

Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 4.2: Scoping Report

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Cambridge Waste Water Treatment Plant Relocation Project



EIA Scoping report
October 2021

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Abbreviations

Abbreviation	Meaning
AADT	Annual Average Daily Traffic
AAP	Area Action Plan
AD	Anaerobic Digestion
ADS	Archaeology Data Service
AEP	Annual exceedance probability
ALC	Agricultural Land Classification
Anglian Water	Anglian Water Services Limited
ANPR	Automatic Number Plate Recognition
AOD	Above Ordnance Datum
AQAL	Air quality assessment level
AQMA	Air quality management area
AQS	Air Quality Strategy
ASP	Activated Sludge Plant
BGS	British Geological Society
BMV	Best and Most Versatile (farmland)
BNG	Biodiversity net gain
BTO	British Trust of Ornithology
CAS	Clean Air Strategy
CCC	Cambridge City Council
CCTV	Closed Circuit Television
CDM	Construction (Design and Management) Regulations 2015
CEAS	Cambridge Eastern Access Scheme
CEMP	Construction Environmental Management Plan
CHER	Cambridgeshire Historic Environment Record
CHET	Cambridgeshire Historic Environment Team
CHP	Combined Heat and Power
CIEEM	Chartered Institute of Ecology and Environmental Management
CIFA	Chartered Institute for Archaeologists
City WS	City Wildlife Sites
CNFE	Cambridge Northern Fringe East
CoCP	Code of Construction Practice
CPERC	Cambridgeshire and Peterborough Environmental Records Centre
CRoW Act	Countryside and Rights of Way Act 2000
CTMP	Construction Traffic Management Plan
CUCAP	Cambridge University Collection of Aerial Photographs
CWS	County wildlife site
CWTP	Construction Workers Travel Plan
CWWTP	Cambridge Waste Water Treatment Plant (existing)
CWWTPR	Cambridge Waste Water Treatment Plant Relocation (for Proposed Development)
CWWTPRP	Cambridge Waste Water Treatment Plant Relocation Project

Abbreviation	Meaning
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DNO	District Network Operator
DRN	Detailed river network
DWF	Dry Weather Flow
ECDC	East Cambridgeshire District Council
EclA	Ecological Impact Assessment
eDNA	Environmental DNA
EIA	Environmental Impact Assessment
EN	Endangered
Eng VU	Vulnerable in England
EPS	European Protected Species
ES	Environmental Statement
EZol	Ecological Zone of Influence
FE	Final Effluent
FFT	Flow to Full Treatment
FRA	Flood Risk Assessment
FST	Final Settlement Tank
GB VU	Vulnerable in Great Britain
GCN	Great crested newt
GCP	Greater Cambridgeshire Partnership
GEART	Guidelines for the Environmental Assessment of Road Traffic
GHG	Greenhouse gas
GRP	Glass Reinforced Plastic
HDD	Horizontal Directional Drilling
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HpH	Heating, Pasteurisation and Hydrolysis
HRA	Habitats Regulations Assessment
HSI	Habitat suitability index
IAQM	Institute of Air Quality Management
IDB	Internal Drainage Board
IED	Industrial Emissions Directive
IEMA	Institute of Environmental Management and Assessment
IRZ	Impact Risk Zone
LBAP	Local Biodiversity Action Plan
LCA	Landscape character area
LDV	Light Duty Vehicle
LEMP	Landscape and Ecology Management Plan
LGV	Light Goods Vehicle

Abbreviation	Meaning
LIA	Local Impact Area
LLFA	Local Lead Food Authority
LNR	Local Nature Reserve
LoD	Limits of Deviation
LVIA	Landscape and Visual Impact Assessment
MABR	Membrane Aerated Bioreactor
MAGIC	Multi Agency Geographic Information for the Countryside
MCC	Manually Classified Counts
MTBM	Micro-Tunnel Boring Machine
MoRPH	Modular River Survey
NCA	National character area
NEC	North East Cambridge
NERC Act	The Natural Environment and Rural Communities Act 2006
NHLE	National Heritage List for England
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRMM	Non-road mobile machinery
NSIP	Nationally Significant Infrastructure Project
NT	Near threatened
NTS	Non-Technical Summary
NVC	National vegetation classification
OS	Ordnance Survey
p.e	Population Equivalent
PEA	Preliminary Ecological Appraisal
PEI	Preliminary Environmental Information
PINS	Planning Inspectorate
PCM	Pollution Climate Mapping
PM	Particulate matter
PEA	Preliminary Ecological Appraisal
PRA	Preliminary roost assessment
PRF	Potential roost features
PRoW	Public Right of Way
PRV	Protected Road Verge
PST	Primary Settlement Tank
PV	Photovoltaic
RAS	Returned Activated Sludge
RBMP	River Basin Management Plan
RCP	Representative Concentration Pathway
RES	Recycling Environmental Services
RHS	River habitat survey
RoFSW	Risk of flooding from surface water
RWCS	Realistic Worst-Case Scenario

Abbreviation	Meaning
SAC	Special Area of Conservation
SAS	Surplus Activated Sludge
SCDC	South Cambridgeshire District Council
SFRA	Strategic Flood Risk Assessment
SoS	Secretary of State
SPA	Special Protection Area
SPD	Supplementary planning document
SPZ	Source Protection Zone
SSSI	Sites of Special Scientific Interest
STC	Sludge Treatment Centre
SuDS	Sustainable Drainage Systems
TA	Transport Assessment
TDS	Tonnes of Dry Solids
TPS	Terminal Pumping Station
TSS	Total Suspended Solids
uPVC	Unplasticised Polyvinyl Chloride
UWWTD	Urban Waste Water Treatment Directive
UXO	Unexploded ordnance
WWTP	Waste Water Treatment Plant
WCA	Wildlife and Countryside Act 1981
WFD	Water Framework Directive
WRC	Water Recycling Centre
ZoI	Zone of influence
ZTV	Zone of Theoretical Visibility

Glossary

Term	Explanation
'A' Weighting (dB(A))	The unit used to define a weighted sound pressure level, which correlates well with the subjective response to sound. The 'A' weighting follows the frequency response of the human ear, which is less sensitive to low and very high frequencies than it is to those in the range 500Hz to 4kHz.
Agricultural Land Classification	A method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system.
Air Quality Management Area	Defined by the local authority as an area requiring management because air quality levels do not meet national air quality objectives
Air Quality Objective	National and European Directive limit and target values for substances released to the atmosphere for the protection of human health and ecosystems.
Anaerobic Digestion	The biological breaking down of organics in the absence of oxygen to remove pathogens and generate biogas.
Annual Exceedance Probability	The likelihood of occurrence of a flood of given size or larger occurring in any one year, expressed in percentages.
Aquifer	A subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater.
Area of Outstanding Natural Beauty	An Area of Outstanding Natural Beauty is land protected by the Countryside and Rights of Way Act 2000. It protects the land to conserve and enhance its natural beauty.
Activated Sludge Plant (ASP)	A type of biological treatment process that forms the secondary treatment stages of a WWTP.
Baseline	The baseline conditions are the conditions that would exist in the absence of any proposed development either (a) at the time that construction is expected to start, for impacts arising from construction or (b) at the time that the Development is expected to open to traffic, for impacts arising from its operation.
Basic Noise Level	The BNL is a measure of source noise at a reference distance of 10m from the carriageway edge. It is determined from obtaining the estimated noise level from the 18-hour flow and then applying corrections for vehicle speed, percentage of heavy vehicles, gradient and road surface as described in CRTN.
Biodiversity Action Plan	An agreed plan for a habitat or species, which forms part of the UK's commitment to biodiversity in response to the Convention on Biological Diversity, Rio de Janeiro 1992
Biodiversity Net Gain	Biodiversity net gain (BNG) is an approach to development, and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand.
Biogas	Methane rich gas generated during the digestion process.

Term	Explanation
Biosolids	The organic solids removed from the waste water stream and treated in the sludge treatment centre.
Cake	The name for biosolids once treated and the water removed.
Calculation of Road Traffic Noise	A technical memorandum document produced by the Department of Transport in 1988.
Cofferdam	A cofferdam is an enclosure built within a body of water to allow the enclosed area to be pumped out. This pumping creates a dry working environment so that the work can be carried out safely.
Combined Heat and Power (CHP)	A type of engine that burns biogas to generate electricity and heat.
Conservation area	An area designated under Section 69 of the Planning (Listed Building and Conservation Areas) Act 1990 as being an area of "special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance".
Construction and demolition waste	A waste stream that is primarily received from construction sites.
Construction Environmental Management Plan	Document setting out the roles and responsibilities, control measures, training and briefing procedures, risk assessments and monitoring systems to be employed during planning and construction of the works for all relevant environmental topic areas.
Cumulative effects	Effects upon the environment that result from the incremental impact of an action when added to other past, present or reasonably foreseeable actions. Each impact by itself may not be significant but can become a significant effect when combined with other impacts
Design Manual for Roads and Bridges	Provides standards, advice notes and other documents relating to the design, assessment and operation of trunk roads, including motorways in the United Kingdom.
Development Consent Order	A Development Consent Order (DCO) automatically removes the need to obtain several separate consents, including planning permission and is designed to be a much quicker process than applying for these separately. An extension of the regime in 2013 now allows certain business and commercial projects to opt into this process.
Dry Weather Flow (DWF)	A calculated flow figure for a catchment to represent a base flow of sewage reaching the treatment plant. The figure is based on a population figure, plus allowances for industrial flows and known infiltration.
Ecological status	Water Framework Directive term denoting a slight deviation from 'Reference Conditions' in a water body, or the biological, chemical and physico-chemical and hydromorphological conditions associated with little or no human pressure.
Environmental Impact Assessment	A process by which information about environmental effects of a proposed development is collected, assessed and used to inform decision making. For certain projects, EIA is a statutory requirement.
Environmental Permit	Permits are needed to carry out a wide range of specified activities lawfully under the Environmental Permitting (England and Wales) Regulations 2016.
Environmental Statement	A document produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations to report the results of an EIA.

Term	Explanation
Embedded Carbon	Embedded carbon means all the CO ₂ emitted in producing materials. It's estimated from the energy used to extract and transport raw materials as well as emissions from manufacturing processes.
European Protected Species Mitigation Licence	European Protected Species (such as bats) receive full protection under The Conservation of Species and Habitat Regulations 2010. A European Protected Species Mitigation Licence permits otherwise prohibited action under the above legislation.
Extended Phase 1 habitat survey	A classification system used to record semi-natural vegetation, notable/protected habitats, and habitats with the potential to support notable/protected species. Each habitat type/feature is defined by way of a brief description and is allocated a specific name, an alpha-numeric code, and unique mapping colour.
Final Effluent	The water that is discharged from the treatment process.
Final Settlement Tank	Where solids within the secondary treatment stage are settled out for future handling.
Flood risk	The exposure, vulnerability and hazard associated with flooding.
Flood zone	Zones referring to the probability of river and sea flooding, ignoring the presence of defences. Flood zone 3 shows the area that could be affected by a 1 in 100 year (1% chance) flood event. Flood zone 2 shows the area that could be affected by a major flood (1 in 1000, or 0.1% chance). Flood zone 1 shows areas that are very unlikely to experience flood (<0.1%).
Floodplain	A floodplain is flat or nearly flat land adjacent to a stream or river, stretching from the banks of its channel to the base of the enclosing valley walls and (under natural conditions) experiences periods of flooding.
Fluvial geomorphology (or hydrogeomorphology)	Study of landforms and the processes of erosion and deposition that shape and form river channels and adjacent floodplains. Specifically concerned with water and sediment movement in channels.
Full to Flow Treatment	The calculated figure that the treatment plant must be able to treat before diverting flows to storm. This figure is permitted and agreed with the EA.
Geomorphology	The study of landforms and the processes that create them.
Green Belt	The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. Green Belt serves five purposes: a) to check the unrestricted sprawl of large built-up areas; b) to prevent neighbouring towns merging into one another; c) to assist in safeguarding the countryside from encroachment; d) to preserve the setting and special character of historic towns; and e) to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.
Greenhouse gas	Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect.
Groundwater dependent terrestrial ecosystems	Wetlands which critically depend on groundwater flows and/or chemistries.
Habitat Regulations Assessment	A formal assessment of the implications of any new plans or projects that may be capable of affecting the designated interest features of European Sites before deciding whether to undertake, permit or authorise such a plan or project.

Term	Explanation
Heating Pasteurisation and Hydrolysis (HpH)	Heating Pasteurisation and Hydrolysis – A pre-treatment process for Anaerobic Digestion that increases the efficiency upon which organics are converted into biogas and pathogens killed through the process.
Heavy duty vehicle	Vehicles and with a gross weight of more than 3.5 tonnes and buses.
Heavy goods vehicle	Goods vehicle with a gross weight of more than 3.5 tonnes.
Hedonic tone	A property of an odour related to its pleasantness/unpleasantness.
Heritage assets	The historic environment assets such as archaeological remains, historic buildings and historic landscapes which have archaeological, architectural, artistic or historic value.
Historic landscape type	The current landscape, whose character is the consequence of the action and interaction of natural and/or human factors.
Hydromorphology	Hydromorphology is a term used to describe the hydrological (water flow, energy etc) and geomorphological (surface features) processes and attributes of rivers, lakes, estuaries and coastal waters.
Interim advice note	Interim advice notes contain specific guidance issued by National Highways and should be read together with Design Manual for Roads and Bridges and Manual of Contract Documents for Highway Works.
Landscape and visual impact assessment	A process that identifies the effects of new developments on views and on the landscape, supported by GLVIA3.
Landscape Character Area	Single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type. The English territory is classified in landscape character areas either at national and local level.
Light duty vehicle	Vehicle with a gross weight of not more than 3.5 tonnes.
Listed building	A building or structure designated under Section 69 of the Planning (Listed Building and Conservation Areas) Act 1990 as being of “special architectural or historic interest”.
Local Nature Reserve	Nature reserves designated under the National Parks and Countryside Act (1949) for locally important wildlife or geological features. They are controlled by local authorities in liaison with English Nature.
Local Planning Authority	The public authority whose duty it is to carry out specific planning functions for a particular area.
Made ground	Areas where material is known to have been placed by man on the pre-existing (natural or artificial) land surfaced (including engineered fill).
Magnitude	The scale, size or degree of change (impact) to the environment from an action upon it.
Main river	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers. N.B. Main River designation is not an indication of size, although it is often the case that they are larger than Ordinary Watercourses.
Membrane Aerated Bioreactor	A type of Activated Sludge Plant technology that improves the oxygen transfer efficiency and process intensification of the secondary treatment stage.

Term	Explanation
Mineral Safeguarded Area	An area which covers known deposits of minerals which are desired to be kept safeguarded from unnecessary changes by non-mineral development.
Mitigation	The action of reducing the severity and magnitude of change (impact) to the environment. Measures to avoid, reduce, remedy or compensate for significant adverse effects.
Nationally significant infrastructure project	Nationally Significant Infrastructure Projects (NSIPs) are large scale developments (relating to energy, transport, water, or waste) which require a type of consent known as "development consent". The Planning Act 2008 introduced a new development consent process for NSIPs which was subsequently amended by the Localism Act 2011. Also refer to Development Consent Order.
Nitrate Vulnerable Zone	A designation required under the Nitrates Directive (91/676/EEC) for all land draining to and contributing to the nitrate pollution in 'polluted' waters. Polluted waters are those where nitrate levels exceed, or are likely to exceed, the levels set in the Directive.
Noise Action Plan	The Noise Action Plan is designed to address the management of noise issues and effects from road and railways in the 65 agglomerations in England under the terms of the Noise
Noise Important Area	The top 1% of noisiest locations adjacent to major roads.
Order limits	The limits of deviation of land shown on the parameter plans within which the authorised development may be carried out.
Ordinary watercourse	All watercourses that are not designated Main River, and which are the responsibility of Local Authorities or, where they exist, Internal Drainage Boards. Note that Ordinary Watercourse does not imply a 'small' river, although it is often the case that Ordinary Watercourses are smaller than Main Rivers.
Pipe jacking	A method of laying underground pipes without digging a trench, in which the pipes are assembled in an access shaft and then pushed into position by a hydraulic jack.
Potential effect	The predicted consequential change that may occur upon the environment as a result of a development, in the absence of mitigation.
Principal aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.
Public Right of Way	A widely known right to cross private land is known as a 'right of way'. If this is a right granted to everyone it is a 'public right of way'.
Ramsar	Ramsar sites are wetlands of international importance designated under the Ramsar Convention.
Receptor	A defined individual environmental feature usually associated with population, fauna and flora that have potential to be impacted by a development.
Regionally Important Geological Site	Site of regional and local importance for their geology that have not been designated a Site of Special Scientific Interest.
Registered park and garden	Gardens, grounds and other planned open spaces with historical significance. Registration is a 'material consideration' in the planning process.
Residual effect	The predicted consequential change on the environment from the impacts of a development after mitigation.

Term	Explanation
Return Activated Sludge	Settled organics in the final settlement tanks returned to the main aeration stage to maintain a level of bacteria for support treatment.
Scheduled monument	Scheduled monuments are protected by law designated under the Ancient Monuments and Archaeological Areas Act 1979 and are, by definition, of national importance.
Scoping	The process of identifying the issues to be addressed by an environmental impact assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered unlikely to be significant. This process is documented in a Scoping report, which in turn is used to request a formal Scoping Opinion.
Screening	Procedure used to determine whether a proposed project is likely to have significant effects on the environment, and if a formal EIA will be required (documented in an
Secondary Aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Sensitivity	Receptor or resource environmental value.
Setting	The setting of an asset is the surroundings in which a place is experienced, while embracing an understanding of perceptible evidence of the past in the present landscape.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Site of Nature Conservation Importance	Sites of Nature Conservation Interest are sites which contain features of substantive nature conservation value at a local level.
Site of Special Scientific Interest	A site of national importance due to its wildlife or geological value that is protected by the Wildlife and Countryside Act 1981 (as amended).
Site Waste Management Plan	A tool for detailing the amount and type of waste that will be produced on a construction site and how it will be eliminated, reduced, reused, recycled and disposed of and to help meet regulatory controls and reduce the costs of waste
Sludge Treatment Centre	Where organics removed from the waste water is treated to yield a high-quality bio-fertiliser and biogas. It covers areas from sludge imports to cake export and biogas treatment.
Source Protection Zone	These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. Divided into three main zones (inner, outer and total catchment).
Special Area of Conservation	A site designated under the Habitats Directive due to its international value for certain habitats and species of conservation importance (those listed on Annex I and II of the Directive).
Special Protection Area	A site designated under Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') due to its international importance for birds.
Superficial aquifer	Recent unconsolidated sediments typically less than 2.6 million years old containing non-negligible volumes of groundwater in storage and through which groundwater moves.

Term	Explanation
Surface water dependent ecosystem	In contrast to groundwater terrestrial ecosystems, surface water dependent ecosystems are (all other) waterbodies supporting sensitive/important ecological communities.
Surplus Activated Sludge (SAS)	Settled organics in the final settlement tanks that are not needed in the aeration stage that are then removed for treatment at the Sludge Treatment Centre.
Susceptibility	The quality or state of being likely to be influenced or impacted by a particular event or factor (e.g. flooding). Could also refer to a lack of ability to resist being influenced or impacted by a particular event or factor.
Terminal Pumping Station	The pumping station that pumps flow from the waste water transfer tunnel into the WWTP.
Treated Effluent Pipelines	Pipelines that convey final effluent and storm flows to an outfall structure.
Tree Preservation Order	A Tree preservation order is an order made by a local planning authority in England to protect specific trees, groups of trees or woodlands in the interests of amenity. An Order prohibits the: cutting down; topping lopping; uprooting; wilful damage or destruction of trees without the local planning authority's written consent. If consent is given, it can be subject to conditions which have to be followed. In the Secretary of State's view, cutting roots is also a prohibited activity and requires the authority's consent
Waste water treatment plant (WWTP)	A site that treats waste water before the treated effluent is discharges back to inland waters, estuaries and the sea.
Waste water transfer tunnel	A tunnel between an interception point and the existing WWTP transferring waste water to the proposed WWTP.
Community Recycling Centres).	Water body Discrete of a river, groundwater area, lake or coast that is a defined management unit under the WFD.
Water Framework Directive	EU water legislation that came into force in 2000, with the overarching objective to get all water bodies in Europe to attain Good or High Ecological Status. River Basin Management Plans have been created which set out measures and potential mitigation to ensure that water bodies in England and Wales achieve 'Good Ecological Status'.
Zone of theoretical visibility	These model the areas of land within which a development will be theoretically visible based on 'bare earth' terrain, that is without taking account of intervening physical features such as existing vegetation and built development

1 Introduction

1.1 Background

- 1.1.1 Anglian Water Services Limited (hereafter referred to as ‘the Applicant’ or ‘Anglian Water’) has commissioned this Environmental Impact Assessment (EIA) Scoping report for the relocation of the Cambridge Waste Water Treatment Plant (hereafter referred to as the ‘Proposed Development’).
- 1.1.2 South Cambridgeshire District Council and Cambridge City Council recently consulted on a draft Area Action Plan (AAP) for a new low carbon city district in North East Cambridge, which could create 8,000 homes and 20,000 jobs over the next 20 years. Achieving the regeneration of the area relies on the relocation of Anglian Water’s Cambridge Waste Water Treatment Plant. Anglian Water is working in partnership with the councils who have a long-standing ambition to unlock the development potential of the area, which has great walking, cycling and public transport links, including the new Cambridge North Station, making it a highly sustainable location for new homes.
- 1.1.3 The Proposed Development involves construction of a new integrated waste water treatment plant (WWTP) together with the associated waste water transfer infrastructure, comprising waste water transfer tunnel, sewer rising main diversions and treated effluent transfer with an outfall to the River Cam. The Proposed Development also includes a transfer pipeline corridor from Waterbeach Water Recycling Centre (WRC). The proposed WWTP is an integrated waste water treatment plant. It would incorporate an integrated sludge treatment centre (STC) which would treat the sludge derived from the waste water from the Cambridge catchment, both from the existing Cambridge WWTP and also the “wet sludge” produced by other satellite WWTP in the region which do not have an integrated STC.
- 1.1.4 The Proposed Development is a nationally significant infrastructure project as directed by the Secretary of State for Environment, Food and Rural Affairs (‘the Secretary of State’) under Section 35 of the Planning Act 2008 (as amended).
- 1.1.5 The Applicant intends to submit an application for a Development Consent Order (DCO) to the Planning Inspectorate for the Proposed Development. The Planning Inspectorate will examine the DCO application and will make a recommendation to the Secretary of State on whether development consent for the Proposed Development should be granted or refused. The DCO application will include an Environmental Statement (‘ES’), which will provide information required to assess the likely significant environmental effects of the Proposed Development, based on the EIA surveys and studies. This report sets out the proposed scope of the EIA and seeks a Scoping Opinion from the Planning

Inspectorate. The Scoping Opinion is a written statement setting out the Inspectorate's opinion as to the scope and level of detail of the information to be provided in the ES. A Scoping Opinion is expected within 42 days of the Planning Inspectorate receiving this report.

- 1.1.6 The Applicant has carefully considered the best time to request a Scoping Opinion. To gain the most benefit, applicants are advised to request the opinion once there is sufficient certainty about the design of the Proposed Development and the main design elements likely to have a significant environmental effect. Applicants are advised to avoid submitting requests with multiple and varied design and layout options.
- 1.1.7 The Applicant has recently consulted (at Phase Two Consultation) on several locations for permanent vehicular access. These options remain under consideration following the Phase Two Consultation. The scope of assessment for each of these options is presented clearly in this Scoping report to aid the Planning Inspectorate and consultation bodies in providing detailed comments.

1.2 Requirement for Environmental Impact Assessment

- 1.2.1 The Proposed Development is subject to mandatory EIA as it is listed in paragraph 13 of Schedule 1 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter 'the EIA Regulations'), in the category of waste water treatment plants with a capacity exceeding 150,000 population equivalent as defined in Article 2(6) of Council Directive 91/271/EEC concerning urban waste-water treatment.
- 1.2.2 Regulation 10(1) of the EIA Regulations allows a person who proposes to make an application for an order granting development consent to ask the Secretary of State for Environment, Food and Rural Affairs (hereafter referred to as the Secretary of State) to state in writing its opinion as to the scope and level of detail of the information to be provided in the ES. The scoping process is undertaken by the Planning Inspectorate on behalf of the Secretary of State. This Scoping report is submitted to the Planning Inspectorate and forms a formal request for a Scoping Opinion under Regulation 10(1) of the EIA Regulations.
- 1.2.3 The Applicant has notified the Planning Inspectorate under Regulation 8(1)(b) of the EIA Regulations that an Environmental Statement (ES) will be submitted in respect of the application for development consent for the Proposed Development and has submitted a GIS shapefile with the notification showing the site boundary that is presented within this Scoping report.

1.3 Purpose of this EIA Scoping report

- 1.3.1 This Scoping report describes how the Applicant proposes to undertake the EIA and details the assessments carried out to date. An effective scoping process enables the refinement of the assessment and defines the information required to form the ES. It allows for an early identification of the likely significant effects applicable to the EIA Regulations and provides an opportunity to agree where aspects and matters can be scoped out from further assessment. The Planning Inspectorate uses the term ‘matters’ (as set out in paragraph 5.7 of Advice Note Seven¹) referring to those parts that are a subdivision of the aspect, for example an assessment of a particular species is a ‘matter’ to the aspect of biodiversity. Ensuring that the ES is appropriately focused on aspects and matters where a likely significant effect may occur is essential and ensures that the EIA process is proportionate.
- 1.3.2 Although requesting a Scoping Opinion of the Secretary of State is not a statutory requirement, the Scoping Opinion is an important document, and the EIA Regulations require the ES to be based on the most recent one adopted (Regulation 14(3) of the EIA Regulations) ‘*As far as the proposed development remains materially the same as the proposed development which was subject to that opinion*’.
- 1.3.3 As set out in paragraph 5.10 of Advice Note Seven, the Planning Inspectorate will agree to ‘scope out’ from the need for further assessment, aspects and matters where it is appropriate to do so. To support the Planning Inspectorate with this aim, applicants should ensure that their requests include sufficient justification for scoping aspects/matters out. The justification should be evidence based and have reference to the assessment process.
- 1.3.4 The Planning Inspectorate considers (as set out in paragraph 5.11 of Advice Note Seven) that suitable justification to support the scoping out of aspects and matters should include information to address the following questions:
- Is there an impact pathway from the Proposed Development to the aspect/matter?
 - Is the aspect/matter sensitive to the impact concerned?
 - Is the impact likely to be on a scale that may result in significant effects to the aspect/matter?
 - Could the impact contribute cumulatively with other impacts to result in significant effects to the aspect/ matter?

¹ Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (version 7 June 2020). Available at <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>

- Is there a method of avoidance or mitigation that would reduce the impact on the aspect/matter to a level where significant effects would not occur?
- Is there sufficient confidence in the avoidance or mitigation method in terms of deliverability and efficacy to support the request?
- Is there empirical evidence available to support the request?
- Do relevant statutory consultees agree with the request?
- Have you had regard to (a) relevant National Policy Statement(s) (NPS) and specifically any requirement stated in the NPS(s) in respect of the assessment of this aspect/matter?

1.3.5 Inclusion of information responding to the points above increases the likelihood of the Planning Inspectorate being able to agree to any ‘scoping out requests. This information is provided in this Scoping report where matters or aspects are proposed for scoping out of further assessment.

1.3.6 Aspects/matters are not scoped out unless specifically confirmed as being scoped out by the Scoping Opinion.

1.4 Relevant Planning Policy

1.4.1 The relevant National Policy Statement (NPS) is the National Policy Statement for Waste Water². NPSs comprise the government’s objectives for the development of nationally significant infrastructure in particular sectors including circumstances where it would be particularly important to address the adverse impacts of development. The EIA approach proposed in this scoping report takes account of the requirements of the NPS in terms of the scope of the assessment of effects and mitigation. Where relevant the provisions of the NPS are cited within each environmental topic of this report.

1.4.2 The National Planning Policy Framework³ (NPPF) alongside other relevant national and local planning policies have also been considered where these could influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation or influence on the methodology of the EIA. For example, a planning policy may require the assessment of a particular impact or the use of a particular methodology. A summary of national and local planning policy relevant to each technical assessment is provided for each environmental topic (Chapters 6 to 21).

1.4.3 The local planning policy documents relevant to the Proposed Development consist of the following:

² The National Policy Statement for Waste Water (2012): Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-waste-water>

³ The National Planning Policy Framework (2021): Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

- South Cambridgeshire Local Plan 2018;
- Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021; and
- Cambridge City Local Plan 2018.

1.4.4 The following documents comprise emerging local planning policy:

- Greater Cambridge Local Plan;
- North East Cambridge Area Action Plan; and
- Waterbeach Neighbourhood Plan.

1.5 Scoping report structure

1.5.1 This Scoping report is structured as follows:

- Chapter 1 introduces the Proposed Development and sets out the context of this Scoping report.
- Chapter 2 provides a plan sufficient to identify the land, describes the Proposed Development including its location and technical capacity, boundary and in line with Planning Inspectorate Advice Note Seven includes:
 - the approach to addressing uncertainty where it remains in relation to elements of the Proposed Development (e.g. design parameters); and
 - plans presented at an appropriate scale to clearly convey the information and all known features associated with the Proposed Development.
- Chapter 3 presents an outline of the alternatives considered to date and the reasons for selecting the preferred option, including the site selection process to identify the preferred location for the Proposed Development.
- Chapter 4 summarises consultation undertaken to date and the engagement that will be carried out as part of the design-development and EIA processes.
- Chapter 5 details the proposed EIA methodology that will be applied, including any overarching assumptions and limitations, and the outline of the structure of the proposed ES. Chapter 5 includes the proposed approach for cumulative effects assessment and a completed shortlist of ‘other existing development and/or approved development.’
- Chapters 6 to 21 provide an explanation of the likely significant effects of the development on the environment for each of the environmental aspects to be assessed as part of this EIA and include the following in line with Planning Inspectorate Advice Note 7:
 - a summary table depicting each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues;

- a detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided;
 - results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters;
 - aspects and matters to be scoped in, the report should include details of the methods to be used to assess impacts and to determine significance of effect e.g. criteria for determining sensitivity and magnitude;
 - any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects;
 - references to any guidance and best practice to be relied upon; and
 - evidence of agreements reached with consultation bodies (for example the statutory nature conservation bodies or local authorities).
- Chapter 21 provides a summary of the proposed technical scope of the EIA.

1.5.2 This Scoping report is also supported by a series of appendices containing further information and detail on matters relating to the scope of the EIA, and environmental data and records referenced as part of the scoping exercise.

1.5.3 A completed transboundary screening matrix dealing with the potential effects of the Proposed Development on other European Economic Area (EEA) States to facilitate the Secretary of State's consideration under Regulation 32 of the EIA Regulations is appended to this Scoping report. Under that provision, the Secretary of State must notify and exchange information with EEA states if they are of the view that the proposed development is likely to have significant effects on the environment in these states.

1.6 Use of competent experts

1.6.1 In accordance with The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended, paragraph (14), a Statement of Competence will be included within the ES, outlining the relevant expertise or qualifications of the experts who prepared the ES.

1.6.2 The introductory and summary chapters of this EIA Scoping report (Chapters 1 to 5 and Chapter 22) have been prepared by JCTR Ltd, drawing on material provided by the Anglian Water team, which includes engineers, designers and external consultants. The design parameters and details contained in this document have been approved by Anglian Water.

1.6.3 The aspect-specific chapters of this Scoping report (Chapters 6 to 21) and their corresponding appendices have been prepared by Mott MacDonald on behalf of the Applicant. Mott MacDonald is a multidisciplinary consultancy with over 20 years' experience of undertaking complex and challenging environmental impact assessments and of writing environmental impact assessment reports

for a wide range of projects. These include some of the world's largest infrastructure, engineering, and development projects.

- 1.6.4 Mott MacDonald is a corporate member of the Institute of Environmental Management and Assessment (IEMA) and hold its EIA Quality Mark. The Quality Mark allows organisations that lead the co-ordination of statutory EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.7 Assumptions, limitations and uncertainties

- 1.7.1 Known assumptions, limitations and uncertainties are provided in each aspect section (Chapters 6 to 21 of this Scoping report).

2 The Proposed Development

2.1 Introduction

2.1.1 This chapter describes the Proposed Development including its location and technical capacity and provides a plan sufficient to identify the land. In line with Planning Inspectorate Advice Note 7 this chapter includes:

- the approach to addressing uncertainty where it remains in relation to elements of the Proposed Development (e.g. design parameters); and
- plans presented at an appropriate scale to clearly convey the information and all known features associated with the Proposed Development.

2.1.2 The scope of assessment presented in Chapters 6 to 21 are based on the project description set out in this chapter and the methodology presented at Chapter 5.

2.1.3 As set out in Chapter 5 Methodology, a spatial parameters approach has been used. The purpose of this approach is to enable reasonable flexibility to reflect likely modification during detailed design, whilst ensuring that the maximum extent of the proposed development is considered in order to assess a realistic worst-case scenario. Within these parameters, infrastructure may be located anywhere within a defined zone.

2.2 The waste water and sludge treatment processes

2.2.1 Figure 2-1 provides an overview of the treatment process proposed for waste water and sludge. Alongside waste water treatment, all storm flows which are conveyed to the proposed WWTP following heavy rainfall would be partially treated⁴. The sludge treatment process would produce sludge for use as bio-fertiliser for spreading on agricultural land and produce energy via anaerobic digestion as biogas is produced as a by-product.

⁴ This may include elements of screening and settlement.

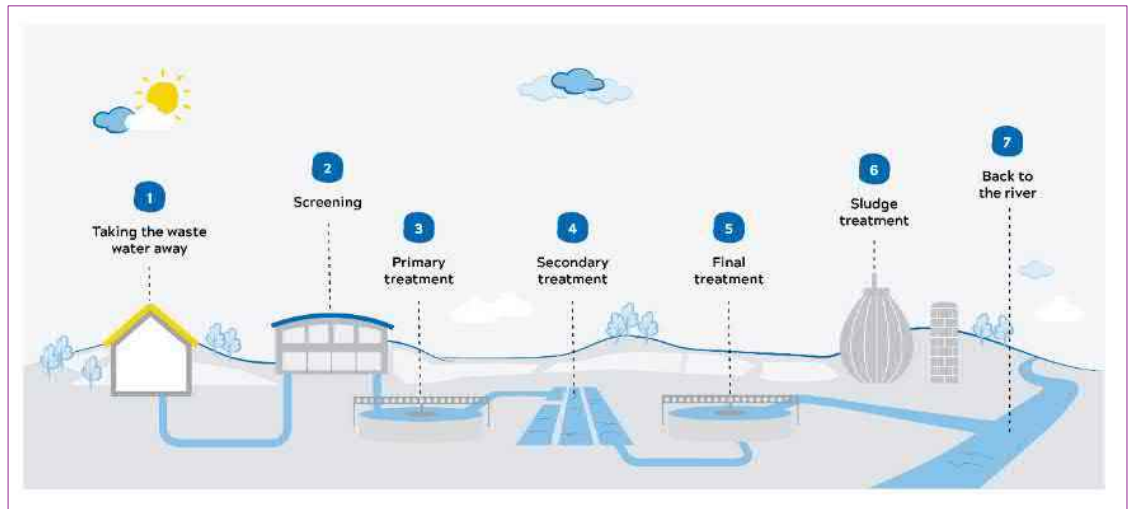






Figure 2-1: Overview of the treatment processes for the proposed WWTP

2.3 Location

2.3.1 A site location plan, showing the EIA Scoping boundary, representing the area within which the project may be delivered is shown in Figure 00: EIA Scoping boundary and Zones on the following page. For the purposes of this report the project it is split into three distinct zones:

- Core Zone: Proposed WWTP and connections within the zone, vehicular operational access options, earth bank and surrounding area including the features of the proposed landscape and habitat masterplan and proposed and/or improved public access;
- Transfers zone: Waste water transfers and final effluent pipelines including the existing Cambridge WWTP, underground transfer pipelines from the existing WWTP to the proposed WWTP, Waterbeach transfer pipeline to Core Zone, final effluent transfer, final effluent outfall; and
- Waterbeach zone: Waterbeach transfer pipeline to Core Zone including existing Waterbeach WRC and temporary construction access routes.

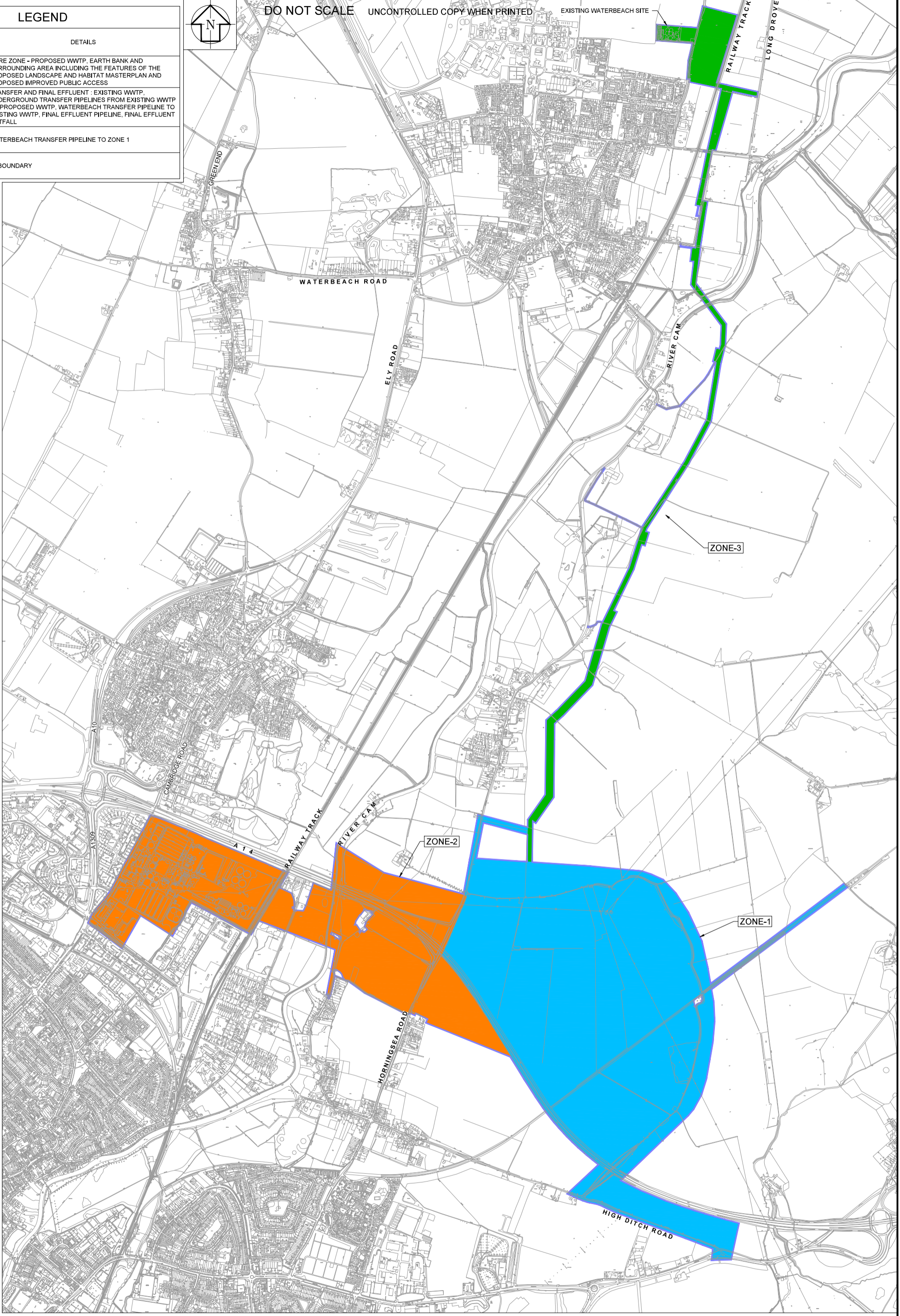
LEGEND

KEY	ZONE	DETAILS
	ZONE-1	CORE ZONE - PROPOSED WWTP, EARTH BANK AND SURROUNDING AREA INCLUDING THE FEATURES OF THE PROPOSED LANDSCAPE AND HABITAT MASTERPLAN AND PROPOSED IMPROVED PUBLIC ACCESS
	ZONE-2	TRANSFER AND FINAL EFFLUENT : EXISTING WWTP, UNDERGROUND TRANSFER PIPELINES FROM EXISTING WWTP TO PROPOSED WWTP, WATERBEACH TRANSFER PIPELINE TO EXISTING WWTP, FINAL EFFLUENT PIPELINE, FINAL EFFLUENT OUTFALL
	ZONE-3	WATERBEACH TRANSFER PIPELINE TO ZONE 1
	EIA SCOPING BOUNDARY	

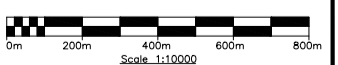


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PLAN
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PROJECT TITLE
**CAMBRIDGE WASTEWATER
TREATMENT PLANT
RELOCATION PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 00
EIA SCOPING BOUNDARY
AND ZONES**

anglianwater
@one
Thorp Wood House, Thorpe Wood, Peterborough,
Cambridgeshire, PE3 9NT
Tel: 01733 414100 Fax: 01733 454111

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2.4 Design concept

- 2.4.1 The Proposed Development comprises the relocation of the Cambridge Waste Water Treatment Plant (WWTP) from its existing site on land adjoining the north eastern side of the city of Cambridge, to a new location. The relocation is required to support the delivery of South Cambridgeshire District and Cambridge City Councils' Area Action Plan for a new low-carbon city district in North East Cambridge, which could create 8,000 homes and 20,000 jobs over the next 20 years.
- 2.4.2 As part of its statutory function, Anglian Water operates the existing Cambridge WWTP. The existing Cambridge WWTP receives waste water from the Cambridge catchment either directly from the connected sewerage network or tankered to the plant from homes and businesses that are not connected. This waste water is then treated to remove pollutants, and the treated effluent discharged through an outfall to the nearby River Cam.
- 2.4.3 The existing Cambridge WWTP is an integrated WWTP, as would be the Proposed Development. Integrated WWTP incorporate a sludge treatment function, in the form of a Sludge Treatment Centre (STC), which treats the sludge derived from the waste water from the catchment, and the "wet sludge" produced by other satellite plants which do not have integrated STC.
- 2.4.4 Integrated waste water treatment plants act as "hubs" dealing not only with the waste water treatment process for the catchment areas in which they, and their nearby population centres, are located but also completing the waste water treatment process for the "wet sludge" tankered in from the local satellite facilities. The "wet sludge" from these satellite plants is transported to the WWTP by tankers and deposited into the first stage of the STC process at the WWTP. The existing Cambridge WWTP acts as a "hub" for local satellite sites. The overall Cambridge catchment has around 45 such satellite sites which send wet sludge to the existing Cambridge WWTP. Other local catchments, Huntingdon and Ely also feed into the existing Cambridge WWTP.
- 2.4.5 Sludge treatment is undertaken to separate suspended solids from the waste water which are then digested anaerobically. The dewatered solids at the conclusion of the digestion process are reduced to methane (which is used to generate heat required to activate the water treatment process, and power in the form of electricity), and an agricultural product to be used as fertilizer. The waste water removed as a result of the digestion process is then returned to the start of the waste water treatment process. The STC at the existing Cambridge WWTP also incorporates a combined heat and power plant and is fully integrated with the other parts of the process via inter-linking pipework.

- 2.4.6 The existing Cambridge WWTP is a critical element of infrastructure required to enable Anglian Water to comply with its principal statutory duty as a sewerage undertaker in the region by providing waste water treatment services to the city of Cambridge, the surrounding drainage catchment area, and the satellite facilities which it serves.
- 2.4.7 The proposed development of Waterbeach New Town lies to the north of Cambridge. The Waterbeach new town development when built out will comprise some 11,000 new homes along with associated business, retail, community and leisure uses. A new pipeline (rising main) is required from Waterbeach to the proposed WWTP to support the development of Waterbeach New Town.
- 2.4.8 There is insufficient capacity to treat flows within the Waterbeach Water Recycling Centre (WRC) to accommodate the entire Waterbeach New Town flows alongside existing Waterbeach flows. The new rising main will accommodate flows from the existing Waterbeach catchment and Waterbeach New Town.

TECHNICAL CAPACITY

Design capacity

- 2.4.9 As described in 2.4.3, the proposed WWTP is an integrated plant. The design capacity of the proposed WWTP will be approximately 548,000 population equivalent. The waste water treatment element (i.e. the Water Recycling Centre not including the Sludge Treatment Centre) has an overall design capacity of 270,000 to 300,000 population equivalent. This would be expected to accommodate current forecasted housing growth to around 2050. The Sludge Treatment Centre will be designed to treat indigenous sludge produced at the proposed WWTP plus imported liquid sludges arriving by road. The STC is designed to treat a total amount of up to 16,000 Tonnes Dry Solids (TDS) per year for both indigenous and imported sludge to accommodate forecast housing growth to around 2050.
- 2.4.10 There is flexibility and capacity within the operational footprint of the Proposed Development to allow for future expansion ensuring the proposed development can accommodate growth up to 2080. Future expansion after 2050 falls outside of the scope of the EIA as set out in Chapter 5 Methodology.
- 2.4.11 At the existing Cambridge WWTP heat and electrical power are generated through burning biogas produced at the STC in combined heat and power (CHP) engines. Two options are under consideration for the proposed WWTP. These are:

- Biogas generated by the process will be firstly burned within onsite steam raising boilers to generate heat for use in the sludge treatment process and the surplus cleaned (concentration of methane increases as impurities are removed to create bio-methane) and exported to the national natural gas network; or
- The approach utilised at the existing Cambridge WWTP of burning biogas within CHP engines to generate electricity, will be used with the waste heat utilised within the process.

Environment Agency discharge permitting

- 2.4.12 The Environment Agency regulates WWTP by assessing the quality of the waste water they discharge against set compliance limits. The level of treatment and monitoring that's required is based on the population the WWTP serves and where the waste water is discharged. The level of treatment and monitoring that a WWTP must provide depends on the population equivalent of the 'agglomeration' it serves.
- 2.4.13 An agglomeration is an area where the population and economic activities are sufficiently concentrated for urban waste water collection. The waste water is then taken for treatment to a WWTP and to a final discharge point.
- 2.4.14 During construction of the proposed WWTP the existing Cambridge WWTP would remain in operation under the current discharge permit. There would be a planned transition period between the two WWTPs.
- 2.4.15 Once fully operational the existing Cambridge WWTP permit will be rescinded to the standards required by the Environment Agency.
- 2.4.16 As per paragraph 3.7.3 of the National Policy Statement on Waste Water, "the Examining Authority and the decision maker should work on the assumption that the relevant pollution control regime will be properly applied and enforced". The main pollution control mechanism in the case of a WWTP is the Environment Agency discharge permit. The National Policy Statement goes on to say that the focus should rest on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves.
- 2.4.17 The proposed WWTP would be designed and operated to meet the requirements of the Environment Agency discharge permit.

Storm water management

- 2.4.18 Due to the nature and design of the Cambridge sewer network all flow conditions (including storm) will be delivered via the terminal pumping station to the proposed WWTP. The provision of full treatment capacity for these larger

diluted 'storm' flows is not required. Therefore, once the rate of flow into the terminal pump station exceeds the expected 'Flow to Full Treatment' (FFT) (2,000litres/second) storm pumps will start working and divert the excess incoming flows to the stormwater storage and treatment plant. This stormwater management solution will be in accordance with the agreement reached with the Environment Agency as part of the discharge permit which aims to minimise the risk of release of waste water to the environment.

- 2.4.19 The storm tanks will also have discharge overflow pipework that transfer flows to the River Cam only once the stormwater storage is full. These flows will be screened and partially settled.
- 2.4.20 The Environment Agency's response to the discharge permit pre-application and other interactions indicate a "no detriment" impact to the River Cam approach between the existing Cambridge WWTP and proposed WWTP for storm water management.
- 2.4.21 The influent flows to the proposed WWTP are currently being refined by hydraulic models of the existing sewer network and include allowances to accommodate the planned development requirements and growth allowances. During a 1 in 100 year storm in the catchment area the flow rates to the proposed WWTP, dependant on the storm intensity chosen, are expected to peak at 7,000litres/second. The storm flows will be influenced by the treatment plant, processes and attenuation capabilities in line with the site's storm consent (storm storage in the permit). The estimated magnitude and frequency of the storm events are currently being developed through network modelling and storm storage and treatment options.

RESILIENCE OF THE PROPOSED DEVELOPMENT TO CLIMATE CHANGE

- 2.4.22 The UK Climate Projections (UKCP) provides the most up-to-date assessment of how the UK climate may change in the future. As set out in the National Policy Statement for Waste Water at 2.3.5 'climate change is already a major pressure on waste water infrastructure. With the probability of wetter winters, more intense rainfall events and greater climate variability in the UK, we can expect greater pressure on public sewer systems. Particularly regarding combined sewers which carry both foul sewage and rainwater run-off to sewage treatment works for treatment prior to discharge. The heavier the rain, the greater the flow the sewer has to carry.'
- 2.4.23 Resilience of the Proposed Development to maintain treatment capacity and quality during future climate events is a separate consideration to design capacity in terms of population growth. The need for resilience is set out in the National Policy Statement for Waste Water which states at 2.3.10 that 'waste water infrastructure providers need to ensure that core capability of key

infrastructure is not unduly compromised by unusual events to secure its fitness for modern purposes.’

- 2.4.24 Paragraph 2.3.6 of the National Policy Statement for Waste Water states that ‘Climate change may also result in reduced annual or seasonal river flows which may in turn require higher standards of sewage treatment in order to meet statutory environmental requirements.’

Climate change scenarios

- 2.4.25 The Flood Risk Assessment (FRA) will be completed in line with the National Policy Statement for Waste Water National Planning Policy Framework requirements. The FRA will follow the Environment Agency’s guidance which includes allowances for future climate change and use numerical modelling to consider a range of scenarios including the 1 in 100 year flood event.
- 2.4.26 The proposed WWTP (and associated infrastructure such as transfers and pumps) is designed to be resilient to climate change with a design based on network modelling which assumes a 1 in 100 year storm event in the catchment area plus a 20% increased allowance for rainfall.

2.5 Design Parameters

Need for flexibility

- 2.5.1 PINS Advice Note Nine⁵ states it is for the Applicant to choose whether there is a need to incorporate flexibility (and how much) into applications to address uncertainty. At this relatively early stage in the design process there is inevitably uncertainty and therefore flexibility in proposals is required at scoping. This flexible approach also allows for consultee feedback to be considered. This flexibility is addressed through design envelopes based on realistic worst-case scenarios.
- 2.5.2 Flexibility is also required in this case as elements of the proposed development are yet to be finalised in terms of choice of technology and for several elements there are options under consideration of which a preferred option is yet to be selected e.g. location of operational access point. The maximum parameters and all likely options where options exist are presented in this chapter to allow for the flexibility required to inform the scope of the EIA at this stage. Flexibility in terms of maximum parameters is likely to be retained throughout the EIA and presented in the DCO submission. On this basis, the impacts of the proposed development as it may be constructed can be identified and effects properly assessed.

⁵ Advice Note Nine: Rochdale Envelope (version 3 July 2018). Available at <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>

Presentation of Parameters

- 2.5.3 In order to ensure that this uncertainty can be appropriately assessed in the EIA process, the Proposed Development is described in terms of design parameters presented within this chapter and on a series of plans at Appendix A (Figures 01 to 22). These parameters are maximum areas, depths and heights within which activities would take place during construction and within which structures would exist during operation. The purpose of this approach is to enable reasonable flexibility to reflect likely modification during detailed design, whilst ensuring that the maximum extent of the proposed development is considered. Within these parameters, infrastructure may be located anywhere within a defined zone. This is described in more detail in Chapter 5 Methodology, Spatial Scope of Assessment.
- 2.5.4 Alongside the design parameters for temporary and permanent structures this chapter sets out parameters which represent the realistic worst-case scenarios for other elements of the project which define the scope for assessment such as the extent of routing for heavy goods vehicles during construction and operation, traffic movements per day and odour control measures.

2.6 Construction programme and duration

- 2.6.1 The earliest construction is expected to start is 2024. Main works construction would commence in early 2025, followed by tunnel construction in mid-2025. Following a period of progressive commissioning, commencing autumn 2026 the proposed WWTP is planned to be fully operational in 2028. The exception to this would be the potential phased elements of the Proposed Development described at 2.6.4.
- 2.6.2 Current key construction durations are as follows and would overlap progressively, as illustrated in Figure 2-2:
- A) Enabling works and mobilisation: 3.5 months
 - B) Waste water recycling centre within the proposed WWTP construction including water testing and dry commissioning: 31 months
 - C) Proposed Sludge Treatment Centre within the proposed WWTP construction including water testing and dry commissioning: 19 months
 - D) Sewer transfer construction: 18 months
 - E) Treated effluent transfer construction: 14 months
 - F) Waterbeach connection followed by decommissioning the existing Waterbeach waste water recycling centre: 12-14 months
 - G) Wet Commissioning of the proposed WWTP: 11 months
 - H) Decommissioning the existing Cambridge WWTP: 8 months

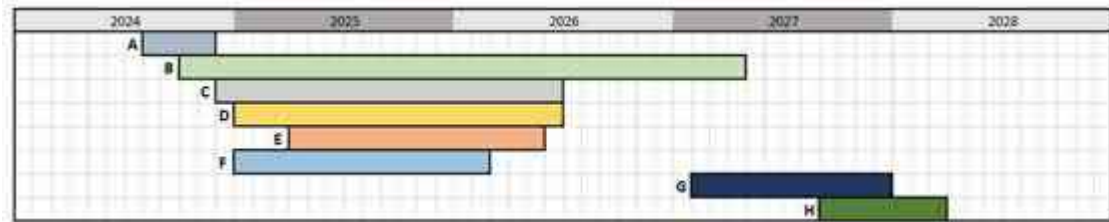


Figure 2-2: Indicative construction programme

CONSTRUCTION SEQUENCE

Likely construction sequence within the Core Zone

2.6.3 The likely construction sequence of works within the Core Zone is as follows:

- Establish construction access and compounds.
- Perimeter land drainage to pick up and divert existing field drainage system, installation of power, water, telecom services.
- Establish working area by removing top soil and moving it to a temporary bund, and the excavation of sub soil to reduce the site level to a level near that proposed for the finished site. The sub soil will be used to construct the landscape earth bank around the proposed WWTP.
- Establish the main site compound, principal store area, sub-contractor compound and a concrete batching plant.
- Within the principal works area for the proposed WWTP (i.e. inside the earth bank) create stable working platforms to each works area and construct internal access roads for use by construction plant, and material deliveries. Each working area will also be provided with temporary site drainage, the provision of utility services and work area compounds and offices.
- Concurrent work to construct both the STC and WRC. Their respective construction programmes will run simultaneously. Both are likely to involve ground improvement to support the structures for stability and engineering purposes (potentially piling at depth as shown on Figure 22 at Appendix A), secondary excavation to form the footprint of each process unit and both in situ and precast concrete techniques to construction foundations, support structures and tanks. Interconnecting pipework will follow. Once the principal structures are complete the mechanical and electrical packages will be installed to complete each process block. Each process block will then be dry commissioned ready for a co-ordinated wet commissioning programme.
- Once construction of the WRC and STC has been established the site will start construction of the onsite infrastructure including operational buildings, the permanent vehicular access road (if different to that used during

construction), car parks, switch gear buildings and generator areas, etc. Where possible also placing topsoil on the earth bank and starting early landscape packages.

- Establish connections to utility services of gas, water, power and telecom services into the proposed WWTP.

2.6.4 Elements of the WRC within the Proposed Development may be phased to be delivered at a later date. These elements are likely to be modular process tanks and units with associated equipment. At present it is anticipated that impacts arising from a phased construction of these elements would fall within the realistic worst-case scenarios set out at Table 5-2 for a single Construction Phase. This will be considered in the EIA.

Likely construction sequence within the Transfers Zone

2.6.5 The likely sequence of works within the Transfers Zone is as follows:

- Establish construction access and compounds as shown on Figure 5 and 10 at Appendix A).
- Construct temporary and permanent shafts to the transfer tunnel.
- Form the transfer main using pipe jacking techniques.
- Using open cut pipelaying techniques construct the rising main diversions around the existing WWTP and into the new tunnel connection chamber.
- Relay the Fen Ditton rising main from its pump station in Fen Ditton to the proposed WWTP or one of the shafts on the transfer main.
- While constructing the transfer main also construct the treated effluent transfer and outfall at the River Cam.

Likely construction sequence within the Waterbeach Zone

2.6.6 The likely sequence of works within the Waterbeach Zone is as follows:

- Establish construction access (as per Figure 5 at Appendix A) and compounds / laydown areas (as per Figures 11 to 13 at Appendix A).
- It is anticipated that on average 40-50 metres of pipeline will be laid per day where open techniques are used. As such the pre-construction work to establish construction access and compounds is likely to be carried out sequentially ahead of the pipeline construction activities.

2.7 Features of the Proposed Development – Core Zone

2.7.1 For the Core Zone the elements labelled on the proposed WWTP layout diagram in Figure 2-3 are described in turn. This section described their functions, design parameters and construction techniques with reference to the

parameter plan figures at Appendix A. The proposals for landscape planting and public access are also described at the end of this section.

- 2.7.2 A section drawing is provided at Figure 22 at Appendix A to show the maximum parameter heights within the Core Zone of 26m for the digesters within the sludge treatment centre, 7m for the earth bank surrounding the operational area and construction depths of between 20m and 40m below ground level.

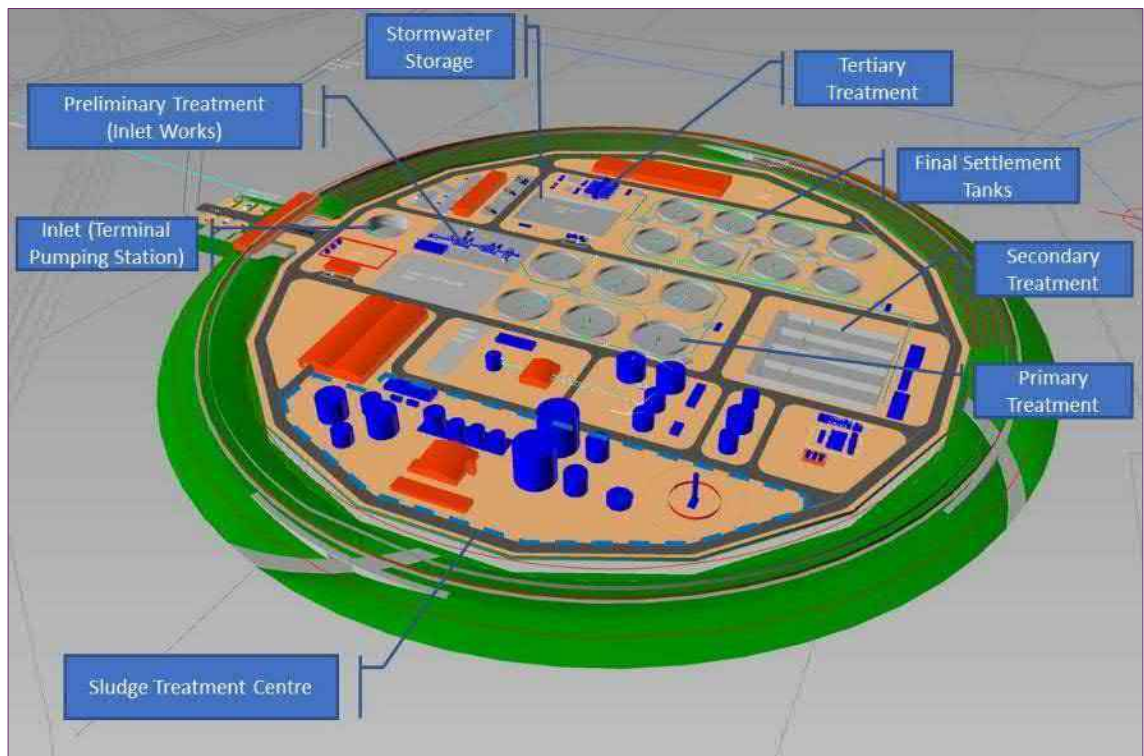


Figure 2-3: Indicative layout of proposed WWTP

WASTE WATER TREATMENT PLANT (WWTP)

Terminal Pumping station

- 2.7.3 The terminal pumping station will lift the waste water and storm flows into a new elevated inlet channel or stormwater management system. To handle both dry weather and storm water flows the terminal pumping station is designed to handle flows of up to 7,000 litres/second.
- 2.7.4 The waste water will be pumped approximately 31m into the elevated inlet channel or to the stormwater storage / treatment tanks. The 31m lift will convey the waste water from approximately 23m below ground (invert of the sewer tunnel) to approximately 8m above ground (invert of the elevated inlet works).

Elevating the inlet works invert to approximately 8m above ground allows the waste water flows to gravitate through the treatment process.

- 2.7.5 The sump to the pumping station, which will funnel the waste water into the pumps, will be approximately 5m below the invert of the sewer tunnel giving a total depth below ground to the pump station of approximately 28m. There may be the need for foundations to a depth of 40m below finished ground level. The concrete lined pumping station will be covered.
- 2.7.6 Adjacent to the pump station will be a valve chamber and a control building containing the Motor Control units and flow monitoring devices for the pumping station.
- 2.7.7 Air venting from the pumping station will be routed through an odour control unit.

Table 2-1: Terminal Pumping Station Parameters

Item	Maximum Parameters
Existing ground level (approximate)	10m Above Ordnance Datum (AOD)
Finished ground level (approximate)	10m Above Ordnance Datum (AOD)
Invert level of incoming sewer	-12.8m AOD
Formation level of terminal pump station	40m below finished ground level
Configuration	Circular (approximately 34m external diameter subject to detailed design)
Dry Weather Flow Pumps	4 No.
Storm Pumps	6 No.
Lifting gantry height	7m above finished ground level
Odour Control Unit	20m x 20m x 5m high with 5m dia. x 4m high carbon vessel
Odour Control Unit Exhaust Stack Height	16m above finished ground level
Overall footprint of Terminal Pumping Station area	65m x 115m



Figure 2-4: Current Terminal Pumping Station at the Existing Cambridge WWTP

Source: CWWTPRP Design Team

Construction of Terminal Pumping Station

- 2.7.8 The depth of works in this area could extend to 40m below ground level, as illustrated in Figure 10 and Figure 22 in Appendix A.
- 2.7.9 With a below ground pump station of this depth specialised deep shaft construction techniques are required. This may involve segmental shaft lining, contiguous bored or similar techniques. The method will be chosen once more geotechnical information is available for the site. Once the shaft has been excavated to the required depth a concrete plug with under reaming to the shaft walls is a possible solution to resist uplift. Once cast this will form the base of the pump station.
- 2.7.10 In situ concrete works will then follow to construct the pump station within the shaft. This will include forming the aperture to receive the incoming effluent main. The pipe jacked pipe and cutting head will be received through this aperture and removed from the shaft.
- 2.7.11 Once the in situ concrete works are complete within the shaft the steel pumped delivery mains from each pump will be installed and fixed to the shaft lining, these delivery mains will leave the shaft via apertures formed in the wall of the shaft and be connected to valves within the adjacent valve chamber.

2.7.12 The large submersible pumps will be installed after the suspended roof slab to the pump station is in place and the pump guides have been fitted. All cabling from the pumps and the level sensors required to manage the pump station will be wired back to the Motor control unit within a control building adjacent to the pump station. Finally, an



Figure 2-5: Example shaft construction

overhead crane built within a galvanise steel frame (see Table 2-1 for height) will be installed to allow maintenance of the pumps etc.

Stormwater management

2.7.13 The volume of stored stormwater could be up to 23,000m³ and this will be diverted back to the inlet works for treatment once the storm has passed and flow rates have reduced. Stormwater storage is likely to happen in an open topped concrete tank(s) which could be rectangular or circular in configuration. The current design contains the rectangular configuration of 71m long x 54m wide x 4.9m high.

Table 2-2: Storm Tanks Parameters

Item	Maximum Parameters
Existing ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Storm Tanks - Configuration	Rectangular 71m long x 76m wide
Storm Tanks - Depth below finished ground level	5m
Storm Tanks - Height above finished ground level	5m
Storm Return (to inlet) Pumps	4 No.

Preliminary treatment - inlet works

2.7.14 The inlet works will be located close to the terminal pumping station and will receive the flows pumped from the terminal pumping station. As well as receiving flows from the terminal pumping station the inlet works will also receive imported liquors from septage tankers and returned storm water that has been stored after a storm event subsides.

- 2.7.15 The inlet works is often referred to as preliminary treatment. The inlet works typically consists of a concrete structure with flow channels, within which the mechanical plant is installed to screen out solids and remove grit from incoming flows to protect downstream plant and equipment.



Figure 2-6: Mogden WWTP (West London) inlet works

Source: BV/Binnies

- 2.7.16 During screening large nondegradable objects (such as nappies, face wipes and plastic bags) are removed. Screens comprise a series of apertures (holes or slots depending on the type of screen employed) through which all the flow must pass. Solid objects (otherwise known as “rag”) larger than the aperture size accumulate on the screen surface and are removed by an automatic raking or washing system and conveyed to the screenings handling plant for further washing to remove organic matter that is returned to the treatment process. The rag will be washed and compacted on site and exported off site for appropriate disposal potentially using skip wagons.
- 2.7.17 Figure 2-7 shows an example screen to allow for understanding of the removal mechanism. However, the inlet screens as well as the channels they are in, along with the terminal pumping station, will be enclosed/covered and the air extracted to an odour control unit for treatment to mitigate odour impacts.



Figure 2-7: Example inlet screen

2.7.18 Grit which is present in the incoming waste water due to road runoff, that may accumulate in downstream process tanks, or cause excessive wear in pumps and equipment, is also removed. The grit removal process provides a low-velocity zone that allows grit to settle out but organic matter to remain in suspension. Deposited grit is conveyed from where it has settled and removed intermittently either hydraulically or by a solids removal pump and discharged to a grit handling plant. The grit is washed to remove organic matter, which is returned to the process. The grit will be exported offsite for appropriate disposal.

Table 2-3: Inlet Works Parameters

Item	Maximum Parameters
Existing ground level (approximate)	10m Above Ordnance Datum (AOD)
Finished ground level (approximate)	10m Above Ordnance Datum (AOD)
Inlet Works: Elevated Screen Channel - Configuration	12m wide x 3m deep x 60m long
Inlet Works: Elevated Grit Removal Chambers - Configuration	16m wide x 3m deep x 17m long
Inlet Works: Elevated Flow Measurement Channel - Configuration	5m wide x 3m deep x 22m long
Inlet Works - Height above finished ground level	8m
Screenings Handling Plant	2No. 12m x 9m x 4m high

Item	Maximum Parameters
Grit Handling Plant	8m x 3m x 4m high
Overall footprint of Inlet Works area	90m x 75m
Odour Control Unit (one unit shared with the terminal pumping station)	As per terminal pumping station parameters

Primary treatment

- 2.7.19 The purpose of primary treatment is to reduce the suspended solids and organics loads to be forwarded to the secondary treatment. At the primary treatment stage, a large proportion of the solid organic matter is separated from the water by allowing it to gravitate to the base of the primary settling tanks (PSTs). The settled solids, referred to as primary sludge, are removed from the tanks by mechanical scrapers directing the sludge to central wells within the tanks, from where it is withdrawn and pumped to the sludge treatment centre for further treatment.
- 2.7.20 To increase the amount of suspended solids that will settle and to enhance phosphorous removal, Ferric (iron) coagulant (or an acceptable alternative) will be dosed to the influent of the primary treatment to increase the precipitate phosphate in the form of a settleable floc. This will reduce the phosphate load on the secondary treatment stage. The coagulant will be stored and made up in a building adjacent to the inlet works and added to the flows at the end of the inlet work channel.
- 2.7.21 The tanks, which could be rectangular or circular, are designed hydraulically to retain the water for a calculated period before releasing the remaining waste water, referred to as settled waste water, over a weir near the top of the tank and then transferring the flows to the secondary treatment stage of process by gravity flow.

Table 2-4: Primary Settlement Tanks Parameters

Item	Maximum Parameters
Existing ground level (approximate)	10m Above Ordnance Datum (AOD)
Finished ground level (approximate)	10m Above Ordnance Datum (AOD)
PSTs - Configuration	Circular 6No. 41.5m diameter
PST - Depth below finished ground level	8m
PST - Height above finished ground level	8m
Overall footprint of PSTs area	175m x 115m
Storm Return (to inlet works) Pumps	4 No.
Ferric Dosing Plant	20m x 5m x 5m high above finished ground level.

Secondary treatment and final settlement tanks

- 2.7.22 Secondary treatment is the biological treatment process in which bacteria removes the soluble and poorly settling organic and inorganic fractions of the primary treated waste water effluent.



Figure 2-8: Existing Cambridge Activated Sludge Process

Source: CWWTPRP Design Team

- 2.7.23 The treatment process included for secondary treatment is an enhanced Activated Sludge Process (ASP). The proposal is to utilise a modern membrane aerated bioreactor (MABR) configuration to ensure low energy utilisation for maximum oxygen transfer. Other ASP options are also being considered all of which are accommodated in the parameters set out below. In the activated sludge process a large quantity of these microorganisms or bacteria (also called floc) are held in an aeration tank, or “reactor”, and supplied with air. Settled waste water is fed into the aerated reactor and allowed to mix with the microorganisms until the liquor has been purified. When this is complete the mixture (called mixed liquor) is transferred to a Final Settlement Tank (FST) via a central feed well, which dissipates energy and provides an even radial distribution of flow. The FSTs comprise circular clarifiers and are sized so the rise rate of the flow is low enough to allow the biological flocs to settle out and concentrate and clear flow to continue over the weirs to Tertiary Treatment and allowed to settle. A mechanical rotating bridge scraper transports the settled sludge to a central hopper. The majority of the concentrated sludge is pumped back to the aNO_xic zone as Return Activated Sludge (RAS) to maintain the concentration of mixed liquor suspended solids. A portion of the settled sludge is wasted as Surplus Activated Sludge (SAS) and is pumped to the sludge treatment centre for treatment. The amount of sludge wasted is carefully

controlled and is determined by the optimal retention time required by the mixed liquor to perform the purification reactions.

2.7.24 Aeration requirements for the ASP will be provided by a mechanical blower system, coupled with a submerged air distribution pipework arrangement. The mechanical blowers draw fresh air/oxygen in and blow it into the distribution pipework under pressure, achieved through compression or pneumatic pumping. These blowers may be located within a building alongside the ASP to mitigate any noise impact through their operation.

Table 2-5: Activated Sludge Process Parameters

Item	Maximum Parameters
Existing ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	9.5m Above Ordnance Datum (AOD)
ASP Tanks - Configuration	Rectangular 4No. x 20m wide x 90m long
ASP Tanks - Depth below finished ground level	6m
ASP Tanks - Height above finished ground level	8m
Overall footprint of ASP Tanks	115m x 135m

2.7.25 As well as growing, the microorganisms also breed and die. Thus, with a continual feed supply the number of microorganisms increases until the oxygen supplied to the tank cannot support them. To avoid this situation an amount of floc is removed daily to keep the concentration of



Figure 2-9: Existing Cambridge Final Settlement Tanks

micro-organisms constant. The sludge removed is called Surplus Activated Sludge (SAS) and discharged to the sludge treatment centre.

Table 2-6: Final Settlement Tanks Parameters

Item	Maximum Parameters
Existing ground level (approximate)	9m Above Ordnance Datum (AOD)
Finished ground level (approximate)	9m Above Ordnance Datum (AOD)
FSTs - Configuration	Circular 8No. 40m diameter
FST - Depth below finished ground level	6m
FST - Height above finished ground level	8m
Overall footprint of FSTs area including RAS/SAS PS	110m x 225m
RAS Pumps	4 No.
SAS Pumps	4 No.

Tertiary treatment

2.7.26 The purpose of the tertiary treatment stage is to provide the final, finest grade of treatment to ensure the effluent complies with discharge consent limits. This is likely to include the conversion of the remaining soluble phosphate to solids for removal via settlement in the PSTs.

2.7.27 It is currently expected that the tertiary treatment will be in the form of tertiary filtration, using proprietary continuously backwashing sand filters. As water flows upwards through the filter bed to the filtrate outlet, precipitated particles are filtered out in the sand bed. The sand is continuously circulated by an airlift pump and impurities washed from the sand in the sand washing device. The dirty backwash is sent to the primary treatment stage or sludge treatment centre (equipment dependant). Cloth filters, compressible media filters or other tertiary filtration/settlement equipment may also be considered during detailed design stage.

Table 2-7: Tertiary Treatment Parameters

Item	Maximum Parameters
Existing ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Filtration Plant - Configuration	Circular 8 to 10No. 5 to 10m diameter (supplier dependent)
Filtration Plant – Depth below finished ground level	1m
Filtration Plant – Height above finished ground level	6 to 10m (supplier dependant)
Airlift Pumps	No. to match unit number

Item	Maximum Parameters
Backwash Pumps	No. to match unit number
Ferric Dosing Plant	20m x 5m x 5m high above finished ground level
Overall footprint of TTP area	60m x 40m

SLUDGE TREATMENT CENTRE (STC)

Sludge import, storage and screening

- 2.7.28 The sludge treatment centre will include dedicated sludge reception facilities for imported primary settled sludge and surplus activated sludge, imported by road in tankers from surrounding WWTPs, which are taken account of in the operational vehicle movements presented in this chapter. Sludge will be delivered into reception tanks similar to the arrangement shown in the photo below, before being screened for rag and grit prior to thickening to remove excess water before the next stage of treatment. These tanks and screens will be enclosed, and odour controlled via a central STC odour control plant.
- 2.7.29 Indigenous primary and SAS sludge will also be stored in holding tanks and screened prior to thickening. All tank sizes are currently estimated, and the number and exact configuration is to be confirmed during detailed design.



Figure 2-10: Sludge Imports Knostrop sludge treatment centre

2.7.30 The heights provided in the tables below are the maximum heights above finished ground level.

Table 2-8: Sludge Storage Capacity Parameters

Name	Number	Maximum Dimensions	Maximum Height
Existing ground level (approximate)	-	-	9.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	9.5m Above Ordnance Datum (AOD)
Imported Primary Sludge	1	800m ³ - 12m diameter	14m
Imported Surplus Activated Sludge	1	1200m ³ – 14m diameter	14m
Un-thickened Primary Sludge	2	1500m ³ – 14m diameter	14m

Name	Number	Maximum Dimensions	Maximum Height
Un-thickened Surplus Activated Sludge	2	3000m ³ – 20m diameter	14m
Overall footprint of imports & screening area	-	130m x 75m	14m

Sludge thickening

2.7.31 The imported sludge is screened prior to mixing with screened indigenous sludge. The combined sludge is conditioned with polyelectrolyte and thickened to reduce the volume to be digested by removing excess water, known as filtrate. The method of sludge thickening is still to be determined. The thickening filtrate flows, as well as washdown flows, are returned to the WWTP for treatment. The thickening process will be enclosed and odour controlled via a central STC odour control plant.



Figure 2-11: Thickening Building Knostrop sludge treatment centre

Table 2-9: Thickening Equipment Parameters

Name	Number	Maximum Dimensions	Maximum Height
Existing ground level (approximate)	-	-	9.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	9.5m Above Ordnance Datum (AOD)
Thickening building to house the various thickening equipment.	1	65m long x 20m wide	12m
Thickened Sludge Blending Tanks	2	2000m ³ – 14m diameter	12m
Overall footprint of thickening area	-	80m x 75m	12m

Odour Control Plant

2.7.32 An odour control plant will be provided within the STC to mitigate odour impacts. This is likely to comprise bio trickling filters followed by an activated carbon polishing unit.



Figure 2-12: Hull STC Odour Control Plant

Table 2-10: Odour Control Parameters

Name	Number	Maximum Dimensions	Maximum Height (m)
Existing ground level (approximate)	-	-	10m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	10m Above Ordnance Datum (AOD)
STC Odour Control Unit	1	40m long x 25m wide	16m vent stack

Digesters and post digestion

2.7.33 Prior to digestion, a pre-digestion treatment process is included with a pasteurisation step, that destroys or deactivates organisms, enzymes and harmful pathogens. It also controls the hydrolysis step, which is often the rate-limiting step in the digestion process, to ensure optimal performance of the digesters.

2.7.34 The anaerobic sludge digesters are the main sludge treatment step of the sludge treatment process, where the volatile solids are destroyed, and biogas released as part of the treatment process. This process renders the sludge

more pleasant to handle, reduces pathogen activity and odour. During digestion, sludge is fed into a vessel in the absence of oxygen and maintained at about 35 to 42°C (known as mesophilic digestion). The sludge is retained in the digester for a minimum of 12 days, but an average of 16 days. During this period the bacteria within



Figure 2-13: Colchester heating, pasteurisation and hydrolysis (HpH) process tanks

the digester are able to break the sludge down into smaller fractions which they can utilise as food. From this process, methane (biogas) is produced as a by-product. The biogas is captured for utilisation in heating the process and export from site to offset natural gas consumption. The residual sludge product is later dewatered and exported to agriculture as a soil conditioner, which are taken account of in the operational vehicle movements presented in this chapter.

- 2.7.35 Digested sludge from the digesters is transferred to a post-digestion stage where the digestion process of the sludge, and therefore the production of methane, is halted through the introduction of air to remove the anaerobic conditions. This makes the sludge safe for the post-digestion dewatering stage. The detail of this post-digestion process will be determined during detailed design.
- 2.7.36 The digestion structures will be the tallest structures on the WWTP site. The design of the digesters is ongoing, and the number and height will be determined by the process requirements, site layout, feedback from the consultation process and configuration associated with visual impact of the site. The current proposal is for two digesters, each of a maximum height of 26m, which may reduce during detailed design.



Figure 2-14: Digestion Tank at Knostrop sludge treatment centre

Table 2-11: Digesters Parameters

Name	Number	Maximum Dimensions	Maximum Height
Existing ground level (approximate)	-	-	10.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	10.5m Above Ordnance Datum (AOD)
Digesters	2	4,900m ³ – 22m diameter	26m
Post Digestion Storage	2	2,000m ³ – 15m diameter	17m
HpH heating tank	1	400m ³ – 7m diameter	17m
HpH pasteurisation tank	2	200m ³ – 7m diameter	17m
HpH hydrolysis tank	1	1500m - 13m diameter	17m

Name	Number	Maximum Dimensions	Maximum Height
Overall footprint of digestion plant	-	100m x 120m	26m

Sludge dewatering and cake storage

- 2.7.37 The STC will produce an ‘Enhanced Treated Biosolids’ product used within agriculture as a valuable soil conditioner. Digested sludge from the post-digestion tanks is dewatered to reduce the volume of sludge to be transported off-site. The sludge is conditioned using coagulant such as polyelectrolyte and dewatered mechanically, with the current proposal being by centrifuge. In the centrifuge the sludge is subjected to centrifugal forces which throw the water out of the sludge and allow a cake with typically 22 to 25% dry solids content to be discharged to a cake barn, cake silos or large skips prior to being transported off-site to be used as bio-fertiliser, which are taken account of in the operational vehicle movements presented in this chapter. Belt presses, screw presses and plate presses are all other dewatering processes which will be considered during detailed design.



Figure 2-15: Sludge Dewatering at Knostrop sludge treatment centre

Table 2-12: Cake Storage Parameters

Name	Number	Maximum Dimensions	Maximum Height
Existing ground level (approximate)	-	-	11m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	11m Above Ordnance Datum (AOD)
Cake Storage Barn/Silo Area	1	1,000m ²	15m
Dewatering Centrifuges	3	30m x 10m	12m (gantry height as in photograph above)
Overall footprint of dewatering & cake storage	n/a	100m x 110m	12m

Liquor treatment

- 2.7.38 The water removed from the sludge during the dewatering process is known as centrate. This is discharged separately and either treated in a dedicated liquor treatment plant or returned to the WWTP inlet works for further treatment. Currently it is envisioned that a separate liquor treatment facility will be included. However, alternative solutions including nutrient harvesting continue to be evaluated for suitability and feasibility. The reasonable worst-case sizing for both options has been included below.

Table 2-13: Liquor Treatment Parameters

Name	Maximum Dimension	Maximum Height
Existing ground level (approximate)	-	11m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	11m Above Ordnance Datum (AOD)
Reactor	25m diameter	16m
Stilling tank	5m diameter	10m
Settlement tank	10m diameter	5m
Total Liquor Treatment Plant Area	75m x 75m	16m

Table 2-14: Nutrient Recovery Parameters

Name	Maximum number / height / area
Existing ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	9.5m Above Ordnance Datum (AOD)
Number of Stripping/Scrubbing Columns	3
Stripping/Scrubbing Column Heights	18m
Stripping/Scrubbing Column Diameters	3m
Feed Pumping Station - Depth Below Finished Ground Level	5m
Total Area	50m x 50m x 18m

Heat generation, gas utilisation and storage

- 2.7.39 Biogas from all digesters and post digestion tanks is captured, stored in a gas bag, and utilised to provide heat to the process through burning within a steam raising boiler. Excess biogas is cleaned-up through a biogas upgrading plant and enriched with propane for injection to the national gas network to provide green gas and offset natural gas usage.

- 2.7.40 The biogas upgrading plant will either be a chemical scrubbing process or pressure membrane process, where impurities within the biogas are removed and captured, leaving the biomethane ready for enrichment.
- 2.7.41 Whilst biomethane upgrading remains our preferred option, a more traditional approach of burning the biogas within a CHP engine to generate electricity and heat for onsite usage still remains as a fall-back option.
- 2.7.42 The biogas system also includes a waste-gas-burner, which burns the biogas during a failure event on site, to protect people and the environment from potential harmful impacts associated with high concentrations of methane and other gasses, in accordance with Environmental Permit requirements.
- 2.7.43 Heat recovery from waste water is being explored with the intention of being included into the project scope. This would allow electrical power generated from renewable means to extract waste heat from waste water to be used in the process. This would be used to reduce the amount of biogas required to heat the process and increase the volume of biomethane injected into the grid.
- 2.7.44 Ancillaries such as power supply, control equipment, wash-water, heat equipment, chemical dosing and potable water is also associated and required with the sludge treatment works.

Table 2-15: Gas Handling Equipment Parameters

Name	Number	Maximum Capacity	Maximum Height (m)
Existing ground level (approximate)	-	-	10-10.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	10-10.5m Above Ordnance Datum (AOD)
Gas Holder	2	2000m ³ – 18m diameter	16m – Gas bag 20m – Lightning protection masts
Flare	1	2000m ³ /hr	15m
Overall footprint of biogas storage and utilisation area	-	75m x 75m	20m
Biogas Upgrading Plant	1	1000m ³ /hr - 50m x 50m (in addition to above)	15m
CHP	2	1.2MW (Total no greater than 5MW) 50m x 50m (same footprint as Biogas Upgrading Plant)	15m



Figure 2-16: Knostrop sludge treatment centre

Steam raising boiler

- 2.7.45 All steam demands on site will be supplied by a dual fuel direct fired boiler as part of the pasteurisation process. Boiler feed water which is treated through a small water treatment system to demineralise the flow will be warmed using excess heat on site. This flow will then feed the boiler hot well, which is the header tank to feed the boiler itself. Flow from the hot well will then pass to the boiler where it will be heat through a burner which can burn either biogas or natural gas. Steam created through this heating will transfer to a steam header which will help to accumulate and pressurise the steam, but also divert the steam through a series or control valves to its final destination within the process.
- 2.7.46 Emissions from the burners will be diverted up a boiler flue stack which will comply with limits as specified within the Environmental Permitting Regulations, and specifically the Medium Combustion Plant Directive.
- 2.7.47 Spent water within the boiler case is removed through a blow down process and discharged into a blow down vessel, before being discharged to the onsite drainage system.

2.7.48 The final details of the steam raising system will be defined through detailed design.

Table 2-16: Steam Raising Boiler Parameters

Name	Number	Maximum Dimension	Maximum Height (m)
Existing ground level (approximate)	-	-	10.5m Above Ordnance Datum (AOD)
Finished ground level (approximate)	-	-	10.5m Above Ordnance Datum (AOD)
Boiler Building	1	40m long x 30m wide	12m
Boiler Stack	1	2m diameter plus access platform	24m – This is to be determined via Medium Combustion Plant Directive and air quality requirements
Overall footprint of boiler plant	-	60m x 60m	-
Boiler Capacity	2	2MWth (Total max 7MWth)	N/A

Final effluent treatment

2.7.49 To service the industrial water needs of the site a final effluent treatment process will be installed. This process will filter and disinfect final effluent for use within the sludge treatment process to help with the transfer of heat, cooling and washdown. The disinfection ensures no pathogens are added back into the treated biosolids before being used within agriculture as a valuable soil conditioner.

Containerised LNG Station

2.7.50 The Anglian Water tanker fleet will be converting to liquid natural gas (LNG) fuel during the construction of the proposed WWTP. To reduce carbon footprint and operational costs the LNG will be delivered to the proposed WWTP into a package plant. All site-based vehicles will fill up their LNG tanks from here when returning to the works. It is not anticipated that vehicles based at other sites or external operators will be using this LNG facility. The delivery of the LNG will be by HGV tanker and consist of 1-2 deliveries per week, which are taken account of in the operational vehicle movements presented in this chapter. The containerised unit will be located on concrete hard standing with a refuelling area. The area will have its own closed drainage system.



Figure 2-17: Typical containerised LNG facility

WATERBEACH PIPELINE ALIGNMENT THROUGH THE CORE ZONE

- 2.7.51 As shown on Figures 6 to 9 at Appendix A the Waterbeach pipeline alignment crosses through the north-western corner of the Core Zone.
- 2.7.52 A connection point will need to be installed where the rising main routes close to the proposed WWTP to allow the flows to be diverted to the proposed treatment plant once it is operational. The connections have not yet been designed but it is anticipated that this would comprise a below ground junction and associated isolating valves.

RENEWABLES INFRASTRUCTURE

- 2.7.53 Renewable power generation will likely be included in the form of solar power generation. This is to be included as part of Anglian Water's aim to reach net zero greenhouse gas (GHG) emissions by 2030. Solar power generation will be integrated into the plant layout to offset electrical power required from the national grid and provide low carbon electricity to the process. The amount of solar installed will be based on the available space within the site with placement locations being primarily areas impractical to build on with other infrastructure or via build over installations (where practical). The current estimate is between 2 and 7 hectares of photo voltaic (PV) cells.
- 2.7.54 Solar PV and energy storage technologies are rapidly evolving. As a result, the parameters of the DCO will maintain flexibility to allow the latest technology to be utilised at the time of construction. The solar installation will consist of the principal infrastructure as follows: Solar PV modules, PV module mounting structures, inverters, transformers, switchgears (housed inside a building), onsite cabling, and one or more 'Battery Energy Storage System' (battery

energy storage system - expected to be formed of lithium-ion batteries storing electrical energy).

ANCILLARY BUILDINGS

- 2.7.55 The offices and workshops required are anticipated to be steel framed buildings with in situ concrete floor slabs sitting on concrete pad foundations. The build could be a mix of 1 to 3 storeys with flat roofs. Brick, stone (gabion) or profiled steel cladding will be used to form the perimeter walls. Standard building process will be used to fit out each of the building as required by their purpose.
- 2.7.56 Work offices, substation building, workshop and vehicle parking, including electrical vehicle charging points will be included as shown in the table below. In addition to these buildings there will be 12 Motor Control Centre (MCC) kiosks located around the proposed WWTP with varying dimensions up to 25m long x 4m wide x 4.5m high.
- 2.7.57 The proposed WWTP could include a Discovery Centre for visitors incorporated into the AWS Office space allowance. This would provide an educational resource supporting the sustainability curriculum so that local children and communities can interact with and learn about the importance of water and the role which water recycling plays in the circular economy. Dedicated parking would be provided for visitors to the Discovery Centre nearby to the gateway of the proposed WWTP.

Table 2-17: Building Parameters

Building	Approximate Area (m ²)	Approximate Height (m)	Function
Existing ground level (approximate)	-	8.5-10m Above Ordnance Datum (AOD)	-
Anglian Water Services (AWS) Office inclusive of Discovery Centre	605m ² (55m x 11m)	10m above finished ground level of 9.5m AOD	For Anglian Water Site Operations and Maintenance personnel with shared mess facilities for tanker drivers and operational staff Discover Centre for educational visits allowance of access, rooms and toilet facilities
Recycling Environmental Services (RES) Office	660m ² (60m x 11m)	10m above finished ground level of 9.5m AOD	For Recycling Environmental Services (RES) staff
Workshop	700m ² (35m x 20m)	13m above finished	For use by site operations and maintenance staff

		ground level of 8.5m AOD	
District Network Operator (DNO) Substation Building	484m ² (22m x 22m)	11m above finished ground level of 10m AOD	For Distribution Network Operator's substation
Vehicle Parking	3,500m ²		Parking for: – 10. cars for AWS staff and visitor parking - 10 AWS vans – 51 cars for staff including electric vehicle charging points – 7 articulated lorries – 3 trailers -20 Discovery Centre visitor car park spaces and 1 coach parking space

INTERNAL ROAD NETWORK

- 2.7.58 The entrance to the proposed WWTP would be via the main entrance gateway, through to the operational area. A perimeter road around the operational area within the earth bank is proposed to provide access to the proposed WWTP. Other internal roads would be included to provide vehicular access to particular areas of the plant for operational purposes.
- 2.7.59 The design of the internal road network must take account of all operational requirements and provide suitable vehicular access including appropriate turning areas and hardstanding areas for a properly functioning and safe site.
- 2.7.60 Roads are likely to be of concrete construction. Car parking areas are likely to be constructed with tarmacadam or a low carbon alternative such as a heavy-duty permeable block paving or a grass reinforcement system base.

Table 2-18: Internal Roads Parameters

Design of Internal Roads

Perimeter Road (2-way traffic)	7m wide
Other internal access roads:	
- roads used for deliveries (1- and 2-way traffic)	7m wide (to allow for parked/stationery delivery vehicles)
- roads used for maintenance access (2-way traffic)	5.5m wide
Total maximum area of internal roads	33,500 m ²

FENCING AND SECURITY

- 2.7.61 A security fence will enclose the operational areas of the WWTP and be within the external bunding of the earth bank, and therefore not visible from outside of the landscaping. It is likely that this will consist of a 1.8m chain link fence with extension arms for barbed wire although the design of the fence will be appropriate for the level of security required at each operational area. The fence will be designed in line with the requirements set out in the Security and Emergency Measures Directive (SEMD).
- 2.7.62 Gates for vehicular and/or pedestrian access will be of a similar height and either a single or double gate type. Where appropriate, gates will be automated.

Table 2-19: Fencing Parameters

Fencing Parameters	
Indicative length of Perimeter security Fencing	1.6km
Fence Type	Chain Link with extension arm for barbed wire topping.
Fencing Height	1.8m (subject to Security and Emergency Measures Directions requirements)

- 2.7.63 A network of pole mounted closed circuit television (CCTV) cameras will be installed within the perimeter of the operational areas for security purposes.

Table 2-20: CCTV Parameters

CCTV Parameters	
Camera Height	4m
Camera Position	Inside the perimeter fence boundary
CCTV Lighting	Infrared outside daylight hours (not visible light)



Figure 2-18: Example fencing and CCTV camera

LIGHTING

- 2.7.64 Road and area lighting will be provided around the site to ensure the safety of Operational staff and visitors. The maximum height of lighting columns will not exceed 15m and the estimated number of lighting columns is 95. The area lighting will only switch on when activated by sensors or when switched on by staff for operational purposes such as the inspection and maintenance of plant. No areas of the plant are proposed to be continuously lit other than the roads and car park areas. The lighting will seek to minimise any offsite effects and use specifically designed lighting equipment that reduces the upward spread of light and minimises glare.



Figure 2-19: Example task lighting

2.7.65 Task lighting will be provided to facilitate safe Operation and Maintenance at task level, this includes security lighting. Large high-level lighting is not anticipated.

2.7.66 Lighting units will be integrated into walls, walkways and other features where possible to reduce visual clutter.

2.7.67 Lighting sources shall be selected to be aesthetically appropriate and to limit light pollution, improve energy efficiency and increase equipment longevity.



Figure 2-20: Example lighting unit

2.7.68 Light pollution will be minimised by means of capped directional and cowled lighting units.

SURFACE WATER DRAINAGE

2.7.69 Surface water within process areas of the proposed WWTP will be contained and collected in these areas and then fed back through the process for treatment. Areas where contamination is not a risk, such as roof runoff, will be captured utilising a suitable SUDs system and returned to the environment appropriately or captured and reused on site.

CORE ZONE - CONSTRUCTION OF THE PROPOSED WWTP

2.7.70 This section covers some of the Core Zone infrastructure and the construction materials which would be used widely across this zone.

Access roads and parking areas

2.7.71 Core Zone infrastructure includes access roads, parking areas, loading bays and operation yards for the management of incoming and outgoing tankers. The standard designs for these areas will be a mixture of reinforced concrete or

tarmacadam roadways. Standard construction techniques will be used to construct these.

Bases, Walls and ground and suspended slabs

- 2.7.72 Generally reinforced cast concrete will be used to construct the bases, walls and slabs of the tanks and chambers that form the structural element of each of the process tanks. Where possible precast concrete or alternative material such as recycled plastic would be used, for example to form smaller chambers, or for the walls and suspended slabs within the process tanks.
- 2.7.73 For smaller above ground tanks glass coated steel tanks sitting on a concrete slab will be used. These will be brought to site in segments and pieced together.

Inter-process pipework

- 2.7.74 Between each process tanks there will be below and above ground interconnecting pipe. The below ground pipework will generally be constructed using open cut techniques. The pipe materials have not yet been selected and could be made from concrete, ductile iron, unplasticized polyvinyl chloride (uPVC) or glass reinforced plastic (GRP). The above ground pipework will be supported on galvanised steel frames and depending on use could be made from stainless steel, ductile or plastic. Some of the above ground pipework will be clad in insulation to protect it from freezing or to retain heat.

Access, mechanical and electrical equipment platforms

- 2.7.75 To support mechanical and electrical equipment and provide access to the tanks galvanised steel walkways and platforms will be constructed over and up to the process tanks. These will be fabricated off site and installed on site.

Process and control building

- 2.7.76 Some of the mechanical equipment and the electrical control panels will require housing in process buildings or kiosk. These building will be provided by a GRP Kiosk or by galvanised steel frame building with profiled steel cladding.
- 2.7.77 For the GRP kiosk solution these will be fabricated off site and brought to site as a complete unit or as segmental units which bolt together on site. For the steel framed solution, the steel sections will be fabricated off site, but they will be erected on site and cladding fixed in situ.

Mechanical equipment.

- 2.7.78 Mechanical equipment required for each process will be manufactured offsite and delivered for installation into or adjacent to the process tanks and buildings. They will be fitted and connected on site.

Electrical Equipment

- 2.7.79 Electrical equipment will be assembled into control units off site as far as possible, however much of the electrical cabling and components must be fitted and connected locally to mechanical equipment and therefore require installing and site with cables passing between each component and its associated mechanical item.

Wet and dry commissioning

- 2.7.80 Once a process unit is assembled and the civil, mechanical and electrical works are complete the unit is ready to be tested. Three types of test are usually required: water testing, dry testing and wet commissioning.
- 2.7.81 The water testing usually checks that the tank or pipe will hold water at the design pressure and not leak. This can involve significant volumes of water standing in the tanks for a number of days.
- 2.7.82 Dry testing checks that the mechanical and electrical equipment has been installed correctly and works when required producing its anticipated output.
- 2.7.83 Wet Commissioning is when the plant starts to treat the effluent as it is designed. This is a planned sequence of activities that seeds the process tanks with the biological enzymes and the sludge centre with sludge that each process can treat. This operation will start to turn the flows from the existing works to the proposed works and would trigger the decommissioning of the existing Cambridge WWTP.

EARTH BANK AND LANDSCAPING

- 2.7.84 The landscaping proposals are being developed to tie into local aspirations and projects and are being consulted on with local communities and environmental organisations, having presented an outline design at Phase Two Consultation and sought feedback.
- 2.7.85 The landscape proposals are composed of the following main elements: landform, tree and hedge planting and species-rich meadow. The proposed WWTP would be surrounded by a new landform from raised embankments forming a circle, inspired by local hillforts. It is proposed to form this structure from the re-use of material excavated as part of the construction activities such as levelling of the operational area, excavations for operational elements and through tunnelling for new pipework. A natural or structural screen on top of the earth bank is proposed and would be taken forward depending on feedback from consultation and future assessments. The extent of proposed landscaping area is presented on Figures 14 to 17 at Appendix A and a cross section showing the maximum height of the earth bank (up to 7m) and 4m screen relative to the surrounding features is shown on Figure 22 at Appendix A.

Table 2-21: Earth Bank and Landscaping Parameters

Parameters	
Maximum earth bank height	Up to 7m
Maximum height of natural or structural screen on top of the earth bank	Up to 4m (with a natural planted screen this would establish over time and may exceed 4m)
A new area of woodland	Up to 25 hectares
New extents of species rich grassland	Up to 35 hectares
New lengths of hedgerows	Up to 9500 linear metres



Figure 2-21 Indicative outline landscaping design as presented in Phase Two Consultation showing access option 1B for context

- 2.7.86 The offices and workshops required are anticipated to be steel framed buildings with in situ concrete floor slabs sitting on concrete pad foundations. The build could be a mix of 1 to 3 storeys with flat roofs. Brick, stone (gabion) or profiled steel cladding will be used to form the perimeter walls. Standard building process will be used to fit out each of the building as required by their purpose.
- 2.7.87 Work offices, substation building, workshop and vehicle parking, including electrical vehicle charging points will be included as shown in the table below. In addition to these buildings there will be 12 Motor Control Centre (MCC) kiosks located around the proposed WWTP with varying dimensions up to 25m long x 4m wide x 4.5m high.
- 2.7.88 The proposed WWTP could include a Discovery Centre for visitors incorporated into the AWS Office space allowance. This would provide an educational resource supporting the sustainability curriculum so that local children and communities can interact with and learn about the importance of water and the role which water recycling plays in the circular economy. Dedicated parking would be provided for visitors to the Discovery Centre nearby to the gateway of the proposed WWTP.

NEW FOOTPATHS AND BRIDLEWAYS

- 2.7.89 A pathway is proposed to follow the top of the earth bank, depending on feedback during consultation. This could allow visitors to enjoy views across the wider landscape and views into the proposed WWTP from an elevated position. Non-motorised user routes mimicking the circular design of the proposed WWTP are proposed on land around the proposed WWTP, providing an amenity for local residents and visitors and enhancing connectivity to existing Public Rights of Way (PRoW).
- 2.7.90 A new public footpath could follow the line of this enhanced hedgerow, connecting Low Fen Drove Way with the disused railway line. Feedback was sought during Phase Two consultation on this proposal.
- 2.7.91 The Proposed Development would aim to create new footpaths and bridleways to open up recreational access in the area, including to Quy Fen and Anglesey Abbey, depending on feedback from Phase Two Consultation. This could form part of a new circular walking route from the WWTP of 3.5km and longer 9.5km loop for bridleway users, as shown in the image Figure 2-22 below.

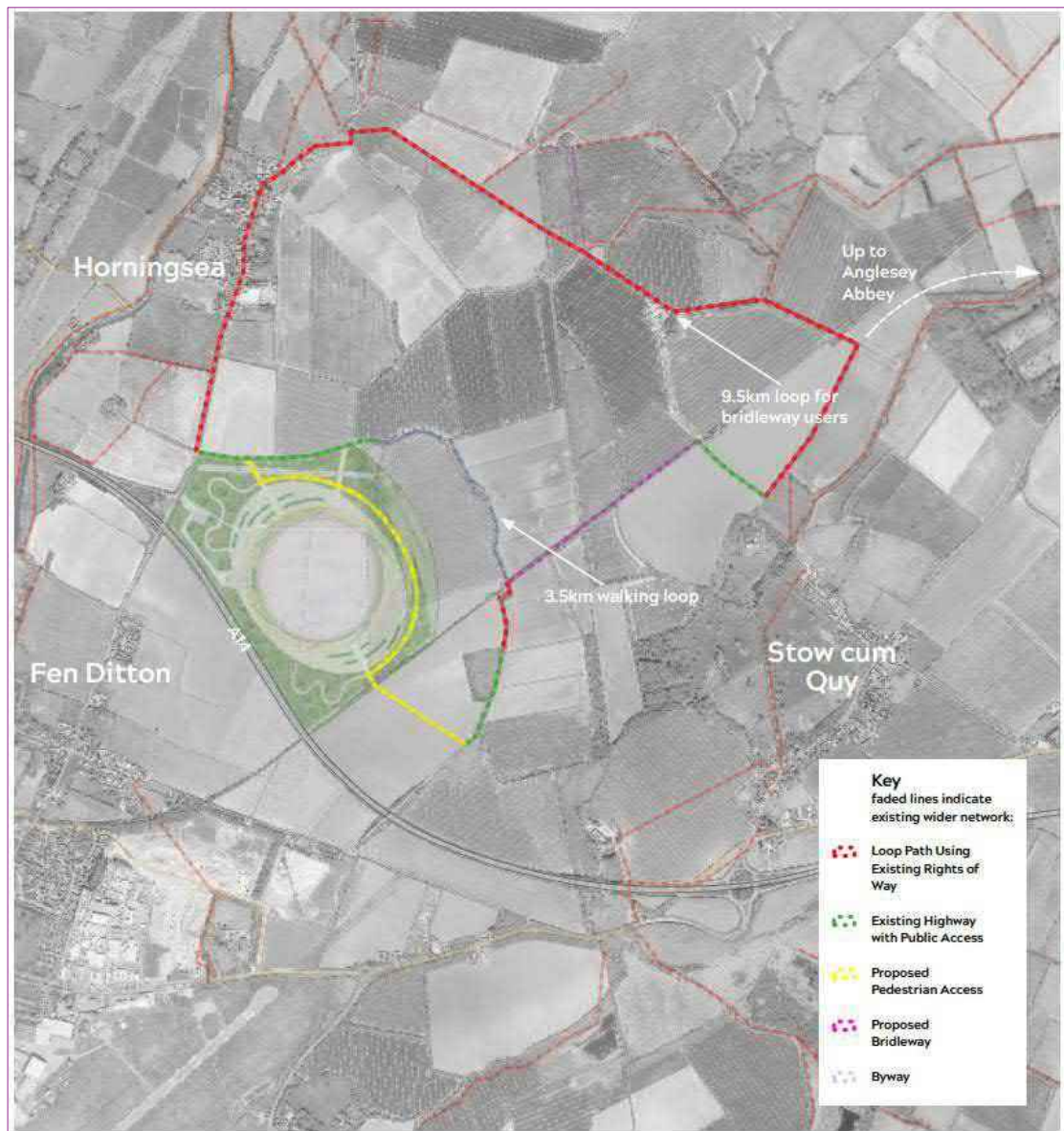


Figure 2-22: Proposed new pedestrian access and bridleways as present at Phase Two Consultation

2.8 Highway network alterations

2.8.1 It is anticipated that operational access to the proposed WWTP would be via one of four options which were presented within the Phase Two Consultation materials, as shown on Figure 2-23. These options are currently being considered, one of which will be chosen. The options are shown in more detail on Figures 1 to 4 at Appendix A including the routing of vehicles on the highway.

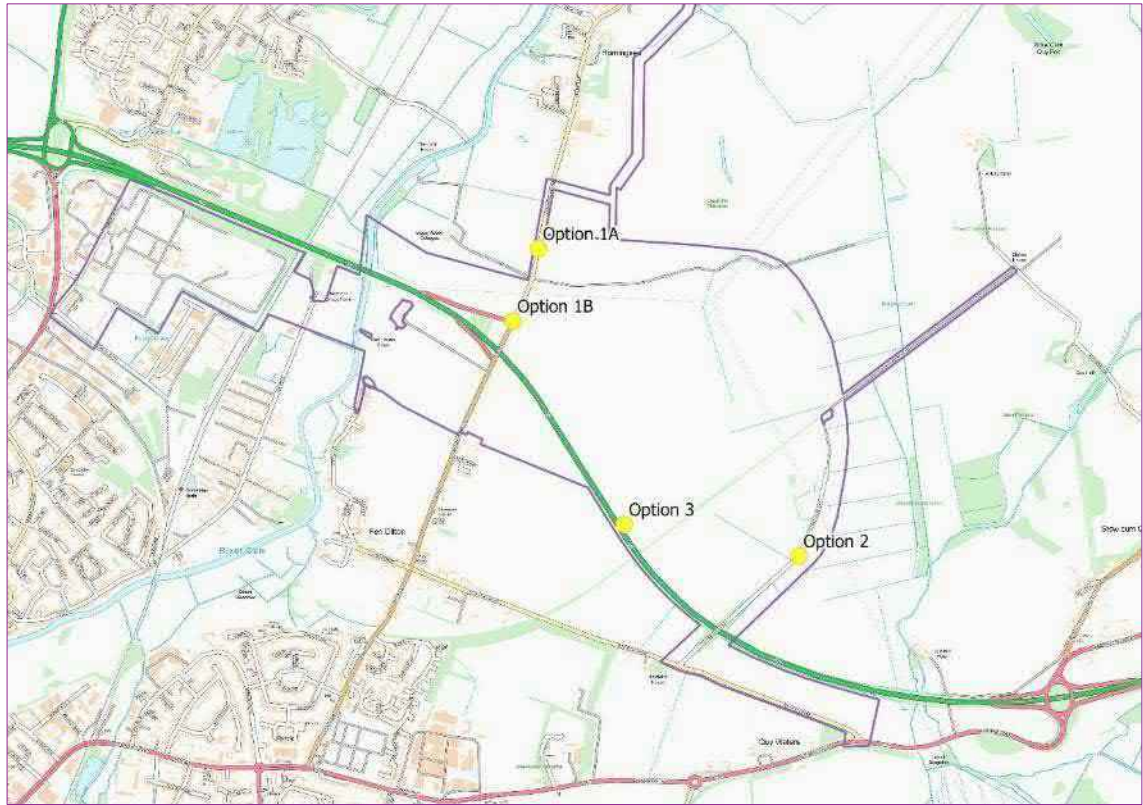


Figure 2-23: Options for operational access to the proposed WWTP

2.8.2 Each option is described below.

- Option 1A Access off Junction 34 of the A14 (Fen Ditton) - utilises the existing A14 slip road to access the proposed WWTP via Junction 34 of the A14, and off Horningsea Road involving a 'Ghost Island Junction' which includes road markings to create an additional lane for traffic waiting to turn right off Horningsea Road into a new access point for the proposed WWTP.
- Option 1B Access off Junction 34 of the A14 (Fen Ditton) – utilises the existing A14 slip road to access the proposed WWTP via Junction 34 of the A14 involving reconfiguration of the existing junction between the A14 each bound exit slip road and Horningsea Road into a 4-arm signalised junction, also connecting to new access point for the proposed WWTP.
- Option 2 Access off Junction 35 (Quoy) – This option utilises Junction 35 south off the A14 and the existing highway network of Newmarket Road, High Ditch Road and Low Fen Drove Way. This would involve significant works to improve the existing highway network, including junction improvements between Newmarket Road and High Ditch Road, the widening of High Ditch Road, the provision of separate footway and

cycleway, the improvements to the existing bridge on Low Fen Drove Way which crosses the A14.

- Option 3 A new junction on the north side of the A14 – This option would involve construction of a new junction on the north side of the A14 between the current junctions 24 and 35 and a new road to the proposed WWTP.

2.8.3 All the operational vehicular access options being considered involve modifications to existing road junctions and the widening of existing roads to provide safe access for heavy goods vehicles and the zones within which such works are required are shown on Figures 6 to 9 inclusive in Appendix A.

UTILITIES: PROVISION AND CONNECTION

2.8.4 Discussions with suppliers regarding provision of and connection points to utilities for the proposed WWTP are ongoing.

- The STC will require a new gas connection to the national grid network in order to fuel the boilers in case of plant failure. It is anticipated the same connection point will be utilised to inject biomethane to grid if this option is selected. This will be supplied by Cadent.
- The WWTP will be powered by a new electrical supply from UK Power Networks.
- The potable water supply to the WWTP will be supplied by Cambridge Water.
- A new telecoms connection will be supplied by BT/Openreach

2.9 Features of the Proposed Development – Transfers Zone

2.9.1 The transfers zone includes the existing WWTP, underground transfer pipelines from existing WWTP to proposed WWTP, the southernmost section of the Waterbeach pipeline corridor, final effluent pipeline and final effluent outfall. Proposed development within the transfers zone is shown on Figure 10 (Temporary construction) and Figure 18 (Permanent operational) in Appendix A.

WASTE WATER TRANSFER TUNNEL AND TUNNEL CORRIDOR

2.9.2 Waste water will be transferred from the existing Cambridge WWTP using a new tunnel constructed from an interception point at the existing WWTP to the proposed WWTP. The tunnel will have an approximate length of 2.5km and have an internal diameter of 2.4m and will be up to 22m deep (cover depth to the top of tunnel). Surface and sub-surface constraints as well as geology are key influences on the tunnel alignment and the intermediate shafts required to facilitate tunnel construction, hence the zones within which these structures would be constructed is a wide corridor as shown on Figure 10 in Appendix A.

2.9.3 The waste water transfer tunnel corridor is a wide area extending eastwards from the existing Cambridge WWTP to the proposed Cambridge WWTP crossing below the existing railway line, the River Cam, Horningsea Road and the A14 along its route.

2.9.4 The new tunnel is a gravity system and will require six shafts, 5 of which will vary in size and are likely to be between 7.5m and 12.5m in diameter, sited at connections and changes of tunnel direction and otherwise approximately at 600m intervals, at the following locations as shown on Figure 10 in Appendix A.

- Interception shaft 1 (permanent shaft), located at the existing Cambridge WWTP to intercept the existing incoming tunnel.
- Intermediate shaft 2 (permanent shaft), located adjacent to the interception shaft at the existing Cambridge WWTP and linking to the new tunnel.
- Intermediate shaft 3 (temporary shaft), located adjacent to the eastern boundary of the existing Cambridge WWTP, on the west side of the railway.
- Intermediate shaft 4 (temporary shaft (see 2.8.6 below)), located on the eastern side of the River Cam.
- Intermediate shaft 5 (temporary shaft), located on the east side of Horningsea Road (the B1047).
- Reception shaft 6 (permanent shaft), which will accommodate the TPS (terminal pumping station) located at the proposed WWTP. The reception shaft which is associated with the pumping station is likely to be between 25m to 36m in diameter.

2.9.5 The new tunnel will intercept the existing tunnel at the existing Cambridge WWTP and transfer the flows to the terminal pumping station (TPS) shaft located at the proposed WWTP. The proposed tunnel will also receive buried pipe flows from other catchments, via a vortex drop pipe located within the interception shaft at the existing Cambridge WWTP. The interception shaft will require ventilation facilities and permanent access for maintenance activities.

2.9.6 The Intermediate shafts are temporary, with the possible exception of shaft 4, and will be backfilled following construction. Intermediate shaft 4 may be required as a permanent installation to provide mid-route access to the tunnel (for inspection and infrequent maintenance) and to receive flows from Fen Ditton, subject to further investigation. In this event, the intermediate shaft 4 will require a venting facility and permanent access for maintenance activities. The introduction of Fen Ditton flows will cause turbulence and the requirement to let air out of the transfer tunnel. The vent stack will discharge at a height and include a carbon filter, to direct the plume at height and reduce its impact by treating the odour (as shown on Figure 18 at Appendix A).

- 2.9.7 The reception shaft will be located within the proposed WWTP site operational boundary and will have a larger footprint to accommodate the terminal pumping station (TPS) which will raise all the incoming flows from the tunnel to the proposed treatment works. The TPS will include a set of pumps to accommodate the flows for full treatment through the works (FFT) and another set to lift the storm flows. The number of pumps called into operation will be dependent on the water level in the tunnel system.
- 2.9.8 The tunnel will use a trenchless method of construction known as pipe jacking and will pass uninterrupted along its route without surface interference, other than at the access shafts. The construction process will require temporary and permanent access shafts as shown on Figure 10 and Figure 18 in Appendix A. The shafts will require construction compounds for materials and equipment and access as shown on Figure 20 and Figure 21 in Appendix A.
- 2.9.9 A particular area of constraint is the railway line crossing, where surface movements and settlements will have tight limits. A monitoring regime will be agreed with Network Rail and adhered to in order to avoid settlement of the tracks.
- 2.9.10 The pipe sections (pre-cast coated concrete or glass reinforced plastic) will be jacked along the tunnel behind the micro-tunnel boring machine (MTBM) which is used to excavate the ground. The tunnel will be constructed in sections, each section commencing at an intermediate shaft (known as a jack-pit shaft) and progress towards a reception shaft where the MTBM will be retrieved. The spoil removed will be dewatered and transported to the proposed WWTP and used within the landscaping activities if suitable for re-use.
- 2.9.11 Following construction, development and other activities above the tunnel will need to be restricted to prevent damage to the pipeline.

EXISTING CAMBRIDGE WWTP DIVERSIONS

- 2.9.12 As treatment operations at the existing Cambridge WWTP will cease, a number of sewers currently entering the site will need to be diverted or relocated or are to be terminated. This will require the relocation of a number of incoming sewers, including rising mains and gravity sewers. The details of the services to be diverted from the Milton site are as follows:
- CAMBSM local gravity foul/combined sewer (450mm diameter concrete)
 - FDIGSM Fen Ditton rising main (6" PVC) (subject to issues discussed further below)
 - MILPSM local rising main (8" PVC)
 - MILCSM local rising main (180mm polyethylene)
 - HISHSP Histon rising main (450mm diameter Cast-iron)

- COBLSP Cottenham rising main (350mm diameter Cast-iron)
- Histon 'Jam factory' main (diameter to be confirmed)
- MILLSM local rising main (diameter to be confirmed)

2.9.13 The above sewers, possibly with the exception of the Fen Ditton rising main, will be diverted to the Interception shaft at the existing Cambridge WWTP and routed to the tunnel via a vortex drop pipe. The pipeline diversion routes to the interception shaft at the existing Cambridge WWTP are subject to ongoing optioneering studies.

FEN DITTON RISING MAIN

2.9.14 A suitable diversion route for the Fen Ditton flows to be routed to the proposed WWTP is required. At present the diversion options for the Fen Ditton main include the following, all of which are accommodated within the zones shown in Figure 10 in Appendix A:

- Retain as much of the upgraded rising main as possible, and divert the pumped flows to the new interception shaft at the existing WWTP (as discussed above);
- Connect the upgraded rising main to the future sewer network that will be required as part of the re-development of the existing WWTP;
- Realign the pipeline towards the proposed intermediate shaft 4 (to enter the tunnel via a vortex drop pipe arrangement), as this represents the nearest section of tunnel and will likely facilitate a gravity operation; or
- Lay a new pumped rising main from Fen Ditton to the proposed WWTP.

2.9.15 The Fen Ditton rising main is a 150mm diameter pump rising main starting at a pump station in Fen Ditton. It pumps raw waste water from Fen Ditton to the existing Cambridge works. This main will be relayed to the proposed works or into one of the shafts on the effluent transfer main. Both routes are likely to use either directional drilling or direct lay techniques (or a combination of both) to install the pipe. The pipe will be laid at minimum depths where possible but will be at significantly greater depths where it crosses the river and the A14 (dependant on chosen route).

OUTFALL TRANSFER CORRIDOR

2.9.16 Final effluent transfer would be required from the proposed WWTP to a new discharge location on the east bank of the River Cam close to the current discharge location as shown in Figure 10 (temporary construction) and Figure 18 (permanent operational) at Appendix A.

2.9.17 The transfer corridors extend west from the proposed WWTP crossing Horningsea Road and running parallel to the A14 to a section of the River Cam

directly north of the A14 bridge. The proposed corridor is in the field to the south of the driveway to Biggin Abbey.

- 2.9.18 The final effluent pipeline will have an approximate length of 1.25km and an internal diameter of 1.5m. The storm transfer pipeline will be laid adjacent to the treated effluent pipeline. Together these pipelines are referred to as 'treated effluent transfers.' The preliminary arrangement for the storm main includes two 1.5m diameter pipes, extending from a pumping facility at the proposed WWTP, to the outfall at the River Cam.
- 2.9.19 The final effluent flow will be used to dilute and flush the outfall(s) when required during and following the conveyance of any storm flows.
- 2.9.20 The pipelines will be provided with access manholes where required, including at changes of direction (for example, after passing under the overhead powerlines) and crossings (for example, of the Horningsea Road and a significant drainage ditch).
- 2.9.21 The route of the pipelines includes crossing Horningsea Road and crossing under drainage ditches which are a feature of the local area. The road crossing will either be carried out by an open-cut method (using a lane-by-lane diversion technique of the road) or by a trenchless method (such as pipe jacking). The pipelines will be installed where possible by open-cut techniques.
- 2.9.22 Prior to laying the pipes a working easement will be established up to 40m wide and fenced on both sides. The easement width will be calculated to allow sufficient area to stockpile topsoil, sub soil, allow room to string out the pipes and provide working area to lay the pipes whilst also allowing access to the rest of the pipeline and the outfall.
- 2.9.23 An easement will be required to provide reasonable access to the pipeline and any facilities and to control any future developments in the vicinity of the pipeline(s) assets.
- 2.9.24 An option to reuse an existing ditch that runs parallel to the A14 on its northern boundary remains under investigation and is considered at this stage as a potential for a proportion of flows in combination with or instead of the proposed out. The ditch will likely require some widening works, erosion protection and the installation of some hydraulic structures to control flow. A pipeline will still be required to convey the flow to the West side of Horningsea Road and would connect into the ditch at that point.

OUTFALL STRUCTURE

- 2.9.25 The new outfall structure will be located on the east bank of the River Cam approximately 90m downstream of the existing outfall from the existing Cambridge WWTP, and 30m downstream of the A14 bridge. The river levels

are controlled by Baits Bite Lock, which is located approximately 0.4km further downstream of the proposed outfall. The outfall structure will be constructed on the eastern bank of the River Cam and be approximately 12m long x 5.5m wide x 4m deep. The zone within which the outfall would be located is shown at Figure 10 (temporary construction) and Figure 18 (permanent operational) at Appendix A.

- 2.9.26 The discharge of treated effluent from the outfall is expected to typically mirror the site's diurnal influent pattern. The final effluent flow is expected to be between 0.63m³/second to an approximate peak of 2.2m³/second. The flows will be regulated by the Environment Agency through the environmental permit.
- 2.9.27 The outfall provisionally follows the requirements of the USBR (US Bureau of Reclamation) Type VI arrangement, which is an accepted design standard for an outfall structure and includes an energy dissipation facility. Bank and bed protection will be provided as part of the design as shown on Figure 10 at Appendix A. One of the features of the structure is a rear chamber; this has been deepened so that the outfall pipe can pass under the adjacent open drain that runs parallel with the river.
- 2.9.28 The storm outfalls from the twin pipelines will be adjacent to the treated effluent outfall and part of the same structure. At present the storm outfalls are provisionally assumed to be of similar arrangement to the final effluent outfall (USBR Type VI) and are subject further design development and to agreement with the Environment Agency.
- 2.9.29 Access to the outfall for maintenance is subject to further study and presently includes four options:
- Access from the south, via the Horningsea Road and an existing track (running parallel to the A14), that serves Popular Hall and provides access to the river bank and to the field adjacent to the outfall.
 - Access from the south, from Fen Ditton, via an existing track (as far as the powerlines) and an existing footpath along the east bank of the river.
 - Access from the north, via a new 4m wide track from Biggin Lane; the Lane also provides access to Baits Bite Lock.
 - Access from the river, using barges/rafts or similar.
- 2.9.30 Temporary access to the outfall area during construction will likely be along the pipeline corridor.
- 2.9.31 Construction of the outfall will make use of pre-cast techniques and will require a sheet pile cofferdam, but construction is not expected to close the river to river users (navigation) although there would be a temporary narrowing at this location and access to the river bank would be restricted during construction.

Only when the new structure is complete and connected to the flood bank will the temporary protection be removed.

- 2.9.32 The outfall structure will be accessed along the pipeline easement from the main works site compound.

WATERBEACH PIPELINE ALIGNMENT THROUGH THE TRANSFERS ZONE

- 2.9.33 A section of the Waterbeach pipeline alignment is located within the transfers zone. The Waterbeach transfer is expected to be required before the proposed WWTP is operational. As such, the pipeline has been designed to take flows into the existing Cambridge WWTP for an interim period as a realistic worst-case scenario. It is expected that once the proposed WWTP is constructed the flows would be connected directly into the sewer tunnel approaching the proposed WWTP where the indicative alignment of these two transfers cross each other as shown on Figure 10 at Appendix A. This would mean that the southernmost section of the pipeline i.e. that to the west of the proposed WWTP within the Transfers Zone, will become redundant.
- 2.9.34 The alignment of the pipeline within the existing Cambridge WWTP has yet to be determined and will be either above or below ground. The final decision will be made once further detailed assessment of the existing constraints including the environmental constraints has been undertaken.
- 2.9.35 Associated with the new pipeline will be a number of air valves. These will be located within the proposed pipeline working corridor. The final number is still to be determined, but it is expected that there will be in the region of for the full length of pipeline from Waterbeach to the existing Cambridge WWTP. The air valves will be located below ground with a manhole cover at ground level. They will be approximately 0.5 metres in diameter and 1 metre in depth and attached to the rising main via new connecting pipework.

DECOMMISSIONING OF THE EXISTING CAMBRIDGE WWTP

- 2.9.36 As part of the relocation process the existing WWTP will be decommissioned once the proposed WWTP is fully operational. The scope of the decommissioning will be aligned with the requirements set out by the Environment Agency in respect of the anticipated rescinding of the current operational permits, specifically the final effluent and storm discharge consents, and sludge treatment operation permit. Whilst the detail of these requirements is currently unknown it is largely expected to include the draining down and cleaning of existing tanks (including the disposal/treatment of any waste), making the plant mechanical and electrically safe, preventing heat generating equipment from being operated and prevention of rainwater storage in open top tanks.

- 2.9.37 Other decommissioning activities, including the demolition of structures and site preparation for the site's redevelopment are outside of the scope of the relocation project DCO and will be carried out by the site developer in accordance with a separate planning permission. The connection shaft for the new waste water transfer tunnel will be retained as a permanent surface feature to allow access for future maintenance activities.

2.10 Features of the Proposed Development – Waterbeach zone

WATERBEACH PIPELINE

- 2.10.1 The Waterbeach zone for the purposes of scoping is the northern most section of the Waterbeach pipeline route to the boundary with the Core Zone shown on Figures 11 to 13 at Appendix A. The new rising main will comprise twin 500mm pipes to be laid below ground.
- 2.10.2 As set out within the transfers zone section above, the Waterbeach transfer is expected to be required before the proposed WWTP is operational. As such, the pipeline has been designed to take flows into the existing Cambridge WWTP for an interim period as a realistic worst-case scenario. It is expected that once the proposed WWTP is constructed the flows would be connected directly into the sewer tunnel approaching the proposed WWTP where the indicative alignment of these two transfers cross each other as shown on Figure 10 at Appendix A. This would mean that the southernmost section of the pipeline i.e. that to the west of the proposed WWTP within the Transfers Zone, will become redundant. The new rising main will be approximately 8.4 km in length in total if the full extent of the alignment shown on Figures 10 to 13 at Appendix A, approximately 5.6 km to the proposed WWTP and approximately 2.8 km from the proposed WWTP to the existing Cambridge WWTP.
- 2.10.3 As shown on Figures 11 to 13 at Appendix A the new main will route east/south east from Waterbeach crossing under the railway but avoiding the new Waterbeach railway station platform before continuing southwards through fields. It will cross to the east side of the River Cam after about 1.9km and continue southward to the east of the village of Horningsea before crossing under the A14. It will then continue southward in to the Core Zone before routing west and connecting into the existing Cambridge WWTP in the transfers zone, crossing under the Horningsea Road, the River Cam, Fen Road, and the railway on route.
- 2.10.4 A new pumping station will be required within the Waterbeach New Town development area, to pump flows into the new rising main. It is expected that this will be located anywhere within the zone outlined by a green dashed line identified on Figure 13 at Appendix A. The final location will be agreed following further discussion with the Waterbeach New Town developer.

- 2.10.5 It is expected that the Waterbeach New Town Developer will obtain consent for the new pumping station and alignment of the rising main within their site under their planning permission, with the new Waterbeach pipeline connecting at a point along the boundary of the Waterbeach New Town development. However, as the developer has not yet obtained consent for these works, the EIA Scoping boundary extends around a realistic maximum extent within which the pumping station is likely to be located.
- 2.10.6 Associated with the new pipeline will be a number of air valves. These will be located within the proposed pipeline working corridor. The final number is still to be determined, but it is expected that there will be in the region of 16 for the full length of pipeline from Waterbeach to the existing Cambridge WWTP. The air valves will be located below ground with a manhole cover at ground level. They will be approximately 0.5 metres in diameter and 1 metre in depth and attached to the rising main via new connecting pipework.
- 2.10.7 In order to lay the new pipeline a temporary 30 metre wide working corridor is proposed. The precise alignment of the main within the corridor will be determined by several factors including the outcome of further environmental surveys, discussion with landowners and technical considerations such as ground conditions. Further assessment will also be needed to determine the exact crossing points under the River Cam, the railway line and the A14. The crossings under the railway and A14 will need to be closely monitored to avoid disturbance in accordance with requirements to be agreed with Network Rail and National Highways (formerly Highways England), respectively.
- 2.10.8 The pipeline will be located at an average depth of 2 to 5 metres below ground level except where it passes beneath the River Cam, larger drainage ditches, the A14 and the railway where it will be a maximum of 20 metres deep. Maximum depths are shown on Figures 10 to 13 at Appendix A. The exact depth will be determined through further environmental assessment, more detailed design including confirmation of the construction technique and agreement with the owner of the feature being crossed under as is legally required.
- 2.10.9 The pipeline will be installed via a combination of open cut and trenchless techniques. Trenchless crossing techniques are proposed for the River Cam, A14 and railway. These will be either horizontal direction drilling (HDD) or pipe jack micro-tunnelling.
- 2.10.10 Where HDD is used a series of drill pits will be required. The final location of these will be dependent upon the length of the drill shot being undertaken. The associated access pits are expected to be circa 10 metres by 5 metres. They will be backfilled once the drill shot is complete. Air valves may be installed at these locations that will be accessed by foot for maintenance.

- 2.10.11 Where pipe jack micro-tunnelling is used then a larger access pit will be required, circa 15 metres by 15 metres. At this stage it is anticipated that this technique will only be used where the pipeline crosses under the railway.
- 2.10.12 The construction technique for the remaining route is not yet determined but has been assumed to be open cut as this would represent a realistic worst-case scenario in terms of potential impact with locations for HDD under certain features shown on Figures 11 to 13 at Appendix A.
- 2.10.13 Where the pipeline is installed by open techniques, the topsoil will be stripped and placed to one side of the working corridor whilst a trench in which to lay the pipeline is cut. This will then be back-filled and the topsoil reinstated. It is anticipated that soil will be spread over the work strip so there will be no requirement for off-site removal of soil excavated in the construction of the pipeline. It may be possible to use spoil from the wet well excavation for nearby earthworks operations or to contribute to the creation of the earth bank for the proposed WWTP within the Core Zone. At this stage as a realistic worst-case scenario 800 HGV movements have been predicted, in the event material has to be transferred on the public highway network for re-use or disposal.
- 2.10.14 The pipeline will need to cross a number of existing drainage ditches. Shallow ditches will be temporarily dammed and over pumped to maintain water flow whilst excavation works to lay the pipe are undertaken. These will be reinstated promptly once the pipe has been laid. Larger ditches will be crossed using trenchless crossing techniques as detailed above.
- 2.10.15 Testing and commissioning of the pipeline and pumping station is likely to be done using final effluent (FE) directly from the Waterbeach WRC due to volumes required and the proximity of Waterbeach WRC. The alternative is a local water supply. It is anticipated that a permit to discharge into local watercourses will be obtained to minimise discharge across the land.
- 2.10.16 Redevelopment of the existing Waterbeach WRC will be a separate future project (and part of the future baseline for the Proposed Development's DCO), but outside of the works delivered by the proposed development DCO. It is not therefore described or referenced further.
- 2.10.17 The scope of the decommissioning of the existing Waterbeach WRC will be aligned with the requirements set out by the Environment Agency in respect of the anticipated rescinding of the current operational permits, specifically the final effluent and storm discharge consents. Whilst the detail of these requirements is currently unknown it is largely expected to include the draining down and cleaning of existing tanks (including the disposal/treatment of any waste), making the plant mechanical and electrically safe and prevention of rainwater storage in open top tanks.

2.10.18 Other decommissioning activities, including the demolition of structures and site preparation for the site’s redevelopment are outside of the scope of the relocation project DCO and will be carried out by the site developer in accordance with their planning permission.

2.11 Construction Phase vehicular access

CORE ZONE AND TRANSFERS ZONE CONSTRUCTION ACCESS

2.11.1 Figure 5 at Appendix A shows the proposed locations for Construction Phase access points from the public highway and the proposed routing of construction traffic (heavy goods vehicles) to reach these points. Following a commitment made in Phase Two consultation heavy goods vehicle traffic associated with the Proposed Development would not use the Horningsea Road through Horningsea. Instead, vehicles would turn north or south of Horningsea into the construction areas.

2.11.2 The main Construction Phase vehicular access for the Core Zone would be via Horningsea Road (option 1a) until the permanent operational access has been constructed (if different to Construction Phase access) as shown on the parameter plans presented in Appendix A (Figures 7 to 9 inclusive). The duration of time the Construction Phase vehicular access would be needed and in use depends on the choice of operational access as each permanent operational access requires a different duration of construction based on elements such as the complexity of the route design and need for associated infrastructure, as set out in Table 2-22 below:

Table 2-22: Construction of temporary and permanent access – indicative timescales

Permanent access arrangement	1a	1b	2	3
Establish temporary access from Horningsea Road - duration	1 month	1 month	3 months	3 months
Construction of permanent access - duration	3 months	4 months	18 months	9 months
Permanent access enters use for construction and operation - date	4 th month after start on site	5 th month after start on site	year 3	Potentially year 2
Duration of use of temporary access	4 months	4 months	3 years	1 to 1 1/2 years

2.11.3 To facilitate access from Horningsea Road highway improvements would be required. The improvements may include increasing the width of a road, and/or

implementing junction improvements. To construct these improvements, temporary diversions or road closures are likely to be required during the above-mentioned indicative timescales.

WATERBEACH ZONE CONSTRUCTION ACCESS

- 2.11.4 Temporary access to the working corridor will be from the adopted road network along existing farm and field access tracks. Following a commitment made in Phase Two consultation heavy goods vehicle traffic associated with the Proposed Development would not use the Horningsea Road through Horningsea. Instead, vehicles would turn north or south of Horningsea into the construction areas (as shown on Figure 5 in Appendix A). The precise number of access points required will depend upon the final construction techniques, but these are expected to be at the locations shown in Appendix A on Figures 11 to 13 inclusive. Works to upgrade the access points including associated vegetation clearance/trimming are anticipated to accommodate construction vehicles. Hardstanding will be laid along the tracks and along the working strip to allow vehicles to track through the fields thereby avoiding the need to take construction traffic through Horningsea. The hardstanding will be removed when the works are complete.

2.12 Construction vehicle movements

CORE AND TRANSFERS ZONE CONSTRUCTION VEHICLE MOVEMENTS

- 2.12.1 It is anticipated that the peak construction period for vehicle movements will be during large concrete pours when construction traffic could lead to up to an additional 300 heavy goods vehicle (HGV) movements per day. Outside of this period this number would likely be between 100-200 vehicle movements per day. In addition, there will be Light Goods Vehicle (LGV) deliveries vehicle movements and construction worker arrivals and departures.

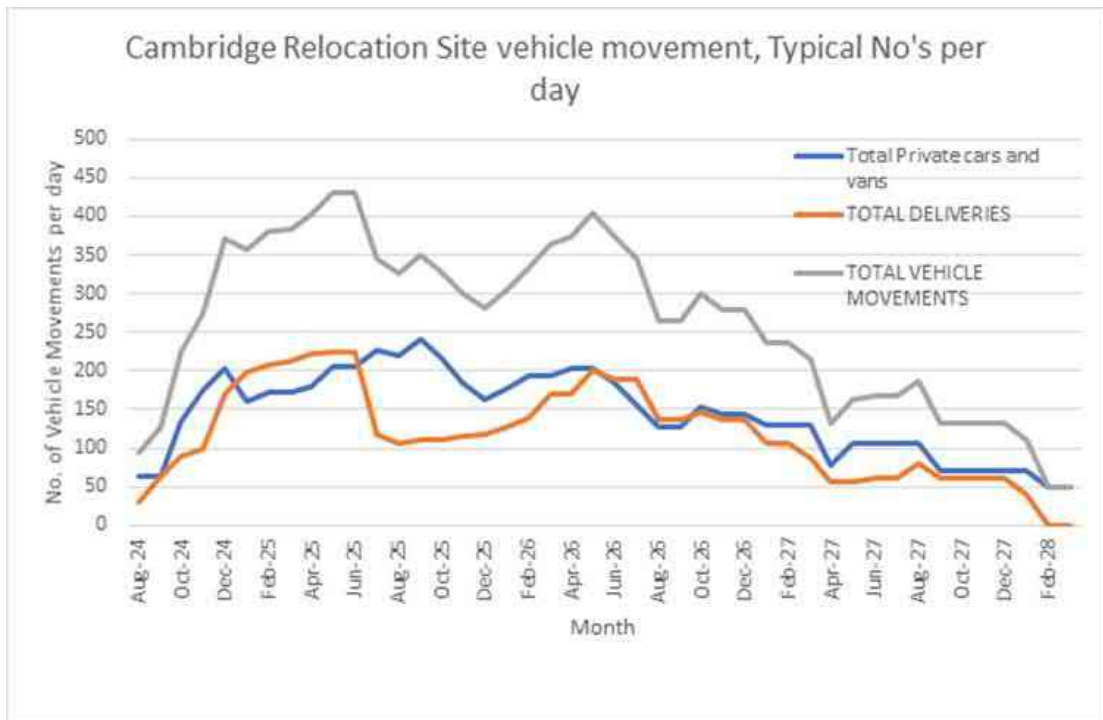


Figure 2-24: Estimated construction site traffic movements

Table 2-23: Typical Heavy goods vehicle movement per day during construction period

Typical Heavy goods vehicle movement per day during construction period (civils)	Number of vehicle movements per day
3 concrete pours (assume batch off site)	18
Stone deliveries for drainage or working areas	8
Diesel deliveries, waste skips, general material and plant deliveries	24
Mechanical and electrical equipment deliveries while civil programme on going	6
Typical Heavy goods vehicle movement per day during construction period (civils)	56

Table 2-24: Task creating high volume of vehicle movements

Wagon movements for specific tasks	Number of vehicle movements per day
Imported stone for site infrastructure and temporary working platforms assume max 600T per day	60
Large concrete pours to bases of process units. Assume max pour 400m ³	133
Arrival of precast concrete units for tank walls assume 2 per hour	40
Tarmac to roads assume 300T delivered per day	30

2.12.2 It is anticipated that abnormal loads will be required for access platform, process tank and pipe bridges and possibly for a pre-assembled process control kiosk.

WATERBEACH PIPELINE CONSTRUCTION VEHICLE MOVEMENTS

2.12.3 It has not yet been determined how the laying of the pipeline will be phased but it is anticipated that different gangs would have different responsibilities i.e. one gang may be welding sections of the pipeline, one preparing drill shots and one laying the pipeline via open cut. It is anticipated that on average 40-50 metres of pipeline will be laid per day where open techniques are used once site preparation works i.e. topsoil strip, pipe welding have taken place.

2.12.4 In terms of construction movements, it is anticipated that these will be highest during the first 8 weeks of construction when all the equipment including the pipe sections, pipe rings, plant and machinery are delivered to site and the compound area set up. During this period hardstanding will also be brought to site and laid along both the access tracks and working strip itself as set out above. Construction vehicle movements will then peak again during the last 8 weeks when the hardstanding is removed from site along with the plant and machinery and the compounds dismantled.

2.12.5 Construction vehicle movements between these periods will reduce significantly and largely be limited to one off deliveries for specific infrastructure items i.e. kiosk, pumps, connecting pipework etc along with travel to and from site by operatives, supervisors and managers, along with associated visitors.

2.12.6 It is expected that the first 4.2km of the pipeline will be accessed via the north from the A10 and Waterbeach, whilst the remaining 3.8km would be accessed from the south primarily via J34 and also via J33.

Table 2-25: Typical Large Vehicle/HGV movements associated with the Waterbeach pipeline

Activity	Duration	North of Horningsea or South of Horningsea (J33 and J34 of the A14)	Vehicle movements per day
Deliveries of hardstanding, pipe sections, pipe rings, plant and machinery and compound equipment, i.e. site cabins etc	8 weeks	North South	68-81 76-89
Deliveries of specific infrastructure requirements i.e.	35-44 weeks	North South	20 10

Activity	Duration	North of Horningsea or South of Horningsea (J33 and J34 of the A14)	Vehicle movements per day
kiosks/pumps, removal of spoil from excavations			
Removal of hardstanding, plant and machinery, compound equipment, i.e. site cabins etc	8 weeks	North South	68-81 76-89

2.12.7 For the Waterbeach works it is expected that the pipeline will be constructed by up to 5 different full-time gangs. There will be around 15 operatives with up to 5 supervisors and managers. Visitors such as designers will also be expected on site along with associated environmental advisors. Various sub-contractors will be required for specialist elements of the works, and these will come on site as required.

2.13 Temporary construction compounds, offices, laydown area and welfare units

2.13.1 Zones within which construction compounds or laydown areas would be located are presented on the parameter plans (Figures 6 to 13 at Appendix A). The maximum areas required for each are noted. To allow for flexibility in siting, the locations would be within the 'zones within which' a construction compound would be located symbolised by dashed lines on the parameter plans.

2.13.2 As a reasonable worst-case scenario, it has been assumed that each construction compound and laydown area will be topsoil stripped and covered with hardstanding. The hardstanding will be removed and the topsoil reinstated when the use of the laydown area ceases.

2.13.3 An indicative plan and elevation of a typical shaft site compound for the six shafts along the sewer tunnel transfer route are presented at Figure 20 and 21 within Appendix A.

2.13.4 Satellite welfare units will be required, particularly within the Waterbeach zone. These would be mobile units which will move with the construction workers along the pipeline and would be located within the working corridor.

2.13.5 Temporary lighting will be provided during the Construction Phase in construction laydown areas, parking facilities and office areas.

2.14 Construction Phase working hours

- 2.14.1 Construction working hours are still to be defined. It is expected that industry standard working hours are anticipated (typically Monday to Friday, 07:00 to 18:00 and Saturday, 08:00 to 13:00).

EXISTING WWTP STAFF AND WORKING HOURS

- 2.14.2 The number of staff on the existing WWTP would remain as current during construction of the proposed WWTP.
- Office Staff: average number of employees on site each day – eight. Normal working hours 07:30-17:00.
 - Operations Daytime staff: average number of employees on site each day – six. Normal working hours 07:30-17:00.
 - Operations Process Controllers (Shift): average of one employee on site at any time working in 2 x 12hr shifts per day (07:00-19:00 & 19:00-07:00).
 - Operations Shift Technicians (Shift): average of one employee on site at any time working in 2 x 12hr shifts per day (06:00-18:00 & 18:00-06:00).
 - Mechanical and Electrical: average number of employees on site each day – four. Normal working hours 07:30-17:00.

2.15 Reinstatement

- 2.15.1 During the Construction Phase and once works are complete, for example after a certain construction compound has served its purpose, reinstatement will be undertaken.

2.16 Construction Phase Management Plans

- 2.16.1 Contracts with companies involved in the construction works will incorporate environmental control, health and safety regulations, and current guidance and will ensure that all contractors involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation. All construction works will adhere to the Construction (Design and Management) Regulations 2015 (CDM).

CODE OF CONSTRUCTION PRACTICE

- 2.16.2 A Code of Construction Practice (CoCP) will accompany the DCO application, which will describe the Construction Phase environmental protection measures to be followed.
- 2.16.3 The detailed Construction Environmental Management Plan (CEMP) will be produced by the appointed construction contractor following grant of the DCO

and prior to the start of construction and will identify the procedures to be adhered to and managed by the Principal Contractor throughout construction.

- 2.16.4 The CEMP will set out how the Applicant would control, monitor and manage construction activities. Ecological mitigation required during construction will be detailed within the CEMP and will govern how and when construction works are completed. It will also set out how activities would be monitored to understand how effective controls are. These plans and monitoring activities will be developed in consultation with stakeholders including Natural England, National Trust, local planning authorities, Local Wildlife Trust and the Environment Agency. In monitoring the construction activities, the Contractor will be able to adaptively amend and change management plans.

SOIL MANAGEMENT PLAN

- 2.16.5 A soil management plan will set out site specific requirements to minimise adverse impacts on soils. Soil resources have the potential to be detrimentally impacted at all stages during the construction process, including stripping, stockpiling and reinstatement. Inappropriate handling of on-site soils may have consequences for both soil structure and overall quality by exacerbating erosion, run-off and compaction. Good practice measures to mitigate these potential impacts will be used and include: (1) the separate storage of topsoil and subsoil; (2) the segregation of different soil types; (3) limiting the height of stored soil within stockpiles and using appropriate slope gradients; (4) ensuring that handling only occurs during suitable weather; (5) ensuring that soils are only handled when dry and non-plastic; and (6) spraying stockpiles with herbicide or seeding with grass to prevent colonisation by weeds.

CONSTRUCTION FLOOD RISK MANAGEMENT PLAN

- 2.16.6 A construction flood risk management plan will set out requirements of construction areas to minimise impacts to the proposed development during construction from flooding and prevent any significant effects on the existing flood risk in the surrounding area.

CONSTRUCTION WATER QUALITY MANAGEMENT PLAN

- 2.16.7 A construction water quality management plan will set out requirements to protect water quality in surface and ground water during construction such as controls for site run-off and dewatering to protect watercourses from sediment release and buffers from watercourses.

SITE WASTE MANAGEMENT PLAN (SWMP)

- 2.16.8 The use of the waste hierarchy to manage waste and implementing mitigation measures such as a Site Waste Management Plan (SWMP), where appropriate,

will be used to minimise and reduce the amount of waste needing treatment and disposal.

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

- 2.16.9 A Construction Traffic Management Plan (CTMP) will be prepared setting out the commitments to mitigate the construction impacts of the proposals as a result of construction traffic such as HGV deliveries to and from the Proposed Development.

CONSTRUCTION WORKERS TRAVEL PLAN

- 2.16.10 A Construction Workers Travel Plan (CWTP) will be prepared setting out the commitments to mitigate the construction impacts as a result of construction workers travel to and from the Proposed Development.

2.17 Operational Phase activities

OPERATIONAL PERMITS

- 2.17.1 The proposed WWTP would be operated in accordance with environmental permits. New permit requirements will be confirmed with the Environment Agency. The assumption is that the relevant pollution control regime will be properly applied and enforced.

OPERATIONAL STAFF AND HOURS

- 2.17.2 The proposed WWTP would be operated by the following staff within the following operational hours.
- Office staff: average number of employees on site each day – eight. Normal working hours 07:30-17:00.
 - Operations Daytime staff: average number of employees on site each day – six. Normal working hours 07:30-17:00.
 - Operations Process Controllers (Shift): average of one employee on site at any time working in 2 x 12hr shifts per day (07:00-19:00 & 19:00-07:00).
 - Operations Shift Technicians (Shift): average of one employee on site at any time working in 2 x 12hr shifts per day (06:00-18:00 & 18:00-06:00).
 - Mechanical and Electrical: average number of employees on site each day – four. Normal working hours 07:30-17:00.

OPERATIONAL TRAFFIC

- 2.17.3 Table 2-26 below provides the estimated operational traffic associated with predicted number of movements associated with proposed WWTP staff and

smaller scale deliveries once the proposed WWTP is operational which are unlikely to require HGVs.

Table 2-26: Estimated operational traffic associated with proposed WWTP staff

Vehicle type	Vehicle Movements per day	Frequency
Sludge technicians	4	Daily (7 days a week)
Operations team	4	Daily (7 days a week)
Maintenance technician	2	Daily (Monday to Friday)
CHP technician	2	Daily (Monday to Friday)
Cars	12	Daily (7 days a week)
Chemical deliveries and other service vehicles	4	Daily (7 days a week)
Office workers	60	Daily (Monday to Friday) with up to 30 on weekends
Operational visitors to the WWTP	4	Daily (7 days a week)
Total estimated small vehicles and van movements per day = 92	92	

2.17.4 In order to give a perspective of how the proposed WWTP will operate in comparison to the existing Cambridge WWTP both existing and future estimates HGV movements have been presented side by side in Table 2-27 below. The future estimates are based on when the proposed WWTP is at full capacity including all the built-in growth of the existing Cambridge WWTP and the additional capacity added from Waterbeach. When the proposed WWTP is commissioned, it is likely that the traffic movements at that time will be similar to the existing Cambridge WWTP.

Table 2-27: Estimated Future operational HGV movements vs current operational HGV movements

Type	Average daily (7 days a week) vehicle movements	
	Existing Cambridge WWTP	Proposed WWTP
Liquid sludge imports	57	62
Biosolids exports	10	10
Non-routine tanker movements	12	14
Septic waste movements (tankers carrying waste water emptied from septic tanks)	50	60
Total HGV movements	129	146

DECOMMISSIONING OF THE EXISTING CAMBRIDGE WWTP AND WATERBEACH WRC

- 2.17.5 The existing Cambridge WWTP would cease to operate once the proposed WWTP is fully operational and taking all the flows that would have previously been treated at the existing Cambridge WWTP.
- 2.17.6 The existing Waterbeach WRC would cease to operate once the Waterbeach transfer pipeline is fully operational taking all Waterbeach flows to treatment. Waterbeach WRC currently discharges final effluent (up to 1350m³/day) into the adjacent Bannold Drain which runs parallel to Bannold Drove and is maintained by the Internal Drainage Board (IDB). Once the new pipeline is operational and the existing Waterbeach WRC decommissioned, the existing final effluent flow into Bannold Drain will cease.

MAINTENANCE ACTIVITIES

- 2.17.7 The type and frequency of maintenance activities will be defined as the design evolves.

2.18 Operational Phase Management Plans

OPERATIONAL WORKERS TRAVEL PLAN

- 2.18.1 An Operational Workers Travel Plan will be prepared aimed at encouraging sustainable transport choices for those travelling to the proposed WWTP.

ODOUR MANAGEMENT PLAN

- 2.18.2 An Odour Management Plan will:
- Set out the measures to be employed by the Operator to anticipate the formation of odours; and
 - Demonstrate how the Operator would control odour release from the site and how the treatment performance would be monitored to prevent and respond to any on-site issues at the earliest opportunity.

LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

- 2.18.3 A Landscape and Ecological Management Plan (LEMP) will be submitted as part of the DCO application, and this document will set out the principles for how the landscape and ecological features proposed such as habitat creation areas and landscape planting would be delivered and how the land will be managed long term.

3 Alternatives Considered

3.1 Introduction

- 3.1.1 A systematic site selection process was undertaken to identify the preferred location for the Proposed Development, including an assessment of options against operational, planning, environmental, community, programme and economic criteria.
- 3.1.2 An Initial Options Appraisal examined the strategic issues to be considered in investigating relocation options and identified the most appropriate study area to search for new waste water treatment plant sites. The subsequent study stages (Stage 1 Initial Site Selection, Stage 2 Coarse Screening, Stage 3 Fine Screening and Stage 4 Final Site Selection) were used to assess location options in increasing levels of detail, each building on the findings of the previous stages. Less suitable options were eliminated at each stage resulting in the identification of the best performing option to take forward to DCO application, which is the subject of this EIA Scoping Opinion request. The site selection approach taken is illustrated in Figure 3-1.



Figure 3-1: Summary of the site selection process

Source: Mott MacDonald, CWWTPR Stage 4 Final Site Selection report, January 2021

3.1.3 The sections below provide a summary of the process and outcomes of each stage of the site selection process. Whilst not needed for the purposes of EIA scoping, full copies of all site selection reports are available in the document library on the CWWTPR website: <https://cwwtpr.com/document-library/>.

3.2 Initial Options Appraisal

3.2.1 The initial options appraisal considered the project background, the existing plant's catchment areas, infrastructure, policy requirements, and other strategic and technical factors.

3.2.2 After considering the different factors, several possible options were identified for the Proposed Development that included: a single new WWTP in the existing Cambridge and Waterbeach drainage catchment areas, north or south of the existing WWTP; a single new WWTP (or expansion of an existing WWTP) outside of the existing Cambridge and Waterbeach drainage catchment areas; or several new WWTPs (or expansion of existing WWTPs), in various locations in or near the existing Cambridge and Waterbeach drainage catchment areas.

3.2.3 The initial options outlined above were evaluated against assessment criteria using a red, amber or green system (RAG), where green is the best and red is the worst. The use of clear assessment criteria was selected to ensure that the RAG process was not a comparative "ranking" exercise.

3.2.4 The RAG assessment showed that the best performing option was for a single WWTP located in the north of the combined Cambridge and Waterbeach drainage catchment area. However, the option of a single WWTP located in the south of the Cambridge drainage catchment area was also considered to be a possible alternative which should be considered further.

3.2.5 Therefore, both options were taken forward for further investigation, meaning the study area for site selection included the whole of the Cambridge drainage catchment area, north and south of the A14, together with the Waterbeach drainage catchment area.

3.3 Stage 1 – Initial site selection

3.3.1 The objective of Stage 1 was to identify a 'longlist' of potential site areas for the proposed WWTP which could then be taken forward for more in-depth assessment in Stage 2. Environmental, community and operational constraints in the area were mapped to see where a new WWTP could not be appropriately located. Primary baseline constraints were identified from a review of national, regional and local policies and, where appropriate, buffer zones were applied around them. The use of buffers ensured that any unconstrained areas would

be away from residential properties, protected and statutory designated sites and existing important infrastructure to limit any potential impacts on them.

- 3.3.2 All constraints and buffer zones were placed onto the Study Area map in order to identify the remaining unconstrained areas. The total footprint required for the proposed WWTP site was considered to be up to 22ha for the arrangement of the necessary plant and not including areas required for any associated mitigation. Using this footprint, the unconstrained areas were reviewed and those under 22ha were removed. The 14 remaining unconstrained areas equal to, or greater than, 22ha then became the longlist of potential site areas.

3.4 Stage 2 – Coarse screening

- 3.4.1 The Coarse Screening stage made a comparison of the potential locations based on their performance against a range of criteria. Each was assessed against the identified criteria using a red, amber and green (RAG) assessment method. Stage 2 screening included consideration of additional criteria including ground water and contaminated land issues, and an assessment of embodied, operational and whole life carbon emissions for each of the site areas.
- 3.4.2 Following the completion of the RAG assessments, the results for each site area were compared with one another to identify the best performing site areas to be included in the shortlist. There were several site areas which performed poorly against a range of important criteria and these sites were removed from further consideration.

3.5 Stage 3 – Fine screening

- 3.5.1 At Stage 3, a more detailed assessment of the remaining seven shortlisted site areas against environmental, community, operational, programme and planning criteria to identify the final site area options to take forward to public consultation. In addition, economic criteria were assessed including the affordability of the sites.
- 3.5.2 The screening assessment results were used to assign a RAG assessment score for each site area option against each of the assessment criteria. A relative comparison of the RAG assessment for each site area was then used to identify the best performing site areas for further consultation and those that should be removed from any further assessment. The results of the Stage 3 – Fine Screening assessment are summarised as follows.

3.6 Stage 4 – Final site selection

- 3.6.1 Stage 4 Final Site Selection was the last stage of the site selection process. Stage 4 applied the finest grain of screening to the three remaining shortlisted site areas and associated infrastructure requirements.

3.6.2 The three remaining shortlisted site areas are shown below on Figure 3-2 below.

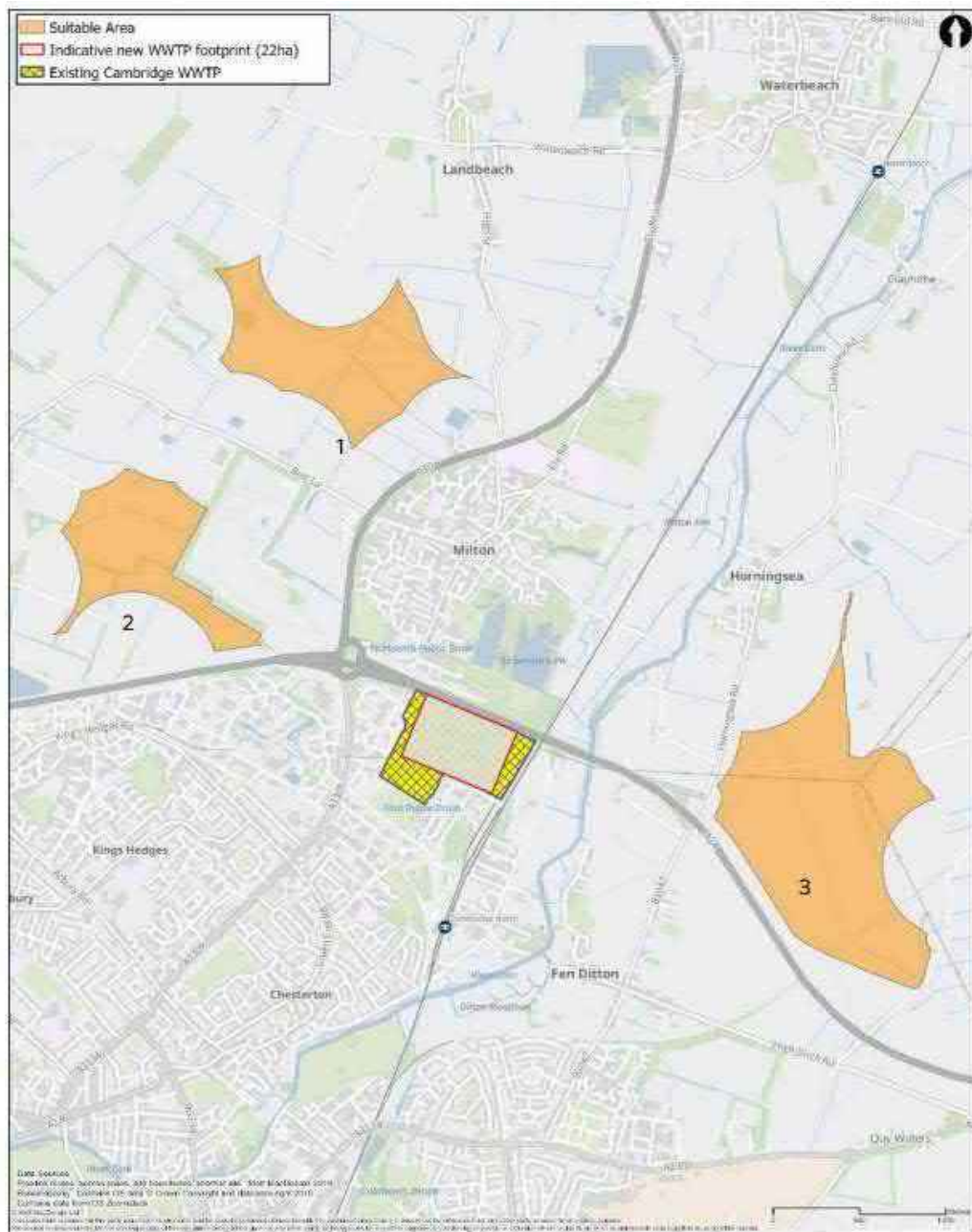


Figure 3-2: Short-listed site areas

3.6.3 The Stage 4 assessment used the information collated during the first four stages of the site selection process combined with the results of further technical feasibility assessments, initial environment walkover surveys and phase one non-statutory public consultation to assess each of the site area options against one another.

3.6.4 Table 3-1 lists the assessment criteria utilised in Stage 4 Final Site Selection.

Table 3-1: Stage 4 Final Site Selection criteria

Theme	Criteria
Environmental	<ul style="list-style-type: none">● Nature conservation and biodiversity● Landscape and visual amenity● Historic environment● Land and water quality● Carbon emissions● Noise● Air quality● Odour
Community	<ul style="list-style-type: none">● Land use, property and business viability● Traffic● Amenity (based on the combined impacts of air quality, odour, noise, landscape and visual and traffic)
Operational considerations	<ul style="list-style-type: none">● Delivery of Anglian Water's strategic corporate commitments● Odour (operational)● Future urban growth● Future operational needs (post 2050)● Transport and access● Flood risk
Planning	<ul style="list-style-type: none">● Evaluation of site against national and local planning policies
Economic	<ul style="list-style-type: none">● Assessment of development, capital and operational costs of each site, with and without appropriate environmental mitigation
Programme risks	<ul style="list-style-type: none">● Whether the site could be developed within the timeframe required by the Homes England funding agreement

3.6.5 A summary of the comparison of the assessments for each of the three remaining site areas is as follows.

3.6.6 Site area 1 was deemed the compromise site in almost all aspects, with the exception of Nature conservation and biodiversity and recreation (in relation to amenity and traffic impacts), although the differences between all sites in these aspects are considered to be relatively minor. Site area 1 has weaker contribution to Green Belt purpose than site 3 so there is a marginally lower consenting risk profile. However, it is in open landscape in close proximity to Landbeach and Milton and, unlike sites 2 and 3, additional odour control measures would be required to mitigate the risk of odour impact at the nearest high sensitivity receptors. Locating a WWTP at site area 1 would also have a significant impact on the fruit farming business within the site area, potentially resulting in extinguishment of the business and loss of employment, which presents a significant socio-economic impact. Like site area 2, there would be traffic impacts at Butt Lane/A10 during construction and operation. Therefore, it was considered that site area 1 is not a preferable option.

3.6.7 This left the comparison between site areas 2 and 3, which present contrasting strengths and weaknesses for almost all assessments.

- 3.6.8 Site area 2 makes a lesser contribution to Green Belt purposes than site area 3, in an area more compromised and congested than the other sites and has less risk of impact on heritage assets and the local landscape. However, it is relatively closer to multiple residential areas and carries significant risk of delays to the project programme due to the competing land use with a credible promotion by a strategic landowner (Trinity College Cambridge), which is compatible with growth aspirations for Greater Cambridge for technology related development and the Government's growth prospectus for the OxCam Arc "key economic priority" area.
- 3.6.9 It also considered that if the current promotion of the site was not successful, even future urban growth and development pressures are likely to affect the long-term resilience of this site for CWWTP due to the close proximity to the Cambridge urban fringe. Also, opportunities to deliver significant enhancements to the environment and to connectivity (e.g. footpaths) of the area are more restricted compared to site areas 1 and 3. It also represents the highest cost option and risk of increase in land acquisition costs to the extent that they might undermine the viability of the WWTP development.
- 3.6.10 Site area 3 makes a stronger contribution to Green Belt purposes than site area 2. Together, with the potential impacts on heritage assets and the local landscape, this site area has a higher consenting risk profile than site area 2. However, it is the best performing for future operational needs and performs equally with site area 2 for odour (no additional mitigation would be required) and distance to highest sensitivity receptors in the prevailing wind direction. It also presents the lowest cost option and lowest lifetime carbon emissions. It provides a greater long-term ability to accommodate growth and maintain suitable distance from residential properties, reducing risk of impact on amenity.
- 3.6.11 However, the potential environmental impacts at site area 3 could be appropriately mitigated and enhancement measures could improve the value of the area in terms of biodiversity and wider landscape and recreational connectivity. Site area 3 also offers a better opportunity to overcome Green Belt harm as a result of these mitigation and enhancement measures. Whereas the potential issues associated with site area 2, in relation to competing land uses and future resilience would be more difficult to overcome.
- 3.6.12 The conclusions of the graphical analysis are shown in Figure 3-3 below demonstrating that in the majority of assessments, including the most important elements (shown by the largest bubbles), site area 1 performed poorly in comparison with either site area 2 or 3.

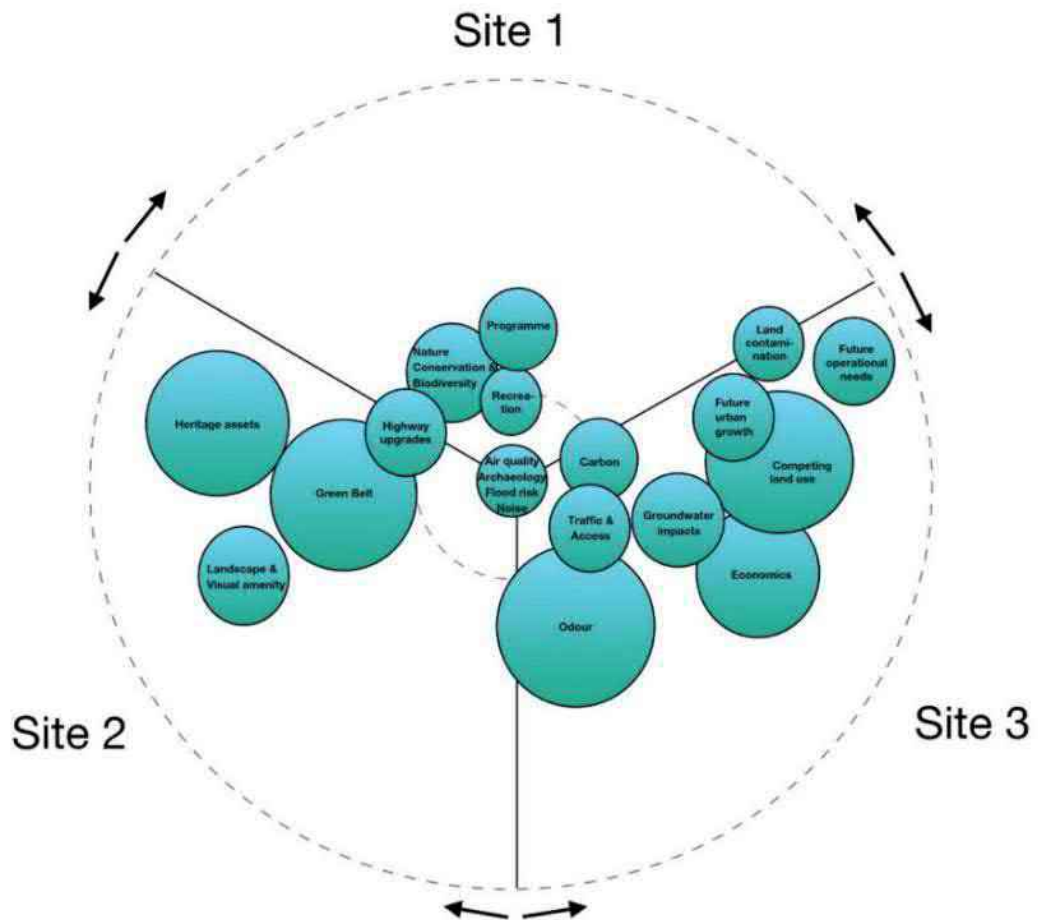


Figure 3-3: Graphical analysis of site selection

3.6.13 Based on the Stage 4 – Final Site Selection assessment, balancing all the risks and opportunities it was considered that site area 3 represented the best performing site area. It was considered that site area 3 presented the greatest opportunity to deliver a development that includes wider benefits, rather than seeking to solely mitigate negative impacts, contributes to Anglian Water Services Limited’s corporate objectives and addresses the concerns posed by the local community and stakeholders. Site 3 was selected for the Proposed Development.

3.7 Post Stage 4

3.7.1 Having selected site 3, the design and layout of the site was refined through the following steps:

CONFIRMATION OF PROJECT FOOTPRINT

3.7.2 As discussed above, an indicative project footprint of 22ha was chosen during the site selection process as being suitable for the development of a relocated waste water treatment. A range of treatment processes were considered in

reaching this optimal size, balancing potential land take against cost, carbon, deliverability and other operational considerations. This footprint size was subsequently tested through further study with a number of technologies being rejected as they would either give rise to a significantly larger footprint than the 22ha used to inform site selection, adversely impact carbon targets or place additional risk on achieving water quality targets.

SELECTION OF TREATMENT PROCESSES

- 3.7.3 The treatment processes and technologies outlined above have been selected through a series of “Risk, Opportunity and Value” (ROV) studies and workshops. This technical analysis considered a wide variety of technologies, concluding that Membrane Aerated Biofilm reactor technology (MABR) for secondary treatment represented a well-balanced outcome, considering a wide number of factors including capital cost, operational cost, carbon, reliability, odour profile and operational complexity. As discussed above, other enhanced activated sludge processes (ASP) remain under consideration.

DEVELOPMENT OF CONCEPT DESIGN

- 3.7.4 In accordance with the National Infrastructure Commission’s Design Principles for National Infrastructure⁶, a set of project level design principles for the project were established, as follows:

- To create a state of the art, low carbon water recycling centre of the future;
- to reduce the footprint of the modern plant to 22 hectares, which is about half the size of the existing plant;
- to create a strong identity for the site while screening the facility and reducing visual impacts on the surrounding community and landscape;
- to re-use excavated material on site which can be used to screen the facility and also reduce the carbon and traffic impact from construction;
- to minimise odour by incorporating solutions to address it at source and using best operational practices;
- to reduce harmful carbon emissions through sustainable design, helping address climate change;
- to increase biodiversity create new wildlife habitats;
- to improve access to the countryside with new paths and accessible open spaces; and
- to connect the site into the wider landscape and establish new wildlife corridors.

⁶ National Infrastructure Commission’s Design Principles for National Infrastructure <https://nic.org.uk/app/uploads/NIC-Design-Principles.pdf>

3.7.5 Subsequently, guided by advice from architects, landscape architects and environmental and other design professionals, further environmental objectives (Figure 3-4) for the project design were developed, alongside a design narrative focussing on the five themes of water, the circular economy, nature, partnerships and Cambridge’s heritage, challenges and future.

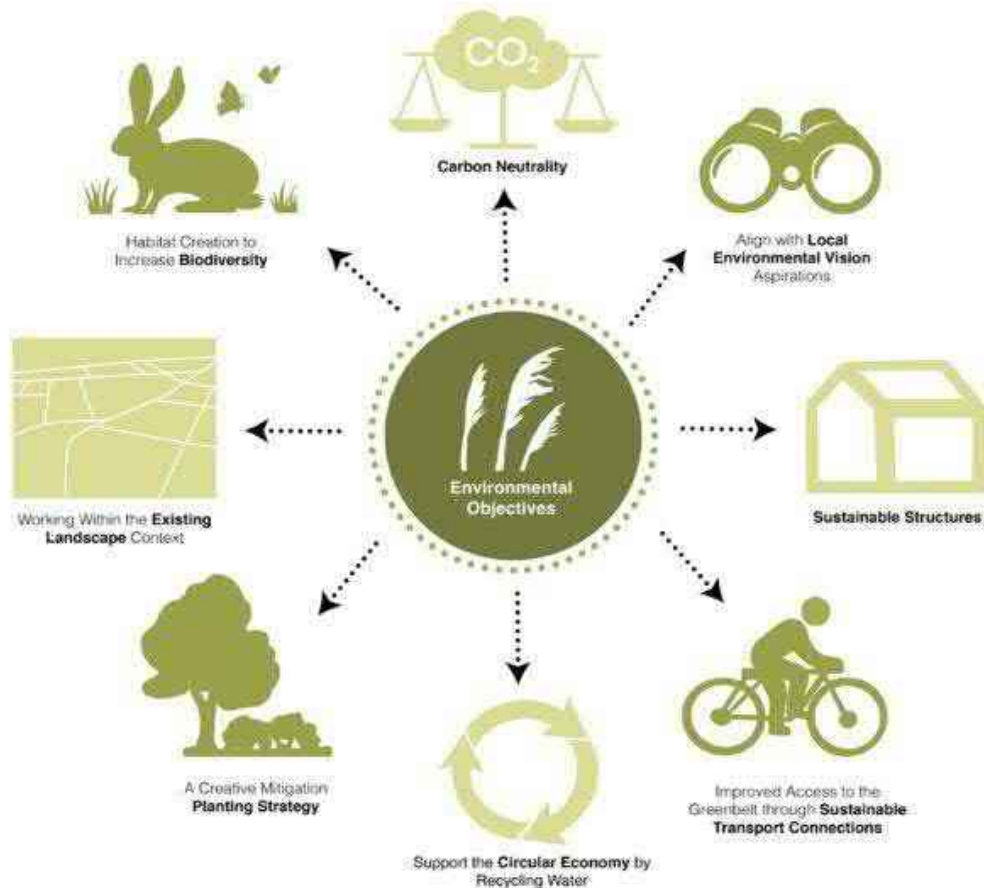


Figure 3-4 Environmental Objectives

3.7.6 Building on the design narrative and environmental objectives (Figure 3-4), and supported by the Design Council, three design concepts were developed as follows:

- i. A functional initial concept with a location and layout optimised for odour, supported by a landscape plan aligned with existing field patterns.
- ii. A “rotunda” design, utilising retained excavation spoil to construct a landscaped feature in the local environment, inspired by local dykes and hillforts.

- iii. A design utilising linear “green fingers”, with a sculptural landscape of retained spoil delineating a fragmented treatment plant.

DESIGN PANEL REVIEW AND CONCEPT DESIGN SELECTION

- 3.7.7 Following further advice from the Design Council, including formal design panel review from independent built environmental experts of the three design concepts, the “rotunda” concept design was selected for further consideration. Preliminary consultation took place with environmental stakeholder groups on the three design concepts and more detailed elements of the “rotunda” design, including landscaping. Further refinement of the landscape design was carried out to mitigate adverse visual impacts and increase opportunities for ecological and recreational benefits.
- 3.7.8 In accordance with the Statement of Community Consultation agreed with the local councils, a single concept design was taken forward for public consultation.

LOCATION OF PROJECT

- 3.7.9 Having developed an outline design, including landscape and ecological mitigation, the proposed location of the project was refined within the footprint derived from the site selection exercise described above. This process included consideration of proximity to ecological receptors, including the county wildlife site, odour modelling and potential access arrangements.

VEHICULAR ACCESS

- 3.7.10 In parallel with the design processes outlined above, a range of potential permanent vehicle access options were explored, including through engagement with National Highways (formerly Highways England) and Cambridgeshire County Council as the relevant highway authorities. Issues considered as part of this work included the safety of road users, the management of potential disruption to local communities and the existing road network and project economics (the relative costs of different options). As a result of this work, three potential permanent access options were taken forward to Phase Two Consultation (June to August 2021). These were:
 - Option 1: Access off Junction 34 of the A14 (Fen Ditton) which consists of two sub options (1A and 1B);
 - Option 2: Access off Junction 35 (Quy); and
 - Option 3: A new junction on the north side of the A14.
- 3.7.11 The options above remain in consideration with a preferred option to be selected following analysis of Phase Two consultation responses alongside assessment across other criteria. The chosen option will be announced prior to

the Phase Three consultation. It is anticipated that the preferred vehicle access option would be identified and communicated with stakeholders and the community ahead of Phase Three consultation, programmed for February 2022. At this stage, we are continuing to assess all options for the purposes of EIA Scoping.

3.8 Evolution of the Proposed Development following Phase Two Consultation

- 3.8.1 The configuration and design of the Proposed Development including construction details were presented at Phase Two Consultation and will continue to evolve based on consultation responses and technical analysis.
- 3.8.2 The ES will include a description of the alternatives relevant to the Proposed Development that have been considered, including their specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects. An appraisal of the options considered will be presented as part of the ES, discussing the rationale for the final site layout and design selection, as well as explaining the flexibility sought within the consent in this regard.

4 Consultation

4.1 Introduction

- 4.1.1 Paragraph 5.8 of PINS Advice Note 7⁷ states that prior to submitting a scoping request, Applicants may choose to undertake their own non-statutory consultation with the consultation bodies, or others. The advice note goes on to state: This might allow for refinement of options prior to making a formal request. For example, Applicants may choose to consult on preferred sites or solutions. The Planning Inspectorate recommends that any non-statutory consultation is undertaken in advance of the formal process to avoid any overlap with the Planning Inspectorate's statutory scoping consultation process. Applicants should therefore carefully consider the timing and nature of any non-statutory consultation exercise to ensure that there is no confusion with the statutory scoping consultation process that the Planning Inspectorate initiates as soon as it receives a scoping request.
- 4.1.2 Stakeholder engagement is critical to the development of a comprehensive and balanced ES. The views of statutory and non-statutory consultees serve to focus the environmental studies and to identify specific issues that require further investigation. Consultation is an ongoing process, which enables mitigation measures to be incorporated into the project design thereby limiting adverse effects and enhancing environmental benefits.
- 4.1.3 The Proposed Development has a wide range of stakeholders (including landowners, statutory consultees, non-governmental organisations, local communities and specialist interest groups) with differing interests that will require varied levels of engagement. Specific communication activities have therefore been focussed to meet the needs of particular individuals and groups. This requires an understanding of the stakeholders and their interests in the Proposed Development.
- 4.1.4 Stakeholder engagement for the Proposed Development is based on the following principles:
- Early, iterative and ongoing engagement to inform and influence the design process.
 - Seeking an appropriate level of feedback in the iterative design process and ensuring that comments received are taken into consideration.
 - Building of long-term relationships with key stakeholders to help better understand their views.

⁷ Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (version 7 June 2020). Available at <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>

- Where possible and practicable ensuring concerns are addressed.
- Ensuring appropriate statutory consultation is undertaken in compliance with requirements of the Planning Act 2008, EIA Regulations and associated guidance.

4.2 DCO consultation requirements

4.2.1 The DCO process has several statutory requirements regarding consultation. These requirements stipulate that certain stakeholder groups and the community must be consulted as part of the pre-application process, as set out in Sections 42, 47 and 48 of the Planning Act 2008 and Regulation 13 of the EIA Regulations. Further requirements set out how the Proposed Development must be publicised, and specific documents produced, including a Preliminary Environmental Information report (PEIR) and a Consultation report.

4.3 Phases of consultation

4.3.1 The first phase of public consultation took place in Summer 2020 for the purposes of site selection. During the Phase One Consultation, the Applicant consulted on the three possible site areas and invited feedback from the public and stakeholders to inform the Stage 4 Final Site Selection. Although not required for the EIA scoping process the phase one consultation material is available here: [REDACTED]

4.3.2 Phase two consultation took place in Summer 2021, the purpose of which was to seek views on the emerging proposals for the new site, including mitigation measures. Although not required for the EIA scoping process the phase two consultation material is available here: [REDACTED]

4.3.3 Phase Three Consultation (anticipated to be February to April 2022) will seek feedback on the final design proposals for the Proposed Development as well as publishing and inviting comment on the Preliminary Environmental Information report (PEIR).

4.3.4 Feedback and comments from the Phase Three Consultation will feed into the ES submitted with the DCO application.

4.4 Pre-scoping EIA related consultation

4.4.1 Pre-scoping EIA consultation is vital in limiting changes and amendments after submission of the EIA Scoping report. It is also important as the Planning Inspectorate expect any aspects or matters proposed to be scoped out to be accompanied by agreement from statutory consultees.

4.4.2 Chapters 6 to 21 of this report set out the proposed scope for each aspect (e.g. biodiversity, heritage). Each chapter includes a table setting out the pre-scoping EIA related consultation undertaken. Table 4-1 EIA Scoping consultation by

consultee below provides a summary of EIA scoping related consultation by consultee.

4.4.3 In summary, consultation in relation to EIA scope has focussed on key areas of traffic and transport, biodiversity, odour and air quality, landscape and heritage, water and land quality.

Table 4-1 EIA Scoping consultation by consultee

Consultee/s	Discussion points / Outcomes
Biodiversity Technical Working Group: Natural England, Cambridgeshire County Council, The National Trust, Environment Agency, The Wildlife Trust, March 2021	Update on 2020 background data search, PEA, aquatic habitat and terrestrial invertebrate scoping assessment completed. High level review of potential impacts on statutory and non-statutory designated sites, habitats and protected species. High level results from 2020 PEA. Introduction to proposed 2021 detailed ecological surveys. Stakeholders confirmed that white-clawed crayfish are absent from the survey area based on local knowledge and were only included as a precautionary survey originally. Ecology Surveys Briefing Note, which sets out the proposed approach with regards to the ecology surveys that will be completed in 2021 to provide the baseline information to support the ES provided to the TWG. Natural England responded.
Biodiversity Technical Working Group: Natural England, Cambridgeshire County Council, The National Trust, Environment Agency, June 2021	Update on 2021 ecology surveys. Methods and survey results to date. Presentation of: Landscape and design inspiration, design principles, indicative design, potential habitat mitigation and compensation, traffic and access proposals.
Cambridge Airport Operators, May 2021	Introduction of the project. Discussion around habitat creation and attracting certain bird species/ assemblages at risk of bird strike. Advised to prepare wildlife hazard management plan.
Cambridge City Council (land quality), May 2021	Advised main contaminated land concerns were the current use of the existing Cambridge WWTP and the contaminants associated with that site use.
Cambridgeshire Historic Environment Team (CHET), November 2020	Discussion around Proposed Development options and agreement of archaeological evaluation strategy. CHET issued an archaeological brief setting out their requirements for archaeological evaluation.

Consultee/s	Discussion points / Outcomes
Environment Agency (water), March 2021	Environment Agency received, reviewed and commented on the water resources statement and hydrogeological impact assessment produced prior to site selection.
Environment Agency, May 2021	Meeting to discuss the rescinding of the permit for the existing Cambridge WWTP. Process identified and potential timings.
Environment Agency, June 2021	Meeting to discuss storm flow management, location of discharge point and outfall design.
Environment Agency, August 2021	Brief on proposed approach to EIA Scoping report, receptors scoped in and out, assessment methodologies
Fen Ditton Parish Council, June 2021	Fen Ditton Parish Council has reviewed and commented on the hydrogeological impact assessment.
Greater Cambridge Shared Planning and East Cambridgeshire District Council, April 2021	Enquiry about the landscape and visual impact assessment methodology with request for contact within the authority.
Historic England, National Trust, Greater Cambridge Planning, CHET, May 2021	Correspondence setting out the proposed approach for identifying the heritage assets and the methodology for assessing impacts. Historic England confirmed acceptance of approach.
Internal Drainage Board (IDB) - Ely Group of Drainage Boards, Bilateral meeting, September 2021	Brief on proposed approach to EIA Scoping report, receptors scoped in and out, assessment methodologies. Knowledge shared in relation to drainage network.
Landscape and Heritage Technical Working Group: Historic England, National Trust, Greater Cambridge Planning, CHET, April 2021.	Discussion around historic environment approach to assessing the impact of the scheme and feedback on the scheme design.
Landscape and Heritage Technical Working Group: Historic England, National Trust, Greater Cambridge Planning, CHET, April 2021	Discussion around approach to assessing landscape and visual impacts of the scheme and feedback on the scheme design. Discussion of landscape resource and visual receptors potentially affected. Discussion of existing and proposed recreational opportunities. Discussion around historic environment approach to assessing the impact of the scheme and feedback on the scheme design.
Natural England (water), February 2021	Further study agreed in order to consider changes to the existing WWTP discharge consent and effects in relation to the proposed WWTP.
Natural England, Cambridgeshire County Council, The National Trust, August 2021	Brief on proposed approach to EIA Scoping report, receptors scoped in and out, assessment methodologies. No feedback received.

Consultee/s	Discussion points / Outcomes
Odour Bilateral: South Cambridgeshire District Council, June 2021	Agreed method of assessment proposed in this Scoping report with South Cambridgeshire District Council.
Permits and consents (water quality) Technical Working Group: Environment Agency, March 2021	Overview of the project. The Environment Agency did reference initial expectations on discharge limits.
Quy Fen SSSI Trustees, March and June 2021	Quy Fen Trustees have been contacted regarding water resources connections on the SSSI and existing monitoring boreholes.
South Cambridgeshire District Council (air quality and odour), May 2021.	Air Quality: Agreed method of assessment as detailed in the air quality chapter of this report with South Cambridgeshire District Council. Odour: Agreement on assessment methodology in June 2021 SCDC Consultation 2 response reiterated odour modelling expectations. Including a consideration of the occurrence of septicity.
South Cambridgeshire District Council (land quality), May 2021	Advised main contaminated land concerns are sand and gravel extraction activities and a dismantled railway adjacent to the Core Zone.
Transport and Access Technical Working Group: Cambridgeshire County Council and National Highways (was Highways England), March 2021	Preferred Site location and access optioneering presentation: Updating statutory consultees on preferred site location to allow for early comment on the preferred site location and a number of its potential access options. Traffic Survey Data and access optioneering presentation: Further consultation of access options as well as in-depth discussions surrounding available survey data and future survey locations/times. Transport Assessment Scope: Comments received an agreement in principle made regarding Transport Assessment scope. Transport Assessment Scope update: Awaiting confirmation of agreement with updated Transport Assessment Scope.
Transport and Access Bilateral: Cambridgeshire County Council, October 2021	Approval given to updated Transport Assessment scope (meeting held on 1 October 2021).

4.4.4 In addition to the two phases of community consultation and targeted EIA scoping consultation already undertaken (set out above), further consultation on specific topics will now commence. While the project has engaged on a wide range of issues with stakeholders, specific EIA consultation will be through the

formal scoping process and through forthcoming consultation as part of the ongoing consultation programme.

- 4.4.5 Consultations in relation to the scope of the assessment of effects on agriculture and soils will be through the formal scoping process and through discussions with individual farm owners and tenants. Individual farm owners and tenant will be consulted as part of the Agricultural Impact Assessment activity to determine any likely impacts and effects on agricultural businesses which may be brought about by the Proposed Development.
- 4.4.6 Recognising the range of matters relevant to Community it is expected that outputs from consultation as part of the aspects of traffic and transport, air quality, noise, water resources, biodiversity would also inform the Community assessment. Furthermore, it is intended that up to ten interviews with affected businesses of community resources impacted by the proposed Development will be undertaken.
- 4.4.7 Similar to Community, consultation will be through the formal scoping process and through forthcoming consultation as part of the ongoing consultation programme. Consultation will be undertaken with public health officers at relevant local authorities and Public Health England's Nationally Significant Infrastructure Project Team.
- 4.4.8 For material resources and waste, consultation will be through the formal scoping process recognising that the scope for Materials resources and waste is standard and there is no other reasonable way to undertake assessment. For major accidents and disasters many aspects are relevant (for example flooding rests within Water resources, traffic accident hazard with Traffic and transport). Accordingly, consultation will be through the interlinked aspects, the formal scoping process and through forthcoming consultation as part of the ongoing consultation programme.
- 4.4.9 No pre-scoping consultations have been carried out with organisations in relation to the scope of the assessment of effects on agriculture and soils, as this is best carried out through the formal scoping process. Individual farm owners will be consulted as part of the Farm Viability Assessment to determine any likely impacts on agricultural businesses which may be brought about by the Proposed Development.

4.5 Scoping consultation with the Planning Inspectorate

- 4.5.1 In September 2021 a presentation was given by the EIA team to PINS on the intended approach to EIA scoping for the project including:
- the zoning of the proposed development for the purposes of scoping,
 - the parameters approach to define potential impacts,

- optionality where it exists,
- consultation specific to scoping,
- approach to mitigation,
- key assumptions, and
- a summary of receptors and resources scoped in and out from several key aspects (land quality, biodiversity and water resources).

4.5.2 PINS were unable to provide specific feedback to the presentation but did not raise any concerns.

4.6 Scoping consultation by the Planning Inspectorate

4.6.1 The Planning Inspectorate (on behalf of the SoS) will consult on this EIA Scoping report under the EIA Regulations. Views from consultees will be used to inform the Scoping Opinion to be issued by the Planning Inspectorate. Under Regulation 10(6) of the EIA Regulations, the SoS must undertake consultation with statutory consultation bodies, including environmental bodies (such as Natural England, the Environment Agency and Historic England) and relevant planning authorities (Greater Cambridge Shared Planning and Cambridgeshire County Council), before adopting a Scoping Opinion.

5 EIA Methodology

5.1 EIA requirements

5.1.1 EIA Regulation 5 (2) requires that: “The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the Proposed Development on the following factors—

- (a) population and human health;
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- (c) land, soil, water, air and climate;
- (d) material assets, cultural heritage and the landscape;
- (e) the interaction between the factors referred to in sub-paragraphs (a) to (d).”

5.1.2 The requirements set out in the EIA Regulations are explained in Planning Inspectorate Advice Notes⁸ inter alia:

- Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements
- Advice Note Nine: Rochdale Envelope
- Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects

5.1.3 Other Advice Notes relate to particular environmental aspects and these may be referred to elsewhere in this Scoping report.

5.1.4 Should any revisions to Advice Notes or other guidance relied upon in the EIA be issued between scoping and reporting of the EIA, they will be adopted if appropriate, provided that it is reasonable to do so within the programme and governance for the project. Any changes in environmental legislation, such as for example the EIA Regulations, will be mandatory and therefore accommodated.

5.2 Structure of the Environmental Statement

5.2.1 An indicative structure of the ES for the Proposed Development is presented in Table 5-1. While this represents the currently envisaged structure of the ES, the final structure may vary as a result of decisions made or needs recognised during the course of implementing the EIA.

Table 5-1: Indicative structure of the ES

Report / Chapter	Sections
Volume 1: Non-Technical Summary	

⁸ The Planning Inspectorate <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>

Report / Chapter	Sections
Volume 2: Main Report	
1. Introduction	Purpose of the ES Overview of the Proposed Development Legislative and policy framework Competent expert evidence
2. The Proposed Development	Location of the Proposed Development Baseline scenario Description of the Proposed Development Construction, operation and long-term management
3. Assessment of Alternatives	Assessment methodology Reasonable alternatives studied
4. Environmental assessment methodology	EIA scoping Consultation Surveys and predictive techniques and methods General assessment assumptions and limitations Significance criteria
5 - 19. Assessments (for each environmental aspect scoped into the assessment): Agriculture and Soils Air Quality Biodiversity Carbon Climate Resilience Community Health Historic Environment Landscape and Visual Major Accidents and Disasters Materials, Resources and Waste Noise and Vibration Odour Traffic and Transport Water Resources	Legislative and policy framework Study area Baseline conditions Potential impacts Assessment methodology Assessment assumptions, limitations and uncertainties Design, mitigation and enhancement measures Assessment of effects Monitoring Summary
20. Assessment of cumulative effects	Cumulative assessment methodology Assessment of cumulative effects Monitoring
21. Summaries	Combined assessment summaries
22. Glossary	
Volume 3: Appendices	
Volume 4: Map Book	
Volume 5: Flood Risk Assessment	
Volume 6: Transport Assessment	
Volume 7: Water Framework Directive Assessment	

5.3 Relationship with other regimes

WATER FRAMEWORK DIRECTIVE (WFD)

- 5.3.1 A WFD assessment will be carried out to identify any impacts on the water body status of the River Cam and other relevant WFD classified water bodies including Bottisham Lode, Quy Water, the Cam and Ely Ouse Chalk groundwater body which underlies the proposed WWTP and determine mitigation measures based on the outcome of the assessment. The assessment will follow the three-stage screening/scoping and detailed assessment approach outlined in the Planning Inspectorate Advice Note Eighteen: The Water Framework Directive. The WFD assessment outcomes will be used in undertaking the EIA and will contribute to determining the need for any mitigation measures. WFD classification is used to determine the sensitivity of water resources in the EIA and the predicted impact on WFD status is used to define the magnitude of impact.

HABITATS REGULATIONS ASSESSMENT (HRA)

- 5.3.2 HRA is required for plans and projects likely to have a significant effect on a European or internationally important site for nature conservation. An HRA assessment will be included as a supporting document within the DCO application and rereferred to within the ES Chapter for Biodiversity.

HEALTH IMPACT ASSESSMENT (HIA)

- 5.3.3 The South Cambridgeshire District Council Local Development Framework, Health Impact Assessment, Supplementary Planning Document states at paragraph 2.10 the following: For those development proposals that are already required to submit an Environmental Impact Assessment (EIA) it may make sense to integrate health impacts into the EIA rather than duplicate the assessments as the methodology is very similar and there is a large overlap in the evidence gathered and used in both assessments. The Council's preferred approach is for Health Impact Assessments to be integrated with other similar assessments to ensure the HIA is wide ranging and has adequately examined all the potential health impacts of a development.
- 5.3.4 Based on this Supplementary Planning Guidance, and experience working with this Local Authority, it is proposed to integrate the health impact assessment within the EIA. Additionally, the South Cambridgeshire District Council Health Impact Assessment Supplementary Planning Document encourages the use of a particular assessment tool to make sure the appropriate range of health and wellbeing issues are considered. This tool has been used to inform scope of the health assessment.

EQUALITY IMPACT ASSESSMENT (EQIA)

- 5.3.5 Equality effects will be considered in a separate EqIA which will be submitted as part of the DCO application if significant impacts are identified at the screening stage. This is in line with paragraph 4.15.6 – 4.15.9 of the National Policy Statement for Waste Water which states: The applicant should undertake and include in their application an equality impact assessment for the construction, operation and decommissioning phases. This will require an Initial EqIA to identify potential adverse, differential or positive impact on equalities groups, and whether these are direct or indirect. If significant impacts are identified at the screening stage, a full Equality Impact Assessment should be undertaken.
- 5.3.6 If required, this would be a separate document to the Environmental Statement.

5.4 EIA purpose

- 5.4.1 The purpose of the EIA process is to identify the likely significant effects of the Proposed Development on the environment. This is done by identifying the baseline conditions, how these may change and predicting the potential impacts of the Proposed Development and then applying mitigation to avoid, prevent or reduce any potential adverse impacts. An assessment of the resulting effects is carried out defined by on the magnitude of the impact (degree of change) and the importance, sensitivity or value of the impacted receptor or resource.

SPATIAL SCOPE OF ASSESSMENT

- 5.4.2 The strategy for determining the spatial scope of assessment and the spatial parameters of the Proposed Development is set out below.

The EIA Scoping boundary

- 5.4.3 The maximum area of land within which the construction, operation, and maintenance of the Proposed Development and decommissioning of the existing WWTP is expected, including land required for permanent and temporary purposes, is within the EIA Scoping boundary as shown on Figure 00 in Chapter 2. It is important to note that this may be subject to change, but it shows the envisaged maximum extent of temporary and permanent land required. The land required for the Proposed Development will be refined as design work progresses, considering environmental and technical factors, and consultation responses.

Spatial Parameters – ‘Zones Within Which’

- 5.4.4 PINS Advice Note Nine states it is for the Applicant to choose whether there is a need to incorporate flexibility (and how much) into applications to address uncertainty. At this relatively early stage in the design process there is inevitably uncertainty and therefore flexibility in proposals is required, both at scoping and for the DCO submission upon which the EIA will be based. This flexibility is

addressed through design envelopes based on realistic worst-case scenarios and in some cases through optionality where more than one option is being considered (e.g. technology choice or location of a particular structure).

- 5.4.5 Flexibility is required in this case as elements of the proposed development are yet to be finalised in terms of choice of technology and for several elements there are options under consideration of which a preferred option is yet to be selected e.g. location of operational access point. To the best of the applicant's knowledge, the maximum parameters, and all likely options where options exist, are presented in this chapter to allow for the flexibility required to inform the scope of the EIA at this stage. Flexibility in terms of maximum parameters is likely to be retained throughout the EIA and presented in the DCO submission. On this basis, the impacts of the proposed development as it may be constructed can be identified and effects properly assessed.
- 5.4.6 The scope of the proposed assessment in EIA is based on the proposed development as set out in Chapter 2. Chapter 2 is accompanied by a set of figures which include parameter plans in which a spatial parameters approach has been used. This allows for a reasonable degree of flexibility to accommodate changes to detailed design, whilst ensuring that the maximum extent of the Proposed Development is considered and that the scope of the EIA can be adequately identified.
- 5.4.7 These figures show the parameters within which elements of the Proposed Development would be constructed and exist after construction. The maximum extent of land expected to be required temporarily for construction activities is also shown. Within these maximum extents, labelled as 'zones within which', the maximum areas, depths and heights provided for specific elements are shown and infrastructure may be located anywhere within a defined 'zone within which' (e.g. construction compounds or access routes). The same is provided where elements of the development would exist after construction is complete. An example of a plan illustrating such 'zones within which' is included in Figure 5-1.
- 5.4.8 The land within the EIA Scoping boundary but outside of the zones showing where construction activities would be carried out or operational elements would exist may be required for mitigation such as drainage features or permissions or work related to PRow or for elements where there is uncertainty of location at this stage due to the involvement of third parties, such as utilities connections or maintenance access to structures such as shafts/pumping stations and the outfall.
- 5.4.9 The final design will be amended to reflect ongoing design work, as well as feedback from public consultation and iterative design through the EIA process. However, sufficient detail is available at this stage to enable robust scoping of the EIA process. Should subsequent design changes require amendments to

the approach taken to the EIA, these amendments will be discussed and agreed in advance with the relevant technical stakeholders.

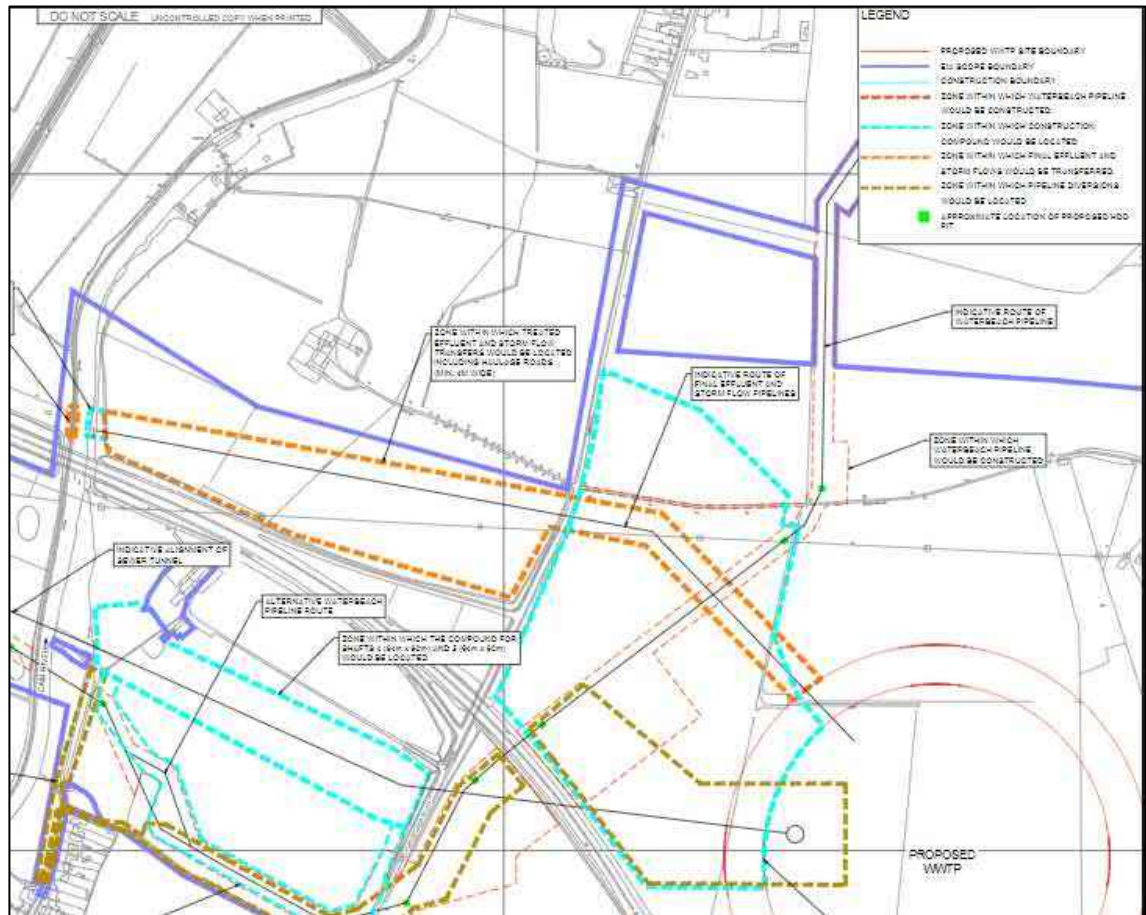


Figure 5-1: Except from parameter plan detailing 'zone within which'

The Rochdale Envelope approach

- 5.4.10 The Rochdale Envelope principle (see *R v Rochdale MBC ex parte Tew* (1999) and *R v Rochdale MBC ex parte Milne* (2000)) is an accepted way of dealing with uncertainty in preparing development applications. The 'Rochdale Envelope' approach is employed *“where the nature of the Proposed Development means that some details of the project have not been confirmed (for instance the precise dimensions of structures) when the application is submitted, and flexibility is sought to address uncertainty. Such an approach has been used under other consenting regimes (the Town and Country Planning Act 1990 and the Electricity Act 1989)”* (para 1.2, Advice Note Nine).
- 5.4.11 Where the details of the Proposed Development cannot be defined precisely, flexibility is sought, in alignment with the Rochdale/Design Envelope approach.
- 5.4.12 Flexibility is sought in terms of the physical extent of the Proposed Development, to allow for optimisation through detailed design whilst providing

a level of information sufficient to enable ‘the main,’ or the ‘likely significant’ effects on the environment to be assessed and the mitigation measures to be described. The extent of flexibility in terms of area of land required temporarily or permanently including heights and depths of structures is provided in the parameter plans presented at Appendix A and parameters set out in Chapter 2. The scope of assessment assumes a realistic worst case presented for each aspect and matter in terms of the potential impacts on the relevant receptor or resource. For example, the largest land use change area and disturbance would be assumed for biodiversity matters such as species and habitats whereas the minimum capacity of drainage may be the worst case for assessing the effects of surface water flooding. Where optionality remains, for example an alternative location for a structure or more than one process option, this is made clear, and the scope of assessment takes account of any options being taken forward.

- 5.4.13 At future stages of consultation, including the submission of Preliminary Environmental Information and the Environmental Statement, every attempt will be made to narrow the range of options and explain clearly which elements of the scheme have yet to be finalised and give reasons. The scheme parameters will be clearly defined in the draft DCO and therefore in the accompanying Environmental Statement. The EIA Scoping boundary will develop to become the Lateral and Vertical Limits of Deviation (LoD) presented in the DCO application. The LoD define the maximum extent within which the proposed Development can be built.
- 5.4.14 Lateral and vertical limits of deviation (LoD) will be introduced for the Proposed Development to define the maximum extent within which the WWTP and ancillary works can be built. Applying LoD is normal practice for Development Consent Orders as they allow for the refinement of the preliminary design, on which the DCO plans are based, during the detailed design stage. For the Proposed Development, the extent and size of vertical and horizontal LoD will be specified in the ES. The environmental assessments would take any LoD into account.
- 5.4.15 It is acknowledged that if the proposed development changes substantially during the EIA process, prior to application submission, there may be a need to request a new scoping opinion.

TEMPORAL SCOPE OF ASSESSMENT

Timescales and assessment years

- 5.4.16 To undertake a robust EIA which considers the likely significant effects during construction and operation for the Proposed Development, it is necessary to establish the timeframes in which those significant effects are most likely to happen, thereby defining the temporal scope of the project. Such timescales will vary from aspect to aspect, i.e. some aspects may base their assessment on

fixed assessment years, whilst others will base their assessment on longer durations such as the entirety of the Construction Phase.

Construction Phase effects

- 5.4.17 For the assessment, these effects will be taken to be those for which the source begins and ends during the construction and commissioning stages prior to the proposed WWTP becoming fully operational as set out in Chapter 2 Project Description. This covers sources of impacts such as construction traffic, noise and vibration from construction activities, dust generation, site runoff, mud on roads, risk of fuel/oil spillage, and the visual intrusion of plant and machinery on-site which could result in significant effects. Some aspects of construction related effects will last for longer than others, for example impacts related to the construction mobilisation stage are likely to be relatively short in duration in respect of the whole construction period, whereas the construction of infrastructure and landscaping activities resulting in temporary land use change are likely to persist throughout the entire construction period.
- 5.4.18 The assumed assessment years for construction are from 2024 until 2028.
- 5.4.19 During construction of the proposed WWTP, the existing WWTP will remain fully operational. Consideration will be given to the combined effects of operation of the existing WWTP alongside the construction and commissioning (as commissioning is within the Construction Phase) of the proposed WWTP.
- 5.4.20 The approach will be to clearly define the project design parameters and base assessments on a realistic worst-case scenario. Information regarding the likely temporal and spatial RWCS for the Construction Phase is presented in Table 5-2. Details of specific design parameters relating to these scenarios is provided within Chapter 2, Project Description, and referenced within chapters 6 to 21.

Table 5-2: Summary of Construction Phase Realistic Worst-Case Scenarios

Construction Phase RWCS		
Aspect	Temporal	Spatial
Agricultural Land	Peak year of land temporarily required for construction	Maximum extent of land temporarily required for construction
Air Quality	Peak year of construction traffic and activities	Maximum extent of land temporarily required for construction Maximum number and/or extent of transport links used during the Construction Phase
Biodiversity	Peak year of land temporarily required for construction	Maximum extent of land temporarily required for construction
Carbon	Entirety of construction	Emissions from construction activities within maximum extent of land temporarily required for construction
Climate Resilience	Not applicable, scoped out for Construction Phase.	Not applicable, scoped out for Construction Phase.

Construction Phase RWCS

Community	Peak year of construction traffic and activities	Maximum extent of land temporarily required for construction
Health	Peak year of construction traffic and activities	Maximum extent of land temporarily required for construction
Historic Environment	Peak year of construction activity in terms of temporary structures and peak earthworks	Maximum extent of ground disturbance (depth and area) Peak visual change in terms of temporary structures, e.g. cranes
Land Quality	Not applicable, the aspect of land quality is scoped out	Not applicable, the aspect of land quality is scoped out
Landscape and Visual	Peak year of construction activity in terms of temporary structures and peak earthworks	Peak visual change in terms of temporary structures, e.g. cranes
Major Accidents and Disasters	Entirety of Construction Phase	Maximum extent of land temporarily required for construction
Materials, Resources and Waste	Peak year of construction activity in terms of materials deliveries	Maximum extent of land temporarily required for construction
Noise and Vibration	Peak year of construction traffic activities	Maximum extent of land temporarily required for construction
Odour	Commissioning of the proposed WWTP in combination with the existing WWTP operating	Not applicable
Traffic and Transport	Peak year of construction traffic and activities	Maximum number and/or extents of transport links affected during Construction Phase
Water Resources	Peak year of construction activities in terms of earthworks and excavations for the Transfers zone.	Maximum extent of ground disturbance (depth and area)

Operational Phase (including decommissioning of the existing Cambridge WWTP) effects

- 5.4.21 For the assessment, these are the effects that, start once the proposed WWTP is commissioned and fully operational and includes the effects of the physical presence of the infrastructure, its operation, use and maintenance, including the permanent change in land use.
- 5.4.22 For most topics, the assessment of operational effects will be the first full 12 months of operation (excluding any commissioning period for the proposed WWTP as this is part of the Construction Phase). The proposed WWTP proposes to become fully operational in 2028, therefore the assessment year for the Operational Phase is 2028. Where this is not the case, this has been indicated within the individual topic methodologies.

- 5.4.23 For certain topics it may also be necessary to consider additional assessment years. For example, when assessing visual effects it is common to make an assessment based on Year 15 of operation, in addition to Year 1 of operation, in order to account for the establishment and maturation of any proposed mitigation landscaping. Where this is the case, this will be indicated within individual topic methodologies.
- 5.4.24 The design capacity of the proposed WWTP is expected to accommodate forecast housing growth to around 2050. There is flexibility and capacity within the operational footprint of the Proposed Development to allow for future expansion ensuring the proposed development can accommodate growth up to 2080. Future expansion after 2050 falls outside of the scope of the EIA.
- 5.4.25 Decommissioning of the existing Cambridge WWTP would start leading up to the point when the proposed WWTP is commissioned and fully operational. As set out in Chapter 2 Project Description this is expected to include the draining down and cleaning of existing tanks (including the disposal/treatment of any waste), making the plant mechanical and electrically safe, preventing heat generating equipment from being operated and prevention of rainwater storage in open top tanks. For the assessment, these are the effects that start during operation of the proposed WWTP but are temporary, short-term and confined to the existing Cambridge WWTP. Demolition of structures and site preparation for the site's redevelopment are outside of the scope of the DCO and will be carried out by the site developer in accordance with a separate planning permission (which is included in the cumulative effects assessment).
- 5.4.26 The approach will be to clearly define the project design parameters and base assessments on a realistic worst-case scenario identified for each receptor/topic group. Information regarding the likely temporal and spatial RWCS for the Operational Phase is presented in Table 5-3. Details of specific design parameters relating to these scenarios is provided within Chapter 2: The Proposed Development, and referenced within chapters 6 to 21.

Table 5-3 Summary of Operation Phase Realistic Worst-Case Scenarios

Operation Phase RWCS		
Aspect	Temporal	Spatial
Agricultural Land	Year 1 of Operation	Maximum extent of easements and land required permanently
Air Quality	Year 1 of Operation	Maximum extent of plant and machinery (most proximate to receptors) within the proposed WWTP
		Maximum number and/or extent of transport links used during operation phase

Operation Phase RWCS

Biodiversity	Year 1 of Operation	Minimum extent of land for habitat creation Maximum extent of land required permanently
Carbon	Year 1 of Operation and projections for operation up to 2050	Emissions from operational activities within maximum extent of land permanently required
Climate Resilience	Climate projections data for the 2080s (2070-2089) using the 10 th and 90 th percentiles (as most relevant) under Representative Concentration Pathway (RCP) 8.5 (the highest emissions scenario available in UKCP18) will be used for this assessment	Maximum future flood outline from Flood Risk Assessment
Community	Year 1 of Operation	Maximum extent of land required permanently during operation
Health	Year 1 of Operation	Maximum extent of land required permanently during operation
Historic Environment	Year 1 of Operation	Maximum heights and extents of permanent structures
Land Quality	Not applicable, the aspect of land quality is scoped out	Not applicable, the aspect of land quality is scoped out
Landscape and Visual	Year 1 of Operation	Maximum heights and extents of permanent structures
Major Accidents and Disasters	Entirety of Operation phase	Variable depending on risk (e.g. 1km safeguarding area for local airport)
Materials, Resources and Waste	Year 1 of Operation	Not applicable
Noise and Vibration	Year 1 of Operation	Maximum extent of plant and machinery (most proximate to receptors) within the proposed WWTP
Odour	Year in which existing WWTP is decommissioned in combination with operation of the proposed WWTP	Maximum extent of plant and machinery (most proximate to receptors) within the proposed WWTP
Traffic and Transport	Year 1 of Operation	Maximum number and/or extent of transport links used during operation phase
Water Resources	Any periods during Operation in which design event storm water discharges occur	Minimum storage capacity prior to going to river

Decommissioning

- 5.4.27 Decommissioning of the proposed WWTP is not assessed in the EIA because there is currently no intention to decommission the proposed WWTP at any point in the future; it is more likely that further upgrades would be undertaken as required, to maintain treatment capacity in the catchment in perpetuity. Within this period, mechanical and electrical equipment would however require maintenance and as such, units such as electrical panels or pumps within buildings would have a shorter design life of between 10 and 20 years. Space for possible future expansion has been allowed for within the WWTP and STC operational areas.

Duration of effects

- 5.4.28 Timescales associated with these effects, regardless of phase are as follows:
- Short-term – endures for up to 12 months after construction or decommissioning
 - Medium-term – endures for 1-5 years
 - Long-term – endures for 5-15 years
 - Permanent effects – endures for more than 15 years and / or effects which cannot be reversed (e.g. where buried archaeology is permanently removed during construction)

BASELINE CONDITIONS

- 5.4.29 To identify the effects of the Proposed Development on the environment, it is important to understand the environment that would be affected by it (the 'baseline conditions'). Understanding the baseline allows any changes that would be caused by the Proposed Development, to be predicted.
- 5.4.30 Environmental data to inform the scoping request has been obtained through desktop studies and site surveys, some of which are ongoing or planned. Further studies, field surveys and consultation will refine the value of the baseline environmental resource reported in the ES. Baseline conditions denote the importance, value or sensitivity of a particular receptor or resource.

FUTURE BASELINE

- 5.4.31 Whilst existing baseline data form a 'current baseline', it is important within the EIA to consider how the environment is likely to change, in any event, in the absence of the project. For example, traffic levels typically increase year-on-year. This is the 'future baseline'.
- 5.4.32 The identification of future baseline conditions involves predicting changes that are likely to happen in the intervening period between the preparation of the EIA and construction/operation of the Proposed Development, for reasons unrelated to the Proposed Development. The future baseline is not only been derived

from assessing likely natural changes in the environment but also by considering the presence and effects of newly built, partially built or fully operational development and their occupiers as advised within Advice Note 179. Advice Note 17 states that ‘Where other projects are expected to be completed before construction of the proposed NSIP and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline and may be considered as part of both the construction and operational assessment. The ES should clearly distinguish between projects forming part of the dynamic baseline and those in the CEA.’

- 5.4.33 The EIA will assess effects associated with the proposed Development and do this against a ‘future baseline’ for both construction and operation. Different future baselines may exist for different assessment years during the construction and Operational Phases. This will entail taking current conditions and committed development into consideration and using experience and professional judgment.
- 5.4.34 Developments proposed to be within the future baseline are set out in Table 5-5 alongside cumulative schemes, in order to make this distinction clear, and shown on Figure 5-2 in Section 5.5. These are:
- S/2075/18/OL: Up to 4500 dwellings, business, retail, community, education and leisure uses, Waterbeach New Town East;
 - S/0791/18/FL: Relocated railway station comprising platforms, pedestrian bridges, access route, cycle routes, Waterbeach New Town;
 - S/0559/17/OL: Up to 6500 dwellings, business, retail, community, leisure, education and sports use, Waterbeach New Town;
 - S/2682/13/OL: Up to 1300 dwellings, school, food store, community and open spaces, Marleigh;
 - 18/0481/OUT: Up to 1200 dwellings, retail, education and community facilities on land north of Cherry Hinton; and
 - 20/04010/FUL: One and two storey building containing offices, custody suite and associated facilities South of Milton Park and Ride.
- 5.4.35 Due to the inevitable uncertainty of predicting effects based on future baseline conditions, a reasonable worst-case approach has been adopted. Where future development may introduce new environmental receptors that could be significantly affected, these will be addressed in the EIA. In the event that the expected development does not occur, any associated proposed mitigation can be amended at a later date to reflect the change from the future baseline position.

9 Advice Note 17: Cumulative effects assessment (version 2 August 2019). Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>

ASSESSING ENVIRONMENTAL EFFECTS

Assessment of construction effects

- 5.4.36 The identification of construction effects will be made on the basis of existing knowledge, techniques and equipment. A 'realistic worst-case' scenario is used with respect to the envisaged construction methods, location (proximity to sensitive receptors based on parameter plans at Appendix A), phasing and timing of construction activities as set out in the Project Description.
- 5.4.37 The assessment of construction effects will assume the implementation of standard good practice measures, for example, the use of temporary noise barriers to reduce noise levels and the management of dust on haul roads, etc. The purpose of this is to focus on effects specific to the Proposed Development, rather than generic construction effects that can be easily addressed using generic best practice mitigation measures. Construction assumptions, including what has been assumed in terms of good practice measures, will be set out within the Code of Construction Practice (CoCP). The ES will identify and assess construction effects that are likely to remain after these mitigation measures are in place.

Effect significance

- 5.4.38 An environmental effect is typically a function of the 'importance' 'value' or 'sensitivity' of the receptor or resource and the 'magnitude' or 'scale' of the impact. Criteria are specific to each aspect and are presented in the aspect sections of this Scoping report (Chapters 6 to 21).
- 5.4.39 Effects determined to be slight or neutral are not deemed to be significant, and as such will not be reported in detail in the ES and will not require specific mitigation. The exception to this is where the combination of multiple slight effects has the potential to lead to a significant (i.e. moderate or above) cumulative effect.
- 5.4.40 Not all the environmental aspects (meaning environmental topics) will use the above criteria or approach. For example, some aspects do not use a matrix-based approach but instead use numerical values to identify impacts (e.g. noise and vibration) and some aspects do not have agreed methods of assessment or scales of measurement for either value or sensitivity (e.g. geology and soils). Therefore, each environmental aspect specialist will use the information provided above, their aspect specific guidance as well as their professional judgement to assess the significance of effects.

Mitigation measures

- 5.4.41 Measures will be identified to avoid or reduce adverse effects identified during the EIA process, following the hierarchy below:

- **Avoidance** – incorporate measures to avoid the adverse effect, for example, alternative design options or modifying the proposed programme to avoid environmentally sensitive periods.
- **Reduction** – incorporate measures to lessen the effect, for example, fencing off sensitive areas during construction and implementing a CEMP to reduce the potential impacts from construction activities.

5.4.42 IEMA’s guidance, Shaping Quality Development (2015)¹⁰, identifies three types of mitigation:

- **Primary (inherent)** – these are measures which are an intrinsic part of the project design. They will be described in the design evolution narrative in the ES and included within the project description. An example of this would be reducing the height of a development to reduce visual impact.
- **Secondary (foreseeable)** – these are measures which require management and activity in order to achieve the anticipated outcome. These mitigation measures will be presented in the form of a series of management plans to be secured through DCO requirements. For example, a Landscape and Ecological Management Plan will set out how habitats and planting created for mitigation would be managed to ensure effective mitigation is delivered long-term. The proposed management plans are as follows and details of control measures proposed for inclusion within these plans is provided in Chapter 2: The Proposed Development and Chapters 6 to 21:
 - Code of Construction Practice
 - Construction Traffic Management Plan
 - Construction Worker Travel Plan
 - Construction Flood Risk / Water Quality Management Plan
 - Site Waste Management Plan
 - Soils Management Plan
 - Operational Odour Management Plan
 - Operational Worker Travel Plan
 - Landscape and Ecological Management Plan
- **Tertiary (inexorable)** – these are measures that will be required regardless of any EIA assessment, as they are imposed, for example, as a result of legislative requirements and/or standard sectoral practices. For example, considerate contractors’ practices that manage activities which have potential nuisance effects or applying emission controls to an industrial stack to meet the requirements of the Industrial Emissions Directive (Directive 2010/75/EU).

¹⁰ [REDACTED]

- 5.4.43 Primary and tertiary measures will be taken into account prior to the assessment of environmental effects. Secondary measures will be identified in the topic chapters, together with the means by which they will be secured. Effects that remain after primary, secondary and tertiary mitigation are referred to as residual effects. The statement of likely significant residual effects after mitigation is therefore the key outcome of the assessment.
- 5.4.44 More details of the methods to be used for each aspect are provided in Chapters 6 to 21 of this Scoping report.

Compensation

- 5.4.45 Where it is not possible to avoid or reduce an adverse effect then compensation measures will be considered, for example the provision of replacement of habitat to replace that lost to the Proposed Development.

Offsetting

- 5.4.46 Where it is not possible to compensate or replace a loss, provision of an alternative may be the next best approach, for example contributing to habitat creation or management regimes in a location outside of the Proposed Development boundary. This approach acknowledges that the impact cannot be avoided, and that compensation will not suffice.

Enhancement

- 5.4.47 Enhancement measures may be incorporated into the Proposed Development. Enhancement measures are considered to be over and above any avoidance, mitigation and compensation measures required to neutralise any adverse effects of the Proposed Development.

5.5 Interaction and accumulation of effects

- 5.5.1 In accordance with the EIA Regulations, 'cumulative effects' will be assessed. By definition, these are effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together (i.e. cumulatively) with the Proposed Development.
- 5.5.2 For the cumulative impact assessment, two types of impact will be considered:
- The combined effect of individual impacts from the Proposed Development, for example noise or pollutants on a single receptor (these will be referred to as 'effect interactions'); and
 - The combined effects of several development schemes which may, on an individual basis be insignificant but, cumulatively with the Proposed Development, have a new or different likely significant effect.
- 5.5.3 The methodology for assessment of these two types of effects is described below.

IN COMBINATION EFFECTS FROM THE PROPOSED DEVELOPMENT ON RECEPTORS

- 5.5.4 There is no established EIA methodology for assessing and quantifying effect interactions that lead to combined effects on sensitive receptors, however the European Commission (EC) has produced guidelines¹¹ for assessing effect interactions *“which are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project...”*.
- 5.5.5 The EIA will predict beneficial and adverse effects during construction and operation of the Proposed Development, which are classified as minor, moderate or major. Several effects on one receptor or receptor group could theoretically interact or combine to produce a combined significant overall effect. The defined residual effects of the Proposed Development will be used to determine the potential for effect interactions that lead to combined effects on local communities as this is the only receptor group whereby potential impacts are considered in the EIA on an aspect basis, e.g. noise, visual, health, traffic, access, odour, when they all could combine to affect people in the local community. All other receptors such as ecological receptors, water resources, the landscape area assessed in terms of the predicted change or impact on the resource or receptor, considering all impacts from a variety of sources e.g. changes to habitats, changes to water quality or volumes, change in view.
- 5.5.6 The Community assessment is an in-combination assessment drawing together all the residual effects on local communities and presenting them together such as noise, air quality, traffic and visual effects at a particular location, impacting the amenity of communities, including users of open and recreational spaces. The scope for the Community assessment is presented in Chapter 11: Community.

CUMULATIVE EFFECTS ASSESSMENT OF THE PROPOSED DEVELOPMENT WITH OTHER SCHEMES

- 5.5.7 The requirement for cumulative effects assessment responds to Regulation 5(2), 14(2) and Schedule 4(5) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
- 5.5.8 Schedule 4(5) requires “A description of the likely significant effects of the development on the environment resulting from, inter alia –
- 5.5.9 ... (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of

¹¹ Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (May 1999). Available at [\[REDACTED\]](#)

particular environmental importance likely to be affected or the use of natural resources;”

- 5.5.10 This section of the Scoping report sets out how it is intended to approach the assessment of cumulative effects (CEA) with reference to the Planning Inspectorate’s guidance advice note seventeen.
- 5.5.11 The EIA Regulations indicate that the approach to cumulative assessment should focus on the effects of Proposed Development with other existing, part-built and/or approved development. For clarity, the proposed assessment will include existing development that is complete and operational at the time when construction of the Proposed Development commences as part of the baseline. Development that is approved, but not yet developed or in operation, will be included in the ‘future baseline’ scenario.
- 5.5.12 The potential for cumulative effects will be considered with regard to specific environmental receptors and the characteristics of the natural environment. This requires a judgement to be made on which other developments have the potential for cumulative effects when the construction and/or Operational Phases could be concurrent, and where there are sensitive receptors common to both developments within a defined geographical area described as the Zone of Influence (Zol).
- 5.5.13 The assessment will consider each of the following categories of project to ascertain whether potential significant environment effects are likely: approved development that has not yet been implemented; other applications for development that are under consideration; and, those for which an EIA scoping request has been made.
- 5.5.14 Other projects for which less detail is available to make a judgement are those that are identified in development plans or frameworks for future development approvals. There is likely to be less clarity on when such projects may be implemented, or what the baseline situation will be at some future point in time.
- 5.5.15 The consideration of cumulative effects in the ES will be of a qualitative nature for many of the environmental aspects scoped into the assessment. Where it is necessary to have a descriptive consideration of cumulative effects, it is not proposed to attribute levels of effect or significance in the assessment.
- 5.5.16 The baseline environment set out in the technical chapters of the ES will include other projects that are expected to be completed at the time when construction of the Proposed Development commences, which is envisaged to be 2024. This baseline position will be used when considering the potential cumulative effects of the Proposed Development and the other developments in the Zol. Clearly there is a point at which the addition of other projects cannot be incorporated in the assessment prepared ready for submission. A response is sought from the Planning Inspectorate to the proposal to define developments for CEA the later

of four months prior to planned DCO application date or the end of the final statutory consultation period.

- 5.5.17 The Planning Inspectorate’s advice note seventeen provides a methodology to approaching CEA in the context of NSIPs. The Planning Inspectorate encourages applicants to follow this methodological approach where it is appropriate to do so, and it is intended to adopt this approach where possible.
- 5.5.18 This Scoping report provides the first step of Stage 1 of the suggested methodology, to establish the Zol in respect of each of the environmental aspects as set out in recognised guidance (see Table 5-4).

Table 5-4: Proposed zones of influence (Zol) for environmental aspects to be assessed

Aspect	Zone of influence
Agricultural Land	Construction – farm holdings wholly or partly within the Site.
	Operation – farm holdings wholly or partly within the Site.
Air Quality	Construction – 350m from the Site and 200m from roads meeting the EPUK assessment criteria due to increase in vehicles from construction traffic.
	Operation – 200m from roads meeting the EPUK assessment criteria due to changes in operational traffic.
	If substantial energy plant (CHP, boiler plant) is included within final design, emissions will be assessed for up to 10km from the Site.
Biodiversity	International statutory designated sites – 10km from the Site.
	National statutory designated - 10km from the Site.
	National non-statutory designated sites – 5km from the Site.
	Waterbodies with potential for great crested newt – 250m from the Site.
	Ancient Woodlands – 200m from the Site.
	Habitats of Principal Importance – 100m from the Site.
	Protected species and Species of Principal Importance – 100m to 300m from the Site, depending on species.
Desk Study - Results from a biological records search undertaken to obtain records of protected or notable species within a 5km radius of a central point (grid reference: TL 49740 61214) in the Core Zone are discussed within this section. Records were provided by the Cambridgeshire and Peterborough Environmental Records Centre (CPERC).	
Community and Health	Construction – PRoW, business impacts: developments within 1km of site boundary and pipeline routes
	Construction: PRoW, business impacts – developments within 1km of the Site.
	Construction employment and employee spending – major development sites within the local authority area that are likely to have a comparable employee base.
	Operation – PRoW: developments within 500m for the Proposed Development site Operation: PRoW – developments within 500m of the Site.

Aspect	Zone of influence
	Local spending – employment-generating Proposed Developments of comparable size and skillsets within the local authority area.
Historic Environment	1km from the Site.
Land Quality	250m from the Site.
Landscape and Visual Effects	2km from the Site.
Material Resources	<p>Construction –</p> <p>Materials: Sources of raw and secondary materials within Cambridgeshire and East of England.</p> <p>Waste: Waste management facilities within 10km of the Site.</p> <p>Operation – no impact operationally due to infrequent use of materials and low generation of waste from maintenance activities</p>
Noise and Vibration	<p>Construction – 300m from any construction works areas (including the main treatment site, pipelines, access roads and construction compounds).</p> <p>Operation – Area to include the closest noise sensitive properties to the main treatment site and any new fixed noise generating noise plant or equipment (no greater than 2km from the proposed WWTP boundary or other new plant and equipment).</p>
Odour	The extent of the odour study area is expected to be contained within 3km of the EIA Scoping boundary.
Traffic and Transport	<p>Construction – the local and strategic highway network where disruption or severance is cause by the location of construction works.</p> <p>Construction and operation – where traffic flows on highway links increase by 30% or more, and/ or where sensitive areas experience traffic flows increasing by 10%.</p>
Water Resources	<p>Waterbodies located within 1km of the EIA Scoping boundary</p> <p>An upstream reach of the Quy Water, together with a reach of the Bottisham Lode downstream of the Quy Water, are located within 1km of the boundary for zones comprising the EIA Scoping boundary. The study area will, however, be extended to include the entire length of the Quy Water between these upstream and downstream areas.</p> <p>The entirety of the Stow-cum-Quy SSSI</p> <p>Some flood zones along the western side of the River Cam extend more than 1km from the boundary for zones comprising the EIA Scoping boundary. The full extent of these flood zones has been included in the study area.</p>

5.5.19 Other developments identified and included in the assessment of cumulative effects are categorised into three principal tiers based upon PINS methodology, which assigns each according to the level of detail that is likely to be available and therefore the certainty that can be attributed to potential effects.

5.5.20 To establish which of the above may give rise to potential cumulative effects, each environmental aspect scoped into the assessment has been considered in relation to the temporal scope, scale and nature of the other developments identified in Stage 1, to determine which should be taken forward to Stage 2 and therefore be subject to CEA. Justification is provided for the exclusion of sites from the shortlist of other developments taken forward to CEA. A matrix is provided in Appendix B showing the developments identified at Stage 1 and 2. Stage 2 developments are shown on Figure 5-2. This matrix and figure are based on information available as of 31 August 2021. This will continue to be monitored over the course of the project and updated as required.

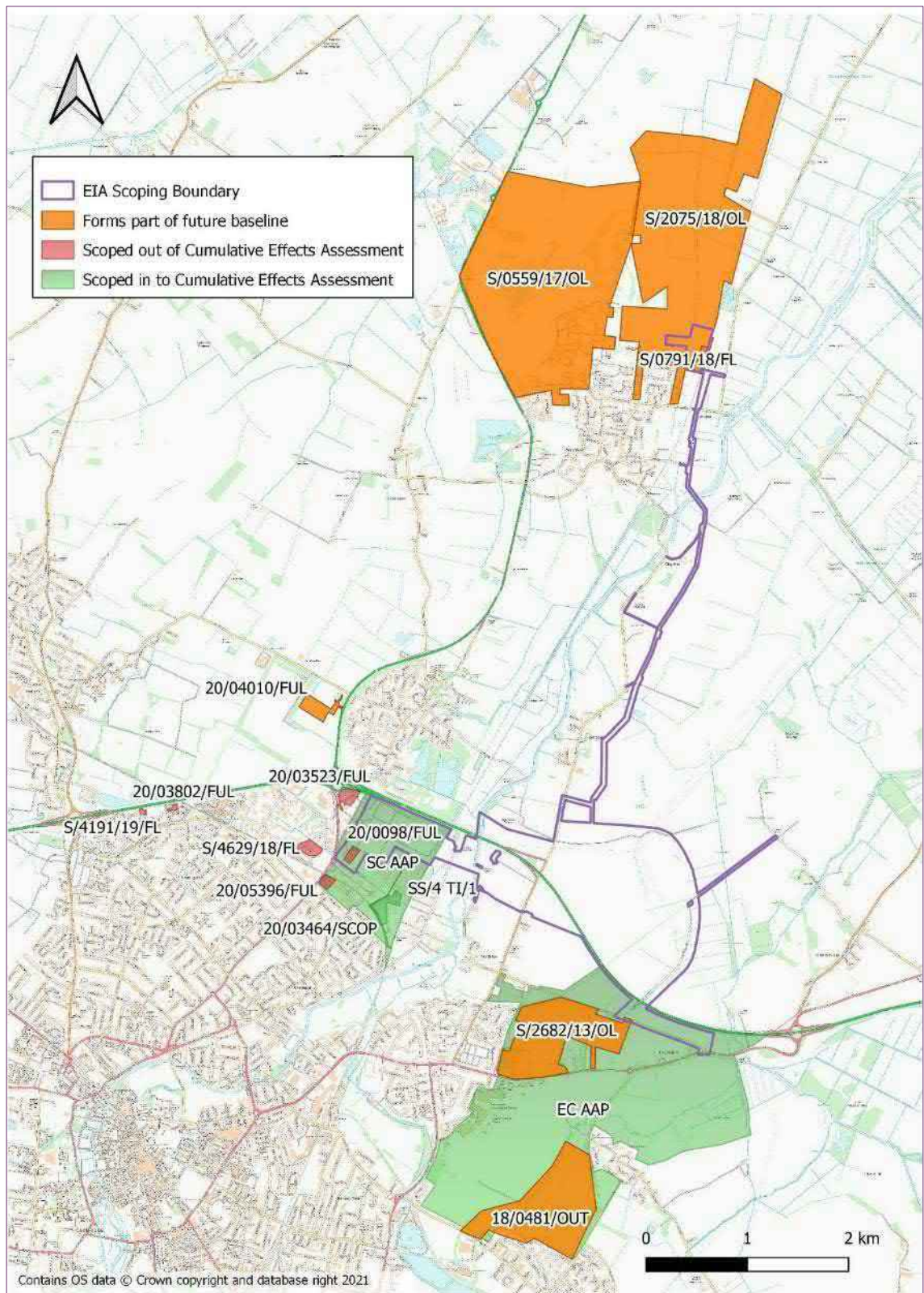


Figure 5-2: Proposed developments considered in cumulative effects assessment

5.5.21 Stages 3 and 4 will be undertaken alongside preparation of the ES after the formal Scoping Opinion has been received. In summary, Stage 3 will consist of information gathering and documentation in respect of the shortlisted developments and will be used to inform the CEA before Stage 4 and the assessment process. The assessment process will consider the shortlisted developments and describe cumulative effects that may arise.

Table 5-5: Cumulative Effects Matrix

Stage 1: Application reference ID	Applicant for 'other development' and brief description	Distance from EIA Scoping boundary	Status	Tier	Within ZOI?	Take to Stage 2?	Stage 2: Overlap in temporal scope?	Scale and nature of development likely to have significant impact? Other factors?	Take to Stage 3 / 4?
S/2075/18/OL	OPP for development of up to 4500 dwellings, business, retail, community, education and leisure uses. Waterbeach New Town East	Within	Application submitted 30/05/2018, Resolution to grant, awaiting decision.	Tier 1	Falls within Zone of Influence for all environmental aspects	Yes	Yes 2022 onwards 200 units p.a. between 2024-2028	Yes Large scale development site (243ha). Construction to commence prior to the construction of the proposed WWTP. Rather than inclusion as a cumulative scheme, this development would form part of the future baseline.	No
S/0791/18/FL	Relocated railway station comprising platforms pedestrian bridges access road pedestrian and cycle routes car and cycle parking with other associated facilities and infrastructure	Within	Application granted permission 09/07/2020.		Falls within Zone of Influence for all environmental aspects.	Yes	Yes	Construction to commence prior to the construction of the proposed WWTP. Rather than inclusion as a cumulative scheme, this development would form part of the future baseline.	
S/0559/17/OL	OPP for up to 6500 dwellings, business, retail, community, leisure, education and sports use. Waterbeach New Town	590m	Application granted permission 27/09/2019. Reserved Matters application	Tier 1	Falls within biodiversity, community & health (PRoW), historic environment, landscape and	Yes	Yes – 2021 onwards 200 units between 2024-2028	Construction to commence prior to the construction of the proposed WWTP. Rather than inclusion as a cumulative scheme, this development would form part of the future baseline.	No

Stage 1: Application reference ID	Applicant for 'other development' and brief description	Distance from EIA Scoping boundary	Status	Tier	Within ZOI?	Take to Stage 2? 2?	Stage 2: Overlap in temporal scope?	Scale and nature of development likely to have significant impact? Other factors?	Take to Stage 3 / 4?
			granted 06/07/2021		visual, material resources (waste), and water (surface water and flood risk) ZOI.				
S/2682/13/OL	OPP for up to 1300 dwellings, school food store, community and open spaces. Marleigh	Within	Application granted 30/11/2016. Reserved Matters application granted 15/12/2020	Tier 1	Falls within Zone of Influence for all environmental aspects	Yes	Unlikely as possibly completed by 2024.	Yes Large scale consented development site (61ha). Likely to be fully built prior to construction of the proposed WWTP. Rather than inclusion as a cumulative scheme, this development would form part of the future baseline.	No
18/0481/OUT	OPP for up to 1200 dwellings, retail, education and community facilities. Land north of Cherry Hinton	1300m	Application granted 18/12/2020	Tier 1	Falls within biodiversity, landscape and visual, noise and vibration (operational), material resources and water (surface	Yes	Yes 2021 onwards	Yes Large scale consented development site (70ha). Construction to commence prior to the construction of the proposed WWTP. Rather than inclusion as a cumulative scheme, this development	No

<u>Stage 1:</u> Application reference ID	<u>Applicant for 'other development' and brief description</u>	<u>Distance from EIA Scoping boundary</u>	<u>Status</u>	<u>Tier</u>	<u>Within ZOI?</u>	<u>Take to Stage 2?</u>	<u>Stage 2: Overlap in temporal scope?</u>	<u>Scale and nature of development likely to have significant impact? Other factors?</u>	<u>Take to Stage 3 / 4?</u>
					water and flood risk) ZOI.			would form part of the future baseline.	
20/05396/FUL	FPP for erection of four commercial comprising Class E (commercial, business and service) to provide office, research and development and Class B8 uses. Trinity Hall Farm Industrial Estate Nuffield Road	160m	Application submitted 24/12/2020, awaiting decision.	Tier 1	Falls within Zone of Influence for all environmental aspects with the exception of agricultural land	Yes	unknown	This small-scale development (1.35ha) is only likely to influence traffic flows once built and during construction. These would be captured in the future growth prediction in the traffic assessment. No other likely cumulative impacts.	No
S/4629/18/FL	Hybrid application for demolition of gym trinity centre, and innovation centre and construction of hotel and commercial floorspace with outline for building of up to 7 stories with B1 floorspace. 24 Cambridge Science Park	140m	Application granted permission 20/12/2019.	Tier 1	Falls within Zone of Influence for all environmental aspects with the exception of agricultural land	Yes	Unknown	This small scale consented development (2.55ha) is only likely to influence traffic flows once built and during construction. These would be captured in the future growth prediction in the traffic assessment. No other likely cumulative impacts.	No
20/04010/FUL	One and two storey building containing	865m	Application granted	Tier 1	Falls within Zone of Influence for	Yes	Unlikely (likely to be	No.	No

Stage 1: Application reference ID	Applicant for 'other development' and brief description	Distance from EIA Scoping boundary	Status	Tier	Within ZOI?	Take to Stage 2? Stage 2?	Stage 2: Overlap in temporal scope?	Scale and nature of development likely to have significant impact? Other factors?	Take to Stage 3 / 4?
	offices, custody suite and associated facilities South of Milton Park and Ride		permission 03/2021.		all environmental aspects except for land quality and agricultural land.		completed before 2024)	Small scale consented development (5ha). Likely to be fully built prior to construction of the proposed WWTP. Rather than inclusion as a cumulative scheme, this development would form part of the future baseline.	
20/03464/SC OP	Request for formal scoping opinion for mixed use development. Approximately 700 private rental sector (PRS) apartments; Approximately 1,450sqm of retail use (Use Class A1/A2/A3/A4/A5); Approximately 11,000sqm of office space (Class B1(a)); .A specialist Maths College ."Meanwhile" uses; and .Landscaping and	220m	Scoping report issued 3 08/10/2020	Tier	Falls within Zone of Influence for all environmental aspects with the exception of agricultural land	Yes	Unknown	Yes Large scale development (4.29ha). Potential to give rise to cumulative effects across several environmental aspects.	Yes

Stage 1: Application reference ID	Applicant for 'other development' and brief description	Distance from EIA Scoping boundary	Status	Tier	Within ZOI?	Take to Stage 2: Stage 2?	Stage 2: Overlap in temporal scope?	Scale and nature of development likely to have significant impact? Other factors?	Take to Stage 3 / 4?
	associated works Cowley Road								
20/03523/FUL	Erection of 5 storey and 6 storey building for commercial/business use, transport hub and carpark with demolition of existing building. St John's Innovation Centre	100m	Application submitted 17/08/2020, awaiting decision.	Tier 1	Falls within Zone of Influence for all environmental aspects with the exception of agricultural land	Yes	Unknown	No. Small scale consented development (2.56ha). Only likely to influence traffic flows once built and during construction. These would be captured in the future growth prediction in the traffic assessment. No other likely cumulative impacts.	No
20/0098/FUL	Application for continued use of the site as a depot until 19 th December 2023 Cowley Road Park and Ride site	Within	Application granted 07/2020	Tier 1	Falls within Zone of Influence for all environmental aspects	Yes	Operation to cease from December 2023.	Will cease operation prior to construction of the proposed development.	No
20/03802/FUL	Residential development of 75 dwellings along with access, car parking, landscaping and all associated infrastructure. Development Parcel L2 Topper Street Orchard Park	1640m	Application submitted 11/9/20, awaiting decision	Tier 1	Falls within biodiversity, landscape and visual, noise and vibration (operational), material resources and water (surface		Unknown	No Small scale development (0.4ha). Given location and nature of the development, only likely to influence traffic flows once built and during construction. These would be captured in the future growth prediction in the traffic	No

Stage 1: Application reference ID	Applicant for 'other development' and brief description	Distance from EIA Scoping boundary	Status	Tier	Within ZOI?	Take to Stage 2? Stage 2? Overlap in temporal scope?	Scale and nature of development likely to have significant impact? Other factors?	Take to Stage 3 / 4?
					water and flood risk) ZOI.		assessment. No other likely cumulative impacts.	
S/4191/19/FL	Erection of new private rented residential block comprising a total of eighty studio one and two bedroom apartments Neal Drive Orchard Park	1900m	Submitted 4/12/19, awaiting decision	Tier 1	Falls within biodiversity, landscape and visual, noise and vibration (operational), material resources and water (surface water and flood risk) ZOI.	Yes Unknown	No Small scale development (0.31ha). Given location and nature of development, only likely to influence traffic flows once built and during construction. These would be captured in the future growth prediction in the traffic assessment. No other likely cumulative impacts.	No
SS/4 TI/1	The area, shown on the South Cambridgeshire Local Plan Policies Map, and illustrated in Figure 6, is allocated for high quality mixed- use development, primarily for employment within Use Classes B1, B2 and B8 as well as a range of supporting uses, commercial, retail, leisure and residential uses	Within	Adopted allocation	Tier 3	Falls within Zone of Influence for all environmental aspects	Yes Unknown	Yes Large scale development (18ha). Potential to give rise to cumulative effects across several environmental aspects.	Yes

<u>Stage 1:</u> Application reference ID	Applicant for 'other development' and brief description	Distance from EIA Scoping boundary	Status	Tier	Within ZOI?	Take to Stage 2?	<u>Stage 2:</u> Overlap in temporal scope?	Scale and nature of development likely to have significant impact? Other factors?	Take to Stage 3 / 4?
	(subject to acceptable environmental conditions).								
SC AAP	Same as 13	Within	Adopted allocation	Tier 3	Falls within Zone of Influence for all environmental aspects	Yes	Yes	Yes Large scale development (83ha). Potential to give rise to cumulative effects across several environmental aspects.	Yes
CE AAP	Cambridge East Area Action Plan. A new urban quarter of Cambridge of approximately 10,000 to 12,000 dwellings with appropriate employment, services, facilities and infrastructure.	Within	Adopted allocation	Tier 3	Falls within Zone of Influence for all environmental aspects	Yes	Unknown	Yes Large scale development (518ha). Potential to give rise to cumulative effects across several environmental aspects.	Yes

6 Agriculture and Soils

6.1 Introduction

- 6.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorate as 'matters' relevant to the aspect of agriculture and soils. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure that proportionate assessment is appropriately focused on aspects and matters where a likely significant effect may occur.
- 6.1.2 Several matters (resources and receptors) within this aspect are proposed to be scoped out of further assessment with justification provided based on, for example, the absence of a pathway from impact to the receptor, through consultation with the relevant statutory consultee or sufficient confidence in impact avoidance methods.

6.2 Matters (resources and receptors)

- 6.2.1 For the aspect of agriculture and soils, the matters, or resources and receptors, are:
- Agricultural soils;
 - Presence of arable crop or grass sward;
 - Farm buildings and infrastructure, such as irrigation pipelines and access tracks;
 - Farm dwellings; and
 - Other farm-related businesses.

6.3 Study area

- 6.3.1 The study area includes all agricultural land and farm holdings located wholly or partly within the EIA Scoping boundary and is shown on Figure-00 (within Appendix A).

6.4 Legislation, planning policy context and guidance

LEGISLATION

6.4.1 There is no applicable legislation specific to the assessment of impacts on agricultural land. Planning policy and guidance relating to agricultural land and pertinent to the Proposed Development comprises the following.

PLANNING POLICY

6.4.2 National planning policy of relevance to agricultural land, and pertinent to the Proposed Development are:

6.4.3 NPS for waste water¹² with particular reference to:

- Paragraph 4.8.8: Retention of the best and most versatile land within the agricultural industry. Proposed developments should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification), and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations; and
- Paragraph 4.8.16: The decision maker should ensure that justification is provided where applicants site their scheme on the best and most versatile agricultural land. It should give little weight to the loss of poor quality agricultural land (in grades 3b, 4 and 5), except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy.

6.4.4 NPPF¹³ with particular reference to:

- Section 15: Conserving and enhancing the natural environment (paragraph 174b, in relation to impacts on best and most versatile agricultural land).

6.4.5 Local planning policy of relevance to the Proposed Development includes:

6.4.6 The South Cambridgeshire Local Plan¹⁴ with particular reference to:

- Policy NH/3 (p114): States planning permission will not be granted for development which would lead to the irreversible loss of Grades 1, 2 or 3a agricultural land unless; Land is allocated for development in the Local Plan; or sustainability considerations and the need for the development are sufficient to override the need to protect the agricultural value of the land; and
- Policy CC/6 (p94): Management of soils on construction sites. Highlights the need to manage soils carefully on construction sites so as to minimise the amount generated as waste. In addition, any construction spoil reused within

12 The National Policy Statement for Waste Water (2012): Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-waste-water> Last Accessed: January, 2021.

13 The National Planning Policy Framework (2021): Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> Last Accessed: September 21, 2021.

14 South Cambridgeshire District Council (2018). *South Cambridgeshire Local Plan – Adopted 2018 (SCDC/LP/27.09.2018)*.

the development site should take account of the landscape character and avoid the creation of features alien to the topography.

6.4.7 Cambridge City Council Local Plan¹⁵ with particular reference to:

- Policy 8 (p37), which highlights the importance of the retention of best and most versatile land within the agricultural industry.

6.4.8 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036 with particular reference to:

- Policy 24 (p62). Entitled ‘Sustainable use of soils’, this identifies where mineral and waste development will be permitted, specifically in the context of best and most versatile land and peat.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

6.4.9 Planning policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation and methodology of the EIA. For the aspect of agricultural land and farm holdings, planning policy has influenced the EIA scope as follows:

- Mitigation – The national planning policies identify the need to retain the best and most versatile agricultural land for the continued and sustainable production of food and related products. Proposed developments should seek to minimise these impacts through the use of land in areas of poorer quality except where this would be inconsistent with other sustainability considerations. These policies emphasise the use of the Agricultural Land Classification (ALC) survey data as the key tool for achieving this and have been proposed as part of the EIA scope; and
- Mitigation – Local planning policies reiterate the above with regard to development of the best and most versatile agricultural land and seek to minimise the generation of soil as a waste product within construction projects. As such, the on-site re-use of soil generated by construction is a key element of the design vision for the proposed waste water treatment plant.

NATIONAL POLICY STATEMENT REQUIREMENTS

6.4.10 Table 6-1 sets out how the scope proposed in this chapter complies with the NPS for waste water¹².

Table 6-1: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.12.7 The impact of dust generation should be kept to a minimum during construction activities.	A Soil Management Plan (SMP) and Construction Environmental Management Plan (CEMP) will

¹⁵ Cambridge City Council (2018). *Cambridge Local Plan 2018*.

NPS requirement	Compliance of EIA scope with NPS requirements
<p>Paragraph 4.8.8 Use of the best and most versatile agricultural land (ALC Grades 1, 2, 3a) should be minimised where possible, preferably use land in areas of poorer soil quality (ALC Grades 3b, 4 and 5). Potential impacts on soil quality during construction should be identified and mitigation measures provided.</p>	<p>detail measures for reducing dust during soil handling construction activities.</p> <p>Further depth as to the scope and methodologies of an SMP is provided in section 6.7: Construction Phase Mitigation.</p> <p>The incorporation of an ALC survey to the project will help to identify ALC grades throughout the land required within both the construction and Operational Phases of the Proposed Development. This will allow a greater understanding of ALC grades across the EIA Scoping boundary than that possible through the provisional Defra baseline mapping described in 6.5.</p> <p>Based on ALC survey results, adverse impacts to soil structure and overall quality will be mitigated via the measures outlined in a SMP delivered through the CEMP.</p>
<p>Paragraph 4.14.3 Disposal of waste should only be considered where other waste management options are not available, or where it is the best overall environmental outcome.</p>	<p>The SMP (and CEMP) will provide guidance for the re-use of any surplus soil resources. Surplus topsoil, in particular, represents a valuable resource to be re-used, while surplus subsoils may have uses for landscaping or ecological mitigation.</p>
<p>Paragraph 4.15.12 Projects should assess any potential socio-economic changes in respect of any potential new issues compared to the existing baseline.</p>	<p>An Agricultural Impact Assessment (AIA) will be conducted to assess the severity of impacts on farm holdings wholly or partly within the EIA Scoping boundary. Please refer to Chapter 11: Community for assessment of socio-economic changes to the topic of Community beyond those impacting farm holdings situated wholly or partly within the EIA Scoping boundary.</p>

GUIDANCE

- 6.4.11 The 25 Year Environment Plan¹⁶ sets out government action to aid the natural world in regaining good health. The plan acts as a policy driver, calling for a more sustainable approach to aspects such as agriculture and land use. Key aims include improving soil health and restoring and protecting peatlands in the context of widespread soil degradation.

¹⁶ Department for Environment, Food and Rural Affairs, 2019. *25 Year Environment Plan*.

- 6.4.12 Safeguarding our Soils: A Strategy for England¹⁷ emphasises the sustainable use of soil as a non-renewable natural resource that provides ecosystem services and is threatened by intensive agriculture, pollution and urban development.
- 6.4.13 The National Planning Practice Guidance includes a dedicated section on natural environment¹⁸, which sets out the information local planning authorities may require in order to take account of the quality of agricultural land when making planning decisions.
- 6.4.14 ALC guidelines¹⁹ set out categories for land in England and Wales, based on physical or chemical properties that impose long-term limitations on agricultural use. This provides the industry standard framework for classifying land with respect to developments impacting agricultural land. The framework uses the following grade definitions:
- Grade 1 (excellent quality agricultural land). ‘Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality;
 - Grade 2 (very good quality agricultural land). ‘Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1’;
 - Grade 3 (good to moderate quality agricultural land). ‘Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2’;
 - Subgrade 3a (good quality agricultural land). ‘Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops’;
 - Subgrade 3b (moderate quality agricultural land). ‘Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year’;

17 Department for Environment, Food and Rural Affairs, 2009. *Safeguarding our Soils: A Strategy for England*.

18 National Planning Practice Guidance: Natural Environment. Accessible at: <https://www.gov.uk/guidance/natural-environment>

19 Ministry of Agriculture, Fisheries and Food, 1988. *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land*.

- Grade 4 (poor quality agricultural land). ‘Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g., cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land’; and
- Grade 5 (very poor quality agricultural land). ‘Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops’.

6.4.15 Grades 1, 2 and 3a are classified as best and most versatile land, denoting land which is ‘most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses²⁰’.

6.4.16 The British Standards BS3882 (Specification for topsoil)²¹, BS8601 (Specification for subsoil and requirements for use)²² and the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites²³ describe practical measures for stripping, stockpiling and reinstating soil. The latter also highlights the importance of utilising soil surveys – namely ALC surveys – to best characterise and mitigate impacts to soil quality.

6.5 Baseline conditions

6.5.1 The baseline conditions for agriculture and soils are described for the three zones within the EIA Scoping boundary as set out below.

6.5.2 For mapping of the provisional ALC grades²⁴ and National Soil Associations²⁵ described throughout this chapter, please refer to Figure 6-1.

BASELINE DATA COLLECTION

6.5.3 The approach to the collection of data in relation to soils is set out within Table 6-2.

Table 6-2: Baseline surveys by zone

Survey approach	Core Zone	Transfers Zone	Waterbeach corridor zone	Justification
ALC surveys Autumn 2021	Yes	No	No	Permanent change in land

20 Natural England, 2012. *Technical Information Note TIN049: Agricultural Land Classification: protecting the best and most versatile agricultural land.*

21 British Standard, 2015. *BS3882:2015: Specification for topsoil.*

22 British Standard, 2013. *BS8601:2013: Specification for subsoil and requirements for use.*

23 Department for Environment, Food and Rural Affairs, 2009. *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.*

24 Natural England, 2020. *Provisional Agricultural Land Classification (ALC).*

25 Hodge, C. A. H et al., 1966. *Soils of the district around Cambridge (1:63,360 coloured soil map).*

Survey approach	Core Zone	Transfers Zone	Waterbeach corridor zone	Justification
Pre-construction Soil Resource Survey (SRS) (to be completed when soil moisture content is appropriate – no surface water ponding / not during drier summer months)	Yes	No	No	use within Core Zone Use of outline SMP to define pre-construction surveys and stockpile testing for any material reuse (landscaping)
AIA (interviews with landowners and occupiers including details, where provided, of any agri-environmental proposals and confirmation of farm holdings)	Yes	No	No	AIA not necessary for Waterbeach corridor as there is no land permanently required and the easement rights sought in operation allow the same use as the baseline

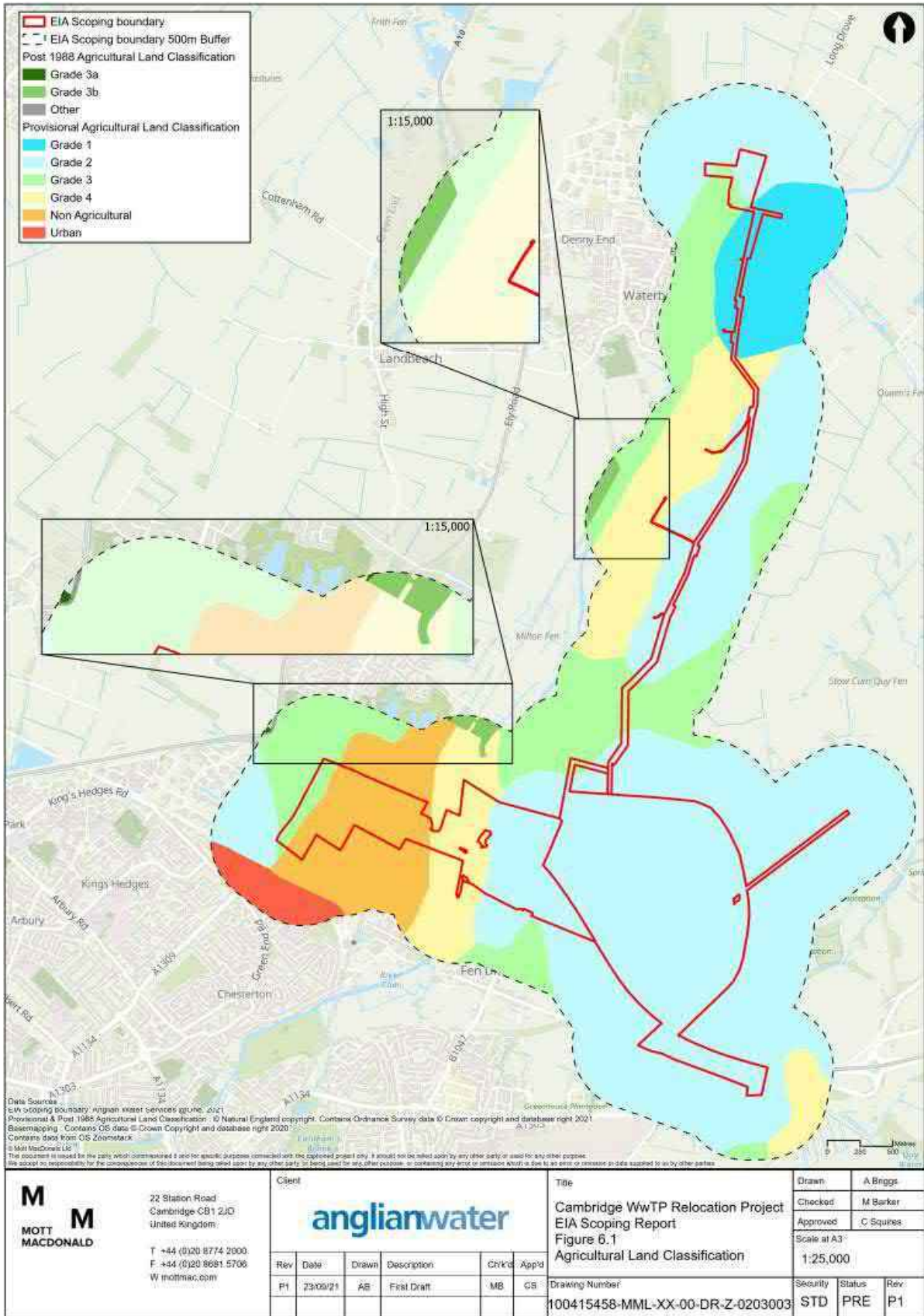


Figure 6-1: Provisional ALC grades within study area

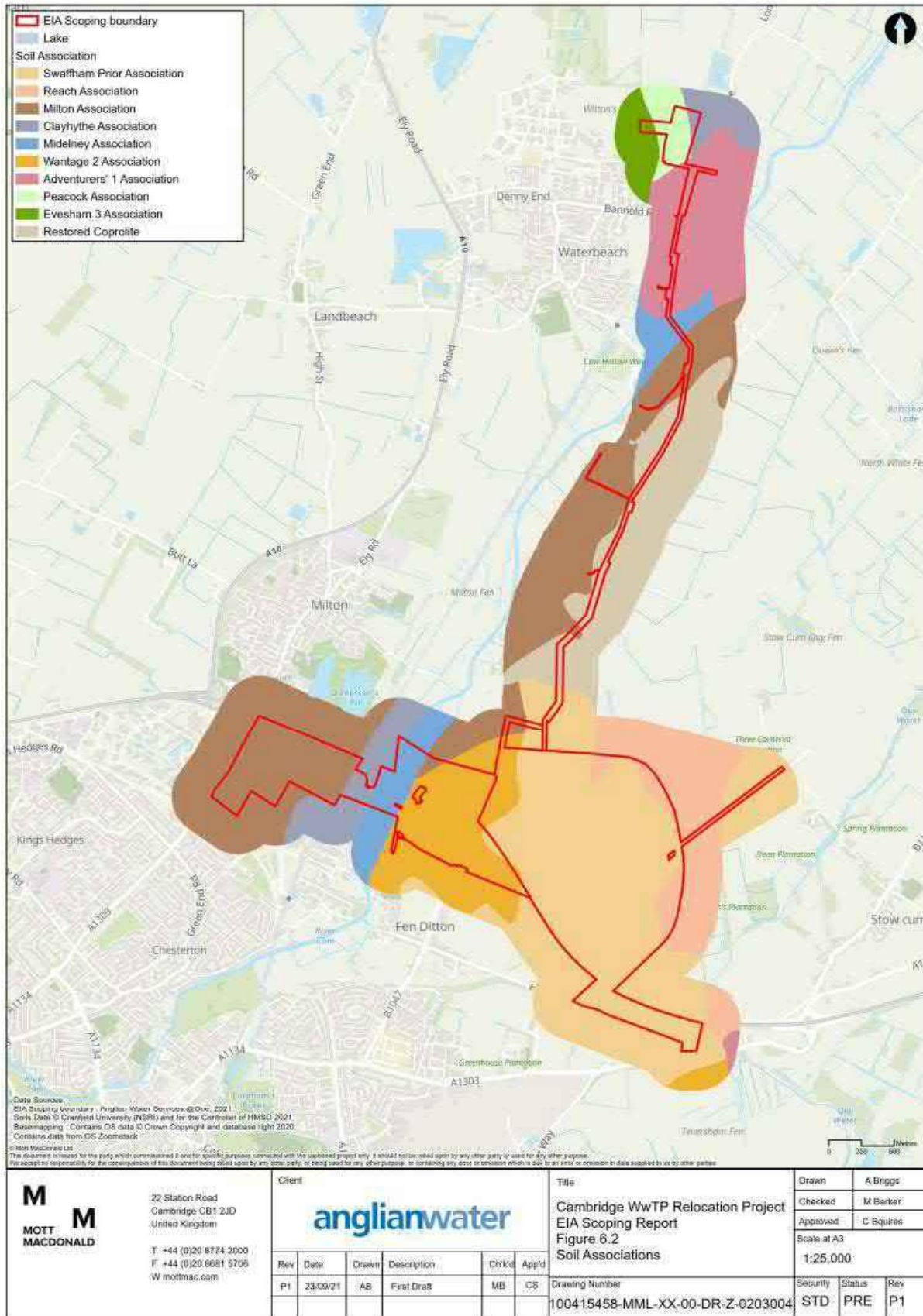


Figure 6-2: National soil associations within study area

CORE ZONE

- 6.5.4 Aerial imagery and site visit information indicate that land use in the Core Zone predominantly comprises arable land and grassland.
- 6.5.5 Provisional ALC mapping²⁴ indicates that the soils within the Core Zone comprise predicted Grade 2 agricultural land (Figure 6-1).
- 6.5.6 National Soil Mapping²⁵ indicates that soils in the Core Zone comprise the Swaffham Prior Soil Association, described as ‘well drained calcareous coarse and fine loamy soils over chalk rubble’. There are notably smaller areas mapped along the eastern boundary which consist of the Reach Association (‘shallow humose fine loamy calcareous soils over chalk or chalk rubble with groundwater controlled by ditches and pumps’). The Wantage 2 Association (‘shallow well drained calcareous silty soils over argillaceous chalk associated with similar soils affected by groundwater’) is also mapped along a small portion of the western boundary.

TRANSFERS ZONE

- 6.5.7 East of the River Cam aerial imagery indicates that agricultural land use is predominantly arable, while the fields adjacent to the west of the river are shown to comprise grassland.
- 6.5.8 Provisional ALC mapping²⁴ indicates that the western extent of the area (in the vicinity of the existing Cambridge WWTP) is non-agricultural land. This is shown to transition to predicted Grade 4 in the vicinity of the River Cam and Grade 2 land moving further to the east.
- 6.5.9 East of the River Cam, soils in the transfers and treated effluent pipeline zone are predominantly mapped as the Wantage 2 Soil Association, with a small area depicted as the Milton Association (‘deep permeable calcareous fine loamy soils variably affected by groundwater’) in the north-west. Soils in the floodplain area of the River Cam are mapped as the Midelney Soil Association, described as ‘stoneless clayey soils mostly overlying peat’. Further to the west, soils are shown to transition to the Clayhythe Soil Association (‘deep humose fine loamy over sandy and fine loamy over clayey soils mainly calcareous’) and the Milton Soil Association, the latter of which covers the majority of the western area.

WATERBEACH ZONE

- 6.5.10 The Waterbeach WRC and transfer pipeline zone is shown to predominantly comprise predicted Grades 2 and 3 soils throughout the section, with a notable area shown as Grade 1 land in the northern extent, as well as Grade 4 land along the western boundary. Notably, this provisional mapping does not differentiate between Grade 3 soils, not taking into account subgrades 3a and 3b.

- 6.5.11 South of the Horningsea village area, soils within the Waterbeach WRC and transfer pipeline zone are again shown to comprise the Swaffham Prior Soil Association. To the north, mapping then indicates that soils primarily transition to Restored Coprolite ('restored coprolite workings', generally 'slowly permeable seasonally waterlogged calcareous fine loamy over clayey soils'), with smaller areas of the Milton Association crossing the site from the west. The Midelney Association is introduced to this section of the Proposed Development adjacent to Cow Hollow Wood, before the majority of the remainder of the area to the north is mapped as the Adventurer's 1 Association ('deep peat soils'). In the northernmost extent of the area, the EIA Scoping boundary falls within small areas shown to consist of the Peacock ('deep humose calcareous clayey and non-calcareous fine loamy over clayey soils' with 'some peat soils'), Evesham 3 ('slowly permeable calcareous clayey, and fine loamy over clayey soils') and Clayhythe Associations.
- 6.5.12 Although not within the EIA Scoping boundary, Defra mapping²⁶ also highlights that a 2016 ALC survey was undertaken along a section of land adjacent to the west of the Cambridge to Waterbeach railway, approximately 500m north of the transfers and treated effluent pipeline and 750m to the west of the Waterbeach WRC and transfer pipeline. The survey report (Milton Rowing Lake and Waterbeach Extension, ALCC1049327) recorded Grades 2, 3a, 3b and 4 soils.

6.6 Future baseline

- 6.6.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline, alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 6.6.2 Where this presents new environmental receptors or a change to the current baseline specific to Agriculture, this is discussed further below.
- 6.6.3 For the aspect of Agriculture and Soils, the main difference will relate to the alteration in land use in the Core Zone, where ALC Grade 2 agricultural land will be lost to accommodate the WWTP. In areas where soils will be disturbed temporarily by construction and reinstated, impacts on the future baseline should be minimal if the soil management measures outlined in the SMP are adhered to stringently.
- 6.6.4 The current pattern of agricultural production in the study area is assumed to be stable and will be used as the basis of assessment of potential impacts arising during construction and operation of the Proposed Development.

²⁶ Department for Environment, Food and Rural Affairs (DEFRA), 2021. *Magic Map Application*.

²⁷ Natural England, 2016. *Agricultural Land Classification detailed Post-1988 ALC Survey, Milton, Milton Rowing Lake and Waterbeach Extension (ALCC10493)*.

6.6.5 The description of baseline conditions for the study area will be included as part of the preliminary information provided at the next consultation and will defined in the ES will be informed by the following:

- Aerial imagery;
 - Provisional ALC grade information obtained from Natural England²⁴ distinguishing best and most versatile agricultural land (graded 1 to 3; excellent to moderate quality) and poorer quality agricultural land.
 - An ALC survey carried out within the EIA Scoping boundary of the Proposed Development (see Table 6-2). The survey will entail one soil auger bore per hectare, in accordance with the industry best-practice guidelines included within the Soil Field Survey Handbook²⁸. In addition to ALC survey requirements, one composite soil sample per field will be sent for soil chemical analysis and some samples will be subject to particle size distribution analysis to confirm on-site soil texture observations.
- Countryside Stewardship Agreement Management Areas obtained from Defra²⁶; and
- Findings from an AIA consisting of interviews with landowners and occupiers including details, where provided, of any agri-environmental proposals. This will aid the identification of potential impacts on the functioning of individual farm holdings located within the EIA Scoping boundary, within both the construction and Operational Phases of the Proposed Development.

6.7 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

6.7.1 During construction impacts to agriculture and soils originate from the following:

- Ground disturbance required for the construction of permanent works above ground within the Core Zone for the Proposed WWTP (including the access road) and within the Transfers Zones at proposed FE outfall and vent shaft locations;
- Clearance of land required for the completion of the landscape masterplan within the Core Zone (which would be include earthwork, landscaping and habitat creation works); and
- Clearance of land required for temporary works, which includes construction compounds, access routes and trenches and easements for pipelaying which would then be reinstated as construction proceeds.

6.7.2 Although an impact of permanent land required at operation the clearance activities, soil stripping, stockpiling and movements as part of the landscape masterplan would originate at the construction stage.

²⁸ Hodgson, J. M, 1997. *The Soil Survey Handbook: Describing and Sampling Soil Profile*.

- 6.7.3 The Proposed Development does not require demolition of farm dwellings or buildings.
- 6.7.4 It is likely that some farm infrastructure such as access tracks, hard standing, irrigation and drainage networks will be affected temporarily or permanently removed during the Construction Phase.
- 6.7.5 Soil resources have the potential to be detrimentally impacted at all stages during the construction process, including stripping, stockpiling and reinstatement. Inappropriate handling of on-site soils may have consequences for both soil structure and overall quality by exacerbating erosion, run-off and compaction.

POTENTIAL IMPACTS PER ZONE

- 6.7.6 The potential impacts presented in Table 6-3: Potential construction impacts by zone are divided by zone.

Table 6-3: Potential construction impacts by zone

Potential impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Adverse impacts to soil structure and overall quality due to construction	✓	✓	✓
Temporary severance to farm holdings	✓	✓	✓
Impacts on farm infrastructure (access tracks, hard standings, irrigation and drainage networks).	✓	✓	✓

CONSTRUCTION PHASE MITIGATION

- 6.7.7 Primary mitigation includes the siting of works areas and accesses to avoid severance of farm holdings as much as possible and the provision of farm accesses if required.
- 6.7.8 Likely significant effects arising during the Construction Phase would be mitigated by secondary mitigation in the form of measures set out in the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to agriculture and soils.
- 6.7.9 Compliance with the CoCP would be secured via a requirement included within the Development Consent Order. The CoCP would then form the basis of more detailed plans and method statements, to be prepared during the pre-construction period by the appointed contractor. These plans would include a detailed Construction Environment Management Plan (CEMP) together with a suite of management plans for specific aspects, such as the SMP. The detailed plans would be subject to agreement with relevant stakeholders.

- 6.7.10 An outline SMP will be included as part of the draft CoCP. This will set out the requirements for detailed SMPs which will include measures to mitigate the potential environmental impacts, most notably on soil structure and hence functionality. Detailed plans will include site specific detail, based on data accrued from the ALC and SRS surveys, and tailored guidance based on industry standards and best practice guidance²³.
- 6.7.11 Site-specific data to inform the detailed SMP will include:
- Pre-construction soil resource survey (SRS) information in areas not covered by the ALC survey;
 - Spatial variation of distinct soil types (topsoil and subsoil), for stripping and storing separately and correct reinstatement;
 - Spatial variation in horizon depths (Topsoil and subsoil) to avoid mixing during soil handling and correct reinstatement;
 - Volumes of soil resources for storage and to inform on stockpile footprint, height and suitable location;
 - Volumes of soil resources not being reinstated to inform on re-use/waste strategies;
 - Soil nutritional status as a record for post reinstatement aftercare monitoring and to inform on the suitability of surplus resources for alternate uses such as landscaping schemes; and
 - Soil structure/health status (signs of compaction, persistent waterlogging etc), to inform on possible remediation strategies and as a record should post reinstatement issues arise with landowners/users.
- 6.7.12 Industry best practice guidelines relating to soil handling expected to be applied to the Proposed Development:
- Use of low ground pressure plant machinery where possible;
 - Ensuring that soil handling only occurs during suitable weather conditions;
 - Ensuring that soils are only handled when of a suitable consistency, meaning that they are dry and non-plastic²⁹ ;
 - Keeping wheeled machinery off topsoil and stockpiles, except during stockpile creation;
 - Limiting the height of stockpiles and using appropriate slope gradient to minimise potential damage to soil structure and erosion risk;
 - Seeding with grass and using herbicide on stockpiles that are to remain in place for more than six months, where cultural methods are likely to prove insufficient in preventing colonisation by weeds;
 - Ensuring that, where necessary (such as where soils are wet or plastic) soils are reconditioned prior to reinstatement to restore structure;

²⁹ A term referring to soil consistency. Plastic soils are unsuitable for handling as they are at high risk of structural damage.

- Ensuring that in all areas where soils are to be reinstated following construction, soil horizons are replaced in the correct order; and
- Preparation and implementation of a suitable aftercare plan to monitor soil recovery following reinstatement.

6.7.13 In relation to agriculture the CoCP control measures will include:

- A requirement for the appointed contractor to consult with land owners and tenants in relation to minimising disruption to agricultural operations arising from construction phasing, temporary access to land and storage of materials.

OPERATION PHASE POTENTIAL IMPACTS

6.7.14 The only residual impact for the Proposed Development will be the permanent loss of agricultural land associated with the construction of the proposed WWTP and the associated landscaping proposals, for which the ALC survey will assess the constituent ALC grades. Beyond this, the Proposed Development will require no additional land either temporarily or permanently, and no additional potential environmental impacts are predicted during this phase.

6.7.15 Newly created habitats and landscaping, including soils, can be detrimentally affected if not adequately managed.

6.7.16 Under normal operation of the Proposed Development, it is not anticipated that easements associated with buried assets will impact crop yields or farm operations. Pipelines and transfers will be buried significantly below the “major root zone” of arable crops and the expected restoration of land to its original quality.

6.7.17 Farm holdings adjoining the boundary of the Proposed Development may be subject to changed odour profile at operation.

POTENTIAL IMPACTS PER ZONE

6.7.18 The potential impacts presented in Table 6-4 are divided by zone.

Table 6-4: Potential operational impacts by zone

Potential impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Permanent land use change (Proposed WWTP, access road, FE outfall, vent shafts)	✓	✓	x
Permanent land use change (landscaping and habitat creation)	✓	x	x
Permanent severance	x	x	x

Potential impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Residual easement rights	✓	✓	✓
Effects on agricultural business receptors from odour	✓	x	x

OPERATION PHASE MITIGATION

- 6.7.19 Secondary mitigation in the form of the LEMP will apply to the operation phase and may include measures in relation to soil management within areas included as part of the landscape management plan.
- 6.7.20 There are no other predicted impacts during the operation of the Proposed Development and so no mitigation required.

6.8 Proposed scope of the assessment

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED IN

- 6.8.1 The impact of permanent loss of agricultural land and farm business will be scoped into the assessment. The footprint of the permanent works will be used to quantify the area of land of different ALC grades lost permanently in each farm holding. The area of best and most versatile land likely to be impacted will be considered in line with NPS compliance guidance.
- 6.8.2 Impact on farm operations through temporary use of agricultural land will be scoped into the assessment. The area and duration of land required temporarily will be estimated to inform this assessment, which will be evaluated through an AIA. Any possible impacts on agricultural businesses brought about by the loss of land permanently will also be scoped into the assessment and considered within the AIA.

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED OUT

- 6.8.3 The matters presented in Table 6-5 are proposed to be scoped out. The justification is provided in the table and expanded upon in the proceeding paragraphs.

Table 6-5: Resources and receptors proposed to be scoped out for all zones

Resources and receptors proposed to be scoped out	Justification for scoping out
Adverse impacts to soil structure and overall quality due to construction	Suitable soil handling measures to be informed by the SMP (implemented through CEMP). See section 6.7 for detail on SMP

Resources and receptors proposed to be scoped out

Justification for scoping out

Effects on agricultural business receptors from odour

There are no agricultural receptors considered likely to be sensitive to odour.

- 6.8.4 Planning Inspectorate Advice Note 7 was consulted to determine matters to be scoped out of the assessment of agriculture and soils.
- 6.8.5 Adverse impacts to soil structure and overall quality during the construction process (such as soil stripping, stockpiling and reinstatement) will be scoped out of the assessment as these aspects will be guided by a SMP implemented through the CEMP. This document will inform suitable soil handling measures throughout the construction process (including stripping, stockpiling and reinstatement) and will be based on the results of the ALC survey undertaken. The empirical evidence from the ALC survey will work to tailor the industry best-practice SMP mitigation measures to a degree suitable for avoiding significant or cumulative impacts.
- 6.8.6 Adverse effects on crops or livestock arising from dust and pollution during construction are proposed to be scoped out of the assessment as these will be controlled through the SMP and CEMP. The best-practice dust and pollution mitigation measures proposed in these documents will reduce the impact of any related events to a level at which significant effects would not occur. Both documents will be informed by empirical evidence obtained through the ALC survey.
- 6.8.7 There are not considered to be any sensitive agricultural business receptors to odour, so this will be scoped out of the assessment. The absence of sensitive agricultural receptors will be confirmed by the AIA, which will evaluate the type, scale and proximity of agricultural businesses within the EIA Scoping boundary.
- 6.8.8 Soil guidance for construction does not take climate change into account, only focusing on direct, shorter term impacts. Climate change impacts are considered in Chapter 11: Climate Resilience.

6.9 Evidence of agreements reached with consultation bodies

- 6.9.1 No consultations have been carried out with official bodies in relation to the EIA scope, although individual farm owners will be consulted as part of the AIA to determine any likely impacts on agricultural businesses which may be brought about by the Proposed Development. The ongoing consultation programme including with Natural England will cover approaches to soils and long term landscaping proposals.

6.10 Assessment methodology

- 6.10.1 While the specific land parcels affected by the options under consideration for the proposed WWTP and for the pipelines differ, agricultural land use is sufficiently similar across the EIA Scoping boundary that the proposed methods for assessing effects on agriculture remain constant.
- 6.10.2 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

SIGNIFICANCE CRITERIA

- 6.10.3 The ALC survey will quantify the respective proportions of land of each grade which will be lost permanently to the Proposed Development.
- 6.10.4 The SMP will provide quantification of the soil resources to be stripped, stockpiled and reinstated or re-used along with industry best practice guidance. It will also provide clear formats for the field records that will need to be kept and an aftercare program for ensuring that soil recovery post reinstatement is monitored correctly. Please see Section 6.7 for more detail.
- 6.10.5 The AIA will report significance in respect of the severity of impact on each farm holding affected by the Proposed Development. Although no formal guidance exists for such studies, the methodology intended for use and highlighted here will be commensurate with studies carried out by public bodies such as High Speed 2³⁰ and National Highways (was Highways England³¹). The assessment quantifies the impact by applying weightings to a series of factors including:
- temporary or permanent requirement of land for the proposed development, with respect to farm size and structure; severance of land parcels;
 - husbandry; sensitivity of receptor and the use of buildings and other fixed equipment (including irrigation and drainage).
- 6.10.6 Significance or the magnitude of the impact will be reported as High, Medium, Low or Negligible. A permanent land take >20% per farm holding and/or no access to severed land would be considered high impact, whereas <5% land take and/or no impact on farm infrastructure would be considered negligible impact. Overall impact is reported as highest rating within factor most affected (for instance, <5% land take but no access to a severed land parcel would be considered a high impact on farm viability).

³⁰ High Speed 2, 2013. London-West Midlands Environmental Statement – Volume 5 Technical Appendices. Scope and Methodology Report (ES 3.5.0.15.2).

³¹ Highways England, 2019. Design Manual for Roads and Bridges – LA109 – Geology and Soils.

6.11 Approach to cumulative effects assessment

- 6.11.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.
- 6.11.2 The cumulative assessment for agricultural land will consider any other proposed developments that give rise to requirements for land – including best and most versatile land – in the farm holdings affected by the Proposed Development. This could apply to both the construction and Operational Phases of the project.
- 6.11.3 The cumulative assessment will also consider any possible effects on agricultural businesses brought about by land required by the scheme.
- 6.11.4 There is also the potential that multiple projects requiring land in the area may give rise to cumulative effects regarding land severances or amplify the impacts on farm infrastructure. This could similarly apply to both the construction and Operational Phases.
- 6.11.5 The above potential cumulative effects will all be considered during the AIA.
- 6.11.6 Impacts on soil resources during the Construction Phase – such as the deterioration of soil quality during stripping, storage and reinstatement – will not be considered to give rise to cumulative impacts. This is because such impacts will be mitigated by the measures outlined in the SMP.

6.12 Assumptions, limitations and uncertainties

- 6.12.1 The following assumptions, limitations and uncertainties have been noted:
- The practical assessment of soils for ALC grade identification relies on the evaluation of the physio-chemical properties of all farmland within the EIA Scoping boundary. This must be undertaken during suitable soil moisture conditions to avoid very dry or waterlogged soils. As crops have been removed to accommodate trial trenching, the survey will not require the disturbance of crops.
 - Although an ALC survey will be carried out in accordance with industry best-practice guidance²⁸ and the incorporation of a methodology adhering to one bore hole per hectare (or every 100m along a linear route), this may not identify every notable soil variation where a property may change on a more local level.
 - The successful reinstatement of soils in accordance with the SMP will require close adherence throughout construction/excavation and reinstatement phases;
 - The accuracy of an AIA relies on the cooperation and honest completion of interviews or questionnaires by all landowners and tenant farmers involved.

- The current Covid-19 pandemic may prevent face-to-face interviews with landowners or occupiers on AIA.

7 Air Quality

7.1 Introduction

- 7.1.1 This chapter of the EIA Scoping report identifies potential pollutants and receptors, referred to by the Planning Inspectorate as ‘matters’, relevant to the aspect of air quality. The study area for the assessment of likely significant effects on identified receptors is also defined. The purpose of EIA Scoping is to ensure a proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.
- 7.1.2 The odour impacts of the Proposed Development on local receptors are addressed separately in Chapter 19: Odour.
- 7.1.3 Ecological receptors sensitive to air quality impacts from the Proposed Development have been identified separately in Chapter 8: Biodiversity.
- 7.1.4 No matters within this aspect are proposed to be scoped out of further assessment, however the scope of assessment has been refined to focus on emissions from: construction dust, construction traffic, operational traffic and operational site plant (combustion processes).

7.2 Matters (Resources and receptors)

- 7.2.1 For the aspect of air quality, the matters (i.e. receptors) are:
- people (further information on human exposure is provided in Table 7-3; and
 - ecological designations.
- 7.2.2 For the aspect of air quality, pollutants that will be assessed are:
- Oxides of nitrogen (NO_x), particularly nitrogen dioxide (NO₂);
 - Sulphur dioxide (SO₂);
 - Fine particles (particulate matter defined as those less than 10 and 2.5 microns in diameter, PM₁₀ and PM_{2.5} respectively); and
 - Dust (defined as particulate matter in the size range 1-75 microns in diameter).
- 7.2.3 No assessment is considered necessary for emissions of pollutants other than those identified above as no significant emission sources of these pollutants would be introduced or affected by the Proposed Development.

7.3 Study Area

- 7.3.1 The study area is defined for air quality below and indicated in Figure 7-1.

Table 7-1: Study area

Receptor	Study area
People	<p>Construction:</p> <p>350m from boundary of Proposed Development</p> <p>50m from the edge construction access routes (trackout route) up to 500m from the site boundary along the public highway.</p> <p>200m from 'affected' roads (as per the EPUK/ IAQM guidance) for traffic.</p> <p>Operation:</p> <p>200m from 'affected' roads (as per the EPUK/ IAQM guidance) for traffic.</p> <p>5km from the Proposed Development (for energy plant)</p>
Designated ecological sites	<p>Construction:</p> <p>50m from the boundary of the proposed Development or the 50m from the edge construction access routes (trackout route) up to 500m from the site boundary along the public highway.</p> <p>200m from 'affected' roads (as per the EPUK/ IAQM guidance) for construction traffic.</p> <p>Operation:</p> <p>200m from 'affected' roads (as per the EPUK/ IAQM guidance) for operational traffic.</p> <p>5km from the Proposed Development (for energy plant)</p>

7.3.2 Construction of the Proposed Development will introduce temporary new emission sources with the potential to affect nearby sensitive receptors in the form of:

- increased construction traffic along the local road network;
- emissions from site plant; and
- potentially dust-generating activities, such as earth-moving and construction works.

7.3.3 The distances from the emission source at which significant construction dust effects are likely to occur are dependent on the extent and nature of mitigation measures, the prevailing wind conditions, rainfall and the presence of screening etc. In line with the latest Institute of Air Quality Management (IAQM) guidance³² for construction dust and demolition, the study area for the air quality assessment will cover human health receptors within 350m and ecological sites within 50m of the Proposed Development.

7.3.4 The study area for construction traffic covers human health receptors and designated ecological sites within 200m of roads that are affected by the Proposed Development. Affected roads will be determined based on 'The Land-Use Planning and Development Control: Planning for Air Quality' guidance produced by Environmental Protection UK (EPUK) and the Institute of Air

³² Institute of Air Quality Management (2014). 'Guidance on the assessment of dust from demolition and construction'.

Quality Management (IAQM)³³ and the criteria set out in Section 7.3.1. The same assessment criteria will be used for operational and construction traffic.

- 7.3.5 The study area for on-site operational emission sources such as Combined Heat and Power (CHP) and boiler plant will include the worst-case receptors closest to the EIA Scoping boundary. Pollutant concentrations will be modelled across a Cartesian grid with 20m spacing up to 1km from the Site and 100m spacing up to 5km from the Site using a gaussian dispersion model. Worst-case discrete human and ecological receptors will also be modelled. Further modelling is likely to be required for the Environmental Permitting application for emissions to air from the site, as required by the Environment Agency.

7.4 Legislation, planning policy context and guidance

- 7.4.1 Legislation, planning policy and guidance relating to air quality, and pertinent to the Proposed Development comprises the following.

LEGISLATION

England

- 7.4.2 The Air Quality Standards Regulations 2010³⁴, Air Quality Standards (amendment) Regulations 2016³⁵, Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019³⁶ and Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020³⁷ implement Directive 2008/50/EC on ambient air quality³⁸.
- 7.4.3 These define limit values and times by which they are to be achieved for the purpose of protecting human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants. The limit values apply everywhere, with the exception of:
- Any locations situated within areas where members of the public do not have access and there is no fixed habitation;
 - In accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply;
 - On the carriageway of roads; and
 - On the central reservations of roads except where there is normally pedestrian access to the central reservation.

33 Environmental Protection UK and Institute of Air Quality Management (January 2017), 'Land-Use Planning and Development Control: Planning for Air Quality' version 1.2

34 Statutory Instrument. (2010), *The Air Quality Standards Regulations*, No. 1001.

35 Statutory Instrument. (2016) *The Air Quality Standards (Amendment) Regulations*, No. 1184.

36 Statutory Instrument. (2019) *Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations*

37 Statutory Instrument. (2020) *Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020*, No. 1313.

38 European Union. (April 2008) *Directive on ambient air quality and cleaner Air for Europe, Directive 2008/50/EC* Official Journal, vol. 152, pp. 0001-0044

- 7.4.4 The Department for Environment Food and Rural Affairs (Defra) assesses and reports on compliance with the limit values for 43 regional quality assessment zones and agglomerations across the UK³⁹. Zones and/or agglomerations achieve compliance when everywhere within the zone and/or agglomeration (excepting locations provided in the Directive) does not exceed the relevant limit value.
- 7.4.5 Part IV of the Environment Act 1995⁴⁰ requires that every local authority shall periodically carry out a review of air quality within its area, including predictions of likely future air quality. The air quality objectives specifically for use by local authorities in carrying out their air quality management duties are set out in the Air Quality (England) Regulations 2000⁴¹ and the Air Quality (England) (Amendment) Regulations 2002⁴². In most cases, the air quality objectives are set at the same pollutant concentrations as the limit values specified in the air quality Directive although compliance dates differ.
- 7.4.6 As part of the review of air quality, the local authority must assess whether air quality objectives are being achieved, or likely to be achieved within the relevant periods. Any parts of a local authority's area where the objectives are not being achieved or are not likely to be achieved within the relevant period must be identified and declared as an Air Quality Management Area (AQMA). Once such a declaration has been made, local authorities are under a duty to prepare an Action Plan which sets out measures to pursue the achievement of the air quality objectives within the AQMA.
- 7.4.7 The Environment Act also requires that the UK Government produces a national 'air quality strategy' (AQS) containing standards, objectives and measures for improving ambient air quality and to keep these policies under review.

Statutory Nuisance

- 7.4.8 Section 79(1)(d) of the Environmental Protection Act 1990⁴³ defines one type of 'statutory nuisance' as "any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance". Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, it must serve an abatement notice. Failure to comply with an abatement notice is an offence. Best practicable means is a widely-used defence by operators, if employed to prevent or to counteract the effects of the nuisance.

39 The UK is divided into zones for air quality assessment – 28 agglomeration zones (large urban areas) and 15 non-agglomeration zones.

40 Department for Environment Food and Rural Affairs. (2003) Part IV of the Environment Act 1995 Local Air Quality Management

41 Statutory Instrument. (2000) Air Quality (England) Regulations, No. 928

42 Statutory Instrument. (2002) Air Quality (England) (Amendment) Regulations, No. 3043.

43 Parliament of the United Kingdom (1990) Environmental Protection Act 1990

Policy

UK Air Quality Strategy

- 7.4.9 The Environment Act 1995 requires the UK Government to produce a national Air Quality Strategy. The Air Quality Strategy establishes the UK framework for air quality improvements. The measures agreed at the national and international level are the foundations on which the strategy is based. The first Air Quality Strategy was adopted in 1997⁴⁴ and was replaced by the Air Quality Strategy for England, Scotland, Wales and Northern Ireland published in January 2000⁴⁵. The 2000 Air Quality Strategy has subsequently been replaced by the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007⁴⁶. The 2007 Air Quality Strategy has now been superseded as of the 14th January 2019 with the Clean Air Strategy 2019 (CAS)⁴⁷.
- 7.4.10 The CAS does not set legally binding objectives, the CAS instead has targets for reducing total UK emissions of nitrogen oxides (NO_x) and fine particulate matter (PM_{2.5}) from sectors such as road transport, domestic sources and construction plant (non-road mobile machinery or NRMM).
- 7.4.11 Air quality objectives and limit values are summarised in Table 7-2. Air quality impacts have been considered against the air quality objectives.

Table 7-2: Relevant Air Quality Objectives and Limit Values

Pollutant	Averaging Period	Concentration	Allowance	Attainment Date	
				Air Quality Objectives	Limit Values
Nitrogen dioxide (NO ₂)	Annual	40 µg/m ³	-	31 December 2005(a)	1 January 2010(c)
	1 Hour	200 µg/m ³	18	31 December 2005(a)	1 January 2010(c)
Sulphur dioxide (SO ₂)	15-minute	266 µg/m ³	35	31 December 2005(a)	-
	1-hour	350 µg/m ³	24	31 December 2005(a)	1 January 2005(c)
	24-hour	125 µg/m ³	3	31 December 2005(a)	1 January 2005(c)
Particulates (PM _{2.5})	Annual	40 µg/m ³	-	31 December 2004(a)	1 January 2005(c)
	24 Hour	50 µg/m ³	35	31 December 2004(a)	1 January 2005(c)

44 Department for Environment Food and Rural Affairs. (March 1997), 'The United Kingdom National Air Quality Strategy', Cm 3587, Department for Environment Food and Rural Affairs.

45 Department for Environment Food and Rural Affairs. (January 2000), 'The Environment Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Clean Air', Cm 4548, Department for Environment Food and Rural Affairs.

46 Department for Environment Food and Rural Affairs. (July 2007), 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', Cm 7169, Department for Environment Food and Rural Affairs.

47 Department for Environment Food and Rural Affairs. (January 2019), 'The Clean Air Strategy'

Pollutant	Averaging Period	Concentration	Allowance	Attainment Date	
				Air Quality Objectives	Limit Values
Fine particulates (PM _{2.5}) ^(e)	Annual	20 µg/m ³	-	-	1 January 2020(c)
		25 µg/m ³	-	2020(b)	-
NO _x ^(d)	Annual	30 µg/m ³	-	31 December 2000(a)	19 July 2001(c)

Notes: ^(a) Air Quality (England) Regulations 2000 as amended
^(b) Air Quality Strategy 2007
^(c) EU Directive 2008/50/EEC on ambient air quality and cleaner air for Europe, as transposed into UK Law
^(d) Designated for the protection of vegetation and ecosystems and also referred to as the 'critical level' for NO_x. The policy of the UK statutory nature conservation agencies is to apply the annual mean NO_x criterion in internationally designated conservation sites and Site of Special Scientific Interest (SSSI) on a precautionary basis, as the limit value applies only to locations more than 20km from towns with more than 250,000 inhabitants or more than 5km from other built-up areas, industrial installations or motorways.
^(e) As the Air Quality Strategy 2007 and EU Directive 2008/50/EC have a different numerical standard for PM_{2.5}, the more stringent standard of 20µg/m³ has been adopted for this assessment.

7.4.12 Table 7-3 provides details of where the respective objectives should and should not apply and therefore the types of receptors that are relevant to the assessment of air quality.

Table 7-3: Locations where the Air Quality Objectives Apply

Averaging Period	Objectives should apply at:	Objectives should not apply at:
Annual	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes, etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
24-Hour	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
1-Hour	All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations, etc., which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

Source: Defra TG16⁴⁸.

PLANNING POLICY

7.4.13 National planning policy of relevance to air quality and pertinent to the Proposed Development are:

NPS for Waste Water with particular reference to:

- Paragraph 4.11.3 the ES should describe any significant air emissions, their mitigation and any residual effects distinguishing between the project stages, and taking account of any significant emissions from any road traffic generated by the project and the predicted absolute emission levels from the proposed project, after mitigation methods have been applied and existing air quality levels and the relative change in air quality from existing levels.
- Paragraph 4.11.4 the decision maker should generally give air quality considerations substantial weight where a project would lead to a deterioration in air quality in an area.
- Paragraph 4.12.7 the decision maker should satisfy itself that all reasonable steps have been taken, and will be taken, to minimise any detrimental impact on amenity from emissions of dust, steam, smoke and artificial light.
- NPPF⁴⁹ with particular reference to Section 15: Conserving and enhancing the natural environment: (paragraph 105 and 186, with regard to sustaining and contributing towards compliance with air quality pollutant objectives).

7.4.14 Local planning policy of relevance to the Proposed Development includes:

SCDC Local Plan 2018 with particular reference to:

- Policy SC/12: (p216) ‘Air Quality’ seeks to ensure that new developments do not exacerbate or be negatively impacted by air pollution. An air quality assessment and Low Emission Strategy are required to be submitted alongside planning applications for a ‘major development’⁵⁰.
- Policy SC/14: (p219) ‘Odour and Other Fugitive Emissions to Air’ states that developments likely to generate emissions to air (dust, fumes, smoke,

⁴⁸ Department for Environment, Food and Rural Affairs and Devolved Administrations (2021). Local Air Quality Management – Technical Guidance LAQM.TG16

⁴⁹ Ministry of Housing, Communities and Local Government (July 2021). National Planning Policy Framework

⁵⁰ “major development” means development involving any one or more of the following—

(a) the winning and working of minerals or the use of land for mineral-working deposits;

(b) waste development;

(c) the provision of dwelling houses where—

(i) the number of dwelling houses to be provided is 10 or more; or

(ii) the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);

(d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or

(e) development carried out on a site having an area of 1 hectare or more.

gases) will only be permitted where it will not have significant adverse effects on health, amenity and the environment. Such developments may require an emissions-to-air impact assessment as evidence of this.

Cambridge City Council Local Plan 2018 with reference to:

- Policy 36: (p134) ‘Air quality, odour and dust’ details that development will only be permitted where it will not lead to significant adverse effects on health, the environment or amenity from polluting or malodorous emissions or dust or smoke emissions to air.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

7.4.15 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of air quality planning policy has influenced the EIA scope as follows:

Methodology - The NPS and NPPF identify the requirement for consideration of air quality during the planning process and associated planning policy guidance sets out what should be included in an air quality assessment. Planning policy sets out the need for the ES to assess air quality and show compliance with limit values and objectives and provides a framework for the key assessment requirements to demonstrate that policy is met. Planning policy highlights that development should help improve the local and natural environment with regard to air quality wherever possible and not adversely affect or be affected by existing air quality. Compliance with relevant limit values and national objectives should be sustained or contributed towards through planning policy and decisions, taking into account of AQMAs and Clean Air Zones and cumulative impacts on air quality from individual sites. The above will be considered within the air quality assessment for the EIA.

Mitigation - Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, ideally at the plan-making stage. Planning decisions should ensure that any new development in AQMAs and Clean Air Zones is consistent with the local air quality action plan.

NATIONAL POLICY STATEMENT REQUIREMENTS

7.4.16 Table 7-4 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 7-4: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.11.3 The ES should describe any significant air emissions, their mitigation and any residual effects distinguishing between the project stages, and taking account of any significant emissions from any road traffic generated by the project.	Air quality will be considered within the Environmental Statement and assessed in line with best-practice guidance and local policy. Any significant effects from the project will be described within the ES. In the event that significant air quality effects are identified, appropriate mitigation will be recommended to minimise the effects, where reasonably practicable. In the case of dust, mitigation measures as recommended within the IAQM guidance will be applied.
Paragraph 4.11.3 The ES should describe the predicted absolute emission levels from the proposed project, after mitigation methods have been applied.	The ES will describe the impacts on and effects from air quality from the project, both with and without mitigation in place. Where possible, a 'post-mitigation' emission level will be provided where additional mitigation is proposed.
Paragraph 4.11.3 The ES should describe existing air quality levels and the relative change in air quality from existing levels.	A baseline assessment will be undertaken and presented within the ES to provide existing air quality information. A future year baseline would be assessed within the EIA to provide predicted pollutant concentrations without the Scheme in place. The change in modelled concentrations will be reported within the ES in line with the EPUK/IAQM guidance.

GUIDANCE

- 7.4.17 The National Planning Practice Guidance includes a dedicated section on air quality⁵¹, which sets out the information local planning authorities may require in relation to air quality and matters for determining whether air quality is relevant to a planning decision. It also states that odour and dust can be a planning concern, for example, because of the effect on local amenity.
- 7.4.18 The 'Land Use Planning and Development Control: Planning for Air Quality' guidance document produced by EPUK and IAQM provides criteria for the determination of whether a development requires an air quality assessment and provides best practice advice.
- 7.4.19 The IAQM's "Guidance on the assessment of dust from demolition and construction"⁵² outlines a comprehensive method of assessing the risk of dust

⁵¹ National Planning Practice Guidance 'Air Quality.' Accessible at: <https://www.gov.uk/guidance/air-quality--3>

⁵² Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London.

effects from construction. Following this assessment, the guidance suggests mitigation commensurate to the level of risk, effective implementation of which is expected to reduce the likely dust impacts to negligible.

7.4.20 The “Greater Cambridge Sustainable Design and Construction Supplementary Planning Document”⁵³, adopted by the Cambridge and South Cambridgeshire local authorities in 2020, aims to assist developers in producing planning applications, and “should form an integral part of the design process so that minimum policy requirements are met, and where possible exceeded, in the most elegant, timely and cost effective way possible.” This guidance includes a checklist to confirm whether an air quality assessment is required for a development and provides best practice advice for developers.

7.4.21 Defra’s Technical Guidance 2016⁴⁸ document provides guidance to local authorities on the management of air quality and includes best-practice advice on how to robustly assess air quality. This guidance contains information useful for assessing planning applications and will be applied as appropriate to the EIA.

7.5 Baseline conditions

7.5.1 The baseline conditions for air quality are described for the three development zones within the EIA Scoping boundary as set out below. The cross-boundary nature of air quality is such that the baseline is similar for each of the three zones, so they have been assessed together.

7.5.2 Appendix A presents the location of the Proposed Development in relation to AQMAs; the Cambridge AQMA (which encompasses the Cambridge inner ring road), 2.9km to the south west of the Site boundary and the South Cambridgeshire AQMA (the A14 corridor AQMA), 3.1km to the west of the Site boundary. The Cambridge AQMA was declared in 2005 for exceedances of the annual mean NO₂ objective. The A14 corridor AQMA was declared in 2008 for exceedances of both the NO₂ annual mean and the PM_{2.5} daily mean objectives.

7.5.3 Baseline air quality information is obtained from a variety of sources including Local Authorities, national network monitoring sites and other published sources. For the purpose of this EIA scoping report, data was obtained from Defra’s Air Information Resource website⁵⁴, South Cambridgeshire District Council and Cambridge City Council. The most recent year of monitoring data is

⁵³ Cambridge City Council and South Cambridgeshire District Council (2020) Greater Cambridge Sustainable Design and Construction Supplementary Planning Document. Greater Cambridge Shared Planning.

⁵⁴ Department for Environment Food and Rural Affairs. Air Quality Information Resource (Air) Website, available at: <http://uk-air.defra.gov.uk>

2019, taken from the SCDC Annual Status Report 2020⁵⁵ and CCC Annual Status Report 2020⁵⁶.

7.5.4 No published data is currently available for 2020, however the effects associated with the coronavirus (Covid-19) pandemic during 2020 when during parts of the year England was subject to a full lockdown would have an influence on these monitoring data and therefore it would likely not be representative of normal conditions at the monitoring sites.

7.5.5 Appendix C presents the locations of the relevant monitoring sites outlined below.

BASELINE DATA COLLECTION

7.5.6 No air quality monitoring is intended to be undertaken for the Proposed Development; existing local authority monitoring data for the surrounding area is considered to be sufficient to provide a robust assessment. This approach has been agreed with the South Cambridgeshire District Council.

LOCAL AUTHORITY REVIEW AND ASSESSMENT

South Cambridgeshire District Council

7.5.7 SCDC undertakes automatic NO₂ and PM_{2.5} monitoring at three locations and NO₂ non-automatic (passive) monitoring at 39 sites within the District. The closest automatic monitors in relation to the Proposed Development are the Impington (IMP) and the Orchard Park Primary School (ORCH) automatic monitors. These monitors are located 5.3km west and 4.5km east of the Proposed Development site, respectively. The automatic monitoring results for the past three years is presented in Table 7-5.

7.5.8 There is one diffusion tube within 2km of the Proposed Development, 73 Cambridge Road, Milton (DT-28N). The diffusion tube monitoring data for the past three years are presented in Table 7-6:

Table 7-5: SCDC automatic monitoring

Site ID	Site type	Distance to Proposed Development (km)	Grid reference X,Y	Annual mean concentration (µg/m ³)					
				NO ₂			PM _{2.5}		
				2017	2018	2019	2017	2018	2019
IMP	Roadside	5.3	543739, 261625	23	19	16	16	17	16
ORCH	Urban Background	4.5	544558, 261579	18	14	15	14	14	14

⁵⁵ South Cambridgeshire District Council (2020). 2020 Air Quality Annual Status Report (ASR), June 2020.

⁵⁶ Cambridge City Council (2020). 2020 Air Quality Annual Status Report (ASR), August 2020.

Source: SCDC ASR 2020, Data capture for IMP was 92% and for ORCH was 97%.
No exceedances of the short-term NO₂ or PM_{2.5} objectives occurred in any reported year.

Table 7-6: SCDC non-automatic monitoring

Site ID	Site Type	Distance to site (km)	Grid Reference	Annual mean NO ₂ concentration (µg/m ³)		
				X,Y	2017	2018
DT-28N	Roadside	1.9	547436, 262295	-*	23	23

Source: SCDC ASR 2020.

Data capture for 2019 was 100%. Data has been bias-adjusted and annualised by SCDC.

*Monitoring started at this site in 2017.

Cambridge City Council

7.5.9 Cambridge City Council undertakes NO₂ and PM_{2.5} automatic monitoring at five locations and NO₂ non-automatic (passive) monitoring at 69 sites. None of the automatic monitors are considered representative in relation to the Proposed Development as they are located in areas where air quality would likely be worse due to the higher levels of congested traffic (central Cambridge).

7.5.10 There is one diffusion tube managed by CCC which is considered representative of the Proposed Development. This is DT12, located Newmarket Road, an arterial road leading out of the city. Table 7-7: presents the concentration and the location of the representative tubes.

Table 7-7: CCC non-automatic monitoring

Site ID	Site Type	Distance to site (km)	Grid Reference	Annual mean NO ₂ concentration (µg/m ³)		
				X,Y	2017	2018
DT12	Roadside	2.0	547998, 259349	28	25	23

Source: CCC ASR 20120.

Data capture for 2019 was 100%. Data has been bias-adjusted and annualised by CCC.

7.6 Future baseline

7.6.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA. Where this presents new environmental receptors or a change to the current baseline specific to air quality, this is discussed further below.

POLLUTION CLIMATE MAPPING (PCM) MODEL

7.6.2 Defra uses the Pollution Climate Mapping (PCM) model⁵⁷ to report compliance with the Limit Values. PCM model projections are available for all years from

⁵⁷ Defra (2018) National Pollution Climate Mapping (PCM) modelled background concentrations. Available from data.gov.uk

2017 to 2030 and these are derived from the base year of 2018. In general, the model suggests NO₂ concentrations decline into the future, mainly in response to cleaner vehicles and technologies, and actions in Defra's Air Quality Action Plan. The most recent PCM model was published in August 2019.

- 7.6.3 The closest PCM model link to the Site boundary is situated on the A1303. The predicted concentration on this link for 2021 is 19.9µg/m³. This link is unlikely to be used in either the constructional phase or the Operational Phase as it leads to central Cambridge. If this route was used, however, the concentration is well below the limit value and therefore is unlikely that the Proposed Development would result in an exceedance and create a non-compliance.

DEFRA PROJECTED BACKGROUND CONCENTRATIONS

- 7.6.4 Defra provide estimates of background pollution concentrations for NO_x, NO₂, PM_{2.5} and PM_{2.5} across the UK for each one-kilometre grid square for every year from 2018 to 2030⁵⁸. Future year projections have been developed from the base year of the background maps which is currently 2018.
- 7.6.5 The maximum background concentrations for the 1km grid squares containing the Proposed Development in 2021, the current year, are presented in Table 7-8: The data shows that the maximum background concentrations are all within the relevant objectives.

Table 7-8: Projected Background Concentrations (µg/m³) of NO_x, NO₂, PM_{2.5} and PM_{2.5} (maximum concentrations across Scheme area)

Year	Pollutant			
	NO _x	NO ₂	PM _{2.5}	PM _{2.5}
2021	12.0	15.9	18.1	10.6

Source: Defra AIR

Note: The background concentrations shown are for the 1km square centred on 549500, 260500.

SUMMARY

- 7.6.6 Concentrations of NO₂ monitored in the past three years at local authority sites considered most representative of the Development met the annual NO₂ and PM_{2.5} air quality objectives.
- 7.6.7 Defra's TG16 indicates that the hourly NO₂ air quality objective of 200µg/m³ (not to be exceeded more than 18 times per year) is unlikely to be exceeded at roadside locations where the annual mean concentration is less than 60µg/m³. Following this guideline, the hourly objective is therefore considered to also be met, as the monitored mean NO₂ concentrations are less than 60µg/m³. It is generally recognised that where concentrations of NO₂ are low and road traffic

⁵⁸ Defra Background maps (2018) available at: <https://uk-air.defra.gov.uk/data/laqm-background-maps>, accessed January 2021

is the primary source of emissions, the concentrations of PM_{2.5} and PM_{2.5} would also likely be lower than the air quality objectives.

7.6.8 The Defra predictions indicate that background concentrations at the Development Site meet the relevant short-term and long-term air quality objectives.

7.6.9 Ambient pollutant concentrations of NO₂, PM_{2.5} and PM_{2.5} are generally predicted to decrease into the future, due to uptake of cleaner vehicles and technologies; as such it is considered that air quality conditions at the site and surrounds would improve and continue meet the air quality objectives in future years.

7.7 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

7.7.1 The Proposed Development may lead to air quality impacts associated with dust and PM_{2.5}, generated during the Construction Phase, which has the potential to cause nuisance and health effects at nearby sensitive receptors. There may also be impacts on local air quality as a result of emissions from construction traffic associated with the Proposed Development.

7.7.2 Potential impacts presented in Table 7-9 are divided by zone.

Table 7-9: Potential construction impacts by zone

Potential impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Construction dust emissions	✓	✓	✓
Construction site plant emissions	✓	✓	✓
Construction traffic emissions	✓	✓	✓

CONSTRUCTION PHASE MITIGATION

7.7.3 The risk of construction dust effects would be mitigated proportionally, using the recommendations within the IAQM guidance⁵² Mitigation measures specific to air quality would be implemented through the CoCP. Measures may include:

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked;
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;

- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Avoid site runoff of water or mud;
- Ensure all vehicles switch off engines when stationary, minimising idling vehicles;
- Avoid the use of diesel- or petrol- powered generators and use mains electricity or battery powered equipment where practicable;
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Avoid bonfires and burning of waste materials.

OPERATION PHASE POTENTIAL IMPACTS

7.7.4 The Proposed Development may lead to local air quality impacts from emissions generated by operational development traffic. Localised air quality impacts from the on-site CHP or boiler plant, and emergency release of emissions during operation of the Proposed Development may also lead to air quality impacts.

POTENTIAL IMPACTS PER ZONE

7.7.5 Potential impacts presented in Table 7-10: are divided by zone.

Table 7-10: Potential operational impacts by zone

Potential impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Operational traffic emissions	✓	✓	✓
Operational energy plant emissions (boilers, CHP, flare)	✓	x	x
Emergency emissions (digester safety valves)	✓	x	x

OPERATION PHASE MITIGATION

7.7.6 Energy plant will be required to meet the emissions limit requirements detailed in the site Environmental Permit, which will be regulated by the Environment Agency, and best practice guidance within the IAQM and TG16 guidance documents. Energy plant should be designed with exhaust stacks designed to maximise dispersion of emissions; these stacks should have a height at least 3m higher than the height of the building they are within.

7.8 Proposed scope of the assessment

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED IN

7.8.1 Emissions of NO₂ and PM_{2.5} from construction vehicles, and dust arising from construction activities have the potential to result in adverse effects at the nearest sensitive receptors. These effects are therefore scoped in for further assessment. A qualitative assessment of construction dust effects will be undertaken.

7.8.2 Emissions of NO₂ and PM_{2.5} from construction and operational vehicles have the potential to result in adverse effects at the nearest sensitive receptors to the site and receptors along local roads. In relation to the transfer and final effluent zones, the construction traffic associated with the transfer tunnel and pipeline will require consideration if they IAQM/EPUK criteria for further assessment. Emissions from CHP or boilers utilised during operation of the Proposed Development have the potential to lead to localised air quality impacts pending the final design. These effects are therefore scoped in for further assessment.

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED OUT

7.8.3 The resources and receptors presented in Table 7-11 are proposed to be scoped out. The justification for doing so is provided.

Table 7-11: Resources and receptors proposed to be scoped out

Resources and receptors proposed to be scoped out	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone	Justification for scoping out
Construction dust emissions	In	In	In	N/A
Construction site plant emissions	Out	Out	Out	Emissions from site plant likely <i>de minimis</i> ⁵⁹ .

⁵⁹ So minor as to merit disregard.

Resources and receptors proposed to be scoped out	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone	Justification for scoping out
Construction traffic emissions	In	In	In	N/A
Operational traffic emissions	In	Out	Out	Small volumes of operational traffic are anticipated at both Transfers Zones. Not expected to exceed EPUK/IAQM criteria.
Operational energy plant emissions	In	Out	Out	There will be no energy plant operating within the transfer or Waterbeach zone.
Emergency emissions (digester safety valves)	Out	Out	Out	These emissions would not occur during normal WWTP operation and should only be required during an emergency. These are covered in Chapter 16: Major Accidents and Disasters.

Construction site plant emissions

- 7.8.4 Construction can require the use of various equipment such as excavators, cranes and on-site generators. All construction plant has an energy demand; with some plant resulting in direct emissions to air from exhausts. Guidance from the IAQM⁵² notes that given the nature of the site plant, effects from on-site plant exhausts will likely not be significant. NRMM^{60 61} are regulated in the UK to limit emissions of pollutants; NRMM on site will be required to adhere to emission requirements within these regulations.

Operational traffic emissions

- 7.8.5 Assessment of operational traffic from the Transfers Zones has been scoped out of the ES as the operational traffic will comprise of maintenance visits only

60 Statutory Instrument (2018), 'The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations', No. 764. Queen's Printer of Acts of Parliament.

61 Statutory Instrument (2019), 'The Road Vehicles and Non-Road Mobile Machinery (Type-Approval) (Amendment) (EU Exit) Regulations', No. 648. Queen's Printer of Acts of Parliament.

and is not anticipated to exceed the EPUK/IAQM criteria (section 7.10.7) for further assessment. Significant effects are therefore not anticipated.

Operational energy plant emissions

7.8.6 Assessment of operational energy plant at the Transfers Zones has been scoped out of the ES as there will be no energy plant operating within the Transfers Zones.

Emergency emissions

7.8.7 Gaseous emissions to air from the proposed WWTP processes would not occur during the normal operation of the plant. Emissions from the digester safety valves would occur only during an emergency and therefore assessment of this has been scoped out of the assessment for air quality.

7.9 Evidence of agreements reached with consultation bodies

7.9.1 The following consultation has been carried out in relation EIA scope and where agreements have been reached these are indicated.

Table 7-12: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
South Cambridgeshire District Council (Agreement on methodology 10/05/2021)	Agreed method of assessment as detailed in section 7.10 with South Cambridgeshire District Council.	Assessment method agreed with EHO

7.10 Assessment methodology

7.10.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst-case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

CONSTRUCTION DUST EMISSIONS

7.10.2 Construction activities can result in temporary effects from dust. 'Dust' is a generic term which usually refers to all airborne particulate matter in the size range 1-75 microns in diameter⁶²; the most common effects from dust emissions are soiling and increased ambient PM_{2.5} concentrations. Dust can arise from numerous construction activities such as concrete-batching, piling, sand blasting, wind erosion on material stockpiles and earth-moving activities. It can be mechanically transported either by wind or through the movement of vehicles

⁶² British Standards Institution (1992) Characterization of air quality. BS 6069-4.4:1993, ISO 7935:1992.

onto the public highway (transport of debris on vehicle wheels, or uncovered loads).

- 7.10.3 Guidance from the IAQM⁵² recommends splitting the construction activities into four separate source categories: demolition, earthworks, construction and trackout (the transport of dust and dirt onto the public road network), and determining the dust risk associated with each of these individually.
- 7.10.4 The risk of each source for dust effects is then identified, depending on the nature and scale of the construction activities and the proximity of sensitive receptors to the construction activities or site boundary. The assessment is used to identify appropriate mitigation measures proportional to the level of risk, to reduce the effects such that they are not significant.
- 7.10.5 The assessment considers three separate effects from dust: annoyance due to dust soiling, harm to ecological receptors and the risk of health effects due to a significant increase in exposure to PM_{2.5}.
- 7.10.6 The dust risk category is defined for each dust source and effect is used to determine appropriate site-specific mitigation measures to be adopted. It should be noted that in line with the recommendations of IAQM guidance, significance is only assigned to construction effects following mitigation.

CONSTRUCTION AND OPERATIONAL ROAD TRAFFIC EMISSIONS

- 7.10.7 The IAQM /EPUK guidance indicates that assessment of traffic emissions is required if a Proposed Development is likely to generate flows exceeding those detailed below over a period of a year or more:
- A change of Light-Duty Vehicles (LDV) flows of:
- More than 100 Annual Average Daily Traffic (AADT) flows within or adjacent to an AQMA; or,
 - More than 500 AADT elsewhere.
- A change of Heavy-Duty Vehicles (HDV) flows of:
- More than 25 AADT flows within or adjacent to an AQMA; or,
 - More than 100 AADT elsewhere.
- 7.10.8 Construction and operational traffic flows associated with the Proposed Development will be screened against the IAQM/EPUK criteria and any roads meeting the criteria will be assessed using the latest ADMS-Roads dispersion modelling software and following Defra's TG16 best-practice guidance. Five years of meteorological data from Mildenhall RAF will be used to obtain the worst-case year. The latest Emission Factor Toolkit from Defra will also be used to calculate emissions for the peak construction year and opening year 'without' and 'with' Proposed Development scenarios.

- 7.10.9 The road traffic assessment will focus on NO₂ and fine particulate matter (PM_{2.5} and PM_{2.5}) as these are the main pollutants associated with traffic emissions and focus of nearby AQMAs. The extent of the assessment of the traffic-related air quality impacts will be determined by the extent of the Proposed Development Transport Assessment. This will cover the local road network and any roads predicted to experience significant changes according to the criteria set out in the IAQM/EPUK guidance.
- 7.10.10 The ADMS Roads model will be verified against existing monitoring data for the area. SCDC and CCC have extensive monitoring networks that can be utilised for this assessment. On this basis, no air quality monitoring is proposed for this assessment.

OPERATIONAL PLANT EMISSIONS

- 7.10.11 As described in Chapter 2, the Proposed Development may include the provision of an on-site CHP or boilers, and a flare, with the details of the design still to be confirmed. The air quality effects of these would be assessed using ADMS5 and based on five years of meteorological data from RAF Mildenhall and emission guarantees from the boiler manufacturers. It should be noted that any on-site energy plant between 1 and 50 MW thermal capacity would be regulated by the Environment Agency (under Schedule 25A of the Environmental Permitting (England and Wales) (Amendment) Regulations 2018).

SIGNIFICANCE CRITERIA

- 7.10.12 The assessment for air quality will be undertaken in accordance with the EPUK/IAQM guidance. This is to ensure that the descriptions of effects within the assessment will be clear, consistent and in accordance with the latest guidance. Definitions for the assessment of air quality concentration changes at individual human health receptors will be adopted. Table 7-13: Impact descriptors for individual receptors (long-term) provides effect descriptors for annual changes in SO₂, NO₂, PM_{2.5} and PM_{2.5} concentrations as a result of the Proposed Development.
- 7.10.13 The magnitude of any concentration change identified will be considered in relation to the air quality assessment level (AQAL), which may be an air quality objective, limit value or target value.
- 7.10.14 EPUK recognises that professional judgement is required in the interpretation of air quality assessment significance. Table 7-13: is intended as a tool to help interpret the results to the air quality assessment and would therefore be employed in conjunction with professional judgement.

Table 7-13: Impact descriptors for individual receptors (long-term)

Long-term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76%-94% of AQAL	Negligible	Slight	Moderate	Moderate
95%-102% of AQAL	Slight	Moderate	Moderate	Substantial
103%-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Notes: (a) AQAL = Air Quality Assessment Level i.e. $40\mu\text{g}/\text{m}^3$ for annual mean NO_2 and $\text{PM}_{2.5}$ and $25\mu\text{g}/\text{m}^3$ for annual mean $\text{PM}_{2.5}$.
 (b) Percentage pollutant concentrations are intended to be rounded to whole numbers. For example, the '<1%' category in this table includes all changes from 0.5% to 1.4% (equivalent to an annual mean NO_2 or $\text{PM}_{2.5}$ absolute concentration change of between $0.2\mu\text{g}/\text{m}^3$ and $0.6\mu\text{g}/\text{m}^3$). Changes of 0% (i.e. less than 0.5%) are described as negligible.
 (c) When defining the concentration as a percentage of the AQAL, use the 'do minimum' concentrations where there is a decrease in pollutant concentration and the 'do something' concentration for an increase

- 7.10.15 Defra's TG16 document⁴⁸ indicates that the hourly NO_2 air quality objective of $200\mu\text{g}/\text{m}^3$ (not to be exceeded more than 18 times per year) is unlikely to be exceeded at roadside locations where the annual mean concentration is less than $60\mu\text{g}/\text{m}^3$. If the annual modelled mean NO_2 concentrations are found to be less than $60\mu\text{g}/\text{m}^3$, they will be considered to be within the hourly objective for NO_2 . In accordance with TG16, a similar assumption will be made with reference to the daily $\text{PM}_{2.5}$ objective; if the annual mean $\text{PM}_{2.5}$ concentration is less than $32\mu\text{g}/\text{m}^3$ the objective would be considered not to be exceeded.
- 7.10.16 In relation to the point sources (CHP, boilers and flare) to be modelled, the IAQM/EPUK guidance recommends using the Environment Agency threshold of 10% of the short-term AQAL as a screening criterion for the maximum short-term impact. Where the modelled short-term concentration is less than 10% of the short-term AQAL, it can be assumed that the impact is sufficiently small as to have an insignificant effect. Table 7-14 provides impact descriptors for short-term impacts; this table will be used in combination with professional judgement when determining a likely significant effect.

Table 7-14: Impact descriptors for individual receptors

Short-term concentration at receptor in assessment year	Magnitude of impact	Severity of impact
10% or less of AQAL	Negligible	N/A
11%-20% of AQAL	Small	Slight
21%-50% of AQAL	Medium	Moderate
51% or more of AQAL	Large	Substantial

Notes: (a) AQAL = Air Quality Assessment Level i.e. $40\mu\text{g}/\text{m}^3$ for annual mean NO_2 and $\text{PM}_{2.5}$ and $20\mu\text{g}/\text{m}^3$ for annual mean $\text{PM}_{2.5}$.

7.10.17 IAQM guidance⁶³ advises for ecological receptors, where the change in relevant predicted pollutant concentrations as a percentage of the relevant critical level or load is less than 1%, effects are deemed to be insignificant. The Project ecologist will be consulted where the change in relevant predicted pollutant concentrations as a percentage of the relevant critical level or load is greater than 1%. A change greater than 1% does not automatically indicate a significant effect; in order to determine significance, the results will be assessed further within the aspect of biodiversity and reported within the biodiversity chapter of the ES.

7.11 Approach to cumulative assessment

7.11.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

7.11.2 The cumulative assessment for air quality for construction will consider other Proposed Developments being constructed at the same time where the effects from construction dust have the potential to overlap.

7.11.3 The air quality approach to the cumulative assessment for construction and operation traffic will consider other developments which have the potential to increase traffic flows on the local road network. Committed developments to be included in the traffic data is to be agreed between SCDC and the Proposed Development transport consultants.

7.12 Assumptions, limitations and uncertainties

7.12.1 The air quality modelling predictions will be based on the most reasonable, robust and representative methodologies. There is an inherent level of uncertainty associated with the model predictions, however, due to:

- uncertainties with model input parameters such as surface roughness length (defined by land use) and minimum Monin-Obukhov length (used to calculate stability in the atmosphere);
- uncertainties with vehicle emission predictions;
- uncertainties with background air quality data;
- uncertainties with recorded meteorological data; and
- simplifications made in the model algorithms or post processing of the data that represent atmospheric dispersion or chemical reactions.

7.12.2 In order to best manage these uncertainties, the air quality roads model will be evaluated using the results from local authority air quality monitoring to verify model outputs. This model verification process will be undertaken in line with

63 Holman et al (2019). A guide to the assessment of air quality impacts on designated nature conservation sites – version 1.0, Institute of Air Quality Management, London. www.iaqm.co.uk/text/guidance/airquality-impacts-on-nature-sites-2019.pdf

Defra TG16 guidance. This is achieved by comparing modelled and monitored pollutant concentrations and, if necessary, adjusting the model output to account for systematic bias.

- 7.12.3 Mildenhall RAF meteorological site has been selected for the modelling assessment, as this is the closest site to the Proposed Development with recent data capture with the relevant parameters for assessment (e.g. wind speed, wind direction, cloud cover, heat flux). The Cambridge Airport meteorological site is closer to the Proposed Development; however, this site does not have available data beyond 2016.
- 7.12.4 Baseline air quality monitoring data for 2020 will not be considered in the air quality assessment as it is unlikely to be representative of normal conditions due to the changes to traffic flows associated with the coronavirus (Covid-19) pandemic lockdowns.

8 Biodiversity

8.1 Introduction

- 8.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorates as 'matters' relevant to the aspect of biodiversity. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.
- 8.1.2 Several matters (resources and receptors) within this aspect are proposed to be scoped out of further assessment with justification provided on, for example, the absence of a pathway from impact to the receptor, through consultation with the relevant statutory consultee or sufficient confidence in impact avoidance methods.

8.2 Matters (resources and receptors)

- 8.2.1 For the aspect of biodiversity the resources and receptors/features, are:
- statutory and non-statutory designated nature conservation sites;
 - habitats; and
 - protected and notable species.

8.3 Study Area

- 8.3.1 The study area is defined by the Ecological Zone of Influence (EZol), which is the area in which ecological features (including habitats and species) may be affected by biophysical changes as a result of the Proposed Development⁶⁴. The EZol is likely to extend beyond the EIA Scoping boundary, for example where there are ecological or hydrological links beyond the site boundaries. The EZol will vary for different ecological features depending on their sensitivity to an environmental change.
- 8.3.2 The study area is based on the EIA Scoping boundary, Figure 00 in Chapter 2. The buffer zone is defined for each resource or receptor as follows and is shown in Table 8-1 below.

64 CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: [\[REDACTED\]](#)

Table 8-1: Study Area table

Ecological resource or receptor	Study area
International statutory designated sites	International statutory designated sites such as Ramsar sites, Special Areas of Conservation (SAC) and Special Protection Areas (SPA) within 10km of the EIA Scoping boundary
National statutory designated sites	Within 10km of the EIA Scoping boundary
Non-statutory designated sites	Within 5km of the EIA Scoping boundary
Habitats-ancient woodlands	Within 200m of the EIA Scoping boundary
Habitats-Principal Importance	Habitats of Principal Importance under S41 of the NERC Act (2006) within 100m of the EIA Scoping boundary
Habitats-ponds, ditches, lakes and River Cam	Within 100m of the EIA Scoping boundary
Habitats-River Habitat Survey (RHS) of the River Cam	500m survey reach centred on the new treated effluent outfall
Bats <i>Chiroptera</i> species - Preliminary bat roost assessments of structures/buildings and trees, dusk emergence and dawn re-entry surveys of potential roost features (PRF),	The surveys will be undertaken within the EIA Scoping boundary plus 100m buffer
Bats – activity transects	The transects will cover the core site, the existing WWTP site and adjacent to the River Cam, including the treated effluent discharge outfall structure
Bats – static detectors	Static bat detectors have been deployed at four locations: one within the existing WWTP; one at the proposed treated effluent discharge outfall structure, one within the centre of the core site, and one along the Low Fen Drove Way Grassland and Hedges County Wildlife Site (CWS) within the core site
Otter <i>Lutra lutra</i>	Otter surveys will be undertaken 100m either side of the proposed treated effluent discharge outfall structure on the River Cam and along all other watercourses, ditches and ponds within the EIA Scoping boundary plus 50m
Great crested newt <i>Triturus cristatus</i>	Suitable ponds and ditches within 250m of the Proposed Development
Schedule 1 birds	The EZoI for birds is defined as areas within 300m from the EIA Scoping boundary.
Habitats-waterbodies with potential to support great crested newt (GCN)	Within 250m of the EIA Scoping boundary
Water Vole <i>Arvicola amphibius</i>	Water vole surveys will be combined with the otter surveys and undertaken 100m either side of the proposed treated effluent discharge outfall structure on the River Cam and

Ecological resource or receptor	Study area
	along all other watercourses, ditches and ponds within the EIA Scoping boundary plus 50m
Reptiles	Surveys for reptiles will occur in five locations: Low Fen Drove Grasslands and Hedges CWS within the core site, the existing WWTP, the WW Transfer and treated effluent pipeline route and suitable habitat off Low Fen Drove Way within the core site
Terrestrial invertebrates	Terrestrial invertebrate surveys will be undertaken at sites identified during the walkover surveys in 2020, including Low Fen Drove Grasslands and Hedges CWS within the core site, semi-improved pasture at Honey Hill within the core site and an area of grassland in the existing WWTP. There were three sites identified in the Waterbeach WWTP and transfer pipeline to proposed WWTP.
Fish	Fish surveys will be undertaken within a 100m buffer of the proposed treated effluent discharge outfall structure on the River Cam
Aquatic macroinvertebrates	Aquatic macroinvertebrate surveys will be undertaken within a 100m buffer of the proposed treated effluent discharge outfall structure on the River Cam. Aquatic macroinvertebrate surveys will be undertaken on ditches within 100m of the EIA Scoping boundary. Each ditch will be surveyed on one occasion, between June and October 2021 inclusive. River macroinvertebrate surveys will comprise of two survey visits in April 2021 and September 2021.
Aquatic macrophytes	Aquatic macrophyte surveys will be undertaken within a 100m buffer of the proposed treated effluent discharge outfall structure on the River Cam. Aquatic macrophyte surveys will be undertaken on ditches within 100m of the EIA Scoping boundary
Badger <i>Meles</i>	Badger surveys are planned to be undertaken within the EIA Scoping boundary plus 100m
National Vegetation Classification (NVC)	Surveys will be undertaken of all priority habitats (deciduous woodland and coastal and floodplain grazing marsh), and the Low Fen Drove Grasslands and Hedges CWS within the core site
Hedgerows	Hedgerow Regulations assessment surveys will be undertaken on all species-rich hedgerows within the EIA Scoping boundary

8.4 Legislation, planning policy context and guidance

8.4.1 Legislation, planning policy, and guidance relating to biodiversity, and which are pertinent to the Proposed Development comprises the following.

8.5 Legislation and regulation

INTERNATIONAL LEGISLATION

- Convention on Biological Diversity 1992; and
- Convention on Wetlands of International Importance 1971 (the Ramsar Convention). It has three main 'pillars' of activity: the designation of wetlands of international importance as Ramsar sites; the promotion of the wise-use of all wetlands in the territory of each country; and international co-operation with other countries to further the wise-use of wetlands and their resources.

NATIONAL LEGISLATION

- The Conservation of Habitats and Species Regulations 2017 (as amended) provides for the protection of a National Site Network of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs);
- The Wildlife and Countryside Act 1981 (as amended) (WCA) is the main piece of UK legislation on nature conservation. Contained within it are lists of species of flora and fauna subject to statutory protection, with the Act detailing the level of protection attributed to each, which in some instances extends to the habitats or structures they use or in which they are found. The WCA is also the primary piece of legislation relating to the designation and protection of Sites of Special Scientific Interest (SSSI);
- The Natural Environment and Rural Communities Act 2006 (NERC Act, 2006) places the duty on every Local Authority to conserve biodiversity. Section 40 refers to the restoration and enhancement of populations and habitats, whilst Section 41 (S41) lists species and habitats of principal importance for the conservation of biodiversity in England. These include those former UK Biodiversity Action Plan (UK BAP) priority habitats and species that occur in England;
- The Protection of Badgers Act 1992 affords a high level of protection to badgers and their setts. The legislation was introduced primarily for reasons of animal welfare as opposed to any concern over the conservation status of what is one of the UK's more common larger mammals;
- The Countryside and Rights of Way Act 2000 (CRoW Act) strengthens the provisions of the Wildlife and Countryside Act 1981 (as amended) in several key areas including in respect of SSSI protection and in the inclusion of 'reckless' in addition to the intentional nature of the offence;
- under The Hedgerow Regulations 1997, the removal of any hedgerows, or sections of hedgerows will require a Hedgerow Removal Licence from the Local Planning Authority. The Hedgerow Regulations 1997 criteria, as listed above, assess whether a hedgerow is 'Important'. If the hedgerow is not Important, the Local Authority cannot refuse permission to remove the hedgerow. If the hedgerow is Important, the Local Authority will decide if the circumstances justify the removal of an Important hedgerow. Unless satisfied

that removal is justified, the Local Authority must refuse permission and issue a hedgerow retention licence; and

- The Eels (England and Wales) Regulations 2009, establishing measures for the recovery of the stock of European eel following significant population declines.

PLANNING POLICY

8.5.1 National planning policy of relevance to biodiversity, and pertinent to the Proposed Development are:

8.5.2 NPS for Waste water⁶⁵ with particular reference to;

- Paragraph 4.5.3: where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species, and on habitats and other species identified as being of principal importance for the conservation of biodiversity. The applicant should provide environmental information proportionate to the infrastructure where EIA is not required. The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests”; and
- Paragraph 4.5.14: Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering applications, the decision maker should consider the extent to which the applicant has maximised such opportunities in and around developments. The decision maker may use requirements or planning agreements where appropriate in order to ensure that such beneficial features are delivered.

8.5.3 NPPF⁶⁶ with particular reference to;

- Section 15, Paragraphs 174 to 178, which state that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. The NPPF highlights that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

⁶⁵ National Policy Statement for Waste Water (2012). Department of Environment, Food and Rural Affairs. London. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69505/pb13709-waste-water-nps.pdf. Last accessed 04 January 2021.

⁶⁶ National Policy Planning Framework (2021). Ministry of Housing, Communities & Local Government: London. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf Last accessed 09 September 2021.

8.5.4 UK Environmental Bill 2020⁶⁷ with particular reference to;

- Schedule 15 of the UK Environmental Bill 2020 indicates that all new infrastructure development should include BNG as a planning condition including under the PA2008.
- to deliver biodiversity net gain measures for development, the net gain requirements are calculated through a metric based system referred to as the “Defra Metric” and the system calculates these requirements, based upon habitat area, distinctiveness, condition, and difficulty of delivering habitat creation/restoration measures. The biodiversity net gain metric calculation permits local planning authorities to have clear and objective biodiversity information as part of the biodiversity net gain plan and achieve biodiversity net gain as required under the NERC Act 2006, NPPF and UK Environmental Bill 2020; and
- The Environment Bill is expected to have its report stage in September 2021 in the House of Lords. Until the Environment Bill receives Royal Assent (final stages) its provisions may be changed and so the preparation of the ES will have regard to the stage reached by the Environment Bill/Act (if Royal Assent has been received) before completion of the ES and address requirements that may apply to the Proposed Development.

8.5.5 The Joint Nature Conservation Committee’s UK Post-2010 Biodiversity Framework: Revised Implementation Plan covers the period 2011 – 2020 and replaces the UKBAP 1994 – 2010. It aims to address the underlying causes of biodiversity loss and improve and enhance biodiversity and ecosystem services. The UKBAP priority habitats and species background information are still widely used at country level. There are plans to replace the framework and that the new Biodiversity Framework will set out shared priorities and areas for collaboration across the UK, primarily as a collective response to the post-2020 global framework of goals and targets, expected to be agreed at the CBD’s Fifteenth Conference of the Parties, COP15. It had been envisaged that publication of a new UK Framework would follow COP15, originally scheduled for October 2020, and therefore lead on directly from the existing implementation plan. As COP15 was delayed to 2021 in light of the coronavirus (COVID-19) pandemic, the Government is considering a further revised plan until the new global framework is announced⁶⁸.

8.5.6 Local planning policy of relevance to the Proposed Development includes:

8.5.7 South Cambridgeshire District Council Local Plan 2018⁶⁹ with particular reference to:

67 DEFRA (2020). UK The Environment Bill. Available at: [REDACTED]. Last accessed 22 January 2021.

68 UK Parliament (2020) Biodiversity: Question for Department for Environment, Food and Rural Affairs. Available at: [REDACTED]

69 South Cambridgeshire District Council, 2018. South Cambridgeshire District Council Local Plan – Adopted. Cambridge. Available URL: <https://www.scambs.gov.uk/media/17793/south-cambridgeshire-adopted-local-plan-2018.pdf>

- Policy NH/4: (p115) which states: new development must aim to maintain, enhance, restore or add to biodiversity. Opportunities should be taken to achieve positive gain through the form and design of development. Measures may include creating, enhancing and managing wildlife habitats and networks, and natural landscape. The built environment should be viewed as an opportunity to fully integrate biodiversity within new development through innovation. Priority for habitat creation should be given to sites which assist in the achievement of targets in the Biodiversity Action Plans (BAPs) and aid delivery of the Cambridgeshire Green Infrastructure Strategy;
- Policy NH/5 (p117): Sites of Biodiversity or Geological Importance; and proposed development likely to have an adverse effect on land within or adjoining a Site of Biodiversity or Geological Importance, as shown on the Policies Map (either individually or in combination with other developments), will not normally be permitted. Exceptions will only be made where the benefits of the development clearly outweigh any adverse impact.

8.5.8 South Cambridgeshire District Council are preparing an AAP and the NEC AAP⁷⁰. A draft NEC has been published which refers to Policy 5: Biodiversity and Net Gain. This policy sets out how new development will achieve biodiversity net gain of 10% minimum and measurably improve the biodiversity network across the wider area.

8.5.9 The Cambridge City Local Plan⁷¹ with particular reference to;

- Policy 69 (p201): Protection of sites of biodiversity and geodiversity importance. States that development will be permitted if it will not have an adverse impact on, or lead to the loss of, part or all of a site identified on the Policies Map. Regard must be had to the international, national or local status and designation of the site and the nature and quality of the site's intrinsic features, including its rarity.
- Policy 70 (p203): Protection of priority species and habitats. States that development will be permitted which protects priority species and habitats and enhances habitats and populations of priority species. Proposals that harm or disturb populations and habitats should minimise ecological harm and secure mitigation and or compensatory measures resulting in either no net loss or a net gain.
- Policy 71 (p205): Trees. States that development proposals should preserve, protect and enhance existing trees and hedges that have amenity value, provide replacement planting, and sufficient space for trees and other vegetation to mature.

⁷⁰ South Cambridgeshire District Council, (2020) North East Cambridge Area Action Plan. Available at: <https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/emerging-local-plans-and-guidance/north-east-cambridge-area-action-plan> Last accessed: 12 January 2021.

⁷¹ Cambridge City Council (2018). Cambridge City Local Plan Towards 2031. Issues and Options Report (including representations to this document)

Green Infrastructure and Conservation Initiatives

- 8.5.14 Cambridge City Nature Conservation Strategy⁷⁷ aims to guide nature conservation activities to enhance the biodiversity and nature conservation value of the City of Cambridge through the planning process. The main aim of the conservation strategy is “To ensure the City has a strong green structure with an accessible network of green spaces rich in biodiversity”. The local plan provides a detailed vision for the next 20 years of biodiversity based on achieving a “net gain” in biodiversity and building an ecological network.
- 8.5.15 The Cambridge Nature Network⁷⁸ has been developed by Cambridge Past, Present and Future and The Wildlife Trust for Bedfordshire, Cambridgeshire, and Northamptonshire (BCN) and includes habitats (parks, reserves, farms) within 10km of Cambridge city, identifying opportunities for locations for creating new habitats as well as making a commitment to doubling the amount of nature rich habitats by 2050.
- 8.5.16 The Proposed Development falls within an area of the National Trust’s Wicken Fen Vision⁷⁹. The 100-year vision aims to restore habitats and create a landscape-scale space for people and wildlife between Cambridge and the Wicken Fen Nature Reserve. The vision is a strategic element of green infrastructure in the adopted development plans for both South Cambridgeshire District Council (adopted 2018) and East Cambridgeshire District Council (adopted 2015).
- 8.5.17 The Proposed Development also falls within part of the proposed Cambridgeshire Strategic Green Infrastructure Network (Strategic Network Area 6: Cambridge and Surrounding Areas). The strategy is used to design green infrastructure across Cambridgeshire County by implementing these four objectives:⁸⁰
- reverse the decline in biodiversity;
 - mitigate and adapt to climate change;
 - promote sustainable growth and economic development; and
 - support healthy living and wellbeing.

77 Cambridgeshire City Council, 2006. Cambridge City Nature Conservation Strategy – “Enhancing Biodiversity”. Cambridge. Available at: <https://www.cambridge.gov.uk/media/3925/nature-conservation-strategy.pdf>. Last accessed: 05 January 2021.

78 The Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire (2021) *The Cambridge Nature Network, A Nature Recovery Network for Cambridge and its Surrounds, Final Report*. Available at: [REDACTED] Last accessed: 25 August 2021

79 National Trust (1999) Wicken Fen Vision. Available at: [REDACTED] Last accessed: 05 January 2021.

80 Cambridge City Council, 2011. Cambridgeshire’s Green Infrastructure Strategy objectives. Available at: <https://www.cambridge.gov.uk/media/2557/green-infrastructure-strategy.pdf> <https://www.cambridge.gov.uk/cambridgeshire-green-infrastructure-strategy#:~:text=The%20Cambridgeshire%20Green%20Infrastructure%20Strategy,now%20and%20in%20the%20future.&text=To%20promote%20sustainable%20growth%20and%20economic%20development>. Last accessed: 05 January 2021.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

8.5.18 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirement for mitigation or influence the methodology of the EIA. For the aspect of biodiversity planning policy has influenced the EIA scope as follows:

- mitigation, compensation, and enhancement – the national planning policies identify opportunities to build, conserve and enhance biodiversity and geological features as part of good design. This states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible; and
- mitigation, compensation, and enhancement – the local planning policies reiterate the above with regards to new development, reinforcing the mitigation hierarchy with the aim to maintain, enhance, restore or add to biodiversity. Opportunities should be taken to achieve positive gain through the form and design of development assisting in the achievement of targets for LBAPs. The built environment should be viewed as an opportunity to fully integrate biodiversity within new development through innovation, with a target of 10% biodiversity net gain.

NATIONAL POLICY STATEMENT REQUIREMENTS

Table 8-2: Scope and NPS Compliance sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 8-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirement
<p>Paragraph 3.3.1 The project shall consider the potential for any significant effect on a European site (or on any site to which the same protection is applied as a matter of policy), either alone or in combination with other plans or projects. Advice of Natural England should be sought, and a screening should be completed to understand the need for Appropriate Assessment.</p>	<p>An HRA assessment will be included as a supporting document within the application and rereferred to within the ES Chapter for Biodiversity.</p>
<p>Paragraph 4.5.3 & 4.5.14: The ES shall identify any effects on internationally, nationally and locally designated sites of ecological importance, on protected species, and on habitats and other species identified as being of principal importance for the conservation of biodiversity. The application should indicate how the proposals have integrated opportunities to conserve and</p>	<p>The assessment of impacts on Biodiversity will follow CIEEM guidance. The ES will refer to a LEMP and landscape design masterplan derived to mitigate adverse effects and that have considered local conservation objectives such as those of the Wicken Fen vision. The Defra metric 3.0 will be used to demonstrate Biodiversity Net Gain (BNG) achieved through the landscape masterplan</p>

NPS requirement	Compliance of EIA scope with NPS requirement
enhance biodiversity. This will also include embedded features within the design.	which will include habitat creation and habitat enhancement proposals.

GUIDANCE

- 8.5.19 Guidelines by the Chartered Institute of Ecology and Environmental Management (CIEEM) sets out the process of ecological impact assessment (EclA)⁸¹. The guidelines promote good practice, provides a common framework to EclA, and provides an indication of the information needed to adequately consider the Proposed Development in the light of biodiversity legislation, policy, and the likely ecological effects of a project.
- 8.5.20 Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013)⁸² cites the CIEEM EclA Guidelines as the acknowledged reference on ecological impact assessment. The Guidelines are consistent with the British Standard on Biodiversity, which provides recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting and monitoring.
- 8.5.21 For example, the current guidance recommends that all ecological features that occur within an EZol for a Scheme are investigated. Areas within the EZol may include:
- areas directly within the land required for the proposed development and access; and
 - areas beyond the proposed development boundary from which the impacts described above are likely.
- 8.5.22 Good practice is to apply the mitigation hierarchy principles, and these underpin EclA. That is to first avoid, mitigate and finally as the last option compensate for biodiversity losses. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then biodiversity losses can be offset by providing gains elsewhere. The principles include:
- avoidance – incorporate measures to avoid the adverse effect, for example, alternative design options or modifying the proposed programme to avoid environmentally sensitive periods;

⁸¹ Chartered Institute of Ecology and Environmental Management. Available at: [REDACTED]

⁸² Biodiversity: Code of practice for planning and development (2013) BS 42020:2013 [REDACTED]

- mitigation/reduction – incorporate measures to lessen the effect, for example, fencing off sensitive areas during construction and implementing a CEMP to reduce the potential impacts from construction activities;
- compensation/remediation – where it is not possible to avoid or reduce a significant effect then offsetting measures will be considered, for example the provision of replacement of habitat to replace that lost to the Proposed Development; and
- enhancement – enhancement measures may be incorporated into the Proposed Development. Enhancement measures are considered to be over and above any avoidance, mitigation and compensation measures required to neutralise the effects of the Proposed Development.

8.5.23 The mitigation hierarchy is also the first principle in the Biodiversity Net Gain Good Practice Principles for Development⁸³. The Proposed Development will incorporate planting proposals to provide a biodiversity net gain (BNG) of 10% by setting aside space for habitat creation within the core site area and restoring habitats to their original function or use within the transfers and treated effluent pipeline, and Waterbeach WWTP and transfer pipeline to proposed WWTP zones. The BNG assessment will be included as a separate report and appended to the ES.

8.5.24 Protected species survey methodology additionally follows that of the standard advice for protected species from Natural England⁸⁴.

8.6 Baseline conditions

8.6.1 The baseline conditions for biodiversity are described for the three zones within the EIA Scoping boundary as set out below.

8.6.2 A desk study was undertaken to ascertain the presence of the following:

- statutory designated sites;
- SSSI Impact Risk Zones (IRZs) to assess the Proposed Development for likely impacts on SSSI⁸⁵;
- non-statutory designated sites; and
- protected and priority habitats and species.

8.6.3 Information on the above features has been accessed from:

- Multi Agency Geographic Information for the Countryside (MAGIC);

83 CIEEM, CIRIA, IEMA (2016) *Biodiversity Net Gain: Good Practice Principles for Development*. Available online: [REDACTED]

84 Natural England and Department for Environment, Food and Rural Affairs (2021) *Guidance: Protected species and development: advice for local planning authorities* www.gov.uk/guidance/protected-species-how-to-review-planning-applications

85 The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSI posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. The IRZs also cover the interest features and sensitivities of European sites, which are underpinned by the SSSI designation and "Compensation Sites", which have been secured as compensation for impacts on European /Ramsar sites. Further guidance on SSSI IRZ are available online at https://magic.defra.gov.uk/Metadata_for_magic/SSSI%20IRZ%20User%20Guidance%20MAGIC.pdf

- aerial photography at a scale of 1:25,000;
- Cambridgeshire and Peterborough Priority Species and Habitat Action Plans;
- Ordnance Survey mapping (at scales of 1:50,000 and 1:25,000); and
- data report from the British Trust of Ornithology (BTO) to summarise bird occurrence and breeding information from Bird Atlas 2007–11 and Bird Track in the 10km and 2km squares in which the Site is located⁸⁶. The BTO data report is provided in Appendix D.

8.6.4 Results from a biological records search undertaken to obtain records of protected or notable species within a 5km radius of a central point (grid reference: TL 49740 61214) in the Core Zone are discussed within this section. Records were provided by the Cambridgeshire and Peterborough Environmental Records Centre (CPERC) in 2019.

8.6.5 A Preliminary Ecological Appraisal (PEA) was undertaken between July and September 2020 to establish the broad ecological baseline for the Proposed Development and surrounding areas, which may be affected by the works (defined as the proposed survey area). Based on the findings of the PEA, habitat and protected species surveys⁸⁷ have been undertaken throughout 2021 to determine the ecological baseline. These ecological receptors and survey summary for the core site and transfers and treated effluent pipeline are listed in Table 8-3. The ecology surveys for the core site and transfers and treated effluent pipeline are largely complete.

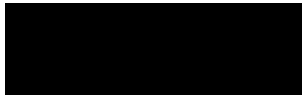
Table 8-3: Ecological Survey Summary 2021 (Core Zone and WW Transfers and Final Effluent Zone)

Ecological survey	Ecological surveys completed	Ecological surveys partially completed
Extended Phase 1 Habitat Survey	July–September 2020	-
Extended Phase 1 Habitat Survey – gap filling	The extended Phase 1 Habitat Survey completed in 2020 did not include the area of the underground transfer pipelines from the existing WWTP to proposed WWTP, south of the A14 and east of the existing WWTP, as this was originally thought to be entirely beneath the ground in a tunnel. The updated design now includes the proposal for shafts within land south of the A14, therefore, this area was surveyed in April 2021	-
Hedgerow Regulations Survey	Completed August 2021	-

⁸⁶ British Trust for Ornithology (BTO) (2020). BTO Data Report - Site 3 Option A (2020-12-14). BTO: Theford.

⁸⁷ Invasive species surveys were conducted in conjunction with other ecological receptor surveys and target notes and annotations on maps made when invasive species were encountered.

Ecological survey	Ecological surveys completed	Ecological surveys partially completed
National vegetation classification (NVC)	Woodland, grassland and Low Fen Drove Way Grassland and Hedges CWS completed July 2021 Floodplain grazing marsh completed August 2021	-
River habitat survey (RHS) and Modular River Survey (MoRPH)	Completed June 2021	-
Arboricultural survey	To be completed December 2021 – January 2022	
Bats – preliminary roost assessment (PRA)	Preliminary bat roost assessment visits completed	-
Bats – Climbed inspection of trees	Climbed tree inspections completed May 2021	-
Bats – activity transect	May, July, September 2021	-
Bats – static surveys	May, July, September 2021	-
Bats – dusk emergence and dawn re-entry surveys	May-September 2021	-
Otter	-	Two of four visits were completed in March and May 2021, the third visit will be undertaken in October/November 2021 and the final survey in January/February 2022.
Great crested newt (GCN) scoping and habitat suitability index (HSI) assessment, presence/absence surveys	Scoping surveys completed in April 2021. Presence/absence surveys completed April 2021	-
GCN environmental DNA (eDNA) surveys	eDNA surveys completed in May 2021	-
Breeding bird surveys targeting turtle dove <i>Streptopelia turtur</i> , grasshopper warbler <i>Locustella naevia</i> , barn owl <i>Tyto alba</i> , kingfisher <i>Alcedo atthis</i> and Cetti's warbler <i>Cettia cettia</i>	Scoping surveys completed April 2021 Schedule 1 species surveys undertaken May-August 2021	-
Water vole	Completed in March and May 2021	-

Ecological survey	Ecological surveys completed	Ecological surveys partially completed
Reptiles	<p>Surveys have been completed at the following locations within the core site zone: Low Fen Drove Grasslands and Hedges CWS, suitable habitat off Low Fen Drove Way.</p> <p>Surveys completed within the transfers and treated effluent pipeline zone include locations within the existing WWTP and adjacent to the treated effluent discharge location and associated fields.</p> <p>The surveys were completed in the months April to September 2021, excluding July and August due to high temperatures.</p>	-
Terrestrial invertebrates	Surveys undertaken from May to September 2021 excluding August.	-
Badger	Initial walkover surveys completed in May 2021	
Fish	<p>One fish eDNA survey has been completed and the second survey will be completed in October 2021</p> <p>Fish surveys of the River Cam completed September 2021</p>	-
Aquatic macroinvertebrates	<p>Ditch macroinvertebrate surveys completed April 2021</p> <p>River Cam survey visits completed April and September 2021</p>	-
Aquatic macrophytes	<p>Ditch macrophyte surveys completed June 2021</p> <p>River Cam macrophytes survey completed September 2021</p>	-


8.6.6 White-clawed crayfish *Austropotamobius pallipes*, dormouse *Muscadines avellanarius*, and wintering birds have been scoped out from further surveys as detailed in Section 8.9.7 onwards.

8.6.7 The PEA undertaken in 2020 included the Waterbeach WRC and transfer pipeline. Table 8-4 provides the ecological survey summary for the Waterbeach WWTP transfer pipeline to proposed WWTP.

Table 8-4: Ecological Survey Summary Waterbeach WRC transfer pipeline to proposed WWTP

Ecological survey	Ecological surveys status	Ecological surveys 2022
Extended Phase 1 Habitat Survey	July–September 2020	An update will be completed, where required to include areas of land in need of survey due to localised route alignment alterations as part of the design process.

Ecological survey	Ecological surveys status	Ecological surveys 2022
Hedgerow Regulations Survey	Completed September 2021	
National vegetation classification (NVC)	Completed September 2021	
Arboricultural survey	To be undertaken between November 2021 - Jan 2022	-
Bats preliminary roost assessment	Bat PRA August/September 2021	-
Bats – Climbed inspection of trees	Climbed tree inspections commencing November 2021 onwards	To be completed by April 2022
Bats – activity transect	-	To be undertaken during April to August 2022
Bats – static surveys	-	To be undertaken during April to August 2022
Bats – dusk emergence and dawn re-entry surveys	-	Bat emergence and re-entry surveys proposed May to August 2022
Otter	Commenced in September 2021 and undertaken quarterly	To continue into 2022
Great crested newt (GCN) scoping and habitat suitability index (HSI) assessment	Scoping/HSI surveys completed in April 2021.	-
GCN environmental DNA surveys	eDNA surveys completed in June 2021	-
GCN presence/absence surveys		None required as eDNA returns were negative (with 1 inconclusive)
Breeding bird surveys targeting Schedule 1 and other high sensitivity, highly protected species	Scoping surveys to be undertaken in November 2021	Schedule 1 species surveys proposed March–August 2022
Water vole	First visit to be completed by October 2021	Second visit to be completed in April 2022
Reptiles	First survey completed mid-September 2021. Further survey visits to be completed by mid-October 2021, but dependent on weather conditions.	Outstanding and additional surveys proposed March to May 2022, but dependent on weather conditions
Terrestrial invertebrates	-	Habitats scoped in as suitable for detailed surveys and which will be directly impacted by the Proposed Development will be surveyed April to September 2022

Ecological survey	Ecological surveys status	Ecological surveys 2022
Badger		
Aquatic macroinvertebrates	To be undertaken, in suitable ditches and ponds in September/October 2021	Additional surveys, where required to be completed in April/May 2022
Aquatic macrophytes	-	April/May 2022
Pond PYSM surveys	September 2021	-

Statutory and Non-statutory Designated Sites

8.6.8 Statutory and non-statutory designated sites within the overall Scoping boundary are indicated below. These are shown in Figure 8-1 and Figure 8-2 which shows proximity to the different zones within the EIA Scoping boundary.

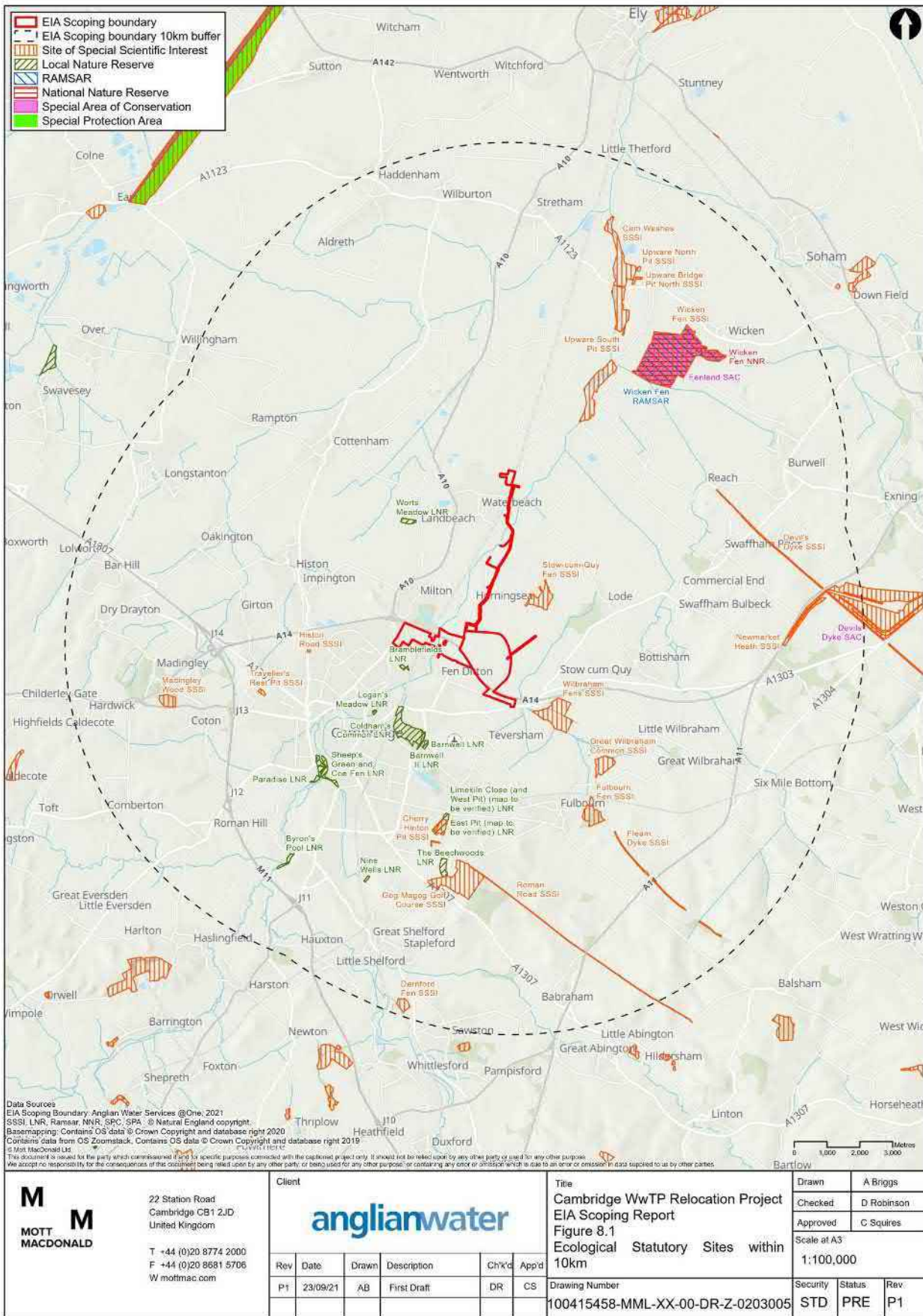
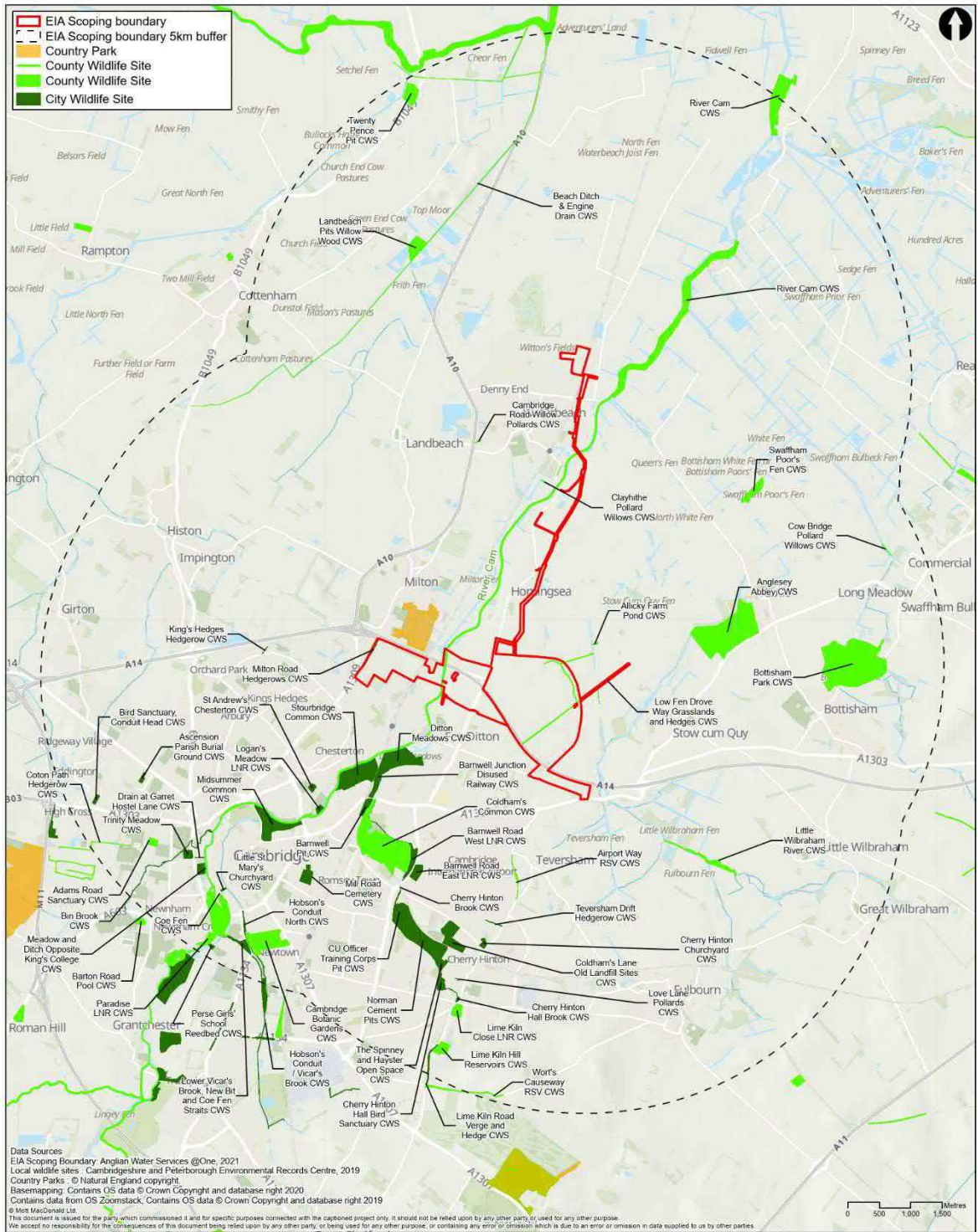


Figure 8-1: Ecological Statutory Sites within 10km



	22 Station Road Cambridge CB1 2JD United Kingdom T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com	Client		Title		Drawn	A Briggs	
				Cambridge WwTP Relocation Project EIA Scoping Report Figure 8.2 Non-statutory Designated Sites within 5km		Checked	D Robinson	
						Approved	C Squires	
				Drawing Number		Scale at A3	1:55,000	
				100415458-MML-XX-00-DR-Z-0203006		Security	Status	Rev
						STD	PRE	P1

Figure 8-2: Ecological Non-statutory Sites within 5km

Statutory Designated Sites

8.6.9 One internationally designated Ramsar site and two designated SAC were identified in the study area:

- Wicken Fen Ramsar;
- Fenland SAC; and
- Devil's Dyke SAC.

8.6.10 Wicken Fen Ramsar, shares the same boundary with Fenland SAC and is also designated as a SSSI and National Nature Reserve (NNR), also known as Wicken Fen. Details of these sites, including name, designation, distance from zone and reason for designation is shown in Table 8-5.

Table 8-5: International and European designated sites within the study area

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for designation
Wicken Fen	Ramsar site	8.5km north-east of the core site area	Supports one of the most outstanding remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields. Also designated as the site supports one species of British Red Data Book (RDB) plant, fen violet <i>Viola persicifolia</i> , which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 British RDB invertebrates.
		9.6km north-east of transfers and treated effluent pipeline and associated potential discharge location	
		4.7km north-east of Waterbeach WWTP and transfer pipeline to proposed WWTP	
Fenland	SAC	8.5km north-east of the core site area	Designated primarily for presence of <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caeruleae</i>) and Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> habitats, with spined loach <i>Cobitis taenia</i> and great crested newt also present as qualifying features.
		9.6km north-east of transfers and treated effluent pipeline and associated potential discharge location	
		4.7km north-east of Waterbeach WWTP and transfer pipeline to proposed WWTP	
Devil's Dyke	SAC	8.96km east of the core site area	Designated for the presence of semi-natural dry grasslands and scrubland on calcareous substrates. The site consists of a mosaic of CG3 <i>Bromus erectus</i> and CG5 <i>Bromus erectus</i> –
		9.7km east of Waterbeach WWTP and transfer	

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for designation
		pipeline to proposed WWTP 8.7km east of the transfers and treated effluent pipeline	<i>Brachypodium pinnatum</i> calcareous grasslands. Devil's Dyke is classified as priority habitat "orchid rich sites". It is the only known UK semi-natural dry grassland site for lizard orchid <i>Himantoglossum hircinum</i> .

Source: MAGIC and JNCC Designated Sites Citations.

- 8.6.11 There are no Ramsar sites, SAC or SPA where the qualifying features are birds or bats within 10km of the EIA Scoping boundary. Wicken Fen is known to have wildfowl interest; however, this is not a reason for its notification as a Ramsar site.
- 8.6.12 Ecological receptors are scoped out of the assessment if there is no evidence of an environmental pathway. During this scoping out of ecological receptors, the scoping is therefore refined enabling targeted assessments to take place. LNR within and south of Cambridge city were not considered and have not been included in Table 8-6 unless they had a direct ecological or hydrological link, as they are within built up areas and isolated from the Proposed Development. Therefore, impacts to these LNR are not anticipated and these LNRs are scoped out.
- 8.6.13 Thirty-two nationally designated statutory sites are present within the 10km study area. These include 19 SSSI, one of which is also classified as a NNR (Wicken Fen), and 13 Local Nature Reserve (LNR). Of these, eight SSSI and all 13 LNR are designated for biodiversity features, as shown in Table 8-6.
- 8.6.14 Hydrological links have been assessed using the Water Resources Statement⁸⁸ and the Hydrogeological Impact Assessment⁸⁹. Ecological links are assessed using Ordnance Survey (OS) and aerial imagery mapping to see if there is habitat connectivity between the EIA Scoping boundary and designated sites. Air quality impacts require further assessment and are discussed in Section 8.12.
- 8.6.15 There are 55 non-statutory designated sites within 5km of the EIA Scoping boundary. This includes 21 County Wildlife Sites (CWS), 33 City Wildlife Sites (City WS) and one Protected Road Verge (PRV). County and City Wildlife Sites south of the A14 road network are not included in Table 8-6 as there are no anticipated impacts from the Proposed Development due to their distance and isolation from the Proposed Development and their location within existing built-up areas of Cambridge. This excludes all City Wildlife Sites except for Milton

88 Mott MacDonald, 2020. Cambridge Waste Water Treatment Plant Relocation Project Preliminary Water Resources Statement.

89 Mott MacDonald, 2021. Cambridge Waste Water Treatment Plant Relocation Project Hydrogeological Impact Assessment.

Road Hedgerows City Wildlife Site (which is adjacent to the existing WWTP) and the PRV. The remaining 14 non-statutory sites are shown in Table 8-7.

Source: MAGIC and Natural England Designated Sites Citations.

Table 8-6: Nationally designated statutory sites within the study area

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for notification
Stow-cum-Quy Fen	SSSI	845m north-west of the core site. 2.1km north-west of transfers and treated effluent pipeline. 1.1km west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Contains floristically rich calcareous loam pasture, in addition to hedgerows and scrub which add to the variety of habitats.
Wilbraham Fens	SSSI	580m south-east of the core site. 2.2km south-east of transfers and treated effluent pipeline. 3.0km south-east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	A large area of fen and neutral grassland with associated scrub and open water communities. Dense stands of <i>Phragmites australis</i> reedbed present with other fen species.
Great Wilbraham Common	SSSI	3km south-east of the core site. 4.7km south-east of transfers and treated effluent pipeline. 5.3km south-east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	The site supports neutral grassland communities of calcareous loam grassland type, which is now rare in Britain. One of the largest remaining species-rich grasslands in Cambridgeshire.
Fulbourn Fen	SSSI	3.6km south-east of the core site. 5.3km south-east of transfers and treated effluent pipeline. 6.1km south-east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	The site has species-rich neutral grassland on calcareous loam and peat, with remnants of fen woodland; these habitats are rare in lowland England.
Cam Washes	SSSI	6.6km north of the core site. 7.5km north of transfers and treated effluent pipeline.	A series of low-lying pastures which are subject to seasonal flooding. This seasonal flooding, coupled with a range of grassland structure

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for notification
		2.5km north of Waterbeach WWTP and transfer pipeline to proposed WWTP.	from damp short grassland to wet tussocky fields, with associated pools, ditches and river margins, together with relative freedom from disturbance makes this an important site for numbers and diversity of wintering and breeding wildfowl and waders.
Wicken Fen	SSSI, NNR	8.5km north-east of the core site. 9.6km north-east of transfers and treated effluent pipeline. 4.7km north-east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Remnant of the East Anglian peat fens, unique within the context of Cambridgeshire. Supports fen communities of carr and sedge, as well as rough pastureland, reedbed and pools, which attract wildfowl.
Newmarket Heath	SSSI	7.5km east of the core site. 9.5km east of transfers and treated effluent pipeline. 8.8km east of the Waterbeach WWTP and transfer pipeline to proposed WWTP.	Adjacent to Devil's Dyke SSSI/SAC, this is a large expanse of unimproved chalk grassland, a habitat which is scarce in Britain. High diversity of flowering plants present.
Devil's Dyke	SSSI	8.9km east of the core site. 8.9km east of transfers and treated effluent pipeline. 6km east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Devil's Dyke is designated for an extensive area of species-rich chalk grassland and chalk scrub, grading to woodland. The wood, scrub and grassland are valuable for insects which are now uncommon in Cambridgeshire.
Upware North Pit	SSSI	7.2km north of Waterbeach WWTP and transfer pipeline to proposed WWTP.	The freshwater habitats hold one of the only two native British localities for the water germander <i>Teucrium scordium</i> which is listed in the British Red Data Book ⁹⁰
Bramblefields	LNR	1.7km south-west of the core site. 0.5km south of transfers and treated effluent pipeline.	Important area for wildlife in a primarily residential area. Features include song thrush, grassland, scrub and a pond.

90 Perring, FH and Farrell, L. 1983. British Red Data Books: 1 Vascular Plants (2nd Edition). Lincoln. Royal Society for Nature Conservation.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for notification
		2.3km south-west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	
Coldham's Common	LNR	2.1km south-west of the core site. 1.8km south of transfers and treated effluent pipeline. 3.2km south of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Area of unimproved grassland. Known for yellow meadow ants <i>Lasius flavus</i> , indicating that the site has never been ploughed. Also known to support pyramidal orchid <i>Anacamptis pyramidalis</i> .
Barnwell II	LNR	2.1km south-west of the core site. 2.3km south of transfers and treated effluent pipeline. 3.4km south of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Supports a wildlife corridor along Coldham Brook. The brook is managed to encourage water voles. Birds such as kingfishers and nightingales <i>Luscinia megarhynchos</i> are also known to be present.
Barnwell	LNR	2.2km south-west of the core site. 2.5km south of transfers and treated effluent pipeline. 3.6km south of the Waterbeach WWTP and transfer pipeline to proposed WWTP.	Supports habitats including grassland, scrub and a pond. Known to have bee orchids <i>Ophrys apifera</i> , as well as frogs <i>Rana temporaria</i> , toads and grass snakes <i>Natrix helvetica</i> .
Logan's Meadow	LNR	3.1km south-west of the core site. 2km south of transfers and treated effluent pipeline. 3.8km south-west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Adjacent to River Cam. Site is known for presence of otter, butterflies, bats and freshwater mussels in the River Cam.
Limekiln Close (and West Pit)	LNR	3.8km south of the core site. 4.5km south of transfers and treated effluent pipeline. 5.6km south of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Previously quarries, now supporting chalk grassland habitats. The rare moon carrot <i>Seseli libanotis</i> is found in the West Pit.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for notification
East Pit	LNR	3.9km south of the core site. 4.7km south of transfers and treated effluent pipeline. 5.8km south of Waterbeach WWTP and transfer pipeline to proposed WWTP.	One of three quarries previously providing chalk and lime. The area now supports rare plants and insects, as well as breeding birds.
Sheep's Green and Coe Fen	LNR	5.2km south-west of the core site. 4km south-west of transfers and treated effluent pipeline. 6km south-west of the Waterbeach WWTP and transfer pipeline to proposed WWTP.	Improved and semi-improved grassland, with some shrubs and hedgerows.
The Beechwood	LNR	5km south of the core site. 6km south of transfers and treated effluent pipeline. 7.0km south of Waterbeach WWTP and transfer pipeline to proposed WWTP.	A small beech wood on a chalk ridge. Wildlife includes white helleborine <i>Cephalanthera damasonium</i> orchid and fungi species. In some good beech-mast crop years, flocks of bramblings
Paradise	LNR	5.6km south-west of the core site. 4.6km south-west of transfers and treated effluent pipeline. 6.5km south-west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Wet woodland and marsh area, with mature riverside willows. Notable species include butterbur <i>Petasites hybridus</i> and the rare musk beetle <i>Aromia moschata</i> .
Nine Wells	LNR	6.5km south-west of the core site. 6.9km south-west of transfers and treated effluent pipeline. 8.1km south-west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Important site with chalk springs, managed to encourage rare freshwater invertebrates that were once present.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for notification
Byron's Pool	LNR	7.5km south-west of the core site. 7km south west of transfers and treated effluent pipeline. 8.7km south-west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Woodland site next to the River Cam, with a small number of ponds managed for amphibians.
Worts Meadow	LNR	3.4km north-west of the core site. 3km north-west of transfers and treated effluent pipeline. 2.5km west of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Urban fringe site with hedgerows supporting breeding birds. Ponds with great crested newts.

Table 8-7: Non-statutory designated sites in scope within 5km of the EIA Scoping boundary.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for designation
Low Fen Drove Way Grasslands and Hedges	County Wildlife Site	Within the core site. 364m east of transfers and treated effluent pipeline 474m east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	Supports more than 0.05ha of the NVC CG3 Upright Brome grassland community.
Allicky Farm Pond	County Wildlife Site	525m north-east of the core site. 1.6km east of transfers and treated effluent pipeline.	A type 10A ⁹¹ water body with at least 15 submerged, floating and emergent plant species.

⁹¹ Cambridgeshire & Peterborough County Wildlife Sites Panel, 2014. Cambridgeshire and Peterborough County Wildlife Sites Selection Guidelines. Available URL: [CAMBRIDGESHIRE \(wildlifebcn.org\)](http://CAMBRIDGESHIRE(wildlifebcn.org)). Last accessed: 06 January 2021.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for designation
		1.4km east of Waterbeach WWTP and transfer pipeline to proposed WWTP.	
River Cam	County Wildlife Site	1.6km south-west of the core site. Within the transfers and treated effluent pipeline Within the Waterbeach WWTP and transfer pipeline to proposed WWTP.	A major river (together with adjacent semi-natural habitat) that has not been grossly modified by canalisation and/or poor water quality. Additionally, it has areas with concentrations of mature pollard willows.
Milton Road Hedgerows	City Wildlife Site	1.8km west of the core site. Within the transfers and treated effluent pipeline 2.1km south-west of the Waterbeach WWTP and transfer pipeline to proposed WWTP.	Site qualifies for its potential value as it just misses criteria for hedgerows and is likely to meet them in the future.
Clayhithe Pollard Willows	County Wildlife Site	2.5km north of the core site. 3km north of the transfers and treated effluent pipeline 0.3km west of the Waterbeach WWTP and transfer pipeline to proposed WWTP	Supports more than 20 mature pollard willows <i>Salix sp.</i>
Anglesey Abbey	County Wildlife Site	1.1km east of the core site. 3.2km east of the transfers and treated effluent pipeline 2.5km east of the Waterbeach WWTP transfer pipeline to proposed WWTP	Contains grassland that supports frequent numbers of at least three strong neutral and six strong calcareous indicator species. Additionally, is a Grade C site in the JNCC Invertebrate Site Register ⁹² .

92 Natural England, 2016. Invertebrate Site Register (England). Available URL: <https://data.gov.uk/dataset/4c43814b-6738-47cc-9b04-4c6acf99fd0c/invertebrate-site-register-england>. Last accessed: 08 January 2021.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for designation
Cambridge Road Willow Pollards	County Wildlife Site	3.1km north of the core site. 3.3km north of the transfers and treated effluent pipeline 1.4km north-west of the Waterbeach WWTP transfer pipeline to proposed WWTP	Consists of more than five mature pollard willows in association with semi-natural habitat.
Swaffham Poor's Fen	County Wildlife Site	5.3km north-east of the core site. 4.1km north-east of the transfers and treated effluent pipeline	Site contains more than 0.5ha of W6 Alder <i>Alnus glutinosa</i> - Stinging Nettle <i>Urtica dioica</i> woodland.
Bottisham Park	County Wildlife Site	3km east of the core site. 5km east of the transfers and treated effluent pipeline 4.5km east of the Waterbeach WWTP transfer pipeline to proposed WWTP	Site supports populations of plant species which are rare in the county (<i>Ophrys insectifera</i> , <i>Dipsacus pilosus</i>) and contains five or more veteran trees in association with other semi-natural habitat.
Landbeach Pits Willow Wood	County Wildlife Site	2.7km north-west of the Waterbeach WWTP transfer pipeline to proposed WWTP	Has an invertebrate index of greater than 500.
Beach Ditch & Engine Drain	County Wildlife Site	4.4km north-west of the transfers and treated effluent pipeline 2.7km north-west of the Waterbeach WWTP transfer pipeline to proposed WWTP	Supports more than five submerged, floating and emergent plant species per 20m stretch; and more than 10 species per 20m if wet bank flora is included.

Site name	Designation	Distance and direction from EIA Scoping boundary	Reasons for designation
Twenty Pence Pit	County Wildlife Site	3.1km north of the core site 4.8km north of the transfers and treated effluent pipeline 2.5km north-west of the Waterbeach WWTP transfer pipeline to proposed WWTP	Contains well developed vegetation mosaics which represent hydroseral zonation.
Cow Bridge Pollard Willows	County Wildlife Site	4.4km north-east of the core site 4.9km east of the Waterbeach WWTP transfer pipeline to proposed WWTP	Supports at least five mature pollard willows in association with another semi-natural feature.
River Great Ouse	County Wildlife Site	4.7km north-west of the transfers and treated effluent pipeline	A major river not grossly modified by canalisation or poor water quality; supports >0.5ha NVC S6 swamp; >0.5ha S4 swamp; >0.05ha MG13 grassland; a NS vascular plant <i>Nymphoides peltata</i> ; breeding populations of a NR dragonfly <i>Libellula fulva</i> .

HABITATS AND FLORA

- 8.6.16 Habitats of Principal Importance (also known as priority habitats) were identified using MAGIC. Results from the desk study, including the use of satellite imagery, MAGIC and OS mapping, and the PEA showed habitats in the study area to include deciduous woodland, grassland, hedgerows, arable, standing water and watercourses.

Ancient Woodland and Veteran Trees

- 8.6.17 There were no records of ancient woodland within 200m of the EIA Scoping boundary. No potential ancient woodland was identified during the PEA.
- 8.6.18 Two veteran pedunculate oak *Quercus robur* trees were identified within the Waterbeach WWTP and transfer pipeline to proposed WWTP, east of Horningsea Road.

Habitats

- 8.6.19 Habitats recorded during the extended Phase 1 Habitat Survey of the Proposed Development in 2020 were dominated by arable land amounting to 262ha. Other habitats also included 0.7ha of broadleaved semi-natural woodland, 4.4ha poor semi-improved grassland, 7.5ha semi-improved neutral grassland, 4.1ha improved grassland, 13.3ha amenity grassland, 9.6km of dry ditch, as well as small areas of scattered scrub, ephemeral short perennial vegetation, hardstanding, and buildings.
- 8.6.20 Within the core site there is 195.6ha of arable land, 0.5ha of broadleaved semi-natural woodland, 2.4ha poor semi-improved grassland, 2.7ha improved grassland, 1.3ha semi-improved neutral grassland, 2ha of amenity grassland, 10.5ha hardstanding and 1.4ha dense scrub. These habitats are shown on the Phase 1 habitat map, in Appendix D.
- 8.6.21 Four ponds were within the aquatic Zol for Waterbeach WWTP transfer pipeline to proposed WWTP. The underground transfer pipelines from existing WWTP to proposed WWTP encompasses the First Public Drain within the existing WWTP. The underground transfer pipelines from existing WWTP to proposed WWTP transects the River Cam. Waterbeach transfer pipeline transects the River Cam to the east of Waterbeach. The aquatic Zol of the Proposed Development supports a network of artificial drainage ditches. Thirty-six of the ditch survey sites within this area were recorded as being dry at the time of survey. Twenty-four ditch survey sites were wet at the time of PEA survey in 2020.

Priority habitats

- 8.6.22 The following priority habitats were found within 100m of the EIA Scoping boundary of the Proposed Development:

- deciduous woodland;
- species-rich hedgerows;
- the River Cam, which is a river priority habitat;
- ponds which may qualify as a pond priority habitat; and
- coastal and floodplain grazing marsh is present along the River Cam within 100m of the EIA Scoping boundary.

- 8.6.23 NVC surveys have been undertaken in May and July 2021. The surveys included woodland and grassland within the core site and the transfers and treated effluent pipeline zones.
- 8.6.24 Initial results of the NVC woodland survey returned no notable species (priority species, red-listed, county rare plant register) present or ancient woodland indicator species. Areas of woodland included plantation woodland and does not correspond to a NVC community.
- 8.6.25 Initial results of the NVC grassland survey suggest that some Breckland type sandy grassland is present within the existing WWTP (there is a known history of Breckland sand having been brought into the area), but there were no associated notable plant species. Marsh dock *Rumex palustris* (on the Register of Plants of Conservation Concern in Cambridgeshire (RPCC)⁹³) was frequently found around the disused balancing pools in the existing WWTP. Strawberry clover *Trifolium fragiferum* was present on the tow path on the eastern side of the River Cam north of the A14 bridge. Field scabious *Knautia arvensis* was scattered throughout the Low Fen Drove Way Grasslands and Hedges CWS and occasional elsewhere within the core site.
- 8.6.26 NVC surveys are required within the Waterbeach WWTP and transfer pipeline to proposed WWTP zone and will be undertaken in September 2021.
- 8.6.27 Hedgerow Regulations assessment surveys have been undertaken on 32 species-rich hedgerows within the EIA Scoping boundary to determine if they are classified as important under the Hedgerow Regulations 1997. Initial results indicate that one hedgerow is classified as important under the Hedgerow Regulations 1997. This hedgerow is north of the core site and outside of the EIA Scoping boundary.
- 8.6.28 Hedgerow surveys are required within the Waterbeach WWTP and transfer pipeline to proposed WWTP zone and will be undertaken in September 2021.
- 8.6.29 One RHS surveys will be undertaken on the River Cam which will be centred on the new outfall (completed June 2021).

Waterbodies

- 8.6.30 The desk study identified 69 ditches and four ponds within the EIA Scoping boundary. The majority of these ditches are drains between field margins. The River Cam flows south to north within the Proposed Development along its

eastern boundary. Several large waterbodies are also present at Milton Country Park and lakes at Cambridge Research Park. Several smaller ponds are also present in the study area.

Notable Plant Species

- 8.6.31 Dwarf spurge *Euphorbia exigua*, a plant listed on the Cambridgeshire Rare Plant Register⁹³ and round-leaved fluellen *Kickxia spuria* were recorded within the core site zone during walkover surveys in 2020. Round-leaved fluellen is of least concern on the Red Data List⁹⁴. Both species are associated with arable field margins.
- 8.6.32 During the 2021 arable weed survey, several notable plants were found scattered throughout the arable field margins of the core site and these were:
- dwarf spurge (classified as vulnerable in Great Britain (GB VU) and vulnerable in England (Eng VU) on the Red Data List⁹⁴, RPCC);
 - catnip *Nepeta cataria* (GB VU, Eng VU, RPCC);
 - hound's-tongue *Cynoglossum officinale* (near threatened (NT) in GB and Eng, RPCC);
 - four individual plants of the prickly poppy *Roemeria argemone* (endangered (EN) Eng, GB VU, RPCC) on disturbed ground to the north of the core site near Low Fen Drove Way.
- 8.6.33 As noted above in Section 8.6.25, Marsh dock *Rumex palustris* (RPCC) was frequently found around the disused balancing pools in the existing WWTP. Strawberry clover *Trifolium fragiferum* (GB VU, Eng VU, RPCC) was present on the tow path on the eastern side of the River Cam north of the A14 bridge and field scabious *Knautia arvensis* (Eng NT, RPCC) was scattered throughout the Low Fen Drove Way Grasslands and Hedges CWS and occasional elsewhere within the core site.

PROTECTED AND NOTABLE SPECIES

- 8.6.34 The potential for protected or notable species to be present within the EIA Scoping boundary is discussed below. This is based upon best available evidence obtained through the desk study, the 2020 PEA and surveys completed in 2021.
- 8.6.35 The biological records search returned records of protected and notable species including priority species of birds, nine species of bat, otter, water vole, three species of reptile, great crested newt, brown trout and five species of butterfly.

⁹³ Botanical Society of Britain and Ireland (BSBI) (2019). Cambridgeshire (v.c.29) Rare Plant Register. 6th edition.

⁹⁴ Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor, I. 2014. A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.

BATS

Core Zone and Transfers Zone

- 8.6.36 All bat species are protected under the Conservation of Habitat and Species Regulations 2017 (as amended) and the WCA (as amended). In addition, Barbastelle *Barbastella barbastellus*, brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula* and soprano pipistrelle *Pipistrellus pygmaus* are all priority species. Barbastelle, brown long-eared bat, noctule and soprano pipistrelle are all listed as Cambridgeshire and Peterborough LBAP species.
- 8.6.37 Records of bats within 5km of the site include; brown long-eared bat, common pipistrelle *Pipistrellus*, Daubenton's bat *Myotis daubentonii*, barbastelle (recorded 2.4km east of the proposed WWTP site at woodlands near to Anglesey Abbey), natterer's bat *Myotis nattereri*, pipistrelle species, *Nyctalus* species, serotine *Eptesicus serotinus*, whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandtii* and soprano pipistrelle. Milton Country Park, approximately 290m north of the existing WWTP site, is known to support foraging bats including noctule and Nathusius' pipistrelle *Pipistrellus nathusii*.
- 8.6.38 The biological records search also returned records of bat European Protected Species (EPS) mitigation licences within 5km of the Site. The closest location was approximately 200m away relating to common pipistrelle and soprano pipistrelle.
- 8.6.39 Woodland and isolated trees in the study area provide potential roosting habitat for bats. The hedgerows, woodland, and waterbodies provide suitable commuting and foraging habitat for bats.
- 8.6.40 Surveys for bats including preliminary bat roost assessments of structures and trees, dusk emergence and dawn re-entry surveys of potential roost features (PRF), bat activity transect and automated static surveys have been undertaken within the EIA Scoping boundary plus 100m. The bat survey results will be used to inform mitigation design and determine the requirement for an EPS mitigation licence.
- 8.6.41 Dusk emergence and dawn re-entry surveys recorded a single common pipistrelle bat day roost within woodland located at the end of Green End lane within the waste water transfer and final effluent zone. The surveys also recorded two other possible bats roosts within this same woodland block. During the second survey in August 2021, these trees were targeted to confirm possible roosts however no bats were observed emerging or re-entering the potential roosts. A third survey on these trees and other high potential trees are ongoing to characterise the bat roost and or provide confirmation of a bat roost.
- 8.6.42 Bat activity surveys have been conducted along three transects that incorporate the existing WWTP, the core site and the waste water transfer and final effluent zones. To date, two bat activity transect surveys visits have been conducted

within the above areas in May and July 2021 with a third transect survey to be undertaken across these areas in September 2021. Bat sound analysis to determine bat species and activity is ongoing.

- 8.6.43 Four automated static detectors have been deployed within the core site (two statics), the final effluent zone (one static adjacent to the River Cam) and the existing WWTP (one static). To date, two surveys have been completed (in May and July 2021) with a third to be conducted in August 2021. Bat sound analysis to determine bat species and activity is ongoing.

Waterbeach zone

- 8.6.44 Further surveys for bats including preliminary bat roost assessments of structures and trees will be undertaken in August and September 2021 within the EIA Scoping boundary plus 100m. PRF climbed inspection surveys will commence from September 2021. Dusk emergence and dawn re-entry surveys of PRF will begin from May 2022 onwards.
- 8.6.45 Dusk emergence and dawn re-entry surveys, bat activity transect and automated static surveys to cover the Waterbeach WWTP and transfer pipeline to proposed WWTP will be undertaken during optimal survey periods in 2022 within the EIA Scoping boundary plus 100m. The bat survey results will be used to inform mitigation design and determine the requirement for an EPS mitigation licence along the Waterbeach WWTP and transfer pipeline to proposed WWTP.

OTTER

- 8.6.46 Otter are afforded protection under the Conservation Habitats and Species Regulations 2017 (as amended) and Schedule 5 and 6 of the WCA 1981 (as amended). Otter is listed as a priority species and a LBAP species for Cambridgeshire and Peterborough.
- 8.6.47 The River Cam is known to support or have previously supported otter in certain locations, for example Logan's Meadow (see Table 8-6), and records of otter exist for other sections of the River Cam. Otters can have wide-reaching territories and are known to use smaller watercourses including drains and ditches. Therefore, otter may utilise the drainage ditches throughout the study area for foraging or dispersal.

Core Zone and Transfers Zone

- 8.6.48 Evidence of otter in the form of spraints were found during the surveys conducted in April 2021. The majority of the signs were within the waste water transfer and final effluent zone along the River Cam with a single spraint to the south of the existing WWTP in a ditch off Cowley Road. Generally, suitable terrestrial habitat for otter holts is limited. Otter surveys are continuing with completion due in early 2022. The otter survey results from these surveys will

be further used to inform mitigation design and determine the requirement for an EPS mitigation licence.

Waterbeach zone

- 8.6.49 Otter surveys are continuing with completion due in early 2022. The otter survey results from these surveys will be further used to inform mitigation design and determine the requirement for an EPS mitigation licence.

GREAT CRESTED NEWT

- 8.6.50 Great crested newts are fully protected by the Conservation of Habitats and Species Regulations 2017 (as amended) and under the WCA 1981 (as amended). Great crested newts are a priority species which require standing water to breed and terrestrial habitats such as grassland, scrub or woodland throughout their life cycle including during hibernation.
- 8.6.51 The biological records search did not return records of a great crested newt EPS mitigation licences within 5km of the Proposed Development. A Natural England Class Survey Licence Return record of great crested newt was recorded approximately 250m north of the Waterbeach transfer pipeline.
- 8.6.52 A network of 198 ditches and 10 ponds within the 250m EZoI have potential to support great crested newts. There was also suitable terrestrial habitat for great crested newt including rough grassland, hedgerows and scrub with refugia to support hibernating great crested newts.

Core Zone and Transfers Zone

- 8.6.53 All ponds within 250m of the Proposed Development and associated infrastructure, and ditches within 250m of a pond have been surveyed for great crested newts. The surveys incorporated presence/likely absence surveys (including environmental DNA (eDNA) surveys) and six population size class assessment survey visits to inform EPS mitigation licencing, where required.
- 8.6.54 Environmental DNA surveys were conducted between mid-April and mid-May 2021 with water samples taken from 18 waterbodies across the Proposed Development (excluding Waterbeach WWTP transfer pipeline, see below). Of the 18 waterbodies sampled, 17 were returned as negative for the presence of great crested newt eDNA and results from one water body were returned as indeterminate due to contamination from sediment within the sample taken. This single inconclusive sample is thought to be negative for great crested newt eDNA due to the surrounding waterbodies having negative eDNA returns.
- 8.6.55 Traditional surveys (bottle trapping, torching and egg searching) were carried out at three waterbodies in early April 2021 prior to the eDNA surveys. However, these surveys were cancelled or scoped out of further survey due to a number of factors such water levels dropping within the waterbodies which prevented bottle trapping, eDNA results returned as negative, night-time

temperatures dropping below 5°C on planned survey visits and the eventual drying up on the waterbodies by late April 2021.

Waterbeach zone

- 8.6.56 Environmental DNA surveys were conducted along the proposed Waterbeach WWTP and transfer pipeline to proposed WWTP in June 2021. Seventeen ponds were sampled with 16 returned back as negative markers for GCN eDNA and one returned as indeterminate.

BIRDS

- 8.6.57 All wild birds, their nests and eggs are protected under the WCA 1981 (as amended). It is an offence to kill or injure wild birds, or to take, damage or destroy the nest of any wild bird while it is in use or being built. In addition, species listed on Schedule 1 of the Act are afforded additional protection from disturbance whilst breeding. A total of 49 bird species are listed as priority species and of these, 26 species occur within Cambridgeshire and are LBAP species.
- 8.6.58 The EZol for birds includes suitable habitat for nesting and foraging birds, such as the River Cam with adjacent floodplain grazing marsh, other waterbodies including standing water, extensive arable farmland with fields separated by hedgerows, small copses of woodland, scrub, and scattered trees.
- 8.6.59 The BTO data report as shown in Appendix D, identified that numerous protected or priority bird species are notable for breeding abundance or range within 10km of the Proposed Development. Of these species, there is suitable breeding habitat within the EZol for 15 species, as described below. The arable fields with interspersing hedgerows provide suitable breeding habitat for grey partridge *Perdix perdix*, corn bunting *Emberiza calandra*, and barn owl. The woodland, scrub and scattered trees are suitable for breeding hobby *Falco subbuteo*, grasshopper warbler, mistle thrush *Turdus viscivorus*, nightingale *Luscinia megarhynchos*, turtle dove and long-eared owl *Asio otus*.
- 8.6.60 The River Cam and standing waterbodies are suitable breeding habitat for grey wagtail *Motacilla cinerea*, kingfisher, garganey *Spatula querquedula*, avocet *Recurvirostra avosetta*, Cetti's warbler, and reed bunting *Emberiza schoeniclus*. The habitats within the EZol are particularly suitable to support the following breeding Schedule 1 species considering their distribution in the local area: barn owl, kingfisher and Cetti's warbler. Of the 15 potential and notable breeders described above, breeding turtle dove and grasshopper warbler is likely to be particularly important in the EZol given the breeding abundance, range in county, uncommon status of the grasshopper warbler in the county shown in the Cambridge Bird Atlas⁹⁵, and turtle dove being listed on the Rare

95 Bacon L., Cooper A., Venables H. (2013) Cambridgeshire Bird Atlas 2007–2011. Cambridgeshire Bird Club.

Breeding Bird Panel⁹⁶. Additionally, long-eared owl is listed as less scarce on the Rare Breeding Bird Panel, and is a confirmed breeder within 10km, although the EZol is outside the currently known breeding distribution of this species.

- 8.6.61 The BTO data report identified that numerous protected, priority or rare bird species are notable for winter abundance and range within 10km of the Proposed Development. Of these, the EZol provides suitable wintering habitat for 14 species as described below. The arable fields with interspersing hedgerows are suitable to support wintering reed bunting, corn bunting, skylark, great grey shrike *Lanius excubitor*, caspian gull *Larus cachinnans* and snow bunting *Plectrophenax nivalis*. The woodland and scrub are suitable to support wintering long-eared owl, stock dove *Columba oenas* and firecrest *Regulus ignicapilla*. The River Cam, waterbodies and adjacent floodplain are suitable to support wintering kingfisher, Cetti's warbler, gadwall, snipe and taiga/tundra bean goose *Anser fabalis/serrirostris*.
- 8.6.62 Of the 14 notable wintering species which could occur within the EZol, the particularly important wintering species likely comprise snipe and, to a lesser extent, gadwall. The area near to the River Cam in the EZol is shown by the Cambridge Bird Atlas to be one of the key areas for winter snipe abundance in Cambridgeshire. The EZol is close to the southern extent of the main Gadwall distribution in Cambridgeshire. However, the EZol is not likely to be particularly notable for the other wintering species described above owing to either the widespread abundance or distribution of a species, the EZol not forming a core wintering area owing to being recorded sporadically in Cambridgeshire (e.g., for great grey shrike and snow bunting), or the availability of similar wintering habitats throughout the wider landscape outside the EZol. In addition, the BTO data report did not identify that the area within 10km of the Proposed Development was notable for winter abundance or range of golden plover or lapwing; the EZol appears to be outside the key areas for winter abundance and distribution for lapwing and golden plover shown in the Cambridge Bird Atlas.
- 8.6.63 The likely baseline conditions for wintering birds within the EZol have been identified as detailed above and, therefore, no additional wintering bird surveys are required to inform the impact assessment.

Core Zone and Transfers Zone

- 8.6.64 The breeding locations and potential breeding presence of key species is not confirmed within the EZol. Therefore, breeding bird surveys have been undertaken which target turtle dove, grasshopper warbler, barn owl, kingfisher and Cetti's warbler in suitable river, hedgerow, scrub, woodland, and building habitats within the core site, existing WWTP and the transfer pipeline areas.

⁹⁶ Eaton M., Holling M. and the Rare Breeding Birds Panel (2020). Rare breeding birds in the UK in 2018. British birds. December 2020: 737-791.

These included a survey using the Barn Owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment⁹⁷, and also undertaking a kingfisher habitat suitability assessment.

- 8.6.65 To date, and with the August 2021 survey yet to be completed, the breeding bird surveys within the study area and a 300m buffer from the EIA Scoping boundary, have recorded low breeding activity, likely due to proximity to roads and urban area. However, Schedule 1 bird species have been recorded and includes:
- a record of breeding hobby to the north of the core site and outside the EIA Scoping boundary;
 - potential kingfisher breeding sites both within the existing WWTP in the First Public Drain and also to the north in Milton County Park.
 - Cetti's warbler have been recorded in both the existing WWTP and core site particularly towards the south-east and outside EIA Scoping boundary in land adjacent to Wilbraham Fen SSSI.
 - additionally, marsh harrier's *Circus aeruginosus* were also noted within this area adjacent to Wilbraham Fen SSSI.
- 8.6.66 Surveys for potential barn owl nesting and roosting location are to be completed in August 2021 across the study area.
- 8.6.67 No turtle dove, long-eared owl or grasshopper warbler have been recorded during the surveys to date.
- 8.6.68 Priority species farmland birds, such as corn bunting, skylark, yellowhammer, yellow wagtail are present through the EIA Scoping boundary.

Waterbeach zone

- 8.6.69 No bird surveys have been undertaken within the EZol of the Waterbeach WWTP and transfer pipeline to proposed WWTP. Bird scoping surveys to identify habitats within the survey area where high sensitivity, protected and notable bird species may be present are programmed to be undertaken in October to December 2021. Breeding bird surveys will be undertaken from April to August 2022.

WATER VOLES

- 8.6.70 Water voles are protected under Schedule 5 of the WCA 1981 (as amended). Water vole is a priority species and is also listed as a LBAP species.
- 8.6.71 Water vole are known to be present along the River Cam and within two drains in the existing WWTP and may utilise other ditches throughout the study area.

⁹⁷ Shawyer, C. R. 2011. Barn Owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting. IEEM, Winchester.

8.6.72 Water vole surveys (combined with otter surveys) have been undertaken 100m either side of where the Proposed Development impacts the River Cam and along all other watercourses within the EIA Scoping boundary plus 50m. Surveys involved two visits during the optimal survey window between mid-April and September 2021 inclusive.

Core Zone and Transfers Zone

8.6.73 Surveys targeting water vole have returned numerous field signs over the study area. These include:

- existing WWTP: latrines, footprints and burrows have been recorded in a drain to the east of the existing WWTP as well as in a ditch to the south of the existing WWTP adjacent to Cowley Road.
- transfers and treated effluent pipeline: latrines, footprints and burrows and a sighting of a water vole were recorded on the banks of the River Cam and in an adjacent ditch near the proposed outfall structure location.
- core site: scattered field signs such as feeding remains were recorded in a ditch east of the core site near Black Ditch watercourse.

8.6.74 It is likely that a Natural England licence to displace water vole from the proposed location of the treated effluent discharge outfall structure will be required.

Waterbeach zone

8.6.75 No water vole surveys have been undertaken within the EZol of the Waterbeach pipeline route and surrounding areas. The first of two surveys will be completed by October 2021 with the following survey taking place in April/May 2022.

WIDESPREAD REPTILES

8.6.76 All UK reptile species are protected under the WCA 1981 (as amended). Common lizard *Zootoca vivipara*, grass snake *Natrix helvetica* and slow-worm *Anguis fragilis*, are priority species that have been recorded within 5km of the Proposed Development. There is suitable habitat for these species within areas of grassland, scrub and woodland edge within and adjacent to the Proposed Development.

Core Zone and Transfers Zone

8.6.77 Surveys for reptiles will include all suitable habitat within the EIA Scoping boundary plus any contiguous habitat within 50m. One set up visit will be undertaken to set out artificial refugia, and seven survey visits will be undertaken in each area. Surveys will be conducted between April and September inclusive, avoiding the warmest months of July and August where possible.

8.6.78 Reptile refugia were placed at five locations across the Proposed Development (excluding Waterbeach WRC and transfer pipeline to proposed WWTP). These survey locations included:

- existing WWTP.
- two locations adjacent to the River Cam within the transfers and treated effluent pipeline;
- two locations within the core site, including along the Low Fen Drove Way Grasslands and Hedges CWS and within a field adjacent to Low Fen Drove Way.

8.6.79 Two locations within the transfer and treated effluent pipeline areas are still undergoing surveys and will be completed in September 2021. The refugia were checked seven times during optimal survey conditions, the following species were recorded:

- four grass snake recorded on four separate survey visits, including adjacent to the River Cam within the transfers and treated effluent pipeline and within the core site, including along the Low Fen Drove Way Grasslands and Hedges CWS and within a field adjacent to Low Fen Drove Way; and
- five common lizard, with four recorded along the Low Fen Drove Way Grasslands and Hedges CWS (two of which were recorded in one survey visit in May 2021) and one adjacent to the River Cam within the transfers and treated effluent pipeline in July 2021.

8.6.80 Given the low numbers recorded it is likely that the habitats surveyed do not support significant populations of grass snake and common lizard. These species are likely to be dispersing through the habitats surveyed.

Waterbeach zone

8.6.81 Reptile refugia have been deployed in suitable habitat along the pipeline route in August and September 2021 with surveys beginning in September through to October 2021. Any surveys not completed within this period due to weather conditions will be undertaken in April 2022.

TERRESTRIAL INVERTEBRATES

8.6.82 Some invertebrate species are priority species, protected under the WCA 1981 (as amended), or are Near-Threatened or above according to IUCN⁹⁸ criteria. There is suitable habitat within the Proposed Development to support terrestrial invertebrates.

8.6.83 The terrestrial invertebrate scoping survey report⁹⁹ identified areas within the Proposed Development which may be important for terrestrial invertebrates and

98 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. Categories include Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild and Extinct.

99 Steve Lane (prepared for Mott MacDonald, 2020), Scoping Survey (Invertebrates) – Relocation of Water Treatment Plant, Cambridge.

recommended further surveys in these locations. Further surveys have been undertaken in 2021 within the following zones:

- Core Zone:
 - Low Fen Drove Grasslands and Hedges CWS (potentially significant for dead wood (saproxylic) assemblages and also for their provision of nectaring sources for aculeate *Hymenoptera*, with species known to be rare and vulnerable, as noted via stakeholder consultation). The grassland margins of these droves and trackways also have potential to support significant invertebrate assemblages. Some of the sandy arable field edges in the vicinity of the drove will be surveyed for nesting aculeate species.
 - a poor semi-improved pasture grassland surrounded by hedgerow at Honey Hill (potentially significant for dead wood (saproxylic) assemblages and also for their provision of nectaring sources for aculeate *Hymenoptera*, with species known to be rare and vulnerable, as noted via stakeholder consultation).
- Transfers Zone:
 - a grassland field, which is part of the existing WWTP, comprises an area of short rabbit-grazed turf and pools of wetland interest, which may be important to invertebrates.

8.6.84 Each of these sites will receive four survey visits between May and September 2021. Survey methodologies will include pitfall trapping, vane trapping, beating, sweeping and blossom sampling as appropriate to the specific site. The following invertebrate groups will be sampled and identified:

- *Coleoptera* (all, including aquatics to species);
- *Hemiptera* (all Heteroptera including aquatics to species and all Auchenorrhyncha to species);
- *Odonata* (all to species);
- *Orthoptera* (all to species);
- *Dermaptera* (all to species);
- *Mecoptera* (all to species);
- *Plecoptera* (all adults to species);
- *Trichoptera* (all adults to species);
- *Lepidoptera* (all adult macro-lepidoptera and some micros to species as found directly by beating and sweeping and observation – no light-trapping);
- *Mollusca* (all molluscs, aquatic and terrestrial, to species);
- *Diptera* (larger Brachycera - soldierflies, horseflies, snipe flies, robberflies etc to species, hoverflies to species, tephritids to species, sciomyzids to species);

- *Hymenoptera* (all sawflies to species, all aculeates to species, all others not surveyed)
- *Araneae* (all to species); and
- *Isopoda* (all to species)

8.6.85 Surveys conducted within the areas above have recorded over 260 species with one more survey visit to complete in September 2021. Pitfall traps were deployed in the existing WWTP within the short-mown areas in the east of the existing WWTP. The invertebrate samples taken from this area are typical of Breckland invertebrate assemblages.

8.6.86 Honey Hill and the Lower Fen Drove Way Grassland and Hedges CWS, returned samples of nationally scarce bee and beetle species with species to be detailed within the dedicated invertebrate report upon completion of the invertebrate surveys in September 2021.

Waterbeach zone

8.6.87 Three areas along the Waterbeach transfer pipeline require terrestrial invertebrate surveys, including:

- a hedgerow surrounding improved pasture at Hatridge's Lane;
- an elm copse with bramble and ash east of Mulberry House Farm; and
- a mosaic wetland of Phragmites reedbed west of Long Road.

8.6.88 The hedgerow and elm copse will be surveyed with particular attention to beating arboreal foliage, to ascertain presence or otherwise of larvae and adults of white-letter hairstreak *Satyrrium w-album* and white-spotted pinion *Cosmia diffinis*. Both of these priority species listed on the NERC Act 2006 are fairly likely to be present at the site. Although the white-spotted pinion is scarce, its populations are recovering after a historic crash relating to Dutch elm disease. Cambridgeshire is more-or-less central in terms of its current National distribution.

8.6.89 Surveys will commence in 2022.

FISH

8.6.90 Spined loach *Cobitis taenia* is a priority species and is listed as a species under Annex II of the EU Habitats Directive (Council Directive 92/43/EEC) and its habitat may be designated as a SAC under the Conservation of Habitats and Species Regulations 2017 (as amended). European eel *Anguilla* is a priority species and is also protected by The Eels (England and Wales) Regulation 2009. Brown trout *Salmo trutta* is a priority species that has been recorded within 5km of the project site boundary.

8.6.91 It is possible that the River Cam adjacent to the EIA Scoping boundary and downstream of the proposed treated effluent discharge point supports a brown

trout population. Spined loach has been recorded within the River Great Ouse catchment area. It is therefore possible that the drainage network within the EIA Scoping boundary and a 250m buffer zone supports this species. The fish population of the River Cam may also include other species of conservation importance, such as barbel *Barbus barbus*, bullhead *Cottus gobio*, European eel and river lamprey *Lampetra fluviatilis*.

Core Zone and Transfers Zone

- 8.6.92 Fish surveys will be undertaken in September/October 2021 within a 100m buffer of the treated effluent discharge outfall structure location and all suitable ditches within 100m of the EIA Scoping boundary. Survey methods will include electro-fishing.
- 8.6.93 The Schedule 9 invasive fish species bitterling *Rhodeus sericeus* was recorded in a ditch adjacent to the River Cam during the macroinvertebrate surveys in April 2021. The unnamed ditch is north-east of the field where the WW Treated effluent discharge outfall structure will be located.
- 8.6.94 The first of the two eDNA fish sample surveys from the River Cam was completed in July 2021 with results still to be delivered. A second eDNA fish sample survey will be completed in October 2021.

Waterbeach Zone

- 8.6.95 No surveys for eDNA fish samples are proposed for the Waterbeach pipeline, as the river will not be impacted by the Proposed Development in this zone.

AQUATIC MACROINVERTEBRATES

- 8.6.96 Some aquatic macroinvertebrates are priority species, protected by the WCA 1981 (as amended), or are Near-threatened or above according to IUCN⁹⁸ criteria. The macroinvertebrate community composition of the drainage network within the Proposed Development and 250m buffer zone is unknown. Similarly, the macroinvertebrate community composition of the River Cam adjacent to the Proposed Development and downstream of the proposed treated effluent discharge outfall is also unknown. It is possible that both the drainage network and the River Cam contain habitats that are suitable to support macroinvertebrate species of conservation importance, including priority species.

Core Zone and Transfers Zone

- 8.6.97 In April 2021 macroinvertebrate surveys were completed upstream and downstream of the treated effluent discharge outfall structure location on the River Cam, and within seven suitable ditches within 100m of the EIA Scoping boundary. A second survey for macroinvertebrates on the River Cam was completed in September 2021. Full survey results will be provided in the EIA.

8.6.98 Species identified in the April 2021 survey within the River Cam were:

- common river snail *Viviparus viviparus*; and
- *Limnephilus rhombicus* a caddisfly.

8.6.99 The survey also returned the following invasive shrimp species:

- *Crangonyx pseudogracilis/floridanus* agg.; and
- demon shrimp *Dikerogammarus haemobaphes*.

8.6.100 Species identified in the April 2021 survey within the seven ditches and of conservation interest were:

- *Bathyomphalus contortus*;
- *Agabus paludosus*;
- *Caenis luctuosa*; and
- *Valvata piscinalis*.

8.6.101 Additionally, one of the ditches had the invasive shrimp species *Crangonyx pseudogracilis/floridanus* agg. present.

Waterbeach zone

8.6.102 Aquatic macroinvertebrate surveys will take place on a number of ditches along the proposed pipeline. These have been identified during previous visits as potentially holding aquatic invertebrate species, and hence candidate for ditch surveys to the methodology described by Buglife (2013) (which also includes macrophytes, see below). Macroinvertebrates will also be surveyed as part of the Pond PSYM methodology, on a number of ponds along the proposed route.

AQUATIC MACROPHYTES

8.6.103 Some aquatic macrophytes are priority species, protected by the WCA 1981 (as amended), or are Near-threatened or above according to IUCN criteria. Macrophytes assemblages of the drainage network within the project site and 250m buffer zone, and of the River Cam where it runs adjacent to the project site boundary and downstream of the proposed effluent discharge point are currently unknown. It is possible that macrophyte species of conservation importance are present in water courses within the study area.

Core Zone

8.6.104 Surveys within four ditches immediately to the east and south of the core site were undertaken in June 2021. Species of common conservation status were recorded within these ditches.

Transfers Zone

8.6.105 Macrophyte surveys are currently being undertaken within a 100m buffer of where the WW Transfer tunnel, and within all other suitable ditches within 100m

of the EIA Scoping boundary. Hairlike pondweed *Potamogeton trichoides* (IUCN status Least Concern) has been recorded in a ditch adjacent to the final effluent outfall location.

8.6.106 Macrophyte surveys within the River Cam were completed in September 2021.

Waterbeach zone

8.6.107 Aquatic macrophytes surveys are proposed on a number of ditches along the pipelines route, as described above. Pond PSYM surveys are to be undertaken mid-September 2021 and will also include surveying of macrophytes.

RIVER HABITAT SURVEY (RHS) AND MODULAR RIVER SURVEY (MORPH)

8.6.108 RHS and MoRPh surveys only affect the transfer and treated effluent zone. These were conducted on the River Cam in June 2021. The RHS and MoRPH survey was centred on the treated effluent discharge outfall structure and surveyed 100m up and down the river from this point. During the MoRPh survey, Nuttall's waterweed *Elodea nuttalli* was recorded along the River Cam.

Waterbeach zone

8.6.109 RHS and MoRPH is not proposed for the River Cam crossing by the Waterbeach transfer pipeline as the proposed installation method will not involve any interface with the river banks or river bed of the River Cam.

BADGER

8.6.110 Badgers and their setts are protected by the Protection of Badgers Act 1992.

8.6.111 Badgers are a highly mobile species and can dig new setts quickly. The woodland, hedgerows and arable land within the Proposed Development provides suitable habitat for sett construction and foraging badgers. [REDACTED]

Core Zone

8.6.112 In 2020 and 2021 a main badger sett was recorded [REDACTED]

8.6.113 Disused sett entrances were recorded [REDACTED]

8.6.114 An active subsidiary sett was recorded [REDACTED]

8.6.115 Bait marking territorial surveys will be undertaken in Autumn 2021 or Spring 2022 [REDACTED]. This

exercise provides details of badger clan activity and territory area which is then used to aid a detailed impact assessment and mitigation, including the provision and appropriate location of an artificial sett.

Waterbeach zone

8.6.116 A main sett was recorded [REDACTED]. No monitoring has been completed at this sett as this area is not to be directly impacted by the Proposed Development. A probable disused badger sett was found [REDACTED]. This disused sett was monitored by camera traps for any sign of current use by badger as part of the ground investigation work. During the monitoring period, [REDACTED].

8.6.117 Outlier setts were recorded in 2021 [REDACTED].

Waterbeach zone

8.6.118 Surveys will be completed from November 2021 onwards. Any further surveys such as bait marking territorial surveys will be completed by May 2022.

INVASIVE SPECIES

8.6.119 The presence of invasive species listed on Schedule 9 of the WCA 1981 (as amended) were recorded during the PEA. Mats of floating pennywort *Hydrocotyle ranunculoides* were recorded in the River Cam and a *Rhododendron* species was recorded adjacent to Cowley Road west of the existing WWTP. Specific invasive plant species will not be undertaken as these were recorded during the PEA, but invasive aquatic species will be recorded throughout the macrophyte, macroinvertebrate and river habitat surveys. Terrestrial invasive species will be recorded during the NVC and hedgerow surveys.

Core Zone

8.6.120 The invasive fish bitterling was recorded within a ditch adjacent to the River Cam during the macroinvertebrate surveys in April 2021. The unnamed ditch is north-east of the field where the WW Treated effluent discharge outfall structure will be located.

8.6.121 The invasive shrimp species *Crangonyx pseudogracilis/floridanus agg.* and demon shrimp were recorded within the River Cam and surrounding ditches.

Waterbeach zone

- 8.6.122 Specific invasive plant species surveys will not be undertaken as these were recorded during the PEA, but invasive aquatic species will be recorded throughout the macrophyte and macroinvertebrate. Terrestrial invasive species will be recorded during the NVC and hedgerow surveys.

OTHER SPECIES

- 8.6.123 There may be habitat loss impacts to other priority species, including European hedgehog *Erinaceus europaeus* and common toad *Bufo*, for which species-specific surveys are not considered necessary, but their potential presence (based on the suitability of habitats present) are of consideration.
- 8.6.124 European hedgehog is listed as an LBAP species. Records of hedgehog were returned by the desk study, but these were outside the EIA Scoping boundary of the Proposed Development. The woodland, scrub and hedgerows within the Proposed Development may provide habitat suitable for hedgehog. Specific surveys will not be undertaken, but any hedgehogs identified during other survey types will be recorded.
- 8.6.125 Common toad is listed as a priority species and is also listed as a LBAP species. Records of common toad were returned by the desk study, but these were outside the EIA Scoping boundary of the Proposed Development. The waterbodies, ditch networks, scrub and woodland habitat may provide suitable habitat for common toads within the Proposed Development. Specific surveys for common toad will not be undertaken but counts of common toad will be included with the great crested newt surveys, if undertaken.

8.7 Future baseline

- 8.7.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 8.7.2 Where this presents new environmental receptors or a change to the current baseline specific to biodiversity, this is discussed further below.
- 8.7.3 For the aspect of biodiversity, all the above listed future developments for the area may lead to an increase in visitor footfall and recreational pressure within Stow-cum-Quy Fen SSSI which could result in an increase in vegetation trampling and soil compaction, dog-fouling, littering, fires and conflicts with livestock grazing management of the sites, resulting in impacts on the grassland and aquatic features the site is designated for. Additionally, an increase in future developments may lead to increase in light and noise pollution from buildings and increased traffic which may impact upon sensitive ecological receptors such as bats.

8.8 Potential environmental impacts and mitigation

8.8.1 The construction and operation of the Proposed Development has the potential to affect ecological features. The assessment of the likely impacts of the Proposed Development takes into account both on-site effects and those that may occur outside of the Proposed Development boundary.

CONSTRUCTION PHASE POTENTIAL IMPACTS

8.8.2 The potential impacts on ecological receptors are:

- hydrological impacts (via surface water and groundwater volumes) on water dependent designated sites and priority habitats;
- construction activities (acoustic disturbance, vibration) which may disturb or damage habitats and species, causing direct mortality;
- work in proximity to watercourses may result in the accidental release of potential pollutants (including silty water) which may disturb or damage habitats and species, causing direct mortality;
- indirect impacts from leaks, spills and run off which may disturb or damage habitats and species, causing displacement and or direct mortality;
- removal of habitats in relation to temporary and permanent use of the land (such as for laydown areas, compounds, and access) resulting in habitat loss, fragmentation and severance of wildlife corridors. This could result in the partial loss of CWSs and City WS, priority habitats including coastal and floodplain grazing marsh, deciduous woodland, hedgerows and ponds;
- mortality of less mobile species, or animals that are young or hibernating, are likely to be those most vulnerable during construction;
- severance (including temporary severance during construction) of existing wildlife corridors (such as field margins, hedgerows) could have significant impacts on species in the area;
- habitat loss resulting in loss of resources critical throughout a given species' life-history such as those for breeding and rearing, shelter and resting, foraging, dispersal and migration;
- [REDACTED]
- injury or killing of reptiles without mitigation in all zones;
- felling of trees or remedial works to trees that support bat roosts;
- construction vehicle movements could increase the risk of mortality for some species;
- spread of invasive species;
- temporary air quality changes and dust generation may impact sensitive botanical species and habitats, particularly within designated sites; and
- use of lighting for construction or security may cause displacement of nocturnal and other sensitive species.

POTENTIAL IMPACTS PER ZONE

- 8.8.3 The potential impacts presented in Table 8-8 are divided by zone.
- 8.8.4 Information on Natural England's SSSI IRZ are taken from Natural England (2021) *Natural England's Impact Risk Zones for Sites of Special Scientific Interest User Guidance, Version 4*¹⁰⁰.

¹⁰⁰ Available online at https://magic.defra.gov.uk/Metadata_for_magic/SSSI%20IRZ%20User%20Guidance%20MAGIC.pdf

Table 8-8: Potential construction impacts by zone

Potential impact	Core Zone	Transfer s Zone	Waterbeach zone	SSSI IRZ ¹⁰¹
Statutory designated sites				
<p>Wicken Fen Ramsar, SSSI and NNR: Potential for hydrological impact as the site is downstream in the catchment of the River Cam. Construction activities in proximity to watercourses may result in the accidental release of potential pollutants. Designated site habitats could be damaged or disturbed as a result of an increase in air pollution associated with construction (excavation / removal of habitats / release of pollutants). Impacts may arise on designated sites where vegetation may be sensitive to elevated levels of airborne dust from the works.</p>		✓	✓	Combustion ¹⁰² and discharge ^{103, 104}
<p>Fenland SAC: Potential for hydrological impact as the site is downstream in the catchment of the River Cam. Construction activities in proximity to watercourses may result in the accidental release of potential pollutants. Designated site habitats could be damaged or disturbed as a result of an increase in air pollution associated with construction (excavation / removal of habitats / release of pollutants). Impacts may arise on designated sites where vegetation may be sensitive to elevated levels of airborne dust from the works.</p>		✓	✓	Combustion ¹⁰² and discharge ^{103,104}

101 If the development descriptions in the SSSI IRZs at a chosen location match the nature and scale of a proposed development, this indicates the potential for impact and means that more detailed consideration is required. In this case Natural England should be consulted for advice on any potential impacts on SSSIs and how these might be avoided or mitigated.

102 General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. E.g., emissions from combustion can cause air pollution affecting the habitats and species on SSSIs. More than 500m away from a SSSI, only combustion processes over a certain minimum size are likely to have an impact. A very large project and could cause air pollution on SSSIs up to 10km away.

103 Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location). E.g., most foul water is removed from a development site by a mains sewer. Where this is not the case, foul water is usually treated on site and then discharged either to ground to filter away from the site, or into a nearby watercourse. If the treated water flows towards a SSSI, it has the potential to impact on water quality sensitive features.

104 Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location). E.g., most foul water is removed from a development site by a mains sewer. Where this is not the case, foul water is usually treated on site and then discharged either to ground to filter away from the site, or into a nearby watercourse. If the treated water flows towards a SSSI, it has the potential to impact on water quality sensitive features.

Potential impact

**Core Zone Transfer Waterbeach SSSI IRZ¹⁰¹
s Zone zone**

<p>Devil's Dyke SAC: Designated site habitats could be damaged or disturbed as a result of an increase in air pollution associated with construction (excavation / removal of habitats / release of pollutants). Impacts may arise on designated sites where vegetation may be sensitive to elevated levels of airborne dust from the works</p>	✓	✓	✓	Combustion and discharge
<p>Stow-cum-Quy Fen SSSI: Potential hydrological link. Black Ditch (an ordinary watercourse) is connected to the drainage system at Stow-cum-Quy Fen and construction activities in proximity to watercourses may result in the accidental release of potential pollutants. Stow-cum-Quy Fen SSSI is adjacent to Black Ditch and partly within Flood Zone 3 along the ditch. Water features in the centre of the SSSI are connected to the Black Ditch via a one-way valve which allows flow into Black Ditch during periods of high water levels in the fen. During periods of particularly high flow in Black Ditch, however, over-bank flow is understood to occur in the reverse direction from the ditch onto the fen.</p>	✓	✓	✓	Infrastructure ¹⁰⁵ , discharge ¹⁰⁶ , combustion ¹⁰⁷ , composting ¹⁰⁸ , and rural non-residential ¹⁰⁹
<p>Wilbraham Fens SSSI: Potential for air quality impact on designated site qualifying features in that the designated site habitats could be damaged or disturbed as a result of an increase in air pollution associated with increased traffic during construction.</p>	✓	✓	x	Combustion, composting and discharge
<p>Cam Washes SSSI:</p>	x	✓	✓	Discharge ¹⁰⁶ and combustion ⁶⁵

105 Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. E.g., pipelines, pylons and overhead cables can create a collision risk for birds and the footprint of the construction can affect local water supplies, which the SSSIs depend on. An increase in road traffic as a result of new or extended roads can cause local air pollution impacts and significant transport infrastructure projects can have impacts on water supply mechanisms, especially by introducing new drainage.

106 Includes discharge of treated effluent and waste of more than 20m³/day to surface water. Any discharge of water or liquid waste that is discharged to ground (i.e., to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

107 General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

108 Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. E.g., emissions of ammonia from composting units can make a significant contribution to nitrogen deposition near to a sensitive site and cause severe localised impacts on semi-natural habitats as well as contributing to regional nitrogen deposition. More than 500m away from a SSSI, the amount of material composted needs to be over a certain amount to be likely to have an impact.

109 Large non-residential developments outside existing settlements/urban areas where footprint exceeds 1ha. E.g., rural non-residential developments can impact on water quality, cause disturbance to birds and impact on functional land outside SSSIs, which they depend on for feeding.

Potential impact

	Core Zone	Transfer s Zone	Waterbeach zone	SSSI IRZ ¹⁰¹
Cam Washes SSSI is downstream of the Proposed Development and the discharge location and is highly dependent on surface water and is subject to winter flooding, which could be contaminated if pollutants are released				
Upware North Pit SSSI: The SSSI is downstream of the Proposed Development and the discharge location. It may be hydrologically linked via the River Cam and Cam Washes SSSI.	x		✓	✓ Combustion ⁶⁵
Non statutory designated sites				
River Cam CWS: The treated effluent corridor and associated potential discharge location may cause impacts to water quality to the River Cam CWS. Potential for habitat loss due to the construction of the treated effluent discharge outfall structure.	x		✓	✓
Low Fen Drove Way Grasslands and Hedges CWS: Low Fen Drove Way Grasslands and Hedges CWS is adjacent to the proposed WWTP site and may experience an increase in pollution, habitat loss, habitat fragmentation, as a result of construction	✓		x	x
Allicky Farm Pond (A type 10A110 water body): Black ditch could be connected to Allicky Farm Pond CWS via the floodplain (within Flood Zone 3). Construction activities in proximity to watercourses may result in the accidental release of potential pollutants (silt laden or contaminated runoff during construction)	✓		x	x
Milton Road Hedgerows CWS: Milton Road Hedges CWS may be impacted by the construction of the waste water transfer tunnel and associated works resulting in habitat loss	x		✓	x
Clayhithe Pollard Willows CWS Construction traffic	x		✓	x

110 Cambridgeshire & Peterborough County Wildlife Sites Panel, 2014. Cambridgeshire and Peterborough County Wildlife Sites Selection Guidelines. Available URL: CAMBRIDGESHIRE (wildlifebcn.org). Last accessed: 06 January 2021.

Potential impact

Core Zone Transfer Waterbeach SSSI IRZ¹⁰¹
s Zone zone

Sensitive species may actively avoid sources of light disturbance and search for alternative foraging habitats/commuting routes leading to a reduction in the distribution of these species within suitable habitats resulting in a reduction of energy intake and/or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates. Those protected or notable species at risk from lighting activities include [REDACTED] bats, GCN, breeding birds, otter, water vole, reptiles, invertebrates.

CONSTRUCTION PHASE MITIGATION

8.8.5 Potential avoidance, mitigation, and compensation measures that could be implemented to address the potential construction impacts of the Proposed Development are set out below.

8.8.6 Primary measures to avoid impacts in construction may include:

- retaining ecological features where possible such as by siting of temporary compounds, laydown areas and access in areas of least ecological sensitivity, such as:
 - avoid locating access routes through Low Fen Drove Way Grasslands and Hedges CWS and Milton Road Hedgerows City WS;
 - retention of habitats within the transfers and treated effluent pipeline zone, particularly around the River Cam; and
 - vent shaft positioning to be located in areas of negligible or low ecological value (i.e. avoiding woodland priority habitat, floodplain grazing marsh priority habitat, good quality semi-improved grassland and waterbodies).
- timing of site clearance works to mitigate potential impacts on protected and/or notable species. An Ecological Clerk of Works (ECoW) will also be based on or near the site once construction begins and will be available to check areas of habitats prior to removal; and
- timing of works within watercourses to mitigate potential impacts on plants, migratory fish, mammals, birds, amphibians and invertebrates.

8.8.7 Measures to compensate for impacts may include:

- habitat creation to compensate for the loss of habitat due to the Proposed Development and should include species-rich calcareous grassland, floodplain grazing marsh, woodland and trees, hedgerows, and wetland habitats including ponds and ditches;
- advance planting to provide screening with secondary benefits to ecological receptors; and
- translocation of species-rich hedgerows and floodplain grazing marsh lost due to the use of land temporarily required for the construction of the Proposed Development will be included as part of the landscape and ecology habitat creation proposals to ensure there is no net loss and to maintain habitat connectivity¹¹¹.

8.8.8 Enhancement of ecological features will also be explored as part of delivering BNG. This could include enhancing hedgerows by increasing species diversity through planting up species-poor and 'planting up' hedgerows with gaps

¹¹¹ Habitat translocation should be the last resort and habitats should be maintained in situ as evidence shows the condition of habitats is often not retained after translocation. Translocation should not be regarded as a mitigation for loss through development and may only offer partial compensation.

8.8.9 Likely significant effects arising during the Construction Phase would be mitigated by secondary mitigation in the form of measures set out in the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to ecological receptors. Control measures may include:

- requirement for a programme for undertaking ecological surveys prior to and during construction;
- requirements for the translocation of receptors such as species or soils for example floodplain grazing marsh habitat;
- the control of dust generation due to activities such as soil stripping and construction traffic movements over unsealed surfaces;
- the management of environmental incidents and accidents, e.g. spillages, noise, emissions;
- the management of acoustic and vibration disturbance;
- the application of best practice measures (such as exclusion zones) to manage and minimise adverse construction stage effects to designated sites, and priority habitats such as woodlands, scattered trees and semi-improved grassland habitats;
- the application of best practice measures such as exclusion zones around excavations to manage and minimise adverse construction stage effects to wildlife;
- requirements for reinstatement of any areas of temporary habitat loss;
- requirement for ongoing consultation with Natural England, the Environment Agency, local wildlife trusts, and relevant planning authorities prior to and during construction in relation to ecological receptors;
- where appropriate an obligation to make necessary arrangements for displaced species to maintain long-term conservation status of the affected species;
- requirement to obtain any protected species licences;
- requirements to prepare or adhere to sub plans such and invasive species and biosecurity management plans, surface water quality management plans, dewatering management plans;
- requirement for an ECoW during enabling and construction works, where required, to manage ecological receptors, undertake ecological watching briefs and achieve compliance with environmental legislation; and requirement for the retention of Ecological Clerk of Works (ECoW) role during the Construction Phase of the Scheme.
- requirement within the CEMP for a water quality management plan of groundwater and drainage in the area within and around the core site during construction due to the presence of Black Ditch and its connection with Stow-cum-Quy Fen SSSI;

8.8.10 Tertiary measures in relation to ecological receptors at construction include:

- compliance with all Environmental Permitting Regulations, regulating and mitigating works to water courses;
- [REDACTED]
- there may also be a requirement for a water vole displacement licence, if these species will be impacted by the Proposed Development and require mitigation. Similarly, an EPS mitigation licences may also be required for bats.

8.8.11 The following sections set out identified mitigation for specific receptors.

DESIGNATED SITES

8.8.12 Wicken Fen Ramsar, Fenland SAC and Devils Dyke SAC are within 10km of the Proposed Development. No hydrological or air quality impacts are anticipated that will result in a likely significant effect, however, this will be assessed through a Habitat Regulations Assessment (HRA) and EIA.

8.8.13 Black Ditch is connected to one of the water bodies at Stow-cum-Quy Fen SSSI. Standard mitigation measures such as a water quality management plan and measures included within the CEMP, will reduce any potential surface water and groundwater impact at Stow-cum-Quy Fen SSSI to a negligible level.

8.8.14 Impacts to Low Fen Drove Way Grasslands and Hedges CWS during construction should be avoided by ensuring that:

- the site access area is moved to avoid the loss of the CWS. If this is not possible, the section of hedge and grassland should be translocated and connected to the existing stretch of the CWS and or compensated for through the creation of new habitat. The access road should be positioned to run through existing gaps in the hedge and avoid trees and their root protection areas (RPAs) to minimise the loss of trees within the hedgerow; and
- a sufficient habitat buffer (e.g. woodland and species-rich grassland habitat creation) is created between the proposed WWTP and CWS, and that construction works areas avoid the CWS.

8.8.15 Impacts should be avoided at Milton Road Hedgerow City WS during construction by ensuring that the Proposed Development associated with the transfers and treated effluent pipeline zone is not within the City WS and outside the hedgerow RPA. If this is not possible, the length of hedgerow that will be lost as a result of construction should be translocated, and there should

be replanting to enhance existing hedgerows and or the creation of new hedgerow to ensure no net loss.

- 8.8.16 Black Ditch could be connected to the pond within Allicky Farm Pond CWS. Further water feature surveys will be required to support the ES to determine the connection with Black Ditch. Standard mitigation measures included within the CEMP will reduce any potential surface water and groundwater impacts during construction to a negligible level.
- 8.8.17 The Waterbeach transfer pipeline will be constructed via a tunnel underneath the River Cam CWS and will include a sufficient buffer to avoid the loss of trees adjacent to the river from the use of land temporarily required during installation. If this is not possible, areas of habitat lost will be replaced through re-planting.
- 8.8.18 Habitat loss due to the treated effluent transfer tunnel or pipeline and discharge location and Waterbeach transfer pipeline should be avoided at the River Cam CWS. If this is not possible, areas of habitat lost will be replaced through re-planting and habitat restoration.
- 8.8.19 Impacts should be avoided on Clayhithe Pollard Willows CWS via the CEMP through the management of traffic and pollution incidents due to its potential surface water connection with the River Cam.

HABITATS

- 8.8.20 The proposed works would result in the permanent loss of a range of habitats. Several of these habitats, such as poor semi-improved grassland, broadleaved woodland, hedgerows and arable field margins are priority habitats listed on the Cambridgeshire and Peterborough LBAP.
- 8.8.21 Floodplain grazing marsh habitat and good quality semi-improved grassland in all zones potentially impacted from disturbance to land temporarily required during installation should be translocated and re-planted post construction in the original footprint.
- 8.8.22 Translocation of any species-rich hedgerows lost due to the use of land temporarily required for the construction of the Proposed Development will be included as part of the landscape and ecology habitat creation proposals to ensure there is no net loss in length and maintain habitat connectivity through and around the Proposed Development. Habitat translocation should be the last resort and habitats should be maintained in situ as evidence shows the condition of habitats is often not retained after translocation.
- 8.8.23 Filling of gaps in existing species-poor hedgerows affected by land temporarily required for the construction of the Proposed Development to enhance and improve condition.

PROTECTED SPECIES

- 8.8.24 Further surveys for protected and notable species will inform the design, assessment, mitigation and compensation measures required. If species such as bats or otters are identified within the Proposed Development, an EPS mitigation licence may be required.
- 8.8.25 Where impacts are unavoidable, specific mitigation and compensation requirements will vary dependent on the species but may include creation of new habitat such as ponds and hedgerows, the incorporation of bat boxes, and [REDACTED]

OPERATION PHASE POTENTIAL IMPACTS

- 8.8.26 The potential impacts on ecological features as a result of land permanently required for the Proposed Development and/or from the operation of the Proposed Development are:
- potential hydrological impacts on designated sites such as through increases in effluent volumes discharged to the River Cam or changes to water levels. Including SSSI IRZ category reference to discharge, which states any discharge of water or liquid waste of more than 5 and or 20m³/day to ground (i.e. to seep away) or to surface water, such as a beck or stream (this does not include discharges to mains sewer which are unlikely to pose a risk at this location). Most foul water is removed from a development site by a mains sewer. Where this is not the case, foul water is usually treated on site and then discharged either to ground to filter away from the site, or into a nearby watercourse. If the treated water flows towards a SSSI, it has the potential to impact on water quality sensitive features.
 - potential contamination of Black Ditch, which is connected to one of the water bodies at Stow-cum-Quy Fen SSSI. There is potential for leakage of waste water from the treatment plant, leading to contamination of groundwater in the chalk aquifer at the proposed WWTP, which could adversely affect Stow-cum-Quy Fen SSSI. Leakage of waste water from the treatment plant might result from: an operational failure giving rise to the short-term discharge of waste water to the ground in or surrounding the WWTP; or, long-term operation leading to deterioration and minor, undetected failures of the integrity of the plant, giving rise to leakages to drainage and groundwater. Either mechanism could result in the contamination of groundwater in the chalk aquifer at the proposed WWTP.
 - there is potential, without mitigation, for surface water and potentially groundwater impacts at Allicky Farm Pond CWS during operation at the proposed WWTP to surface water or possibly seepages originating from groundwater underlying the site, which may discharge to Black Ditch. As a result, the discharge from the Proposed Development may drain through the channels and affect the CWS, which may be connected to Black Ditch.

- changes to water quality and flow characteristics from river discharge locations may affect aquatic species.
- changes to ambient light level as a result of external lighting associated with the operation of the proposed WWTP which may result in light spill/ into retained habitats (such as Low Fen Drove Way Grasslands and Hedgerows CWS). Changes to ambient light / night light levels may result in disturbance and severance of wildlife corridors, which may impact biodiversity on and adjacent to the Proposed Development.
- increased traffic movements increasing noise and light disturbance.
- air quality changes such as from traffic movements and industrial processes within the proposed WWTP may impact sensitive botanical species and habitats, particularly within designated sites. Including SSSI IRZ category reference to combustion, which states general combustion processes of >20MW energy input, including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion should be assessed. Emissions from combustion can cause air pollution affecting the habitats and species on SSSIs, however Proposed Developments more than 500m away from a SSSI are only likely to have an impact if the combustion processes are over a certain minimum size. Whereas, a very large project and could cause air pollution on SSSIs up to 10km away. Combustion processes from the proposed WWTP is unlikely to generate ecological impacts as it will be below 20MW energy and classified as a medium combustion plant. Therefore, this SSSI IRZ relevant to combustion can be scoped out as a potential impact.
- air pollution changes. Wilbraham Fens SSSI, is within 200m of the A1303, which may be used by operational traffic and therefore further assessment may be needed to determine likely effects from vehicle emissions at this site.
- changes to visitor numbers to designated sites through new public access opportunities. Improved and or new accesses may promote visitor numbers, such as to Stow-cum-Quy Fen SSSI and Low Fen Drove Way Grasslands and Hedges CWS or may serve to disperse users to new or different features such as newly created habitat areas as part of the landscape proposals of the Proposed Development. Visitor footfall and recreational pressure within Stow-cum-Quy Fen SSSI could result in an increase in vegetation trampling and soil compaction, dog-fouling, littering, fires and conflicts with livestock grazing management of the sites, resulting in impacts on the grassland and aquatic features the site is designated for.
- changes to avian assemblages due to new habitat creation and risk of mortality through bird strike due to proximity to airport.
- new habitat creation and restoration has the potential to result in a positive impact on biodiversity (e.g. improve the condition of Low Fen Drove Way


Grasslands and Hedges CWS, enhance existing habitats for reptiles in Low Fen Drove Way Grasslands and Hedges CWS).

POTENTIAL IMPACTS PER ZONE

8.8.27 The potential impacts presented in Table 8-9 are divided by zone.

Table 8-9: Potential operation impacts by zone

Potential impact	Core Zone	Transfer s Zone	Waterbeach zone	SSSI IRZ
Designated sites				
<p>Wicken Fen Ramsar Site: Potential impacts during operation of the Proposed Development could be due to excessive variations in discharge, or discharge of effluent of an unacceptable quality to the River Cam. Potential for hydrological/discharge impact as the site is downstream in the catchment of the River Cam.</p>	x	✓	x	Discharge
<p>Fenland SAC: Potential impacts during operation of the Proposed Development could be due to excessive variations in discharge, or discharge of effluent of an unacceptable quality to the River Cam. Potential for hydrological/discharge impact as the site is downstream in the catchment of the River Cam</p>	x	✓	x	Discharge
<p>Devil's Dyke SAC: Potential for air quality impact on designated site qualifying features.in that the designated site habitats could be damaged or disturbed as a result of an increase in air pollution associated with combustion processes</p>	✓	x	✓	Air pollution and combustion processes
<p>Stow-cum-Quy Fen SSSI Stow-cum-Quy Fen SSSI is adjacent to Black Ditch and partly within Flood Zone 3 along the ditch. Water features in the centre of the SSSI are connected to the Black Ditch via a one-way valve which allows flow into Black Ditch during periods of high water levels in the fen. During periods of particularly high flow in Black Ditch, however, over-bank flow is understood to occur in the reverse direction from the ditch onto the fen. Potential connection in flood events. Recreational pressure due to potential circular walks.</p>	✓	x	x	Infrastructure, discharge, combustion, and rural non-residential
Cam Washes SSSI:	x	✓	x	Discharge

Potential impact	Core Zone	Transfer s Zone	Waterbeach zone	SSSI IRZ
During operation, treated water that flows towards the Cam Washes SSSI has the potential to impact on water quality sensitive features				
Wilbraham Fens SSSI: Potential for air quality impact on designated site by increased traffic using the roads adjacent during operation.	✓	x	x	
Allicky Farm Pond CWS: Potential for hydrological impact as may be connected to Black Ditch and may experience hydrological impacts from groundwater or surface water. The CWS is also within Flood Zone 3 along the ditch.	✓	x	x	
River Cam CWS: Potential for designated site to be impacted by discharge into the river if discharge quality is not properly controlled.	x	✓	x	
Low Fen Drove Way Grasslands and Hedges CWS: Potential for designated site to be impacted as it is immediately adjacent to the proposed WWTP site and may experience an increase in pollution as a result of operation. Recreational pressure due to potential circular walks	✓	x	x	
Clayhithe Pollard Willows CWS The treated effluent corridor and associated potential discharge location may cause impacts to water quality to the River Cam, which may be connected to this CWS	x	✓	x	
Protected and notable species				
Access routes into the proposed core site will experience an increase in operational traffic which will lead to an increase in disturbance from noise and/or light leading to mortality of protected species. Potential for increased disturbance to species due to changes to visitor numbers through new public access opportunities Those species include badger, bats, GCN, breeding birds (including Schedule 1), reptiles and invertebrates.	✓	✓	x	
	✓	x	x	
Protected and notable species				
River discharge:	x	✓	x	

Potential impact	Core Zone	Transfer s Zone	Waterbeach zone	SSSI IRZ
Installation of a treated effluent discharge into the River Cam may negatively impact water quality and flow conditions and therefore aquatic species such as fish, otter, water vole, macroinvertebrates and macrophytes.				

OPERATIONAL PHASE MITIGATION

- 8.8.28 Potential avoidance, mitigation, and compensation measures that could be implemented to address the potential operation impacts of the Proposed Development are set out below.
- 8.8.29 Primary mitigation measures intended to avoid impacts in operation include:
- incorporation of planting proposals defined in a landscape masterplan to provide a BNG of 10% by setting aside space for habitat creation within the site area and associated infrastructure corridors (the siting of habitat features such as ponds should be created in a way to avoid attracting bird species that pose a risk to aircraft flightpaths);
 - the creation of new circular footpaths and bridleways has the potential to increase visitor footfall and recreational pressures within Stow-cum-Quy Fen SSSI and Low Fen Drove Way Grasslands and Hedges CWS. Potential adverse impacts on these designated sites should be avoided, through measures such as diverting pressure elsewhere (signage and interpretation), creating alternative accessible greenspace, and or buffering and enhancing the resilience of these designated sites;
 - incorporation of enhancement features within the landscape masterplan to contribute increasing biodiversity value such as log piles, reptile hibernacula, bat and bird boxes;
 - design of the permanent facility to prevent leakage of waste water from the treatment plant and associated pipelines / transfer corridors;
 - design of the permanent site drainage to avoid any discharge of pollutants to surface water bodies including the Black Ditch;
 - design of the treated effluent outfall to accommodate design flows, control outflows so that they prevent bed and bank scour; and
 - design of the treated effluent outfall to embed finish that may encourage biodiversity;
 - technology selection and engineering design to prevent effluent discharge of unacceptable quality.
- 8.8.30 Compensation proposals, such as riparian habitat creation or restoration may provide better biodiversity outcomes if sited in locations further down/upstream

from the location of impact on the River Cam. In such cases habitat creation proposals would be developed in consultation with relevant stakeholders.

8.8.31 Secondary measures to mitigate impacts on ecological resources at operation may include:

- Any monitoring of groundwater quality, if required, would be agreed with the Environment Agency and implementation of a water quality monitoring programme (agreed with the Environment Agency) to detect potential contaminant releases from the proposed WWTPs. The survey programme may be reviewed during the early years of monitoring in connection with the operation of the plant. However, any subsequent changes to the monitoring programme would only be made with the agreement of the Environment Agency;
- use of the FRA outputs to understand changes to river levels and flood extents in order to devise any changes to the way water levels are managed so as not to affect ecological receptors;
- preparation and implementation of a Landscape and Ecology Management Plan (LEMP) as described in Chapter 2: The Proposed Development, to include the management and monitoring of created habitats;
- preparation and implementation of operational environmental management plans which incorporate measures to respond to leaks and spills detected by routine environmental quality monitoring. These would include measures to detect and manage contamination to groundwater with an immediate clean-up programme implemented;
- preparation and implementation of emergency response plans which incorporate measures to respond to abnormal operations and emergency events, such as spills and leaks; and
- preparation of a wildlife hazard management plan in consultation with Cambridge Airport operators.

8.8.32 Tertiary measures in relation to ecological resources at operation include:

- compliance with all Environmental Permitting Regulations, regulating and mitigating emissions accordingly. The operation of the WWTP would be subject to:
 - emission controls to meet the requirements of the Industrial Emissions Directive (IED),
 - environmental permits to meet the requirements of the Urban Waste Water Treatment Directive (UWWTD) and Water Framework Directive (WFD).
- compliance with protected species licence conditions to include the monitoring of mitigation and compensation measures.

8.8.33 The following sections outline proposed mitigation for specific receptors:

DESIGNATED SITES

- 8.8.34 Black Ditch is connected to one of the water bodies at Stow-cum-Quy Fen SSSI. The permanent site drainage will be designed to avoid any discharge of pollutants to Black Ditch during operation of the scheme. As a result, Stow-cum-Quy Fen SSSI should not be adversely affected by surface water discharge from the site. Consideration has also been given to the potential impacts during operation of the WWTP, due to leakage of waste water from the treatment plant, leading to contamination of groundwater in the chalk aquifer, which could adversely affect Stow-cum-Quy Fen SSSI. However, these risks would be taken into account fully in the robust design, protection measures and operational procedures for the WWTP. In addition, monitoring of groundwater and drainage in the area within and surrounding the WWTP could be implemented prior to and during the construction of the works. A water quality sampling programme to monitor for potential contaminants would then be agreed with the Environment Agency and implemented during the operation of the site. The sampling programme may be reviewed during the early years of monitoring in connection with the operation of the plant. However, any subsequent changes to the monitoring programme would only be made with the agreement of the Environment Agency. If any significant contamination of groundwater was detected, an immediate clean-up programme would be implemented. The HIA was undertaken to further assess the potential impacts on the groundwater-dependent environment including on Stow-cum-Quy Fen SSSI. The HIA modelled the potential migration of contamination in shallow groundwater to the Black Ditch in the unlikely event of a release of contaminants during operation of a WWTP. The HIA concluded that with appropriate construction design, management and operational management, including protection measures, it is unlikely that significant concentrations of potential contaminants will reach Black Ditch within 1,000 years and therefore, it is unlikely that there will be an adverse impact on Stow-cum-Quy Fen SSSI.
- 8.8.35 The creation of new circular footpaths and bridleways has the potential to increase visitor footfall and recreational pressures within Stow-cum-Quy Fen SSSI and Low Fen Drove Way Grasslands and Hedges CWS. Potential adverse impacts on these designated sites should be avoided, through measures such as diverting pressure elsewhere (signage and interpretation), creating alternative accessible greenspace, and or buffering and enhancing the resilience of these designated sites. Natural England will be further consulted on habitat creation proposals.
- 8.8.36 Wilbraham Fens SSSI is approximately 580m south-east of the site. Operational traffic may require further assessment as the vehicle movements exceed the assessment thresholds. However, although further assessment is recommended it is considered that the change in pollutant concentration as a percentage of the relevant critical level or load is likely to be less than 1%.

Where the change in concentration is less than 1%, the effects can be deemed to be insignificant.

- 8.8.37 Black Ditch could be connected to the pond within Allicky Farm Pond CWS. A HIA has been undertaken to further assess the potential impacts on the water environment including on Allicky Farm Pond CWS as detailed above. The preliminary conclusions of the HIA indicate that with appropriate construction design, management and operational management, including protection measures, it is unlikely that significant concentrations of potential contaminants will reach Black Ditch within 1,000 years and therefore, it is unlikely that there will be an adverse impact on Allicky Farm Pond CWS.

8.9 Proposed scope of the assessment

ECOLOGICAL RECEPTORS TO BE SCOPED IN

- 8.9.1 A summary table of ecological receptor sites scoped into the EIA as a result of the above tables are shown in Table 8-10 below:

Table 8-10: Ecological receptors to be scoped in

Receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach zone	Justification for scoping in*
Wicken Fen Ramsar (SSSI and NNR)	Out	In	In	Within SSSI IRZ for discharge
Fenland SAC	Out	In	In	Within SSSI IRZ for discharge
Devils Dyke SAC	In	In	In	Construction Phase impacts with regard to combination with other plans and projects, based on nitrogen deposition due to elevated traffic levels on the A14
Stow-cum-Quy Fen SSSI	In	Out	Out	Black Ditch connection Recreational pressures
Wilbraham Fens SSSI	In	Out	Out	Air quality impacts during operational traffic
Upware North Pit SSSI	Out	In	Out	Potential hydrological link with Cam Washes SSSI, River Cam
Cam Washes SSSI	Out	In	Out	Within SSSI IRZ for discharge
Low Fen Drove Way Grassland and Hedges CWS	In	Out	Out	Habitat loss, fragmentation Recreational pressures
Allicky Farm Pond CWS	In	Out	Out	Black Ditch potential connection
River Cam CWS	Out	In	In	Habitat loss

Receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach zone	Justification for scoping in*
				Water quality
Milton Road Hedgerows	Out	In	Out	Habitat loss
Clayhithe Pollard Willows CWS	Out	In	In	Potential hydrological link with River Cam Traffic
Priority habitats	In	In	In	Habitat loss, fragmentation
Bats	In	In	In	Disturbance and or destruction to a potential bat roost. Fragmentation of Low Fen Drove Way Grasslands and Hedges CWS dependent on access route Surveys ongoing
Otter	Out	In	In	Surveys ongoing
Breeding birds Bird species/assemblages	In	In	In	Surveys ongoing Operational impacts on birds due to bird strike and Cambridge Airport following new habitat creation which may attract new assemblages
Water vole	Out	In	In	Presence on the River Cam and ditches likely to be impacted by construction
Reptile	In	In	In	Surveys ongoing. Presence recorded in low numbers, translocation requirement unlikely, but a precautionary method of works during construction will be required.
Terrestrial invertebrates	In	In	In	Surveys ongoing
Fish	Out	In	Out	Surveys ongoing
Aquatic macroinvertebrates	In	In	In	Surveys ongoing
Aquatic macrophytes	In	In	In	Surveys ongoing
Badger	In	In	In	[REDACTED]
Invasive species	Out	In	In	Surveys ongoing

Receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach zone	Justification for scoping in*
				Invasive species recorded. Requirement for biosecurity management plan during construction
Notable plant species	In	In	In	Presence confirmed. Surveys ongoing

*Where surveys are ongoing, receptors have been scoped in as a precautionary approach¹¹².

8.9.2 Wicken Fen Ramsar, Fenland SAC, and Devils Dyke SAC are within 10km of the Proposed Development. No air quality impacts are anticipated during operation, combustion has been scoped out as an impact as it will be below 20MW energy, but this will be assessed through a HRA and EIA.

8.9.3 During operation there will be no waste water discharged to ground or surface water, it will be treated and transferred to the discharge point on the river. The operation of the WWTP would be subject to emission controls to meet the requirements of the Industrial Emissions Directive and an environmental permit to meet the requirements of the Urban Waste Water Treatment Directive.

8.9.4 Wilbraham Fens SSSI is approximately 580m from the site. Operational traffic may require further assessment as the vehicle movements exceed the assessment thresholds. However, although further assessment is recommended it is considered that the change in pollutant concentration as a percentage of the relevant critical level or load is likely to be less than 1%. Where the change in concentration is less than 1%, the effects can be deemed to be insignificant.

ECOLOGICAL RECEPTORS TO BE SCOPED OUT

8.9.5 The receptors presented in Table 8-11 are proposed to be scoped out. The justification is provided in the proceeding paragraphs.

Table 8-11: Ecological receptors to be scoped out for all zones

Receptor proposed to be scoped out	Justification for scoping out
White-clawed crayfish	White-clawed crayfish surveys have been scoped out following the Technical Working Group meeting in March 2021 as this species is not present within the study area.
Wintering birds	The wintering birds baseline within the EZol is detailed in the baseline section above and identified within the Ecology Surveys Briefing Note ¹¹³ . Therefore, no additional wintering bird surveys are required to inform the impact assessment. This is due to no

¹¹² It can be difficult at the scoping stage to establish the full extent of likely effects, and a precautionary approach is needed to ensure that the study area incorporates all areas where significant effects could occur throughout the life of the project.

¹¹³ Ecology Surveys Briefing Note CWWTP, 06/05/2021

Receptor proposed to be scoped out	Justification for scoping out
	new baseline data being required to inform the assessment. This data has been supplied in a report by the BTO and can be used to for the ES.
Hazel dormouse	The limited distribution of this species in Cambridgeshire means that this species is not likely to be present and are, therefore scoped out of further assessment
Bramblefields LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Newmarket Heath SSSI	Scoped out of the assessment due to no hydrological or ecological pathways
Coldham's Common LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Barnwell II LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Barnwell LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Logan's Meadow LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Lime Kiln Close (and West Pit) LNR	Scoped out of the assessment due to no hydrological or ecological pathways
East Pit LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Sheep's Green and Coe Fen LNR	Scoped out of the assessment due to no hydrological or ecological pathways
The Beechwoods LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Paradise LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Nine Wells LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Byron's Pool LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Worts Meadow LNR	Scoped out of the assessment due to no hydrological or ecological pathways
Anglesey Abbey CWS	Scoped out of the assessment due to no hydrological or ecological pathways
Cambridge Road Willow Pollards CWS	Scoped out of the assessment due to no hydrological or ecological pathways
Swaffham's Poor's Fen CWS	Scoped out of the assessment due to no hydrological or ecological pathways
Bottisham Park CWS	Scoped out of the assessment due to no hydrological or ecological pathways
Landbeach Pits Willow Wood CWS	Scoped out of the assessment due to no hydrological or ecological pathways

Receptor proposed to be scoped out	Justification for scoping out
Beach Ditch and Engine Drain CWS	Scoped out of the assessment due to no hydrological or ecological pathways
Twenty Pence Pit CWS	Scoped out of the assessment due to no hydrological or ecological pathways
Cow Bridge Pollard Willows CWS	Scoped out of the assessment due to no hydrological or ecological pathways
River Great Ouse CWS	Scoped out of the assessment due to no hydrological or ecological pathways

- 8.9.6 Twenty-one statutory designated sites that were not hydrologically or ecologically linked to the EIA Scoping boundary are scoped out of further assessment, given their distance from the Proposed Development, meaning significant effects on these sites unlikely. Ten non-statutory designated sites (CWS) have also been scoped out, as significant effects on these sites are unlikely given their distance from the Proposed Development.
- 8.9.7 The Cambridgeshire and Peterborough Priority Species¹¹⁴ list states that hazel dormouse is only known to be present in two reintroduced populations in Cambridgeshire: Brampton Wood and Bedford Perlieus, which are approximately 30km north west and 56km north west of the Proposed Development. Whilst some suitable woodland and hedgerow habitats exist for this species within and adjacent to the Proposed Development, the limited distribution of this species in Cambridgeshire means that this species is not likely to be present in the Site and are, therefore scoped out of further assessment.
- 8.9.8 Wintering birds have been scoped out from the assessment as data from the BTO report describes the baseline for wintering birds within the EZol. Therefore, no wintering bird surveys are required to inform the impact assessment.
- 8.9.9 White-clawed crayfish surveys have been scoped out following the Technical Working Group meeting in March 2021. Stakeholders confirmed that white-clawed crayfish are absent from the survey area based on local knowledge. Furthermore, the biological records did not return any records of the species within 5km of the Proposed Development.

HABITAT REGULATIONS ASSESSMENT

- 8.9.10 The Conservation of Habitats and Species Regulations 2017 (as amended) require that the Secretary of State considers whether the Proposed Development is likely to have a significant impact on a European Site or on any sites to which the same protection is applied as a matter of policy (e.g. a Ramsar Site), either alone or in combination with other plans or projects. If likely

¹¹⁴ Cambridgeshire and Peterborough Biodiversity Group <http://www.cpbiodiversity.org.uk/biodiversity-action-plans/priority-species>

significant effects cannot be excluded, an Appropriate Assessment is required to determine whether the Proposed Development may have an adverse effect on the integrity of the protected site.

- 8.9.11 Table 8-5 identifies any SACs, SPAs and Ramsar Sites within the Study Area. In order to assess the likely significant effects on qualifying features and determine effects on the integrity of the Site, a HRA screening exercise will be required to determine the potential, or otherwise, for the project to impact European Sites. Air quality impacts will be investigated on all susceptible European sites within a 10km radius of the facility.
- 8.9.12 The relevant matrices from The Planning Inspectorate (PINS) Advice Note 10: Habitats Regulations Assessment¹¹⁵ will be completed as required to ensure a compliant submission.
- 8.9.13 The Screening Exercise will be used to identify whether there is a requirement for further consideration of effects on European Sites, i.e. the need for Appropriate Assessment as the next stage of HRA. Consideration will be given to the use of an Evidence Plan in discussion with the statutory nature conservation bodies.

8.10 Evidence of agreements reached with consultation bodies

- 8.10.1 The following consultation has been carried out in relation to EIA scope and where agreements have been reached these are indicated.

Table 8-12: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Technical Working Group (including Natural England, Cambridgeshire County Council, The National Trust, Environment Agency, The Wildlife Trust BCN) meeting on 11 March 2021	Update on 2020 background data search, PEA, aquatic habitat and terrestrial invertebrate scoping assessment completed. High level review of potential impacts on statutory and non-statutory designated sites, habitats and protected species. High level results from 2020 PEA. Introduction to proposed 2021 detailed ecological surveys. Potential opportunities to enhance the natural environment. 10% BNG commitment	Stakeholders confirmed that white-clawed crayfish are absent from the survey area based on local knowledge and were only included as a precautionary survey originally. Ecology Surveys Briefing Note, which sets out the proposed approach with regards to the ecology surveys that will be completed in 2021 to provide the baseline information to support the ES provided to the TWG. Natural England responded.

¹¹⁵ PINS (2017) Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects [online]: [Advice-note-10v4.pdf \(planninginspectorate.gov.uk\)](#) Accessed September 2021

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Technical Working Group (including Natural England, Cambridgeshire County Council, The National Trust, Environment Agency, The Wildlife Trust BCN) meeting on 15 June 2021	Update on 2021 ecology surveys. Methods and survey results to date. Consultation programme for Phase 2. Landscape and design inspiration, design principles, indicative design, potential habitat mitigation and compensation. Traffic and access proposals.	
Natural England, Cambridgeshire County Council, The National Trust, 19 August 2021	Brief on proposed approach to EIA Scoping Report, receptors scoped in and out, assessment methodologies	
Environment Agency, 26 August 2021	Brief on proposed approach to EIA Scoping Report, receptors scoped in and out, assessment methodologies	
Cambridge Airport Operators May 2021	Habitat creation and attracting certain bird species/ assemblages at risk of bird strike	Advised to prepare wildlife hazard management plan

8.11 Assessment methodology

- 8.11.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.
- 8.11.2 Guidelines by the Chartered Institute of Ecology and Environmental Management (CIEEM) sets out the process of ecological impact assessment (EclA)⁶⁴. The ecological assessment will be undertaken using the approach detailed in Guidelines for EclA in the United Kingdom and relevant legislative and policy framework. The methodology for determining nature conservation importance of features and the assessment of impacts of the Proposed Development are provided below.

8.11.3 Ecological survey methodology have followed industry standard good practice guidelines, Natural England standing advice, and Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013). Habitat and protected species survey methodology and results will be presented as technical appendices in the ES. Those ecological surveys that are planned to be completed will follow the above survey methodology.

SIGNIFICANCE CRITERIA

8.11.4 CIEEM's guidelines describe significant effect for the purpose of EclA, as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.

8.11.5 A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution), and can be a positive or negative ecological effect.

8.11.6 For designated sites, impacts shall be considered significant when the Proposed Development affects the integrity of the site in terms of the coherence of its ecological structure and function or the impact on the site is likely to be significant in terms of its ecological objectives.

8.11.7 For habitats, impacts shall be considered significant when the Proposed Development results in a change in extent, structure and function, that reduces its ability to sustain the habitat, complex of habitats and/or the population levels of species of interest within a given geographical area.

8.11.8 For species, impacts are considered when the Proposed Development affects the conservation status, abundance, and distribution of the species within a given geographical area.

8.11.9 The impacts will be assessed in terms of:

- magnitude;
- extent;
- the route which they occur (whether direct, indirect, secondary or cumulative);
- duration (short, medium, long-term, permanent, temporary);
- reversibility;

- timing;
- frequency; and
- positive or negative.

- 8.11.10 The assessment of the potential impacts considers both impacts within the Proposed Development and those that occur beyond it.
- 8.11.11 The nature conservation importance or potential importance of an ecological feature is determined within the geographic context (International, National, Regional, County, Borough of Local Authority, Local, Negligible).
- 8.11.12 Once the geographic importance of ecological features has been defined and the likely impacts identified, the significance of these effects will be determined. Significant impacts will be determined as being either positive or negative. Impacts are unlikely to be significant where features of low importance or sensitivity are subject to small or short-term impacts. However, where there are several small-scale impacts that are not significant alone, the assessor may determine that, cumulatively, these may result in an overall significant impact.
- 8.11.13 Following the completion of further surveys and the assessment of impacts, mitigation, compensation, and enhancement measures to reduce and avoid any adverse effects will be identified and developed, and any residual significant effects evaluated.

8.12 Approach to cumulative effects assessment

- 8.12.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.
- 8.12.2 In line with CIEEM guidelines¹¹⁶ the cumulative assessment for biodiversity will consider other committed developments that give rise to additive/incremental impacts¹¹⁷ and effects or associated/connected impacts¹¹⁸ and effects with the Proposed Development.

8.13 Assumptions, limitations and uncertainties

- 8.13.1 The following assumptions and limitations have been noted during the scoping:
- field surveys were confined to locations where land access permission has been granted. Where access was not available, surveys were undertaken from PRow, and information from aerial imagery, Master Map (OS high detail

¹¹⁶ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester

¹¹⁷ Multiple activities/projects (each with potentially insignificant effects) added together to give rise to a significant effect due to their proximity in time and space.

¹¹⁸ A development activity enables another development activity e.g. phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the project as a whole and not ignore impacts that fall under a separate consent process.

base mapping to determine Phase 1 habitats), and Natural England's open source data set for Priority Habitat Inventory (Natural England, 2020) was used to supplement the surveys.

- In areas where there is more residential development, the survey areas are likely to be restricted in extent and limited to the route and areas with public access. Where possible, the extended Phase 1 habitat survey was completed up to 100m from the EIA Scoping boundary, however, if the 100m buffer includes small land parcels dominated by residential homes and small gardens, these areas will not always require a survey. There are land parcels where land access permission was not granted within the 100m of the Waterbeach WWTP and transfer pipeline to proposed WWTP (east of Horningsea High street). These land parcels do not require a PEA or an Aquatic Habitat Scoping Assessment, as the land parcels consist of residential buildings and small back gardens. Sufficient habitat survey data was collected from aerial maps and adjacent land parcel surveys to ascertain broad habitat types present and the absence of aquatic habitats (waterbodies, watercourses, and ponds). However, the buildings are likely to have the potential to support roosting bats as well as trees in the back gardens, but these will not be directly impacted by the Waterbeach transfer pipeline;
- the extended Phase 1 Habitat Survey completed in 2020 and 2021 did not include the land/track within the EIA Scoping boundary, which runs east from Low Fen Drove Way to Station Road as well as some areas of land within 100m of the Waterbeach WWTP and transfer pipeline to proposed WWTP EIA Scoping boundary. The EIA Scoping boundary will be reviewed further to determine the requirement for additional extended Phase 1 habitat surveys will be included in future surveys;
- the October and November 2020 Phase 1 habitat surveys were completed outside the recommended season for Phase 1 habitat surveys, which is April to September (in accordance with the JNCC Handbook for Phase 1 Habitat Survey). However, most of the survey coverage was completed during the optimal season (July-September) and sub-optimal surveys were completed when vegetation was still visible to undertake an assessment of habitat types and a suitable species list was recorded;
- baseline ecological surveys commenced in 2021. The surveys may highlight other ecological features with the potential to be significantly affected which have not been considered significant or identified at the scoping stage of assessment;
- ecological surveys are dependent on land access to areas within the EIA Scoping boundary and the appropriate EZol for each species; and
- protected species surveys have seasonality constraints due to the variation in activity and plant flowering times throughout the year. It should be noted that the absence of certain protected or rare species does not preclude their

presence on a site. There is always the risk of protected or rare species being over-looked, either owing to the timing of the survey or the scarcity of the species at the site

- 8.13.2 Ecological surveys took place during the Covid-19 pandemic and during a period of no national lockdowns or minimal restrictions to working outside. Surveyors travelled to survey locations in separate private or hire cars as per government guidance. Surveyors additionally followed guidance set out by CIEEM on ecological survey and assessment in the UK during the COVID-19 outbreak¹¹⁹. Ecological surveys were conducted in an open-air environment and so further reducing potential exposure to the virus. Therefore, Covid-19 was not considered to be a limitation to the surveys and/or to the ecological assessment.

¹¹⁹ CIEEM (2021). Guidance on Ecological Survey and Assessment in the UK During the COVID-19 Outbreak. Version 4. Published 10 February 2021. Chartered Institute of Ecology and Environmental Management, Winchester, UK

9 Carbon

9.1 Introduction

9.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorate as ‘matters’ relevant to the aspect of greenhouse gas emissions (GHGs) (commonly referred to as carbon emissions)¹²⁰. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.

9.2 Matters (resources and receptors)

9.2.1 For the aspect of GHG emissions the receptor is the global climate. The impact is climate change.

9.3 Study Area

9.3.1 The assessment of the effects on climate does not have a physical study area per se as the receptor (the global climate) for GHG emissions is not spatially defined. Climate change resulting from GHG emissions will lead to social, environmental and economic impacts felt globally, regardless of where the GHGs are emitted. Chapter 10: Climate Resilience considers the vulnerability of the Proposed Development to climate change.

9.3.2 Instead of a physical study area, the climate impact assessment will consider the potential GHG emissions arising from the activities for both construction and operation (the latter for the design-life of the Proposed Development). Section 9.7 on potential environmental impacts describes the emissions sources considered in more detail.

9.4 Legislation, planning policy context and guidance

9.4.1 Legislation, planning policy and guidance relating to carbon and pertinent to the Proposed Development comprises the following.

LEGISLATION

- The requirement to consider a project’s impact on climate change was introduced in the 2014 amendment to the Environmental Impact Assessment (EIA) Directive (2014/52) (The European Parliament and the Council of the European Union, 2014). The Directive has been fully transposed into UK law

¹²⁰ GHGs refer to the seven gases covered by the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). These are measured in units of carbon dioxide equivalent (CO₂e) which expresses the impact of each gas in terms of the amount of CO₂ that would create the same impact.

in the EIA Regulations. Schedule 4 Part 5 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 5. States that ‘A description of the likely significant effects of the development on the environment resulting from, inter alia—... (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change.’

- The Climate Change Act 2008¹²¹ (and its 2019 amendment) supports the UK’s transition towards a low carbon economy. It includes a legally binding commitment to reach net zero by 2050, which represents a 100% reduction in national carbon emissions compared to 1990 levels. The Act also sets a national 5-year carbon budgeting system, with legally-binding ‘carbon budgets’ to cap the amount of greenhouse gases (GHGs) emitted in the UK over a five-year period. It also established the context for Government action and incorporated the requirement to undertake Climate Change Risk Assessments, and to develop a National Adaptation Programme (NAP) to address opportunities and risks from climate change (which is covered in Chapter 10: Climate Resilience).

PLANNING POLICY

9.4.2 National planning policy of relevance to the Proposed Development includes:

9.4.3 NPS for waste water with particular reference to;

- paragraph 2.2.3 in relation to the Government’s key policy objectives around climate change mitigation and adaptation. Namely to help deliver the Climate Change Act’s obligation to reduce GHG emissions.

9.4.4 NPPF with particular reference to;

- paragraphs 8, 20 and 153-154 in relation to adaptation, mitigation and climate change resilience; paragraphs 152, 154-158 in relation to reduction of CO₂e emissions through design and reduced energy consumption.

9.4.5 Local planning policy of relevance to the Proposed Development includes:

9.4.6 South Cambridgeshire District Council Local Plan 2018 with particular reference to:

- Policy CC/1 Mitigation and Adaptation to Climate Change, which states that proposals should ‘embed the principles of climate change mitigation and adaptation into the development’.
- Policy CC/3: Renewable and Low Carbon Energy in New Developments requires developments for new dwellings or other buildings to reduce carbon emissions.

¹²¹ [Climate Change Act 2008 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2008/27/section/1)

- 9.4.7 South Cambridgeshire District Council (SCDC) has committed to deliver Net Zero Carbon by 2050 and declared a Climate Emergency in December 2018. The commitment is that the next local plan (to be a combined local plan with Cambridge City Council) will 'look at ways South Cambridgeshire District Council can press for a carbon-free area through the design of homes and other buildings, land use including open space, transport links, energy supplies and waste and recycling services'. The current local plan is focused on buildings and energy reduction, the new local plan will have to take a broader view on all new developments and how to reduce carbon (embedded and operational emissions).
- 9.4.8 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021¹²² with particular reference to:
- Policy 1 Sustainable development and climate change, where mineral and waste management proposals will be assessed against their active role in guiding development towards sustainable solutions.
- 9.4.9 Cambridge City Council Local Plan 2018¹²³ with particular reference to:
- Policy 28 Carbon reduction, community energy networks, sustainable design and construction, and water use which states that 'all developments should take the available opportunities to integrate the principles of sustainable design and construction into the design of proposals... including carbon reduction'.
- 9.4.10 Cambridge City Council declared a Climate Emergency in January 2019. Relevant climate change strategy includes Cambridge City Council Climate Change Strategy (2021-2026)¹²⁴ and supporting Carbon Management Plan (2021-2026)¹²⁵. The climate change strategy identifies key objectives to tackle, including:
- Reducing energy consumption and carbon emissions from homes and buildings in Cambridge
 - Reducing consumption of resources, reducing waste and increasing recycling in Cambridge.

CORPORATE POLICY AND GUIDANCE

- 9.4.11 In 2019, Anglian Water, along with other water companies in England, committed to achieve net zero operational carbon emissions by 2030¹²⁶. This includes emissions associated with operational power use, transportation and

¹²² [Adopted minerals and waste plan - Cambridgeshire County Council](#)

¹²³ [Local Plan 2018 - Cambridge City Council](#)

¹²⁴ [Climate change strategy - Cambridge City Council](#)

¹²⁵ [Carbon management plan - Cambridge City Council](#)

¹²⁶ [REDACTED]

process emissions. Anglian Water set out their roadmap to net zero in July 2021 including targets of 70% reduction in capital carbon from a 2010 baseline, and net zero operational carbon.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

9.4.12 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of carbon planning policy has influenced the EIA scope as follows:

- Mitigation - The national planning policies identify the need to reduce GHG emissions in line with UK commitments to net zero and work to carbon budgets stemming from the Climate Change Act 2008. Outline mitigation actions to reduce emissions will be included within the PEI documentation and measures taken forward by CWWTPR detailed within the ES. Estimates of overall emissions as a result of the Proposed Project will be compared to UK carbon budgets and AWS targets for carbon emissions.
- Mitigation - Local planning policies reiterate the above with regard to reduced-carbon development, and as above mitigation actions will be included within the PEI documentation and measures taken forward by CWWTPR detailed within the ES.
- Sensitivity of receptor (the global climate) – national planning policies reiterate the serious nature of climate change and the need to rapidly decarbonise. This has been taken account through the scope by defining the sensitivity of the global climate as high.

NATIONAL POLICY STATEMENT REQUIREMENTS

9.4.13 Table 9-1 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 9-1: Scope and NPS compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 2.2.3 sets out the policy context including 'to help deliver the UK's obligation to reduce greenhouse gas emissions by 80% by 2050 and work to carbon budgets stemming from the Climate Change Act 2008'	The scope includes assessment of GHG emissions from operation and construction, with mitigation measures to reduce emissions identified. Emissions estimates will be compared against the UK carbon budgets.

GUIDANCE

9.4.14 The following guidance provides best practice for assessment of carbon emissions and will be used to inform the EIA:

- 9.4.15 The Infrastructure Carbon Review¹²⁷ sets out carbon reduction actions required by infrastructure organisations. In terms of the Proposed Development, this means that emissions reduction actions should be taken into account when developing scheme specific mitigation measures.
- 9.4.16 The National Planning Practice Guidance includes a dedicated section on climate change¹²⁸, which sets out key legislation and drivers for considering climate change in planning. The guidance sets out examples of climate change mitigation (reduction of emissions), and adaptation to climate change. For example, use of renewable and low carbon energy, and low carbon design of buildings which will need to be considered in the assessment.
- 9.4.17 PAS 2080: 2016 Carbon Management in Infrastructure¹²⁹ is the first global low carbon infrastructure specification. It establishes a common understanding, approach and language for whole life carbon management in the provision of economic infrastructure (defined as water, energy, transport, communications and waste). This approach is key to informing the methodology for assessment. PAS 2080 covers:
- Integration of greenhouse gas emissions management into infrastructure delivery;
 - Leadership and governance;
 - Quantification of greenhouse gas emissions;
 - Target setting, baselines and monitoring;
 - Reporting and information management;
 - Continual improvement;
 - Responsibilities across the value chain – including asset managers, designers, constructors and product/materials suppliers.
- 9.4.18 The IEMA Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017)¹³⁰ is accepted as comprehensive guidance on assessment of GHG emissions and will be used to inform assessment of significance.

9.5 Baseline conditions

- 9.5.1 The baseline considers the existing GHG emissions relevant to development of the Proposed Development. These present a picture of emissions for comparison to the Proposed Development. These are the following:

127 Infrastructure Carbon Review - GOV.UK (www.gov.uk)

128 UK Government [online] <https://www.gov.uk/guidance/climate-change> (accessed December 2020)

129 BSI (2016 [online] <https://www.bsigroup.com/en-GB/our-services/product-certification/product-certification-schemes/pas-2080-carbon-management-in-infrastructure-verification/>(accessed December 2020)

130 Institute of Environmental Management and Assessment (2017) EIA Guide to Assessing Greenhouse Gas emissions and Evaluating their Significance

- the annual UK emissions, including national waste water and construction sector emissions;
- the AWS published operational emissions per MI treated waste water.

9.5.2 Baseline conditions associated with construction are zero because there is no current construction on the site. The UK construction sector was estimated to account for 2.9% of total emissions in 2019¹³¹, this will be used as context for assessment of the development construction footprint.

9.5.3 In 2019, UK net greenhouse gas (CO₂e) emissions were estimated at 455 million tonnes¹³². The water supply and sewage services sector accounted for 0.8% of UK GHG emissions in 2019.

9.5.4 The total annual net emissions in 2020 for AWS are reported as 290,266 tCO₂e. GHG emissions related to waste water reported by AWS are provided in Table 9-2. Waste water (water recycling and sludge treatment) total 53% of the reported emissions footprint in 2020.

Table 9-2: GHG emissions related to waste water

Emissions	Tonnes CO ₂ e
Kg CO ₂ e per MI water treated	224
Kg CO ₂ e per MI recycled water	243
Kg CO ₂ e per MI recycled water, flow to full treatment	220

Source (Anglian Water, 2020)

9.6 Future baseline

9.6.1 In 2019, Anglian Water, along with other water companies in England, committed to achieve net zero operational carbon emissions by 2030. This includes emissions associated with operational power use, transportation and process emissions.

9.6.2 The projections from the Department for Business, Energy & Industrial Strategy (referred to as the BEIS projections) show a decline in total emissions to 2040 (emissions are projected to fall by 24% from 2019 levels).

9.6.3 The UK 2019 energy demand and greenhouse gas emissions projections show that the third carbon budget (2018 to 2022) is very likely to be achieved with a headroom of around 26MtCO₂e. However, the Committee on Climate Change have stated that emissions will need to fall quicker than the existing fourth carbon budget (2023 to 2027) and fifth carbon budget (2028 to 2032). In 2021,

131 UK greenhouse gas emissions by Standard Industrial Classification (SIC) 1990-2019 [online] available at: <https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics> (accessed September 2021).

132 UK greenhouse gas emissions by Standard Industrial Classification (SIC) 1990-2019 [online] available at: <https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics> (accessed September 2021).

the ambitious 6th Carbon Budget for 2033 to 2037 was brought into law committing to cut emissions by 78% by 2035 compared to 1990 levels.

9.6.4 Accounting for the UK carbon budgets and Anglian Water’s net zero commitment, the future baseline is therefore likely to require low carbon emission operation of waste water assets.

9.6.5 The CCC have also determined a balanced net-zero pathway for construction and manufacturing that includes a reduction of 43% by 2030, 75% by 2035 and 90% by 2040 to achieve the 97% reduction by 2050. This pathway considers a proportion of the reduction will come from improved resource efficiency in production and material substitution. Therefore, significant effort is required to ensure that all contributing emissions are reduced as far as possible through the design, construction, and operation of all projects.

9.7 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

9.7.1 During the construction period, the embodied GHG emissions from the use of construction materials are expected to be the main contributor to climate change, with additional GHG emissions arising from the use of plant and the transportation of materials to and from site.

POTENTIAL IMPACTS PER ZONE

9.7.2 The potential impacts presented in Table 9-3 are divided by zone:

Table 9-3: Potential construction impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Emissions associated with manufacture and processing of raw materials into products ('embodied carbon') to be used for the construction of the Proposed Development	✓	✓	✓
Emissions associated with transporting construction products to site	✓	✓	✓
Emissions associated with operation of construction plant	✓	✓	✓

CONSTRUCTION PHASE MITIGATION

9.7.3 It is important that the design seeks to limit GHG emissions from the earliest stage possible to ensure the greatest reductions can occur. In line with Anglian Water’s capital carbon emission reduction targets, throughout the design the

Proposed Development seeks to reduce embodied GHG emissions as far as practicable in all cases.

9.7.4 Potential primary measures to reduce emissions may include:

- The specification for the use of low carbon concrete;
- Selection of an access option that has lower embodied carbon to construct when compared to others;
- Pre-casting of some concrete structures to reduce waste (which reduces material demand);
- Local sourcing of construction materials to reduce emissions associated with transportation;
- Specification of alternative materials for tunnels and pipelines with lower embodied carbon;
- Use of Design for Manufacture and Assembly (DFMA) which is a more efficient offsite manufacture of process plant and equipment;
- Utilisation of spoil and demolition waste from other projects in construction;
- Selection of advanced treatment process technology to reduce the overall size of the proposed WWTP.

9.7.5 The following high-level approach would be applied and developed when seeking to reduce GHG emissions (as stipulated within PAS 2080):

- Build nothing: The design would evaluate the basic need for an asset and shall explore alternative approaches to achieve outcomes set by the asset owner/manager;
- Build less: The design would evaluate the potential for building fewer or smaller structures and other assets than the reference design, reducing the extent of new construction required;
- Build clever: The design would consider the use of low carbon solutions (including technologies materials and products) to minimise resource consumption during the construction, operation and user's use stages of the asset or programme of work; or
- Build efficiently: The design would use techniques (e.g. construction, operational) that reduce resource consumption during the construction and operation phases of an asset or programme of work.

9.7.6 During the Construction Phase the mitigation would comprise secondary mitigation in the form of the CoCP which will require the preparation a Carbon Management Plan by the appointed contractor(s). As a minimum this plan is expected to include:

- a description of measures to reduce sources of construction energy use and carbon emissions;

- the approach to procuring energy from renewable and/or low-emission sources;
- energy and carbon dioxide (CO₂) monitoring methods for site activities;
- reporting approaches to documenting emission management of site activities; and
- consideration of the procurement, maintenance and use of energy and carbon efficient construction plant.

9.7.7 Secondary measures to mitigate impacts related to construction traffic are discussed in Chapter 19: Odour.

OPERATION PHASE

9.7.8 The projected future operational GHG emissions of the proposed WWTP will include emissions associated with maintenance activities and operating at the required capacity for the projected lifespan of the Proposed Development up to 2050, from start of operation which is expected to be 2028.

9.7.9 Operation will include assessment of projected power use for pumping and treatment process operations, emissions associated with chemical use, process emissions from water recycling and sludge treatment, and planned replacement over the lifetime. Emissions reduction measures will be taken into account including any renewable energy generation on-site. Emissions associated with land use change within the scheme boundary will also be assessed.

POTENTIAL IMPACTS PER ZONE

9.7.10 The potential impacts presented in Table 9-4 are divided by zone.

Table 9-4: Potential operational impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Emissions associated with power use for pumping, and treatment process operation	✓	✗	✓
Emissions associated with chemical use	✓	✗	✓
Process emissions from treatment (water recycling and sludge treatment)	✓	✗	✗
Emissions associated with planned replacement over the assessed lifetime	✓	✓	✓

OPERATION PHASE MITIGATION

9.7.11 Progressing a design that seeks to limit GHG emissions from the earliest stage possible to ensure the greatest reductions can occur is a fundamental measure

adopted by the CWWTRP to mitigate GHG emissions. The overarching design target is for the proposed WWTP to be operationally net zero in its carbon emissions and energy neutral.

9.7.12 In 2019 all water companies in England agreed a 'Public Interest Commitment' that reflected public purpose, setting five goals including a pledge to reach net zero on operational emissions by 2030¹³³. In line with AWS net zero operational emissions targets, throughout the development of the Scheme, the design will reduce operational GHG emissions as far as practicable in all cases.

9.7.13 Primary mitigation measures (design) intended to reduce GHG emissions in operation include:

- Sludge treatment generates methane (biogas) as a by-product, the surplus biogas would be transferred to the national natural gas network to offset natural gas usage from fossil fuels. An alternative being considered is to use biogas within combined heat and power (CHP) to generate electricity and heat.
- Sludge treatment also produces a residual sludge product (biosolids). It is proposed that biosolids produced by the Proposed Development be used in agriculture. Recycling of biosolids to land is one key means for water companies to contribute to a circular economy. Biosolids provide a sustainable source of crop nutrients and this approach avoids disposal to landfill. Biosolid recycling to land also indirectly reduces carbon emissions by substituting for carbon-intensive manufactured fertiliser.
- Inclusion of LNG refuelling capacity at the proposed WWTP to support long term vehicle fleet changes
- Use of gravity systems where possible to eliminate the need for ongoing energy demand for the operation of pumps
- Inclusion of solar photovoltaic (PV) panels on the site to minimise the use of grid electricity
- Selection of the proposed WWTP to minimise distance from the existing Cambridge WWTP so that transfer distances and pumping energy use are minimised.

9.7.14 The PAS2080 aligned approach outlined above for Construction Phase mitigation will also be applicable to the development of Operational Phase mitigation. Furthermore Anglian Water's net zero routemap¹³⁴ outlines the following approach to achieving net zero operational emissions by 2030 which would apply to the Proposed Development:

- Maximising energy efficiency and storage;

133 Water UK, Net Zero (2020) 2030 Roadmap [online] (accessed August 2021)

134 [Anglian Water announces routemap to reach net zero by 2030](#)

- Procuring green electricity;
- Maximising the value of biogas;
- Decarbonising vehicle fuel;
- Managing process emissions;
- Opting for alternative fuels;
- Developing an offsetting strategy for residual emissions.

9.7.15 Secondary measures that may be applied to mitigate impacts of travel emissions in operation are discussed in Chapter 20: Traffic and Transport.

9.7.16 Post pandemic work policies may also serve to reduce emissions associated with vehicle journeys to the workplace as some employees work partially or wholly from home depending on their role at the proposed WWTP.

9.8 Proposed scope of the assessment

MATTERS PROPOSED TO BE SCOPED IN

9.8.1 The assessment will calculate an estimate of the GHG emissions associated with the lifecycle of the Proposed Development for both construction and operation, and the decommissioning of the existing works (in accordance with PAS 2080). The assessment will include:

- Products and materials;
- Transport of materials to works site;
- Construction plant use;
- Operational use (power use, chemical use, process emissions);
- Capital maintenance and replacement;
- Emissions associated with land use change within the EIA Scoping boundary.

MATTERS PROPOSED TO BE SCOPED OUT

9.8.2 No matters proposed to be scoped out.

9.9 Evidence of agreements reached with consultation bodies

9.9.1 There are no statutory consultees for carbon assessment in EIA. Feedback received during the Phase Two Consultation in 2021 included questions around embodied carbon and operational carbon. Further details were also requested around plans for solar.

9.9.2 Section 9.8 of this scoping report sets out the proposed scope of assessment to include embodied carbon and operational carbon. Section 9.7 sets out the potential mitigation options that will be considered through design to reduce embodied and operational carbon. In line with AWS net zero operational

emissions targets, throughout the development of the Scheme the design will reduce operational GHG emissions as far as practicable in all cases.

9.10 Assessment Methodology

- 9.10.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.
- 9.10.2 The assessment of the impacts of the Proposed Development on the global climate will include:
- Construction and operation GHG assessments using recognised calculation methodologies and tools.
 - Anglian Water carbon models, which are PAS 2080 compliant will be used for assessment of construction emissions.
 - An appraisal of the operational GHG emissions for the Proposed Development for the commissioning year and full capacity operations, using predicted operational quantities, and emissions factors published by the UK Government and other industry sources.
- 9.10.3 Assessment comparing modelled operational emissions with Anglian Water’s data on the existing waste water treatment plant, including emissions from both the treatment processes and sewage transfer.
- 9.10.4 Mitigation options to reduce the impact will be identified and implemented throughout the project development in line with the methodology set out in PAS 2080 and AWS carbon reduction targets.

9.11 Significance criteria

- 9.11.1 There is at present no single accepted criteria for determining significance of impact, sensitivity of receptors, or magnitude of effect of GHGs on climate change. The IEMA guidance on Assessing Greenhouse Gas Emissions and Evaluating their Significance¹³⁵ on assessing significance states ‘when evaluating significance, all new GHG emissions contribute to a significant negative environmental effect [...] The significance of a project’s emissions should therefore be based on its net impact.’
- 9.11.2 The IEMA guidance will be followed in providing a context for the Proposed Development’s GHG emissions to give a sense of scale and assist in

¹³⁵ IEMA Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance [online] available at: [\[redacted\]](#) (last accessed January 2021)

understanding significance¹³⁵. In line with this guidance, and that of the NPS for Waste Water, the projected embodied carbon emissions of the Proposed Development will be compared to UK carbon budgets and Anglian Water targets for embodied carbon and operational emissions.

9.12 Approach to cumulative assessment

- 9.12.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the Proposed Development identified to date that may give rise to potential cumulative effects.
- 9.12.2 Given that climate is impacted by worldwide emissions, and not just emissions from the Proposed Development or other Proposed Developments in the vicinity, consideration of cumulative impacts on climate is not considered proportionate for the Proposed Development.

9.13 Assumptions, limitations and uncertainties

- 9.13.1 Any GHG assessment at design stage is an estimate of the proposed scheme based on best available industry standard emissions factor data and industry design standards. There is an inherent limitation in GHG assessments, as the assessment will be based on the scheme design at the time. The final constructed asset will not have the same emissions as estimated due to differences in the final materials procurement specification and practices on site.
- 9.13.2 There is uncertainty within GHG emissions factors themselves as they represent industry averages and are calculated on a set of assumptions, and thus may not reflect real world scenarios or specific products that are used in the final construction or operation. In some cases there is not a perfect match between the material specified in the design and the available emissions factor, for example where the unit of measurement is not directly equivalent or the material varies. In these instances, assumptions will be made to attempt to replicate the type and weight of the materials as closely as possible, any assumptions made will be conservative, i.e. when there is a choice use the highest emissions factor or density.
- 9.13.3 The assessment of the GHG emissions from the construction and operation of the Proposed Development, will be based Anglian Water's carbon models. It is assumed that these are the most representative source of data.

10 Climate Resilience

10.1 Introduction

- 10.1.1 This chapter of the EIA Scoping identifies likely impacts of climate change on the project receptors, referred to by the Planning Inspectorate as ‘matters’, and the resilience of these matters to the effects of climate change. This section also provides a summary of the baseline information that is currently available, defines the study area and matters that may be affected by climate change. It then identifies likely significant effects and sets out the proposed approach that will be taken to the assessment. The purpose of EIA Scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.
- 10.1.2 No matters (receptors) within this aspect are proposed to be scoped out of further assessment, with the exception of those other aspects for which no in combination climate impacts have been identified.
- 10.1.3 The impact of the Proposed Development on the study area’s pluvial, fluvial and ground water flooding during construction and operation will be addressed within the Flood Risk Assessment (FRA). The FRA will follow the Environment Agency’s guidance which includes allowances for future climate change. The results and conclusions from the FRA will be summarised in the ES and used to inform the magnitude and effect of flood-related climate impacts on receptors within the study area that are assessed.
- 10.1.4 The assessment will consider resilience of the Proposed Development to the effects of climate change by considering operational resilience under the 2018 UK Climate Projections (UKCP18) for the 2080s.

10.2 Matters (resources and receptors)

- 10.2.1 For the aspect of Climate Resilience, the matters, or resources and receptors, consist of all the operational assets forming part of the Proposed Development including:
- the proposed WWTP;
 - transfer tunnels and pipelines;
 - the final effluent channel and outfall;
 - surface water drainage including access drainage;
 - landscaping; and
 - the workforce.

10.3 Study area

- 10.3.1 Since the aim of the climate resilience aspect is to consider the impacts of future climate on the Proposed Development itself, the study area is the

geographical area within the EIA Scoping boundary (Figure 00) in Chapter 2. The aspect of climate resilience considers the effects of climate change upon specific matters (receptors and resources) as defined above, within the study area.

10.3.2 When assessing in-combination climate impacts on other aspects (such as biodiversity), the study area will be the study area as defined for that aspect.

10.4 Legislation, planning policy context and guidance

10.4.1 Legislation, planning policy and guidance relating to climate change, and pertinent to the Proposed Development comprises the following:

LEGISLATION

- The Nationally Significant Infrastructure Projects (NSIPs) - Infrastructure Planning (Environmental Impact Assessment) Regulations 2017¹³⁶ which came into effect on 16th May 2017, as secondary legislation to the Planning Act 2008¹³⁷. The amended regulations introduce climate change as a new topic, broadening the potential scope of an EIA. Schedule 4 ('Information for inclusion in environmental statements), paragraph 5 requires the impact that the project will have on climate change to be assessed alongside an assessment of the project's vulnerability to climate change.
- The Climate Change Act 2008¹³⁸ (and its 2019 amendment) supports the UK's transition towards a low carbon economy. It includes a legally binding commitment to reach net zero by 2050, which represents a 100% reduction in national carbon emissions compared to 1990 levels. The Act also sets a national 5-year carbon budgeting system, with legally-binding 'carbon budgets' to cap the amount of greenhouse gases (GHGs) emitted in the UK over a five-year period (which is covered in Chapter 9: Carbon). It also established the context for Government action and incorporated the requirement to undertake Climate Change Risk Assessments, and to develop a National Adaptation Programme (NAP) to address opportunities and risks from climate change. The Government commissioned the completion of the National Climate Change Risk Assessment which was first reported in January 2012. The second report was published in 2017 and the third Climate Change Risk Assessment report (CCRA3) was published in June 2021. The CCRA3 provides a useful basis for assessing the likely future environment which EIA's need to consider and provides information on the range of 61 risks and opportunities across the UK, across the following sectors: natural environment, infrastructure, health and communities and built

136 UK Government (2021), Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 <https://www.legislation.gov.uk/uksi/2017/572/contents/made> (last accessed July 2021)

137 UK Government (2008), The Planning Act 2008, The Planning Act 2008 ([legislation.gov.uk](https://www.legislation.gov.uk)) (last accessed July 2021)

138 Climate Change Act 2008 ([legislation.gov.uk](https://www.legislation.gov.uk)) (last accessed July 2021)

environment, business, and international dimensions¹³⁹. In addition, the UK Climate Change Committee publishes annual progress reports to Parliament including recommendations for further adaptation measures to mitigate climate risks¹⁴⁰.

PLANNING POLICY

10.4.2 National planning policy of relevance to the Proposed Development includes:

- The National Policy Statement (NPS) for Waste water¹⁴¹ with particular reference to:
 - Paragraph 2.2.3 in relation to the Government’s key policy objectives around climate change mitigation and adaptation. Namely to “ensure that climate change adaptation is adequately included in waste water infrastructure planning”.
 - Paragraphs 2.3.5 through 2.3.7 on adaptation to climate change and the anticipated greater pressure on public sewer systems, and higher standards of sewage treatment to meet statutory environmental requirements.
 - Paragraph 3.6.6 ‘New infrastructure will typically be long-term investments which will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the impacts of climate change when planning the location, design, build, operation and, where appropriate, decommissioning of new waste water infrastructure. The ES should set out how the proposal will take account of the projected impacts of climate change. While not required by the EIA Directive, this information will be needed by the examining authority and the decision maker’.
 - Paragraph 3.6.7 ‘Applicants should use the latest set of UK Climate Projections to ensure they have identified appropriate adaptation measures. Applicants should apply as a minimum, the emissions scenario that the Independent Committee on Climate Change suggests the world is currently most closely following – and the 10%, 50% and 90% estimate ranges. These results should be considered alongside relevant research which is based on the climate change projections’.
 - Paragraph 3.6.8 ‘The decision maker should be satisfied that the proposals have taken into account the potential impacts of climate change using the latest UK Climate Projections available at the time the ES was prepared and have identified appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the

139 Climate Change Committee (2021), Independent Assessment of UK Climate Risk, [Independent Assessment of UK Climate Risk - Climate Change Committee](#), (last accessed July 2021)

140 Climate Change Committee (2021), 2021 Progress Report to Parliament, [2021 Progress Report to Parliament - Climate Change Committee](#), (last accessed August 2021)

141 UK Government (2012) [National policy statement for waste water - GOV.UK \(www.gov.uk\)](#) (last accessed July 2021)

new infrastructure. Should a new set of UK Climate Projections become available after the preparation of the ES, the examining authority should consider whether they need to request further information from the applicant.’

- The National Planning Policy Framework (NPPF)¹⁴² with particular reference to paragraphs 8, 11, 20, 98 and 131 in relation to adaptation, mitigation and climate change resilience; paragraphs 152-154 in relation to meeting the challenges of climate change and, paragraph 161 in relation to flood risk planning.
- The National Adaptation Programme (NAP) and the Third Strategy for Climate Adaptation Reporting¹⁴³, published in 2018, sets focused priorities and specific and measurable objectives that address the findings of the second UK Climate Change Risk Assessment (2017)¹⁴⁴ and to build the nation’s resilience to climate change. The programme responds to the requirement in the Climate Change Act to publish a programme for adaptation to climate change. The National Adaptation Programme includes the following actions relevant to the Proposed Development:
 - manage floods and coastal erosion to save lives, better protect communities and support economic growth; and
 - improve water quality, reverse the deterioration of groundwater, and reduce emissions of harmful substances.

10.4.3 Local planning policy of relevance to the Proposed Development includes:

- South Cambridgeshire District Council Local Plan 2018 with particular reference to:
 - Policy CC/1: Mitigation and Adaptation to Climate Change, which states that proposals should “embed the principles of climate change mitigation and adaptation into the development.” Policy CC/3: Renewable and Low Carbon Energy in New Developments requires developments for new dwellings or other buildings to reduce carbon emissions.
- Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 with particular reference to:
 - Policy 1: Sustainable development and climate change, where mineral and waste management proposals will be assessed against their active role in guiding development towards sustainable solutions.
- Cambridge City Local Plan 2018 with particular reference to Section 4:

¹⁴² UK Government (2021) National Planning Policy Framework, [National Planning Policy Framework \(publishing.service.gov.uk\)](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/national-planning-policy-framework-2021.pdf), (last accessed July 2021)

¹⁴³ HM Government (2013) The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf (last accessed January 2021)

¹⁴⁴ UK Climate Change Risk Assessment 2017 [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf

- Policy 28: carbon reduction, community energy networks, sustainable design and construction and water use states all new development is required to meet minimum standards of sustainable construction and carbon reduction. Policy 29: Renewable and low carbon energy generation requires the provision of low carbon generation in all new developments.
- Cambridge City Council declared a Climate Emergency in January 2019. This is in addition to the Climate Change Strategy (2016-2021) and a supporting Carbon Management Plan (2016-2021) that has already been put in place. The climate change strategy identifies six key themes to tackle, including measures to: supporting Council services, residents, and businesses to adapt to the impacts of climate change.
- South Cambridgeshire District Council (SCDC) has committed to deliver Net Zero Carbon by 2050 and declared a “Climate Emergency” in December 2018. The commitment is that the next local plan (to be a combined local plan with Cambridge City Council) will ‘look at ways South Cambridgeshire District Council can press for a carbon-free area through the design of homes and other buildings, land use including open space, transport links, energy supplies and waste and recycling services’. The current local plan is focused on buildings and energy reduction, the new local plan will have to take a broader view on all new developments and how to reduce carbon (embedded and operational emissions).

CORPORATE POLICY AND GUIDANCE

- 10.4.4 In addition to the following legislation, policy and guidance Anglian Water published their strategic direction statement 2020-2045¹⁴⁵ in 2017 which stated that climate change was one of their biggest challenges due to its effects on water scarcity and drought as well as increased risk of flooding and service disruptions and commits to overcoming this and other challenges through innovative and resilient strategies.
- 10.4.5 Anglian Water Services Ltd climate change Adaptation Report 2020¹⁴⁶ recognises the challenges presented by climate change and presents the long term ambition of Anglian Water Services Ltd to make the East of England resilient to the risks of drought and flooding.
- 10.4.6 In 2019, Anglian Water made changes to its Articles of Association, enshrining public interest within the purpose of the business and making a long term committing to environmental and social interests.

145 Anglian Water Services Ltd (2017), Strategic direction statement – revised, [Strategic Direction Statement](#) [REDACTED], (last accessed July 2021)

146 Anglian Water Services Ltd (2020) Anglian Water’s Climate Change Adaptation Report 2020, [Adapting to climate change](#) [REDACTED], (last accessed July 2021)

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

10.4.7 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of Climate Resilience, planning policy has influenced the EIA scope as follows:

- Methodology – The NPS specifies the emissions scenarios and estimate ranges that should be considered when conducting the EIA which will be used for this assessment.
- Sensitivity and mitigation – the NPS, the NPPF and the NAP identify the need to adapt to climate change through building resilient physical infrastructure which can reduce the sensitivity of receptors. The NPPF outlines mitigation measures such as safeguarding land for future flood management, deployment of green infrastructure to reduce the causes and impacts of flooding, and use of natural flood management techniques. These and other mitigations will be considered within the EIA impact assessment through review of the FRA.

NATIONAL POLICY STATEMENT REQUIREMENTS

10.4.8 The following table sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 10-1 Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Use of the latest set of UK Climate Projections. Applicants should apply as a minimum, the emissions scenario that the Independent Committee on Climate Change suggests the world is currently most closely following – and the 10%, 50% and 90% estimate ranges. These results should be considered alongside relevant research which is based on the climate change projections.” (3.6.7)	The Climate Resilience aspect has used the RCP8.5 ¹⁴⁷ highest emissions scenario for the East of England and considered the 50% estimate range for average climate variables (such as increase change in average temperature) as well as the 10% and 90% estimate range for maximum and minimum values to determine the scope for the EIA. The ES will use a similar methodology, and the baseline section and impact assessment will consider all of the 10%, 50% and 90% estimate range for climate variables analysed, under RCP8.5 specific to the 25km grid square within which the study area is located.

¹⁴⁷ Representative Concentration Pathways. RCPs are the new scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) and used by most global climate models (and downscaled regional climate models). RCPs are based on the projected concentration of greenhouse gases in the atmosphere in 2100, e.g. RCP 8.5 is a radiative forcing of 8.5 wm^{-2} in 2100. There are 4 RCPs in regular use (2.6, 4.5, 6.0 and 8.5).

GUIDANCE

- 10.4.9 The National Planning Practice Guidance includes a dedicated section on climate change¹⁴⁸, which sets out key legislation and drivers for considering climate change in planning. The guidance sets out examples of climate change mitigation (reduction of emissions), and adaptation to climate change. For example, consideration of flood risk and the availability of water and water infrastructure for the whole lifespan of the development.
- 10.4.10 The NPPF is supported by the Environment Agency Flood Risk Assessment: climate change allowances¹⁴⁹. Current and future flood risk will be assessed as part of the Flood Risk Assessment which will accompany this EIA.
- 10.4.11 The following IEMA guidance on climate change assessment will be followed, as appropriate:
- IEMA EIA Guide to: Climate Change Resilience and Adaptation (2020)¹⁵⁰. This includes guidance on emissions scenarios to use, the use of UKCP18 climate projection data produced by the UK Met Office and consideration of both short-term weather such as extreme events as well as longer-term climatic change such as variations in average precipitation or temperature)¹⁵¹.

10.5 Baseline conditions

- 10.5.1 The following key data sources will be used to inform a description of the existing climate baseline conditions:
- Met Office UK regional climates summaries;
 - UK Climate Change Risk Assessment 2021;
 - Met Office UK climate projections (UKCP18) for the 2080s under a high emissions scenario;
 - Historic water level and flow data from the weir across the River Cam at Baits Bite lock (downstream of proposed outfall); and
 - Environment Agency River Cam catchment peak river flow allowances.
- 10.5.2 The baseline conditions for the Climate Resilience aspect are described below. It should be noted that the baseline conditions refer to the current day and future climate at the study area and are the same across all three zones. As such, a single baseline is presented which applies to all three zones.
- 10.5.3 For the scoping report, regional averaged climate data is used which captures average climate values for across the East of England UK administrative region

148 UK Government [online] <https://www.gov.uk/guidance/climate-change> (last accessed December 2020)

149 See <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> (last accessed July 2021)

150 IEMA (2020), [IEMA - IEMA EIA Guide to: Climate Change Resilience and Adaptation \(2020\)](#). Last accessed July 2021

151 See [REDACTED] (last accessed July 2021)

(as defined by the UK Met Office¹⁵²) within which the study area resides. This provides a high-level understanding of likely significant effects of present day climate upon the Proposed Development. The climate resilience aspect of the EIA will use the 25km resolution climate projections to provide a more in-depth view of climate effects.

- 10.5.4 The Met Office holds historical weather and regional climate records including temperature and precipitation. South Cambridgeshire is included in the East of England region¹⁵³. High-level climate observations for the East of England over a 30-year averaging period between 1981-2010 are presented in Table 10-2.

Table 10-2: Historic climate baseline for the East of England (1981-2010)

Climatic conditions	Climate observations
Temperature	The mean annual temperature over the region varies from around 9.5 °C to just over 10.5 °C. Mean daily maximum temperatures range from just over 6 °C to 8 °C during the winter months and from 20 °C to 23 °C in the summer.
Precipitation	Atlantic depressions or convection are the source of the majority of rain in the east, particularly in autumn and winter where Atlantic Lows are more vigorous. Annual rainfall in the east averages at 700mm. Monthly rainfall is variable but is highest in the winter months. Across most of the region there are, on average, about 30 rain days (rainfall greater than 1 mm) in winter (December to February) and less than 25 days in summer (June to August).
Wind	Eastern England is one of the more sheltered parts of the UK, since the windiest areas are to the north and west, closer to the track of Atlantic storms. The strongest winds are associated with the passage of deep depressions across or close to the UK. The frequency of depressions is greatest during the winter months, so this is when the strongest winds normally occur.
Sunshine	Across the region, annual averages range from about 1450 hours over much of Lincolnshire and East Yorkshire to over 1600 hours in east Norfolk, Suffolk and Essex.
Air Frost	The average number of days a year with air frost ranges from less than 30 at the coast to about 55 well inland.

Source: Met Office Regional Climate Data¹⁵⁴

- 10.5.5 The proposed Development is located within the Anglian river basin district and within the Cam and Ely Ouse management catchment. Table 10-3 details the current and future peak river flow allowances for this management catchment.

152 Met Office UK regional climates summaries: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/regional-climates/eastern-england-climate---met-office.pdf> (last accessed October 2019)

153 Met Office UK regional climates summaries: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/regional-climates/eastern-england-climate---met-office.pdf> (last accessed October 2019)

154 Met Office UK regional climates summaries: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/regional-climates/eastern-england-climate---met-office.pdf> (last accessed 29 October 2019)

Table 10-3: Cam and Ely Ouse Management Catchment peak river flow allowances

	Central	Higher	Upper
2020s	2%	7%	21%
2050s	-2%	5%	22%
2080s	9%	19%	45%

Source: Peak river flow map, climate change allowances, Defra, Hydrology Data Explorer¹⁵⁵

FUTURE BASELINE

- 10.5.6 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 10.5.7 Where this presents new environmental receptors or a change to the current baseline specific to Climate Resilience, this is discussed further below.
- 10.5.8 For the aspect of climate resilience, the future baseline refers to what the climate at the study site will look like in the future, in line with the operational lifetime of the Proposed Development. Climate projections data for the 2080s (2070-2089) under Representative Concentration Pathway (RCP) 8.5 (the highest scenario available in UKCP18) will be used for this assessment. This is in line with the latest IEMA Guidance on climate change assessment within EIA (see 10.4.11) and based on the lifespan of the Proposed Development up to 2050 (see Chapter 2).
- 10.5.9 The UK Climate Projections developed by the Met Office Hadley Centre include climate projections data (summarised at the UK Administration region level) for which South Cambridgeshire is included in the East of England region. The East of England is projected (under a range of emissions scenarios modelled in UKCP18) to experience hotter and drier summers, and warmer and wetter winters.
- 10.5.10 Projected changes in key climate variables under RCP 8.5 emissions scenario, for the 2080s, are summarised in Table 10-4. Future peak water levels are provided in Table 10-3.

Table 10-4: Future climate projections for the 2080s (RCP 8.5 scenario)

Climatic conditions	Climate projections
Temperature	The average summer temperature is projected to increase by 4.4°C (50 th percentile) or as much as 6.7°C (90 th percentile). The average winter temperature is projected to increase by 3°C (50 th percentile) or up to 5°C (90 th percentile).

¹⁵⁵ Climate change allowances for peak river flow in England (data.gov.uk) (last accessed September 2021)

Climatic conditions	Climate projections
	The mean annual temperature is projected to increase by 3.5°C (50 th percentile) or up to 5.1°C (90th percentile).
Rainfall	Average summer rainfall is projected to change by -31% (50 th percentile) or as much as -63% (10 th percentile). Average winter rainfall is estimated to increase by 20% (50th percentile) or as much as 46% (90th percentile).
Wind	Climate projections for wind are more uncertain than those for temperature and precipitation, due to inherent difficulty in modelling future wind conditions, and specific values are not available in UKCP18 climate projections. Overall an increase in extreme weather, including wind, is projected.

Source: UK Met Office UKCP18 climate projections.

- 10.5.11 Assessing the resilience of the Proposed Development to climate change is fundamentally different to the remainder of the EIA assessment, as it assesses the impact of an external event (climate change) on the Proposed Development itself, where the matters (i.e. receptors) are the elements of the Proposed Development.

10.6 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

- 10.6.1 Potential climate resilience impacts to all zones of the proposed development during the Construction Phase are scoped out, as the Construction Phase will occur in the short-term (next 10 years), whereas future climate change impacts are expected in the medium (15-30 years) and long-term (30 years and beyond).
- 10.6.2 Notwithstanding this, the impacts of extreme weather events (including storms, drought, heatwave) in the present day on the Construction Phase will be identified, and measures for management of these drafted for inclusion the prepared for the Proposed development before construction and secured through a requirement in the DCO. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures intended to provide resilience to extreme weather events. The CoCP will draw from measures, determined through the EIA process.
- 10.6.3 Control measures in relation to heat extremes may include:
- Provision of cooling at welfare facilities;
 - Providing adequate rest, shade and Personal Protective Equipment (PPE) – such as hats and sunscreen – for workforce during periods of high temperature; and

- Changing work patterns to avoid hottest part of the day.

10.6.4 Chapter 6: Agriculture and Soils details measures that may be adopted in relation to soil protection.

10.6.5 Control measures that may be adopted in relation to extreme rainfall events occurring in construction are detailed within Chapter 21: Water Resources. In the case of storm flows different options to provide management of storm events are under careful consideration including options to use transfer pipelines to help manage storm events. The approach to storm management remains under discussion with the Environment Agency to explore sustainable solutions.

10.6.6 Control measures that may apply during periods of high wind may include:

- Monitoring forecasts and changing work patterns to windy periods or parts of the day;
- Monitoring forecasts to make provision at site such as additional checks on stockpiles and fencing; and
- Temporary suspension of works.

OPERATION PHASE POTENTIAL IMPACTS

10.6.7 During the Proposed Development’s first 50-years of operational lifetime (before which significant enhancements or upgrades are not anticipated), changes in climate as outlined in Table 10-5 are likely to be experienced in the study area. This has the potential to pose a risk to the matters identified within. It should be noted that mechanical and electrical equipment is expected to have a shorter design life of between 10 and 20 years, after which it will be refurbished. After the first 50-years of operation, climate change will continue to impact upon the Proposed Development however due to both expected enhancements and refurbishments to the receptors as well as divergence in current climate models after 2050, the effects of climate are hard to determine and are beyond the scope of this EIA.

10.6.8 Vulnerability of the Proposed Development to increased temperatures, higher winter precipitation and drier summer conditions, would be considered during design stage in accordance with relevant industry design guidance.

10.6.9 In terms of the key climate variables which may have impacts during the operation phase for the matters within the Proposed Development and potential mitigations are as follows:

Table 10-5 Summary of operation phase potential impacts and mitigations

Receptor	Impact identified	Potential mitigation
	Higher temperatures (e.g., heatwaves, maximum daytime temperatures and increased average temperatures, particularly during summer months)	

Receptor	Impact identified	Potential mitigation
Waste water treatment plant assets Utilities infrastructure Access road and site entrance and exist	<ul style="list-style-type: none"> Structural damage due to thermal loading of structures and surfaces, causing expansion, buckling and stresses on structural features. Increased maintenance costs to address structural damage 	<ul style="list-style-type: none"> Choice of materials to include consideration for future temperature ranges and maximums. Thermal protection such as painting or inclusion of natural ventilation / air conditioning options within buildings. Design basis temperature range is -10 to 40°C
Waste water treatment plant assets	<ul style="list-style-type: none"> Decrease in anaerobic digestion efficiency 	<ul style="list-style-type: none"> Design to include appropriate air-cooling system (e.g. air conditioning units or natural ventilation / nature based solutions) which are designed with consideration for future temperatures.
Study area and surrounding areas (equivalent to the study area for the odour aspect)	<ul style="list-style-type: none"> Increased odour nuisance from treatment works and sewers during these conditions Increased septicity 	<ul style="list-style-type: none"> Design to include appropriate air-flow and air-cooling system (e.g. air conditioning units or natural ventilation / nature based solutions) which are designed with consideration for future temperatures.
Workforce	<ul style="list-style-type: none"> Increased discomfort and health risks to staff 	<ul style="list-style-type: none"> Design to include appropriate air-cooling system (e.g. air conditioning units or natural ventilation / nature based solutions) which are designed with consideration for future temperatures. Provision of appropriate personal protection equipment (PPE) and hydration for outdoor staff.
Extreme precipitation		
Waste water treatment plant assets Ancillary structures Access roads Landscape earthworks	<ul style="list-style-type: none"> Increased scour and erosion on structural elements from flooding and surface water run off Flooding blocking vehicular access and the sole entrance and exit to the site. Increased potential for pipe failure within network 	<ul style="list-style-type: none"> The CWWTPR will be designed to protect against a 1 in 100 year flood, plus climate change The outfall design will be suitable for a 1 in 100 year flood level of the River Cam The river bank height at the location of outfall to be maintained throughout the construction and as part of the final design

Receptor	Impact identified	Potential mitigation
Waste water treatment plant assets	<ul style="list-style-type: none"> ● Increase in sediment load in waste water from soil erosion within the catchment served 	<ul style="list-style-type: none"> ● Designing drainage to include an appropriate uplift factor to account for additional extreme rainfall and associated surface flooding risk associated with climate change. ● Natural flood management through measures such as landscape planting. ● Use of a proactive inspection and maintenance regime.
Landscape earthworks, access roads	<ul style="list-style-type: none"> ● Heavy rainfall and flooding may weaken or wash out the soil and culverts that support primary structural features. ● Flooding and landslip blocking access and the sole entrance and exit to the site. 	<ul style="list-style-type: none"> ● Use of a proactive inspection and maintenance regime. ● Siting of proposed WWTP and access outside of the flood plain ● Surface water drainage network design include an allowance for climate change / design to greenfield flow rates ● Use of SUDs where appropriate
Access road and ancillary structures (e.g. internal roads and access areas)	<ul style="list-style-type: none"> ● Surface flooding reducing access to the study area. This includes access to the Proposed Development if the sole access road is blocked, or access and mobility in and around the study area 	<ul style="list-style-type: none"> ● Site access road and internal road / path network drainage should be designed to include an appropriate uplift factor to account for additional extreme rainfall and associated surface flooding risk associated with climate change.
Waste water treatment plant assets Ancillary buildings Utilities infrastructure	<ul style="list-style-type: none"> ● Water ingress as a result of flooding can cause damage to infrastructure and also result in the egress of sewage from the pipeline. 	<ul style="list-style-type: none"> ● Detailed design should include appropriate consideration for water proofing, including consideration for increased wintertime precipitation and extreme rainfall events. ● Use of a proactive inspection and maintenance regime.

Receptor	Impact identified	Potential mitigation
River Cam	<ul style="list-style-type: none"> ● Increase in frequency of storm flows to River Cam 	<ul style="list-style-type: none"> ● Current design for storm flows management incorporates an allowance for climate change and the capacity is in line with Environment Agency advice obtained to date.
Combined increased temperatures and rainfall		
Ancillary landscaped areas Landscape earthworks	<ul style="list-style-type: none"> ● Increased vegetation growth affecting landscaped areas and increased maintenance costs. 	<ul style="list-style-type: none"> ● Use of a proactive inspection and maintenance regime
Dry spells (particularly during summer) due to decreased rainfall leading to drought		
Landscape earthworks	<ul style="list-style-type: none"> ● When fluctuations in the soil's moisture content become too pronounced, for instance during drought conditions, this can result in ground movement or subsidence as clay in the soil swells and shrinks. As the ground rises and falls naturally with it these vertical land shifts could cause collapse of the earth bank, cracking and damage to buildings and pipelines. The damage potential depends on the stability of building structures and pipelines and their foundations. 	<ul style="list-style-type: none"> ● Use of a proactive inspection and maintenance regime including actions such as re-wetting of the earth bank and other earthworks
Transfers and treated effluent pipeline Waterbeach transfer pipeline	<ul style="list-style-type: none"> ● Subsidence leading to damage to underground components such as pipeline 	<ul style="list-style-type: none"> ● Design of pipes to include necessary levels of flexibility to account for soil settlement and subsidence.
Ancillary landscaped areas Landscape earthworks	<ul style="list-style-type: none"> ● Vegetation dieback affecting soil stability ● Failure to sustain habitats created to deliver net gain 	<ul style="list-style-type: none"> ● Careful selection of drought resistant vegetation. ● Including of a post-planting maintenance regime including replanting if vegetation dieback occurs and periodic (e.g. bi-annual) inspection and maintenance / re-planting as necessary. The first five years following planting are often the most critical to establish vegetation
Water utilities	<ul style="list-style-type: none"> ● Availability of potable water for offices, staff, welfare facilities due to regional water scarcity ● Changes to influent quality and availability 	<ul style="list-style-type: none"> ● Use of a robust water management plan

Receptor	Impact identified	Potential mitigation
Proposed WWTP	<ul style="list-style-type: none"> More stringent consent conditions as low flows alter dilution 	<ul style="list-style-type: none"> Technology selection that provides future redundancy Design that allows for future modifications to improve treatment capability
Proposed WWTP	<ul style="list-style-type: none"> Ability to function under low flow conditions 	<ul style="list-style-type: none"> Design that allows for future modifications to improve treatment capability
High winds including storms and gales		
Waste water treatment plant assets Ancillary buildings	<ul style="list-style-type: none"> Structural damage due to windborne debris and loading of structures 	<ul style="list-style-type: none"> Detailed design should include adequate wind loading for future worst case wind conditions Lightning protection installed in line with industry standards
Ancillary landscaped areas Landscape earthworks	<ul style="list-style-type: none"> Landscape features such as trees can be vulnerable to high winds and can cause damage if uprooted 	<ul style="list-style-type: none"> Grouping of planting and trees with deep root structures to limit uprooting
Ancillary infrastructure (e.g. fencing, lighting and signage)	<ul style="list-style-type: none"> Damage to ancillary features such as fencing and lighting and increased maintenance costs 	<ul style="list-style-type: none"> Appropriate detailed design of ancillary matters to withstand high wind conditions or the provision of additional wind protection such as weather shields where appropriate.
Staff	<ul style="list-style-type: none"> Health and safety risk to staff especially on call / emergency response staff working during extreme weather events 	<ul style="list-style-type: none"> Use of a robust weather hazards action plan for all on-site staff

POTENTIAL IMPACTS PER ZONE

10.6.10 Table 10-6 sets out potential vulnerability of each zone of the Proposed Development to climate change impacts.

Table 10-6: Potential operation phase impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Higher temperatures			
Structural damage due to thermal loading of structures and surfaces, causing expansion, buckling and stresses on structural features. Increased maintenance costs to address structural damage.	✓	✓	✓
Decrease in anaerobic digestion efficiency	✓	x	x
Increased odour nuisance (frequency and or intensity)	✓	✓	x

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Increased discomfort and health risks to staff from extreme temperatures	✓	✗	✗
Extreme precipitation			
Increased scour and erosion on structural elements from flooding and surface water run off	✓	✓	✗
Flooding blocking access and the sole entrance and exit to the operational asset	✗	✓	✓
Increased potential for pipe failure within network	✓	✓	✓
Increase in sediment load in waste water from soil erosion within the catchment served	✓	✓	✓
Weakening or wash out the soil and culverts that support primary structural features.	✓	✗	✗
Surface flooding reducing access to the proposed WWTP. Including impacts to the sole access road and impacts to access and mobility in and around the proposed WWTP	✓	✗	✗
Damage to infrastructure from water ingress as a result of flooding and the egress of sewage from the WWTP and pipeline	✓	✓	✓
Increase in frequency of storm flows to River Cam	✗	✓	✗
Combined increased temperatures and rainfall			
Increased vegetation growth affecting landscaped areas and increased maintenance costs.	✓	✗	✗
Dry spells (particularly during summer) due to decreased rainfall leading to drought			
Vertical land shifts could cause collapse of the earth bank, cracking and damage to buildings and pipelines. The damage potential depends on the stability of building structures and pipelines and their foundations.	✓	✓	✓
Subsidence leading to damage to underground components such as pipeline	✓	✓	✓
Vegetation dieback and impacts to soil stability	✓	✗	✗
Failure to sustain habitats created to deliver net gain	✓	✗	✗
Availability of potable water for offices, staff, welfare facilities due to regional water scarcity	✓	✗	✗
Changes to influent quality and availability	✓	✗	✗
More stringent consent conditions as low flows alter dilution	✓	✗	✗
High winds including storms and gales			

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Structural damage due to windborne debris and loading of structures	✓	✗	✗
Landscape features such as trees can be vulnerable to high winds and can cause damage if uprooted	✓	✗	✗
Damage to ancillary features such as fencing and lighting and increased maintenance costs	✓	✗	✗
Health and safety risk to staff especially on call / emergency response staff working during extreme weather events	✓	✓	✓

POTENTIAL IN COMBINATION CLIMATE IMPACTS

- 10.6.11 In combination climate impacts refers to the combined effect of climate change on changes in receptors of other environmental aspects (such as local air quality, or water quality) whereby the combined change in the climate and the change in condition of the environmental receptor (due to the Proposed Development) may result in a significant effect. These are the in combination climate impacts (ICCI) described in the IEMA Environmental Impact Assessment Guide to Climate Change Adaption and Resilience (2020). For example, increased frequency of vegetation growth can affect the establishment of landscape planting, and increased average air temperatures in combination with increased odour levels can have a combined impact upon local odour levels. In line with the IEMA Guidance on climate change resilience and adaptation, in combination impacts are not identified at the scoping stage as the receptors of interest (those with likely significant effects) will be identified, collated and evaluated in combination with climate change at the EIA impact assessment stage.

OPERATION PHASE MITIGATION

- 10.6.12 Potential mitigation measures considered are likely to be appropriate for particular impacts during the Operational Phase are included in Table 10-5.
- 10.6.13 Embedded design measures that will be included within the Proposed Development in relation to higher temperatures are:
- Design basis set at a temperature range of -10 to 40°C
- 10.6.14 Cooling measures may include:
- adopting a design that allows natural air-flow to cool the proposed WWTP; and
 - building design to consider natural cooling as well as traditional heating ventilation air conditioning (HVAC) systems.

10.6.15 Embedded design measures that will be included within the Proposed Development in relation to increased / extreme precipitation are:

- siting of the proposed WWTP and access outside of the flood plain (see Chapter 3);
- design of the surface water drainage network to include an allowance for climate change / and design to greenfield flow rates (drainage design supported by numerical modelling considering 100 year rainfall event with a 20% allowance for climate change);
- Retention of the existing river bank height at the location of outfall to be factored in to the final design of the outfall;
- design of the outfall to be suitable for a 1 in 100 year flood level of the River Cam. Modelling to consider 1 in 100 year flood event plus a 20% allowance for climate change and use latest peak river projections published by the Environment Agency); Design of the outfall according to the methods set out within CIRIA manual (C786– Culvert, Screen and Outfall, 2019; and
- design for flexibility within the proposed WWTP for future expansion and or modifications that could be required.

10.6.16 Embedded design measures that will be included within the Proposed Development in relation to dry periods / droughts are:

- industry best practice design for pipelines and tunnels to account for variable soil / ground water content;
- careful selection of drought resistant vegetation and trees within the planting schedule;
- use of water efficient fittings and water conservation measures within operational offices / welfare areas; and
- selection of technology with that incorporates the ability to alter processes to cope with changing influent quality and quantity.

10.6.17 Embedded design measures that will be included within the Proposed Development in relation to high winds and electrical storms are:

- installation of lightning protection in line with industry standards;
- detailed design to adopt industry standards and include adequate wind; loading for future worst case wind conditions; and.
- developing the landscape plan to consider grouping of trees with deep root structures to limit uprooting.

10.6.18 It should also be noted that the Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate

potential environmental impacts associated with the activities covered by permit.

- 10.6.19 The written system may cover general management of the proposed WWTP, equipment maintenance, contingency plans, accident prevention and emergency response (including pollution response) as well as defining monitoring activities. The EMS would also set out an organisational structure with environmental management roles and responsibilities. Environment Agency advice in relation to the preparation of written systems also sets out the need to consider changing climatic conditions¹⁵⁶.

10.7 Proposed scope of the assessment

MATTERS PROPOSED TO BE SCOPED IN

Spatial scope

- 10.7.1 The assessment will be limited to consider resilience of the Proposed Development to climate impacts. This will consider assets such as structures and buildings, site services and treatment processes in addition to the in-combination impacts of climate change on the environmental receptors.
- 10.7.2 The ability to replace and upgrade assets will be taken into account in the assessment. It will be vital to ensure any long-lived assets without the opportunity for refurbishment, and which could be impacted by changes in climate, are designed to take into account these future potential vulnerabilities.

Temporal scope

- 10.7.3 The impact on the Proposed Development as a result of climate change during the Operational Phase will be assessed to the 2080s in line with the projected lifespan of the Proposed Development up to 2050.

In combination climate impacts (ICCI)

- 10.7.4 The impacts of the Proposed Development in combination with climate change will be assessed for the biodiversity, odour, health, air quality, landscape and visual aspects, as climate change may directly interact with these aspects.

MATTERS PROPOSED TO BE SCOPED OUT

- 10.7.5 The matters presented in Table 10-7 are proposed to be scoped out. The justification is provided in the table and expanded upon in the proceeding paragraphs.

¹⁵⁶ Environment Agency (2016) Develop a management system: environmental permits [online] [Develop a management system: environmental permits - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/544442/Develop_a_management_system_environmental_permits_-_GOV.UK_(www.gov.uk).pdf) Accessed September 2021

Table 10-7: Matters proposed to be scoped out

Matter proposed to be scoped out	Core Zone	Transfer s Zone	Waterbeach Zone	Justification for scoping out
Resilience to climate change during construction – rainfall	Out	Out	Out	Deemed resilient taking into account the short construction timeframe in the 2020s whereby events are considered tolerable under current construction practices and associated construction management approaches. Any impacts arising from severe weather events in the present-day climate should be managed by measures included in the CoCP and the CEMP.
Climate resilience – decommissioning activities at existing assets – rainfall/droughts	Out	Not applicable	Out	Deemed resilient taking into account the short construction timeframe in the 2020s whereby events are considered tolerable under current construction practices and associated construction management approaches.
Climate resilience – fluvial flood risk	Out	Out	Out	Covered by separate FRA with impacts reported in Chapter 21: Water Resources
Climate resilience – surface water flood risk	Out	Out	Out	Covered by separate FRA with impacts reported in Chapter 21: Water Resources Waterbeach transfer pipeline will be a buried asset.
Climate resilience – extreme rainfall and storm flows	In	In	Out	Waterbeach assets not part of storm flow management solution
Resilience – drought	Out	Out	Out	Buried assets to be in line with industry standards and designed to accommodate variable ground conditions Treatment processes managed in accordance with established practices derived from industry experience.

Matter proposed to be scoped out	Core Zone	Transfer s Zone	Waterbeach Zone	Justification for scoping out
				Technology selected to allow for process adjustments to manage changes to influent (quality and volume).
Resilience – high winds	Out	Out	Out	Proposed Development will comply with industry standards re wind loading.
In combination climate impacts for agricultural land, carbon, historic environment, noise and vibration, material resources and waste, soils, geology and land quality, traffic and transport, major accidents and disasters	Out	Out	Out	Considered not to have significant interaction with climate, and not leading to in combination climate impacts.

Construction

10.7.6 The resilience of the Proposed Development to extreme rainfall or heat events during the construction stage (including the decommissioning of the existing Cambridge WWTP and existing Waterbeach WRC) is being scoped out, due to the short construction period not being affected by the changing climate. These activities are deemed to be resilient, taking into account the short construction timeframe in the 2020s whereby events are considered tolerable under current construction practices and associated construction management approaches. Any impacts arising from severe weather events would be managed by measures included in the CoCP.

Resilience – precipitation

10.7.7 The FRA will consider the potential impacts from extreme rainfall events and associated flooding and surface water drainage response. In the case of modelling of flood risk modelling all will consider the 1 in 100 year flood event with an allowance of 20% for climate change. In the case of modelling surface water drainage and network modelling for sewerage and transfers the 1 in 100 year rainfall event plus a 20% allowance for climate change will be adopted. The design of networks and surface water drainage will be informed by the outcomes of the models. The outfall will be designed to operate during the 1 in 100 year flood event.

Resilience – dry spells / drought

- 10.7.8 Drought is scoped out as the proposed WWTP will be designed and operated to account for drought conditions including the management of high flow following a long period of dry weather. In the case of adapting to changing consent limits resilience is inbuilt through a combination of technology selection and changing operational practices, furthermore it is anticipated that technology improvements over time would also provide additional means to adapt in the future.
- 10.7.9 In relation to landscape planting the landscape masterplan will be developed to account for the changing climate. The landscape masterplan for the Proposed Development would also be subject to a LEMP which will be developed to account for:
- ecology baseline;
 - soil conditions and drainage;
 - local hydrology and planned surface water drainage; and
 - measures required to sustain created habitats to deliver BNG.

Resilience – high winds / electrical storms

- 10.7.10 Resilience to high winds and lightning strike is scoped out from the assessment as the Proposed Development will be designed to meet industry standards in relation to lightning protection and wind loading.

In combination climate impacts (ICCI)

- 10.7.11 The assessment of In Combination Climate Impacts for the following aspects have been scoped out as they are considered not to have significant interaction with climate, and not leading to in combination climate impacts; agricultural land, carbon, historic environment, noise and vibration, material resources and waste, soils, geology and land quality, traffic and transport, major accidents and disasters.
- 10.7.12 The surface water and flooding aspect assessment will include an assessment of climate impacts built into the aspect as part of the FRA and therefore does not require further assessment within this aspect.

10.8 Evidence of agreements reached with consultation bodies

- 10.8.1 No separate consultation for Climate Resilience has been carried out. Through the Environmental Permit process pre application advice has been sought from the Environment Agency which has included matters such as storm flow storage capacity and the approach to storm flow management of the proposed Cambridge WWTP, flood risk, and water levels in the River Cam. Environmental permitting discussions with the Environment Agency are detailed within Chapter 21: Water Resources.

- 10.8.2 The current design capacity is in line with Environment Agency advice obtained to date. Further consultation is planned to agree in principle the approach to storm flow management including the use of storm tanks as well as exploring storage options that make use of redundancy embedded within the transfer pipeline.
- 10.8.3 Through the Consents and Permitting Technical Working Group (TWG) with the Environment Agency the need to conduct an FRA (which shall include climate change projections) has been confirmed (June 10th 2021). This assessment will follow NPS and NPPF requirements (as detailed in Chapter 21: Water Resources).
- 10.8.4 UK Power Networks have been consulted in relation to committed power supply for the Proposed Development. UKPN have committed to being able to serve the Proposed Development, which is relevant to understanding and assessing the impact of interdependencies.

10.9 Assessment methodology

- 10.9.1 Assessing the resilience of the Proposed Development to climate change is fundamentally different to the remainder of the EIA assessment, as it assesses the impact of an external event (climate change) on the Proposed Development, where the matters are the assets of the Proposed Development.
- 10.9.2 A qualitative methodology for assessing the resilience of the Proposed Development assets to climate change has been produced in line with the IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation 2020, leading to the evaluation of the significance of the effects as follows:
- The impacts (hazards and opportunities) for each matter will be identified using available climate projections data. In the UK, these are the UKCP18 projections, produced by the Met Office Hadley Centre. The resilience of the Proposed Development to both normal weather and extreme weather-related disaster scenarios under future climate, throughout its lifecycle, will be identified and reported.
 - Once the climate change impacts (hazards and opportunities) have been identified, a risk assessment of those impacts on the Proposed Development will be undertaken using likelihood categories and consequence of impact.
- 10.9.3 The outputs of the impact assessment will be used to assess if effects are significant.
- 10.9.4 The FRA will be used a primary resource for the assessment of impacts with Chapter 21: Water Resources. The FRA will be completed in line with NPPF requirements and will use 2/3d numerical modelling to consider a range of scenarios including allowances for climate change and modelling of extreme

events including the 1 in 100 year flood event. The model scenarios will be discussed with the Environment Agency.

- 10.9.5 The proposed transfers from the existing Cambridge WWTP and the proposed WWTP will use network modelling to support the ongoing design. A numerical model will be used to consider a range of scenarios including allowances for climate change and modelling of extreme events including the 1 in 100 year rainfall event.
- 10.9.6 The surface water drainage network at the proposed WWTP (including access) will use network modelling to support the ongoing design. A numerical model will be used to consider a range of scenarios including allowances for climate change and modelling of extreme events including the 1 in 100 year rainfall event.
- 10.9.7 A qualitative assessment of the in-combination climate impacts will be carried out in line with the IEMA Environmental Impact Assessment Guide to Climate Change Adaptation and Resilience (2020). The assessment will be based on professional judgement of the information available where published quantifiable methods are not available. The assessment, with a focus on flooding from storms and surface water flooding informed by the FLA and Chapter 21: Water Resources, will include:
- Impacts due to the Proposed Development on the current baseline (the assessments carried out by aspects);
 - How the matters (receptors) as well as staff and services (and by extension, the customers) will be affected by the future climate baseline; and
 - The impacts of climate change on the impacts of the Proposed Development directly and/or through climate change impacting on the mitigation measures for the Proposed Development.

SIGNIFICANCE CRITERIA

- 10.9.8 Significance criteria for the resilience of the Proposed Development to climate have been developed following the guidance in the IEMA Environmental Impact Assessment *Guide to Climate Change Resilience and Adaptation*. The criteria have been tailored to the Proposed Development, i.e., they are defined in relation to impacts of future climate on the operational status of the Proposed Development and its ability to deliver its intended function.
- 10.9.9 The assessment of magnitude, and assessment of significance for climate resilience impacts differs from the assessment carried out by other environmental topics. This is for two key reasons:
- Climate resilience assessment focusses on the impacts of external events (the projected changes in climate) to the project itself, which is the opposite of other environmental assessment topics, and

- Climate change resilience assessment needs to factor in the levels of uncertainty regarding future climate change projections.

ASSESSMENT OF SENSITIVITY OF THE RECEPTORS

- 10.9.10 The sensitivity of the receptors is the ability of the receptor to withstand and recover from a climate impact (such as high temperatures), while keeping or shortly returning to its normal functionality. Table 10-8 provides a summary of the sensitivity of the matters under assessment.
- 10.9.11 The sensitivity of a receptor takes into account its susceptibility (likelihood of being affected by a change) and its vulnerability (potential exposure to change).

Table 10-8 Sensitivity of receptors

Sensitivity of receptor	Criteria	Examples
Negligible	No change to the integrity of receptor or a small, temporary, reversible change to receptor performance following the occurrence of a climate impact	Underground/buried assets have negligible susceptibility to higher temperatures (climate impact) due to being buried below ground.
Low	Adverse: small, measurable impact to a receptor’s performance following climate impact, or small reduction in receptors lifespan due to chronic deterioration (e.g. slight decrease in lifespan of an asset due to increased higher temperatures)	Ability of reinforced concrete receptors to withstand daily changes in temperature which can result in a small but noticeable increase in the rate of spalling and deterioration (due to expansion of metal components).
	Beneficial: small, measurable increase in matter lifespan due to deterioration, or performance or reduced need for maintenance.	Key personnel onsite attendance / absence due to inability to travel to work on days of severe snow and ice will reduce slightly due to increase in average temperatures leading to fewer snow and ice events
Medium	Adverse: measurable decrease in receptor performance (short-term or long-term) or lifespan, or increase in necessary maintenance frequency and costs following the occurrence of climate impact.	Landscaping vegetation which is susceptible / reactive to changes in weather conditions – the climate impact of longer growing season will lead to increased growth (impact on the receptor) and associated maintenance costs.
	Beneficial: moderate measurable increase in matter lifespan or performance, or a measurable reduced need for maintenance	None identified
High	Adverse: short-term, acute impact to receptor functionality or a large, measurable decrease in receptor lifespan following the occurrence of a climate impact. Major increase in need for periodic maintenance or in maintenance costs.	Stormwater storage reservoirs/tanks which are already on some occasions insufficiently large to manage stormwater – these are receptors with a high sensitivity to increase in frequency of heavy rainfall events. The occurrence of the climate impact will lead to an acute impact on the functionality of the receptor.

Sensitivity of receptor	Criteria	Examples
	<i>Beneficial:</i> very strong improvement to matter's performance, lifespan or a large reduction maintenance requirements.	None identified

ASSESSMENT OF MAGNITUDE

10.9.12 The assessment of the magnitude of a climate change impact is undertaken in two steps. First, the identified impacts are categorised as beneficial or adverse. Second, impacts are categorised as major, moderate, minor or negligible based on consideration of the following parameters:

- Consequence of the impact – how intense or severe the extent of the impact is likely to be.
- Probability or likelihood of the impact– ranging from ‘occurring regularly under typical future climate conditions’ to ‘unlikely to occur under future climate conditions’.

10.9.13 The assessment of likelihood is based on information from the climate change projections, together with knowledge and professional judgement on the level of certainty associated with the projections. For example, there is a high degree of certainty in the climate projections in relation to temperature change (with great certainty in projection that temperatures will rise overall); however, there is a lower level of certainty in relation to climate change projections for changes in rainfall and the exact pattern of change throughout the seasons.

10.9.14 Table 10-9 sets out criteria for the magnitude of impact to the matters under assessment:

Table 10-9 Magnitude of impact

Magnitude	Criteria	Examples
Negligible	Small or undetectable change in climatic conditions leading to a low consequence impact on a receptor.	Changes in temperature (increase in average temperatures) affecting the efficiency of CHP units. The units will continue to operate, but a 2-3 temperature degree change may temporarily slow down the efficiency of the process.
Minor	Change in climate conditions which may have measurable effect on a receptor but which are low likelihood / infrequent.	Increased maximum temperatures leading to asphalt deformation on paved surfaces– in the timescales considered these are likely to be low likelihood events.
Moderate	Medium likelihood that a large, measurable climate impact will occur.	Increased maximum temperatures leading to overheating and temporary malfunction of electrical equipment (assuming no adaptation measures such as cooling systems, use of reflective paint on casings, in place)

Magnitude	Criteria	Examples
Major	Large change to climate condition and large increase in likelihood of event	Increase in the probability of extreme weather events occurring, leading to surface flooding

10.9.15 The significance of effects of each climate impact upon identified receptors is based on the combination of receptor sensitivity and magnitude of impact. Table 10-10 identifies the significance of effect assessment matrix to be used.

Table 10-10 Effect evaluation matrix

		Magnitude					
		Adverse			Beneficial		
		Major	Moderate	Minor	Minor	Moderate	Major
Sensitivity	High	Major Significant	Major Significant	Moderate Significant	Moderate Significant	Major Significant	Major Significant
	Medium	Major Significant	Moderate Significant	Minor Not significant	Minor Not significant	Moderate Significant	Major Significant
	Low	Moderate Significant	Minor Not significant	Negligible Not significant	Negligible Not significant	Minor Not significant	Moderate Significant
	Negligible	Minor Not significant	Negligible Not significant	Negligible Not significant	Negligible Not significant	Negligible Not significant	Minor Not significant

10.9.16 Effects which have been evaluated as being ‘Moderate’ or ‘Major’ are considered to be significant effects. Effects which are ‘Minor’ or ‘Negligible’ are not significant

10.10 Approach to cumulative effects assessment

10.10.1 The methodology relating to the project’s approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

10.10.2 The cumulative assessment for Climate Resilience will consider any other proposed developments that have potential to increase flood risk due to changes in land use for land adjacent to the site of the proposed WWTP. This cumulative impact will be considered and addressed within the Water resources aspect of the EIA, however cumulative effects on the ground water have been scoped out during the operation phase in the view that appropriate mitigations for flood will be in place.

10.11 Assumptions, limitations and uncertainties

10.11.1 The assessment of the climate resilience impacts on the Proposed Development will require data from Anglian Water on the Proposed Development design. Where information is not available (for example because it will be available at the detailed design stage), expert judgement and industry benchmarking will be used.

- 10.11.2 Chapter 9: Carbon of this report assesses GHG in respect to impacts on climate due to the Proposed Development, which may include climate resilience building measures such as design of air conditioning or increased natural ventilation where possible (climate resilience measures) to be incorporated. Any GHG emissions associated with design measures adopted to provide resilience, such as the inclusion of any additional heating, ventilation, and air conditioning, would be assessed in Chapter 9.
- 10.11.3 The baseline for climate resilience considers both current climate and how the climate may change in the future as a result of climate change, expressed as the outputs of climate modelling, referred to as projections and obtained from a third-party source (the UK Met Office). Climate projections are not predictions or forecasts but scenarios of future climate under a range of hypothetical emissions scenarios and assumptions. The results, therefore, from the experiments performed by climate models cannot be treated as exact or factual, rather they are scenarios. They represent internally consistent representations of how the climate may evolve in response to a range of potential forcing scenarios and their reliability varies between climate variables. Scenarios exclude outlying "surprise" or "disaster" scenarios in the literature and any scenario necessarily includes subjective elements and is open to various interpretations. Generally global projections are more certain than regional, and temperature projections more certain than those for precipitation and other variables. Further, the degree of uncertainty associated with all climate change projections increases for projections further into the future. Figures for climate variables provided in this report are based upon these projections and are based on a high emissions scenario which assumes a scenario of continued greenhouse gas emissions (RCP8.5) as recommended for use in EIA in the IEMA Environmental Impact Assessment Guide to Climate Change Adaption and Resilience (2020).
- 10.11.4 COVID-19 has increased uncertainties in future emissions due to significant changes in lifestyles (such as reduced international travel and reduced commuter traffic due to more employees working from home). However, this has not impacted upon the scoping for this aspect as a conservative approach using the higher emissions scenario (RCP8.5) has still been used. There is currently not sufficient evidence to support that a less conservative scenario may be appropriate and that the effect of COVID-19 on future emissions will be permanent.

11 Community

11.1 Introduction

- 11.1.1 This chapter of the EIA Scoping Report identifies the resources and receptors, referred to by the Planning Inspectorate as ‘matters’ relevant to the aspect of community. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of the EIA Scoping is to ensure the proportionate assessment appropriately focused on aspect and matters where a likely significant effect may occur.
- 11.1.2 This chapter of the EIA Scoping Report assesses the potential direct community impacts and considers the potential indirect community impacts as a result of other impacts. Other impacts include those associated with Agricultural and Soils (Chapter 6), Land Quality (Chapter 15), Air Quality (Chapter 7), Odour (Chapter 19) Landscape and Visual (Chapter 14), Noise and Vibration (Chapter 18), Traffic and Transport (Chapter 20) and Water Resources (Chapter 21).
- 11.1.3 The health impacts of the Proposed Development are addressed in Chapter 12: Health. The potential business disruption impacts of the Proposed Development on agricultural holdings is addressed in Chapter 5.
- 11.1.4 Several matters (resources and receptors) within this aspect are proposed to be scoped out of further assessment with justification provided based on, for example, the absence of a pathway from impact to the receptor, through consultation with the relevant statutory consultee or sufficient confidence in impact avoidance methods.

11.2 Matters (resources and receptors)

- 11.2.1 For the aspect of community the matters, or resources and receptors, are:
- private property and housing; residents living within the study area
 - community facilities and services such as healthcare facilities, educational facilities, recreational facilities (including the River Cam navigation) and places of worship;
 - users of community facilities in the study area such as schools, health facilities, services and recreational facilities;
 - users of public open space, recreational areas and PRow; and
 - commercial buildings, employers, employees and job-seekers based in the study area.

11.3 Study area

- 11.3.1 The study area is defined for each resource or receptor in Table 11-1 below and are shown on Figure 11-1 and Figure 11-3.

Table 11-1: Community Study Area

Resource or receptor	Study area
Private property and housing	Residential properties within 500m of the EIA Scoping boundary,
Community facilities	500m from the EIA Scoping boundary
Open space and recreational areas	500m from the EIA Scoping boundary
PRoW	PRoW 500 m from the EIA Scoping boundary which are directly impacted as a result of construction and operation of the Proposed Development will be included within the scope of the assessment. For example, due to temporary or permanent closure, diversion or alteration.
Businesses	Businesses, their owners, and employees 500m from the EIA Scoping boundary
Employment and economic activity	South Cambridgeshire, East Cambridgeshire and Cambridge City

11.3.2 The community assessment for both the construction and Operational Phases will be conducted at both a local level and a wider level, dependent on the type of impact being assessed.

11.3.3 Some effects, such as those affecting the economy, may occur across a broader population. Therefore, information from South Cambridgeshire, East Cambridgeshire and Cambridge City local authorities will be used to provide context for the assessment.

11.4 Legislation, planning policy context and guidance

11.4.1 Legislation, planning policy and guidance relating to community, and pertinent to the Proposed Development comprises the following.

LEGISLATION AND REGULATIONS

11.4.2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017¹⁵⁷, states that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the Proposed Development on population and human health. The population aspect is outlined within this chapter. Health aspects are outlined in Chapter 12.

PLANNING POLICY

11.4.3 National planning policy of relevance to Community, and pertinent to the Proposed Development are:

¹⁵⁷ The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, available at: [The Infrastructure Planning \(Environmental Impact Assessment\) Regulations 2017 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2017/1231/contents/made)

11.4.4 The NPS for Waste water with particular reference to;

- Paragraph 4.15.3: Regional and local socio-economic impacts associated with new waste water infrastructure may include the creation of jobs and training opportunities.
- Paragraph 4.15.3: The location of PRow, including footpaths, bridleways and byways should be taken into account and disruption to them minimised where possible.
- Paragraph 4.15.3: The potential alteration in demand for services and facilities surrounding the proposed development during construction, operation and decommissioning as a result of changing influx of workers.
- Paragraph 4.15.5: Socio-economic impacts and how these may be linked to other impacts, for example visual impacts may also have an impact on tourism and local businesses.
- Paragraph 4.15.6 – 4.15.9: The need for an Equality Impact Assessment (EqIA) which should be included in the documents submitted for the Development Consent Order (DCO).

11.4.5 The NPPF with particular reference to;

- Section 6: Building a strong, competitive economy (paragraphs 80, 82-83),
- Section 12: Achieving well designed places (paragraphs 127-128)
- Section 8: Building health and safe communities (paragraphs 91, 92, 96 and 98).¹⁵⁸

11.4.6 Local planning policy of relevance to the Proposed Development includes:

11.4.7 South Cambridgeshire District Council Local Plan 2018 with particular reference to;

- Policy SC/8: Protection of Existing Recreation Areas, Playing fields Allotments and Community Orchards;
- Policy SC/9: Lighting Proposals which requires new external lighting to not adversely impact on the local amenity of neighbouring or nearby properties, or on the surrounding country; and
- Chapter 8: Building a strong and competitive economy (paragraphs 8.3, 8.5, 8.6) is also relevant.
- South Cambridgeshire District Council has produced a Health Impact Assessment Supplementary Planning Document (SPD) which focuses on creation of healthy and inclusive communities and that health impacts on populations are adequately addressed throughout the development process.

11.4.8 Cambridge City Council Local Plan 2018 with particular reference to;

¹⁵⁸ National Planning Policy Framework, February 2019, Ministry of Housing, Communities and Local Government, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

- Section Five; Supporting the Cambridge Economy,
- Section Seven: Protecting and enhancing the character of Cambridge; and
- Section Eight: Services and local facilities.¹⁵⁹

11.4.9 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 with particular reference to;

- Policy 18: Amenity Considerations, which outlines the importance of health and wellbeing within the community.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

11.4.10 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation or influence on the methodology of the EIA. For the aspect of community planning policy has not influenced the EIA scope.

NATIONAL POLICY STATEMENT REQUIREMENTS

11.4.11 Table 11-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 11-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Section 3.2 states that the applicant needs to set out information on the likely significant social and economic effects of the development, which could include receptors such as employment, equality, community cohesion and well-being.	The scope of the Community assessment will include potential likely social and economic effects on private property and housing (including residential amenity), businesses, community facilities, employment and economic activity surrounding the Proposed Development. Factors influencing wellbeing are considered in the Health Chapter. Equality effects are considered in a separate Equality Impact Assessment which will be submitted as part of the Development Consent Order application.
Section 4.8 sets out the Government’s commitment to ensure adequate provision of open space and sports and recreation facilities to meet the needs of local communities. Applicants are required to consult the local community on their proposals to build on open space, sports or recreation facilities.	The scope of the Community assessment will include potential significant effects on existing community facilities, open space and recreational land surrounding the Proposed Development.

¹⁵⁹ Cambridge Local Plan, October 2018, available at: <https://www.cambridge.gov.uk/media/6890/local-plan-2018.pdf>

NPS requirement

Section 4.15 suggests the types of socio-economics impacts that could be assessed during the construction, operations and decommissioning phases. They include:

- The creation of jobs and training opportunities;
- Changes to PRowS, including footpaths, bridleways and byways;
- The changing influx of workers which may alter the demand for services and facilities in the areas surrounding the proposed development;
- the equalities impact on people living, working or owning businesses who may be displaced as a result of the development.

Socio-economic impacts may be linked to other impacts, such as visual impact;

Section 4.15 also suggests that applicants assess existing socio-economic conditions in the areas surrounding the proposed development.

Compliance of EIA scope with NPS requirements

The scope of the Community assessment will include potential significant effects on jobs, training opportunities, changes to PRowS, and whether an influx of workers may alter the demand for services and facilities in the identified study area.

Potential amenity effects resulting from a combination of other effects (air quality, landscape and visual, noise and vibration and traffic and transport) at the same location will also be considered within the scope of the assessment.

Equality effects are considered in a separate EqlA which will be submitted as part of the DCO application. A preliminary EqlA will be completed and a full EqlA would be completed if deemed necessary on basis of preliminary assessment.

The existing socio-economic conditions in the areas surrounding the Proposed Development will also be set out in the baseline information.

GUIDANCE

- 11.4.12 There is no set industry guidance which outlines how to assess community effects. The Highways England Design Manual for Roads and Bridges (DMRB) LA 112¹⁶⁰ provides guidance on ‘population and human health’ assessments. This community assessment fulfils the requirement to consider potential ‘population’ effects since human health is assessed in a separate chapter. Although DMRB LA 112 is for linear transport schemes, some aspects of the guidance are applicable for community assessments of infrastructure in other sectors. For example, DMRB LA112 provides a framework for assessing, mitigating and reporting the effects of infrastructure development projects on population, introducing significance criteria to aid consistent and proportionate assessment to support the reporting of significance effects. Where appropriate, DMRB LA 112 will be utilised to guide the assessment. However, professional judgement will also be used so that the assessment is proportionate and utilises criteria specific to this type of infrastructure.

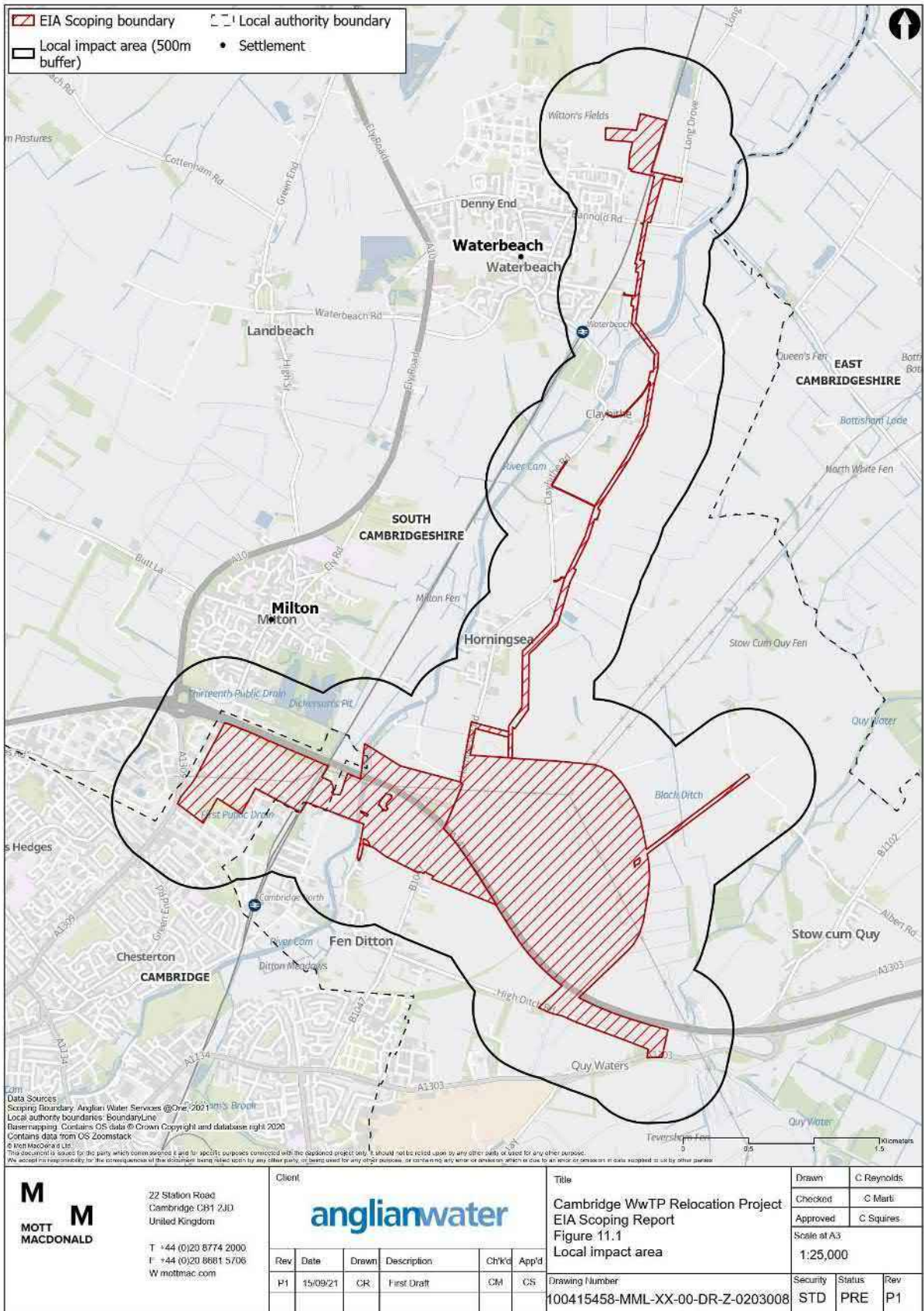
¹⁶⁰ DMRB (2019). Volume 11: Environmental Assessment Section 3: Environmental Assessment Techniques, Part 6 LA 112. [online]. Available at:



11.5 Baseline conditions

11.5.1 The baseline conditions for community have been calculated for a Local Impact Area (LIA) and Wider Impact Area (WIA). The LIA and WIA have been created based on guidance and professional judgement. The LIA and WIA are defined as follows:

- LIA: The area located within a 500m distance from the EIA Scoping boundary. This is the primary study area for community effects and is designed to capture most potential community effects. This is shown in Figure 11-1 below and includes areas within Cambridge, East Cambridgeshire and South Cambridgeshire.
- WIA: The areas covered by the local authorities of Cambridge City, East Cambridgeshire and South Cambridgeshire form the WIA due to the scheme being located on the boundary between these three authorities. This is shown in Figure 11-2.



<p>22 Station Road Cambridge CB1 2JD United Kingdom</p> <p>T +44 (0)20 8774 2000 F +44 (0)20 8681 5708 W mottmac.com</p>	<p>Client</p>		<p>Title</p> <p>Cambridge WwTP Relocation Project EIA Scoping Report Figure 11.1 Local impact area</p>			<p>Drawn</p> <p>C Reynolds</p>	
			<p>Rev</p> <p>CM CS</p>			<p>Checked</p> <p>C Marti</p>	
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					<p>Security</p> <p>STD</p>	<p>Status</p> <p>PRE</p>	<p>Rev</p> <p>P1</p>

Figure 11-1: Local Impact Area

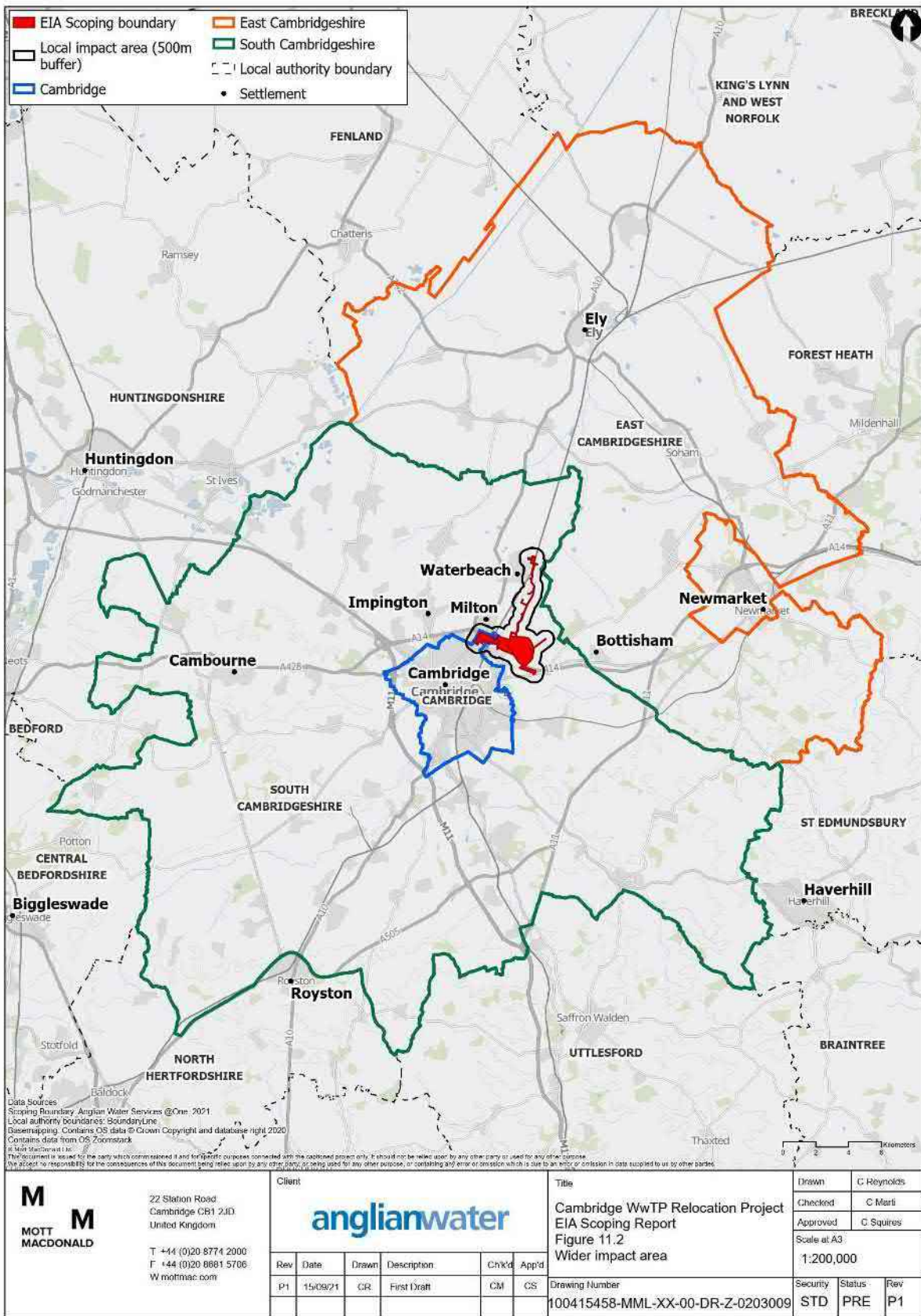


Figure 11-2: Community local impact area

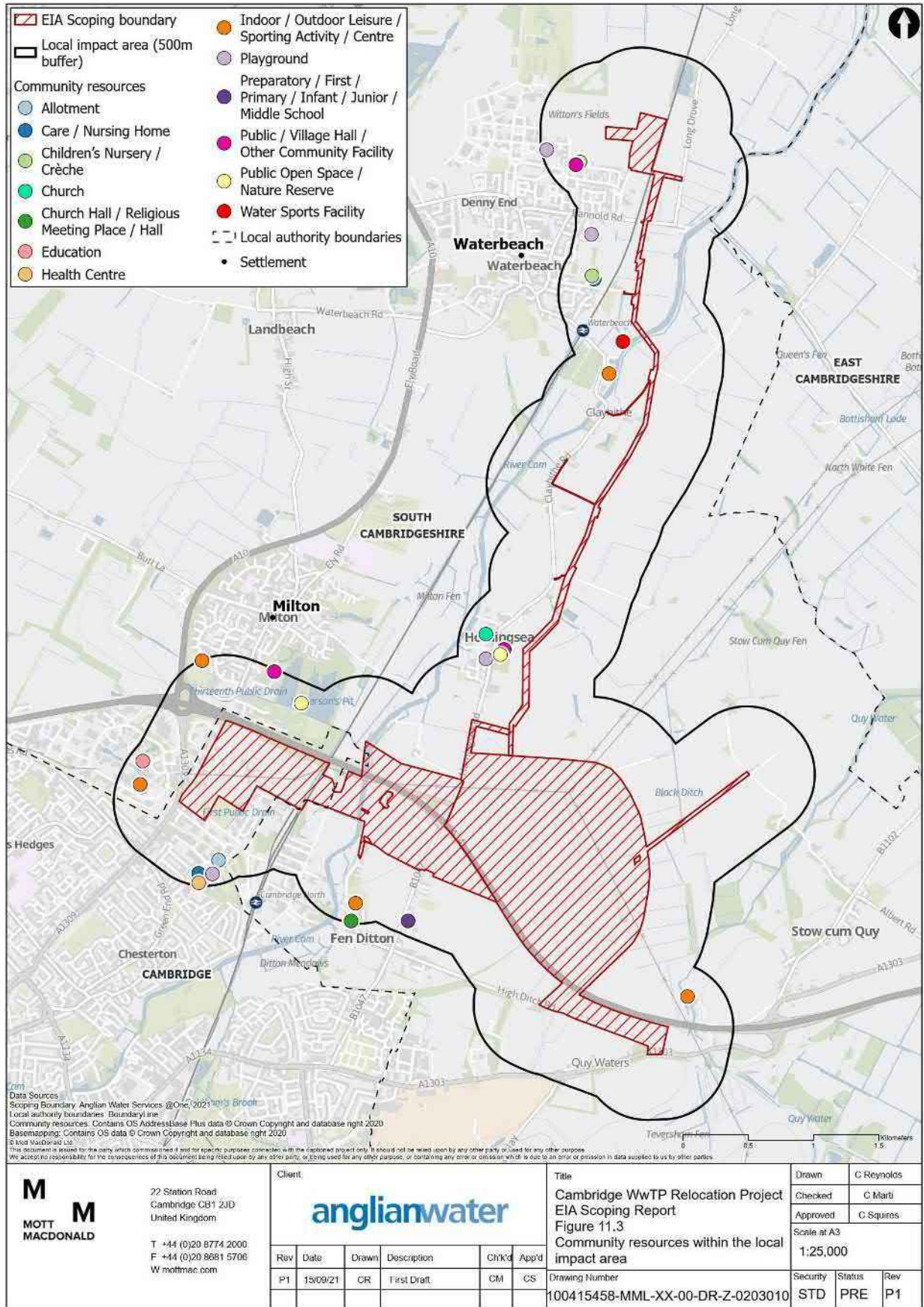


Figure 11-3: Community wider impact area

POPULATION

- 11.5.2 The total population for the Community LIA is 4,195. Key communities in the Community LIA include, Horningsea and Milton, which are located to the west of the Proposed Development and Kings Hedges, Chesterton and Fen Ditton to the south of the Proposed Development.
- 11.5.3 Table 11-3 shows the population numbers and proportions according to age groups within the study area, regions and nation.

Table 11-3: Population and age structure

	LIA	Cambridge City	East Cambs	South Cambs	WIA	East of England	England
Total Population (2019)	4,195	124,798	89,840	159,086	373,724	6,236,072	56,286,961
Children (under 16)	18%	17%	20%	20%	19%	19%	19%
Young people (16 to 24)	9%	22%	8%	8%	13%	10%	11%
Working age population (16 to 64)	65%	69%	60%	60%	63%	61%	62%
Older people (65 and over)	16%	13%	20%	20%	18%	20%	18%

Source: ONS mid-year population estimates, 2019

- 11.5.4 The table above shows that children make up 18% of the LIA. This figure is in line with Cambridge (17%), East Cambridgeshire (20%), South Cambridgeshire (20%), East of England (19%) and England (19%) proportions.
- 11.5.5 The proportion of young people in the study area (9%) is considerably lower than Cambridge (22%) averages, but broadly in line with East Cambridgeshire (8%), South Cambridgeshire (8%), East of England (10%) and England (11%) proportions.
- 11.5.6 The proportion of working age population in the LIA (65%) is lower than Cambridge (69%), but considerably higher than East Cambridgeshire (60%), South Cambridgeshire (60%), East of England (61%) and England (62%) proportions.
- 11.5.7 The proportion of older people in the LIA (16%) is higher than Cambridge average of 13%. In comparison, the proportion of older people in other areas is higher than in the LIA.

Deprivation

11.5.8 The English Indices of Multiple Deprivation (IMD) 2019 are commonly used for the measurement and comparison of relative levels of deprivation (poverty). Table 11-4 outlines the deprivation data by quintile. The deprivation of the existing community is also relevant to the Equality Impact Assessment (EqIA) and Health Chapter. These two chapters also report existing levels of deprivation.

Table 11-4: Deprivation quintiles

	LIA	Cambridge City	East Cambs.	South Cambs.	WIA	East of England	England
Most deprived quintile	0%	3%	0%	0%	1%	10%	20%
Second quintile	17%	9%	4%	1%	4%	18%	21%
Third quintile	24%	30%	31%	10%	22%	25%	20%
Fourth quintile	39%	31%	30%	33%	31%	22%	20%
Least deprived quintile	20%	25%	35%	56%	41%	25%	19%

Source: 2019 mid-year population estimates, ONS and 2019 Index of Multiple Deprivation, MHCLG

11.5.9 The table above shows that the proportion of population falling within the most deprived quintile is lower than Cambridge (3%) and East of England (10%). 39% of the population in the study area falls within the 2nd least deprived quintile, which is considerably higher than Cambridge (31%), East Cambridgeshire (30%), South Cambridgeshire (33%), and East of England (22%).

Private property and housing

11.5.10 There are approximately 2,000 residential properties within the Community LIA. This includes properties in the settlements of Waterbeach, Clayhithe, Milton, Horningsea, Chesterton and Fen Ditton. The closest properties to the Proposed Development, and the settlements in which they are located, are detailed below:

- Waterbeach - properties located from Station Road, Burges Road, Way Lane, Bannold Road, Long Drove, Bannold Drove and Cody Road
- Clayhithe – properties located from Clayhithe Road
- Milton – properties located from Cambridge Road
- Horningsea – properties located from Horningsea High Street

- Chesterton – properties located from Milton Road and Green End Road
- Fen Ditton – properties located from Horningsea Road, High Ditch Road, Green End and Fen Road

Community facilities

11.5.11 The community resources located within the Community LIA and the settlements in which they are located are detailed below. These are also shown on Figure 11-4.

- Waterbeach
 - A playground located on Abbey Place;
 - Lancaster House located on Capper Road;
 - Little Stars Day Nursery located on Capper Road;
 - A playground located to the south of Bannold Road;
 - Waterbeach Toddler Playgroup located on Burgess Road; and
 - Hatley Court Residential Care Home located on Way Lane.
- Clayhithe
 - Cambridge Sailing Club located on Clayhithe Road; and
 - Cambridge Motorboat Club located on Clayhithe Road.
- Milton
 - Milton Country Park located on Cambridge Road;
 - Sycamores Recreation Ground located on The Sycamores; and
 - Milton Village Community Centre and Recreation Grounds located on Coles Road.
- Horningsea
 - Horningsea Village Hall located on High Street;
 - Millennium Green located on High Street;
 - Goose Green Play Area located on High Street; and
 - Church of St. Peter located on St John’s Lane.
- Chesterton
 - Nuffield Road Medical Centre located on Nuffield Road;
 - Nuffield Road Allotment Society located on Nuffield Road;
 - Pauline Burnet House care home located on Nuffield Road;
 - Play Area located on Discovery Way;
 - The Bradfield Centre located in Cambridge Science Park; and
 - The Trinity Centre located in Cambridge Science Park.
- Fen Ditton
 - Recreation Ground located on Green End;
 - Fen Ditton Church located on Church Street; and

- Fen Ditton Primary School located on Horningsea Road.

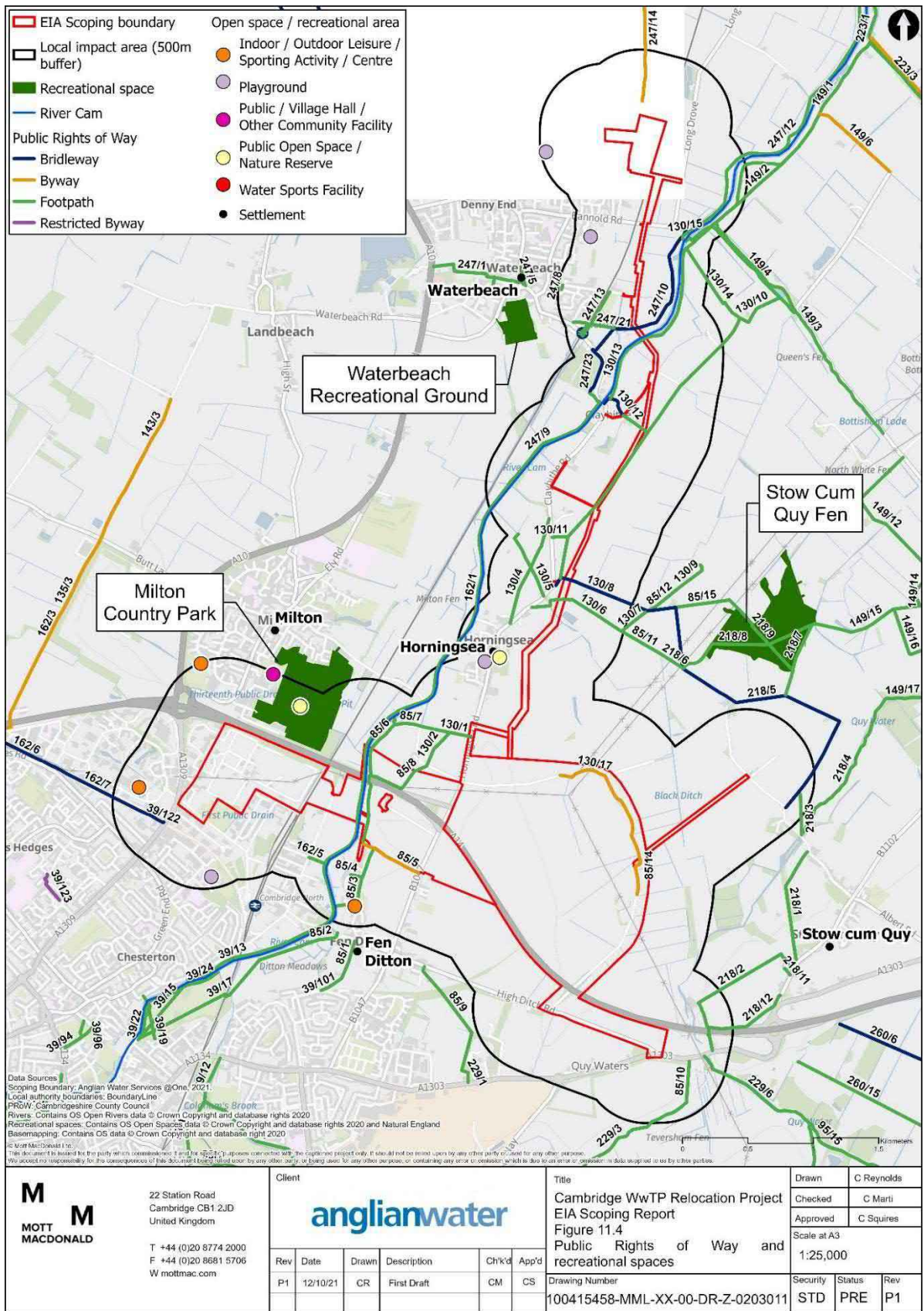


Figure 11-4: Community Resources

Open space and recreational areas

11.5.12 Open space and recreational areas located within and just outside the LIA are shown in Figure 11-4 they are:

- Waterbeach
 - Waterbeach Recreational Ground;
 - A playground located on Abbey Place; and
 - A playground located to the south of Bannold Road.
- Milton
 - Milton Country Park located on Cambridge Road; and
 - Sycamores Recreation Ground located on The Sycamores.
- Horningsea
 - Millennium Green located on High Street; and
 - Goose Green Play Area located on High Street.
- Chesterton
 - Play Area located on Discovery Way
- Fen Ditton
 - Recreation Ground located on Green End
- Stow-cum-Quy
 - Stow-cum-Quy Fen Nature Reserve.
- River Cam

River Cam

11.5.13 The River Cam navigation extends from Cambridge to the junction with the Great Ouse, at Pope's Corner¹⁶¹. The location of the outfall as part of the Proposed Development is located within the navigable part of the River Cam. The River Cam navigation is an important and well used resource. In this location, river uses are likely to include rowers, punters, boaters, and canoers and the river also has a number of short and long stay moorings. It is reported that there are more than 2,000 rowers registered at over 30 boathouses in Cambridge¹⁶². There are also a large number of liveaboard boats as well as commercial operations offering boat trips on the navigational section of the river.

¹⁶¹ Inland Waterway (2021) River Cam [online] [REDACTED] Accessed: September 2021

¹⁶² Cam Boaters (2021) The River Cam History of the River Cam [online] [REDACTED] Accessed: September 2021

PRoW

11.5.14 As shown in Figure 11-4 several PRoWs are located within the Community LIA. This PRoW network provides routes connecting the communities south of the A14 and north of the A14 as well as between the communities of Milton, Waterbeach, Horningsea and Lode. Chapter 20: Traffic and Transport has also reported the location of these PRoW within the baseline conditions.

Businesses

11.5.15 The main business clusters within or adjacent to EIA Scoping boundary are located as follows:

- adjacent to the existing waste water treatment plant is Cambridge Golf Driving Range;
- in Cambridge Science Park and St John's Innovation Park, situated both sides of Milton Road in Kings Hedges and Chesterton;
- in Cambridge Road Industrial Estate in Milton;
- on the eastern edge of Horningsea;
- in Horningsea, adjacent to Horningsea Road and High Street;
- smaller clusters of businesses located on the northern edge of Fen Ditton, in Clayhithe and on the western edge of Waterbeach.

Employment and Economic activity

11.5.16 The following table shows the economic baseline for the South Cambridgeshire, East Cambridgeshire and Cambridge City local authorities. Data is not available at Community Study Area level. Information presented in Table 11-5 is from September 2020 and therefore does not reflect all changes to the economy and employment associated with the Covid-19 pandemic. As comparable information becomes available for last quarter of the 2020 period and 2021, the baseline will be updated.

Table 11-5: Economic Activity

	Cambridge	East Cambs	South Cambs	Wider impact area	East	England
Economic activity rate	80.4	83.2	78.3	80.1	80.4	79.5
Employment rate	77.2	83.2	76.1	78.1	77.2	75.7
Unemployment rate	3.9	!163	2.8	!164	4	4.8

163 Estimate and confidence interval not available since the group sample size is zero or disclosive (0-2).

164 Estimate and confidence interval not available since the group sample size is zero or disclosive (0-2).

Source: Annual Population Survey, September 2020

- 11.5.17 Data on economic activity from the Annual Population Survey suggests that employment and economic activity rates are relatively high in Cambridge City, East Cambridgeshire and South Cambridgeshire local authority areas, higher than England rates.
- 11.5.18 Table 11-6: Employment by main industries shows the employment estimates by industry for the LIA, WIA, regional and national comparators. The Business Register and Employment Survey (BRES) provides data on employment estimates by industry.¹⁶⁵ These data are from 2019 and some sectors may have seen a large change from this as a result of the pandemic, for example retail, transport and entertainment. Where this baseline information influences the assessment, the consequences of potential changes to this data as a result of the Covid-19 pandemic will be described within the EIA.

Table 11-6: Employment by main industries

	Local impact area	Cambridge	East Cambs	South Cambs	Wider impact area	East	England
Agriculture, forestry & fishing	0.0%	0.0%	3.8%	1.1%	1.0%	0.9%	0.6%
Mining, quarrying & utilities	1.9%	0.3%	1.5%	0.8%	0.7%	1.0%	1.1%
Manufacturing	8.5%	1.4%	12.0%	12.3%	7.1%	7.6%	7.9%
Construction	3.6%	1.4%	6.8%	5.6%	3.8%	6.0%	4.8%
Motor trades	3.4%	0.8%	2.1%	2.2%	1.6%	2.4%	1.9%
Wholesale	4.3%	1.1%	3.8%	3.4%	2.4%	4.3%	4.0%
Retail	2.8%	7.3%	6.8%	4.5%	6.1%	9.2%	9.2%
Transport & storage (inc postal)	3.7%	1.4%	6.8%	1.7%	2.3%	4.9%	5.0%
Accommodation & food services	3.9%	9.1%	6.0%	4.5%	6.9%	6.9%	7.5%
Information & communication	20.5%	7.3%	3.0%	9.0%	7.3%	3.8%	4.5%

¹⁶⁵ The Business Register and Employment Survey (BRES) publishes employee and employment estimates at detailed geographical and industrial levels and is regarded as the official source of employee and employment estimates by detailed geography and industry.

	Local impact area	Cambridge	East Cambs	South Cambs	Wider impact area	East	England
Financial & insurance	1.3%	1.1%	1.1%	1.1%	1.1%	2.5%	3.5%
Property	0.5%	1.6%	1.5%	1.0%	1.4%	1.7%	1.8%
Professional, scientific & technical	28.1%	16.4%	9.0%	25.7%	18.9%	9.6%	9.1%
Business administration & support services	7.1%	4.6%	12.0%	6.7%	6.5%	10.2%	9.0%
Public administration & defence	1.4%	2.3%	1.5%	1.4%	1.8%	3.3%	4.0%
Education	2.9%	22.8%	9.0%	7.8%	15.1%	9.2%	8.7%
Health	3.3%	16.4%	7.5%	7.8%	11.8%	11.9%	12.7%
Arts, entertainment, recreation & other services	2.8%	4.6%	6.0%	3.4%	4.3%	4.5%	4.5%

Source: Business Register and Employment Survey, 2019

- 11.5.19 The largest industries of employment in the LIA are 'professional, scientific and technical', 'information and communication', 'manufacturing' and 'business administration and support services' (28.1%, 20.5%, 8.5% and 7.1% respectively). The proportion of employees within the professional, scientific and technical sector in the study area is 28.1%, which is broadly in line with the South Cambridgeshire (25.7%) but considerably higher than the proportion in England (9.1%). Due to the characteristics of the businesses located in the study area, the proportion of employees within the information and communication sector (21.5%) is notably higher than all the other comparators (7.3% for Cambridge City, 3% for East Cambridgeshire, 9% for South Cambridgeshire and 4.5% for England).

11.6 Future baseline

- 11.6.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.

11.6.2 Where this presents new environmental receptors or a change to the current baseline specific to community, this is discussed further below.

11.6.3 For the aspect of community changes in access to residential properties, community resources, businesses and open space and recreational areas will be relevant to the future baseline. Additionally, potential changes to work patterns, such as how often people choose to commute to work, is relevant to understanding impacts on business activity and the value placed on local recreational resources.

11.7 Potential environmental impacts and mitigation

11.7.1 Potential community impacts as a result of the Proposed Development are summarised below.

CONSTRUCTION PHASE POTENTIAL IMPACTS

11.7.2 The Construction Phase of the Proposed Development may have the following potential direct impacts:

- Temporary increases in road traffic and changes to access from construction activities could impact access to residential properties, within the study area of the EIA Scoping boundary as a whole (all zones).
- Temporary and permanent requirements for land may impact residential properties and businesses.
- Temporary increases in road traffic and changes to access from construction activities could impact access to community resources, open space and recreational area (including the River Cam), within the study area of the EIA Scoping boundary as a whole (all zones).
- The Proposed Development is anticipated to result in temporary changes to the local environment which may affect the amenity of communities within the study area of the EIA Scoping boundary as a whole (all zones). Potential adverse impacts could result from a combination of noise, air quality, traffic and visual effects at a particular location, impacting the amenity of communities, including users of open and recreational spaces.
- The temporary or permanent closure or diversion of PRowS in and around the EIA Scoping boundary as a whole (all zones) due to the laying of pipelines and construction of the Proposed Development. These potential temporary or permanent diversions or closures may also create severance, by restricting the ability for users to travel between communities to access community facilities and goods and services.
- Temporary increases in road traffic and changes to access from construction activities could impact access to business owners, employees and customer bases, within the study area of the EIA Scoping boundary as a whole (all zones).

- The Proposed Development within the EIA Scoping boundary as a whole (all zones), requires a construction workforce to deliver it, which would likely result in beneficial impacts from temporary employment.

POTENTIAL IMPACTS PER ZONE

11.7.3 The potential impacts presented in Table 11-7.

Table 11-7: Potential construction impacts (all zones)

Potential impact
Temporary increase in road traffic and changes in access affecting residential properties
Temporary increase in road traffic and changes in access affecting community resources, open space and recreational areas, including users of the River Cam.
Temporary changes to the local environment including increased noise, reduced air quality, increased transport and visual effects impacting, local communities and users of open and recreational space, including users of the River Cam.
Temporary or permanent closure of PRow with the potential to create severance affecting local communities' access to community facilities and goods and services.
Temporary increase in road traffic and changes in access effecting business owners, employees and customer bases.
Temporary employment
Demand for local accommodation and public services due to the temporary workforce
Temporary and permanent requirement for land may impact businesses

CONSTRUCTION PHASE MITIGATION

11.7.4 Likely significant effects arising during the Construction Phase would be mitigated by secondary mitigation in the form of measures set out in the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to water quality and flooding. Control measures may include:

- Requirements to prepare a construction traffic management plan (CTMP) (See Chapter 20 for details of what this may cover);
- Requirements to prepare air quality management plan (See Chapter 7 for details of what this may cover);
- Requirements to prepare a CEMP including community consultation activities which may include specific measures in relation to the community;
- A requirement for the public to be informed of the nature, timing and duration of particular activities during construction via multiple forms of appropriate communication; and

- A requirement to employ a nominated Community Liaison Officer (CLO) who will be responsible for engaging with local communities and providing regular updates on the construction programme.

OPERATIONAL PHASE POTENTIAL IMPACTS

11.7.5 The Operational Phase of the Proposed Development may have the following potential impacts:

- The Proposed Development may result in permanent changes to the local environment which may affect the amenity of communities. Potential adverse impacts could result from a combination of noise, air quality, visual and traffic impacts combining at a location, impacting amenity of communities.

POTENTIAL IMPACTS PER ZONE

11.7.6 The potential impacts presented in Table 11-8.

Table 11-8: Potential operational impacts (all zones)

Potential impact

Permanent changes to the local environment including increased noise, odour impacts, reduced air quality, increased transport and visual effects impacting local communities and users of open and recreational space.

OPERATIONAL PHASE MITIGATION

- 11.7.7 The Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by the permit. These plans are expected to include management plans that control emissions such as air quality, odour and noise.
- 11.7.8 The written system may cover general management of the proposed WWTP, equipment maintenance, contingency plans, accident prevention and emergency response (including pollution response) as well as defining monitoring activities. The EMS would also set out an organisational structure with environmental management roles and responsibilities.
- 11.7.9 The documentation in relation to the Environmental Permit would be prepared prior to operation by the operator.
- 11.7.10 Operational environmental control and protection measures (including environmental monitoring requirements) will be identified through the EIA process. These measures will be recorded within the mitigation schedule as

part of the DCO application and the eventual operational environmental management plan would be developed to be consistent with the mitigation schedule. Compliance with these measures would be secured consistent with the advice set out in paragraph 3.7.3 of the National Policy Statement for Waste Water.

11.8 Proposed scope of the assessment

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED IN

- 11.8.1 Based on the potential community impacts described above, it is proposed that the following aspects be scoped into the assessment:
- Potential impacts on residential properties and residents in relation to disruption to access during construction of the Proposed Development. The characteristics of the residential properties and residents impacted will be identified and analysed via a desk study utilising AddressBase data and informed by a site visit.
 - Potential impacts on community facilities, open space and recreational areas in relation to disruption to access during construction of the Proposed Development. The characteristics of the community facilities, open space and recreational areas impacted will be identified and analysed via a desk study utilising AddressBase and informed by a site visit.
 - Potential impacts on users of the River Cam during construction of the proposed outfall. This is likely to cause short term impedance to navigation as part of the river will be isolated to facilitate safe construction. The existing use of the River Cam for recreational purposes will be determined by undertaking interviews with representatives from potentially affected user groups to understand usage patterns (including seasonal differences) and the types of user (for example rowing, boating, swimming).
 - The Proposed Development is anticipated to result in temporary or permanent changes to the local environment which may affect the amenity of communities. This is proposed to be scoped in during both construction and operation. The findings of Agriculture and Soils (Chapter 6), Air Quality (Chapter 7), Odour (Chapter 19), Landscape and Visual (Chapter 14), Noise and Vibration (Chapter 18), Traffic and Transport (Chapter 20) and Water Resources (Chapter 21) will be reviewed to assess the impact on the local community.
 - Impacts (both temporary and permanent) on non-motorised users are anticipated to arise in relation to their ability to access routes and use PRoW and non-designated public routes, changes to the accessibility and usability of routes, changes to journey lengths, and journey pleasantness during construction. The PRoW and non-designated public routes effected by the Proposed Development will be identified and the degree of disruption will be assessed (in relation to the ability for people to access community resources,

businesses, and recreational opportunities), drawing on the findings from Traffic and Transport (Chapter 20).

- Potential impacts on business owners, employers and employees in relation to disruption to access during construction of the Proposed Development. The characteristics of the businesses effected will be identified and analysed via a desk study utilising AddressBase and informed by a site visit
- Changes in employment are anticipated to arise in relation to job creation, the supply chain, and employment opportunities during construction. These will be based on construction employment estimates and the potential effect determined in the context of the existing economic activity within the local authority area.
- During construction, there may be changes in demand for local accommodation and public services from the temporary workforce as it is anticipated that labour will be drawn from both local and non-local labour markets. The impact on local accommodation and public services will be assessed based on existing capacity and additional demand (based on construction employment estimates) within the local authority area.

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED OUT

11.8.2 The resources and receptors presented in Table 11-9 are proposed to be scoped out. The justification is provided in the proceeding paragraphs.

Table 11-9 Resources and receptors proposed to be scoped out

Resources and receptors proposed to be scoped out	Core Zone	transfer and final effluent zone	Waterbeach Transfers Zone
Requirement for land from residential properties and displacement of local residents	Out	Out	Out
Requirement for buildings and land used by community facilities	Out	Out	Out
Operational employment and training	Out	Out	Out
Demand for local accommodation and public services due to the permanent workforce.	In	In	Out
Changes to crime levels, such as from theft and disturbance, to areas where there is proposed to be construction activity	Out	Out	Out

Requirement for land from residential properties and displacement of local residents

- 11.8.3 The Proposed Development does not require the acquisition of residential properties and there would be no displacement of local residents. Therefore, these will not be considered further within the ES.

Requirement for Acquisition of buildings and land used by community facilities

- 11.8.4 The Proposed Development does not require land from community facilities. Therefore, these will not be considered further within the ES.

Operational employment and training

- 11.8.5 The Proposed Development is intended to replace the existing Cambridge Waste Water Treatment Plant. Given that the proposed WWTP would operate at a similar capacity and given the proximity of the existing site, it is not considered likely that there will be a notable change in operational employment. Therefore, effects related to operational employment will not be considered further.

Demand for local accommodation and public services due to a permanent workforce.

- 11.8.6 Given the large size of local and regional labour markets and housing markets, it is assumed that most additional jobs during the Operational Phase will be filled by people living within commuting distance. There is unlikely to be a significant increase in demand for accommodation and public services due to temporary workers or a permanent workforce. Therefore, this will not be considered further.

Changes to crime levels at the Proposed Development

- 11.8.7 It is assumed that site security arrangements for the Proposed Development will be in line with the requirements set out the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided. Furthermore, appropriate levels of security (personnel / CCTV) will be implemented during the Operational Phase. Therefore, there are unlikely to be significant effects in relation to crime and these will not be considered further within the ES.

11.9 Evidence of agreements reached with consultation bodies

- 11.9.1 To date the project has carried out a series of engagement with both the community and technical stakeholders. The latest of which was the Phase Two Statutory Community Consultation which focused on informing and consulting the community. It is planned that the next series of community consultation will include up to ten interviews with affected businesses of community resources impacted by the Proposed Development to inform the community assessment.

Consultation will also be undertaken with relevant recreational users of the River Cam to understanding existing use patterns.

11.9.2 Further evidence of consultation in relation to the scope of the EIA with consultation bodies will be detailed within the EIA.

11.10 Assessment methodology

11.10.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

11.10.2 The assessment will consider both direct and indirect effects on community receptors arising as a result of the construction and operation of the Proposed Development in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, NPS for Waste Water, the NPPF and local planning policy set out in Section 11.4 above.

11.10.3 Steps to be undertaken are:

- identifying components and impacts of the Proposed Development that could have an effect on community and health receptors;
- telephone interviews with identified businesses or community resources to assist with determining the sensitivity as well as magnitude of change;
- determining the sensitivity of receptors to the Proposed Development as well as the magnitude of the change on those receptors; and
- assessing the significance of those effects, incorporating any mitigation measures included within the Proposed Development, and assessing any residual effects.

SIGNIFICANCE CRITERIA

11.10.4 The assessment focusses on those impacts that are likely to have significant effects on community receptors. Significance is determined by considering the sensitivity of the receptor, as well as the magnitude of the impact on those receptors.

11.10.5 The sensitivity of receptors is determined by their capacity to absorb proposed changes. It reflects their vulnerability to change and in some cases the availability of alternative resources of a similar nature.

11.10.6 Table 11-10 sets out the criteria that will be used to describe and assess the sensitivity of receptors.

Table 11-10: Sensitivity criteria

Sensitivity	Sensitivity criteria
High	<ul style="list-style-type: none"> • An already vulnerable receptor with very little capacity and means to absorb changes. • No alternative resources, access arrangements or opportunities are available within an easily accessible distance. • A highly or frequently accessed resource.
Medium	<ul style="list-style-type: none"> • A non-vulnerable receptor with limited capacity and means to absorb changes. • A limited range of alternative resources, access arrangements or opportunities are available within and easily accessible distance. • A moderately, or semi-frequently accessed resource.
Low	<ul style="list-style-type: none"> • A non-vulnerable receptor with sufficient capacity and means to absorb changes. • A wide range of alternative resources, access arrangements or opportunities are available within an easily accessible distance. • An infrequently accessed resource.

11.10.7 To assess the magnitude of the effect, each effect will be assessed in terms of the following indicators:

- Spatial scope – whether impacts are likely to be felt within the Study Area, or more widely;
- Extent – how many community resources and receptors are likely to experience impacts;
- Duration – whether the impacts would be short or long-term; and
- Reversibility – whether the impact is permanent or temporary.

11.10.8 Taking these indicators into consideration, as well as mitigation measures that can be applied, the guideline criteria described in Table 11-11 will be used to assess the magnitude of each impact.

Table 11-11: Magnitude Criteria

Magnitude	Magnitude criteria
Major	<ul style="list-style-type: none"> • A large proportion of the Community Study Area is impacted • Affects many (for e.g. over 1000) receptors • The impact is permanent or long-term (e.g. more than a year) • Requires considerable intervention to return to the baseline
Moderate	<ul style="list-style-type: none"> • A moderate proportion of the Community Study Area is impacted • Affects a moderate (for e.g. over 100) number of receptors • The duration over which the impact is experienced is medium-term (e.g. between six months and a year) • May require some intervention to return to the baseline
Minor	<ul style="list-style-type: none"> • A small proportion of the Community Study Area is impacted • Affects a small (for e.g. less than 10) number of receptors

Magnitude	Magnitude criteria
	<ul style="list-style-type: none"> The duration over which the impact is experienced is short-term (e.g. between three and six months) Baseline returns without intervention or with only limited intervention
Negligible	<ul style="list-style-type: none"> A very small proportion of the Community Study Area is impacted Impact is very short-term (e.g. less than three months) Affects a very few number of receptors Baseline remains consistent

11.10.9 The characteristics of the impacts being assessed may not fall entirely into one of the categories for sensitivity and magnitude criteria. Professional judgement and justifications will be provided for assigning sensitivity and magnitude categories to each impact.

11.10.10 Effects are evaluated by combining the assessments of magnitude and sensitivity as above to determine the effect category, as shown in Table 11-12. Effects can be beneficial or adverse and temporary or permanent. Effects that are major or moderate are considered to be significant.

Table 11-12: Community effect categories

Magnitude of impact	Sensitivity		
	Low	Medium	High
Negligible	Neutral (not significant)	Neutral (not significant)	Minor (not significant)
Low	Neutral (not significant)	Minor (not significant)	Moderate (significant)
Moderate	Minor (not significant)	Moderate (significant)	Major (significant)
Major	Moderate (Significant)	Major (significant)	Major (significant)

11.11 Approach to cumulative assessment

11.11.1 The methodology relating to the project’s approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

11.11.2 The cumulative assessment for community will consider any other proposed developments that have a significant effect on access to and the amenity of residential properties, community receptors and areas of open space and recreation. Proposed developments which have significant land requirements in relation to residential properties and businesses will also be considered.

Additionally, significant effects on nearby businesses, as well as significant changes to non-motorised user routes within the Community LIA are considered to be relevant.

- 11.11.3 The approach to identifying Proposed Development for cumulative assessment is outlined in Section 5.4 of this report. Where available, information on significant community impacts of the Proposed Development will be collated. This will be considered alongside the conclusions of the community assessment and professional judgement to assess the potential for cumulative effects arising from the Proposed Development.

11.12 Assumptions, limitations and uncertainties

- 11.12.1 The assessment of the potential for significant effects will be carried out against a benchmark of current baseline conditions within the study area and local authority. As with any dataset, these may be subject to change over time, which may influence the findings of the assessment and could lead to the assessment being subject to statistical time lag.
- 11.12.2 No formal consultation or primary research has been undertaken in the production of this chapter. However, the results of consultation will be used to inform the assessment.
- 11.12.3 Some of the economic activity data presented in the baseline is from 2019. Some sectors may have seen a large change from this as a result of the Covid-19 pandemic, for example retail, transport and entertainment. Where this baseline information influences the assessment, the consequences of potential changes to this data as a result of the Covid-19 pandemic will be identified. Additionally, community receptors and areas of open space and recreation have been identified using internet sources. However issues such as capacity or the range of services provided may be subject to some uncertainty as some facilities retain some Covid-19 pandemic measures.

12 Health

12.1 Introduction

- 12.1.1 This chapter of the EIA Scoping Report identifies the resources and receptors, referred to by the Planning Inspectorate as ‘matters’ relevant to the aspect of health. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of the EIA Scoping is to ensure the proportionate assessment appropriately focused on aspect and matters where a likely significant effect may occur.
- 12.1.2 This chapter of the EIA Scoping Report assesses the potential direct health impacts and considers the potential indirect health impacts as a result of other impacts. Other impacts include Agriculture and Soils (Chapter 6), Land Quality (Chapter 15), Air Quality (Chapter 7), Odour (Chapter 19) Landscape and Visual (Chapter 14), Noise and Vibration (Chapter 18), Traffic and Transport (Chapter 20) and Water Resources (Chapter 21).
- 12.1.3 The potential community impacts of the Proposed Development are addressed in Chapter 11: Community.
- 12.1.4 No matters within this aspect (resources and receptors) are proposed to be scoped out of further assessment, however the scope of assessment has been refined to focus on potential health and wellbeing effects from changes to the environment, changes to physical activity and active lifestyles as a result of impacts on access to areas of open space and recreation, changes in local economic conditions and the effect on livelihoods and effects on social cohesion as a result of construction activity and the Proposed Development being a new feature within the community.

12.2 Matters (resources and receptors)

- 12.2.1 For the aspect of health the matters, or resources and receptors are:
- residents living within the study area, in particular vulnerable groups;
 - community facility owners, operators and users, such as those of healthcare and educational facilities;
 - construction workers and operational employees; and
 - users of open spaces, the River Cam and sports facilities within the study area

12.3 Study Area

- 12.3.1 The main health study area will be the area shown on Figure 12-1 below and will be the study area for assessing health effects such as on community facilities and health outcomes associated with construction activities/disturbance. Relevant health receptors groups are outlined in Table

12-1 below. For each health impact, the assessment considers the potential effects on two types of populations. The first is the general population and the second is vulnerable groups within the general population. Vulnerable groups have been identified by reviewing local planning policy relevant to this assessment. This approach ensures that the health assessment takes account of the ways in which the Proposed Development may affect health inequalities. Health, by its nature very specific to individuals. However, the focus of the assessment will be on receptors as population groups.

Table 12-1:Health receptor groups

Receptor	Receptors included within the group
General population	Residents
	Employees at the waste water treatment plant
	Construction workers
	Owners, operators and users of community facilities (including healthcare services and schools)
	Visitors to, or workers in or passing, the communities, open spaces and sports facilities around the Proposed Development
Vulnerable group population	Young age – children and young people
	Old age – older people, over the age of 65
	Low income – people who unemployed, on low incomes, have regular shift work, have low job stability, or have few progression prospects (including those unable to work due to ill health)
	Poor health – people (and their carers) with existing poor health (physical and mental health), including where this is due to disabilities.
	Social disadvantage - People who may experience social isolation, discrimination or social disadvantage (including people from Black and Minority Ethnic Groups (BAME) and people who identify as being part of faith and belief groups)
	Access and geographic factors: <ul style="list-style-type: none"> ● People experiencing barriers to access to services, amenities and facilities. ● People living in areas known to exhibit high deprivation or poor economic and/or health indicators

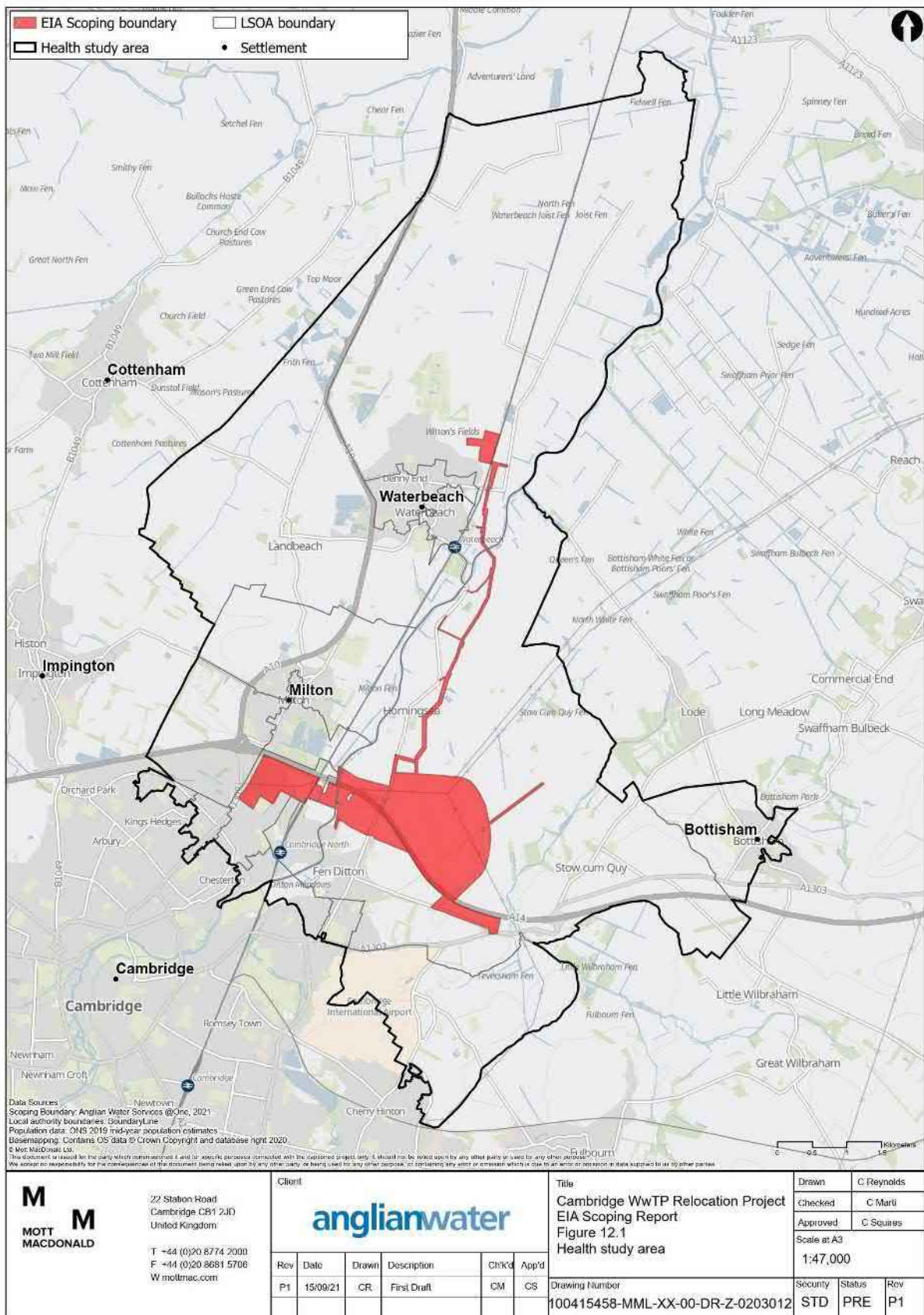


Figure 12-1: Health assessment study area

12.4 Legislation and guidance

12.4.1 Planning policy and guidance relating to health effects pertinent to the Proposed Development comprises the following:

LEGISLATION AND REGULATIONS

- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017,¹⁶⁶ states that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the Proposed Development on population and human health. The health aspect is outlined within this chapter. Population aspects are outlined in Chapter 11: Community.

PLANNING POLICY

12.4.2 National planning policy of relevance to the health assessment, and pertinent to the Proposed Development are:

12.4.3 NPS for Waste Water¹⁶⁷ with particular reference to:

- Chapter 3.10 which states that the applicant should identify any significant adverse health impacts in the ES, and identify measures to avoid, reduce or compensate for these impacts as appropriate.
- Chapter 3.10 also identifies the types of health impacts that may be considered:
 - Paragraph 3.10.2 states that the direct health impacts may include increased traffic, air pollution, dust, polluting water (toxicity and disease risks), hazardous waste and substances, noise, and increases in pests.
 - Paragraph 3.10.3 states that new waste water infrastructure may also have indirect health impacts, including access to key public services, employment, transport or use of open space and recreation and physical activity.

12.4.4 NPPF with particular reference to:

- Section 8: Promoting healthy and safe communities (paragraphs 92, 93, 95, 98, 99 and 100) These paragraphs state that policies should achieve healthy, inclusive and safe places which enable and support healthy lifestyles, especially where this would address identified local health and well-being needs and to take into account and support the delivery of local strategies to improve health, social and cultural well-being for all sections of the

166 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, available at: [The Infrastructure Planning \(Environmental Impact Assessment\) Regulations 2017 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukdsi/2017/12/01/1709011000100001/1-10)

167 National Policy Statement for Waste Water, Defra, March 2012, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69505/pb13709-waste-water-nps.pdf

community. The importance of providing access to high quality open spaces and opportunities for sport and physical activity is considered to be an important consideration for the health and well-being of communities. The NPPF acknowledges that planning decisions should protect and enhance PRoW and access, including taking opportunities to provide better facilities for users.

12.4.5 Local planning policy of relevance to the Proposed Development include:

12.4.6 South Cambridgeshire Local Plan 2018 Policy SC/2;

- Objectives of the Local Plan provide a vision for new development to ensure the supporting of healthy lifestyles and the wellbeing for everyone. Policy SC/2 states that planning applications for large-scale developments (developments of 100 or more dwellings or 500m² or more floorspace) should be accompanied by a full Health Impact Assessment.

12.4.7 South Cambridgeshire District Council Local Development Framework, Health Impact Assessment, Supplementary Planning Document (Adopted March 2011)¹⁶⁸

- This Supplementary Planning Document states that developments have the potential to impact on human health and wellbeing. This is because a wide range of social and environmental factors affect the health of local communities within South Cambridgeshire. Paragraph 2.8 states it is important to consider the effects of the wider determinants of health in development policies and plans to enhance the potential to influence health and wellbeing, and therefore health inequalities. Within the Supplementary Planning Document, it is recommended at paragraph 3.3 that screening is undertaken to review the possible health impacts, considering the size and importance of the development proposal.
- Within the Supplementary Planning Document, it states at paragraph 2.10 that for those development proposals that are already required to submit an Environmental Impact Assessment (EIA) it may make sense to integrate health impacts into the EIA rather than duplicate the assessments as the methodology is very similar and there is a large overlap in the evidence gathered and used in both assessments. The Council's preferred approach is for Health Impact Assessments to be integrated with other similar assessments to ensure the Health Impact Assessment is wide ranging and has adequately examined all the potential health impacts of a development.
- Within the Supplementary Planning Document, it is also recommended at paragraph 3.3 that screening is undertaken to review the possible health impacts, considering the size and importance of the development proposal

¹⁶⁸ South Cambridgeshire District Council, Local Development Framework, Health Impact Assessment, Supplementary Planning Document, Adopted March 2011, available at: <https://www.scambs.gov.uk/media/8950/health-impact-assessment-spd.pdf>

12.4.8 Cambridge City Council Local Plan 2018;

- with particular reference to Section Seven: Protecting and enhancing the character of Cambridge, Section Eight: Services and local facilities and Section Nine: Providing the infrastructure to support development. One of the Local Plan's strategic objectives is to '*promote a safe and healthy environment, minimising the impacts of development and ensuring the quality of life and place*'.¹⁶⁹

12.4.9 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021;

- with particular reference to Policy 18: Amenity considerations, which outlines the importance of health and wellbeing within new developments.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

12.4.10 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation or influence on the methodology of the EIA. For the aspect of health planning policy has influenced the EIA scope as follows:

- The NPS for Waste Water outlines the potential health impacts which could be included as part of the assessment. The NPS states that direct health impacts may include increased traffic, air pollution, dust, polluting water (toxicity and disease risks), hazardous waste and substances, noise, and increases in pests. Examples of indirect impacts include how new waste water infrastructure may affect access to key public services, employment, transport or use of open space and water for recreation and physical activity. These potential health impacts have been scoped into the following categories:
 - Scoped into the health assessment.
 - Considered by other technical assessments within the EIA. Only where there are residual effects that would result in health impacts will these effects be considered within the scope of the health assessment.
 - Scoped out of the health assessment.
- Appendix F to this chapter comprises the Health Impact Assessment Screening, in line with South Cambridgeshire District Council Health Impact Assessment Supplementary Planning Document. The Supplementary Planning Document encourages the use of the Healthy Urban Development Unit (HUDU) Rapid Health Impact Assessment Tool to make sure the appropriate range of health and wellbeing issues are considered. The HUDU Rapid Health Impact Assessment Tool¹⁷⁰ has been utilised to identify issues

¹⁶⁹ Cambridge Local Plan, October 2018, available at: <https://www.cambridge.gov.uk/media/6890/local-plan-2018.pdf>

¹⁷⁰ London Healthy Urban Development Unit (2019) Rapid Health Impact Assessment Tool [online]

September 2021

. Accessed

that are relevant to construction and operation activities associated with the Proposed Development.

12.5 National Policy Statement requirements

12.5.1 Table 12-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 12-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Chapter 3.10 states that the applicant should identify any significant adverse health impacts in the ES, and identify measures to avoid, reduce or compensate for these impacts as appropriate.	The scope of the Health assessment will identify any significant adverse health impacts, and identify measures to avoid, reduce or compensate these impacts as appropriate.
Chapter 3.10 identifies the types of health impacts that may be considered. Paragraph 3.10.2 states that the direct health impacts may include increased traffic, air pollution, dust, polluting water (toxicity and disease risks), hazardous waste and substances, noise, and increases in pests.	The scope of the Health assessment includes direct health impacts such as from increased traffic, air pollutions, dust and noise. During construction and operation, the potential health impacts from polluting waste (toxicity and disease risks), hazardous waste and substances and increases in pests are unlikely to be significant with appropriate implementation of mitigation and management processes.
Chapter 3.10 also identifies the types of health impacts that may be considered. Paragraph 3.10.3 states that new waste water infrastructure may also have indirect health impacts, including access to key public services, employment, transport or use of open space and recreation and physical activity.	The scope of the Health Chapter will identify any significant adverse indirect health impacts, which will include consideration of impacts on access to key public services, employment, transport or use of open space and recreation and physical activity.

GUIDANCE

12.5.2 The Design Manual for Roads and Bridges (DMRB) LA 112 provides guidance on population and human health assessments. Although this guidance is most applicable for linear transport schemes, elements of the guidance are applicable for non-transport health assessments. This document provides a framework for assessing, mitigating and reporting the effects of infrastructure development projects on population and health, introducing significance criteria to aid consistent and proportionate assessment to support the reporting of significance effects. However, professional judgement is also used to guide the assessment.

- 12.5.3 The Health in Environmental Impact Assessment: A Primer for a Proportionate Approach provides guidance and recommendations for the conducting of the Population and Health section of an EIA. It sets out five key principles from a public health perspective which should underpin the coverage of population and health within an EIA, informed by the EIA Directive, accepted principles for Health Impact Assessment, and accepted principles for Environmental Risk Assessment.
- 12.5.4 The assessment is also guided by Public Health England's 'Health Impact Assessment in spatial planning - A guide for local authority public health and planning teams' which outlines human health assessment methods for England.

12.6 Baseline conditions

- 12.6.1 The main Health Study Area will be the area shown on Figure 12.1 below and will be the study area for assessing health effects such as on community facilities and health outcomes associated with construction activities/disturbance. Data from South Cambridgeshire, East Cambridgeshire and Cambridge City local authorities has been used to provide context for the assessment as health data is not available at Census Area Unit Level which are the geographic units that make up the Health Study Area. Baseline information is provided at these respective local authority areas, but they do not form part of the study area.

Health Profile

- 12.6.2 The Joint Strategic Needs Assessment for Cambridgeshire¹⁷¹ provides an analysis of health and well-being status of local communities. According to this piece of research, overall, Cambridgeshire is a healthy place to live and one that compares generally well with national health and wellbeing determinants and outcomes. This is due to a number of factors, including:
- South Cambridgeshire having the lowest level of relative overall deprivation out of all the Cambridgeshire Districts. There are no wards within the most the most deprived wards of Cambridgeshire and 100% of wards fall within the least deprived 80% of wards in Cambridgeshire.
 - Compared to England, South Cambridgeshire has low levels of relative deprivation for overall deprivation and income deprivation affecting children or older people.
 - South Cambridgeshire has a statistically significantly lower level of household overcrowding than found on average in England and a lower level compared with Cambridgeshire.

¹⁷¹ Cambridgeshire County Council, Joint Strategic Needs Assessment Summary of Themed JSNA Reports 2017, available at: 

- Compared with England's average, South Cambridgeshire has a statistically significantly higher rate of people in employment, this rate is also higher than the county average.
- South Cambridgeshire District Council Health and Wellbeing Strategy 2020-2024¹⁷² identified a number of issues specific to South Cambridgeshire:
- Demand for health and education services will continue to increase significantly as a result of the particularly strong local housing growth and the general aging of the population.
- New communities which attract young and growing families have a significantly higher birth rate than the Cambridgeshire average.
- Approximately a quarter of adults are physically inactive, not meeting the recommended 150 minutes of moderate intensity activity each week. Over half of all adults across the district are classified as overweight or obese.
- Where poverty does exist, the percentage of children achieving a good level of development at the end of reception is significantly worse than the England average for local children with free school meal status.

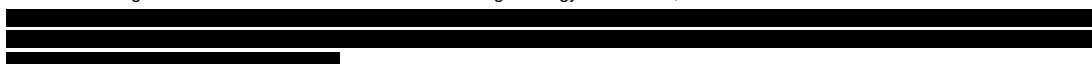
Health Data

12.6.3 Table 12-3 shows an overview of key health indicators for the population of surrounding districts. These indicators include conditions and impairments that might be affected by potential effects associated the Proposed Development (for example, changes in air pollution, noise, traffic, employment and physical activity).

Table 12-3: Public Health Baseline Data

Indicator	South Cambs	East Cambs	Cambridge City	England
Life expectancy at birth (Male), 2016-18	82.8	81.1	81.0	79.6
Life expectancy at birth (Female), 2016-18	85.7	85.2	83.6	83.2
Under 75 mortality rate: all causes (per 100,000), 2017-19	230	268	292	326
Under 75 mortality rate from all cardiovascular diseases (per 100,000), 2017-19	45	61	62	70

172 South Cambridgeshire District Council Health and Wellbeing Strategy 2020-2024, available at:



Indicator	South Cambs	East Cambs	Cambridge City	England
Under 75 mortality rate from cancer (per 100,000), 2017-19	106	112	103	129
Under 75 mortality rate from respiratory disease (per 100,000), 2017-19	19	22	28	34
All ages killed and seriously injured (KSI) rate	63.6	67.1	55	42.6
Percentage of physically active adults (over 19)	68.3	67.4	80.1	66.3
Percentage of people in employment	85.2	81.3	78.5	75.6

Source: Public Health England, Local Authority Health Profile 2019

- 12.6.4 As shown in Table 12-3, South Cambridgeshire and surrounding districts perform relatively well on key indicators. Life expectancy (both female and male) is slightly higher across all districts compared to the national average. The under 75 mortality rates (from all causes, cardiovascular diseases, cancer and respiratory diseases) is less than the England rate across all districts. The South Cambridgeshire under 75 mortality rate (from cardiovascular disease and respiratory disease) is significantly lower than the England rate and lower than all other surrounding districts. The rate of employment is better across all districts than the England average and the percentage of physically active adults (aged 19+) is higher in Cambridge compared to the percentage in England and comparator districts.
- 12.6.5 Only one indicator, as shown in Table 12-3, South Cambridgeshire and surrounding districts perform worse than national statistics. For example, the rate of killed and seriously injured on roads is worse across all districts compared to the England rate.

COMMUNITY RESOURCES

- 12.6.6 There are several community resources that have been identified within the Health Study Area. A full list is provided in Chapter 11: Community. Figure 11-3 within Chapter 11 shows the location of community resources.
- 12.6.7 Based on current information community resources located within the LIA and of particular relevance to the health assessment are Little Stars Day Nursery, Waterbeach Toddler Playgroup, Hatley Court Residential Care Home, Nuffield Road Medical Centre, Pauline Burnet House care home and Fen Ditton Primary School.

12.7 Future baseline

- 12.7.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 12.7.2 Where this presents new environmental receptors or a change to the current baseline specific to health, this is discussed further below.
- 12.7.3 For the aspect of health changes in access to services (including health, social care and educational facilities) and areas of open space and recreation, as a result of proposed developments, will be relevant to the health future baseline. The introduction of new receptors (such as a new housing development) or new resources (such as health, social care and educational facilities and areas of open space and recreation), will also be relevant. Additionally, if there are proposed schemes in close proximity to the Proposed Development which result in significant temporary and permanent changes to the local environment impacting health and wellbeing, this will be relevant to determining if elements of the health baseline are required to be altered when presenting the future baseline.

12.8 Baseline data collection

- 12.8.1 Baseline information has been obtained to describe the existing health profile and location of community resources within the study area. This has been undertaken by undertaking a desk-based assessment which involved collating publicly available information from local and utilising national data sets such as from Public Health England and Addressbase.
- 12.8.2 Additional information from a site walkover and engagement with stakeholders will be used to supplement this desk-top data collection.

12.9 Potential health impacts and mitigation

- 12.9.1 Potential significant health effects as a result of the Proposed Development are summarised below. This has been informed by the requirements of national and local policy. This includes completion of health impact screening in line with the requirements of the South Cambridgeshire District Council Local Development Framework, Health Impact Assessment, Supplementary Planning Document (see Appendix F).

CONSTRUCTION PHASE POTENTIAL IMPACTS

- 12.9.2 The Construction Phase of the Proposed Development may have the following potential impacts (without mitigation):

- Environment: the Proposed Development (all zones) is anticipated to result in temporary and permanent changes to the local environment. Potential adverse effects could result from a combination of noise, air quality, dust, odour, traffic and visual effects at a particular location, impacting the amenity of residents in local communities. This may have an effect on the health and wellbeing, including mental health.
- Environment: there is a potential risk to human health from polluting water (toxicity and disease risk), hazardous waste and substances, and increases in pests during construction (all zones).
- Lifestyle: there may be changes in opportunities for access to areas of open space and recreation, including PRow, from construction activities. This could influence the use of these places for physical activity and therefore active lifestyles across all zones.
- Access to services: due to potential disruption as a result of construction traffic, changes to travel routes and delays across all zones, there may be a change in the ability of people to access local services (for example health, social care and educational facilities).
- Economy: there is the potential for maintaining and potentially increasing local employment due to the presence of a construction workforce and procurement of local goods and services.
- Social cohesion: The presence of a construction workforce could be a source of concern for the local communities in close proximity to the proposed construction activities. The impact will vary depending on the location of the community and proposed construction activity.

POTENTIAL IMPACTS PER ZONE

12.9.3 The potential impacts presented in Table 12-4 are divided by zone.

Table 12-4: Potential construction impacts (all zones)

Potential impact
Temporary changes to health and wellbeing due to an increase in noise, air quality, dust, odour, traffic and visual effects
Temporary risk to human health from potential water polluting water, hazardous waste and substances, and increases in pests during construction.
Temporary changes in access to areas of open space and recreation, including PRow, from construction activities and the ability for local communities to undertake physical activity and live active lifestyles
Temporary changes in access to local services (for example health, social care and educational facilities), as a result of construction activities and changes to travel routes and delays.
Potential temporary increase in local employment due to the presence of a construction workforce and procurement of local goods and services.
Temporary concern for local communities in close proximity to the proposed development with regard to the presences of a construction workforce affecting social cohesion.

CONSTRUCTION PHASE MITIGATION

12.9.4 Good practice measure to mitigate these potential impacts should include:

- (1) traffic management systems and diversion routes place to maintain access to community and human health receptors;
- (2) consultation about any temporary changes in traffic and access undertaken with affected residents, businesses, community facilities and users of open space, recreational areas and PRoW; and
- (3) site specific measures including a nominated Community Liaison Officer (CLO) should be appointed by the contractor as part of the CEMP to who will be responsible for engaging with local communities and providing regular updates on the construction programme.

12.9.5 The relevant mitigation to minimise noise and vibration levels, air quality, water quality, and visual effects on community and human health receptors are outlined in Agriculture and Soils (Chapter 6), Land Quality (Chapter 15), Air Quality (Chapter 7), Odour (Chapter 19) Landscape and Visual (Chapter 14), Noise and Vibration (Chapter 18), Traffic and Transport (Chapter 20) and Water and Resources (Chapter 21).

OPERATION PHASE POTENTIAL IMPACTS

12.9.6 The Operational Phase of the Proposed Development may have the following potential impacts:

- the Proposed Development is anticipated to result in temporary and permanent changes to the local environment. Potential adverse effects could result from a combination of noise, air quality, odour, traffic and visual impacts at a particular location, impacting the amenity of communities, including users of open and recreational spaces. This may have an effect on the health and wellbeing, including mental health.
- there is a potential risk to human health from polluting water (toxicity and disease risk) such as from discharges to the River Cam, from hazardous waste and substances, and presence of pests during operation of the proposed WWTP.
- the pathways within the landscape proposals as part of the Proposed Development, and the associated improved connectivity to the PRoW network, may provide new and or different opportunities for exercise and access to outdoor spaces. This may have associated beneficial health and wellbeing effects, including mental health.
- the Proposed Development will be a new feature within the community. This may change how local people feel about their community, in particular their sense of place and wellbeing, including mental health. The response of the community may be both positive and negative.

POTENTIAL IMPACTS PER ZONE

12.9.7 The potential impacts (unmitigated) presented in Table 12-5 are divided by zone.

Table 12-5: Potential operational impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Temporary and permanent changes to the local environment including increased noise, reduced air quality, increased transport and visual effects, potentially impacting the health and wellbeing of local communities and users of open and recreational space.	✓	✓	✗
Potential risk to human health from polluting water, hazardous waste and substances, and increases in pests during operation.	✓	✓	✗
Changes to how local people feel about their community, in particular their sense of place and wellbeing, including mental health.	✓	✓	✓
Improvements and/or new provision of areas of open space and recreation, including PRoW, and the ability for local communities to undertake physical activity and live active lifestyles.	✓	✗	✗

OPERATIONAL PHASE MITIGATION

- 12.9.8 The relevant mitigation to minimise noise and vibration levels, air quality and visual effects on community and human health receptors during operation are outlined in Agriculture and Soils (Chapter 6), Land Quality (Chapter 15), Air Quality (Chapter 7), Odour (Chapter 19) Landscape and Visual (Chapter 14), Noise and Vibration (Chapter 18), Traffic and Transport (Chapter 20) and Water Resources (Chapter 21).
- 12.9.9 In addition the Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by permit.
- 12.9.10 The written system may cover general management of the proposed WWTP, equipment maintenance, contingency plans, accident prevention and emergency response (including pollution response) as well as defining monitoring activities. The EMS would also set out an organisational structure with environmental management roles and responsibilities.
- 12.9.11 The documentation in relation to the Environmental Permit would be prepared prior to operation by the operator.

12.9.12 Operational environmental control and protection measures (including environmental monitoring requirements) will be identified through the EIA process. These measures will be recorded within the mitigation schedule as part of the DCO application and the eventual operational environmental management plan would be developed to be consistent with the mitigation schedule. Compliance with these measures would be secured consistent with the advice set out in paragraph 3.7.3 of the National Policy Statement for Waste Water.

12.10 Proposed scope of the assessment

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED IN

12.10.1 Based on the potential health impacts described above, it is proposed that the following matters be scoped into the assessment:

- Environment: the Proposed Development is anticipated to result in temporary and permanent changes to the local environment during construction and operation. Potential adverse effects could result from a combination of noise, air quality, dust, odour, traffic and visual effects at a particular location, impacting the amenity of communities, including users of open and recreational spaces. This may have an effect on the health and wellbeing, including mental health.
- Environment: during construction and operation, the potential health impacts from polluting water, hazardous waste hazardous increases in pests are unlikely to be significant with appropriate implementation of mitigation and management processes. These aspects won't be reported within the assessment method, but the mitigation and management processes and procedures will be outlined.
- Lifestyle: there may be changes in opportunities for access to areas of open space and recreation, including PRow, from construction activities. This could influence the use of these places for physical activity and therefore active lifestyles.
- Access to services: due to potential disruption to access services from changes to travel routes and delays, there may be a change in ability for people to access services, including health, social care and educational facilities during construction.
- Economy: during construction there is the potential for changes in local economic conditions due to the presence of a construction workforce and procurement of local goods and services.
- Social cohesion: the presence of a construction workforce could be a source of concern for the local communities in close proximity to the proposed construction activities. The impact will vary depending on the location of the community and proposed construction activity.

- Social cohesion: the Proposed Development will be a new feature within the community. This may change how local people feel about their community, in particular their sense of place and wellbeing, including mental health.

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED OUT

12.10.2 Based on the potential health impacts described above, it is proposed that the following aspects will be considered by the other technical assessments specified below, and will only be considered further within the health assessment if residual effects relevant to human health are identified:

- Polluting water (toxicity and disease risks): this will be assessed as part of the Chapter 21: Water Resources which considers impacts on water quality. This aspect will only be included as part of the health assessment if residual risks to human health are identified during construction and operation.
- Hazardous waste and substances: this will be assessed as part of the Chapter 17: Materials, Resources and Waste which considers impacts from hazardous waste and substances. This aspect will only be included as part of the health assessment if residual risks to human health are identified during construction and operation.
- Air quality, dust, noise, traffic: these issues will be assessed as part of Chapter 7, Chapter 18 and Chapter 20 respectively. The findings from these assessments will not be duplicated in the health chapter. The outputs from the assessments in these chapters also provide inputs to the health assessment.

12.10.3 The matters presented in Table 12-6 are proposed to be scoped out. The justification is provided in the subsequent paragraphs.

Table 12-6: Matters proposed to be scoped out

Resources or receptors to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone
Potential health impacts from increases in pests during construction and operation	Out	Out	Out
Changes to access to services during operation	Out	Out	Out
Operational employment	Out	Out	Out
Demand for local accommodation and public services due to temporary workers or a permanent workforce during construction and operation.	Out	Out	Out
Changes to crime levels at the Proposed Development	Out	Out	Out

- 12.10.4 Environment: during construction and operation, the potential health impacts from increases in pests are unlikely to be significant with appropriate implementation of mitigation and management processes. This aspect will not be assessed, but the applicable mitigation and management processes and procedures will be reported. In relation to construction, including decommissioning of the existing Cambridge WWTP and exiting Waterbeach WRC inclusion of pest control measures will be required within the CEMP would be required and include management protocols if pests are identified on site. This should include implementing best practice construction methods (such as having a tidy site and restricting what is stored on site).
- 12.10.5 In operation the Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by permit. This is expected to include control of pests.
- 12.10.6 Access to services: during operation, any changes in road layout or volumes of traffic associated with the operation of the scheme / project are unlikely to result in changes to travel routes or delays that would affect the ability of people to access services, including health, social care and educational facilities during operation.
- 12.10.7 Economy: during operation, there is unlikely to be a significant increase in the operational workforce.
- 12.10.8 Social inclusion: during construction, no specific construction worker accommodation is being provided as part Proposed Development. Although affordable housing within the area is limited, it is unlikely that the Proposed Development will create sizable demand for accommodation during construction. It is also anticipated that construction workers will remain registered with their existing healthcare centres and that construction site occupational health services will deal with the vast majority of construction-related incidences, therefore avoiding placing additional pressure on local healthcare services.
- 12.10.9 Social inclusion: during construction and operation, it is not anticipated that crime and personal security are likely to be affected as a result of the Proposed Development. As stated in within section 11.8.7 of Chapter 11: Community, it is assumed that site security arrangements for the Proposed Development will be in line with the requirements set out the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided.

12.11 Evidence of agreements reached with consultation bodies

- 12.11.1 The Environmental Health Officers for Cambridge County Council were engaged on the EIA scopes for Air Quality and Odour, as part of this engagement the linkages that these two topics have to the scope of the Health assessment was discussed. Further consultation will be undertaken with public health officers at relevant local authorities and Public Health England's Nationally Significant Infrastructure Project Team.
- 12.11.2 Further evidence of consultation in relation to the scope of the EIA with consultation bodies will be detailed within the EIA.

12.12 Assessment Methodology

- 12.12.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.
- 12.12.2 There is no formal guidance on considering health within the context of EIA. The institute of Environmental Management and Assessment (IEMA) have published 'Health in Environmental Impact Assessment; A Primer for a Proportionate Approach'¹⁷³. This document provides a high-level introduction to considering public health in EIA. Regard has also been given to the South Cambridgeshire Supplementary Planning Document for Health Impact Assessment.
- 12.12.3 Given the wide range of issues that affect physical and mental health, a source-pathway-receptor model will be applied to link the activities associated with the Proposed Development with likely health effects. This model requires all three aspects to be in place for a health effect to be considered to be plausible (i.e., there is a clear link between the source – the project – and the receptors). In addition, where a linkage does exist there are sometimes controls in place that make it improbable that harm to human health is likely to occur. For example, where legislation or risk management processes are in place.
- 12.12.4 Therefore, a potential health effect needs to be both plausible and probable to give rise to a 'likely significant effect'. Establishing credible source-pathway-receptor linkages will determine the relationship between project activities and potential health effects on the population and will therefore help to establish the scope of the assessment.

¹⁷³ Cave, B. et al. (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach. Ben Cave Associates Ltd., IEMA and the Faculty of Public Health. [online]. Available at:



12.12.5 Table 12-7 provides an example of the source-pathway-receptor model.

Table 12-7: Example of Source-Pathway-Receptor Model for Health Effects

Source	Pathway	Receptor	Plausible Health Impact	Explanation
No	Yes	Yes	No	There is not a clear source from where a potential health impact could originate.
Yes	No	Yes	No	The source of a potential health impact lacks a means of transmission to a population.
Yes	Yes	No	No	Receptors that would be a sensitive or vulnerable to the health impact are not present.
Yes	Yes	Yes	Yes	Identifying a source, pathway and receptor does not mean a health impact is a likely significant effect; health impacts should be assessed (describing what effect will occur and its likelihood) and likely health effects are then evaluated for significance.

Source: Institute of Environmental Management and Assessment. 2017.

12.12.6 A number of other EIA topics are relevant to the determinants of health and will therefore provide inputs to the assessment of health effects. These are:

- Air quality
- Odour
- Landscape and visual
- Traffic and transport
- Noise and vibration

12.12.7 The assessment of each health pathway will draw on quantitative and qualitative analysis and stakeholder engagement. The assessment will be based on professional judgements with appropriate reference to supporting evidence.

SIGNIFICANCE CRITERIA

12.12.8 The following framework comprises three steps to determine whether effects are considered to be ‘likely significant effects’ in EIA terms.

12.12.9 The evaluation of whether effects of the Proposed Development on human health will be considered to be significant is a professional judgement. The following three steps will be undertaken:

- The health effects will be described
- The evidence will be presented to assess health effects
- The effects on health will be categorised on a scale of major, moderate, minor and negligible over time, and from this it is determined whether the effect on human health is significant or not.

12.12.10 Each of these steps is described in further detail below:

Step 1: Describing the potential effect on health

12.12.11 For each of the potential health effects, the following factors will be considered:

- Source-pathway-receptor: The features of the project that lead to a change, the pathway of that change and the receptor experiencing the change. The plausibility and probability of that change resulting in a significant health effect.
- Direction: whether the impact is positive, negative or neutral
- Relationship: whether the impact is direct, indirect, affecting physical and/or mental health and wellbeing
- Severity: the type of health outcome affected, the type of affect, relative to the baseline conditions
- Exposure: the degree of exposure, variation in exposure based on their proximity to the source and existence of existing regularly standards
- Extent: the size of the population likely to experience the health effect or the extent of usage of a particular facility or service
- Frequency, duration and permanence: the time period over which the effect will occur, how often the population will be affected, and the extent to which the health effect is reversible
- Health status: the existing health status and deprivation of the population, including conditions that would make the population more susceptible to the change
- Resilience: the ability to ability to absorb the impact, as influenced by their adaptability, outlook, life stage and ability to access alternatives
- Vulnerable groups and inequalities: considering the general population and the vulnerable groups listed above and how these groups may experience effects differently.

Step 2: Assess the potential effect on health

12.12.12 This step involving considering the health factors above and providing the evidence and justification for the professional judgement to categorise health effects. Key considerations that will be used in this step are:

- Strength of evidence: the weight of scientific literature supporting the presence and understanding of health effects.
- Baseline: the extent of change from the baseline for those receptors that are affected, in terms of the severity, extent, frequency, duration and permanence of the change
- Regulation and policy: the applicable policy context and regulatory standards and whether any of these are compromised by the anticipated health effects.
- Sensitivity: the sensitivity of the affected population groups. In some cases, the effect on the general population may be different to the effect on vulnerable groups.
- Consultation: the feedback received during consultation exercises will be taken into account to identify concerns or opportunities expressed about potential health effects

Step 3: Categorising the effect on health

12.12.13 Table 12-8 provides examples of the typical characteristics relevant to health effects in each category. It is important to note that a health effect does not need to meet all of the characteristics to be assigned to a specific category. The assessment will provide the justification as to why a health effect has been assessed to be in a particular category; this will principally be based on the majority of shared characteristics, the interrelationships of characteristics and applying professional judgement.

Table 12-8: Categorising health effects

Category	Typical characteristics relevant to health effects in this category
Major (positive or negative)	<ul style="list-style-type: none"> ● A strong evidence base that risk factors for a permanent, progressive or irreversible health condition would be affected (positively or negatively) ● Permanent or irreversible exposure over a long timescale ● Substantial change (positive or negative) from the baseline position ● A change in whether regulatory standards are met or exceeded ● Highly deprived communities affected ● A large widening or narrowing of inequalities ● Most people in a community affected (positively or negatively) ● A strong and consistent theme of consultation by both health stakeholders and the public on the issue (positive (support) or negative (concern or uncertainty))

Category	Typical characteristics relevant to health effects in this category
Moderate (positive or negative)	<ul style="list-style-type: none"> • A strong evidence base that risk factors for a non-permanent, reversible, non-progressive health condition would be affected (positively or negatively) • Occasional or reversible exposure over a medium timescale • A small change (positive or negative) from the baseline position • A community with average deprivation affected • A small widening or narrowing of inequalities • Many people in a community affected (positively or negatively) • A minority theme of consultation or with inconsistent views between health stakeholders and the public on the issue (positive (support) or negative (concern or uncertainty))
Minor (positive or negative)	<ul style="list-style-type: none"> • A strong evidence base that risk factors for transient, temporary symptoms (e.g. irritation, nausea or headache) would be affected (positively or negatively) • Infrequent or reversible exposure over a short timescale • A slight change (positive or negative) from the baseline position with evidence available to demonstrate change • A community with low deprivation affected • A slight widening or narrowing of inequalities with evidence available to demonstrate change • Few people in a community affected (positively or negatively) • A few individual consultation responses on the issues, but not a theme of consultation for health stakeholders or the public on the issue (positive (support) or negative (concern or uncertainty))
Negligible (positive or negative)	<ul style="list-style-type: none"> • No discernible change in health or wellbeing within normal variations • No discernible change in exposure levels • No discernible change (positive or negative) from baseline positions • No discernible widening or narrowing of inequalities • No links to a recognised health priority • No consultation responses on the issues

12.13 Approach to cumulative assessment

12.13.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

12.13.2 The cumulative assessment for health will consider any other proposed developments that have potential to effect access to services (including health,

social care and education facilities), result in temporary and permanent changes to the local environmental effect health and wellbeing, change local economic conditions or effect social cohesion.

- 12.13.3 Where available, information on significant health impacts of cumulative Proposed Developments will be collated, specifically available HIAs completed for other proposed developments. This will be considered alongside the conclusions of the health assessment and professional judgement to assess the potential for cumulative effects arising from the Proposed Development.

12.14 Assumptions limitations and uncertainties

- 12.14.1 This assessment will be carried out using professional judgement and based on available information.
- 12.14.2 The assessment will be carried out against current population and health baseline conditions prevailing around the application site. As with any dataset, these may be subject to change over time, which may influence the findings of the assessment.
- 12.14.3 In considering health effects associated with air quality and noise, the outputs from these topic assessments will be used. These considered appropriate to assess changes to amenity affecting local communities. No primary assessment on these health determinants is proposed, instead the health assessment will be based on the findings of the air quality and noise assessment.

13 Historic Environment

13.1 Introduction

13.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorate as ‘matters’ relevant to the aspect of Historic Environment. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.

13.1.2 One matter (resource/receptor) within this aspect is proposed to be scoped out of further assessment with justification provided based on, for example, the absence of a pathway from impact to the receptor, through consultation with the relevant statutory consultee or sufficient confidence in impact avoidance methods.

13.2 Matters (resources and receptors)

13.2.1 For the aspect of Historic Environment the matters, or resources and receptors, are:

- Designated heritage assets, such as listed buildings, scheduled monuments, registered parks and gardens and conservation areas;
- Non-Designated heritage assets, such as locally listed buildings and archaeological remains recorded by the Cambridgeshire Historic Environment Record (CHER); and;
- Historic landscapes and historic landscape assets, these can be designated or non-designated.

13.3 Study Area

1.1.3 The study area is defined for each resource of receptor as follows and is shown on Figure 13-1 and Table 13-1.

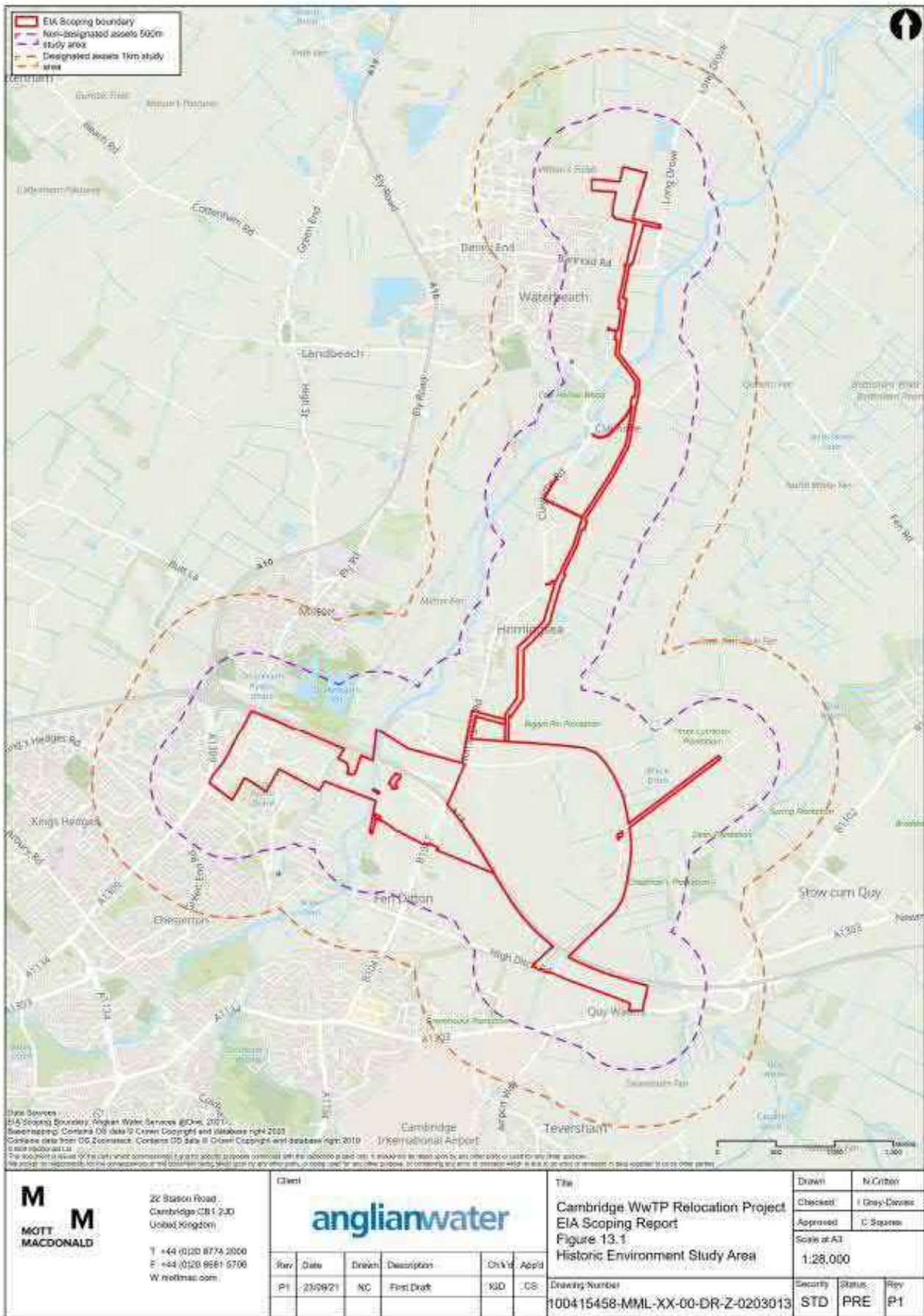


Figure 13-1: Historic Environment Study Area

Table 13-1: Study Area

Resource or receptor	Study area
Designated Heritage Assets	Within the EIA Scoping boundary and within 1km of the EIA Scoping boundary. Those identified by a 10km Zone of Theoretical Visibility (ZTV).
Non-Designated Heritage Assets	Within the EIA Scoping boundary and within 500m of the EIA Scoping boundary.
Historic Landscapes	Designated landscapes and historic landscape assets within the EIA Scoping boundary and within 1km. Those identified by a 10km Zone of Theoretical Visibility (ZTV).

13.4 Legislation, planning policy context and guidance

13.4.1 Legislation, planning policy and guidance relating to the Historic Environment and pertinent to the Proposed Development comprises the following.

LEGISLATION

Planning (Listed Building and Conservation Areas) Act (1990)

13.4.2 This Act sets out the protection given to buildings of special architectural or historic interest through listing. It also sets out the process for designation of conservation areas, which are recognised as areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.

Ancient Monuments and Archaeological Areas Act (1979)

13.4.3 This Act sets out the legal protection given to archaeological remains in England, Scotland and Wales. The Act outlines the process for scheduling and the protections afforded scheduled monuments and other ancient monuments.

PLANNING POLICY

13.4.4 National planning policy of relevance to the Historic Environment and pertinent to the Proposed Development are:

13.4.5 NPS for Waste water with particular reference to;

- Paragraph 4.10.7 which requires the applicant to describe the significance of heritage assets affected by the proposed development, and the contribution of their setting to that significance, to an appropriate level of detail. The policy also states the Historic Environment Record should be consulted.
- Paragraph 4.10.8 which states that an appropriate desk-based assessment and, if required, field evaluation should be carried out by the applicant to assess heritage assets with an archaeological interest.

- Paragraph 4.10.9 which requires the documents submitted by the applicant to clearly state the extent of the impact of the proposed development on the significance of any heritage assets.
- Paragraph 4.10.18 which requires applicants to design the proposal to avoid unnecessary damage but also ensure that any unavoidable losses are recorded.
- Paragraph 4.10.19 which states that the ability to record evidence of the asset should not be a factor in deciding whether consent should be given.
- Paragraph 4.10.21 which requires procedures to be in place for the identification and treatment of as yet undiscovered heritage assets with archaeological interest where there is a high probability for these to be discovered during construction.

13.4.6 NPPF with particular reference to;

- Section 16: Conserving and enhancing the historic environment, especially paragraphs 194, 199, 200, 202, 203, 205 and 207, as follows:
 - 194. Which requires the applicant to describe the significance of heritage assets affected by the proposed development, and the contribution of their setting to that significance, to an appropriate level of detail. The policy also states the Historic Environment Record should be consulted. It also requires an appropriate desk-based assessment and, if required, field evaluation should be carried out by the applicant to assess heritage assets with an archaeological interest.
 - 199. Which gives great weight to the conservation of assets, especially designated assets, regardless of the level of harm to its significance from the proposed development.
 - 200. Which states that any harm to designated heritage assets requires clear and convincing justification. It also states harm to grade II listed buildings, or grade II registered parks or gardens, should be exceptional and to assets of the highest significance (e.g. grade I or II* listed buildings and parks and gardens) should be wholly exceptional.
 - 202. Which states that proposals leading to less than substantial harm should be weighed against public benefits.
 - 203. Which states that the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application and weighed appropriately.
 - 205. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost and to make this evidence publicly accessible. But that the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

- 207. Which states that not all elements of a Conservation Area will necessarily contribute to its significance. Loss of an element which makes a positive contribution to the significance of the Conservation Area should be treated either as substantial harm under paragraph 201 or less than substantial harm under paragraph 202, as appropriate.

13.4.7 Local planning policy of relevance to the Proposed Development includes:

13.4.8 South Cambridgeshire District Council Local Plan 2018 with particular reference to;

- Policy NH/14: Heritage Assets. Development proposals will be supported when:
 - They sustain and enhance the special character and distinctiveness of the district's historic environment including its villages and countryside and its building traditions and details;
 - They create new high quality environments with a strong sense of place by responding to local heritage character including in innovatory ways.
 - Development proposals will be supported when they sustain and enhance the significance of heritage assets, including their settings, as appropriate to their significance and in accordance with the National Planning Policy Framework, particularly:
 - Designated heritage assets, i.e. listed buildings, conservation areas, scheduled monuments, registered parks and gardens;
 - Non-designated heritage assets including those identified in conservation area appraisals, through the development process and through further supplementary planning documents;
 - The wider historic landscape of South Cambridgeshire including landscape and settlement patterns;
 - Designed and other landscapes including historic parks and gardens, churchyards, village greens and public parks;
 - Historic places;
 - Archaeological remains of all periods from the earliest human habitation to modern times.

13.4.9 Cambridge City Council Local Plan 2018 with particular reference to;

- Policy 61: Conservation and enhancement of Cambridge's historic environment, which promotes the preservation and enhancement of heritage assets. This includes promoting preservation of assets, designing developments to an appropriate scale, form, height, massing, alignment and detailed design and demonstrating an understanding of significance of assets within applications. It also requires clear justification for any works that would lead to harm or substantial harm to a heritage asset.

- Policy 62: Local heritage assets which states that the Council will actively seek the retention of local heritage assets, especially as detailed on the local list. It states proposals will be permitted where they retain the significance, appearance, character or setting of a local heritage asset. Where an application for any works would lead to harm or substantial harm to a non-designated heritage asset, a balanced judgement will be made having regard to the scale of any harm or loss and the significance of the heritage asset.
- Appendix G: Local heritage assets criteria and list. This sets out the criteria against which local heritage assets are assessed for the local list, as described in policy 62. A local heritage asset is one that is not already statutorily listed but is of significant interest within the context of Cambridge. Criteria for inclusion on the local list include; age and integrity, architectural quality and style, architect, innovation, group value, landmark value, historic interest and designed landscapes.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

13.4.10 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of Historic Environment planning policy has influenced the EIA scope as follows:

- Methodology – the NPS requires adequate desk-based and field evaluation for archaeological assets. This has been incorporated into the proposed scope for EIA.
- Methodology - The NPS requires a plan for the treatment of unknown archaeological remains where there is high potential for these. This will be incorporated into the archaeological investigation plan to be agreed with Cambridgeshire Historic Environment Team (CHET) (post DCO submission) and within the CEMP.
- Mitigation – The NPS, NPPF and local planning policy require the scheme to be designed to minimise change in the setting of heritage assets. Consultation with the design team and landscape team is ongoing to reduce/avoid impact to heritage assets;
- Sensitivity of historic and designed landscapes – the South Cambridgeshire District Local Plan specifically mentions historic landscapes and designed landscapes as sensitive to change. This has been accounted for through the scope, which identifies non-designated and designated landscape features;
- Sensitivity of non-designated heritage assets – local planning specifically draws out the importance of local heritage assets, such as locally listed buildings. This will be considered when assessing their sensitivity to change;
- Methodology - the NPPF and NPS require the significance of heritage assets to be understood and explained before any impact is described. This methodology is proposed within the scope for Historic Environment; and

- Methodology – the NPPF, NPS and Cambridge City Council Local Plan require the setting/context of heritage assets, and the contribution of this to significance, to be understood and described. This methodology is proposed within the scope for Historic Environment.

13.5 National Policy Statement requirements

13.5.1 Table 13-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 13-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS
Paragraph 4.10.7 To describe the significance of heritage assets in a proportional way and including contribution by setting	The significance of all assets within the study area will be described. A setting assessment will be undertaken for all relevant assets. This will be more detailed for those assets most likely to be impacted.
Paragraph 4.10.8 To carry out desk-based research and field evaluation of archaeological assets	Initial desk-based research has already been undertaken and further research is ongoing. A programme of evaluation, initially including geophysical survey and trial trenching, is being undertaken and has been agreed with key stakeholders.
Paragraph 4.10.9 To ensure the extent of impact on the significance of heritage assets can be understood from documents	Documents will be clear and proportional; they will use accessible language and follow all relevant guidance.
Paragraph 4.10.18 To ensure the design avoids unnecessary damage to assets and any unavoidable losses are recorded	Inputs have been provided into the emerging scheme design, so that where possible/practicable impacts to heritage assets, can be avoided.
Paragraph 4.10.21 To implement procedures for identification and treatment of as yet undiscovered heritage assets with archaeological interest	A programme of archaeological evaluation is being undertaken to establish the presence/absence of archaeological remains within the areas of ground disturbance. Where archaeological remains are identified and mitigation through avoidance is not possible a programme of archaeological investigations will be undertaken, in accordance with the requirements of the Cambridgeshire Historic Environment Team.

GUIDANCE

13.5.2 The following relevant guidance will be followed for this EIA:

- Chartered Institute for Archaeologists (CIfA) for Historic Desk Based Assessment¹⁷⁴;
- Conservation Principles, Policies and Guidance¹⁷⁵;
- Historic Environment Good Practice Advice in Planning Note 2: managing significance in decision making¹⁷⁶;
- Historic Environment Good Practice Advice in Planning Note 3: the setting of heritage assets¹⁷⁷; and
- Statements of Heritage Significance: Analysing Significance in Heritage Assets¹⁷⁸.

13.6 Baseline Conditions

13.6.1 The baseline conditions for the Historic Environment are described for the three zones within the EIA Scoping boundary as set out below.

13.6.2 This information was gathered from the following sources:

- The National Heritage List for England (NHLE);
- The Cambridgeshire Historic Environment Record (CHER);
- Conservation Area information available from South Cambridgeshire District Council and Cambridge City Council;
- Targeted geophysical survey and
- Available online historic documents and cartographic sources.

BASELINE RELEVANT TO ALL THREE ZONES

Archaeological and Historical Development Overview

13.6.3 There is evidence of prehistoric inhabitation within the area. Bronze Age and Neolithic flints have been uncovered during fieldwalking of the area within the EIA Scoping boundary. Cropmarks adjacent to Horningsea Road are also indicative of prehistoric settlement. There is evidence of Iron Age activity within Horningsea.

13.6.4 There is considerable Roman activity within the EIA Scoping boundary and the broader study area. The River Cam is known to have been navigated since at least Roman times therefore encouraging development and commercial activity. There are extensive remains of Roman pottery kilns at Horningsea and Car

174 Chartered Institute for Archaeologists, 2017. Standards and Guidance for Historic Desk-based Assessment. Available at: [\[redacted\].df](#)

175 English Heritage, 2008. Conservation Principles, Policies and Guidance. Available at: <http://modgov.southnorthants.gov.uk/ieDecisionDetails.aspx?id=923>

176 Historic England, 2015. Good Practice Advice in Planning Note 2 (GPA2) – managing significance in decision taking in the historic environment. Available at: [\[redacted\]](#)

177 Historic England, 2017. Good Practice Advice in Planning Note 3 (GPA3) – the setting of heritage assets. Available at: [\[redacted\]](#)

178 Historic England, 2019. Statements of Heritage Significance: Analysing Significance in Heritage Assets. Available at: [\[redacted\]](#)

Dyke is an 85-mile (137 km) long ditch dating from the Roman period. A section of the dyke connects to the River Cam just to the south of Waterbeach. Within the Core Zone are extensive cropmarks dating to the Roman period, which may represent a villa. Numerous roman findspots have been identified throughout the area within the EIA Scoping boundary.

- 13.6.5 Fleam Dyke, which runs along the northern side of High Ditch Road, dates to the early medieval period. Human inhumations have been found associated with it within the EIA Scoping boundary. Other sections of the monument, where the bank and ditch are more pronounced, are scheduled. There is evidence of settlements in the study area emerging from the 10th century, especially at Fen Ditton.
- 13.6.6 The settlements of Fen Ditton, Horningsea, Stow-cum-Quy, Waterbeach all emerged in the early medieval to medieval periods. The villages have all remained as rural agricultural communities, developing gradually into the post-medieval period. The rest of the study area has largely remained as agricultural land, reclaimed from the Fens, evidenced by the presence of ridge and furrow, throughout the medieval, post-medieval and modern periods. This agricultural land would have served the nearby settlements and grand houses. For example, in the Core Zone agricultural land likely served Biggin Abbey. Cambridge expanded gradually before expanding more rapidly in the modern period with a number of large estates. Post-medieval and modern transport infrastructure has also influenced the area, including railways and the A14.

Historic Landscape

- 13.6.7 There are no designated historic landscapes within the 1km study area for designated heritage assets. However, the grade II* registered park and garden of Anglesey Abbey (NHLE: 1000611) may fall within the ZTV (2.5km to the north-west of the EIA Scoping boundary).
- 13.6.8 In addition, 900m east of the EIA Scoping boundary is the non-designated parkland associated with the grade II* listed building Quy Hall (NHLE: 1331325), this historic landscape asset may fall within the ZTV.
- 13.6.9 A historic landscape characterisation has not been undertaken for Cambridgeshire. However, there are some broad historic landscape areas that are definable, within the EIA Scoping boundary.
- 13.6.10 The Proposed Development is located in a rural landscape that largely owes its character to late post medieval enclosure and modern agricultural practices. However, character elements of earlier landscapes do survive. The Core Zone is located on a low chalkland hill called 'Honey Hill', which is situated at the point where the River Cam Valley widens out into the Cambridgeshire Fenlands.

- 13.6.11 The fens were formerly a wetland landscape, of interconnecting channels/creeks and meres, with historic settlement focused on areas of relative high ground called fen islands. The village of Horningsea and the settlement at Eye Hall are both situated on such islands with ‘Stow-cum-Quy Fen’ and ‘Queens Fen’ situated to the east and northeast, which form part of the wider ‘Bottisham Fen’¹⁷⁹. The Waterbeach pipeline route runs south to north along the eastern edge of these islands. An area which would have been part of the settlements open field system during the medieval period. This area now comprises of modern large prairie type fields but traces of medieval ridge and furrow (cultivation features) are visible as crop marks.
- 13.6.12 Up to the early post medieval period, the fens only saw limited attempts to drain and manage the land to enable agricultural activity. However, from the early 17th century large scale attempts were made to drain the fens, with parts of ‘Stow-cum-Quy Fen’ and ‘Queens Fen’, being allocated under an Act of parliament to ‘the Adventurers’ in 1652¹⁸⁰. The results of this means that very little trace of the earlier historic fenland landscape survives. The route of the Waterbeach pipeline potentially crosses over areas of former fenland, either side of the River Cam crossing, near Clayhithe. Just to the north of this area is Bottisham Lode a formerly navigable channel that connects the historic settlements of Bottisham, Lode and Stow-cum-Quy to the River Cam. The Lode dates to at least the Roman period and enable the transport of goods across the fens and along the Cam.

Assets within the study area

- 13.6.13 Designated and non-designated heritage assets within the three zones within the EIA Scoping boundary are given below. In addition to assets located within the EIA Scoping boundary, the following assets have been identified within the study area as defined above in Section 13.3.
- 13.6.14 Within the 1km study area for designated assets from the EIA Scoping boundary there are:
- One grade I listed building;
 - 11 grade II* listed buildings;
 - 79 grade II listed buildings;
 - Four scheduled monuments; and
 - Six conservation areas.
- 13.6.15 Of these, those of greatest relevance include:

¹⁷⁹ A F Wareham and A P M Wright, 'Bottisham: Economic history', in A History of the County of Cambridge and the Isle of Ely: Volume 10, Cheveley, Flendish, Staine and Staploe Hundreds (North-Eastern Cambridgeshire) (London, 2002), pp. 205-214. British History Online [redacted] [accessed 19 January 2021]

¹⁸⁰ A F Wareham and A P M Wright, 'Bottisham: Economic history', in A History of the County of Cambridge and the Isle of Ely: Volume 10, Cheveley, Flendish, Staine and Staploe Hundreds (North-Eastern Cambridgeshire) (London, 2002), pp. 205-214. British History Online [redacted] [accessed 19 January 2021]

- Biggin Abbey, a grade II* listed building (NHLE: 1178408) 70m north of the EIA Scoping boundary;
- Horningsea Conservation Area, and the assets contained within it including the grade I listed Church of St Peter (NHLE: 331295), 30m west of the EIA Scoping boundary; and
- The collection of grade II* and grade II listed buildings within Fen Ditton captured by the conservation area, which falls mostly outside the EIA Scoping boundary (see also below).

13.6.16 Additional designated assets within the study area will be identified by the production of a Zone of Theoretical Visibility (ZTV). Assets of greatest relevance identified by the ZTV are expected to include:

- The grade II* registered park and garden (NHLE: 1000611) of the grade I listed Anglesey Abbey (NHLE: 1331433), which contains numerous grade II and grade II* listed structures, such as sculptures, urns and outbuildings (see also historic landscapes above); and
- The non-designated parkland of the grade II* listed Quy Hall (NHLE: 1331325, see also historic landscapes above).

13.6.17 Within the 500m study area for non-designated assets there are 165 non-designated assets identified by the CHER.

13.6.18 Additional non-designated built heritage and archaeological assets may be identified within this within the study area through archaeological investigation and site surveys.

CORE ZONE

13.6.19 The following designated heritage asset has been identified within the EIA Scoping boundary:

- Milestone South-West of Quy Mill at NGR 505 594 (NHLE: 1331307).

13.6.20 The CHER identifies the following non-designated heritage assets within this zone:

- Anglo-Saxon inhumation, Fleam Dyke at junction of Fen Ditton and Newmarket Roads (CHER: 06303);
- High Dyke/ northern section of Fleam Dyke (CHER: MCB12150);
- Enclosures, Fen Ditton (CHER: 09037);
- Ridge and furrow, High Ditch Field, Fen Ditton (CHER: 05471);
- Ridge and furrow, Horningsea (CHER: 05798);
- Ridge and furrow, Horningsea (CHER: 05611);
- Ridge and furrow, Horningsea (CHER: 05612);
- Barnwell Junction to Mildenhall railway (disused) (CHER: 07633);

- Roman cropmark system, Horningsea (CHER: 11555);
- Medieval earthworks, Horningsea (CHER: 05324a); and
- Soilmarks and earthworks, A45 Quy fieldwalking survey field 20, Horningsea (CHER: 11207).

13.6.21 The CHER also identifies the following findspots within this zone:

- Bronze Age pot and spear, Horningsea (CHER: 06343);
- Medieval pottery, A45 fieldwalking project field 10, Fen Ditton (CHER: 11197);
- Multiperiod finds, A45 Girton to Stow-cum-Quy fieldwalking survey, field 5 (CHER: 11192);
- Multiperiod finds, A45 Quy fieldwalking survey field 8, Horningsea (CHER: 11194);
- Prehistoric pottery, A45 Quy fieldwalking survey field 8, Horningsea (CHER: 11195);
- Roman pottery, A45 Quy fieldwalking survey field 8, Horningsea (CHER: 11195A);
- Medieval pottery, A45 Quy fieldwalking survey field 8, Horningsea (CHER: 11195B);
- Post-medieval pottery, A45 Quy fieldwalking survey field 8, Horningsea (CHER: 11195C);
- Roman pottery, A45 Quy fieldwalking survey field 16, Horningsea (CHER: 11203);
- Medieval pottery, A45 Quy fieldwalking survey field 16, Horningsea (CHER: 11203A);
- Post-medieval pottery, A45 Quy fieldwalking survey field 16, Horningsea (CHER: 11203B);
- Roman artefact scatter, Horningsea (CHER: 05324); and
- Bronze Age worked flints, Horningsea (CHER: 07812).

13.6.22 Additional non-designated built heritage and archaeological assets may be identified within this zone through archaeological investigation and site surveys.

TRANSFERS ZONE

13.6.23 The following designated heritage assets have been identified within the EIA Scoping boundary:

- Poplar Hall, a grade II listed building (NHLE: 1127400);
- Fen Ditton Conservation Area (partially outside the EIA Scoping boundary);
- Baits Bite Lock Conservation Area (partially outside the EIA Scoping boundary); and

- Lode Cottage (partially outside the EIA Scoping boundary) a grade II listed building (NHLE: 1331301).

13.6.24 The CHER identifies the following non-designated heritage assets within this zone:

- Windmill Hill, Fen Ditton (CHER: 05310);
- Mounds, Fen Ditton (CHER: 10515);
- Mound, Fen Ditton (CHER: 11206);
- Former clay pit, Fen Ditton (CHER: MCB27455);
- Cropmark site, Fen Ditton (CHER: 08327);
- Roman settlement, Milton (CHER: 05281); and
- Site of cross, Cambridge (CHER: 05229).

13.6.25 The CHER also identifies the following findspot within this zone:

- Multiperiod finds, A45 Girton to Stow-cum-Quy fieldwalking survey, field 6 (CHER: 11193).

13.6.26 Additional non-designated built heritage and archaeological assets may be identified within this zone through archaeological investigation and site surveys

WATERBEACH ZONE

13.6.27 There are no designated heritage assets within the EIA Scoping boundary.

13.6.28 The CHER identifies the following non-designated heritage assets within this zone:

- Ridge and furrow, Horningsea (CHER: 05614);
- Site of former tramway, Horningsea (CHER: MCB28303); and
- Park and gardens of Eye Hall Farm, Horningsea (CHER: 12122).

13.6.29 The CHER also identifies the following findspot within this zone:

- Bronze Age rapiers & dirks, Horningsea (CHER: MCB27482); and
- Roman pottery finds, Eye Hall Farm South (CHER: 06350).

13.6.30 Additional non-designated built heritage and archaeological assets may be identified within this zone through archaeological investigation and site surveys.

13.7 Future Baseline

13.7.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.

- 13.7.2 However, none of these developments present new environmental receptors or a change to the current baseline specific to historic environment. Therefore there are no proposed developments which require consideration for the aspect of Historic Environment. This information will be reviewed during completion of the EIA.

13.8 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

- 13.8.1 Construction Phase potential impacts may include temporary or permanent change to the setting of heritage assets, from the presence of, for example, construction machinery including lighting or the proposed WWTP. It may also include change to the character or setting of historic landscape assets. There may also be permanent impact to archaeological remains, such as their removal or truncation by construction activity.

BUILT HERITAGE

- 13.8.2 The grade II* listed Biggin Abbey (NHLE:1178408) is located approximately 70m north of the EIA Scoping boundary and has intervisibility with the Core Zone and the waste water transfers and final effluent zone. There may be a temporary impact to this asset from change in its setting during construction.
- 13.8.3 The grade II listed Poplar Hall is located within the EIA Scoping boundary, in the waste water transfers and final effluent zone. There is potential for it to experience temporary impact due to setting changes during the construction of pipelines and tunnels within this zone. Further impact is possible but unlikely due to the presence of the A14 and associated screening, which separates the conservation area from the site.
- 13.8.4 Bait Bites Lock Conservation Area captures an area of the River Cam from around Bait Bites Lock to, and including, Biggin Abbey. It is partially within the waste water transfers and final effluent zone. There may be a temporary change in the character of Bait Bites Lock Conservation Area during the construction of pipelines and tunnels within the waste water transfers and final effluent zone.
- 13.8.5 Fen Ditton Conservation Area captures the village of Fen Ditton to the south-west of the site. It is partially within the waste water transfers and final effluent zone. There is potential for impact during construction from the presence of an access route to the north-east of the asset. Further impact is possible but unlikely due to the presence of the A14 and associated screening, which separates the conservation area.
- 13.8.6 A grade II listed milestone is located within the EIA Scoping boundary, within the Core Zone, at the junction between Newmarket Road and High Ditch Road. If this access option is chosen, it is possible that this milestone may need to be

temporarily moved during road widening to allow construction traffic to use the access route without damaging the asset.

- 13.8.7 Construction of the scheme may have a permanent impact on the grade II* listed Biggin Abbey (NHLE:1178408), as a result of change within its setting. The proposed scheme would introduce proposed waste water treatment plant into the flat farmland to the east of the asset.
- 13.8.8 Construction works may have a permanent impact on Horningsea Conservation Area. The conservation area captures the village of Horningsea to the north-west of the EIA Scoping boundary, nearest to the Waterbeach Transfers Zone. The scheme is not located within key views identified from the conservation area, however there is potential for the proposed scheme to result in change in the farmland setting to the south-east of this asset from the construction of the Proposed Development.
- 13.8.9 Construction works may have a permanent impact on the Bait Bites Lock Conservation Area. There is potential to impact views west and south-west from Biggin Abbey, identified as positive vistas in the conservation area appraisal through the presence of the proposed waste water treatment plant.
- 13.8.10 There may be additional temporary and/or permanent impacts from change to the setting of heritage assets identified during the EIA process, and especially through site surveys.

BURIED ARCHAEOLOGY

- 13.8.11 The following known areas of buried archaeology have been identified as having the potential to be impacted by the construction of the scheme through the truncation/removal of archaeological remains of low to moderate value (impact to archaeological remains would be permanent):
- There is potential for impact on non-designated archaeological remains of moderate value with the EIA Scoping boundary. There is high potential for archaeology relating to the Roman period and the known archaeology within the study area suggests a likely Roman settlement. Construction of the proposed waste water treatment plant could result in truncation or complete removal of these remains;
 - Construction of the Waterbeach transfer pipeline may result in impacts to low value assets associated with the post-medieval former Eye Hall Park and Garden (CHER: 12122);
 - Additionally, Bronze Age remains of potentially moderate value are identified in the study area for the Waterbeach pipeline, including Bronze Age rapiers and dirks (MCB27482). Construction of the pipeline may result in impact to these remains or other unknown prehistoric remains;
 - There is high potential for unknown Roman archaeological remains relating to the scheduled kiln site north of Horningsea. These remains may be of

moderate value, if present, and may experience impact from construction of the Waterbeach transfer pipeline;

- The study area for Waste water Transfer and Treated Effluent pipeline corridors include known, multi-period archaeological remains. There is also potential for unknown archaeological remains relating to the prehistoric or roman periods, which are likely to be moderate value. If the pipeline is excavated top-down, rather than by tunnel, these remains may be impacted;
- Immediately south of High Ditch Road, within the Option 2 access areas, is a section of Fleam Dyke (CHER: MCB12150), a potentially moderate value asset. If any widening of the road to the south was required, this may impact the asset of moderate value. Currently the road widening is proposed for the northern side of High Ditch Road. There is also potential for remains relating to Fleam Dyke within the access area; and
- The Option 2 access route area also has high archaeological potential associated with a Roman cropmark system, Horningsea (CHER: 11555) and roman activity in the surrounding landscape. This non-designated asset relates to archaeological remains of potentially moderate value. The construction and use of this access route could impact these remains.

HISTORIC LANDSCAPE

- 13.8.12 Anglesey Abbey Gardens which fall partially within the ZTV is located 2.3km to the north-east of the site. There is a potential for views from the end of the main tree lined avenue (which runs south-west towards the site area), to be very slightly altered, by the introduction of new structures into the wider landscape. It is not currently clear if the scheme will be visible from the asset. However, due to distance any impact is not expected to be significant.
- 13.8.13 Quy Hall parkland may be partially within the ZTV. Tree cover partially screens the parkland from the Proposed Development, however there is potential for there to be a minor impact on views from the parkland and on its setting from the construction of the Proposed Development.

POTENTIAL IMPACTS PER ZONE

- 13.8.14 The potential impacts presented in Table 13-3 are divided by zone.

Table 13-3: Potential construction impacts by zone

Potential Impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Change in the setting of Biggin Abbey	✓	✓	✓
Change in the setting of Horningsea Conservation Area and associated assets	✓	x	✓

Potential Impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Change to the character of Fen Ditton Conservation Area and setting of associated assets	x	✓	x
Change to the character of Baits Bite Lock Conservation Area and setting of associated assets	x	✓	x
Change to the setting of Poplar Hall	x	✓	x
Impact to grade II listed milestone through damage or moving	✓	x	x
Impact to buried archaeology, e.g. removal	✓	✓	✓
Change to views from / setting of historic landscape features such as Quy Hall parkland and Anglesey Abbey	✓	x	x

CONSTRUCTION PHASE MITIGATION

- 13.8.15 The Proposed Development will be continued to be developed to reduce change in the setting of heritage assets, through the design of landscaping and built elements to reduce visibility from key assets, such as Biggin Abbey.
- 13.8.16 A programme of archaeological evaluation is currently being undertaken. This has been agreed with the Cambridgeshire Historic Environment Team (CHET) It includes a programme of geophysical survey and trial trenching. Archaeological recording will be undertaken where it is unavoidable, as a consequence of the impact/loss but will not reduce/remove the loss. However, the programme of archaeological evaluation will allow for archaeological remains to be better understood, so they may be avoided wherever possible.
- 13.8.17 Recognising that archaeological investigation works do not reduce the significance of effect but that they are in place owing to loss of a receptors the CoCP will include measures to obligate the appointed contractor to comply with measures and procedures agreed with CHET. Measures within the CoCP may include:
- A requirement for the appointed contractor to complete all archaeological works in accordance with the mitigation measures agreed with CHET as informed by the survey programme described above.
 - A requirement to a chance finds procedure which would include the cease works if items of potential or expected interest are discovered during the necessity to cease works and reporting immediately to project manager or other nominated individual within the project team who would follow the steps set out in the procedure.
 - Preparation of plans to demarcate areas of known interest and setting in place buffers and exclusions zones as agreed with CHET.

- A requirement for the appointed contractor to comply with the Treasure Act 1996.
- A requirement for the appointed contractor to give specific tool box talks or similar in relation to project obligations in relation to archaeology and heritage as agreed with CHET.

OPERATION PHASE POTENTIAL IMPACTS

- 13.8.18 Operation of the scheme, particularly the movement of vehicles accessing the site and the use of lighting, has the potential to impact the following assets:
- Biggin Abbey;
 - Horningsea Conservation Area;
 - Fen Ditton Conservation Area; and
 - Bait Bites Lock Conservation Area.
- 13.8.19 It is predicted that odour and noise will not cause a significant effect on the identified heritage assets.
- 13.8.20 Below ground archaeological remains are not expected to be impacted by the operation of the Proposed Development.

POTENTIAL IMPACTS PER ZONE

- 13.8.21 The potential impacts presented in Table 13-4 are divided by zone.

Table 13-4: Potential operational impacts by zone

Potential Impact	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
Change in the setting of Biggin Abbey	✓	✓	✓
Change in the setting of Horningsea Conservation Area	✓	✓	✓
Change in the setting of Fen Ditton Conservation Area	✓	✓	✗
Change in the setting of Bait Bites Lock Conservation Area	✓	✓	✗
Change in the setting of grade II listed Milestone	✓	✗	✗

OPERATION PHASE MITIGATION

- 13.8.22 Where possible the planting design will minimise the visible movement of vehicles within/around the CWWTP. In addition, the lighting design will minimise light spill wherever possible to reduce change in the setting of heritage assets.

13.9 Proposed scope of the assessment

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED IN

- 13.9.1 Due to the presence within and proximity of historic environment assets to the scheme, and the impacts of the scheme on these historic environment assets, the historic environment will be scoped in.
- 13.9.2 Due to the potential for impact on designated and non-designated heritage assets, particularly during the construction of the Proposed Development, both designated and non-designated assets will be assessed. Built heritage, archaeological and landscape receptors all have the potential to be impacted by the scheme, therefore all will be scoped in.

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED OUT

- 13.9.3 The matters presented in Table 13-5 are proposed to be scoped out. The justification is provided in the proceeding paragraphs.

Table 13-5: Resources or receptors proposed to be scoped out

Resource or receptor proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
Archaeological remains within the existing Cambridge CWWTP and existing Waterbeach WRC	In	Out	In	Archaeological potential removed by prior development

- 13.9.4 Any works associated with the scheme that take place within the existing Cambridge WWTP and existing Waterbeach WRC, within the transfer and final effluent zone, will be scoped out. Archaeological remains in this area would have been removed by the construction and operation of the existing Cambridge WWTP and existing Waterbeach WRC. The proposed works that will be required in this area to enable the Proposed Development will also not impact on any built heritage or historic landscape assets.

13.10 Evidence of agreements reached with consultation bodies

- 13.10.1 The following consultation has been carried out in relation EIA scope and where agreements have been reached these are indicated.

Table 13-6: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Cambridgeshire Historic Environment Team (CHET) 10/11/2020	Discussion around Proposed Development options and	CHET issued an archaeological brief setting

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
	agreement of archaeological evaluation strategy.	out their requirements for archaeological evaluation
Landscape and Heritage Technical Working Group, (Historic England, National Trust, Greater Cambridge Planning, CHET). 29/04/2021	Discussion around historic environment approach to assessing the impact of the scheme and feedback on the scheme design.	No objections raised
Historic England, National Trust, Greater Cambridge Planning, CHET. 14/05/2021	Email issued with copy of 415458-MMD-TN-0001 CWWTPR Historic Environment Approach. Setting out the proposed approach for identifying the heritage assets and the methodology for assessing impacts.	Email confirmation (04/06/2021), from Historic England, confirming acceptance of approach.

13.11 Assessment methodology

ASSESSMENT APPROACH AND SIGNIFICANCE CRITERIA

- 13.11.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Table 5-2 and 5-3 presented in Chapter 5.
- 13.11.2 Historic Environment reporting will follow the legislation, policy and guidance identified in Section 13.4. The criteria for the assessment of value (heritage significance/importance), impacts (loss) and significance of effects (harm) on the historic environment will make use of the guidance provided within the Design Manual for Roads and Bridges (DMRB) for environmental assessment and monitoring¹⁸¹ and cultural heritage assessment¹⁸².
- 13.11.3 The historic environment study area that will be used for the EIA will be based on the study area set out in Section 13.3. Following consultation with the historic environment stakeholders (see Section 13.10), professional judgement will be used for the inclusion of heritage assets that fall outside of the study area but are likely to be pertinent to the Proposed Development of the baseline or may be affected by the scheme. In addition, the 10km ZTV will be rerun on the emerging design.
- 13.11.4 For the designated assets identified within the ZTV a proportionate high-level appraisal of the setting will be undertaken. From this assessment it will be

¹⁸¹ DMRB 2019 Volume 11, Section 2, Part 4. Environmental assessment and monitoring

¹⁸² DMRB 2019 Volume 11, Section 3, Part 2, Cultural heritage assessment

established which assets/group of assets will have the potential for their value to be impacted by the Proposed Development. Where, it is established (as part of the high level appraisal) that there will be no impact to value for an asset/asset group, they will be scoped out of the EIA. This methodology has been developed through consultation; this exercise will be conducted with involvement from consultees. A record of the scoped out ZTV heritage assets, consultation undertaken and the reasons for their exclusion will be included as an appendix to the ES.

- 13.11.5 Consultation will to be undertaken with relevant stakeholders to the Proposed Development, including but not limited to:
- The Conservation Officers at the Greater Cambridge Planning team a shared service for South Cambridgeshire District Council and Cambridge City Council;
 - Historic England; and
 - The Cambridgeshire Historic Environment Team (CHET), archaeological advisors to the local planning authority.
- 13.11.6 Sources which will be consulted as part of the assessment include:
- A search of the National Heritage List for England (NHLE), which is maintained by Historic England. For details on nationally designated heritage assets including information on listed buildings, scheduled monuments and registered parks and gardens;
 - Cambridge City Council (CCC), East Cambridgeshire District Council (ECDC) and South Cambridgeshire District Council (SCDC) websites for conservation area maps and appraisals;
 - The Cambridgeshire Historic Environment Record (CHER) for records pertaining to all non-designated heritage assets (both below and above ground), previous archaeological events, secondary sources;
 - The Cambridgeshire County Council Archives, for relevant historic maps, estate/parish documents and publications;
 - The University of Cambridge Library for historic maps and records held by the university; and
 - The online Archaeology Data Service (ADS) (via Archaeologydataservice.ac.uk) will be searched for relevant archaeological fieldwork grey literature reports and publications.
- 13.11.7 In addition, a programme of archaeological geophysical survey and intrusive evaluation is currently being undertaken. The scope of the archaeological works has been agreed with the Cambridgeshire Historic Environment Team. This will further inform the historic environment baseline and impact assessment; aiming to identify the presence and nature of archaeological remains within the EIA Scoping boundary.

13.11.8 The ES will include;

- Historic Environment Chapter, which will provide details on any significant effects on the heritage assets and mitigation measures;
- Historic Environment Technical Appendix, which will include a detailed assessment of the historic environment study area, providing a baseline, relevant setting assessments and details on the likely impacts/effects and mitigation requirements;
- Impact assessment/significance effect tables;
- A gazetteer of the heritage assets;
- A table of assets that have been scoped out of the ZTV;
- Maps of the designated/non designated heritage assets, in relation to the scheme; and
- Geophysical survey and intrusive evaluation reports.

13.12 Approach to cumulative effects assessment

13.12.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

13.12.2 The cumulative assessment for historic environment will consider any other proposed developments affecting archaeology, built heritage and historic landscapes that may also be affected by the Proposed Development.

13.13 Assumptions, limitations and uncertainties

13.13.1 Information provided by the CHER can be limited due to its dependence on random opportunities for historical and archaeological research, fieldwork, and discovery. Where nothing of historical interest is shown in a particular area, this can be down to a lack of research or investigation, rather than no heritage assets being present.

13.13.2 Documentary sources are rare before the post medieval period, and many historical documents are inherently biased. Older primary sources often fail to accurately locate sites and interpretation can be subjective.

13.13.3 Historic maps provide a glimpse of land-use at a specific moment. It is therefore possible that short-term structures or areas of land-use are not shown and therefore not available for assessment.

13.13.4 Although access is expected to be available to the Cambridgeshire County Council Archives, and the University of Cambridge Library, access may be restrictive due to existing COVID restrictions.

- 13.13.5 The Cambridge University Collection of Aerial Photographs (CUCAP) no longer allow visitors. The collection holds the largest collection of aerial photographs of the Cambridge area and includes photographs of known heritage assets, which are located within the study area. Therefore primary source information held on some of the heritage assets cannot be viewed and the information on the assets may not be available or only available from secondary sources.

14 Landscape and Visual

14.1 Introduction

14.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorate as ‘matters’ relevant to the aspect of landscape and visual amenity. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.

14.2 Resources and receptors

14.2.1 For the aspect of landscape and visual amenity, the resources and receptors, are:

- key features that contribute to the landscape character of the area within 2km of the EIA Scoping boundary (such as woodland, trees, hedgerows, meadows, farmland, watercourses and heritage assets); and
- People living or working within 2km of the EIA Scoping boundary and people using PRoW, local roads, hotels and recreational facilities within 2km of the EIA Scoping boundary.

14.3 Study area

14.3.1 The study area will include the area within 2km of the EIA Scoping boundary. This is the area within which there could potentially be landscape and visual effects. In practice, effects are likely to be contained by intervening vegetation, variation in the local landform and existing development to a smaller area, especially along the pipeline routes. The extent of the study area was determined by digitally mapping the zone of theoretical visibility (ZTV) of the Proposed Development and by site survey. The study area will be extended to include more distant locations if it is found through further site survey that longer views are possible. The ZTV showing the potential visibility of the proposed WWTP in year 1 and year 15 of operation are illustrated in Appendix G.

14.4 Legislation, planning policy context and guidance

LEGISLATION

14.4.1 There is no applicable legislation specific to the assessment of landscape and visual effects. Planning policy and guidance relating to landscape and visual and pertinent to the Proposed Development comprise the following.

PLANNING POLICY

14.4.2 National planning policy of relevance to landscape and visual amenity and pertinent to the Proposed Development are:

14.4.3 NPS for Waste Water with particular reference to;

- Paragraph 4.7.2 The applicant should carry out a landscape and visual assessment and report it in the ES. It should include reference to any landscape character assessment and associated studies, as a means of assessing landscape impacts relevant to the proposed project and take account of relevant policies based on these assessments in local development documents.
- Paragraph 4.7.3 The assessment should include the effects during construction of the project and of the completed development and its operation on landscape components and landscape character.
- Paragraph 4.7.4 The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include any light pollution effects including on local amenity and nature conservation.
- Paragraph 4.7.12 Developments outside nationally designated areas may be highly valued locally and protected by local designation. Where a local development document in England has policies based on landscape character assessment, these should be paid particular attention.
- Paragraph 4.7.17 Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of proposed project. Materials and designs of buildings should always be given careful consideration.
- Paragraph 4.6.18 Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off site. For example, filling in gaps in existing tree and hedge lines would mitigate the impact when viewed from a more distant vista.
- Paragraph 4.8.1 A waste water infrastructure project will have direct effects on the existing use of the proposed site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. Given the likely locations of waste water infrastructure projects there may be particular effects on open space including green infrastructure.
- Paragraph 4.8.4 Green Belts are situated around certain cities and large built-up areas. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the most important attribute of Green Belts is their openness.

14.4.4 NPPF with particular reference to;

14.4.5 Section 12: Achieving Well Designed Places – developments should be visually attractive and sympathetic to local character and history, should maintain a strong sense of place and create places that are safe, inclusive and accessible.

- 14.4.6 Section 13: Protecting Green Belt Land – the Green Belt serves five purposes:
- To check the unrestricted sprawl of large built-up areas
 - To prevent neighbouring towns merging into one another
 - To assist in safeguarding the countryside from encroachment
 - To preserve the setting and special character of historic towns
 - To assist in urban regeneration, by encouraging the recycling of derelict and other urban land
- 14.4.7 Paragraph 148 states that: ‘When considering any planning application, local planning authorities should ensure that substantial weight is given to any harm to the Green Belt. ‘Very special circumstances’ will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, is clearly outweighed by other considerations’.
- 14.4.8 Section 15: Conserving and Enhancing the Natural Environment – the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes and soils and recognising the intrinsic character and beauty of the countryside.
- 14.4.9 Local planning policy of relevance to the Proposed Development includes:
- 14.4.10 South Cambridgeshire District Council Local Plan 2018 with particular reference to;
- Policy HQ/1: Design principles - all new development must be of high quality design, with a clear vision as to the positive contribution the development will make to its local and wider context.
 - Policy S/4: Cambridge Green Belt – new developments in the Green Belt will only be approved in accordance with Green Belt policy the NPPF.
 - Policy NH/2: Protecting and Enhancing Landscape Character – developments must respect and aim to retain or enhance the character of the local landscape and the National Character Area (NCA) in which it is located.
 - Policy NH/6: Green Infrastructure – developments must aim to reinforce, connect, protect and create new green infrastructure where possible and promote its use by society. Refer to Cambridgeshire Green Infrastructure Strategy.
 - NH/7: Ancient Woodlands and Veteran Trees - development should avoid loss or damage to veteran trees or ancient woodland. If unavoidable, adverse impacts will be mitigated and developers will contribute to the management and further enhancement of the woodland and/or veteran trees.
 - Policy NH/8: Mitigating the Impact of Development in and adjoining the Green Belt – developments must not have detrimental impact on rurality and openness of Green Belt. Development should include careful landscaping of high-quality design. Landscaping and planting must be well-maintained.

- Policy NH/13: Important Countryside Frontage – development must not compromise land with strong countryside character that provides important break between nearby development framework areas or acts to provide connection between urban and surrounding rural area. Policy NH/2: Protecting and Enhancing Landscape Character.

14.4.11 Cambridge City Council Local Plan 2018 with particular reference to;

- Policy 4: The Cambridge Green Belt - new development in the Green Belt will only be approved in line with Green Belt policy in the NPPF 2012. The purposes of the Cambridge Green Belt are to preserve the unique character of Cambridge as a compact, dynamic city with a thriving historic centre, to maintain and enhance the quality of its setting and prevent communities in the environs of Cambridge from merging into one another and with the city.
- Policy 7: The River Cam – development proposals should include an assessment of views of the river and demonstrate the design takes account of the assessment in enhancing views to and from the river; preserve and enhance the unique physical, natural, historically and the culturally distinctive landscape of the River Cam; raise, where possible, the quality of the river, adjacent open spaces and the integrity of the built environment in terms of its impact, location, scale, design and form; propose, where possible and appropriate to context, enhancement of the natural resources of the River Cam and offer opportunities for re-naturalisation of the river; enable, where possible, opportunities for greater public access to the River Cam; and take account of and support, as appropriate, the tourism and recreational facilities associated with the river.
- Policy 8: Setting of the City - development on the urban edge, within and abutting green infrastructure corridors and in the Cambridge Green Belt, open spaces and the River Cam corridor, will only be supported where it responds to, conserves and enhances the setting, and special character of the city, in accordance with the Cambridge Landscape Character Assessment 2003, Green Belt assessments, Cambridgeshire Green Infrastructure Strategy and their successor documents; promotes access to the surrounding countryside/open space, where appropriate; and c. safeguards the best and most versatile agricultural land unless sustainable development considerations and the need for development are sufficient to override the need to protect the agricultural value of land; and includes landscape improvement proposals that strengthen or recreate the well-defined and vegetated urban edge, improve visual amenity and enhance biodiversity.
- Policy 55: Responding to context - development will be supported where it is demonstrated that it responds positively to its context and has drawn inspiration from the key characteristics of its surroundings to help create distinctive and high quality places.

- Policy 59: Designing the Landscape and the Public Realm - Development will be supported where the existing features including trees, natural habitats and boundary treatment that positively contribute to the character of an area are retained and protected, materials are of a high quality and respond to context to help create local distinctiveness, and the design adopts the principles of inclusive design.
- Policy 60: Tall buildings and the skyline: any proposal for a structure that breaks the existing skyline and/or is significantly taller than the surrounding built form will be considered against criteria including location, scale, context and architectural quality. Appendix F sets out the required approach, methodology and assessment required in developing tall buildings in Cambridge.
- Policy 71: Trees - development will not be permitted which involves felling, significant surgery (now or in the foreseeable future) and potential root damage to trees of amenity or other value, unless there are demonstrable public benefits accruing from the proposal which clearly outweigh the current and future amenity value of the trees.

OTHER PLANNING CONSIDERATIONS

Cambridgeshire Green Infrastructure Strategy June 2011

- 14.4.12 The objectives of the strategy are to reverse the decline in biodiversity; to mitigate and adapt to climate change; to promote sustainable growth and economic development and to support healthy living and well-being. The development site lies in Strategic Area 6: Cambridge and Surrounding Areas.

Wicken Fen Vision

- 14.4.13 The 100-year vision aims to restore habitats and create a landscape-scale space for people and wildlife between Cambridge and the Wicken Fen Nature Reserve (owned by the National Trust). The vision is a strategic element of green infrastructure in the adopted development plans for both South Cambridgeshire District Council (2018) and East Cambridgeshire District Council (2015). The development site lies in the southern end of the Wicken Fen Vision area.

South Cambridgeshire District Council: Landscape in New Developments Supplementary Planning Document (SPD) 2010

- 14.4.14 The South Cambridgeshire District Council (SCDC) supplementary planning document (SPD) identifies that a well-designed landscape scheme can contribute to the natural environment and the community in a number of ways. The SPD sets out a number of key elements to be considered when delivering a high quality landscape. Those of relevance to the Proposed Development include:

- Respecting Landscape Character – ensuring that the Scheme relates to its immediate setting and the contextual setting and recognises that a landscape will have a value to those who live, work or pass through and that the landscape will also have a value for wildlife and biodiversity. The landscape design should seek to preserve and enhance the local landscape character.
- Appropriate Design – the landscape design should fit well and be of an appropriate scale to the existing landscape character and use the available land effectively. The landscape must function correctly and should work well and be easy, pleasant and safe to use.
- Landscape Management and Maintenance – all landscape management and maintenance requirements should be designed into the final landscape, rather than applied at the end of the design process.
- Encouraging Biodiversity – schemes should include native species trees, shrub or herbaceous planting, particularly if it can connect areas of habitat in the context of the Scheme. Compensatory measures will be required where development results in loss or permanent damage to habitats.
- Sustainable Landscape Schemes – a well-designed landscape Schemes should help to deliver aspects of social inclusion, effective protection of the environment, prudent use of natural resources, sustainable economic development and green infrastructure.

South Cambridgeshire District Council: District Design Guide: High Quality and Sustainable Development in South Cambridgeshire SPD (2010)

14.4.15 The SPD expands on district-wide policies in the Development Control Policies Development Plan Document (2007) and policies in individual Area Action Plans for major developments that may vary from the district-wide policies. It provides additional details on how they will be implemented. Policies seek to ensure that design is an integral part of the development process. The SPD sets out a number of key factors to delivering a high quality landscape. Specific objectives include: Those of relevance are:

- Assist applicants in the achievement of an attractive, sustainable, well designed, high quality environment that integrates housing, employment and community uses, together with infrastructure and green areas in conjunction with the surrounding landscape.
- Assist applicants' understanding of the local context, help identify features of importance, and ensure that proposals are appropriately designed to be compatible with their surroundings.

Waterbeach Neighbourhood Plan

14.4.16 The Waterbeach Neighbourhood Plan was submitted to South Cambridgeshire District Council on 2 February 2021 and is currently being examined by the independent examiner.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

14.4.17 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of landscape and visual amenity, planning policy has influenced the EIA scope as follows:

- Mitigation – local planning policies and SPD emphasise the importance of high quality design, respecting landscape character, responding to local context, enhancing recreational opportunities, footpath and cycle connectivity, green infrastructure and biodiversity through good design. The requirement for good design which responds to local context has been highlighted in the scope.
- Sensitivity – local planning policies emphasise the value and sensitivity of the landscape of the River Cam corridor and the role of the rural landscape as a setting for the city of Cambridge. This has been taken into account in the scope in the baseline description of the River Cam Corridor Landscape Character Area.
- Green Belt – the Proposed Development site is in the Green Belt. Maintenance of the openness and rural character of the Green Belt has been highlighted in the scope and will be considered in the development of the landscape mitigation design.

NATIONAL POLICY STATEMENT REQUIREMENTS

14.4.18 Table 14-1 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 14-1 Scope and NPS compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Applicant’s assessment - Paragraph 4.7.2: the applicant should carry out a landscape and visual assessment and report it in the ES. It should include reference to any existing landscape character assessment and take account of relevant policies based on these assessments in local development documents. The assessment should include effects during construction and operation of the project on landscape character and visual amenity, including light pollution effects.	The EIA scoping report makes reference to published landscape assessments and includes a full methodology for the landscape and visual impact assessment (LVIA).
Landscape impact - Paragraph 4.7.6: the existing character, quality and value of the landscape and its capacity to accommodate change should be considered in assessing the impact of a project on the landscape.	The LVIA methodology sets out the criteria for assessing the landscape value, capacity to accommodate change and sensitivity of the existing landscape setting for the Proposed Development. A site selection process has

NPS requirement	Compliance of EIA scope with NPS requirements
Projects should be designed and sited carefully to minimise harm and provide reasonable mitigation, where possible and appropriate.	been followed to identify the location of the Proposed Development. Preliminary design development has focussed on reducing landscape impacts and ensuring the Proposed Development can be adequately mitigated.

GUIDANCE

14.4.19 The National Planning Practice Guidance¹⁸³ includes a dedicated section on natural environment, and Green Belt. The guidance includes the following relevant advice:

- Assessing the impact of a proposal on the openness of the Green Belt, where it is relevant to do so, requires a judgment based on the circumstances of the case. By way of example, the courts have identified a number of matters which may need to be taken into account in making this assessment. These include, but are not limited to:
 - openness is capable of having both spatial and visual aspects – in other words, the visual impact of the proposal may be relevant, as could its volume;
 - the duration of the development, and its remediability – taking into account any provisions to return land to its original state or to an equivalent (or improved) state of openness; and
 - the degree of activity likely to be generated, such as traffic generation.
 - Where it has been demonstrated that it is necessary to release Green Belt land for development, strategic policy-making authorities should set out policies for compensatory improvements to the environmental quality and accessibility of the remaining Green Belt land. These may be informed by supporting evidence of landscape, biodiversity or recreational needs and opportunities including those set out in local strategies, and could for instance include:
 - new or enhanced green infrastructure;
 - woodland planting;
 - landscape and visual enhancements (beyond those needed to mitigate the immediate impacts of the proposal);
 - improvements to biodiversity, habitat connectivity and natural capital;
 - new or enhanced walking and cycle routes; and
 - improved access to new, enhanced or existing recreational and playing field provision.

¹⁸³The National Planning Policy Framework and relevant planning practice guidance. Available at <https://www.gov.uk/government/collections/planning-practice-guidance>

- The National Planning Policy Framework is clear that plans should recognise the intrinsic character and beauty of the countryside, and that strategic policies should provide for the conservation and enhancement of landscapes. This can include nationally and locally-designated landscapes but also the wider countryside. Where landscapes have a particular local value, it is important for policies to identify their special characteristics and be supported by proportionate evidence. Policies may set out criteria against which proposals for development affecting these areas will be assessed. Plans can also include policies to avoid adverse impacts on landscapes and to set out necessary mitigation measures, such as appropriate design principles and visual screening, where necessary. The cumulative impacts of development on the landscape need to be considered carefully.

14.4.20 The following guidance will be followed during the assessment of landscape and visual effects:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition¹⁸⁴;
- An Approach to Landscape Character Assessment¹⁸⁵;
- Landscape Institute Technical Guidance Note 06/19 - Visual Representation of development proposals¹⁸⁶; and
- Planning Practice Guidance - Light Pollution¹⁸⁷.

14.5 Baseline conditions

14.5.1 The baseline conditions for landscape and visual are described for the three zones within the EIA Scoping boundary as set out below. The baseline conditions were established through site survey and the use of aerial photography and Ordnance Survey mapping. They were further informed by recent published landscape character assessments including those contained in the most recent Cambridge Inner Green Belt Study¹⁸⁸.

CORE ZONE

Designations

14.5.2 There are no designated landscapes within the Core Zone, but there are features of heritage and ecological value in or near the zone including conservation areas, registered parks and gardens and sites of special scientific

184 Wilson, S. (2013) Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute and Institute of Environmental Management and Assessment.

185 Tudor, C. (2014) An Approach to Landscape Character Assessment. Natural England. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-character-assessment.pdf

186 Landscape Institute (2019) Technical Guidance Note 06/19 - Visual Representation of development proposals. Available at

187 Ministry of Housing, Communities and Local Government (2019) Planning Practice Guidance – Light Pollution. Available at <https://www.gov.uk/guidance/light-pollution>

188 LDA Design (2015). Cambridge Inner Green Belt Study Figures. Available at <https://files.cambridge.gov.uk/public/ldf/coredocs/rd-mc-030-part2.pdf>

interest (SSSI). These are shown in Appendix G and considered further in Chapter 8: Biodiversity and Chapter 13: Historic Environment.

14.5.3 The Core Zone is entirely within the Cambridge Green Belt.

National Landscape Character

14.5.4 The study area for the Core Zone includes parts of three national character areas (NCA): NCA 88: Bedfordshire and Cambridgeshire Claylands, NCA 87: East Anglian Chalk and NCA 46: The Fens.

Local Landscape Character

14.5.5 A number of landscape character assessments have been produced for Cambridge and its surroundings. The most recent is included in the Cambridge Inner Green Belt Study, by LDA Design (2015) which identified local landscape character areas (LCA). The Core Zone lies within the Eastern Fen Edge LCA and the study area for the Core Zone includes part of the River Cam Corridor LCA and the Waterbeach-Lode Fen LCA. The LCA are illustrated on in Appendix G.

14.5.6 The key characteristics of the Eastern Fen Edge LCA are summarised below.

- The land is low lying, predominantly farmland, with settlement situated above the fen floodplain. Land between the villages comprises flat open fields separated by drainage ditches and hedgerows. The A14 severs the link between Cambridge and the landscape to the north and east. There are distant views of the centre of Cambridge from higher ground to the east. Overhead power lines are prominent vertical features in parts of the LCA.
- Settlements, including Horningsea, Lode, Stow-cum-Quy, Landbeach and Bottisham, largely retain their rural setting, with the urban edge meeting farmland in most directions.
- There is a good PRow network in the LCA, including the Harcamlow Way Trail and a registered park and garden at the National Trust's Anglesey Abbey. The centres of Horningsea, Waterbeach and Fen Ditton are conservation areas.
- The area is relatively tranquil, especially away from the A14, which generates traffic and noise along its corridor. The villages are lit at night, but the minor roads in rural areas are not lit and consequently the landscape is relatively dark at night. Skyglow above Cambridge is apparent.

14.5.7 The key characteristics of the River Cam Corridor LCA are summarised below:

- The narrow LCA has a rural and pastoral character, even close to the city centre, forming a distinctive approach to Cambridge from the north-east, through meadow and commons.
- The river is lined with willow, poplar and alder. It is relatively dark at night and is tranquil for much of its length, except where it passes under the A14.

- PRoW follow the river and a long distance trail, the Fen Rivers Way runs along the west bank, linking Cambridge with Ely and the Wash.

14.5.8 The key characteristics of the Waterbeach-Lode Fen LCA are summarised below:

- The landscape is flat, with a regular pattern of fields bordered by drainage ditches and hedgerows.
- The landscape has an expansive, open character and the horizon and sky are an important component of panoramic, distant views.
- The peaty soils are dark brown in colour and support intensive arable agriculture.
- Lines of willows and poplars mark the course of the River Cam and line drainage ditches and ponds.
- Settlement is dispersed and is restricted to scattered farms situated on slightly higher land, along straight roads. Most buildings are of brick construction and date from the draining of the land in the 18th and 19th centuries.
- The area is tranquil, with little through traffic, and dark at night.

Visual Amenity

14.5.9 The Core Zone lies between the A14, B1047 Horningsea Road and Low Fen Drove Way. The landform, at 5-12m AOD, appears flat but rises gently towards the south-west. The landscape of the site is open, with large, arable fields with limited vegetation cover. Field boundaries mainly consist of ditches and/or low hedgerows, but there are belts of trees and scrub vegetation along a disused railway line (now a country wildlife site), which crosses the site, and along Low Fen Drove Way. The landscape north-east and east of the site is more wooded, with tree and woodland belts along field boundaries. There is a narrow band of vegetation along much of the A14 corridor.

14.5.10 Views of the Core Zone are largely limited to an area within 2km of the site. It is clearly visible in uninterrupted views from Low Fen Drove Way, B1047 Horningsea Road and the A14. The core site is also visible from parts of Horningsea, Fen Ditton, Stow-cum-Quy, Biggin Abbey Cottages and from the PRoW network east and west of the Core Zone. These views are filtered and screened by intervening vegetation along the A14, the disused railway line, field boundaries and watercourses and by the bridges over the A14 east and west of the Core Zone.

14.5.11 Overall, views are predominantly rural in character, but power and transport infrastructure are detracting elements. Overhead power lines cross the northern part of the Core Zone and are prominent vertical features in the landscape. The A14, partly in shallow cutting, is a clearly visible linear feature.

Representative viewpoints

- 14.5.12 The following visual receptors will potentially be affected by Proposed Development within the Core Zone:
- Residents of High St, Horningsea looking south-east
 - Residents at Biggin Abbey Cottages looking east
 - Residents on the B1047 Horningsea Road and Musgrave Way, Fen Ditton looking north-east
 - Residents of High Ditch Road, Fen Ditton looking north-east
 - Residents of Orchard House, Black House and Hardwick House on High Ditch Road, Fen Ditton looking north
 - Residents of the Marleigh Development (under construction) looking north
 - Residents in property on Low Fen Drove Way looking west
 - Residents of Church Road and Orchard Street, Stow-cum-Quy looking west
 - Users Byway Fen Ditton 85/14 (Low Fen Drove Way) looking west
 - Residents of Allicky Farm and users of Bridleway Stow-cum-Quy 218/5 looking south-west
 - Users of Footpath Horningsea 130/1, Footpath Horningsea130/2 and Footpath Fen Ditton 85/7 (Harcamlow Way and Fen Rivers Way) (near Biggin Abbey) looking east
 - Users of Footpath Stow-cum-Quy 218/2 (Harcamlow Way) and guests at the Quy Mill Hotel looking west
 - Users of Users of Footpath Milton 162/1 (Fen Rivers Way/Haling Way along the River Cam), Footpath Fen Ditton 85/6 and Wildfowl Cottage looking east
 - Users of Horningsea Greenway and B1047 Horningsea Road looking east and west

TRANSFERS ZONE

Designations

- 14.5.13 There are no designated landscapes within the Transfers Zone. There are features of heritage value in or near this zone including conservation areas and listed buildings. These are shown in Appendix G and considered further in Chapter 13: Historic Environment of this Scoping Report.
- 14.5.14 The Transfers Zone is mostly within the Cambridge Green Belt. A small area of this zone within the existing WWTP and an area to the east of the railway corridor is not designated as Green Belt.

National Landscape Character

- 14.5.15 The Transfers Zone includes parts of NCA 88: Bedfordshire and Cambridgeshire Claylands, and NCA 46: The Fens (see Appendix G).

Local Landscape Character

- 14.5.16 The Transfers Zone lies within the Eastern Fen Edge LCA , River Cam Corridor LCA and the Waterbeach-Lode Fen LCA. The key characteristics of these LCA are summarised in paragraphs 15.4.6 – 15.4.8 above.

Visual Amenity

- 14.5.17 The Transfers Zone runs through land north and south of the A14, crossing the A14, B1047 Horningsea Road, River Cam, Fen Line railway line and PRow in the area. The landform, at 5-12m AOD, appears flat but slopes down towards the River Cam in the west. The Transfers Zone is mainly farmland, with meadows and arable fields separated by hedgerows and ditches. Tree belts border the A14 corridor, the raised road junctions with the B1047 Horningsea Road and residential and agricultural property boundaries. Views of the Transfers Zone are largely limited to an area within 500m of the zone by existing vegetation and built development. It is clearly visible from the PRow along and close to the River Cam, Northern Bridge Farm, Red House Close, the B1047 Horningsea Road, Low Fen Drove Way and the A14. The Transfers Zone is also visible in filtered and partially screened views from Fen Ditton, Biggin Abbey Cottages and residential properties at the northern end of Fen Road and Green End.
- 14.5.18 Overall, views have a rural character, but power and transport infrastructure are detracting elements. An overhead power line crossing the A14 is a prominent vertical feature in the landscape. The A14, elevated where it crosses the River Cam and the railway line and partly screened by boundary vegetation, is strong linear feature.

Representative viewpoints

- 14.5.19 The following visual receptors will potentially be affected by the Transfers Zone of the Proposed Development:
- Residents at Biggin Abbey Cottages looking south;
 - Residents on the B1047 Horningsea Road and Musgrave Way, Fen Ditton looking north;
 - Residents of Poplar Hall and Red House Close and users of Footpath Fen Ditton 85/6 looking south;
 - Residents of Fen Road looking north;
 - Residents of Green End and Byway Horningsea 130/3 (Field Lane) looking north;
 - Residents at Northern Bridge Farm looking south;
 - Users Byway Fen Ditton 85/14 (Low Fen Drove Way) looking south;

- Users of Footpath Horningsea 130/1, Footpath Horningsea130/2 and Footpath Fen Ditton 85/7 (Harcamlow Way and Fen Rivers Way) (near Biggin Abbey) looking south;
- Users of Users of Footpath Milton 162/1 (Fen Rivers Way/Haling Way along the River Cam), Footpath Fen Ditton 85/6 and Wildfowl Cottage looking south; and
- Users of Horningsea Greenway and B1047 Horningsea Road looking south and north.

WATERBEACH ZONE

Designations

- 14.5.20 There are no designated landscapes within the Waterbeach corridor zone but there are features of heritage and ecological value in or near the study area including scheduled monuments and county wildlife sites. These are shown in Appendix G and considered further in Chapter 13: Historic Environment and Chapter 8: Biodiversity of this Scoping Report.
- 14.5.21 With the exception of its northern extent, the Waterbeach corridor zone lies within the Cambridge Green Belt.

National Landscape Character

- 14.5.22 The study area for the Waterbeach corridor zone of the Proposed Development lies mostly within NCA 46: The Fens. Small parts of NCA 88: Bedfordshire and Cambridgeshire Claylands, and NCA 87: East Anglian Chalk intersect with the southern extent of this zone.

Local Landscape Character

- 14.5.23 The study area includes parts of the Waterbeach-Lode Fen LCA, the Eastern Fen Edge LCA and the River Cam Corridor LCA. The key characteristics of these LCA are summarised in paragraphs 15.4.6 and 15.4.8 above.

Visual Amenity

- 14.5.24 The Waterbeach corridor zone extends between the Core Zone and the existing WWTP north of Waterbeach. The corridor passes to the east of Horningsea and Waterbeach, through open farmland, crossing the River Cam between Clayhithe and Bottisham Lock. The landform along the corridor, at or below 5m AOD, appears flat. The landscape is open, with large, arable fields and meadows, separated by ditches and hedgerows. There are occasional tree belts along water courses, including the River Cam, roads and residential and agricultural property boundaries.
- 14.5.25 Views of the Waterbeach corridor zone are largely limited to an area within 500m of the site by existing vegetation. The Waterbeach corridor zone is visible

in clear and filtered views from residential properties along stretches of the B1047 Horningsea Road and Clayhithe Road and on or near Burgess Road, Bannold Road and Bannold Drove on the north-eastern outskirts of Waterbeach. It is also visible in filtered and partially screened views from Northfields Farm Cottages and the PRoW crossing the surrounding area.

14.5.26 Overall, views have a rural character, with few detracting elements.

Representative viewpoints

14.5.27 The following visual receptors will potentially be affected by the Waterbeach corridor zone of the Proposed Development during construction:

- Users of Horningsea Greenway and B1047 Horningsea Road looking east and west;
- Users of Footpath Horningsea 130/1, Footpath Horningsea 130/2 and Footpath Fen Ditton 85/7 (Harcamlow Way and Fen Rivers Way) (near Biggin Abbey) looking east;
- Residents at Biggin Abbey Cottages;
- Users of Footpath Milton 162/1 (Fen Rivers Way/Haling Way along the River Cam), Footpath Fen Ditton 85/6 and Wildfowl Cottage
- Residents of Lowe Fen Drove Way;
- Residents of High St, Horningsea looking east;
- Residents on Clayhithe Road and users of Cambridge Motorboat Club looking east;
- Residents of Clayhithe Road, Horningsea looking east;
- Residents at Northfields Farm Cottages and users of Footpath Horningsea 130/14;
- Users Byway Fen Ditton 85/14 (Low Fen Drove Way) looking west;
- Users of Footpath Horningsea 130/5 and Footpath Horningsea 130/6 and Bridleway Horningsea 130/8 (Harcamlow Way) (PRoW crosses the zone);
- Users of Footpath Horningsea 130/10 (PRoW crosses the zone);
- Residents in Burgess Road looking east;
- Residents close to Bottisham Lock and users of Bridleway Waterbeach 247/10 looking east and west; and
- Residents in Bannold Drove and Capper Road looking east and north.

14.6 Baseline surveys

14.6.1 A winter baseline survey was carried out on 19th March 2021. Representative viewpoint photography was captured during this site visit. A summer baseline survey to capture representative viewpoint photography while deciduous vegetation was in leaf took place in September 2021. Any additional winter

photography required to capture new views identified since March 2021 will take place in November or early December 2021.

14.7 Future Baseline

- 14.7.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 14.7.2 Where this presents new environmental receptors or a change to the current baseline specific to landscape and visual impacts, this is discussed further below.
- 14.7.3 The existing landscape character of the study area is considered stable and will be used as the basis of assessment of potential impacts arising during construction and operation of the Proposed Development. A housing development is currently under construction south of the A14 (Marleigh Development), but this is not anticipated to substantially alter the existing landscape character baseline. The Waterbeach New Town East development planning application was given outline planning permission in January 2021. It includes a substantial new area of housing and community space north of Waterbeach which includes part of the Waterbeach corridor zone. Waterbeach Station will be moved to this area as part of the development. The development is not anticipated to substantially alter the existing landscape character baseline, but it will potentially generate new visual receptors.
- 14.7.4 New visual receptors will potentially arise from the following developments:
- Residential receptors on the Marleigh Development (S/2682/13/OL). A viewpoint has been included in the scoping report located on an existing PRoW which passes through the site.
 - Residential receptors in Waterbeach New Town East (S/2075/18/OL).
- 14.7.5 Any potential visual impacts on residential receptors in the new developments will be included in the baseline if the development is complete and occupied by the time the baseline assessment is under way or under future baseline if it is not completed.

14.8 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

Landscape character

- 14.8.1 The landscape character of the study area would be directly and indirectly affected by the Construction Phase of the Proposed Development as a result of

the introduction of construction plant, earthworks, materials storage, construction compounds, changes to road junction arrangements and lighting into the existing, unlit rural landscape. Tranquillity would be reduced by increased traffic movement and construction activity.

14.8.2 The landscape character areas potentially affected by the Proposed Development in construction are as follows:

- Eastern Fen Edge LCA;
- Waterbeach-Lode Fen LCA; and
- River Cam Corridor.

Visual amenity

14.8.3 Visual receptors in Fen Ditton, Horningsea, Stow-cum-Quy and Waterbeach and using the local PRow network within 2.0km of the Proposed Development site boundary and within 500m of the pipeline routes would be most affected during the Construction Phase. They would have clear, filtered or partly screened views of the construction works and movement of construction vehicles. Construction plant, earthworks, materials storage, construction compounds and lighting would be introduced into existing views of the rural landscape. Vegetation clearance would be kept to a minimum but would, in places, open up views of the construction works. Views of cranes would be visible over a wider area, but they would form narrow elements in the wider panorama.

POTENTIAL IMPACTS PER ZONE

14.8.4 The potential impacts presented in Table 14-1 are divided by zone.

Table 14-1: Potential construction impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Temporary impacts on Eastern Fen Edge LCA due to presence of construction activity and earthworks in rural landscape, reduction in tranquillity and severance of PRow network	✓	✓	✓
Temporary impacts on Waterbeach-Lode Fen LCA due to presence of construction activity and earthworks in rural landscape, reduction in tranquillity and severance of PRow network	✓	✓	✓
Temporary impacts on River Cam Corridor LCA due to presence of construction activity and earthworks in	✓	✓	✗

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
rural landscape, reduction in tranquillity and severance of PRoW network			
Temporary impacts on views of rural landscape from Footpath Fen Ditton 85/9 (and Marleigh Development)	✓	✗	✗
Temporary impacts on views of rural landscape from High Ditch Road, Fen Ditton	✓	✗	✗
Temporary impacts on views of rural landscape from Orchard House, Black House and Hardwick House on High Ditch Road, Fen Ditton	✓	✗	✗
Temporary impacts on views of rural landscape from B1047 Horningsea Road and Musgrave Way, Fen Ditton	✓	✓	✗
Temporary impacts on views of rural landscape from Fen Road, Chesterton	✗	✓	✗
Temporary impacts on views of rural landscape from Green End and Byway Horningsea 130/3 (Field Lane)	✗	✓	✗
Temporary impacts on views of rural landscape from Northern Bridge Farm	✗	✓	✗
Temporary impacts on views of rural landscape from Poplar Hall, Red House Close and Footpath Fen Ditton 85/6 and Byway Horningsea 130/3 (Field Lane)	✗	✓	✗
Temporary impacts on views of rural landscape from property on Low Fen Drove Way	✓	✗	✓
Temporary impacts on views of rural landscape from Footpath Stow-cum-Quy 218/2 (Harcamlow Way) and Quy Mill Hotel	✓	✗	✗
Temporary impacts on views of rural landscape from Church Road and Orchard Street, Stow-cum-Quy	✓	✗	✗
Temporary impacts on views of rural landscape from Byway Fen Ditton 85/14 (Low Fen Drove Way)	✓	✓	✓
Temporary impacts on views of rural landscape from Horningsea Greenway and B1047 Horningsea Road	✓	✓	✓
Temporary impacts on views of rural landscape from Biggin Abbey Cottages	✓	✓	✓

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Temporary impacts on views of rural landscape from Footpath Horningsea 130/1, Footpath Horningsea 130/2 and Footpath Fen Ditton 85/7 (Harcamlow Way and Fen Rivers Way) (near Biggin Abbey)	✓	✓	✓
Temporary impacts on views of rural landscape from Footpath Milton 162/1 (Fen Rivers Way/Haling Way along the River Cam), Footpath Fen Ditton 85/6 and Wildfowl Cottage	✓	✓	✓
Temporary impacts on views of rural landscape from High St, Horningsea	✓	✗	✓
Temporary impacts on views of rural landscape from Allicky Farm and users of Bridleway Stow-cum-Quy 218/5	✓	✗	✗
Temporary impacts on views of rural landscape from Clayhithe Road, Horningsea	✗	✗	✓
Temporary impacts on views of rural landscape from Footpath Horningsea 130/5 and Footpath Horningsea 130/6 and Bridleway Horningsea 130/8 (Harcamlow Way)	✗	✗	✓
Temporary impacts on views of rural landscape from Footpath Horningsea 130/10	✗	✗	✓
Temporary impacts on views of rural landscape from Clayhithe Road and Cambridge Motorboat Club	✗	✗	✓
Temporary impacts on views of rural landscape from Northfields Farm Cottages and Footpath Horningsea 130/14	✗	✗	✓
Temporary impacts on views of rural landscape from Burgess Road	✗	✗	✓
Temporary impacts on views of rural landscape from Residents close to Bottisham Lock and users of Bridleway Waterbeach 247/10	✗	✗	✓
Temporary impacts on views of rural landscape from Bannold Drove and Capper Road	✗	✗	✓

CONSTRUCTION PHASE MITIGATION

14.8.5 Primary mitigation measures will include:

- Minimising the footprint of the Proposed Development to reduce loss of trees and hedgerow;
- Reinstatement of hedgerows where avoidance is not possible;
- Design of construction lighting to minimise light pollution;
- Maintaining PRow connectivity through the provision of PRow diversions; and
- Planting additional trees and strengthening hedgerows along Low Fen Drove Way where feasible.

14.8.6 Primary mitigation measures may also include:

- Planting gaps in existing shelter belt on farmland south of Horningsea (outside area required for construction); and
- Planting trees in gaps in the existing avenue of trees lining both sides of Horningsea Road (outside area required for construction).

14.8.7 Secondary mitigation measures will be set out in the CEMP. These will include measures to protect trees and other vegetation to be retained, the use of construction lighting and the maintenance of hoardings and temporary fencing.

14.8.8 Likely significant effects arising during the Construction Phase would be mitigated by secondary mitigation in the form of measures set out in the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to landscape and visual impacts. Control measures may include:

- Requirements to design temporary lighting so as not to
 - intrude on adjacent buildings,
 - affect ecological receptors (including designated sites),
 - interference with local residents,
 - affect transport operations (railway, passing motorists, or the navigation lights for air traffic);
- Avoidance of night working;
- Use of site fencing or hoarding that is painted and kept free of graffiti;
- Use of hoarding that accounts for the local character of the area; and
- The incorporate of vegetation and planting as part of the boundary if possible.

14.8.9 Compliance with the CoCP would be secured via a requirement included within the Development Consent Order. The CoCP would then form the basis of more detailed plans and method statements, to be prepared during the pre-construction period by the appointed contractor. These plans would include a detailed Construction Environment Management Plan (CEMP) and it is this document which would set out the types of controls listed in 14.8.7.

OPERATION PHASE POTENTIAL IMPACTS

Landscape Character

- 14.8.10 The Proposed Development would result in a permanent effect on the character of the Eastern Fen Edge LCA and on small areas of the River Cam Corridor LCA and Waterbeach-Lode Fen LCA.
- 14.8.11 The proposed WWTP would be a prominent new feature in the rural and semi-rural landscape of the Eastern Fen Edge LCA. The scale and industrial appearance of the new structures would be uncharacteristic of the existing built development in an area which currently comprises small villages and isolated farmhouses. Lighting on the Core Zone will introduce a lit area into a largely unlit environment and the operation of the proposed WWTP would result in a reduction in tranquillity. Extensive woodland planting around the WWTP would gradually screen most of the new structures from the surrounding area but the digesters would remain apparent above the vegetation in the long-term or permanently. The character of the landscape would become more wooded and less open.
- 14.8.12 Trees, hedgerow and scrub vegetation would potentially be lost along the route of the final effluent and Waterbeach transfer pipelines in the River Cam Corridor LCA and Waterbeach-Lode Fen LCA during construction. However, the majority of the pipeline corridors pass through open farmland and there would be limited permanent loss of vegetation as a result of the Proposed Development. A vent stack above the waste water transfer tunnels and the discharge outfall on the River Cam would be permanent new structures in the River Cam Corridor LCA. A new pump house in Waterbeach, close to the existing waste water treatment works, would be a permanent new structure in the Waterbeach-Lode Fen LCA.
- 14.8.13 The development would be situated at the southern end of the National Trust's Wicken Fen Vision area, a strategic element of green infrastructure in South Cambridge District Council and East Cambridge District Council's development plans.

Visual Amenity

- 14.8.14 Views from Horningsea, Stow-cum-Quy, Waterbeach, the A14, the River Cam, B1047 Horningsea Road and the local PRoW network within 2.0km of the Proposed Development boundary would be affected by the Proposed Development. Most views from these locations would be filtered or partly screened by existing vegetation, variations in the local landform and intervening built development but there would be open and close views from Low Fen Drove Way, the B1047 Horningsea Road and the A14. In time, the woodland planting around the WWTP would screen most of the structures from the surrounding area, but views over the landscape would become more wooded and less open. Views of the routes of the Waterbeach pipeline and the transfer

and final effluent pipeline would be restored to their former appearance in the medium term, but the small number of existing trees removed from the pipeline corridors would not be replaced. The vent stack (15m high), close to the River Cam at Fen Ditton, the discharge outfall on the river bank and the new pump house (4m high) at Waterbeach would be permanent new structures in views.

POTENTIAL IMPACTS PER ZONE

14.8.15 The potential impacts presented in Table 14-2 are divided by zone.

Table 14-2: Potential operational impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Permanent impacts on Eastern Fen Edge LCA due to presence of large-scale infrastructure in the rural landscape and permanent loss of trees along pipeline corridors (due to easement restrictions). Introduction of lighting into unlit farmland	✓	✓	✓
Permanent impacts on Waterbeach-Lode Fen LCA due to permanent loss of trees along pipeline corridor (due to easement restrictions).	✓	✓	✓
Permanent impact on small proportion of River Cam Corridor LCA due to presence of new outfall on the river bank	✓	✓	✗
Permanent impacts on views of semi-rural landscape from Footpath Fen Ditton 85/9 (and Marleigh Development)	✓	✗	✗
Permanent impacts on views of semi-rural landscape from High Ditch Road, Fen Ditton	✓	✗	✗
Permanent impacts on views of semi-rural landscape from Orchard House, Black House and Hardwick House on High Ditch Road, Fen Ditton	✓	✗	✗
Permanent impacts on views of semi-rural landscape from B1047 Horningsea Road and Musgrave Way, Fen Ditton due to presence of construction works	✓	✗	✗
Permanent impacts on views of rural landscape from Property on Low Fen Drove Way	✓	✗	✗
Permanent impacts on views of rural landscape from Footpath Stow-cum-Quy 218/2 (Harcamlow Way) and Quy Mill Hotel	✓	✗	✗
Permanent impacts on views of rural landscape from Byway Fen Ditton 85/14 (Low Fen Drove Way)	✓	✗	✗
Permanent impacts on views of rural landscape from Horningsea Greenway and B1047 Horningsea Road	✓	✗	✗

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Permanent impacts on views of rural landscape from Biggin Abbey Cottages	✓	x	x
Permanent impacts on views of rural landscape from Footpath Horningsea 130/1, Footpath Horningsea 130/2 and Footpath Fen Ditton 85/7 (Harcamlow Way and Fen Rivers Way) (near Biggin Abbey)	✓	x	x
Permanent impacts on views of rural landscape from Footpath Milton 162/1 (Fen Rivers Way/Haling Way along the River Cam), Footpath Fen Ditton 85/6 and Wildfowl Cottage	✓	✓	x
Permanent on views of rural landscape from High St, Horningsea	✓	x	x
Medium-term impacts on views of rural landscape from Clayhithe Road, Horningsea	x	x	✓
Medium-term impacts on views of rural landscape from Footpath Horningsea 130/5 and Footpath Horningsea 130/6 and Bridleway Horningsea 130/8 (Harcamlow Way)	x	x	✓
Medium-term impacts on views of rural landscape from Footpath Horningsea 130/10	x	x	✓
Permanent impacts on views of rural landscape from Clayhithe Road and Cambridge Motorboat Club	x	x	✓
Medium-term impacts on views of rural landscape from Residents close to Bottisham Lock and users of Bridleway Waterbeach 247/10	x	x	✓

OPERATION PHASE MITIGATION

14.8.16 Primary mitigation measures will include:

- A landscape masterplan including new woodland, tree belts, hedgerows and meadows would provide the landscape context for the Proposed Development and long-term screening of the new structures from the surrounding area. Surplus material excavated during construction would be used to create an earth bank around the proposed WWTP.
- New pedestrian and cycle routes on and close to the proposed WWTP would increase recreational opportunity and access to the countryside.
- The new buildings, fencing and hard surfacing will be designed to minimise their prominence in the landscape. The design of new structures, finishes, hard surfaces and fencing would aim to minimise landscape and visual impacts and be sympathetic to the rural setting and Green Belt location of the Proposed Development location.

- The lighting design would minimise offsite effects and use lighting equipment that would reduce the upward spread of light and minimise skyglow and glare.
- Opportunities for off-site planting to strengthen tree belts and hedgerows close to receptors would be explored.

14.8.17 Secondary mitigation will include the preparation of a LEMP which would set out the requirements for the establishment and maintenance of the landscape masterplan.

14.9 Proposed scope of the assessment

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED IN

14.9.1 Significant impacts on landscape character and visual amenity are likely as a result of the Proposed Development during construction and operation due to the scale of the developments. Landscape and visual effects are therefore scoped into the assessment.

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED OUT

14.9.2 The following resources or receptors are proposed to be scoped out.

Table 14-4: Resources or receptors proposed to be scoped out

Resource or receptor proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
Standalone lighting assessment	In	Out	Out	There will be no continuous night-time lighting in the transfer and final effluent zone or the Waterbeach Transfers Zone.

14.10 Evidence of agreements reached with consultation bodies

14.10.1 The following consultation has been carried out in relation EIA scope and where agreements have been reached these are indicated.

Table 14-5: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Landscape and Heritage Technical Working Group, (Historic England, National Trust,	Description of the Proposed Development design, discussion of landscape resource and visual receptors potentially affected. Discussion of	N/A

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Greater Cambridge Planning), 29/04/2021.	existing and proposed recreational opportunities.	
Cambridgeshire County Consultation 2 response August 2021	<p>Landscape mitigation to follow a mitigation hierarchy to avoid ecology impacts and provide adequate mitigation.</p> <p>Enhancement opportunities to focus on strategic priorities including the Cambridge Nature Network's strategic vision, mitigation and enhancement of grassland and hedgerows along Low Fen Drove Way, mitigation and enhancement of the River Cam CWS and provision of wetland habitat to complement the River Cam habitat. Reassess woodland proposals to reflect local requirements with species-rich grassland and a network of water habitats.</p> <p>Welcomed inclusion of public access/greenspace, and advised landscape to be designed to protect wildlife areas from negative impacts from visitors.</p>	N/A
National Trust Consultation 2 response August 2021	<p>The circular earthwork bank not regarded as characteristic of the low lying, flat and open nature of the local landscape. Considered that the landscape strategy had limited association with local landscape character.</p> <p>Encouraged plans to be developed to ensure a positive legacy. National Trust welcomed involvement in development of legacy. Noted wider opportunities for linkages into the Wicken Fen Vision area for all users, not just pedestrians.</p> <p>Identified that plans may be a significant opportunity to tackle severance caused by the A14 for existing residents and those of future development proposals in the area.</p>	N/A
East Cambridgeshire District Council Consultation 2 response August 2021	More planting should be provided between Horningsea Road and the built-up area of the CWWTP site, to add to	N/A

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Greater Cambridge Shared Planning Consultation 2 response August 2021	<p>biodiversity and enhance the landscape of the site further.</p> <p>The landscape-led approach is supported. CWWTRP seen as opportunity to provide green infrastructure to the east of Cambridge. Suggested alternative options are developed for discussion and consultation.</p> <p>The site is characterised as Fen Edge and a landscape proposal should respect and enhance local character (including Quy Fen), support the Wicken Fen Vision, and contribute positively to the Cambridge Nature Recovery Network. Typical landscape principles to be considered include linear drainage ditches, small-scale pastoral fields, sparse woodland cover with small deciduous blocks, wet and species-rich grasslands, floodplain grazing marsh and shelterbelts.</p> <p>The circular earthwork bank not regarded as characteristic with existing Fen landscape. Installation of a structure on top of the earthwork bank is not supported due to impact on openness of the Green Belt. Further consideration should be given to soft landscape options.</p> <p>Advised that the landscape should be multifunctional providing amenity, biodiversity, carbon storage and SuDs. .</p>	

14.11 Assessment methodology

- 14.11.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for the assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

- 14.11.2 The assessment will be carried out in accordance with guidance in the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition¹⁸⁹. The assessment will identify the effects likely to arise from the Proposed Development, taking into account mitigation measures and changes over time. The level of effect will be assessed by considering the sensitivity of the receptor and the predicted magnitude of change in relation to the baseline conditions. Effects will be assessed in construction and in year 1 (opening year) and 15 of operation.
- 14.11.3 The ZTV of the proposed WWTP has been modelled to show the potential visibility of the WWTP. The ZTV for the transfer and final effluent pipeline and outfall and the Waterbeach transfer pipeline will not be modelled as these will be largely at or below ground level, apart from the vent stack on the transfer and final effluent pipeline. The ZTV and site survey informed the identification of the representative viewpoints.
- 14.11.4 Photomontages to support the assessment will be prepared in accordance with the Landscape Institute Technical Guidance Note 06/19 - Visual Representation of development proposals. Suggested locations for the photomontages and representative viewpoints are shown in Appendix G. The location and number of photomontages, along with the representative viewpoints, will be finalised in consultation with Greater Cambridge Shared Planning and East Cambridgeshire District Council.
- 14.11.5 The effects of lighting on the night-time landscape character and views from residential properties, campsites, recreational attractions which are open at night, hotels and healthcare institutions will be assessed in construction and operation. This will be a qualitative assessment and will not include quantitative assessments of illumination levels. The night-time baseline assessment will be informed by the Guidance Note for the Reduction of Obtrusive Light, 01/21190 . It will consider the visibility, brightness and prominence of existing light sources in views, comment on existing light spill, glare and skyglow and use the Environmental Zone Classification provided in the guidance note to assess the level of darkness or brightness.

GLINT AND GLARE

- 14.11.6 The Ministry for Housing, Communities and Local Government's guidance 'Planning Practice Guidance for Renewable and Low Carbon Energy' (Ref. 99) notes that 'particular factors a local planning authority will need to consider include [inter alia] the effect on landscape of glint and glare'.
- 14.11.7 Glint and glare are defined as follows:

¹⁸⁹ Landscape Institute and Institute of Environmental Management and Assessment (2013)

¹⁹⁰ Guidance Note for the Reduction of Obtrusive Light, Institution of Lighting Professionals GN 01/21

- Glint (specular reflection) may be produced as a direct reflection of the sun from the development; and
- Glare (diffuse reflection) is a continuous source of brightness in scattered light waves.

14.11.8 A general consideration of the potential for glint and glare from the proposed solar array to cause significant effects to receptors will be carried out. The results and recommendations of any glint and glare calculations will be incorporated into the Proposed Development design and presented as a technical appendix to the LVIA chapter. It is considered that this will negate the need for an individual glint and glare chapter in the ES.

SIGNIFICANCE CRITERIA

Landscape character assessment

14.11.9 The landscape assessment will use LCA identified in the Cambridge Inner Green Belt Study. These cover the Green Belt only however, and hence new character areas will be identified, if necessary, to ensure full coverage of the whole study area.

14.11.10 The value of each LCA will be evaluated in accordance with the criteria set out in Table 14-6.

Table 14-6: Landscape value

Value	Criteria for assessing landscape value
High	Designated landscape such as National Park, AONB or undesignated landscape. High scenic quality with a distinctive combination of features, elements and characteristics, outstanding views and a strong sense of place. A scarce or fragile landscape with cultural, historic or ecological elements which make a major contribution to landscape character. No or very few landscape detractors. Has components which are difficult to replace (such as mature trees). A tranquil landscape in good condition, largely intact, with an unspoilt character.
Medium	Landscape locally designated (such as conservation area, regional park) or locally valued (for its recreational facilities and footpath networks for instance). Some scenic quality and a moderate sense of place. A landscape with some distinctive features, elements and characteristics. Some cultural, historic or ecological elements which contribute to landscape character. Some high use areas, but overall medium tranquillity. Few landscape detractors.
Low	Undesignated landscape, not valued for its scenic quality, with a disparate combination of features, elements and characteristics and a weak sense of place. Mainly common features and few or no cultural, historic or ecological elements that contribute to landscape character. Many landscape detractors. A landscape of low tranquillity.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

- 14.11.11 The susceptibility of each LCA to change will be evaluated in accordance with the criteria set out in Table 14-7.

Table 14-7: Landscape susceptibility to change

Susceptibility	Criteria for assessing landscape susceptibility
High	The overall character and the valued landscape characteristics, elements and features have a low ability to tolerate the nature and scale of the change resulting from the proposed development without permanent serious adverse change to the baseline situation.
Medium	The overall character and the valued landscape characteristics, elements and features have a moderate ability to tolerate the nature and scale of the change resulting from the proposed development, with some adverse changes to the baseline situation.
Low	The overall character and the valued landscape characteristics, elements and features have a high ability to tolerate the nature and scale of the change resulting from the proposed development, with limited adverse changes to the baseline situation.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

- 14.11.12 The sensitivity of each LCA will be evaluated in accordance with the criteria set out in Table 14-8.

Table 14-8: Landscape sensitivity

Sensitivity	Criteria for assessing landscape sensitivity
High	Landscape of high importance, rarity and value with distinctive features/elements with limited ability to accommodate change without incurring substantial loss/gain (i.e. designated areas, registered parks and gardens, country parks and strong sense of place). Landscape with elevated tranquillity, components not easily replaced or substituted and limited scope for effective mitigation in character with the existing landscape. A high susceptibility to change due to the type of development proposed.
Medium	Landscape of medium value and local or regional recognition of importance, able to accommodate some change (i.e. with features worthy of conservation, some sense of place or value through use of perception). A landscape with moderate tranquillity, components that are easily replaced or substituted and scope for effective mitigation in character with the existing landscape. A medium susceptibility to change due to the type of development proposed.
Low	Undesignated landscape of low value, able to accommodate change (i.e. non-designated or designated areas of local recognition or areas with little sense of place). A landscape with limited tranquillity, components that are easily replaced or substituted and scope for effective mitigation in character with the existing landscape. A low susceptibility to change due to the type of development proposed.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

- 14.11.13 The magnitude of change to landscape character in construction and operation will be determined by considering:

- the nature of an impact - whether the introduction of the proposed WWTP will be of benefit or detriment to the existing landscape character;
- the scale of the change – the extent of the loss of landscape elements, the degree to which aesthetic features or perceptual aspects of the landscape are altered (by the removal of hedgerows or introduction of new structures for example) and whether a key characteristic of the landscape is altered;
- the geographical extent of the area affected; and
- the duration of the change and its reversibility.

14.11.14 The magnitude of change to landscape character will be evaluated in accordance with the criteria set out in Table 14-9.

Table 14-9: Magnitude of change to landscape character

Magnitude of change		Typical description
Major	Adverse	Total loss or large scale damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, conspicuous features or elements (i.e. infrastructure). Changes that alter a substantial proportion of the LCA. Introduction of long-term and/or irreversible changes to an LCA or its setting.
	Beneficial	Large scale improvement of landscape character to features and elements; and/or addition of new distinctive features or elements, or removal of conspicuous infrastructure elements. Changes that alter a substantial proportion of the LCA.
Moderate	Adverse	Partial or noticeable damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, noticeable features or elements (i.e. infrastructure), but which do not necessarily conflict with key characteristics of the existing landscape
	Beneficial	Partial or noticeable improvement of landscape character by restoration of existing features or elements; or addition of new characteristic features or elements or removal of noticeable features or elements.
Minor	Adverse	Slight loss or damage to existing landscape character of one (maybe more) key features and elements; and/or addition of new uncharacteristic features and elements. Changes that will alter a small to a small proportion of the LCA and its immediate setting.
	Beneficial	Slight improvement of landscape character by the restoration of one (maybe more) key existing features and elements; and/or the addition of new characteristic features. Changes that will alter a small to a small proportion of the LCA and its immediate setting.
Negligible	Adverse	Very minor loss, damage or alteration to existing landscape character of one or more features and elements.
	Beneficial	Very minor noticeable improvement of character by the restoration of one or more existing features and elements

Magnitude of change		Typical description
No change	N/A	No noticeable alteration or improvement, temporary or permanent, of landscape character of existing features and elements.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

VISUAL ASSESSMENT

- 14.11.15 The scoping report identifies visual receptors and important, designated or protected views that will potentially be affected by the development. Representative viewpoints are proposed to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually (in urban areas or where there are numerous PRow and where significant effects are unlikely to differ. Specific viewpoints have been proposed to illustrate effects on key views from landscapes of high visual amenity or to illustrate a particular effect or issue. Visual receptors vary in their sensitivity to changes in the view. Their sensitivity will be determined by considering the value receptors attach to specific views and their susceptibility to changes to views and visual amenity. The selection of representative viewpoints takes into account:
- the accessibility of the viewpoint;
 - the number of receptors likely to be affected;
 - the viewing direction and distance from the site of the Proposed Development;
 - the nature of the viewing experience; and
 - cumulative views, in conjunction with other projects.
- 14.11.16 The selection of representative viewpoints proposed was based on the extent of the ZTV, the findings of site survey and a review of planning policy documents.
- 14.11.17 The value attached to a view will be evaluated in accordance with the criteria set out in Table 14-10.

Table 14-10: View value

View value	Criteria for assessing view value
High	A view in which attractive features are dominant or include attractive focal points and/or skyline features. Visual detractors may be present but are not strongly apparent in the composition of the view. A view in a high quality landscape such as an Area of Outstanding Natural Beauty, designated or identified as of value in a guide book or tourist literature. A view where the composition is a fundamental aspect of the design or function of a heritage asset and is integral to its setting.
Medium	An unremarkable view where neither attractive or discordant elements are dominant or form a clearly apparent part of its composition. A view that is not designated or documented.

View value	Criteria for assessing view value
Low	A view where discordant or unattractive features are dominant or prevalent and/or where such features are focal points and/or skyline features. These views may contain some attractive features, but these are not strongly apparent in the composition of the view. A view that is not designated or undocumented.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

- 14.11.18 The susceptibility to change depends on the occupation or activity of the receptor and the extent to which their attention is focused on the view and visual amenity. The susceptibility of receptors to change will be evaluated in accordance with the criteria set out in in Table 14-11.

Table 14-11: Visual receptor susceptibility to change

Susceptibility	Criteria for assessing visual receptor susceptibility
High	Occupiers of residential properties, users of PRow and visitors to places whose attention is focussed on the landscape.
Medium	People working outdoors in or travelling through rural areas whose attention is partially on the landscape. People walking or cycling through urban areas whose views are partially focussed on their surroundings. Users of publicly accessible outdoor open space including cemeteries.
Low	People at work, at school and engaging in formal sport. People walking or cycling through urban areas whose attention is focussed on their destination rather than enjoying the scenery they are passing through. People travelling at high speed on main roads or railways.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

- 14.11.19 The sensitivity of each visual receptor will be evaluated in accordance with the criteria set out in Table 14-12.

Table 14-12: Visual receptor sensitivity

Sensitivity	Receptor
High	Occupiers of residential properties, PRow users and visitors to places whose attention is focussed on the landscape. Designated or undesignated views of high or medium value, with few detracting features.
Medium	People working outdoors in or travelling through rural areas, people walking or cycling through urban areas and visiting outdoor publicly accessible open space. Medium views where neither attractive or discordant elements are dominant and are undesignated and undocumented.
Low	People at work, at school, engaging in formal sport, commuting in urban areas and travelling at high speed on main roads or railways. Views with predominantly discordant or unattractive features, which are undesignated and undocumented.

Source: Criteria based on guidance in the Guidelines for Landscape and Visual Impact Assessment. 3rd edition (LI and IEMA, 2013)

- 14.11.20 The magnitude of change to views in construction and operation will be determined by considering the scale, nature and duration of the change, the distance of the change from the visual receptor, the receptor’s direction of view, the extent of screening and filtering of the view and whether the receptor is static or moving.
- 14.11.21 The magnitude of change to views will be evaluated in accordance with the criteria set out in Table 14-13.

Table 14-13: Magnitude of change to views

Magnitude	Criteria
Major	The proposed scheme or part of it would become the dominant feature or focal point of the view. Total loss or substantial alteration to key characteristics of the view.
Moderate	The proposed scheme or part of it would form a noticeable feature or element of the view, readily apparent to the receptor. Substantial change partially filtered by intervening vegetation and/or built form or viewed obliquely.
Minor	The proposed scheme or part of it would be perceptible but not alter the overall balance of features and elements that comprise the existing view. Changes largely filtered by intervening vegetation and/or built form or viewed obliquely.
Negligible	Only a small part of the proposed scheme would be discernible or being at such a distance it would form a barely noticeable feature or element of the view. Changes almost entirely obscured by intervening vegetation and/or built form.
No Change	No part of the proposed scheme would be discernible.

Source: Criteria based on guidance in LA107 Landscape and visual effects Rev 0 (2019) and GLVIA 3rd edition (LI and IEMA, 2013)

14.12 Significance of effects

- 14.12.1 Professional judgement will be used to determine the overall significance of effect on landscape and visual receptors by weighing the sensitivity of the receptors against the magnitude of change. Effects can be adverse or beneficial and those of moderate, large or very large adverse or beneficial will be considered significant in EIA terms. The evaluation of the level of effect will be guided by the matrix in Table 14-14 below.

Table 14-14: Significance of effect

Sensitivity	Magnitude of change				
	Major	Moderate	Minor	Negligible	No Change
High	Large/ Very Large	Moderate/Lar ge	Slight/ Moderate	Slight	Neutral
Medium	Moderate/ Large	Moderate	Slight	Neutral/ Slight	Neutral
Low	Slight/ Moderate	Slight	Neutral/ Slight	Neutral/ Slight	Neutral

Source: Criteria based on guidance in LA107 Landscape and visual effects Rev 0 (2019) and GLVIA 3rd edition (LI and IEMA, 2013)

14.13 Approach to cumulative assessment

- 14.13.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.
- 14.13.2 The cumulative assessment for landscape and visual will include consideration of the cumulative impacts of the Proposed Development in conjunction with committed development and committed infrastructure in the surrounding area. This will be determined through review of permitted planning permissions and through discussion with the Local Planning Authority and Local Highway Authority. This ensures that the assessment complies with guidelines and that consideration is given to the combined effect of developments, which may not have a significant impact individually, but may have a cumulative impact overall.
- 14.13.3 Impacts on future visual receptors, including those subject to planning permission, will be assessed as part of the future baseline where developments are to be completed before the Proposed Development is under construction, or otherwise they will be treated as part of the cumulative effects assessment.

14.14 Assumptions, limitations and uncertainties

- 14.14.1 Access to viewpoints linked to potential receptors may be restricted to publicly accessible areas and private land where prior access has been agreed. Where access is limited, site work will be undertaken from the nearest publicly accessible location and noted within the assessment. The consequential evaluation for impacts on some private and/or inaccessible viewpoints will be made, therefore, based upon the professional judgement of suitably qualified and experienced specialists.
- 14.14.2 Restrictions arising from the COVID 19 pandemic prevented face to face meetings with stakeholders but a meeting was held on-line. Site surveys took place, unaffected by any restrictions.

15 Land Quality

15.1 Introduction

- 15.1.1 This chapter of the EIA scoping report identifies resources and receptors to allow assessment of the likely impacts of the Proposed Development on land quality. Land quality includes land contamination, impacts on mineral resources and geological designated sites. This chapter identifies the potential impacts, sets out the proposed scope and approach that will be taken to the assessment and provides a summary of the baseline information that is currently available. The purpose of EIA scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.
- 15.1.2 Several matters (resources and receptors) within this aspect are proposed to be scoped out of further assessment with justification provided based on, for example, the absence of a pathway from impact to the receptor, through sufficient confidence in impact avoidance methods.

15.2 Matters (resources and receptors)

- 15.2.1 For the aspect of land quality the matters, or resources and receptors, are:
- Soils and geology (including impacts arising from contaminated land);
 - Human health (including construction workers, land users and surrounding land users);
 - Mineral resources such as minerals safeguarding areas; and
 - Geodiversity such as geological Sites of Special Scientific Interest or local geological sites.
- 15.2.2 Groundwater and surface waters are included as secondary receptors from impacted ground conditions, however, the direct potential impacts of the Proposed Development on surface and groundwater resources are addressed in Chapter 21: Water Resources.
- 15.2.3 This chapter excludes agricultural soils as this is covered in Chapter 6: Agriculture and Soils.

15.3 Study area

- 15.3.1 The study area for land quality includes all resources and receptors within 250m of the EIA Scoping boundary. This distance has been selected based on professional judgement considering the distance, beyond which, migration of contamination is likely to be minimal.

15.4 Legislation, planning policy context and guidance

15.4.1 Legislation, planning policy and guidance relating to land quality, and pertinent to the Proposed Development comprises the following.

LEGISLATION

15.4.2 This section is not intended to provide a full and exhaustive account of legislation relating to land contamination with the EU, or UK. However, it is intended to provide a thematic background to applicable legislation and guidance at the time of writing. Following the UK exit from the EU, UK law is currently consistent with EU law but this will be kept under review.

15.4.3 Other legislation pertinent to this report is listed in Table 15-1. Further legislation concerning water resources is covered in Chapter 21: Water Resources.

Table 15-1: Legislation and guidance for land quality

Aspect	Legislation/policy/guidance
Buildings	Planning Act 2008
	The Building Regulations 2010
	National Policy Statement for Waste Water 2012
	National Planning Policy Framework 2019
Contaminated land	The Pollution Prevention and Control Regulations 2000 (as amended 2003)
	The Control of Pollution (Oil Storage) (England) Regulations 2001
	The Control of Substances Hazardous to Human Health 2002 (as amended 2004)
	The Contaminated Land (England) Regulations 2006 (as amended)
	Environmental Quality Standards Directive 2008/105/EC
	Contaminated Land Statutory Guidance 2012
	The Control of Asbestos Regulations 2012
	The Environmental Damage (Prevention and Remediation) Regulations 2015
Waste/materials reuse/emissions	Waste Framework Directive 2008/98/EC
	The Hazardous Waste (England and Wales) Regulations 2005 (as amended by The Waste (England and Wales) Regulations 2011)
	Definition of Waste: Development Industry Code of Practice CL:AIRE, 2014
	The Environmental Permitting Regulations 2016 (as amended)

Aspect	Legislation/policy/guidance
	The Industrial Emissions Directive 2010/75/EU
Water resources	The Water Resources Act 1991
	Water Framework Directive 2000/60/EC
	Groundwater Daughter Directive 2006/118/EC
	The Groundwater Regulations 2009
	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
	The Environmental Damage (Prevention and Remediation) (England) Regulations 2015
UXO	Unexploded ordnance (UXO) A guide for the construction industry (C681) 2009

HYDROLOGY AND HYDROGEOLOGY

15.4.4 With regards to groundwater, the following legislation is relevant:

- EU Water Framework Directive (European Commission, 2000);
- Environmental Permitting Regulations (The Environmental Permitting Regulations (England and Wales), 2016);
- Industrial Emissions Directive (European Commission, 2010); and
- Water Resources Act 1991.

Water Framework Directive 2000

15.4.5 The Water Framework Directive (WFD) introduces consideration of ‘significant’ pollution of controlled waters. In determination of whether significant pollution is being caused, the following criteria are used:

- pollution equivalent to ‘environmental damage’ as per the Environmental Damage Regulations 2015;
- deterioration of abstracted water quality or such water intended for use in the future for human consumption such that additional treatment would be required to enable such use; and
- a breach of statutory surface water Environmental Quality Standards (EQS), and/or the input of a substance in groundwater resulting in a significant and sustained upward trend in concentration of contaminants.

Environmental Permitting Regulations 2016

15.4.6 The Environmental Permitting Regulations aim to provide comprehensive help for those operating, regulating, or interested in facilities that are covered by the Environmental Permitting (England and Wales) Regulations 2010 SI 2010/675 (as amended (‘the Regulations’)). It describes the main provisions of the

Regulations and sets out how the Regulations should be applied and how particular terms should be interpreted in England and Wales.

Industrial Emissions Directive 2010

- 15.4.7 The Industrial Emissions Directive (IED) 2010/75/EU commits EU member states to control and reduce the impact of industrial emissions on the environment, including releases of hazardous substances to land (i.e. to soil and groundwater). The permit requirements for installations falling under the IED require operators to carry out periodic monitoring of groundwater and soil quality or justify the absence of monitoring as part of an environmental risk assessment in terms of a systematic appraisal of the risk of contamination to soil and/or groundwater.

Water Resources Act 1991

- 15.4.8 The Water Resources Act 1991 (WRA) sets national regulatory controls and restrictions used to protect the water environment. Under Section 85 of the WRA, it is an offence to cause or knowingly permit any poisonous, NO_xious or polluting matter to enter into controlled waters, which include groundwater and surface waters.

LAND CONTAMINATION

- 15.4.9 The following legislation is relevant to land contamination issues:
- Part IIA of The Environmental Protection Act 1990 (EPA);
 - Contaminated Land (England) Regulations 2006 (as amended); and
 - Contaminated Land Statutory Guidance (2012) from the Department for Environment, Food and Rural Affairs.

Environmental Protection Act 1990

- 15.4.10 The EPA outlines the legal responsibilities for dealing with contaminated or potentially contaminated land, contained within Part IIA. Within the EPA contaminated land is defined as ‘any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) pollution of controlled waters is being, or is likely to be, caused’.
- 15.4.11 Part IIA of The EPA 1990 was introduced by The Environment Act 1995 (Environment Act, 1995) and provides an overarching framework for the control of risks to the environment or human health from land contamination arising from historical or current Site uses. It outlines the responsibilities of Local Authorities to inspect and act based upon suitable risk assessment in accordance with Statutory Guidance, with the exception of ‘Special Sites’ that are regulated by the Environment Agency.

Contaminated Land Regulations 2006

- 15.4.12 These regulations apply to England and set out provisions relating to the identification and remediation of contaminated land under Part IIA of the EPA 1990. The regulations also include additional description of contaminated land that is required to be designated as a 'Special Site'. The regulations also state the EA will be the enforcing authority for any sites which fall under the definition of a 'Special Site'. Whereas local authorities will be the enforcing authority in relation to any other type of site.

PLANNING POLICY

- 15.4.13 National planning policy of relevance to the Proposed Development includes:
- National Policy Statement for Waste Water with particular reference to paragraph 4.8.8, 4.8.9 and 4.5.3 in relation to soil quality, contaminated land and geology; and
 - National Planning Policy Framework¹⁹¹ with particular reference to paragraph 118 in relation to brownfield land and remediation; and Section 15, paragraphs 178 and 179, in relation to ground conditions and suitability of a site for its proposed uses in relation to land instability and contamination.
- 15.4.14 Local planning policy of relevance to the Proposed Development includes:
- South Cambridgeshire District Council Local Plan 2018 with particular reference to policy SC/11 (contaminated land) and policy CC/6 (construction methods);
 - Cambridge City Council Local Plan 2018 with particular reference to policy 33 (Contaminated Land); and
 - Cambridgeshire and Peterborough Minerals and Waste Local Plan (2021) with particular reference to Policy 5 Mineral Safeguarding Areas (MSAs).

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

- 15.4.15 These policies identify the need for protection of natural resources including soils, mineral resources, groundwater and surface waters during development. These topics are embedded in the policies and regulations identified.
- 15.4.16 The South Cambridgeshire Local Plan is supported by the NPPF in stating that land must be suitable for its new use, taking account of ground conditions.
- 15.4.17 The South Cambridgeshire Local Plan identifies public health and safety as a sensitive receptor relating to land contamination and therefore potential contamination must be identified at an early stage in the development. The

¹⁹¹ National Policy Planning Framework (2018). Ministry of Housing, Communities & Local Government: London. Available URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf. Last accessed 24 October 2019.

Cambridge City Council Local Plan also identifies controlled waters as sensitive receptors.

- 15.4.18 In terms of mitigation the local plans and NPPF require appropriate remediation to be identified and addressed, if required, to remove any unacceptable risks and ensure the site is suitable for use.
- 15.4.19 In order to assess and limit these impacts the policies relating to contaminated land require consideration of impacts during the construction and Operational Phases of the development.

NATIONAL POLICY STATEMENT REQUIREMENTS

- 15.4.20 Table 15-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 15-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPA requirements
Paragraph 4.8.8 Identify any effects and minimise impacts on soil quality taking into account any mitigation measures	Soil quality (contamination) included in assessment with impacts during construction and operation considered. See Chapter 6 in relation to agricultural soil quality.
Paragraph 4.8.8 For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination	Previously developed land limited to the existing Cambridge WWTP and limited areas of the waste transfer tunnels. Consideration of contaminated land risk is included within the scope of assessment.
Paragraph 4.5.3 The applicant should set out any effects on sites of geological conservation importance	Geodiversity baseline reviewed and included in scope.
Paragraph 4.8.9 Mineral resources should be safeguarded as far as possible including long term potential of land use after future decommissioning	Assessment will consider the Mineral Safeguarding Areas (MSAs) within the assessment boundary.

GUIDANCE

- 15.4.21 The National Planning Practice Guidance includes a dedicated section on land affected by contamination¹⁹², and a section on land stability¹⁹³.
- 15.4.22 Guidelines on assessment of land affected by contamination in England and Wales detail the process of identifying sources, pathways and receptors and

¹⁹² <https://www.gov.uk/guidance/land-affected-by-contamination>

¹⁹³ <https://www.gov.uk/guidance/land-stability>

associated pollutant linkages. This allows a conceptual site model and risk assessment to be produced. The guidance for this comprises Land Contamination Risk Management (LCRM, 2020)¹⁹⁴ and Contaminated land risk assessment. A guide to good practice (CIRIA C552, 2001)¹⁹⁵.

- 15.4.23 In the absence of other guidance, the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 11: Geology and Soils offers guidance on potential impacts on geology, soils and designated sites.

15.5 Baseline conditions

- 15.5.1 The baseline conditions for land quality are described for the three zones within the EIA Scoping boundary as set out in Appendix H.
- 15.5.2 The baseline conditions have been informed by Landmark Envirocheck reports for the core site, existing Cambridge WWTP site, waste water transfer tunnels from existing Cambridge WWTP to proposed WWTP and final effluent pipeline to outfall at River Cam. Baseline conditions were also informed by aerial photography and open source data provided by various regulatory bodies and organisations such as the Environment Agency, Cambridgeshire County Council and the British Geological Survey (BGS). The baseline will be further supported by the completion of a land contamination, Preliminary Risk Assessment (PRA) of the area within the EIA Scoping boundary.
- 15.5.3 Current aerial photography from 2019 was used to identify land use in the remainder of the study area. No historical OS maps of the wider area (outside of core site) are currently available for review. The pertinent information is summarised below.

CORE ZONE

- 15.5.4 Historical maps (1887 – 2019) covering the core site have been reviewed. The mapping indicates the site has generally been occupied by open field/agricultural land since the oldest map. A pond was identified onsite in 1886 but is no longer shown, which may indicate that this feature has been infilled. The land use is currently used for arable farming.
- 15.5.5 Geological mapping (BGS GeolIndex) indicates no superficial deposits are present across the core site. BGS mapping indicates that this area is underlain by bedrock comprising the West Melbury Marly Chalk Formation (part of the Grey Chalk Subgroup). The total thickness of the West Melbury Marl Chalk Formation in the area is approximately 10m based on geological logs from boreholes along the A14 and Low Fen Drove Way.

¹⁹⁴ <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

¹⁹⁵ Construction Industry research and Information Association (CIRIA) C552 (2001) Contaminated land risk assessment. A guide to good practice

TRANSFERS ZONE

- 15.5.6 The waste water transfer tunnel route leading from the existing Cambridge WWTP to the core site, is indicated to underlie the River Cam, the B1047 Horningsea Road, A14 and a railway line. The remainder of this area has remained in continuous agricultural use. The waste water transfer tunnel route extends into the existing Cambridge WWTP which is currently in use.
- 15.5.7 The indicative treated effluent transfer pipeline route runs approximately 300m – 400m north of the waste water transfer tunnel (described above). The route, however, does not extend as far west towards the existing Cambridge WWTP and instead ends at the treated effluent discharge outfall to the River Cam.
- 15.5.8 Geological mapping (BGS GeoIndex) indicates varying superficial geology deposits are present across the waste water transfer tunnel (including the existing Cambridge WWTP) and treated effluent transfer pipeline. River Terrace Deposits are present in the west of the study area, including beneath the existing Cambridge WWTP. Alluvium deposits are present 200m east of the existing Cambridge WWTP, extending 200m further east. Available BGS borehole logs in the surrounding area indicate that there is considerable variability in thickness (and composition) of these superficial deposits (3.5 to 7m).
- 15.5.9 The Gault Formation underlies the existing Cambridge WWTP site and surrounding area. The boundary between the Gault Formation and the West Melbury Marly Chalk Formation lies in the area of the River Cam, part way along the waste water transfer tunnel. Therefore, the eastern area of the waste water transfer route and the final effluent pipeline are likely to be underlain by Chalk. The total thickness of the Gault Formation in the area is approximately 35m.
- 15.5.10 The Cambridge Greensand (Lower Greensand) underlies the Gault Formation.

WATERBEACH ZONE

- 15.5.11 The land use along the Waterbeach waste water transfer pipeline is generally agricultural with the exception of some areas of residential use, the railway line in the north and the existing Waterbeach WRC. The route crosses beneath the River Cam in the north. Waterbeach Barracks were historically present to the west of the northern section of pipeline, the barracks were in use from the 1960's.
- 15.5.12 Geological mapping (BGS GeoIndex) indicates varying superficial deposits are present along the Waterbeach waste water transfer pipeline route. River Terrace Deposits are present at the existing Waterbeach WRC and in localised areas along the Waterbeach transfer pipeline including in the vicinity of Horningsea. Alluvium and peat deposits are present in the northern area where the route passes under the River Cam.

- 15.5.13 The West Melbury Marly Chalk Formation comprises the bedrock along the southern section of the proposed Waterbeach pipeline (up to and including Horningsea) as well as a 1km stretch south of Clayhithe. The Gault Formation forms the bedrock across the remainder of the Waterbeach waste water transfer pipeline and beneath the existing Waterbeach WRC.
- 15.5.14 The Cambridge Greensand (Lower Greensand) underlies the Gault Formation.

HYDROGEOLOGY (ALL ZONES)

- 15.5.15 Based on the WFD, the Environment Agency has classified three groundwater resource types (aquifers) as Principal aquifers, Secondary aquifers and Unproductive Strata based upon their capacity to supply drinking water and support ecosystems. Principal aquifers are considered to have the greatest capacity and Unproductive aquifers the least, Table 15-3 provides a summary of aquifer designations.

Table 15-3: Environment Agency aquifer designations

Strata	Environment Agency aquifer designations
Alluvium	Secondary A aquifer
River Terrace Deposits	Secondary A aquifer
Peat	Unproductive strata
West Melbury Marly Chalk Formation	Principal aquifer
Gault Formation	Unproductive strata
Lower Greensand Group	Principal aquifer

Source: Environment Agency

- 15.5.16 The study area is not located within a groundwater source protection zone (SPZ) or within 1km of an SPZ. Local abstractions have been identified in the surrounding area from available Envirocheck mapping and details of local abstractions have been requested from the local authorities.

HYDROLOGY (ALL ZONES)

- 15.5.17 There is one main hydrological feature within the study area. The River Cam runs north to south between the existing Cambridge WWTP and the core site bisecting the waste water transfer tunnel. The River Cam also enters the study area further north as it crosses the Waterbeach waste water transfer pipeline approximately 600m north of Clayhithe. The treated effluent discharge outfall will discharge to the River Cam.
- 15.5.18 Certain surface waterbodies are classified under the WFD and are assessed for a number of parameters to give an overall ecological and chemical status or potential. This includes an assessment of water quality, morphology, tidal

regime and freshwater flow inputs, chemical elements and mitigation measures. Further information on the status of the River Cam is provided in Chapter 21: Water Resources.

- 15.5.19 In addition to the River Cam, there are numerous drains and other surface water bodies within the study area that are not identified as waterbodies under the WFD. Consequently, no quality data is available under the WFD for these surface waterbodies.

LANDFILL AND WASTE SITES (ALL ZONES)

- 15.5.20 Milton Landfill (EPR/BV4584IU) is recorded approximately 500m to the north-west of the existing Cambridge WWTP. The waste site currently accepts household, commercial and industrial waste as landfill. Eversden Landfill (Quy Landfill) is located 400m east of the study area. This site has been accepting “non-biodegradable wastes” since 1993 but is now closed.

- 15.5.21 There are four historical landfills within 500m of the study area:

- Clayhithe Cottages is located directly west of the proposed Waterbeach pipeline in Clayhithe. The landfill is recorded to have accepted inert waste between 1989 and 1992;
- Winship Industrial Estate is located 330m north of the existing Cambridge WWTP. The landfill is recorded to have accepted inert waste between 1974 and 1980;
- Quy Mill Hotel is located 200m east of the study area. The landfill is recorded to have accepted inert waste between 1989 and 1992; and
- Quy Bridge is located 200m east of the study area. The landfill is recorded to have accepted inert waste between 1990 and 1992.

UNEXPLODED ORDNANCE (ALL ZONES)

- 15.5.22 Zetica, unexploded bomb (UXB) risk maps indicate the potential for UXB to be present as a result of bombing during World War II. UXB maps covering the study area indicate a low risk zone. Low risk is defined as areas indicated as having 15 bombs per 1000acre or less. The historical Waterbeach Barracks were recorded to have been a Luftwaffe target during World War II. An UXO specialist will be consulted to undertake further assessment to confirm potential risks of encountering UXO and employ appropriate mitigation, if recommended.

MINERAL SAFEGUARDING AREAS (ALL ZONES)

- 15.5.23 Mineral Safeguarding Areas (MSAs) are designated for deposits of sand and gravel, brick, clay, limestone and chalk that are considered to be of current or future economic importance. Cambridgeshire County Council (CCC) is the minerals planning authority (MPA). The Cambridgeshire and Peterborough Minerals and Waste Development Plan Core Strategy (2011) and

Cambridgeshire and Peterborough Minerals and Waste Development Plan Site Specific Proposals (2012) documents were replaced in 2021. The current document is the Cambridgeshire and Peterborough Minerals and Waste Local Plan (July 2021). Section 2.2 of the plan identifies objectives including ensuring a steady and adequate supply of mineral to support growth whilst ensuring the best use of materials and safeguarding productive land. The MPAs are required to maintain a stock of sand and gravel reserves (a landbank) equivalent to at least 7 years supply. The plan sets out MSAs to meet these objectives.

- 15.5.24 Sand and gravel deposits are present within the study area and are designated as within an MSA. These deposits are predominantly located between the existing Cambridge WWTP and the River Cam as well as localised areas along the proposed Waterbeach pipeline.

GEODIVERSITY (ALL AREAS)

- 15.5.25 Open source government data does not identify any geological Sites of Special Scientific Interest (SSSI), any regionally or locally important geological sites or non-designated outcrops/features of interest within 250m of the EIA Scoping boundary. The closest geological Site of Special Scientific Interest relates to the Upware Bridge Pit North located approximately 7km north of the scoping boundary.

SUMMARY

- 15.5.26 The majority of the study area comprises rural agricultural land in arable production.
- 15.5.27 An MSA is present within the study area, which is designated due to the likely presence of mineral resources associated with potential deposits of sands and gravels. It is likely that some mineral resources will be removed as part of the construction, this is likely to be restricted to the shaft sites required as part of the waste water transfer tunnel.
- 15.5.28 Potential presence of contamination is likely to be limited due to the lack of potentially contaminative land uses.
- 15.5.29 Potential presence of contaminant sources in relation to the areas of development are summarised in Table 15-4.

Table 15-4: Potential contamination sources

Location	Potential sources identified	Contaminants of Concern
Core site	Infilled pond, off-site landfill	Metals/semi-metals, total petroleum hydrocarbons (TPH), polyaromatic hydrocarbons (PAH), asbestos and

Location	Potential sources identified	Contaminants of Concern
		ground gas (carbon dioxide and methane)
Existing Cambridge WWTP, waste water transfer tunnels from existing Cambridge WWTP to proposed WWTP and final effluent pipeline to outfall at River Cam.	Railway sidings, existing Cambridge WWTP, electrical substations	Metals/semi-metals, TPH, PAH, semi volatile organic compounds (SVOC)/volatile organic compounds (VOC) and poly chlorinated biphenyl (PCB), bacteriological contaminants.
Waterbeach waste water transfer pipeline	Army barracks, railway, existing Waterbeach WWTP, off-site landfill.	Metals/semi-metals, TPH, PAH, SVOC/VOC.

15.5.30 The following receptors in Table 15-5 are identified in the study area that could be impacted by the Proposed Development.

Table 15-5: Summary of identified receptors

Receptor type	Receptor description	Receptor Sensitivity
People	On-site WWTP workers and visitors	Low
	Off-site industrial/commercial workers and visitors	Low
	Adjacent residents to development sites	Medium
Groundwater	Secondary A aquifer (River Terrace Deposits)	Medium
	Principal aquifer (Lower Greensand Group and Chalk)	Medium
Surface water	Onsite watercourse (the River Cam)	Medium
	Drainage channels on and off-site	Low
Built environment	Proposed Development foundations and utilities	Low

15.6 Baseline data collection

- 15.6.1 A ground investigation for the purposes of geotechnical, contaminated land and hydrogeological baseline data collection is currently underway at the site. The ground investigation has been designed to obtain sufficient data to allow generic quantitative risk assessment and to identify any specific remediation or mitigation requirements of the scheme as required under LCRM guidance.

15.7 Future baseline

- 15.7.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA
- 15.7.2 Where this presents new environmental receptors or a change to the current baseline specific to land quality, this is discussed further below.
- 15.7.3 For the aspect of land quality, the future baseline will remain largely the same in terms of ground conditions, the main difference will be the change in land use at the core site from agricultural land to WWTP introducing some potential additional contamination sources.

15.8 Potential environmental impacts and mitigation

- 15.8.1 Effects occur when pollutant linkages (where a contaminant source is present that can travel through pathways to reach identified receptors) are present. If significant, these have the potential to cause harm. Based on information collected during the baseline study, there are only limited sources of contamination within the study area, which may impact identified receptors.

POTENTIAL IMPACTS PER ZONE

- 15.8.2 The potential impacts presented in Table 15-6 and Table 15-7 are divided by zone.

Table 15-6: Potential construction impacts per zone

Potential impact	Core Zone	Transfes Zone	Waterbeach Zone	Comment
Off-site human exposure to contaminated dusts and vapours	✓	✓	✓	Not anticipated to be an impact in areas of pipe jacking but potential impact in areas of shafts, piling and open cut trenching.
Increased leaching of existing contamination during excavation works where	✗	✓	✗	As above. Considered unlikely at the core site and Waterbeach transfer route due to a lack of existing hardcover.

Potential impact	Core Zone	Transfes Zone	Waterbeach Zone	Comment
existing hardstanding is removed				
Creation of additional pathways to sensitive aquifers	x	✓	x	Pipeline routes and piling works where pathways may be created between made ground and the Greensand or the Chalk Principal aquifers.
Spills and leaks from storage of fuel and refuelling operations	✓	✓	✓	Limited to temporary fuel storage areas within the zones.
Permanent removal of mineral resources comprising River Terrace Deposits	x	✓	✓	Limited to areas of shafts (including launch recovery shafts for river, road and rail crossing associated with the Waterbeach transfer pipeline) piling works and cut and cover works along the Waterbeach transfer pipeline.

Table 15-7: Potential operational impacts per zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone	Comment
Exposure of on-site future site users of the WWTP to contaminants in soils and groundwater	✓	x	x	Assumes reuse of soils within landscaping areas. Unlikely to be a source of contamination at the core site but ground investigation will confirm this.
Leaching and migration of contaminated liquids/groundwater through the creation of preferential pathways, impacting upon controlled waters	x	✓	x	Relates to pipeline routes where they intersect with the Greensand or the Chalk Principal aquifers

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone	Comment
Leaks and spills from use of the new WWTP.	✓	✗	✗	
Gas migration through permeable strata or conduits into confined spaces at potentially asphyxiant or explosive concentrations	✓	✗	✓	Limited to the core site and localised areas along the Waterbeach transfer pipeline associated with nearby historical landfills.
Exposure of materials to a corrosive environment, causing damage	✓	✓	✓	

Potential mitigation

15.8.3 There will be a number of primary (inherent) mitigation measures which are intrinsic to the Proposed Development, these will be considered when undertaking the land quality impact assessment. These may include avoidance and/ or protection of sensitive land use areas, strata or contamination sources and design features including bunding of tanks.

15.8.4 Tertiary mitigation measures relating to land quality will follow the LCRM process for assessment of contaminated land risks. This will include assessment of ground investigation data and generic quantitative risk assessment as a minimum. Any remediation or additional mitigation measures will be informed by this assessment.

PRE-CONSTRUCTION MITIGATION

15.8.5 The study area will be further characterised and assessed, with respect to potential land quality impacts through preliminary risk assessment (PRA). Upon the completion of any necessary ground investigation works, site specific assessments would determine requirements for any specific mitigation or remediation measures, if necessary. Remediation can be completed as part of the pre-construction works but, more typically, would continue through the Construction Phase.

CONSTRUCTION PHASE MITIGATION

- 15.8.6 During the Construction Phase tertiary measures comprising remediation works (if identified in the pre-Construction Phase following LCRM guidance) would be completed.
- 15.8.7 The Construction Phase would be mitigated by secondary mitigation in the form of the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to land quality and contamination. Control measures may include:
- Health and safety controls with respect to land quality issues:
 - all construction site workers would be adequately trained to recognise and appropriately respond to potential land quality issues. Site welfare facilities and if appropriate, use of decontamination units (i.e., dirty in, clean out welfare units);
 - use of standard construction site personal protective equipment (PPE) (e.g., high visibility clothing, safety boots, hard hat, safety glasses gloves);
 - work areas will be well delineated and kept secure to prevent trespass; and
 - robust emergency procedures (e.g., with respect to UXO, previously unidentified contamination or structures), which are periodically tested and reviewed. In the event of previously unidentified conditions being encountered (e.g., underground storage tanks, drums), works would be suspended, the work area evacuated, and specialist advice obtained. Where appropriate, risk assessments would be undertaken, and additional control measures implemented prior to any works recommencing.
 - Implementation of effective contaminative substance and excavated material management procedures such as:
 - fuel and other chemicals to be stored in designated areas with potentially contaminating substances stored on drip trays or in double skinned bunded tanks;
 - spill kits available to deal with spillages to ground;
 - re-fuelling will be via a mobile double-bunded bowser equipped with a spill kit and bunding. No refuelling will take place within 10m of a watercourse;
 - potentially contaminated materials will be removed from site as soon as practicable;
 - storage areas for surplus excavated materials from site grading or excavation works that demonstrate visual or olfactory evidence of contamination will be stored in covered skips, or on a sheeted stockpile placed on hardstanding or impermeable sheeting pending its removal or treatment; and

- implementation of good construction site control measures to reduce dust such as damping down and wheel washes.
- Environmental monitoring, including watching brief:
 - On-site watching brief during potentially high-risk activities and an on call watching brief for all other activities.
 - Specialist watching brief may include UXO, contaminated land, asbestos; health and safety/occupational health and ecological; and
 - Dust and air/vapour monitoring. If appropriate, this would include a combination of on-site and boundary monitoring, which would either provide real-time measurements or collect samples for subsequent analysis.

15.8.8 Compliance with the CoCP would be secured via a requirement included within the Development Consent Order. The CoCP would then form the basis of more detailed plans and method statements, to be prepared during the pre-construction period by the appointed contractor. These plans would include a detailed Construction Environment Management Plan (CEMP).

OPERATIONAL PHASE MITIGATION

15.8.9 Operational effects from the Proposed Development relate to the exposure of future site users to potentially contaminated soils, groundwater or ground gases. Primary mitigation measures will ensure that the design of the operational site includes appropriate bunding of tanks and use of hardstanding to break any significant pathways for contamination. Any pre-existing contamination would be adequately managed through the contaminated land regime (LCRM) and implemented as tertiary mitigation to ensure that the operational area is suitable for use. Although the maintenance of the WWTP once it is operational will be required to be in compliance with relevant environmental legislation in order to prevent land, surface water or groundwater contamination, the major operational sources of contamination will be reviewed and appropriate mitigation measures identified. During the operational period, monitoring works (such as for groundwater) may continue in order to demonstrate the effectiveness of any primary mitigation and or remedial works should they be required.

15.9 Proposed scope of the assessment

15.9.1 A summary of the aspects scoped in and out are shown below in Table 15-8.

Table 15-8: Matters to be scoped out

Matter	Core Zone	Transfers Zone	Waterbeach Zone	Justification
Land quality (contamination of soils)	Out	Out	Out	The majority of the site is greenfield with only limited sources of contamination at or within close proximity to the core site and along indicative locations of the transfer and treated effluent pipeline routes. Shaft sites may potentially penetrate into the Lower Greensand Group or Chalk (Principal aquifer). Land quality has been scoped out of the assessment due to limited sources being identified. Contaminated land will be dealt with through the UK regulatory regime as standard including requirements of LCRM.
Geodiversity (geological Site of Special Scientific Interest (SSSI), regionally or locally important geological sites or non-designated outcrops/features of interest)	Out	Out	Out	Geodiversity has been scoped out of the assessment as no such sites are known to exist within 250m of the scoping boundary.
Minerals and mining (e.g. sand and gravel deposits, limestone)	Out	Out	Out	No mineral resources are anticipated at the core site. An MSA is located in localised areas of the transfer and treated effluent pipelines, and the Waterbeach transfer pipeline. However, as the footprint of the construction in these areas is small in comparison to the MSA

Matter	Core Zone	Transfers Zone	Waterbeach Zone	Justification
				and the majority of the tunnel route will be constructed by HDD likely below the sand and gravel deposits, there is not considered to be a significant effect. On this basis this has been scoped out.
Agricultural soils	N/A			This matter is addressed in Chapter 6: Agriculture and Soils

15.10 Evidence of agreements reached with consultation bodies

15.10.1 The following consultation has been carried out in relation EIA scope and where agreements have been reached these are indicated in Table 15-9.

Table 15-9: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
South Cambridgeshire District Council	Contacted on 8th April 2021 to request information on known ground conditions and contaminated land sites in the area of the Core site.	<ul style="list-style-type: none"> Email response received 18th May 2021. Advised main contaminated land concerns are sand and gravel extraction activities and a dismantled railway adjacent to the Core Zone.
Cambridge City Council	Contacted on 8th April 2021 to request information on known ground conditions and contaminated land sites in the area of the Core site and at the existing Cambridge WWTP including pipelines.	<ul style="list-style-type: none"> Email response received 9th May 2021. Advised main contaminated land concerns were the current use of the existing Cambridge WWTP and the contaminants associated with that site use.

15.11 Assessment methodology

15.11.1 Land quality has been scoped out of the assessment, as detailed above. Therefore an assessment methodology is not required.

15.12 Approach to cumulative effects assessment

- 15.12.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.
- 15.12.2 As land quality has been scoped out a cumulative assessment concerning land quality is not required. It is assumed that any new development during its Operational Phase would not cause deterioration to land or sensitive receptors (such as groundwater, human health and built environment), as appropriate preventative/mitigation measures would be in place.

15.13 Assumptions, limitations and uncertainties

- 15.13.1 The Envirocheck report used in identifying the baseline conditions, particularly the site history, only covered the core site and existing Cambridge WWTP.
- 15.13.2 A ground investigation is currently on-going, therefore there is the potential for ground conditions to vary from the published geological maps, particularly relating to presence and depth of any made ground.
- 15.13.3 The assessment within this topic area considers land quality from the perspective of land contamination. It does not cover soil quality from an agricultural perspective which is addressed in Section 6 of this document.
- 15.13.4 There would be interaction between the Land Quality and the Water topic assessments to understand the potential effects on the quality of groundwater from any contaminated land. Wider issues of groundwater and surface water resources are contained within Chapter 20: Water Resources of this document.
- 15.13.5 Land contamination has the potential to affect ecological resources. Other ecological issues are contained in Chapter 8: Biodiversity of this document.
- 15.13.6 Remediation of contamination can lead to a requirement for disposal of contaminated materials. Issues of soil reuse and the disposal of contaminated soils off site are dealt with in Chapter:18 Materials, Resources and Waste, of this document.
- 15.13.7 It is not expected that the collection of baseline data will be affected by the Covid-19 pandemic.

16 Major Accidents and Disasters

16.1 Introduction

- 16.1.1 This chapter of the EIA Scoping report considers potential significant adverse effects of the Proposed Development on the environment, deriving from the vulnerability of the Proposed Development to risks of relevant major accidents and/or disasters.
- 16.1.2 Major accidents or natural disasters are rare events or situations that have the potential to affect the Proposed Development causing immediate or delayed serious damage to human health, welfare and/or the environment.
- 16.1.3 This chapter describes the proposed assessment methodology and identifies potential risks in relation to possible major accidents and disasters. Relevant primary and tertiary mitigation that may be adopted for the purposes of the assessment are summarised.
- 16.1.4 This chapter also identifies legislation, guidance and local policy of relevant to major accidents and disasters in the context of EIA. This chapter concludes with the proposed scope for the assessment of major accidents and/or disasters within the ES, along with exclusions and limitations.

16.2 Approach

- 16.2.1 The following definitions from the Institute of Environmental Management and Assessment (IEMA) document Major Accidents and Disasters in EIA: A Primer (September 2020)¹⁹⁶, are referred to:
- Major Accidents: Events (such as train derailment or major road traffic accident) that threaten immediate or delayed serious environmental effects to human health, welfare and / or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Major accidents can be caused by disasters resulting from both man-made and natural hazards. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.
 - Disaster: May be a natural hazard (for example a flood, landslip/slide, or earthquake) or a man-made / external hazard (for example an act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
 - Risk: For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, property, environment); and a pathway between the source and the receptor (e.g. flood routes).

¹⁹⁶ Institute of Environmental Management and Assessment (IEMA) document Major Accidents and Disasters in EIA: A Primer [online] [\[redacted\]](#): Assessed September 2021

- Vulnerability: Describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to the 'exposure and resilience' of the development to the risk of a major accident and / or disaster. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact

16.2.2 The assessment will focus on low likelihood, but potentially high consequence events. Low consequence events do not meet the definition of major accidents and/or disasters. This includes example such as minor traffic accidents or minor spills that may occur during construction but would be limited in area and volume and temporary in nature. Such minor events would be dealt with under the Anglian Water or the Contractors' Environmental Management Systems.

16.2.3 The scoping assessment considers the risks of major accidents and disasters during construction and operation that may be caused by operational failure, man-made or natural events through:

- setting out a study area to identify potential major accident and/or disaster hazards that could affect the Proposed Development and or could be exacerbated by the Proposed Development;
- identification of receptors vulnerable to effects of major accidents and/or disaster risk (including the Proposed Development);
- identification of a short list of major accidents and/or disasters and using the IEMA process flow steps to assess these; and
- identification of mitigation (design measures or legal requirements, codes and standards in place to control the potential major accident and/or disaster and management activities) and determining if these render the risk of major accident and/or disaster hazards as low as reasonably practicable (ALARP).

16.3 Matters (resources and receptors)

16.3.1 For the aspect of Major Accidents and Disasters the matters, or resources and receptors are:

- population and human health
- biodiversity
- air, land (soils and groundwater)
- surface water features
- heritage assets and landscape
- material assets (such as existing infrastructure and property)

16.4 Study Area

16.4.1 There is no specific regulatory guidance or standardised methodology for defining a study area in relation to major accidents and/or disaster vulnerability. There is no single fixed buffer from the EIA Scoping boundary as the extents

relate to the nature of the potential major accident and or disaster identified. Figure 16-1 shows the study area under consideration for the major accidents and disasters assessment.

- 16.4.2 Risks within the study area that have been considered include potentially hazardous ground conditions, flood zones and the location of other infrastructure (road, rail, utilities) within 1km of the EIA Scoping boundary.
- 16.4.3 In relation to aviation, aerodrome safeguarding and Cambridge City Airport, the relevant guidance states that the study area for consideration is 13km zone around the airport¹⁹⁷. This is not indicated on Figure 16-1 as the entire Proposed Development is located within this safeguarding zone. Figure 16-1 indicates the public safety zone which extends north-east from the runway¹⁹⁸.
- 16.4.4 A review of information was conducted on sites subject to Control of Major Accident Hazard regulations (termed COMAH sites) held by the Health and Safety Executive (HSE) which provides a 4.8km search radius from a location. The search indicated no existing COMAH sites within 4.8km of the proposed WWTP¹⁹⁹.
- 16.4.5 The study areas for specific aspects with associated receptors that could be affected by the consequences of major accidents and disasters are described in individual chapters, which are signposted in Table 16-1.

¹⁹⁷ CAA (2020) Safeguarding of aerodromes [online] Safeguarding of Aerodromes (caa.co.uk) Accessed September 2021

¹⁹⁸ Areas of land at the ends of airport runways within which development is restricted in order to control the number of people on the ground at risk of death or injury in the event of an aircraft accident on take - off or landing. It corresponds to the 1 in 100,000 individual risk calculated for the airport.

¹⁹⁹ HSE Public information on establishments subject to COMAH 2021 [ONLINE] <https://www.hse.gov.uk/comah/comah-establishments.htm> accessed September 2021

Table 16-1: Study area for relevant aspects

Aspect	Chapter	Study Area Details	Figure(s)
Biodiversity	8	Table 8-1	Figure 8-1, Figure 8-2
Climate resilience	9	Section 9.3 (variable depending on receptors)	Figure-00 in Chapter 2
Community	11	Table-11-1	Figure 11-1, Figure 11-2
Health	12	Table 12-1	Figure 12-1
Historic Environment	13	Table 13-1	Figure 13-1
Landscape	14	Section 14.3	Appendix G
Land quality	15	Section 15.3	No Figure
Materials resources and wate	17	Table-17-1	Figure 17-1
Traffic and transport	19	Section 19.3	Figure 19-1
Water	20	Table 20.1	Figure 20.1

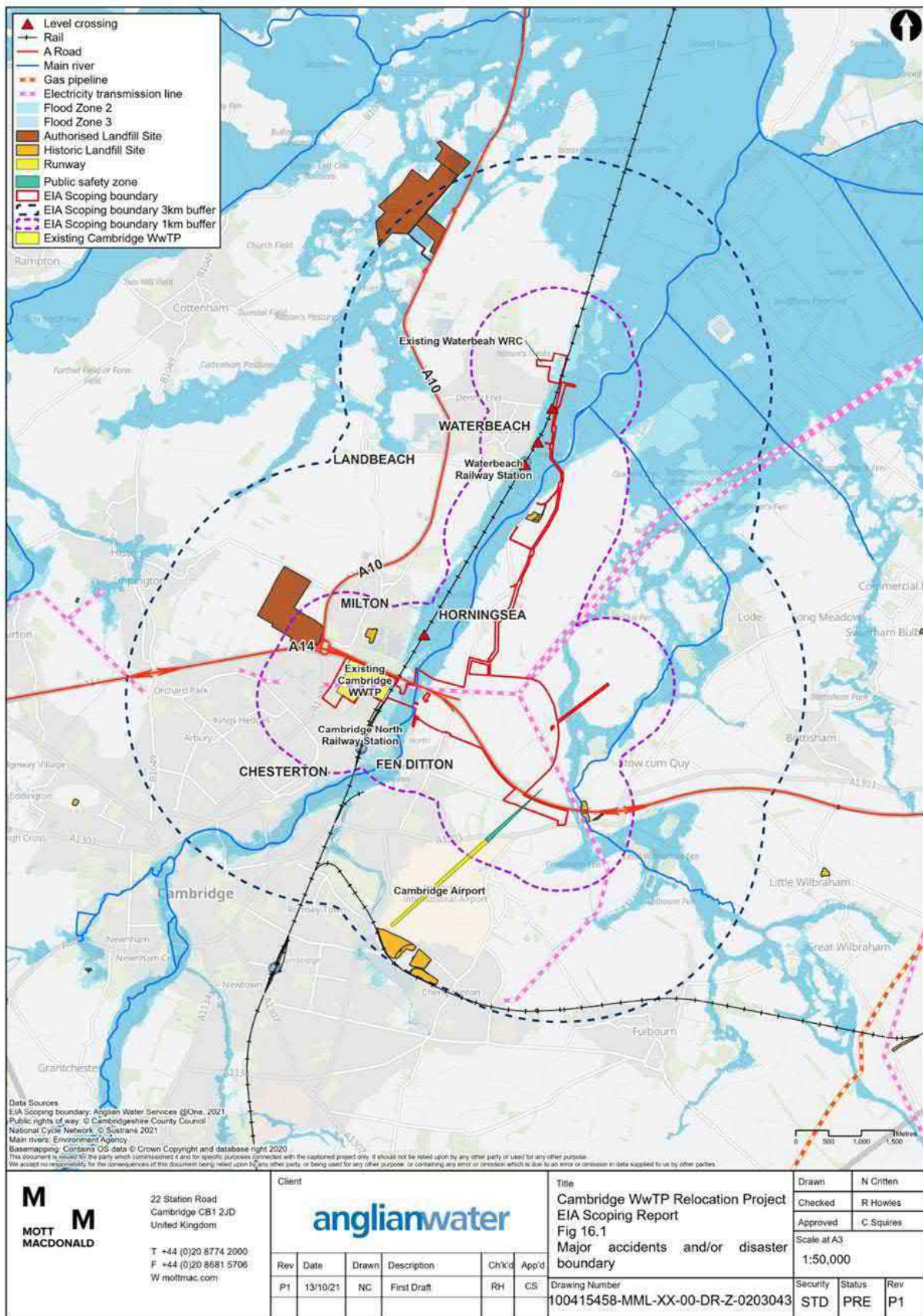


Figure 16-1: Major accidents and/or disasters baseline study area

16.5 Legislation, Planning policy context and guidance

16.5.1 Legislation, planning policy and guidance relating to Major Accidents and Disasters, and pertinent to the Proposed Development comprises is summarised below.

LEGISLATION

16.5.2 The EIA Directive was transposed into UK legislation in 2017, including but not limited to the Infrastructure Planning (EIA) Regulations 2017 (referred to as the EIA Regulations from here).

16.5.3 Regulation 5, Part 4 of the EIA Regulations states that ‘The significant effects to be identified, described and assessed include, where relevant, the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development.’

16.5.4 Schedule 4, paragraph 8 requires an ES to provide ‘A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters...’.

16.5.5 The Health and Safety at Work etc. Act 1974 and relevant statutory provisions provides the overarching framework in relation to the regulation of industrial health and safety. It applies to construction, operation and maintenance of the Proposed WWTP, and:

- places general duties on e.g. employers, people concerned with premises, manufacturers and employees. Health and safety Regulations made under this Act contain more detailed provisions.
- provides the framework for the regulation of industrial health and safety in the UK. The overriding principle is that foreseeable risks to persons in workplaces shall be reduced so far as is reasonably practicable and that adequate evidence shall be produced to demonstrate that this has been done

16.5.6 Further pertinent legislation in relation to the Proposed Development are detailed below, this list is not exhaustive:

- The Construction (Design and Management) (CDM) Regulations 2015 (‘the CDM Regulations’) and accompanying guidance:
 - place particular duties on clients, designers and contractors, to ensure that health and safety is considered throughout the lifecycle of project, from inception, design, construction, operation and into subsequent demolition and removal.
 - Under the CDM Regulations, designers must avoid foreseeable risks, as far as reasonably practicable.
- Environmental Permitting Regulations 2016

- An Environmental Permit will be required for the operation of the Proposed WWTP accordance with the Environmental Permitting Regulations (EPR) 2016.
- Regulatory framework for management aviation risks:
 - International Civil Aviation Organization ICAO Annex 14, Volume 1, to the Convention on International Civil Aviation (“the Chicago Convention”).
 - European Commission Regulation (EU) No 139/2014 of 12 February 2014. Article 9 (e).
 - The European Commission Implementing Rules ADR.OPS.B.020.
 - Detailed Regulatory guidance regarding wildlife hazards to aviation in the UK is provided by the UK Civil Aviation Authority as an Acceptable Means of Compliance (AMC) with the EC regulations in their publication CAP 772 - Wildlife Management at Aerodromes (2013) and Chapter 5 of CAP 168 Licensing of Aerodromes.
- The Security & Emergency Measures Direction (SEMD)
 - a statutory document produced under the provisions of Section 208 of the Water Industry Act 1991. It places upon Water Companies the requirement to ‘keep under review and revise such plans as it considers necessary to ensure the provisions of essential water supply ...and waste water services at all times’

PLANNING POLICY

16.5.7 National planning policy of relevance to major accidents and disasters, and pertinent to the Proposed Development are:

16.5.8 NPS for Waste water with particular reference to;

- Paragraph 3.8.1: Applicants should consult with the Health and Safety Executive (HSE) on matters relating to safety. HSE is responsible for enforcing a range of health and safety legislation applying to the construction, operation and decommissioning of waste water infrastructure. The decision maker will need to be satisfied that there is no reason expect that the project will not comply.
- Paragraph 3.12.1: National security considerations apply across all national infrastructure sectors. Overall responsibility for security of waste water infrastructure lies with Defra. Defra has lead responsibility for security of the waste water sector. It works closely with Government Agencies including the Centre for the Protection of National Infrastructure (CPNI) to reduce the vulnerability of the most ‘critical’ infrastructure assets in the sector to terrorism and other national security threats

16.5.9 Planning Inspectorate’s Advice Note Eleven: Working with public bodies in the infrastructure planning process Annex G with reference to:

- Health and Safety Executive (HSE) role in infrastructure planning. This annex states that the two main considerations for the HSE for the purposes of Nationally Significant Infrastructure Projects are:
 - Does the Proposed Development have the potential to cause a major accident; and
 - Is the Proposed Development vulnerable to potential major accidents?

16.5.10 NPPF²⁰⁰ with particular reference to paragraph 45 in siting of, or changes to, major hazard sites, installations or pipelines, or for development around them, paragraph 97 in relation to public safety, and paragraphs 152 to 174 in relation to meeting the challenge of climate change, flooding, coastal change and water pollution.

16.5.11 Local planning policies of relevance to the Proposed Development includes the following:

- South Cambridgeshire Council Local Plan 2018 with particular reference to;
 - Policy SC/13: (p218) Hazardous Installations. In considering proposals for hazardous substances consent or development in the vicinity of hazardous installations, account will be taken of the amount, type and location of hazardous substances present, and the need for special precautions to protect future users of the site and any other affected land.
 - Policy CC/9: (p97) Managing Flood Risk. Suitable flood protection / mitigation measures are incorporated as appropriate to the level and nature of flood risk, which can be satisfactorily implemented to ensure safe occupation, access and egress. Management and maintenance plans will be required, including arrangements for adoption by any public authority or statutory undertaker and any other arrangement to secure the operation of the scheme throughout its lifetime.
- Cambridge City Council Local Plan 2018 with particular reference to;
 - Policy 32: (p125) Flood risk. The development is designed so that the flooding of property in and adjacent to the development would not occur for a 1 in 100 year event, plus an allowance for climate change and in the event of local drainage system failure.
 - Policy 38: (p138) Hazardous installations. Proposals for the development of hazardous installations/pipelines, modifications to existing sites, or development in the vicinity of hazardous installations or pipelines, will be permitted where:
 - It has been satisfactorily demonstrated that the amount, type and location of hazardous substances would not pose adverse health and safety risks; and

²⁰⁰ National Policy Planning Framework (2018). Ministry of Housing, Communities & Local Government: London. Available URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf. Last accessed 24 January 2021.

- Any necessary special precautions to limit potential societal risks to an acceptable degree would be put in place prior to the commencement of development.
- Policy 19: – Cambridge Airport Public Safety Zone²⁰¹ and Air Safeguarding Zones:
 - Public Safety Zone Development, including change of use, which increases the number of people living, working or congregating on land within the Cambridge Airport Public Safety Zone, as identified on the Proposals Map, will not be permitted.
 - Air Safeguarding Zones Applications for development within Cambridge Airport’s Air Safeguarding Zones will be the subject of consultation with the operator of the airport and the Ministry of Defence.

NATIONAL POLICY STATEMENT REQUIRMENTS

- 16.5.12 Table 16-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

²⁰¹ In Cambridge and South Cambridgeshire, the Public Safety Zone comprises a narrow triangle of land extending approximately 1,300 metres (0.8 miles) from each end of the runway

Table 16-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 3.8.1 Applicants should consult with HSE on safety issues.	The applicant will consult with the Health and Safety Executive (HSE) on the construction, operation and decommissioning of waste water infrastructure.
Paragraph 3.8.2 Infrastructure may be subject to the Control of Major Accident Hazards (COMAH) Regulations 1999. These are enforced by HSE and the Environment Agency in England and Wales.	Proposed Development does not meet criteria for a COMAH site. It is noted that the Proposed Development does not fall within the scope of EU legislation 2012/18/EU (control of major-accident hazards involving dangerous substances).
Paragraph 3.9.1 All establishments wishing to hold stocks of certain hazardous substances, above a threshold quantity need hazardous substances consent. Applicants should consult the HSE at pre-application stage if the project is likely to need hazardous substances consent.	The HSE will be consulted pre-application for the hazardous substance consent if needed. Currently predicted hazardous substances volumes are below threshold levels.
3.12.1 National security considerations apply across all national infrastructure sectors. Defra has lead responsibility for security of the waste water sector. It works closely with Government Agencies including the Centre for the Protection of National Infrastructure (CPNI) to reduce the vulnerability of the most 'critical' infrastructure assets in the sector to terrorism and other national security threats.	Ongoing consultation will continue through the pre-application process and any safety and security issues will be discussed as appropriate. Design incorporates suitable fencing, security and surveillance requirements. Design will include appropriate information and communications technology (ICT) security.
3.12.3 Where national security implications have been identified, the applicant should consult with relevant security experts from CPNI and Defra to ensure that physical, procedural and personnel security measures have been adequately considered in the design process and that adequate consideration has been given to the management of security risks	
Paragraph 4.4.4. Applications for projects of 1 hectare or greater in Flood Zone 175, and all proposals for projects located in Flood Zones 2 and 3 in England should be accompanied by a flood risk assessment (FRA).	A flood risk assessment will be prepared for the Proposed Development.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

- 16.5.13 Planning Policy guidance can influence the consideration and sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or the methodology of the EIA. In addition to the information noted in Table 16-2, planning policy has influenced the development of the EIA scope through:
- considering the Public Safety Zone and Air Safeguarding Zones associated with Cambridge Airport.
 - Considering local flood policy to inform design and construction approach and any associated risks.

GUIDANCE

- 16.5.14 At present, there is no formal methodology for the assessment of major accidents and disasters within EIA. However, potential approaches discussed in IEMA (2020) Major Accidents and Disasters in EIA: A Primer have been referenced in the development of this scoping assessment.

16.6 Baseline conditions

- 16.6.1 Baseline conditions in relation to possible major events have been derived from the following sources:

- National Risk Register of Civil Emergencies²⁰²
- Cambridgeshire and Peterborough Local Resilience Forum Community Risk Register v1.2²⁰³
- British Geological Survey 'Onshore GeoIndex'²⁰⁴
- Tsunamis Hazard Map²⁰⁵
- The International Disaster Database²⁰⁶
- Health and Safety Executive's COMAH 2015 Public Information Search²⁰⁷
- Ordnance Survey map
- Cambridge Airport Public Safety Zones and Safeguarding Areas
- Grid Network Route Maps

- 16.6.2 Based on information published by the British Geological Survey (BGS, 2020), the Proposed Development Site is located in one of the lowest areas of seismic hazard risk in the UK.

²⁰² Cabinet Office. 2017. National Risk Register of Civil Emergencies. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/644968/UK_National_Risk_Register_2017.pdf

²⁰³ Cambridgeshire and Peterborough Local Resilience Forum. 2013. Cambridgeshire and Peterborough Local Resilience Forum Community Risk Register. Available at: <https://www.scamb.gov.uk/media/7963/cplrf-community-risk-register-v12.pdf>

²⁰⁴ Website available at: [REDACTED]

²⁰⁵ Website available at: [REDACTED]

²⁰⁶ Website available [REDACTED]

²⁰⁷ Health and Safety Executive. 2015. Available at: <https://www.hse.gov.uk/comah/>

- 16.6.3 The Proposed Development crosses the Public Safety Zone and is within the Safeguarding Area of Cambridge Airport. At the closest point, the EIA Scoping boundary is 700m north east of the Cambridge Airport runway.
- 16.6.4 The A14 passes to the south of the Core Zone and interfaces with the Transfers Zone. The Cambridge railway line passes approximately 900m west of the Core Zone. The railway line also crosses through the Transfers Zone and Waterbeach Zone. There are four rail level crossings connecting public highway between Cambridge North station and the northern extent of the Proposed Development boundary. It is anticipated that these level crossings would be required to facilitate construction access routes (Figure 5, Appendix A). The Cambridge mainline has overhead catenary infrastructure, which will be taken into consideration as part of standard health and safety protocols for construction access.
- 16.6.5 There are no high pressure gas pipelines within the EIA Scoping boundary. There is an existing major overhead powerline running across the Core Zone and Transfers Zone, however due to the nature of the project this is not a risk.
- 16.6.6 The River Cam passes through the Transfers Zone and the northern section of the Waterbeach Zone. The floodplain, as indicated by flood zones 2 and 3, falls within part of the EIA Scoping boundary. In this location, flood defences are understood to comprise earth embankments along both banks of the River Cam that provide a 1 in 30 year event standard of protection. The outfall for the Proposed Development would directly interface with the flood embankment on the eastern bank of the River Cam. To the east and north of the Core Zone, there is another flood zone associated with the Black Ditch.
- 16.6.7 There are no active landfills within the EIA Scoping boundary. There is one historic landfill (refer to Figure 16-1) within 1km of the EIA Scoping boundary to the west of the Waterbeach Zone.
- 16.6.8 Until its decommissioning, the existing Cambridge WWTP may pose a potential accident hazard to the construction works of the Waterbeach pipeline for the new Cambridge WWTP. The existing Cambridge WWTP has digestion processes and associated gas storage which may present a fire and explosion risk while operational, before decommissioning.

RECEPTORS

- 16.6.9 Information on possible receptors that could be vulnerable to the effects of major accidents and/or disasters are set out within the following chapters.

Table 16-3: Summary of relevant chapters

Aspect	Document Chapter
Biodiversity (includes wildlife hazard management)	8
Climate resilience	9
Community	11
Health	12
Historic environment	13
Landscape	14
Land quality	15
Materials resources and waste	17
Traffic and transport	19
Water	20

16.7 Future baseline

- 16.7.1 The methodology relating to the project's approach to future baseline is presented in Section 5.4 Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 16.7.2 The lack of COMAH sites in the vicinity and the standard of flood protection in the study area is assumed to be stable and will be used as the basis for the assessment of potential impacts arising during construction and operation of the Proposed Development.
- 16.7.3 Development is planned in areas to the south of the A14 which may in future alter the receptors (people and property) within the area. Any developments completed or in construction at year one of operation will be identified and considered within the assessment.
- 16.7.4 At the time of writing this report, there are plans to re-locate Cambridge Airport although no final site has been confirmed. While the future use of the Cambridge Airport site may change, for the purposes of this assessment it is currently assumed that the airport will continue to be operational. The status of this situation will be reviewed throughout the life of the project.

MITIGATION

- 16.7.5 The management framework for the Proposed Development would be defined by a number of mechanisms. These include the Development Consent Order (DCO) requirements in addition to UK laws, regulations and guidance applicable

to construction and operational activities. It is considered that these would serve to control identified risks including those arising from major accidents and natural disasters.

16.7.6 All works will be carried out in accordance with the conditions forming part of the DCO (including submissions made to discharge the requirements of the DCO) and applicable laws and regulations.

16.8 Screening of potential major accidents and/or disaster risks

16.8.1 A list of possible major accidents or disasters relevant to the Proposed Development has been identified using the screening assessment provided in Appendix I:

- Hydrological disasters
 - Flood risk and extreme rainfall
- Transport
 - Rail accidents
 - Aviation
- Engineering accident/failures
 - Tunnel failure during construction
 - Flood defence failure
 - Utilities failure
- Industrial accidents
 - Anaerobic digestion/gas storage fire and explosion
- Malicious attack
 - Terrorism and cyber threat
 - Vandalism

16.8.2 This list of possible events is considered further in relation to their potential for significant effects to receptors. The scoping process included in the IEMA Primer (refer to Figure 16.2) has been used to identify the potential for significant effects that may occur in relation to the short list of possible major accidents and/or disasters relevant to the Proposed Development.

16.9 Evidence of agreements reached with consultation bodies

16.9.1 Table 16-4 summarises the consultation that has been carried out in relation to the development of the EIA scope. Where agreements have been reached at the time of writing this report, these are indicated.

Table 16-4: EIA Scoping consultation

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Environment Agency	Refer to Chapter 21: Water resources	Refer to Chapter 21: Water resources
Cambridge Airport	Advised to prepare wildlife hazard management plan Discussed permit process for equipment	<ul style="list-style-type: none">● Confirmation wildlife hazard to be addressed● Confirmation crane / tall equipment permit to be used
UK Power Networks	No specific scoping consultation but power supply arrangements discussed	<ul style="list-style-type: none">● Power supply can be provided to Proposed Development
National Highways	Refer to Chapter 20: Traffic and transport	<ul style="list-style-type: none">● Approach to traffic assessment
Cambridgeshire County Council	Refer to Chapter 20: Traffic and transport	<ul style="list-style-type: none">● Approach to traffic assessment

16.9.2 Further engagement is planned to be undertaken with Health and Safety Executive (HSE), Cambridge Airport and Environment Agency. Consultation will include discussion on aviation hazards, hazardous substance and environmental health.

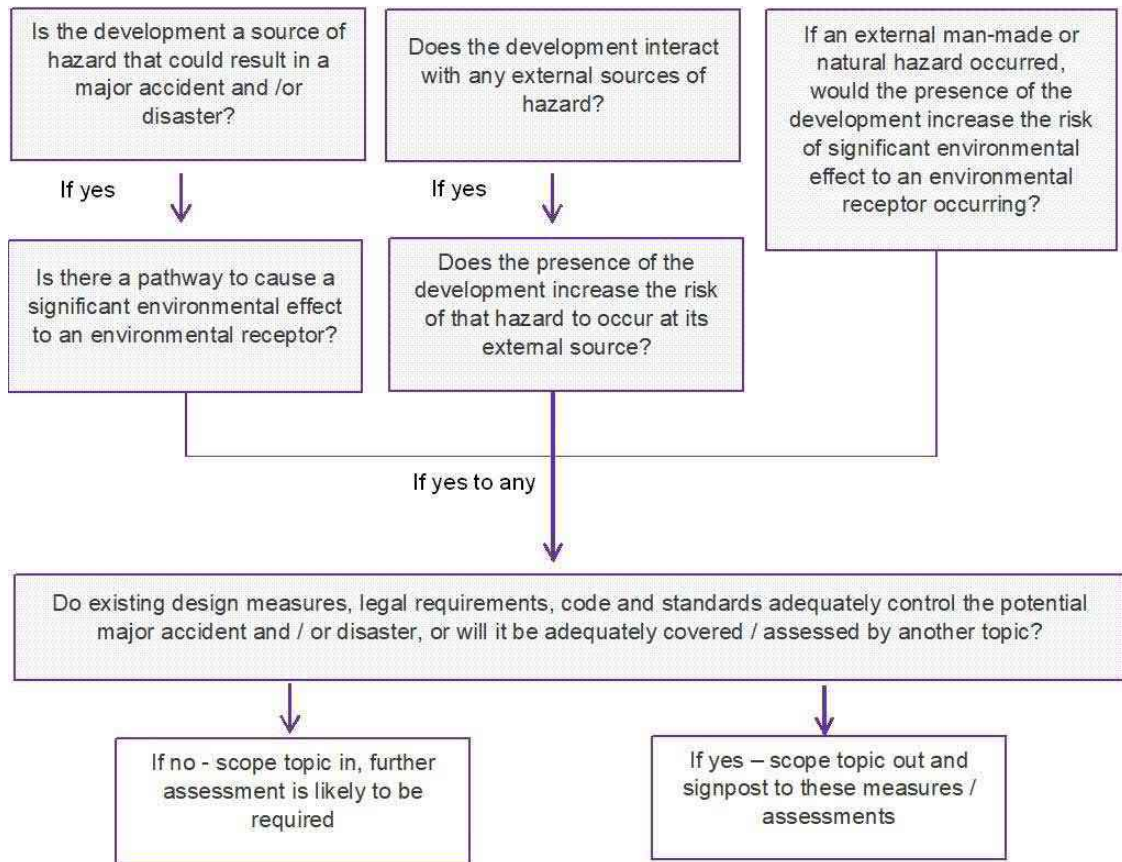


Figure 16-2: Scoping process flow chart from EIA primer

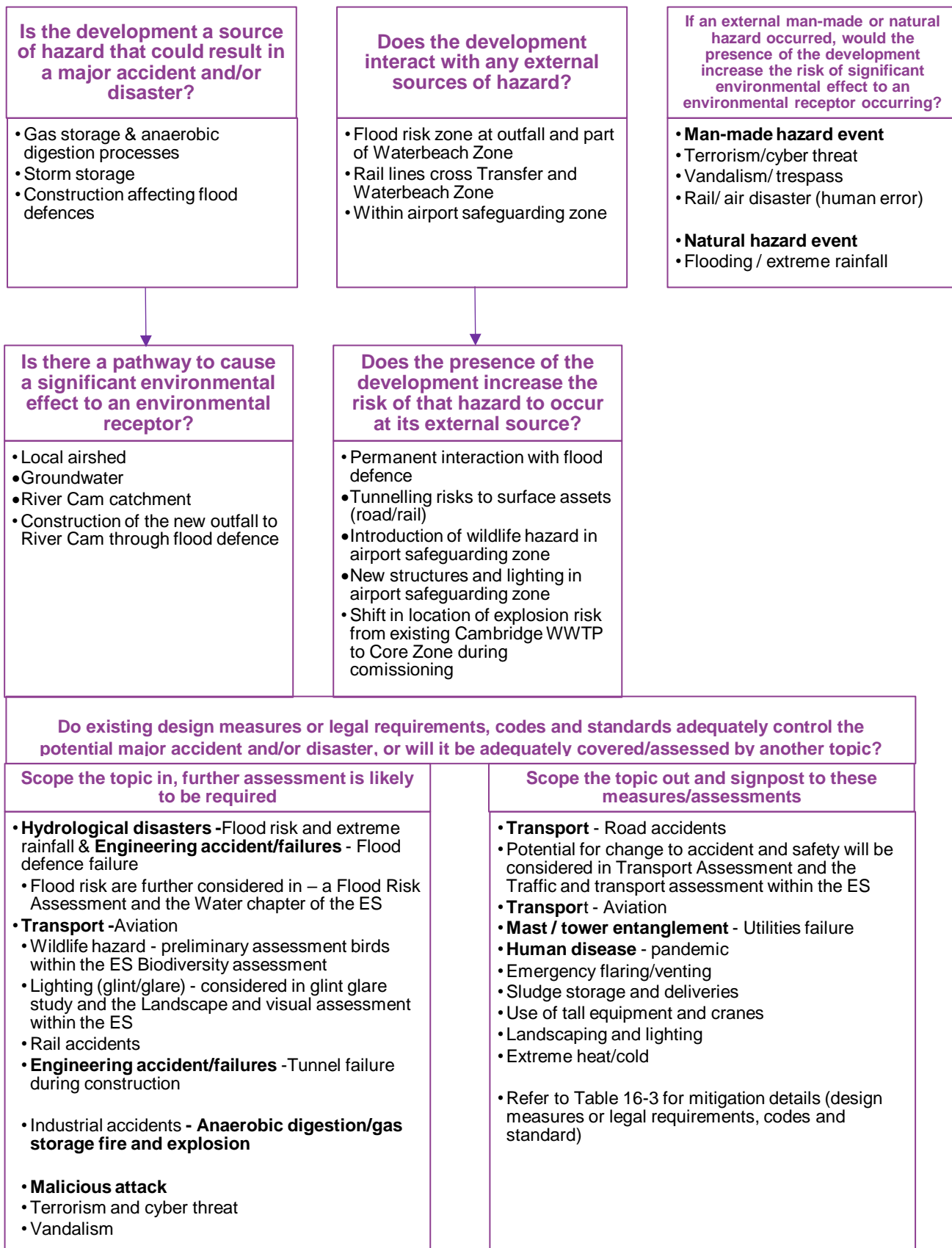


Figure 16-3: Summary of scoping process flow

16.10 Proposed scope

- 16.10.1 A risk assessment will be appended to the ES as part of the 'Description of the development' chapter. This will identify risks associated with the Proposed Development and set out the embedded design features and management controls to demonstrate that risks are mitigated and the resulting outcome aligns with the principle of ALARP (refer to Figure 16.3).
- 16.10.2 The assessment of the impact of flooding in relation to the Proposed Development will be addressed in the ES Chapter: Water Resources and will be further assessed within the Flood Risk Assessment (FRA) that will be appended to the ES.
- 16.10.3 The assessment of the impact of the Proposed Development to landscape (including lighting and glint and glare in relation to the airport) will be addressed in the ES Chapter: Landscape and Visual. A glint and glare study will be a technical appendix to the ES.
- 16.10.4 The assessment of the impact of the Proposed Development in relation to traffic accidents will be addressed in the ES Chapter: Traffic and Transport.

PRELIMINARY BIRD HAZARD ASSESSMENT

- 16.10.5 The assessment will consider the pre-development bird populations of the site, the anticipated post-development bird populations of the site and the likely net changes in the populations and movements of hazardous birds through the critical airspace over and around the airport.
- 16.10.6 The assessment of potential changes to bird assemblages as a result of the Proposed Development will be addressed within the ES chapter: Biodiversity. A standalone preliminary bird risk assessment will be a technical appendix to the ES and referred to as part of the assessment within chapter on Biodiversity.
- 16.10.7 Any residual risk of increased bird strike as a result of the scheme within the 13km safeguarding zone would be managed through the preparation and implementation of a bird control management plan. The plan will be based on the appropriate management of vegetation within the final order limits of the DCO for land to be permanently acquired by the Proposed Development.

16.11 Approach to cumulative effects assessment

- 16.11.1 Cumulative risks combined with other development projects have the potential to escalate the likelihood of major accidents or natural disasters from or to the Proposed Development.
- 16.11.2 Other projects may cumulatively contribute to increased volumes of traffic on roads and highways. However, the management and control of the risk of accidents in this context is controlled by the highway authorities.

16.11.3 The ongoing process of risk assessment for the Proposed Development will include reviews to identify other development brought forward that may cumulatively contribute to a change in hazard source and or the level of risk presented by existing hazard sources.

16.12 Assumptions, limitations and uncertainties

16.12.1 The following limitations and assumptions are noted.

16.12.2 Environmental effects associated with unplanned events that do not meet the definition of a major accident and / or disaster, such as minor leaks and spills are addressed in the relevant topic chapters.

16.12.3 No modelling or detailed calculations were undertaken. The qualitative assessment took the form of 'sign-posting' to existing risk assessments and the assessment of potential gaps or residual risks that are not considered to be able to be managed using the ALARP principle.

16.12.4 Where information was not available, professional judgement was used to reach a conclusion.

16.12.5 It is assumed that good safety management principles would be applied during construction and operation and that all risks that have the potential to be major accidents or disasters, and could impact a local environmental receptor, would be managed using the ALARP principle.

16.12.6 The Proposed Development will be designed, and its operation directed by industry standards and codes, many of which are mandatory. These require infrastructure and systems to be designed in order that risks to people and the environment are either eliminated or reduced to levels that are ALARP.

Table 16-5: Major accident and/or disasters hazard controls

Hazard	Primary Mitigation	Secondary mitigation CoCP / other management plan	Tertiary mitigation	Relevant item in order application
Hydrological disasters				
Flood and extreme rainfall River flooding affects construction works, people and property	Avoidance of works near flood defence assets. Siting out of floodplain as much as possible Construction method for the outfall will developed with the Environment Agency via the FRAP process.	Code of construction Practice (CoCP) with specification to prepare detailed management plans: <ul style="list-style-type: none"> • Flood management plan 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> • Environmental permit (flood risk activities permit) • CDM Regulations 	ES Chapter on Water Resources Designers risk assessment
Extreme flood event affects outfall operation and or surface water flooding affect proposed WWTP	Maintain contiguous line of defence to appropriate level within design Outfall and surface water drainage design to 1% AEP event with allowance for climate change	Compliance with management framework <ul style="list-style-type: none"> • Contingency plans • Flood warning and flood resilience and recovery planning 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> • Environmental permit (flood risk activities permit) • CDM Regulations 	ES Chapter on Water Resources Flood risk assessment Designers risk assessment
Aviation				
Aviation hazard Aircraft hazard collision risk with cranes or tall equipment used during construction of Proposed Development	Equipment selection Timing of use Highest structures within the permitted limits of safeguard zone	<u>Construction</u> CoCP measures include requirement to obtain permits for cranes and tall equipment <ul style="list-style-type: none"> • Emergency response plans <u>Operation</u>	Compliance with required regulatory requirements Cranes and tall equipment permit from Cambridge Airport	Designers risk assessment Works Plans Details of any agreements with Cambridge Airport

Hazard	Primary Mitigation	Secondary mitigation CoCP / other management plan	Tertiary mitigation	Relevant item in order application
		<ul style="list-style-type: none"> Compliance with required management framework. Associated contingency / incident response plans 		
Aviation hazard Aircraft hazard (new or different bird attractants from expanse of cleared landscape / earthworks)	Sequencing of earthworks	<ul style="list-style-type: none"> CoCP measures such to control attractants Wildlife hazard management plan 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations The Department for Transport Circular 1/2010 'Control of Development in Airport Public Safety Zones'²⁰⁸ 	ES Chapter on Biodiversity CoCP Preliminary wildlife hazard assessment Landscape plan Details of any agreements with Cambridge Airport
Aviation hazard New lighting / glint& glare hazards associated within the Proposed Development	Lighting designed in accordance with requirements of the safeguard zone	<ul style="list-style-type: none"> Operational lighting / solar pv operations as agreed with Cambridge Airport 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> CDM Regulations Health Safety at Work Act etc 1974 The Department for Transport Circular 1/2010 'Control of Development in Airport Public Safety Zones'²⁰⁹The Department for Transport Circular 1/2010 'Control of 	ES Chapter 2: The Proposed Development Chapter: Landscape and Visual Appendix: Glint and glare study Details of any agreements with Cambridge Airport

²⁰⁸ [Control of development in airport public safety zones - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

²⁰⁹ [Control of development in airport public safety zones - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

Hazard	Primary Mitigation	Secondary mitigation CoCP / other management plan	Tertiary mitigation	Relevant item in order application
			Development in Airport Public Safety Zones ^{210'}	
Aviation hazard New or different bird attractants associated with landscaping	Landscaping designed in accordance with requirements of the safeguard zone	<ul style="list-style-type: none"> Wildlife Hazard Management Plan 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> CDM Regulations The Department for Transport Circular 1/2010 'Control of Development in Airport Public Safety Zones^{211'} 	ES Chapter on Biodiversity CoCP Preliminary wildlife hazard assessment Details of any agreements with Cambridge Airport
Engineering accident/failures				
Tunnel failure Failure in construction during tunnelling under road and rail infrastructure	BAPA agreement with Network Rail Highways permits / agreements Flood risk activities permit Design and method statements	CoCP measures with specification to prepare detailed management plans: <ul style="list-style-type: none"> Contingency plans Emergency response plans Safety plan	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations Environmental permitting regulations 	ES Chapter 2: Project Description of ES Designers risk assessment Details of any agreements with Network Rail, National Highways, and Environment Agency
Flood defence failure Flood defence failure results in flooding and affects construction works, people and property	Maintain contiguous line of defence to appropriate level Avoidance of flood defences by directional	COCP with specification to prepare detailed management plans: <ul style="list-style-type: none"> Flood management plan Contingency plans 	Compliance with required regulatory requirements such as (not exhaustive):	ES Chapter on Water resources Designers risk assessment

²¹⁰ [Control of development in airport public safety zones - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

²¹¹ [Control of development in airport public safety zones - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

Hazard	Primary Mitigation	Secondary mitigation CoCP / other management plan	Tertiary mitigation	Relevant item in order application
	<p>drilling/ pipejacking technique under water courses</p> <p>Construction method for the outfall will developed with the Environment Agency via the FRAP process.</p>	<ul style="list-style-type: none"> Emergency response plans 	<ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations Environmental permitting regulations 	<p>Works plans</p> <p>CoCP</p> <p>FRA</p>
<p>Utilities failure Power supply failure results in significant disruption to normal operations at proposed WWTP</p>	<p>Embedded features with uninterruptable power supply (UPS) for critical elements of proposed WWTP</p> <p>Standby pumps</p>	<p>Operational management requirements related to Environmental Permit for Proposed WWTP</p>	<p>Compliance with required regulatory requirements such as (not exhaustive):</p> <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations 	<p>ES Chapter 2:Project Description</p> <p>Designers risk assessment</p> <p>CoCP</p>
Industrial accidents				
<p>Fire and explosion Fires and explosion risk associate with digestors and stored gas at existing Cambridge and proposed WWTP during commissioning</p>	<p>Required design features for fire protection at site compounds</p>	<p>CoCP measures to prohibit open fires during construction, to store waste, to prepare emergency response plans with specification to prepare detailed management plans such as:</p> <ul style="list-style-type: none"> CEMP Existing response measures at existing sites (fire / explosion response) Safety plan Evacuation plans 	<p>Compliance with required regulatory requirements such as (not exhaustive):</p> <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations DSEAR 	<p>ES Chapter 2:Project Description</p> <p>Designers risk assessment</p> <p>CoCP</p>

Hazard	Primary Mitigation	Secondary mitigation CoCP / other management plan	Tertiary mitigation	Relevant item in order application
Fire and explosion Decommissioning at existing sites may present fire risks	Existing fire protection measures at existing Cambridge WWTP	CoCP Managed under active Environmental Permit <ul style="list-style-type: none"> Existing response measures at existing sites (fire / explosion response) Safety plan Evacuation plans	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations DSEAR 	ES Chapter 2:Project Description CoCP Designers risk assessment
Malicious attack				
Terrorism / cyber threat		Application of recognised sources of security management good practice, such as the ISO/IEC 27000 series of standards, and implement physical, personnel, procedural and technical measures. <ul style="list-style-type: none"> Physical security measures Contingency and crisis plans Multiagency response plans 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations 	Chapter 2:Project Description of the ES CoCP Designers risk assessment
Vandalism Vandalism to the Proposed Development in construction and subsequent leaks, spills or hazardous conditions	Temporary site hoarding Site security Lighting Access controls	CoCP with specification in relation to safety and security and requirements for the preparation of detailed management plans: <ul style="list-style-type: none"> CEMP Emergency response plan 	Compliance with required regulatory requirements such as (not exhaustive): <ul style="list-style-type: none"> Health Safety at Work Act etc 1974 CDM Regulations 	ES Chapter 2:Project Description of the ES CoCP Designers risk assessment

17 **Materials, Resources and Waste**

17.1 **Introduction**

- 17.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorate as 'matters' relevant to the aspect of material resources and waste management. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.
- 17.1.2 Several matters (resources and receptors) within this aspect are proposed to be scoped out of further assessment with justification provided based on, the material resources required and the generation and management of waste during the operation phase through sufficient confidence in existing impact avoidance methods.

17.2 **Matters (resources and receptors)**

- 17.2.1 For the aspect of material resources, the matters, or resource and receptor, are:
- quarries, other sources of minerals, and other finite raw material resources.
- 17.2.2 For the aspect of generation and management of waste, the matters, or resource and receptor, are:
- waste management infrastructure capacity and/or landfill capacity within Cambridgeshire and East of England.

17.3 **Study Area**

- 17.3.1 Professional judgement has been used to define two geographically different study areas to examine the use of material resources and the generation and management of waste.
- 17.3.2 The first study area will be based on the EIA Scoping boundary, as this constitutes the area within which construction materials would be consumed (used, reused and recycled) and where waste would be generated.
- 17.3.3 The second study area will focus on an area sufficient to identify the suitable waste infrastructure that could accept arisings or waste generated by the EIA Scoping boundary, and feasible sources and availability of construction materials typically required for construction works of this nature. Therefore, for the purposes of this assessment this study area will focus primarily on Cambridgeshire and East of England region within which the EIA Scoping boundary is located.

17.3.4 The study area for materials resources is given in Table 17-1 and Figure 2-1 Figure 17-1.

Table 17-1: 'Study Area' table for material resources

Resource or receptor	Study area
Construction materials	EIA Scoping boundary
Quarries for construction materials	Cambridgeshire and East of England

17.4 Legislation, planning policy context and guidance

17.4.1 Legislation, planning policy and guidance relating to material resources and waste management, and pertinent to the Proposed Development comprises the following.

LEGISLATION

17.4.2 The following legislation is relevant to the aspect of material resources and waste:

- Waste (Circular Economy) (Amendment) Regulation 2020
- Waste Framework Directive (2008/98/EC)
- The Environmental Protection Act, 1990
- The Hazardous Waste (England and Wales) Regulations, 2005 as amended
- The Waste (England and Wales) Regulations, 2011, as amended
- The Environmental Permitting (England and Wales) Regulations, 2016
- Waste Electrical and Electronic Equipment (WEEE) (England and Wales) Regulations, 2013
- Waste Batteries and Accumulators (England and Wales) Regulations, 2009
- The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020.

17.4.3 English and Welsh law was updated on 1 October 2020 to include changes to the Waste Framework Directive (WFD) made in 2018. This was done through the Waste (Circular Economy) (Amendment) Regulations 2020.

17.4.4 The draft Waste and Environmental Permitting etc (Legislative Functions and Amendment etc) (EU Exit) Regulations 2020 were laid before Parliament on 20 October 2020. They make amendments to ensure that the waste and environmental permitting regimes continue to operate effectively at the end of the transition period.

17.4.5 The Waste Management Plan for England, 2013²¹² will fulfil the requirements of the Waste (England and Wales) Regulation 2011.

PLANNING POLICY

17.4.6 National planning policy of relevance to material resources and waste, and pertinent to the Proposed Development are:

17.4.7 NPS for Waste Water with particular reference to:

- Paragraph 4.14.2: Implementation of sustainable waste management through the waste hierarchy.

²¹² Waste Management Plan for England (2020). Department for Environment and Rural affairs. [Online] available at: [Waste Management Plan for England.pdf \(defra.gov.uk\)](https://www.defra.gov.uk/waste-management-plan-for-england.pdf). Accessed 22 January 2021.

- Paragraph 4.14.3: Disposal of waste to be considered where other waste management options are not available or where it is the best environmental outcome.
- Paragraph 4.14.4: All large infrastructure projects are likely to generate hazardous and non-hazardous waste during the construction, operation and decommissioning phases. The Environment Agency's (EA) Environmental Permitting (EP) regime incorporates operational waste management requirements for certain activities. When an applicant applies to the EA for an Environmental Permit, the EA will require the application to demonstrate that processes are in place to meet all relevant EP requirements.

17.4.8 4.14 in relation to waste management.

17.4.9 National Planning Policy Framework (NPPF)²¹³ with particular reference to:

- Section 17: Sustainable use of materials includes use of secondary and recycled materials and mineral waste before considering extraction of primary materials,
- Section 17 in relation to sustainable use of minerals.

17.4.10 National Planning Policy for Waste, 2014²¹⁴ sets out to identify need for waste management facilities and requirement for Local authorities to identify in their Local Plans suitable sites and areas for waste management facilities²¹⁵.

17.4.11 The Waste Prevention Programme for England 2013²¹⁶, is under review as part of the ongoing work programmed for the Resources and Waste Strategy for England, 2018, which will be supplemented with a new waste prevention programme to help move to a more circular economy model.

17.4.12 Our waste, our resources: a strategy for England, 2018²¹⁷ sets out how the Government plan to double resource productivity and eliminate avoidable waste of all kinds (including plastic waste) by 2050.

17.4.13 A Green Future: Our 25 Year Plan to improve the Environment²¹⁸ – in particular Chapter 4 – Increasing resource efficiency and reducing pollution and waste and Section 8 on minimising waste:

213 National Policy Planning Framework (2021). Ministry of Housing, Communities & Local Government: [Online] available at: [National Planning Policy Framework \(publishing.service.gov.uk\)](#) Accessed August 2021.

214 National Planning Policy for Waste, DEFRA, 2014 [online] available at: [Title \(publishing.service.gov.uk\)](#) 2014. Accessed 22 January 2021

215 National Planning Policy for Waste (2014). Department for Communities and Local Government: [Online] available at: [Title \(publishing.service.gov.uk\)](#) Accessed 22 January 2021

216 Prevention is better than cure: the role of waste prevention in moving to a more resource efficient economy, HM Government, Dec 2013, [online] available at: [Waste prevention programme for England - GOV.UK \(www.gov.uk\)](#). Accessed 22 January 2021

217 Our waste, our resources: A strategy for England, HM Government, 2018. [online] available at: [Resources and waste strategy for England - GOV.UK \(www.gov.uk\)](#). Accessed 22 January 2021

218 A Green Future: Our 25 Year Plan to improve the Environment, HM Government, 2018. [online] available at: [25 Year Environment Plan - GOV.UK \(www.gov.uk\)](#). Accessed 22 January 2021

- The National Planning Practice Guidance update includes a dedicated section on waste²¹⁹ which sets out the planning authority for waste developments, the scope of waste development includes waste water management and the type of waste development handled by the waste planning authority includes waste water treatment plants with a capacity to exceed a population equivalent of 500,000 and facilities to transfer or store waste water facilities if the capacity for storage of waste water exceeds 350,000 cubic meters.

17.4.14 Local planning policy of relevance to the Proposed Development includes:

17.4.15 South Cambridgeshire District Council Local Plan 2018²²⁰ with particular reference to:

- policy CC/6 (construction methods), which seeks to ensure the construction of developments manages material and waste in accordance with the waste hierarchy.

17.4.16 Cambridge City Council Local Plan 2018²²¹ with particular reference to:

- policy 1 (The presumption in favour of sustainable development).

17.4.17 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036 (Adopted July 2021)²²², with particular reference to:

- Policy 1: Sustainable development and climate change;
- Policy 3: Waste management needs;
- Policy 4: Providing for waste management;
- Policy 10: Waste management areas (WMAS);
- Water recycling areas (WRAS);
- Policy 16: Consultation areas (CAS);
- Policy 17: Design;
- Policy 19: Restoration and aftercare;

17.4.18 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021)^{223, 224} with particular reference to:

- Appendix 3 (The Location and Design of Waste Management Facilities),

219 Planning practice guidance (2016) Ministry of Housing, Communities & Local Government. [Online] available at: [Waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk) Accessed 18 January 2021

220 South Cambridgeshire Local Plan (2018). Available URL: [South Cambridgeshire Local Plan 2018 - South Cambs District Council \(scambs.gov.uk\)](https://scambs.gov.uk). Accessed 18 Jan 2021.

221 South Cambridge Local Plan (2018). Available URL: [Local Plan 2018 - Cambridge City Council](https://www.cambridge.gov.uk). Last accessed 18 Jan 2021.

222 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036. Available URL: [Adopted minerals and waste plan - Cambridgeshire County Council](https://www.cambridgeshire.gov.uk) Last accessed 13 September 2021.

223 Cambridgeshire and Peterborough Minerals and Waste Local Plan Preliminary Draft Consultation (October 2018) Available URL: [Decision - Draft response to Cambridgeshire and Peterborough Minerals and Waste Local Plan: Preliminary Draft Consultation - Cambridge Council](https://www.cambridgeshire.gov.uk). Last accessed 18 Jan 2021.

224 Emerging Minerals and Waste Local Plan (November 2019). Available URL: [Emerging Minerals and Waste Local Plan - Cambridgeshire County Council](https://www.cambridgeshire.gov.uk) Last accessed 18 Jan 2021.

- Policy 3 (Waste Management Needs), Policy 4 (Providing for Waste Management),
- Policy 10 (Waste Management Areas), Policy 14 (Waste Management Needs Arising).

17.4.19 The Proposed Development assessment will also take into consideration the findings and priorities of the South Cambridgeshire's Annual Monitoring Reports (latest is 2018/2019 edition)²²⁵ for dealing with waste and minerals.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

17.4.20 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of material resources and generation and management of waste, planning policy has not influenced the EIA scope.

NATIONAL POLICY STATEMENT REQUIREMENTS

17.4.21 Table 17-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

²²⁵ Cambridgeshire County Council (2019) Annual Monitoring Report, including Five Year Housing Land Supply [webpage] Available at: <https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/annual-monitoring-report/> Accessed October 2020

Table 17-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.14.1: Government policy on hazardous and non-hazardous waste is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Where this is not possible, waste management regulation ensures that waste is disposed of in a way that is least damaging to the environment and to human health.	See Chapter 6 which refers requirements for a Soil Management Plan (SMP). The CoCP and associated CEMP will detail measures for use of site won material.
Paragraph 4.14.2: Sustainable waste management is implemented through the waste hierarchy.	Waste management infrastructure within Cambridgeshire or the East of England will be used for reuse, recycling and recovery of the waste generated.
Paragraph 4.14.3: Disposal of waste should only be considered where other waste management options are not available or where it is the best overall environmental outcome.	Generated waste will be disposed to the landfills only if they are not suitable for reuse, recycle or recovery. The SMP and CEMP will outline the reuse of excavated soil on site.
Paragraph 4.14.4: All large infrastructure projects are likely to generate hazardous and non-hazardous waste during the construction, operation and decommissioning phases. The Environment Agency's (EA) Environmental Permitting (EP) regime incorporates operational waste management requirements for certain activities. When an applicant applies to the EA for an Environmental Permit, the EA will require the application to demonstrate that processes are in place to meet all relevant EP requirements.	The existing Cambridge WWTP has Environmental Permit.
Paragraph 4.14.5: The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan, SWMP	The CoCP and required waste management plan will be developed as part of the proposed mitigation plans.

GUIDANCE

17.4.22 The following guidance is appropriate for the assessment:

- IEMA guide to Materials and Waste in Environmental Impact Assessment²²⁶ (2020). This provides guidance and recommendations for the impacts and effects of materials and waste on the environment.

²²⁶ IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) [online] available at: [IEMA - Materials and Waste in Environmental Impact Assessment](#). Accessed July 2021

- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 13 LA110 ‘Sustainability and Environment Appraisal - Material Assets and Waste’²²⁷. Although this guidance is primarily for motorway and truck road projects but based on the professional judgement it is regarded as suitable for other linear construction projects.

17.5 Baseline conditions

17.5.1 The baseline conditions for material resources and waste for the three zones within the EIA Scoping boundary as set out below, will be identical and hence detailed collectively under a single section.

USE OF MATERIAL RESOURCES

- 17.5.2 Information on the demand for key construction materials within the UK and within Cambridgeshire has been used to provide the baseline for material resources. This information has been determined through a desk-study using a number of readily available resources, in particular from the British Geological Society’s (BGS) Minerals UK, World Steel Association, and Cambridgeshire County Council.
- 17.5.3 In terms of sales of minerals and mineral products in 2018²²⁸, crushed rock aggregate made up the largest proportion of 117.3 million tonnes (mT) (46.7%) of the total 251mT of aggregates. The remaining proportion being sandstone and gravel (48.9mT), marine dredging (13.7mT) and recycled aggregates (71mT)²²⁹. Apparent Steel Use in UK was 11,203 metric tonnes (2019)²³⁰.
- 17.5.4 The Cambridgeshire and Peterborough Minerals and Waste Development Plan: Local Aggregates Assessment, Local Aggregate Assessment 2020²³¹ assesses the demand for and supply of aggregates in the region of the Proposed Development. Table 17-3 outlines the aggregate sales and reserves in the region for 2019. Raw aggregates extracted across Cambridgeshire and Peterborough include sand and gravel (river sand and gravel, glacial deposits, head deposits and bedrock sand) and crushed rock (Lincolnshire Limestone).
- 17.5.5 The former National and Regional Guidelines for Aggregates Provision in England (June 2003 and June 2009) specified that the East of England region should provide 117 million tonnes of alternative aggregate materials between 2005 and 2020, equating to 31% of the region’s total aggregate supply.

227 Highways England (2019) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste (formerly IAN 153/11) [online] available at:

[redacted] Accessed 18 January 2021

228 Profile of the UK Mineral products Industry (2020 Edition). [online] available at: [Profile of the UK Mineral Products Industry 2020 Spread.pdf](#) Accessed 18 January 2021

229 British Geological Society (2019) United Kingdom Minerals Yearbook 2018 [online] available at:

230 Steel Statistical Yearbook 2020: concise version. [online] available at: [Statistical reports | worldsteel](#). Accessed 18 January 2021

231 Cambridgeshire and Peterborough Minerals and Waste Development Plan: Local Aggregates Assessment, Local Aggregate Assessment 2020. [online] available at: [Local Aggregates Assessment 2020 \(cambridgeshire.gov.uk\)](#) Accessed 19 January 2021

17.5.6 The region also has reserves of recycled aggregates from construction, demolition and excavation wastes comprising of brick, concrete and other similar materials. Secondary aggregates are by-products from construction or industrial processes. In 2019 (the latest available WDI data) sales of secondary and recycled aggregates in Cambridgeshire and Peterborough were approximately 0.71 Mt, this figure is likely to be an underestimate. In 2019, recycled and secondary aggregates was below the 31% of the total aggregate supply in the region.

17.5.7 Table 17-3 shows that the site production capacities across Cambridgeshire and Peterborough is sufficient to ensure the future provision of sand and gravel supply at levels above the minimum requirement.

Table 17-3: Aggregate sales and reserves in Cambridgeshire and Peterborough for 2019

Aggregate	Sales (Mt)	Average 10-year Sales (Mt)	Average 3-year sales (Mt)	LAA* Rate (Mtpa)	Reserves (Mt)	Land-bank (years)
All sand and gravel	3.42	2.49	3.42	3.0	39.17	13.06
Crushed rock	0.22	0.27	0.19	0.3	3.2	10.67
Recycled / Secondary aggregates	0.71	0.59	0.57	**	-	-

Source: Cambridgeshire and Peterborough Local Aggregate Assessment 2019232

Note: (*) Local Aggregates Assessment (LLA) rate is the planned rate level of provision in the adopted Core Strategy.

(**) 31% of total aggregate supply.

GENERATION AND MANAGEMENT OF WASTE

17.5.8 The most recent information available relating to current waste generation and operational waste management infrastructure in Cambridgeshire and the East of England region has been gathered to provide the baseline for this assessment. Information on the current waste arisings, and the waste management infrastructure have been determined through a desk-top study, using a number of readily available resources, in particular data from the Environment Agency, Defra, South Cambridgeshire District Council and Cambridgeshire County Council.

Waste generation in East of England region and England

17.5.9 The latest data from the Environment Agency indicated that England produced over 228 million tonnes of waste in 2019, which was managed in 6,285 permitted waste facilities. The waste facilities in East of England region received over 33 million tonnes of waste in 2019, and Cambridgeshire received over 5.2 million tonnes (Table 17-4).

232 Cambridgeshire and Peterborough Minerals and Waste Development Plan: Local Aggregates Assessment, Local Aggregate Assessment 2020. [online] available at: [Local Aggregates Assessment 2020 \(cambridgeshire.gov.uk\)](https://www.cambridgeshire.gov.uk) Accessed 19 January 2021

Table 17-4: Waste Breakdown by Site Type (2018)

Site Type	Cambridgeshire (tonnes)	East of England (tonnes)	England (tonnes)
Landfill	1,675,821	9,552,302	45,859,761
Transfer	956,676	5,232,524	46,297,732
Treatment (excluding metal recycling sector)	2,016,265	11,465,855	84,800,161
Metal Recovery	256,144	2,274,317	14,516,041
Incinerated	84,399	1,061,903	15,276,432
Use of Waste	0	0	177,241
Land Disposal	71,159	1,986,536	10,942,480
Total	5,060,464	31,573,437	217,869,848

Source: Environment Agency Waste Data Interrogator 2019233

Note: Mobile plant, processing and storage of waste are included in the overall waste breakdown

- 17.5.10 With respect to construction and demolition waste (CDW) in 2019, the Environment Agency recorded that 6,497,852 tonnes of inert construction and demolition waste was deposited in landfill in the East of England region, with 694,127 tonnes landfilled in Cambridgeshire. The Waste Data Interrogator states that 1,955,769 tonnes of inert construction and demolition waste was removed in East of England with 374,581 tonnes removed from Cambridgeshire. Of the 84.9 million tonnes of non-hazardous construction and demolition waste received in England in 2019, 17.8 million tonnes were removed.
- 17.5.11 Excavation and site clearance activities generate a significant quantity of potential waste arisings. The baseline target for recovery of CDW is 70% by weight, as set out in the EU Waste Framework Directive 2008/98/EC and the Waste Plan for England.
- 17.5.12 Regarding hazardous waste, Table 17-5 below outlines the quantities managed and deposited in 2019 in England, the East of England and Cambridgeshire. Of the 77,141 tonnes of hazardous waste received in Cambridgeshire, 76,397 tonnes were specified as construction and demolition waste. Of the 117,758 tonnes of Hazardous waste removed in Cambridgeshire, 15,790 tonnes were removed as construction and demolition waste.

Table 17-5: Hazardous waste managed and deposited in 2019

Hazardous waste	Cambridgeshire (tonnes)	East of England (tonnes)	England (tonnes)
Managed (received)	77,141	501,123	5,542,581
Deposited (removed)	117,756	559,046	5,988,654

233 Environment Agency (2021) Waste Data Interrogator 2019[online] available at: [2019 Waste Data Interrogator - data.gov.uk](https://data.gov.uk) . Accessed 19 January 2021

Source: Environment Agency Waste Data Interrogator 2019234

Potentially hazardous waste arisings

- 17.5.13 To identify potential sources of contamination an initial review of the landfill sites, both authorised and historic, in the area was undertaken. Potential sources of contamination that are greater than 500m away from the EIA Scoping boundary have not been considered, as these are considered unlikely to affect the Proposed Development and the decommissioning of the existing Cambridge WWTP.
- 17.5.14 There are two authorised and five historic landfills within 500m of the EIA Scoping boundary, see Table 17-6, and for details of these landfills. For more information on the potential contamination risks see Chapter 15: Land Quality.

Table 17-6: Landfill sites within 500m of the EIA Scoping boundary

Site	Location (Postcode/ Easting/Northing)	Landfill Type	Status
Eversden Landfill – Quy Landfill	CB5 9AG	Authorised	Closure
East West Limited	CB24 6DQ	Authorised	Effective
Clayhithe Cottages	550100/264100	Historical	
Quy Bridge	550900/259500	Historical	
Quy Mill Hotel	550900/ 259500	Historical	-
Northfields Farm, Clayhithe	550200/ 264100	Historical	
Winship Industrial Estate	547600/ 26300	Historical	

Source: Permitted Waste Sites - Authorised Landfill Site Boundaries²³⁵ and Historic Landfill Sites²³⁶

Waste management facilities

- 17.5.15 The Environment Agency reported that in 2019, 835 sites accepted waste in the East of England, and at the end of 2018, 1,1191 sites in the region had environmental permits to accept waste. There were 106 active sites receiving waste in Cambridgeshire in 2019.
- 17.5.16 Table 17-7 outlines the capacity of landfill within Cambridgeshire and East of England at the end of 2019. There are currently 29 effective landfills in Cambridgeshire with 20 landfills having remaining capacity at the end of 2019. The county has 16 inert landfills and 11 non-hazardous landfills. There are no permitted non-hazardous landfill sites in the county, however two non-hazardous landfill sites have at least one cell to take some Stable Non-Reactive Hazardous Wastes (SNRHW).

²³⁴ Environment Agency (2021) Waste Data Interrogator 2019 [online] available at: [2019 Waste Data Interrogator - data.gov.uk](https://data.gov.uk/dataset/2019-waste-data-interrogator) Accessed 19 January 2021

²³⁵ Environment Agency (2021) Permitted Waste Sites - Authorised Landfill Site Boundaries [online] available at: <https://data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permited-waste-sites-authorised-landfill-site-boundaries> Accessed 22 January 2021

²³⁶ Environment Agency (2021) Historic Landfill Sites [online] available at: <https://data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites> Accessed 22 January 2021

17.5.17 The remaining capacity for Cambridgeshire, recorded in 2019, for non-hazardous landfill was 9,294,432m³, and for inert landfill was 5,210,050m³. The 11 inert landfills, identified with remaining capacity, are outlined below in Table 17-8.

Table 17-7: Landfill capacity at the end of 2019

Landfill Type	Cambridgeshire (cubic metres)	East of England (cubic metres)	England (cubic meters)
Hazardous Merchant	-	-	18,443,000
Hazardous Restricted	-	-	833,000
Non-Hazardous with SNRHW* cell	1,921,300	4,986,939	69,447,000
Non-Hazardous	7,373,132	23,537,406	134,291,000
Non-Hazardous Restricted	-	-	25,869,000
Inert	5,210,050	21,921,490	122,110,000
Total	14,504,482	50,445,835	370,992,000

Source: Environment Agency Remaining Landfill Capacity²³⁷

*Some non-hazardous sites can accept some Stable Non-Reactive Hazardous Wastes (SNRHW) into a dedicated cell, but this is usually a small part of the overall capacity of the site.

Table 17-8: Cambridgeshire permitted sites for inert landfill

Facility Name	Local Authority	Remaining capacity at the end of 2019 (cubic metres)
Mepal Airfield Inert Landfill	East Cambridgeshire	65,568
Kennett Hall Farm	East Cambridgeshire	49,582
Mepal Landfill Extension	Fenland	64,099
Cow Lane Inert Landfill	Huntingdonshire	225,500
Barrington Cement Works	East Cambridgeshire	545,795
Willow Hall Quarry and Landfill	Peterborough	1,009,215
Land at Pasture House Farm	Cambridgeshire	1,961,108
Kennet Phase 2A	East Cambridgeshire	125,902
Mepal Landfill Southern Extension	Fenland	335,661
Park Farm	Huntingdonshire	433,416
Colne-Fen Quarry	Huntingdonshire	394,204

Source: Environment Agency Remaining Landfill Capacity²³⁸

17.5.18 A search on the public registers for permitted waste facilities showed that there are 19 able to treat or transfer construction and demolition waste within a 10km distance from the Proposed Development at CB5 8TF Table 17-9. The EIA

²³⁷ Environment Agency (2021) Remaining Landfill Capacity [online] available at: <https://data.gov.uk/dataset/237825cb-dc10-4c53-8446-1bcd35614c12/remaining-landfill-capacity>. Accessed 19 January 2021.

²³⁸ Environment Agency (2021) Remaining Landfill Capacity [online] available at: <https://data.gov.uk/dataset/237825cb-dc10-4c53-8446-1bcd35614c12/remaining-landfill-capacity>. Accessed 19 January 2021

Scoping boundary is within 1.5km of the existing Cambridge WWTP and the waste facilities will be suitable for the treatment or transfer of construction and operation waste arising from construction and decommissioning of the existing Cambridge WWTP. Not all treatment facilities may be suitable for the project, but it demonstrates that sufficient treatment facilities are available for the waste that will be generated in this project.

Table 17-9: Permitted sites within 10km of Proposed Development (CB5 8TF) for construction and demolition waste recycling and recovery

Treatment facility name	Treatment facility type	Distance (km)
Skips R Us	S0803 No 3: 75kte HCl Waste TS + treatment	2.2
Barnwell Junction Railway Sidings	A20: Metal Recycling Site (mixed MRS's)	2.5
Cambridge Waste Management Centre	S0803 No 3: 75kte HCl Waste TS + treatment	2.6
SR2010 No5: Mobile plant for reclamation, restoration	Mobile Plant S R 2010 No5	3
Cambridge Transfer Station	A11: Household, Commercial & Industrial Waste T Station	3
Cottenham Skips Limited	A11: Household, Commercial & Industrial Waste T Station	8
Donarbon Ltd - Cambridge Recycling Centre	A22: Composting Facility	8.8
Waterbeach Recycling Facility	SR2010 No12: Treatment of waste to produce soil <75,000 tpy	8.9
Ameycespa Waste Management Park	A9: Special Waste Transfer Station	8.9
Donarbon Ltd - Cambridge Recycling Centre	A22: Composting Facility	8.9
Liberty Barn	SR2010 No12: Treatment of waste to produce soil <75,000 tpy	9.1
Ameycespa Waste Management Park	A9: Special Waste Transfer Station	9.1
Waterbeach Materials Recycling Facility	A15: Material Recycling Treatment Facility	9.3
Cottenham Oil Treatment Plant	A11: Household, Commercial & Industrial Waste T Station	9.9

Source: Environment Agency Public Register 2021239

17.5.19 The site options are within 10km of Cambridge’s Waterbeach Waste Management Park (at CB25 9PG), a site comprising of a number of waste management operations including a transfer station, materials recycling facility, composting facility and production of secondary aggregates. The Park is run by Amey Cespa (East) Ltd to treat wastes generated in the county from households and commercial and industrial businesses (including construction and demolition) In addition, Amey offer skip and bin hire service for waste collection. Amey has expressed they wish to expand the Park to include an Energy from Waste facility²⁴⁰, which (if approved) may become a future permitted site for recovery of waste generated from the Proposed Development (likely during operation).

17.5.20 There are a few other operators who carry out permitted activities at or near Waterbeach Waste Management Park that allows for treatment of construction and demolition wastes or its disposal which may be suitable for the Proposed Development (Waterbeach Recycling Facility shown in, landfills shown in Table 17-9). The permitted landfills sites (Table 17-10) will also be within the proximity of the existing Cambridge WWTP to allow its disposal.

Table 17-10: Permitted landfill sites within 10km of the Proposed Development for construction and demolition waste

Landfill facility name	Landfill type	Distance (km)
Milton Landfill	A02: Other landfill site taking hazardous waste	4.6
Donarbon Ltd – Dickersons (nearby to Waterbeach Waste Management Park)	A02: Other landfill site taking hazardous waste A04: HCI Landfill, however unlikely to be permitted for C&D waste.	8.6
Wilbraham Chalk Quarry	A5: Landfill taking Non-Biodegradable Wastes	8.6

Source: Environment Agency Public Register 2021241

17.5.21 In addition to permitted construction and demolition waste management sites, inert material is also managed on sites that have an Environment Agency waste management license exemption. These exempt sites generally comprise land restoration activities such as restoring mineral voids, engineering/landscaping Proposed Developments and for agricultural improvements on farmland.

239 Environment Agency (2021) Environmental Permitting Regulations – Waste Operations [online] available at: <https://environment.data.gov.uk/public-register/view/search-waste-operations> Accessed 21 January 2021

240 Amey (2019) Our energy from waste proposal [online] Available at: [REDACTED] Accessed 22 January 2021

241 Environment Agency (2021) Environmental Permitting Regulations – Waste Operations [online] available at: <https://environment.data.gov.uk/public-register/view/search-waste-operations> Accessed 22 January 2021

- 17.5.22 Although small tonnages of waste from other waste streams (e.g. biodegradable waste) may be managed at locations with an exemption, the largest tonnage of exempt activities is likely to involve construction and demolition material.
- 17.5.23 There are 116 U1 waste exemption sites listed by the Environmental Agency within 10km of the Site and the existing Cambridge WWTP. These U1 exempt sites are used to manage waste produced on-site only as a one-off event and could accept waste from the EIA Scoping boundary. These exempt sites are often short-lived, and therefore, should be identified upon commencement of construction.
- 17.5.24 Reuse, recycling and recovery of wastes will be prioritised. However, if these options are not available or feasible the following alternative is to adopt the Proximity Principle. Within the 10km radius of site option are three landfill sites that may be suitable for construction and demolition waste (Table 17-10) and these should be considered first as means of disposal before arranging for waste to be transported at greater distance.

17.6 Future baseline

- 17.6.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 17.6.2 Where this presents new environmental receptors or a change to the current baseline specific to materials, resources and waste, this is discussed further below.
- 17.6.3 For the aspect of materials, resources and waste the future baseline has been assessed on the basis of a desktop review of the waste forecast data from the Minerals and Waste Local Plan March 2019²⁴²
- Waste forecasts indicates that waste arisings from within the Plan area could increase to 3.157Mtpa by the end of the Plan period (2036);
 - The adopted London Plan sees household and commercial & industrial waste exports to the East of England gradually reducing from the current (estimated at 3.449Mt in 2015) and ceasing completely in 2026.
 - The present capacity gap (indicated by a '-' figure) or a surplus (indicated by a '+' figure) for Non Hazardous waste management - Recovery and for deposits to land and disposal are given in Table 17-11 and Table 17-12.
- 17.6.4 The Waste Planning Authorities of Cambridgeshire County Council and Peterborough City Council will seek to achieve net self-sufficiency in relation to

²⁴² Cambridgeshire and Peterborough Minerals and Waste Local Plan, Further Consultation Draft 2019. [online] available at: [Emerging Minerals & Waste Local Plan - Peterborough City Council](#). Accessed 29 January 2021.

the management of wastes arising from within the plan area. Plus, additional provision until 2026 in order to accommodate needs arising from London (specifically regarding non-apportioned household and commercial and industrial waste).

- 17.6.5 Changes to existing conditions were also considered with due regard to committed developments, existing and proposed land uses. On the basis of a review of committed developments that are assumed to form part of future baseline, no significant changes to the material resource use and waste baseline were identified.

Table 17-11: Non-hazardous waste management – Recovery (Mtpa)

			2017	2026	2036
Preparing for re-use and recycle	Materials recycling (Mixed – Municipal, C&I)	Forecast arising	0.660	0.753	0.850
		Existing capacity	0.661	0.887	0.887
		Capacity gap	+0.001	+0.134	+0.237
	Composting (Mixed – Municipal, C&I)	Forecast arising	0.199	0.225	0.249
		Existing capacity	0.324	0.373	0.373
		Capacity gap	+0.125	+0.148	+0.124
	Inert recycling (C,D&E)	Forecast arising	0.087	0.067	0.068
		Existing capacity	0.184	0.600	0.600
		Capacity gap	+0.097	+0.533	+0.532
Other Recovery	Treatment energy and recovery processes (Mixed Municipal, C&I)	Forecast arising	0.160	0.312	0.415
		Existing capacity	0.327	0.994	1.002
		Capacity gap	+0.167	+0.682	+0.587
	Soil treatment (C,D&E)	Forecast arising	0.112	0.097	0.099
		Existing capacity	0.278	0.315	0.315
		Capacity gap	+0.166	+0.2217	+0.216

Source: Cambridgeshire and Peterborough Minerals and Waste Local Plan, Further Consultation Draft 2019243

Table 17-12: Non-hazardous waste management – Deposit to land and disposal (Mtpa)

			2017	2026	2036	Total need (2016-2036)	Estimated void space (2016-2036)	Balance
Other recovery	C,D&E	Inert recovery (fill)*	0.728	0.776	0.776	16.061	14.058	-2.003
Disposal	C,D&E	Inert landfill*	0.262	0.176	0.174	3.856	1.932	-1.924
	Mixed – Municipal, C&I	Non-hazardous landfill (including SNRHW)	0.536	0.601	0.475	11.174	12.466	+1.292
		Non-hazardous landfill	0.507	0.580	0.460	10.804	8.525	-2.278
		Non-hazardous (SNRHW) landfill	0.028	0.021	0.015	0.370	3.940	+3.570

Source: Cambridgeshire and Peterborough Minerals and Waste Local Plan, Further Consultation Draft 2019244

17.6.6 The Waste Planning Authorities of Cambridgeshire County Council and Peterborough City Council will seek to achieve net self-sufficiency in relation to the management of wastes arising from within the plan area. Plus, additional provision until 2026 in order to accommodate needs arising from London (specifically regarding non-apportioned household and commercial and industrial waste).

17.7 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

17.7.1 This section provides an overview of potential impacts of material resource use and waste generation from the EIA Scoping boundary, during its construction. The Construction Phase considers site preparation and construction.

Use of materials resources

17.7.2 The scoping assessment follows the approach set out in the IEMA guide to Materials and Waste in Environmental Impact Assessment (2020) and also the application of professional judgement.

17.7.3 Material resources include raw materials such as aggregate and minerals from primary, secondary and recycled sources, and manufactured construction products. Manufactured construction products can include the materials required for the construction of the road surfaces, and pre-cast elements for the construction of structures such as tanks, gantries, lighting and fencing.

244 Cambridgeshire and Peterborough Minerals and Waste Local Plan, Further Consultation Draft 2019. [online] available at: [Emerging Minerals & Waste Local Plan - Peterborough City Council](#). Accessed 29 January 2021.

- 17.7.4 The Proposed Development is likely to require large quantities of material resources for the construction of the proposed WWTP and its associated structures and pipeline networks. Thus, there is potential for permanent, direct, adverse effects on the environment due to a reduction in the availability of material resources and potentially the depletion of natural resources.
- 17.7.5 Construction activities that include excavation works are required at all zones.
- 17.7.6 Assessment of the environmental effects associated with raw material extraction, processing, and manufacturing of construction material is outside the scope of this assessment, as these are subject to separate environmental assessments. The receptors likely to be subject to impacts as a result of the requirement for material resources during the construction of the Proposed Development include quarries and other sources of minerals, and other finite raw material resources. The potential impacts associated with the use of material resources on these receptors include:
- The availability of material resources and the subsequent impact on the demand for materials
 - The depletion of non-renewable resources
 - The potential to adversely and substantially impact access to one or more allocated mineral sites.
- 17.7.7 Specific quantities of materials have not been quantified at this stage, however Table 17-13 summarises the potential significant effects from the use of materials for specific activities.

Table 17-13: Summary of activities and effects for material resource use during Construction Phase

Activity	Material use and potential to generate significant effects
Site remediation, preparation, and earthworks	Potential direct effects associated with the import and use of primary aggregates or fill material, which may result in the depletion of non-renewable resources.
Site construction	<p>The type of materials that are required includes but is not limited to:</p> <ul style="list-style-type: none"> ● Steel; ● Aggregate; ● Cement; ● Concrete; ● Bitumen; ● Ductile Iron for Pipelines; ● Wood; ● Clay for bricks and ● Plastic. <p>Import and use of primary aggregates and material will result in the depletion of non-renewable resources.</p>

Source: Based on professional judgement and experience from similar Proposed Developments.

- 17.7.8 It is likely that any significant effects due to the quantity of materials resources required could be appropriately mitigated through the implementation of mitigation measures. However, without accurate material quantification at this stage, this assumption cannot be confirmed. Therefore, further assessment is required, with accurate material quantification and further design information, to confirm the likelihood of significant effects.
- 17.7.9 It is not anticipated that any mineral safeguarding sites will be sterilised due to sufficient future provision of aggregates as stated in paragraph 17.5.7.

Generation and management of waste

- 17.7.10 In considering the generation and management of waste, it is important to define when, under current legislation and understanding, a material is considered to be a waste. The EU Waste Framework Directive 2008/98/EC defines waste as 'any substance or object which the holder discards or intends or is required to discard'.
- 17.7.11 Waste generation during the Construction Phase may result in adverse environmental effects. These effects include temporary increased use of waste management facilities and permanent reduction to landfill capacity. Waste is likely to be generated from three main sources; site-won materials, from excavations of natural and made ground, and materials brought to site which are not used for their original purpose; these would likely be as follows:
- Surplus excavated materials
 - Green waste
 - Contaminated soils from excavations, potentially classified as hazardous
 - Surplus construction materials
 - Damaged stock or cut offs
 - Packaging waste
 - Office waste
- 17.7.12 The receptors likely to be subject to impacts as a result of waste generation and management are landfills and other waste management infrastructure. The generation and management of waste as a result of the construction of the Proposed Development may result in adverse environmental effects, including the temporary occupation of waste management facility space (from treatment of waste) and the permanent reduction to landfill capacity (from disposal of waste) (Table 17-14).
- 17.7.13 However, the Proposed Development would aim to minimise the generation of waste as much as possible, through the implementation of the principles of the waste hierarchy. The surplus soil from cut material will be used to construct the landscape earth bank around the new works.

Table 17-14: Summary of activities and impacts for waste generation for Construction Phase

Activity	Waste arisings and potential to generate impact
Site remediation, proportion, and earthworks	<p>Effects associated with the off-site disposal of waste, which may result from:</p> <ul style="list-style-type: none"> ● Site clearance (e.g. green waste, contaminated soils, inert waste); ● Excavated wastes from the historic landfill; and ● Generating excess soil produced from site excavation.
Site construction	<p>Waste generation is likely to originate from site preparation and excavation. These, along with other phases of construction, may result in the following waste arisings:</p> <ul style="list-style-type: none"> ● Materials brought to site that are not used for their intended purpose, e.g. damaged items, packaging, offcuts, and surplus materials; ● Excavated materials, such as soil which may be contaminated, unsuitable or surplus. ● Packaging material; ● Waste generated from site offices; and ● Waste generated during testing and commissioning of the Waste Water Treatment works <p>These can cause direct impacts on waste infrastructure locally through temporary occupation of sites or indirect effects if disposal in landfill is required, which would result in a permanent reduction in landfill void capacity. Waste generation quantities are not known at this stage.</p>

Source: Based on professional judgement and experience from similar Proposed Developments.

17.7.14 The assessment of effects of hazardous waste generation, particularly from contaminated land, will be informed by the volumes and types of material required and the anticipated quantity of waste generated within the first study area and by a baseline study of the material resources and waste management facility capacity within the second study area. The generation and management of waste would require transport off-site; associated transportation impacts are considered in Chapter 7: Air Quality, Chapter 15: Land Quality and Chapter 18: Noise and Vibration.

17.7.15 As long as waste is managed appropriately, implementing the mitigation measures it is unlikely that the generation and management of waste would result in significant effects. However, due to the existing uncertainties regarding the quantities of waste anticipated, further assessment is required to confirm the likely significant effects.

17.8 Potential impacts per zone

17.8.1 The potential impacts presented in Table 17-15 are divided by zone

Table 17-15: Potential construction impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Material Resources			
The availability of material resources and the subsequent impact on the demand for materials	✓	✓	✓
The depletion of non-renewable resources.	✓	✓	✓
The potential to adversely and substantially impact access to one or more allocated mineral sites.	x	x	x
Generation and management of waste			
Temporary occupation of waste management facility space (from treatment of waste)	✓	✓	✓
The permanent reduction to landfill capacity (from disposal of waste)	✓	✓	✓

17.9 Construction Phase mitigation

17.9.1 Primary mitigation measures in relation to material resource use and waste generation include:

- Re-use of all suitable excavated material in the construction of the Proposed Development, in particular for the creation of landscape earthworks, to reduce the requirement to import materials for construction and reducing the need to remove surplus materials from site
- Re-engineering of excavated material to make it suitable for use form the construction of the Proposed Development thereby avoiding the need for imported recycled or virgin aggregates.

17.9.2 The Construction Phase would be mitigated by secondary mitigation in the form of the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to material resource use and waste generation. Control measures may include:

- Development of a programme of material deliveries and storage areas to avoid damage or contamination and therefore limit the likelihood of waste.
- Requirement to procure secondary or recycled materials where available and practicable where site-won material is not available.
- Where possible road planings to be incorporated into new pavements on or off-site.

- Fill materials prior to incorporation in the EIA Scoping boundary would, where required, be stockpiled in accordance with best practice and managed appropriately to limit the likelihood of damage or contamination.
- Identification of locally sourced materials sources and suppliers used where practicable.
- Use of pre-cast elements to be used where practicable to ensure efficient use of materials and avoid the generation of waste arisings from off-cuts.
- Implementation of the waste hierarchy throughout the construction to minimise disposal and maximise reuse and recycling of waste arisings. Opportunities for reuse and recycling of waste include (but are not limited to):
 - Chipping green waste on-site for use in the landscaping within the EIA Scoping boundary.
 - Composting of green waste.
 - Recycling of inert material by crushing, blending and subsequent reuse, as an aggregate.
 - Re-using waste on other nearby schemes and support local community benefits (e.g. skate park etc).
 - Re-using waste for uses with clear benefits to the environment, for example in the remodelling of agricultural land or in the restoration of nearby quarries or other excavation sites.
 - Provision of waste segregation facilities to enable recovery of material through recycling.
 - Utilising local recycling schemes e.g. for timber, cardboard, steel, cables off cuts etc.
- Application of CL:AIRE Definition of Waste: Development Industry Code of Practice, v2 (2011) for the reuse of excavated waste materials.
- Use of appropriately licensed waste treatment and disposal facilities. In addition, the suitable facility would be located as close to the Proposed Development as possible to minimise the impacts of transportation, in particular the release of carbon emissions. (a non-exhaustive list of waste infrastructure sites within 10km of the EIA Scoping boundary is provided in Table 17-9. The ability for waste arisings to be deposited at these sites will be dependent on the conditions imposed on the sites by the relevant licence or permit. There may be other facilities in the vicinity of the EIA Scoping boundary that may be used. A non-exhaustive list of landfill sites that EIA Scoping boundary is presented in Table 17-10. The sites that have an Environment Agency Environmental Permit exemption can also potentially receive inert waste).

17.9.3 Compliance with the CoCP would be secured via a requirement included within the Development Consent Order. The CoCP would then form the basis of more

detailed plans and method statements, to be prepared during the pre-construction period by the appointed contractor. These detailed plans would include a detailed Construction Environment Management Plan (CEMP) together with a suite of management plans for specific controls, such as a Materials Management Plans (MMP) and a Soil and or Excavated Materials Management Plan (SMP). The detailed plans would be subject to agreement with relevant stakeholders.

17.10 Operational Phase potential impacts

Use of material resources

- 17.10.1 Small quantities of materials are going to be required for the maintenance of the Proposed Development, during its operational lifetime. This includes localised repairs, which may require concrete, aggregate and bitumen as well as other materials for the repair and maintenance of the proposed WWTP and its transfer pipework (Table 17-16).
- 17.10.2 Raw materials will be required as part of the operational activity of the waste water and sludge treatment processes. These may be similar material types to the existing Cambridge WWTP and will be determined as the detailed design develops. Some modifications to the existing site arrangements and procedures in place may be required, to take into account use of different chemicals, but these are not likely to change significantly for the operation of the relocated facility. Considering that the proposed WWTP will be a modern facility it is assumed increased efficiencies may lead to a decrease in operational materials consumption rates.
- 17.10.3 The impacts associated with the use of material resources include the reduction in the availability of those material resources and potentially the potential depletion of natural resources.
- 17.10.4 Major maintenance and repair activities are expected to occur infrequently and would require relatively negligible quantities of both primary raw materials and manufactured construction products compared to the Construction Phase. Accordingly, it is anticipated that there will not be significant effects on the use of material resources relating to the operation of the new plant.
- 17.10.5 The decommissioning activities at the existing Cambridge WWTP and the existing Waterbeach WRC are limited to site preparation for full decommissioning activities to be completed at a later date by others (and are not part of the scope of the CWWTTP). It is unlikely that decommissioning will require large quantities of material resources. Thus, there is no potential for permanent, direct, adverse effects on the environment due to a reduction in the availability of material resources and potentially the depletion of natural resources. Use of material will be scoped out for the decommissioning of the existing Cambridge WWTP and existing Waterbeach WRC.

Table 17-16: Summary of activities and impacts for material resource use for Operational Phase

Activity	Material use and potential to generate significant effects
Operation - maintenance	No impacts relating to the operation of the new plant are anticipated on material assets as major maintenance, repairs and replacements would be infrequent and unlikely to require large volumes of materials.
Operation – treatment	Minor impacts relating to the operation of the treatment process are anticipated for raw materials may be an increase in materials consumption relating to the overall increase in capacity however increased efficiencies may lead to a decrease rate of operational materials consumption.
Decommissioning	Minor requirement for materials is anticipated for the decommissioning activities at the existing Cambridge WWTP or the existing Waterbeach WRC (such as cleaning fluids, small amounts of concrete, fixings)

Generation and management of waste

17.10.6 Waste may be generated during the operation of the proposed WWTP (Table 17-17) and during the decommissioning of the operation of the existing Cambridge WWTP and existing Waterbeach WRC. Arisings would likely originate from site maintenance including:

- Waste arising from waste management operation of the facility
- Road sweepings
- Replacement signage and lighting
- Road and parking area resurfacing;
- Structure maintenance e.g. paints, oils (some may be hazardous)
- Landscaping maintenance
- General plant maintenance
- Waste water from draining of tanks
- Sludge from draining of tanks.
- Municipal type of waste generated from site offices.

17.10.7 The receptors likely to be subject to impacts as a result of waste generation and management are landfills and other waste management infrastructure. The generation and management of waste as a result of the operation of the proposed WWTP may result in adverse environmental effects, including the temporary occupation of waste management facility space (from treatment of waste) and the permanent reduction to landfill capacity (from disposal of waste) (Table 17-17).

17.10.8 The environmental effects associated with the generation of waste is the temporary occupation of waste management facility space or land for storage, and the permanent reduction to landfill capacity.

- 17.10.9 It is anticipated that there will not be any significant effects relating to the operation of the proposed WWTP. Waste generated through significant maintenance and repair activities would be infrequent and unlikely to generate large volumes of waste requiring treatment or disposal. The sludge produced by the proposed WWTP will be used as bio fertilizers and spread on land. Arrangements and procedures in place, that are used for the existing WWTP will also be used to manage the waste generated during the waste water and sludge treatment process.
- 17.10.10 The assessment of effects of hazardous waste generation, particularly from contaminated land, will be informed by the volumes and types of material required and the anticipated quantity of waste generated within the first study area (EIA boundary) and by a baseline study of the material resources and waste management facility capacity within the second study area (Cambridgeshire and East of England region) (see paragraph 17.3.2 – 17.3.3 for definitions of study area).
- 17.10.11 The generation and management of waste would require transport off-site; this is more logically presented in Chapter 7: Air Quality and Chapter 18: Noise and Vibration.

Table 17-17: Summary of activities and impacts for waste generation for Operational Phase

Activity	Waste arisings and potential to generate significant effects
Operation - maintenance	No impacts relating to the operation of a replacement plant are anticipated on waste generation as major maintenance, repairs and replacements would be infrequent and unlikely to generate large volumes of waste requiring disposal or treatment.
Operation – treatment	No impacts relating to the operation of the treatment process are anticipated for waste generation as the relocated facility will operate similarly to the existing site and produce similar waste streams. The sludge treatment process would also produce sludge, to be used as bio-fertilizer for spreading on agricultural land. In addition to it, there are already existing arrangement and procedures in place to appropriately manage wastes generated during the treatment process and any changes will not be significant with respect of potential waste generation at the relocated facility.
Decommissioning – tanks drain down	Liquid and sludge waste (both hazardous and non-hazardous) will arise from the tanks drain down. The volume of waste that will be generated is unknown at this time and its potential to impact cannot be determined without assessment.
Decommissioning – demolition activities	The demolition activities of the existing Cambridge WWTP and existing Waterbeach WRC would be carried out by others and is not part of the DCO for the project. There, waste arising from demolition activities will be scoped out of the ES.

Source: Based on professional judgement and experience from similar Proposed Developments.

17.11 Potential impacts per zone

17.11.1 The potential operational impacts presented in Table 17-18 are divided by zone.

Table 17-18: Potential operation impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Material Resources			
The availability of material resources and the subsequent impact on the demand for materials.	x	x	x
The depletion of non-renewable resources	x	x	x
The potential to adversely and substantially impact access to one or more allocated mineral sites.	x	x	x
Generation and management of waste			
Temporary occupation of waste management facility space (from treatment of waste)	x	✓	x
The permanent reduction to landfill capacity (from disposal of waste)	x	✓	x

OPERATIONAL PHASE MITIGATION

- 17.11.2 The Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by permit.
- 17.11.3 The written system may cover general management of the proposed WWTP, equipment maintenance, contingency plans, accident prevention and emergency response (including pollution response) as well as defining monitoring activities. It is considered that it would be standard practice to apply the waste hierarchy in development of associated plans and procedures.
- 17.11.4 The documentation in relation to the Environmental Permit would be prepared prior to operation by the operator.
- 17.11.5 Operational environmental control and protection measures (including environmental monitoring requirements) will be identified through the EIA process. These measures will be recorded within the mitigation schedule as part of the DCO application and the eventual operational environmental management plan would be developed to be consistent with the mitigation schedule. Compliance with these measures would be secured consistent with

the advice set out in paragraph 3.7.3 of the National Policy Statement for Waste Water.

17.12 Proposed scope of the assessment

MATTERS PROPOSED TO BE SCOPED IN

Use of material resources

- 17.12.1 Considering the size and scale of the Proposed Development, and the works required, there is potential that a significant quantity of material resources would be required. Therefore, use of materials during construction will be scoped in, and an assessment (using known or estimated quantities of material required) within each study area will be carried out to assess the impact of the Proposed Development on available resources within Cambridgeshire and East of England. Consideration will be made to the designated and proposed Mineral Safeguarding Areas (MSAs) and Mineral Consultation Areas, described in Chapter 15: Land Quality. The assessment can be used to inform where to find opportunities for resource efficiency and reuse to reduce the demand for raw materials.

Generation and management of waste

- 17.12.2 The generation of waste during the construction works within the EIA Scoping boundary and decommissioning of the existing Cambridge WWTP and existing Waterbeach WRC will be scoped in and assessed through consideration of facilities listed as Waste Consultation Areas and the proximity of landfill sites. Milton Landfill site, which is in the proximity to the site, is non-hazardous but may result in contaminated soils being generated during excavation and construction stages. The authorised and historic landfill sites, which are within 500m of the EIA Scoping boundary, may pose a hazardous waste arising risk. A more detailed assessment is not considered to be required since there are suitable waste management facilities within Cambridgeshire and East of England to accommodate construction and demolition wastes.

MATTERS PROPOSED TO BE SCOPED OUT

Use of materials

- 17.12.3 Assessment of the environmental effects associated with raw material extraction, processing, and manufacturing of construction material is outside the scope of this assessment, as these are subject to separate environmental assessments.
- 17.12.4 Use of material resources during the Operational Phase of the new Proposed Development and the decommissioning of the existing Cambridge WWTP will be scoped out of the assessment because maintenance activities would be infrequent with associated materials volumes expected to be in small quantities.

- 17.12.5 The matters presented in Table 17-19 and Table 17-22 are proposed to be scoped out for material resources. The justification is provided in Table.

Table 17-19 : Matters proposed to be scoped out for material resources

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
Construction Phase				
The potential to adversely and substantially impact access to one or more allocated mineral sites.	Out	Out	Out	Paragraph 17.5.7
Operation phase				
The availability of material resources and the subsequent impact on the demand for materials.	Out	Out	Out	Table 17-16
The depletion of non-renewable resources	Out	Out	Out	Table 17-16
The potential to adversely and substantially impact access to one or more allocated mineral sites.	Out	Out	Out	Paragraph 17.5.7

Generation and management of waste

- 17.12.6 The waste arising from the waste management operation of the proposed WWTP is unlikely to change significantly when compared to the existing facility and so will be scoped out of the assessment for operational waste.
- 17.12.7 Generation of wastes produced during the Operational Phase will be scoped out of the assessment because waste generated through maintenance activities would unlikely generate large volumes of waste requiring treatment or disposal.
- 17.12.8 The matters presented in Table 17-20 are proposed to be scoped out for generation and management of waste and the justification is provided in Table 17-20.

Table 17-20: Matters proposed to be scoped out for generation and management of waste

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
Operation phase				
Temporary occupation of waste management facility space (from treatment of waste)	Out	In	Out	Paragraph 17.10.11
The permanent reduction to landfill capacity (from disposal of waste)	Out	In	Out	Paragraph 17.10.9

17.13 Evidence of agreements reached with consultation bodies

17.13.1 There has been no specific consultation for material resources and waste. The scope for Materials and Waste is standard and there is no other reasonable way to undertake assessment. The feedback provided by the Cambridgeshire County Council is with regards to the planning of the Scheme and refers to their policies for Minerals and Waste Guidance.

17.14 Assessment methodology

17.14.1 This section describes the methodology to be used for the assessment of material resources and waste generation and waste management infrastructure which could affect, or be affected by, the construction and operation of the Proposed Development and the decommissioning and demolition activities involved with the existing Cambridge WWTP. It is expected that all operational waste arising from the waste management will be similar to the existing Cambridge WWTP and is dealt as part of the waste management of the facility.

17.14.2 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

17.14.3 Industry guidance for assessing the impact of materials and waste for projects of this nature is available from IEMA²⁴⁵ and will be used for the purpose of assessment.

17.14.4 The assessment will consider the following:

²⁴⁵ IEMA guide to: Materials and Waste in Environmental Impact Assessment [online] available at: [IEMA - Materials and Waste in Environmental Impact Assessment](#). Accessed January 2021

- Types and quantities of materials required for the Proposed Development, where known
- Details of the source or origin of materials, site-won materials to replace virgin materials, materials from secondary or recycled sources, or virgin or non-renewable sources, if known
- Cut and fill balance (no import of fill material is envisaged)
- Forecast of non-hazardous, hazardous, and inert waste arisings
- Surplus materials and waste falling under regulatory controls
- Wastes that require storage on-site prior to re-use, recycling and disposal
- Wastes to be pre-treated on-site for re-use within the Proposed Development
- Wastes requiring treatment or disposal off site
- The impacts that will arise from the issues identified in relation to materials and waste
- Identification of mitigation measures based on identified impacts
- Conclusion based on nature and magnitude of impacts

SIGNIFICANCE CRITERIA

- 17.14.5 The categories for the significance of effect is provided in Table 17-21 , the level of significance in Table 17-22 and the effect thresholds are defined in Table 17-23. For these tables “Region” means the authority comprising the second study area, in this case Cambridgeshire. “Primary materials” describes materials that are from a non-renewable source.
- 17.14.6 It is important to note that the criteria mainly reflect the impacts caused by transportation of materials and waste, and so are based on proportions transported as opposed to the scale of the work involved. Therefore, professional judgement will be used to provide an assessment of effects based on several factors, including:
- The availability of the material resources
 - The type of materials required, for example primary/virgin materials, manufactured materials, recycled materials
 - The type of waste generated, for example inert, hazardous
 - The availability of suitable facilities within close proximity to the Scheme options to treat the waste generated
 - Compatibility of the Best Practicable Environmental Option (BPEO) for the waste within the context of the waste hierarchy, such as whether generation of the waste can be minimised, the waste can be recycled, landfilled etc
- 17.14.7 The assessment of effects on material assets and waste generation will encompass effects arising during the

- decommissioning activities of the existing Cambridge WWTP ,
- construction of the Proposed Development up until the point when the Proposed Development opens; and
- the operation of the Proposed Development in relation to maintenance for the lifetime of the Proposed Development. The sludge waste arising from the treatment operation at the proposed WWTP as part of its waste management process is considered as part of the purpose of the relocated facility and will continue to be dealt with under existing management arrangements and not considered in the scoping process.

17.14.8 Materials required for the construction of the Proposed Development are likely to be procured from a range of different sources (which are unknown at this stage), all of which will have their own specific environmental effects, which may or may not have been subject to an environmental assessment. Therefore, there are no obvious environmental receptors or resources for materials identified as there are for other aspect areas. Consequently, assessing the significance of the use and consumption of materials based on the value or sensitivity of a resource or receptor and the magnitude of an identified effect is precluded. Instead, the scale of use for the Proposed Development relative to the current supply or capacity of a resource forms the principal measure for assessing significance.

17.14.9 Significant environmental effects are likely to arise from those materials or waste which:

- arise in the largest quantities;
- are primary/virgin materials;
- have hazardous properties; and
- comprise a large proportion of the value of the Proposed Development.

Table 17-21: Significance categories and descriptions for material assets and waste generation for sensitivity (or value) of receptor.

Significance category	Description
Negligible	<p>Material assets for the key materials required for the construction and/or operation of a development:</p> <ul style="list-style-type: none"> ● are forecast (through trend and analysis and other information) to be free from known issues regarding supply and stock; and/or ● are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials. <p>Sustainable features and benefit could include materials or products that comprise reuse, secondary or recycled content (including excavated and other arisings), support the drive to a circular economy or in some other way reduce lifetime environmental impacts.</p> <p>Waste generation across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national):</p>

Significance category	Description
Low	<ul style="list-style-type: none"> ● inert, non-hazardous and hazardous landfill capacity void is expected to remain unchanged or is expected to increase through a committed change in capacity; and ● hazardous and hazardous landfill capacity void is expected to remain unchanged or is expected to increase through a committed change in capacity. <hr/> <p>Material assets for the key materials required for the construction and/or operation of a development:</p> <ul style="list-style-type: none"> ● are forecast (through trend and analysis and other information) to be generally free from known issues regarding supply and stock; and/or ● are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials. <p>Waste generation across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national):</p> <ul style="list-style-type: none"> ● inert and non-hazardous landfill capacity void is expected to reduce minimally by <1% as a result of waste forecast; and/or ● hazardous landfill capacity void is expected to reduce minimally by <0.1% as a result of waste forecast
Medium	<p>Material assets for the key materials required for the construction and/or operation of a development:</p> <ul style="list-style-type: none"> ● are forecast (through trend and analysis and other information) to suffer from some potential issues regarding supply and stock; and/or ● are available comprising some sustainable features and benefits compared to industry-standard materials. <p>Waste generation across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national):</p> <ul style="list-style-type: none"> ● inert and non-hazardous landfill capacity void is expected to reduce noticeably by 1-5% as a result of waste forecast; and/or ● hazardous landfill capacity void is expected to reduce noticeably by 0.1- 0.5% as a result of waste forecast.
High	<p>Material assets for the key materials required for the construction and/or operation of a development:</p> <ul style="list-style-type: none"> ● are forecast (through trend and analysis and other information) to suffer from some potential issues regarding supply and stock; and/or ● comprise little or no sustainable features and benefits compared to industry-standard materials. <p>Waste generation across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national):</p> <ul style="list-style-type: none"> ● inert and non-hazardous landfill capacity void is expected to reduce considerably by 6-10% as a result of wastes forecast; and/or ● hazardous landfill capacity void is expected to reduce considerably by 0.5 - 1% as a result of wastes forecast.

Significance category	Description
Very High	<p>Material assets for the key materials required for the construction and/or operation of a development:</p> <ul style="list-style-type: none"> are known to be insufficient in terms of production, supply and/or stock; and/or comprise no sustainable features and benefits compared to industry-standard materials. <p>Waste generation across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national):</p> <ul style="list-style-type: none"> inert and non-hazardous landfill capacity void is expected to reduce very considerably (by >10%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand; and/or hazardous landfill capacity void is expected to reduce very considerably (by >1%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.

Source: IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020)²⁴⁶

Table 17-22: Significance criteria for material assets and waste generation for magnitude of impact

Significance	Description
No change	<p>Material assets: no materials required</p> <p>Waste generation:</p> <ul style="list-style-type: none"> based on void capacity: for inert, non – hazardous and hazardous waste, zero waste generation and disposal from the development. based on landfill diversion in construction and/or operation, a development is expected to achieve 100% landfill diversion.
Negligible	<p>Material assets: no individual material type is equal to or greater than 1% by volume of the regional or where justified national baseline availability</p> <p>Waste generation:</p> <ul style="list-style-type: none"> based on void capacity, the development will reduce: <ul style="list-style-type: none"> regional or where justified national landfill void capacity baseline# for inert and non – hazardous by <1%; and/or national landfill void capacity baseline# for hazardous waste by <0.1%; based on landfill diversion in construction and/or operation, a development is expected to achieve 90 - 99% landfill diversion.
Minor	<p>Material assets:</p> <ul style="list-style-type: none"> one or more materials is between 1-5% by volume of the regional or where justified national baseline availability; and/or

²⁴⁶ IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) [online] available at: [IEMA - Materials and Waste in Environmental Impact Assessment](#). Accessed February 2021

Significance	Description
Moderate	<ul style="list-style-type: none"> ● the development has the potential to adversely and substantially* impact access to one or more allocated mineral site (in their entirety), placing their future use at risk. <p>Waste generation:</p> <ul style="list-style-type: none"> ● based on void capacity, the development will reduce: <ul style="list-style-type: none"> – regional or where justified national landfill void capacity baseline# for inert and non – hazardous by 1- 5%; and/or – national landfill void capacity baseline# for hazardous waste by <0.1-0.5%; ● based on landfill diversion in construction and/or operation, a development is expected to achieve 60 - 89% landfill diversion.
Major	<p>Material assets:</p> <ul style="list-style-type: none"> ● one or more materials is between 6-10% by volume of the regional or where justified national baseline availability; and/or ● the allocated mineral site is substantially* sterilised by the development rendering it inaccessible for future use. <p>Waste generation:</p> <ul style="list-style-type: none"> ● based on void capacity, the development will reduce: <ul style="list-style-type: none"> – regional or where justified national landfill void capacity baseline# for inert and non – hazardous by 6-10%; – national landfill void capacity baseline for hazardous waste by <0.5-1%; ● based on landfill diversion in construction and/or operation, a development is expected to achieve 30-59% landfill diversion.

Source: IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020)²⁴⁷

²⁴⁷ IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) [online] available at: [IEMA - Materials and Waste in Environmental Impact Assessment](#). Accessed February 2021

Table 17-23: Effect threshold used in EIA

		Magnitude of impact				
		No change	Negligible	Minor	Moderate	Major
Sensitivity (or value) of receptor	Very high	Neutral	Slight	Moderate or large	Large or very large	Very Large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Slight	Slight	Moderate	Moderate or large
	Low	Neutral	Slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Slight	Neutral or slight	Neutral or slight	Slight

Source: IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020)²⁴⁸

17.15 Approach to cumulative effects assessment

- 17.15.1 The methodology relating to the project’s approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.
- 17.15.2 Where available, information on material resources and waste generation impacts of other Proposed Developments will be collated. The cumulative assessment for materials, resources and waste will present the significance of permanent or temporary impacts where other Proposed Developments give rise to requirements for materials and waste facilities in the same study areas, using the same criteria as applied to the assessment of the Proposed Development.
- 17.15.3 The sensitive receptors which could potentially experience cumulative effects as a result of the use of material resources include quarries and other sources of minerals, and other finite raw material resources. The potential cumulative impacts these receptors may experience include:
- The depletion of non-renewable resources
 - The impact on the national or local demand for materials
 - Sterilisation of larger areas of land from future mineral extraction either above or below ground (although this is further assessed in Chapter 15: Land Quality)
- 17.15.4 The sensitive receptors which could potentially experience cumulative effects as a result of waste generation and management are landfills and other waste

²⁴⁸ IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) [online] available at: [IEMA - Materials and Waste in Environmental Impact Assessment](#). Accessed February 2021

management infrastructure. The potential cumulative impacts these receptors may experience include:

- Utilisation and depletion of the remaining local landfill capacity
- Occupation of available waste management infrastructure capacity

- 17.15.5 There is the potential that other Proposed Developments have an adverse impact on the capacity of receiving waste management facilities within the study area where these generate waste and require materials during any enabling works, construction and operation, and that such waste would require treatment and/or disposal at third party waste management facilities. It is also anticipated that there would be a requirement for a materials, particularly during the construction of each of the other Proposed Developments which could be significant in terms of quantity.
- 17.15.6 The cumulative assessment for material resources and waste will be carried out using professional judgement and based on currently available information.
- 17.15.7 All small-scale residential developments such as those relating to 5-15 units will be scoped out. All developments whose constructions are anticipated to have been completed or expired, based on planning information available in the local authority portal will also be scoped out. During the construction of the Proposed Development, cumulative effects relating to the waste and material resources may arise in combination with all of the remaining developments on the short list. The material resources required and the waste anticipated to be generated by the other Proposed Developments that have been short-listed or the timescales over which waste would be generated and materials required are not known at this time. Accordingly, no assessment of potential cumulative effects for waste and materials arisings has been completed. However, it is recognised that the cumulative effects are likely to be greater than the individual effects, although good practice would seek to reuse material on the development sites where possible to reduce waste arisings as far as practicable.
- 17.15.8 The other Proposed Developments would also be subject to the National Planning Policy Framework (NPPF) and will require mitigation and control measures to be adopted during the construction through management plans to reduce impacts to the environment including dust generation and potential mobilisation of contaminants.

17.16 Assumptions, limitations and uncertainties

- 17.16.1 Baseline information, potential effects identified are based on available information. At this scoping stage there are no material or waste quantities available, therefore, assumptions such as existing arrangements in respect of operational waste have been considered sufficient for the Proposed Development.

- 17.16.2 The assessment will not consider the environmental effects associated with the off-site extraction of raw materials used for the off-site manufacture of products. These stages of the products' or materials' lifecycles are outside of the scope of the assessment due to the range of unknown variables associated with the processes involved and are not considered to form part of the Proposed Development. In most cases, it can also be assumed that these processes would have already been subject to EIA in securing consents for the facilities' operation.
- 17.16.3 The assessment will not consider waste and material types and quantities for the decommissioning of the Proposed Development at the end of its lifetime. Refer to paragraph 5.2.24.
- 17.16.4 The assessment will not consider the sterilisation of any mineral safeguarding areas or peat resources, this will be covered by Chapter 15: Land Quality.
- 17.16.5 Information on permitted capacity of waste management facilities has been used in the assessment, based on current publicly available data (at the time of writing). However, it should be noted that the capacity information obtained from the Environment Agency for the sites and regions identified does not necessarily mean that the capacity detailed would be available to use by the Proposed Development.
- 17.16.6 It is noted that any future changes to this permitted capacity and throughput are uncertain. It is also difficult to assess the available capacity due to the commercial sensitivity of existing contracts and the timescales over which waste would be produced. It is likely that additional capacity would become available. However, it is not currently possible to predict the timeframes for when these new waste management facilities would become available and, therefore, how many of these sites would be available to accommodate waste arisings from the Proposed Development. Similarly, it is also possible that some of the existing waste management facilities might close or be unavailable.
- 17.16.7 The procurement strategy for the materials required for the construction of the Proposed Development is unknown at this stage and likely to be unknown for the ES. For the purposes of the assessment, it will be assumed that, apart from bulk fill, not all materials would be available to be sourced locally (within Cambridge), and that the majority would be sourced nationally (within the UK). This will represent the (environmentally) worst case scenario.

18 Noise and Vibration

18.1 Introduction

18.1.1 This chapter of the EIA Scoping report identifies the resources and receptors, referred to by the Planning Inspectorate as 'matters' relevant to the aspect of noise and vibration. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of EIA Scoping is to ensure the proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.

18.1.2 Operational vibration within this aspect is proposed to be scoped out of further assessment with justification provided based on the magnitude of impacts at receptor locations.

18.1.3 The scope of assessment has been refined to focus on construction noise and vibration and operational noise.

18.2 Matters (resources and receptors)

18.2.1 For the aspect of noise and vibration the matters, or resources and receptors, are:

- Human receptors (primarily residential properties but also includes noise and vibration sensitive uses such as hospitals, schools, nurseries, community facilities, spaces used for recreation and amenity, etc.) within 300 m of the EIA Scoping boundary related to construction noise and vibration impacts.
- Human receptors (primarily residential properties but also includes noise sensitive uses such as hospitals, schools, nurseries, community facilities, spaces used for recreation and amenity, etc.) within 2 km of the EIA Scoping boundary related to operational noise impacts.

18.3 Study Area

CONSTRUCTION

18.3.1 In accordance with BS 5228-1 guidance, the study area for airborne noise during the Construction Phase is 300m from any construction works areas (including but not exclusively, the main treatment plant site, pipelines, haul roads and construction compounds).

18.3.2 Assessment of noise impacts due to construction traffic using the wider road network will be undertaken in accordance with DMRB LA111. Assessment will be completed for receptors within 50m from the kerb of a public road with the potential to increase the Basic Noise Level (BNL) by 1dB or more due to construction traffic.

18.3.3 Ground-borne vibration typically has the potential to affect the closest receptors during piling activities or activities that involve high vibratory sources (for example vibratory compaction or tunnelling). Vibration effects will be assessed for receptors within 50m of these relevant activities, but this area will be extended if significant adverse effects appear likely at larger distances.

OPERATION

18.3.4 Noise during operation of the Proposed Development, including fixed plant and mobile plant, has the potential to impact a wide area subject to existing background noise levels and predicted operational noise levels. However, the closest existing residential properties have the potential to be most affected. Assessment of operational effects will therefore be considered at of the closest affected receptors surrounding noise generating plant and relevant noise sources and activities associated with the development.

18.3.5 Vehicles accessing the proposed site (HGV and staff vehicles) are not expected to significantly alter traffic volumes or composition using the road network in the wider Cambridge area. However, vehicles accessing the proposed site may result in localised changes to the baseline noise conditions at the closest receptors to site access routes. Noise impacts from vehicles accessing the site on these routes will be assessed at representative noise sensitive receptors.

SUMMARY

18.3.6 The study area is defined for each resource or receptor as follows and as shown on.

Table 18-1: Noise and vibration study areas

Resource or receptor	Study area
Human receptors subject to construction noise impacts	300m from the EIA Scoping boundary (such as: any construction works areas including but not exclusively, the main plant site, pipelines, haul roads and construction compounds) in accordance with BS 5228-1 guidance.
Human receptors adjacent highways on the wider road network which are subject to change in noise levels due to construction traffic	50m from the kerb of a public road with the potential to increase the Basic Noise Level (BNL) by 1dB or more due to construction traffic in accordance with DMRB LA111.
Human receptors subject to construction vibration impacts	50m from EIA Scoping boundary (specifically, to include 50m from areas where construction activities will be undertaken that have the potential to generate high vibration levels including piling, vibratory compaction, tunnelling, etc.) unless significant adverse effects are predicted to arise at a greater distance.

Resource or receptor	Study area
Human receptors subject to operational noise due to fixed plant and machinery	2km from the EIA Scoping boundary. Assessment will be undertaken for selected representative receptors accounting for the closest affected receptors to respective noise sources and elements of the Proposed Development.
Human receptors subject to operational noise impacts due to changes in road traffic on the wider road network	600m from local access routes to the site (which is in accordance with DMRB LA111 to include 600m from local roads used for site access during operation where noise levels have the potential to increase at the nearest receptors by 1dB or more due to changes in road traffic).

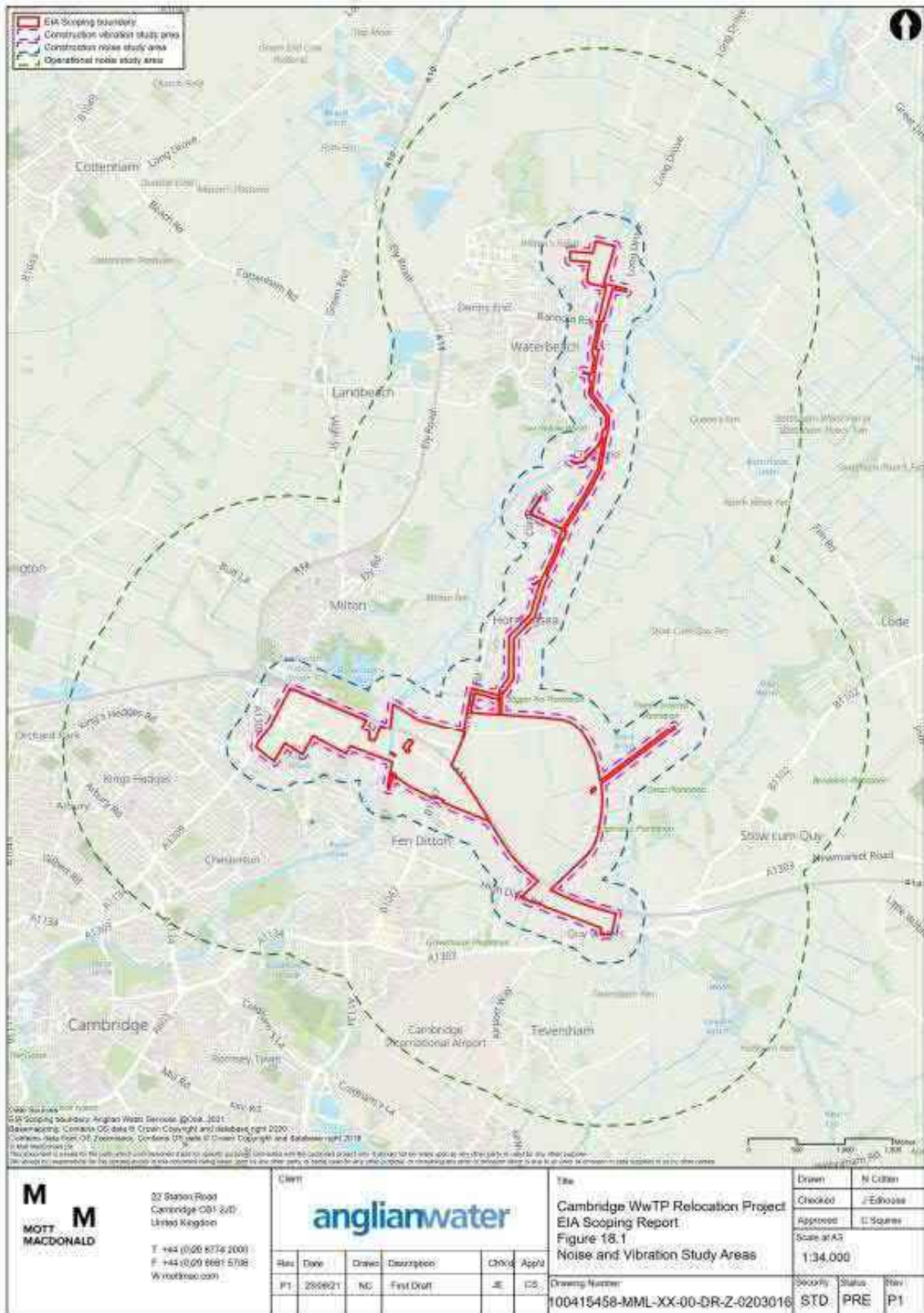


Figure 18-1: Noise and vibration study area

18.4 Legislation, planning policy context and guidance

18.4.1 Legislation, planning policy and guidance relating to noise and vibration, and pertinent to the Proposed Development comprises the following.

LEGISLATION

- Sections 60 and 61 of the Control of Pollution Act 1974²⁴⁹ concern impacts relating to construction sites and the Environmental Protection Act 1990²⁵⁰ places a duty on local authorities to serve abatement notices where noise from premises, vehicles and machinery is judged to constitute a statutory nuisance. Compliance with these controls is required although the requirements fall outside the planning system.
- The Land Compensation Act 1973 Part 1²⁵¹ includes provision for compensation for loss in property value resulting from physical agents, including noise and vibration, resulting from the use of public works, such as new or improved roads.
- The Environmental Noise (England) Regulations²⁵² implement European legislation requiring noise action plans to be developed on a five-year rolling programme. Action plans have to be developed for the major noise sources and areas for which maps have been produced and that identified 'Important Areas' for future mitigation. The action plans seek to manage noise issues and effects including noise reduction, if necessary, based on the results obtained through the mapping process.

PLANNING POLICY

18.4.2 National planning policy of relevance to noise and vibration, and pertinent to the Proposed Development are:

18.4.3 NPS for Waste Water²⁵³ with particular reference to;

- Section 4.9 in relation to noise and vibration. The policy statement describes factors which determine likely noise impact from development, proportionate assessment, mitigation measures and guidance for decision makers in the consideration of noise and vibration impacts against policy aims.
- In particular the NPS refers to government policy as set out in the NPSE and that noise should be assessed using the principles of the relevant British Standards and other guidance.

249 Her Majesty's Stationary Office, The Control of Pollution Act, 1974.

250 Her Majesty's Stationary Office, Environmental Protection Act, 1990.

251 Her Majesty's Stationary Office, Land Compensation Act, 1973.

252 Her Majesty's Stationary Office, Environmental Noise Regulations, 2006 (Amended 2018).

253 Department for Environment, Food and Rural Affairs, National Policy Statement for Waste Water, 2012.

- It states that decision makers should not grant development consent unless proposals meet the three aims which are consistent with the NPSE as set out in paragraph 18.4.5.
- Section 4.9 states assessment should consider impacts on sensitive receptors including human health, use and enjoyment in external areas and also on wildlife and biodiversity.

18.4.4 NPPF with particular reference to;

- NPPF²⁵⁴ with particular reference to Section 15, paragraphs 174 and 185 in relation to mitigating and reducing potential adverse impacts resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and the quality of life and identifying and protecting tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

18.4.5 The Noise Policy Statement for England (NPSE)²⁵⁵. The purpose of the NPSE is to promote, “good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”. The three main aims are to:

- Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

18.4.6 Within the aims stated above there are several key phrases that lead to additional concepts now considered in the assessment of noise impact; these and their definitions are detailed below:

- Lowest Observed Adverse Effect Level (LOAEL): this the level above which adverse effects on health and quality of life can be detected.
- Significant Observed Adverse Effect Level (SOAEL): this is the level above which significant adverse effects on health and quality of life occur.

18.4.7 There are no pre-defined levels for these effect levels as it is acknowledged that they will be different for different sources, different receptors and at different times.

254 Ministry of Housing, Communities & Local Government, National Planning Policy Framework, 2021.

255 Department for Environment, Food and Rural Affairs, The Noise Policy Statement for England, 2010.

18.4.8 Local planning policy of relevance to the Proposed Development includes:

- South Cambridgeshire District Council Local Plan 2018 with particular reference to policy SC/10 (Noise Pollution).
- Cambridge City Council Local Plan 2018 with particular reference to policy 35 (protection of human health and quality of life from noise and vibration).
- Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 with particular reference to Policy 18: Amenity considerations where proposals must ensure that development must not result in unacceptable adverse impacts on the amenity of existing occupiers including noise and/or vibration levels.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

18.4.9 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of noise and vibration planning policy has influenced the EIA scope as follows:

- Sensitivity of receptors - The NPS for Waste Water, NPPF and NPSE identify the need for a site-specific assessment to consider the impacts of noise and vibration during both construction and Operational Phases on local sensitive receptors.
- Mitigation - The NPS for Waste Water references the NPSE policy aims which development should seek to apply to avoid significant noise impacts, minimise and mitigate adverse impacts and contribute to improvement of health and quality of life.
- Methodology - The NPS for Waste Water advises on relevant assessment guidance in the assessment of construction / decommissioning and operational noise, which are proposed for the EIA.
- Methodology and Mitigation - Local planning policies identify the requirements for appropriate assessment and consideration of noise and vibration impacts due to new noise generating development during construction and Operational Phases.

NATIONAL POLICY STATEMENT REQUIREMENTS

18.4.10 Table 18-2 sets out how the scope proposed in this chapter complies with the NPS for Waste Water.

Table 18-2: Scope and NPS Compliance

NPS Requirement	Compliance of EIA Scope with NPS Requirements
Paragraph 4.9.1 - 4.9.6 Assessment of noise and vibration impacts in accordance with relevant British Standards and guidance	<p>Assessment of operational noise and construction noise and vibration are scoped in to EIA.</p> <p>Assessment of impacts on human receptors will be undertaken in accordance with relevant British Standards and guidance.</p> <p>Assessment of impacts on ecological receptors will be completed in accordance with the Biodiversity and Geological Conservation section of the NPS within the EIA Biodiversity chapter.</p>
Paragraph 4.9.8 - 4.9.13 Mitigation of noise impacts	Noise and vibration mitigation will be considered, assessed and included within the scheme design where appropriate in accordance with NPS policy aims.
Paragraph 4.9.9 Assessment of noise impacts with respect to policy aims which reference those of the NPSE	The assessment of noise and vibration impacts and inclusion of mitigation measures will be undertaken in accordance with the aims of the NPS for Waste Water and NPSE.

GUIDANCE

Planning Practice Guidance

- 18.4.11 The National Planning Practice Guidance includes a dedicated section on noise²⁵⁶, which states that: ‘plan making and decision making should take account of the acoustic environment and in doing so consider:
- Whether or not a significant adverse effect is occurring or likely to occur.
 - Whether or not an adverse effect is occurring or likely to occur.
 - Whether or not a good standard of amenity can be achieved’
- 18.4.12 In line with the Explanatory Note of the Noise Policy Statement for England, this would include ‘identifying whether the overall effect of the noise exposure (including the impact during construction wherever applicable) is, or would be, above or below the significant observed adverse effect level...’
- 18.4.13 Among the specific factors to consider where relevant the guidance states: ‘In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the

²⁵⁶ Department for Communities and Local Government, Planning Practice Guidance, 2019.

overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur’.

- 18.4.14 The PPG provides a noise exposure hierarchy which describes the perception and outcomes associated with increasing effect levels.

WHO Environmental Noise Guidelines for the European Region 2018

- 18.4.15 The World Health Organisation (WHO) Environmental Noise Guidelines for the European Region²⁵⁷ provide evidence-based recommendations on the health effects of noise. The guidelines complement the expert-based recommendations of the WHO ‘Night Noise Guidelines’ (2009) (NNG). The guidelines provide source specific recommendations road traffic, railway, aircraft and wind turbine noise, and indoor as well as outdoor exposure levels for leisure noise sources. No specific recommendations are provided for industrial or commercial noise sources.

WHO Night Noise Guidelines for Europe, 2009

- 18.4.16 The WHO Night Noise Guidelines for Europe (NNG)²⁵⁸ suggest on a very precautionary basis, that the population should not be exposed to a NNG value greater than 40dB of $L_{\text{night, outside}}$ (defined as the night noise level outside in free field conditions) during the part of the night when most people are sleeping. However, the precautionary nature of this target is fully appreciated by the WHO and a noise level of 55dB $L_{\text{night, outside}}$ is therefore recommended relating to the onset of heart disease.

British Standard (BS) 8233:2014

- 18.4.17 BS 8233:2014²⁵⁹ provides guidance relating to indoor ambient noise levels for residential dwellings. Guidance recommends that internal noise levels should not exceed 35 dB $L_{\text{Aeq, 16hour}}$ in living rooms during daytime periods (between 07:00-23:00) and 35 dB $L_{\text{Aeq, 8hour}}$ in bedrooms during the night-time periods (between 23:00-07:00).
- 18.4.18 BS 8233:2014 also provides guidance relating to noise levels in external amenity areas which states that it is desirable noise levels do not exceed 50 dB $L_{\text{Aeq, T}}$ with an upper guidance value of 55 dB $L_{\text{Aeq, T}}$. The upper guidance value is relevant in noisier environments.
- 18.4.19 The guidance states “however, it is also recognized that these [external noise level] guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in

257 World Health Organisation, Environmental Noise Guidelines for the European Region, 2018.

258 World Health Organization, Night Noise Guidelines for Europe, 2009.

259 British Standards Institution, BS 8233:2014 “Guidance on sound insulation and noise reduction for buildings”, 2014.

these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.”

British Standard (BS) 4142:2014+A1:2019

- 18.4.20 BS 4142:2014+A1:2019²⁶⁰ entitled ‘Methods for rating and assessing industrial and commercial sound’, provides guidance for assessing a new industrial sound source in mixed residential and industrial areas. The methods described in this standard assess the likely effects of the new sound source on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 18.4.21 The level of sound from proposed new plant, the ‘rating level’, is predicted in terms of the A-weighted equivalent continuous sound level dB L_{Aeq} , and compared to the existing background sound level, in terms of LA_{90} . The LA_{90} is to be representative of the period being assessed. If the new sound source is impulsive, intermittent, or tonal in nature, then a penalty is added to the ‘rating level’ to account for the character of the noise.
- 18.4.22 The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, guidance states that this is an indication of the specific sound source having a low impact, depending on the context.

British Standard (BS) 5228 Parts 1 and 2

- 18.4.23 BS 5228-1:2009+A1:2014²⁶¹ provides a methodology for calculating noise levels generated by fixed and mobile plant used for a range of typical construction operations. The Standard includes a database of equivalent continuous noise levels (L_{Aeq} dB) at a reference distance of 10m and a simple noise propagation model that can be used to make allowances for source-receiver distances, ground properties, utilisation time etc. The standard does not define strict criteria to determine the significance of noise effects, although examples of how limits of acceptability have been applied historically and some examples of assessing significance are provided.
- 18.4.24 The standard BS 5228-2:2009+A1:2014²⁶² provides guidance on the human and physical effects of vibration, such as levels at which it will cause complaint or cosmetic damage to buildings. BS5228 does not indicate whether particular vibration levels are significant. However, it does state that “*It is likely that*

260 British Standards Institution, BS 4142:2014+A1:2019 “Methods for rating and assessing industrial and commercial sound”, 2019.

261 British Standards Institution, BS 5228-2:2009+A1:2014 “Code of practice for noise and vibration control on construction and open sites”, 2014.

262 British Standards Institution, BS 5228-2:2009+A1:2014 “Code of practice for noise and vibration control on construction and open sites” Part 2: Vibration, 2014.

vibration of... [1.0mm/s] ...in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents". The standard also provides a methodology for the calculation of vibration impacts for a range of construction activities that generate vibration.

Design of Roads and Bridges (DMRB) LA111

- 18.4.25 DMRB LA111 'Noise and Vibration'²⁶³ describes methodology and guidance for the assessment road traffic noise in the UK. Guidance best reflects EIA methodology as applied to highways projects and assessment of noise impacts due to road traffic. It includes a method of the classification of magnitude of impact, assessment of and determination of significance.

18.5 Baseline conditions

- 18.5.1 Baseline noise surveys have not been completed to date. Baseline noise monitoring will be carried out during preparation of the EIA at locations representative of surrounding noise sensitive receptors to determine ambient and background noise levels for assessment of noise impacts accordingly.
- 18.5.2 Existing baseline conditions have been reviewed through desktop study including review of noise levels from the Extrium noise map viewer²⁶⁴.
- 18.5.3 The nearest Noise Important Areas to the EIA Scoping boundary are located on the A14 (west of Junction 33), A10 (north of Milton) and A1303 Newmarket Road (between A14 Junction 35 and Cambridge Airport) and all relate to road traffic noise. These Important Areas do not affect baseline noise levels at receptor locations surrounding the EIA Scoping boundary however are noted here for context within the surrounding noise environment.
- 18.5.4 The baseline conditions for noise and vibration are described for the three zones within the EIA Scoping boundary as set out below.

CORE ZONE

- 18.5.5 The closest noise sensitive receptors to the Core Zone area include residential housing within Milton, Horningsea and north Cambridge in Chesterton and Fen Ditton.
- 18.5.6 Existing ambient noise levels are indicated to be less than 55 dB L_{Aeq,16hr} (daytime) for the majority of sensitive receptors within immediate proximity of this zone which are located in generally rural areas. Existing ambient noise levels increase for receptors which are located closer to main road noise sources including the A14. Baseline noise levels in the immediate vicinity of the Core Zone area are understood to be characterised by road traffic noise using the A14. Other noise sources (including road traffic from minor roads, rail,

²⁶³ Highways England, Design Manual for Roads and Bridges, LA111 Noise and Vibration (Revision 2), 2020.

²⁶⁴ Available online at: XXXXXXXXXX

aircraft, anthropogenic and environmental sources) are likely contribute to ambient noise levels in more rural areas at greater distances from road traffic noise sources.

TRANSFERS ZONE

- 18.5.7 The closest noise sensitive receptors to the existing WWTP, the waste water transfers and final effluent zone include residential housing within Milton, Horningsea and north Cambridge in Chesterton and Fen Ditton.
- 18.5.8 Existing ambient noise levels are indicated to be less than 55 dB $L_{Aeq,16hr}$ (daytime) for the majority of sensitive receptors within north Cambridge (Chesterton and Fen Ditton). Existing ambient noise levels increase for receptors which are located closer to the main road noise sources including the A10 and A14 and railway noise sources.
- 18.5.9 Baseline noise levels in the immediate vicinity of this zone area are understood to be characterised by road traffic noise using the A14 and surrounding road network. Other noise sources (including rail, aircraft, anthropogenic and environmental sources) are likely to contribute to ambient noise levels in areas at greater distances from the primary road traffic noise sources.

WATERBEACH ZONE

- 18.5.10 The closest noise sensitive receptors to the Waterbeach waste water transfer pipeline zone include residential housing within Waterbeach and Horningsea.
- 18.5.11 Existing ambient noise levels are indicated to be less than 55 dB $L_{Aeq,16hr}$ (daytime) for the majority of sensitive receptors within immediate proximity of the Waterbeach pipeline zone which are located in generally rural areas. Baseline noise levels in the immediate vicinity of this zone are understood to be characterised by minor/local road traffic, rail, aircraft, anthropogenic and environmental sources.

18.6 Future baseline

- 18.6.1 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline. alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 18.6.2 Where this presents new environmental receptors or a change to the current baseline specific to noise and vibration, this is discussed further below.
- 18.6.3 For the aspect of noise and vibration it is assumed that baseline noise conditions will remain broadly unchanged at the time of the start of construction of the Proposed Development compared to current baseline conditions. Ambient noise levels in the areas adjacent the Proposed Development are

predominantly controlled by road traffic noise from the A14. and are not anticipated to alter significantly due to committed developments.

18.6.4 Noise measurements will be undertaken to establish the baseline conditions for EIA.

18.6.5 Where relevant within the scope of EIA and subject to representative conditions (i.e. to avoid any ongoing construction of committed developments that may affect noise measurement results) baseline noise measurements will be undertaken also to account for relevant receptors within committed developments.

18.7 Baseline data collection

18.7.1 Baseline noise measurements are planned for autumn 2021 and date will be reported within the ES in accordance with methodology stated in 18.11. Available preliminary information will also be presented as part of the PEI.

18.8 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

18.8.1 During construction, works have the potential to directly alter the noise and vibration baseline for sensitive receptors for a temporary period during the programme of construction activities. Adverse impacts are likely to be restricted to areas where the existing baseline noise levels are exceeded subject to the application of appropriate mitigation. This would be principally in the immediate vicinity of the Proposed Development (including any haul roads and construction compound areas).

18.8.2 Construction traffic using the wider road network (such as to access the site or for delivery/collection of materials) may increase noise levels at receptors within the temporary period during the programme of construction activities. Adverse noise impacts would be restricted to receptors on minor roads where resultant relative increases in noise levels due to construction traffic would be higher.

POTENTIAL IMPACTS PER ZONE

18.8.3 The potential construction impacts presented in Table 18-3 are divided by zone.

Table 18-3: Potential construction impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Temporary noise impacts on receptors due to construction activities	✓	✓	✓
Temporary noise impacts on receptors due to construction traffic	✓	✓	✓

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Temporary vibration impacts on receptors due to construction activities	✓	✓	✓

CONSTRUCTION PHASE MITIGATION

- 18.8.4 Likely significant effects arising during the Construction Phase would be mitigated by secondary mitigation in the form of measures set out in the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to noise and vibration. Control measures may include:
- Requirement for the appointed contractor to prepare a Noise and Vibration Management Plan. The plan will detail the environmental controls, environmental protection measures including best practicable means (BPM) to minimise and prevent construction noise and vibration. It is expected this would be developed to incorporate the following:
 - the use of acoustic screening around construction working areas or compounds;
 - restrictions of construction working hours to avoid more sensitive time periods including evenings, night-times or weekends;
 - measures to mitigate noise and vibration to include good practice and the application of BPM as defined by the Control of Pollution Act and described by BS 5228.
 - the selection of quiet and low vibration equipment
 - sequencing of works so that earthworks and planting provide local screening effect; and
 - altering construction methodology to avoid high impact activities.
- 18.8.5 In the case where noise meets the criteria as defined within CoPA and BS 5228 for significant noise/vibration disturbance the provision of noise insulation or temporary rehousing at affected residences may be required. Noise insulation or temporary rehousing would only be considered where all reasonable measures have been taken to reduce noise (or vibration) levels but levels are such that significant community disturbance or interference with activities or sleep is likely to occur over an extended duration. Relevant trigger thresholds and impact durations would be considered in accordance with as per requirements and guidance of the Control of Pollution Act, 1974 and BS 5228 Parts 1 and 2.
- 18.8.6 The NVMP would also require the development of monitoring protocol, including the identification of noise and vibration monitoring locations to be used at different stages during construction.

18.8.7 Noise and vibration from the movement of construction traffic will be set out within a Construction Traffic Management Plan.

OPERATION PHASE POTENTIAL IMPACTS

18.8.8 New noise sources during operation of the proposed WWTP include fixed plant and machinery and on-site mobile plant. The proposals may result in changes in road traffic noise levels at the closest noise sensitive receptors located on access routes to the site. There is potential that new noise sources and changes in road traffic noise on site access routes will result in changes to baseline noise conditions at noise sensitive receptors. The magnitude of change may result in adverse noise impacts.

POTENTIAL IMPACTS PER ZONE

18.8.9 The potential operational impacts presented in Table 18-4 are divided by zone.

Table 18-4: Potential operational impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Permanent noise impacts on receptors due to operation of fixed plant and machinery associated with the Proposed Development	✓	✗	✓
Permanent noise impacts on receptors due to increases in road traffic noise on the wider road network	✓	✗	✗

OPERATION PHASE MITIGATION

18.8.10 In accordance with national and local policy, appropriate mitigation design would aim to minimise potential adverse noise impacts at the nearest noise sensitive receptors.

18.8.11 Primary mitigation measures (design) intended to reduce avoid or reduce noise and vibration in operation may include:

- Selection of low noise generating plant and equipment
- Implementation of noise reduction to specific plant items (e.g. attenuators or enclosures)
- Siting and orientation of plant and equipment such to maximise distance and screening effects
- Provision of acoustic barriers or earth bunds.

18.8.12 The Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing

measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by permit.

- 18.8.13 Operational management plans and procedures are expected to cover measures to management noise such as hours of operation, site access arrangements for HGVs, and best practice in relation to regular maintenance of plant and any noise mitigation such as bunds, barriers, and attenuators.

18.9 Proposed scope of the assessment

MATTERS PROPOSED TO BE SCOPED IN

- 18.9.1 Construction noise and vibration impacts have the potential to result in adverse effects due to the anticipated activities and distance to nearest receptors. Construction noise and vibration effects are therefore scoped into the assessment.
- 18.9.2 Operational noise impacts have the potential to result in adverse effects at the nearest noise sensitive receptors. Operational noise effects are therefore scoped into the assessment.

MATTERS PROPOSED TO BE SCOPED OUT

- 18.9.3 Any potential sources of operational vibration would be located within the Proposed Development Core Zone. The nearest residential receptors are at distances greater than 100m from these areas. Operational vibration effects are therefore unlikely to result in adverse effects or significant adverse effects due to the magnitude of potential impacts and distance to nearest sensitive receptors.
- 18.9.4 Additionally, no significant sources of vibration are noted in the existing baseline at receptors near to the Core Zone that would result in cumulative operational vibration impacts due to operation of the site. Operational vibration effects are therefore scoped out of the assessment for all zones.
- 18.9.5 The matters presented in Table 18-5 are proposed to be scoped out. The justification is provided in the proceeding paragraphs.

Table 18-5: Matters to be scoped out

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
Operational vibration	Out	Out	Out	<ul style="list-style-type: none"> ● The level of vibration from operational sources is expected to be negligible at nearest receptors due to the large distance (>100m) from sources to receptors and would not result in significant adverse effects.

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
				<ul style="list-style-type: none"> No significant sources of vibration in the existing baseline that would result in cumulative significant adverse vibration effects due to operation of the site.

18.10 Evidence of agreements reach with consultation bodies

18.10.1 Consultation is planned to be undertaken with local authority Environmental Health Officers (EHO) within Greater Cambridge Shared Planning and Cambridgeshire County Council. Ongoing consultation will include the presentation of baseline noise survey methodology and survey locations.

18.11 Assessment methodology

18.11.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

BASELINE NOISE SURVEYS

18.11.2 Baseline noise surveys have not been undertaken to date however will be undertaken during preparation of and to inform the EIA.

18.11.3 Baseline noise monitoring will be undertaken to establish the noise environment at locations representative of sensitive receptors within the study area. Noise surveys will include the measurement of background noise levels at a sample of representative receptors for the assessment of operational noise impacts from fixed plant and machinery. Noise surveys will also include the measurement of ambient noise levels at a sample of representative receptors for the assessment of construction noise impacts. Where relevant baseline noise levels will also be established at locations representative of new sensitive receptors within committed developments (for example the Marleigh residential development currently under construction).

18.11.4 The monitoring procedures for assessment of operational noise will follow guidance from BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

18.11.5 Measurements will be undertaken during representative conditions, i.e. to avoid any ongoing construction or other temporary activities or changes in the ambient noise environment that may affect noise measurements.

- 18.11.6 National and local COVID-19 restrictions implemented in 2020 and 2021 resulted in changes to the ambient noise environment in many areas across the country. Locations most affected include areas near to sources of transportation noise (i.e. main roads, railways and airports). In general, this has resulted in lower ambient noise levels for many locations but also some changes in the distribution of noise throughout a typical day and week.
- 18.11.7 Joint guidance was issued during 2020 and 2021 by the Association of Noise Consultants and Institute of Acoustics²⁶⁵ relating to the impact of COVID-19 on and the reliability of undertaking baseline noise measurements. This guidance was provided to assist relevant assessors and authorities to understand implications of undertaking noise measurements and consider alternative approaches where it is not possible or safe to undertake representative noise measurements due to COVID-19. The joint guidance advises that when baseline noise measurements are undertaken that the prevailing sound environment must be reasonably representative and not affected by local [or national] restrictions.
- 18.11.8 The final selection of noise survey locations will be shared and agreed with Environmental Health Officers at Cambridge City Council and Greater Cambridge Shared Planning.

CONSTRUCTION NOISE

- 18.11.9 The assessment of construction noise will be carried out at the closest representative receptors using BS 5228-1:2009+A1:2014 methodology and guidance. The assessment will include all relevant construction activities including but not exclusively, the proposed WWTP, pipelines, haul roads and construction compounds. Construction noise impacts will be assessed over the full duration of the Construction Phase for relevant days and hours during works in accordance with BS5228 guidance.
- 18.11.10 The guidance outlines how site noise can be calculated based on sound power levels of plant, periods of operation, distances from sources to receivers, screening barriers, sound reflection and level of soft ground attenuation.
- 18.11.11 The total noise (including the baseline noise and the predicted site noise) will be compared with the baseline noise before any construction noise takes place to determine the effects of construction noise.
- 18.11.12 The assessment of noise due to construction traffic using the wider road network will be undertaken in accordance with DMRB LA111 at relevant receptors using a comparative approach of Basic Noise Levels (BNL) values.

²⁶⁵ Association of Noise Consultants and Institute of Acoustics, "Joint Guidance on the Impact of COVID-19 on the Practicality and Reliability of Baseline Sound Level Surveying and the Provision of Sound & Noise Impact Assessments (Version 6)", January 2021

CONSTRUCTION VIBRATION

- 18.11.13 The assessment of construction vibration will be carried out at selected receptors using BS 5228-2:2009+A1:2014 methodology and criteria.
- 18.11.14 Effects on community perception and risk of damage to structures is characterised by estimating the Peak Particle Velocity (PPV).
- 18.11.15 Vibration impact estimates of any relevant activities (such as piling activities) will be made for receptors within 50m.

OPERATIONAL NOISE

- 18.11.16 The assessment of operational noise from activities and plant within the proposed site will be carried out at selected representative receptors using BS 4142:2014+A1:2019 methodology and criteria.
- 18.11.17 Noise predictions will be undertaken to determine the specific sound level from plant operation at the nearest representative receptors. Calculations of noise propagation from plant will be completed using ISO 9613-2:1996 methodology.
- 18.11.18 Character corrections will be applied to the specific sound level, accounting for tonality, impulsivity and intermittency, to determine the rating noise level and compared against representative background noise levels to determine the level of noise impact.
- 18.11.19 Noise from operational vehicles movements on access routes to the proposed site will be assessed using a proportionate approach following methodology and guidance of DMRB LA111. Assessment will be completed for representative receptors on site access routes. Assessment will include comparison of noise levels with (Do-Something) and without (Do-Minimum) the scheme in the opening year to determine the magnitude of impact.

SIGNIFICANCE CRITERIA

Construction Noise

- 18.11.20 BS5228–1:2009+A1:2014 (BSI, 2014) does not define strict criteria to determine the significance of noise effects, although examples of how limits of acceptability have been applied historically and some examples of assessing significance are provided.
- 18.11.21 The assessment of construction noise will be carried out at selected receptors using BS5228 Example method 2 – 5dB change. An adverse effect arises when total noise (baseline plus construction noise) exceeds the baseline by 5dB or more and LOAEL is exceeded. A significant adverse effect arises when total noise exceeds the baseline by 5dB or more and where SOAEL is exceeded for a period of 10 or more days in any 15 consecutive days or for 40 days in any

consecutive six months. With respect to BS5228-1 guidance the values for LOAEL and SOAEL for construction noise will be:

- LOAEL for the daytime and Saturday mornings is 65dB $L_{Aeq,T}$, for night-time is 45dB $L_{Aeq,T}$ (in both cases the lower cut-off value in example method 2 (section E.3.3))
- SOAEL for the daytime and Saturday mornings is 72dB $L_{Aeq,T}$, for night-time is 55dB $L_{Aeq,T}$ (in both cases the trigger for noise insulation with 75dB façade converted to 72dB free-field)

18.11.22 The assessment of construction traffic will be carried out at receptors within the study area using DMRB LA111. An adverse effect arises when the BNL of closest public road to relevant receptors increases due to construction traffic by 3dB or more. A significant adverse effect arises when the BNL of closest public road to relevant receptors increases due to construction traffic by 3dB or more for a period of 10 or more days in any 15 consecutive days or for 40 days in any consecutive six months.

Construction Vibration

18.11.23 BS5228 Part 2 provides guidance on the human and physical effects of vibration, such as levels at which it will cause complaint or cosmetic damage to buildings. BS5228 does not indicate whether particular vibration levels are significant.

18.11.24 With respect to BS5228-1 guidance the values for LOAEL and SOAEL for construction noise will be:

- LOAEL is the level at which vibration is perceptible, 0.3 mm/s PPV
- SOAEL is the level vibration in residential environments can cause complaint but can be tolerated if prior warning and explanation is given, 1.0 mm/s PPV

18.11.25 An adverse impact is one in which LOAEL is exceeded. A significant adverse effect is one for which construction vibration exceeds SOAEL for an extended period (such as, for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months).

Operational Noise

18.11.26 The operational noise assessment for on-site activities and fixed plant and machinery will follow guidance in BS4142:2014+A1:2019 and will compare the rating level (equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location plus any adjustment for the characteristic features of the sound) with the representative background noise level.

- A potentially significant adverse effect arises when there is difference of 10dB or more, depending on the context.

- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

18.11.27 The noise assessment for changes in road traffic on site access routes will follow guidance of DMRB LA111. LOAEL and SOAEL values relevant to impacts of road traffic noise are proposed within DMRB LA111 which will be adopted for the purposes of this assessment. The assessment will consider the potential significance of any changes using criteria based on the classification of impact and noise levels with respect to the LOAEL and SOAEL as follows:

- A potentially significant adverse effect arises for moderate or major impacts (i.e. an increase of 3dB or more in the short-term) where noise levels are above LOAEL; or for minor, moderate or major impacts (i.e. an increase of 1dB or more in the short-term) where noise levels are above SOAEL.
- In all cases where a potentially adverse effect is indicated, professional judgement is used to determine if a significant adverse effect arises that includes consideration of the sources of noise, the causes of the change in noise levels, the magnitude of the impact and noise levels relative to LOAEL and SOAEL.

18.12 Approach to cumulative effects assessment

18.12.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

18.12.2 The cumulative assessment for noise and vibration will consider any other proposed developments that present new noise sensitive receptors, including residential development sites within the study area which are currently proposed or under construction.

18.13 Assumptions, limitations and uncertainties

18.13.1 Predictions of sound levels have an associated degree of uncertainty. Modelling, calculation and measurement processes are undertaken in such a way to reduce such uncertainty; however, it is unavoidable that some degree of prediction uncertainty remains.

18.13.2 Construction works noise levels will be predicted following guidance from BS 5228:2009+A1:2014 which provides a realistic estimate of sound propagation from construction plant. The predictions will use representative

noise levels, sourced from industry standard guidance documents such as BS 5228:2009+A1:2014, for typical items of plant that are used in such developments as advised by the Applicant.

- 18.13.3 Predictions of operational plant and activities sound pressure levels will be undertaken following guidance to ISO 9613 Attenuation of sound during propagation outdoors – Part 2: General method of calculation, which are based on an assumption of moderate downwind propagation, and hence could be considered as a reasonable worst-case calculation. However, the standard also indicates an estimated accuracy of ± 3 dB(A) in predicted levels.
- 18.13.4 Any measurement of existing ambient or background sound levels will be subject to a degree of uncertainty. Environmental sound levels vary between days, weeks, and throughout the year due to variations in source levels and conditions, meteorological effects on sound propagation and other factors. Hence, any measurement survey can only provide a sample of the ambient levels. Every effort will be made to ensure that measurements are undertaken in such a way as to provide a representative sample of conditions, such as avoiding periods of adverse weather conditions, and school holiday periods (which are often considered to result in atypical sound levels). However, a small degree of uncertainty will always remain in the values taken from such a measurement survey.
- 18.13.5 At the time of writing in the context of the ‘relaxing’ COVID-19 restrictions, development proposals and location of sensitive receptors surrounding the EIA Scoping boundary it is considered that current ambient and background noise levels are representative for the purposes of assessment and are not significantly affected due to the effects of COVID-19. It is considered unlikely that conditions will change significantly in the near future during preparation of the ES. Prevailing conditions and methodology will however continue to be reviewed prior to and during any measurements undertaken.

19 Odour

19.1 Introduction

- 19.1.1 This chapter of the EIA Scoping report identifies receptors, referred to by the Planning Inspectorate as 'matters', relevant to the aspect of odour. The odour sources and study area for the assessment of likely significant effects on identified receptors is also defined. The purpose of EIA Scoping is to ensure a proportionate assessment appropriately focused on aspects and matters where a likely significant effect may occur.
- 19.1.2 The air quality impacts from the Proposed Development on local receptors is addressed separately in Chapter 7: Air Quality.
- 19.1.3 Several matters within this aspect are proposed to be scoped out of further assessment with justification provided based on, for example, the absence of a pathway from impact to the receptor, through consultation with the relevant statutory consultee or sufficient confidence in impact avoidance methods.

19.2 Matters

- 19.2.1 For the aspect of odour, receptors are locations where people are present within 3km of odorous activities associated with the Proposed Development within the EIA Scoping boundary.

19.3 Study Area

- 19.3.1 The study area is the area potentially at risk of odour impacts as a result of odour emissions from the Proposed Development. An inception phase odour modelling assessment was undertaken to support site selection for the Proposed Development. The assessment identified that a section of the Low Fen Drove Way public byway and farmland surrounding the indicative proposed WWTP footprint could experience odour impacts. The highest level of impact at these receptor locations was identified as 'negligible' in both the unmitigated and mitigated scenarios assessed as defined by the IAQM's 'Guidance on the assessment of odour for planning' for assessing odour impacts in 2018²⁶⁶. Other modelled receptors further from the WWTP were found to be unlikely to experience odour impacts, even in the unmitigated scenario.
- 19.3.2 Although the relevant guidance does not limit the distances at which receptors could be considered, the study area for the odour assessment will have a 3km radius from the EIA Scoping boundary. This has been chosen as a reasonable limit for the assessment, based on professional judgement and the outcome of

266 Bull et al (2018). IAQM Guidance on the assessment of odour for planning – version 1.1, Institute of Air Quality Management, London. [REDACTED]

the preliminary site selection assessment, which showed potential odour impacts were located close to the proposed WWTP boundary.

19.3.3 The study area for odour is indicated in Table 19-1 and shown in Figure 19-1.

Table 19-1: Study Area

Receptor	Study Area
People	3km from odorous activities within the EIA Scoping boundary (associated with the Proposed Development)

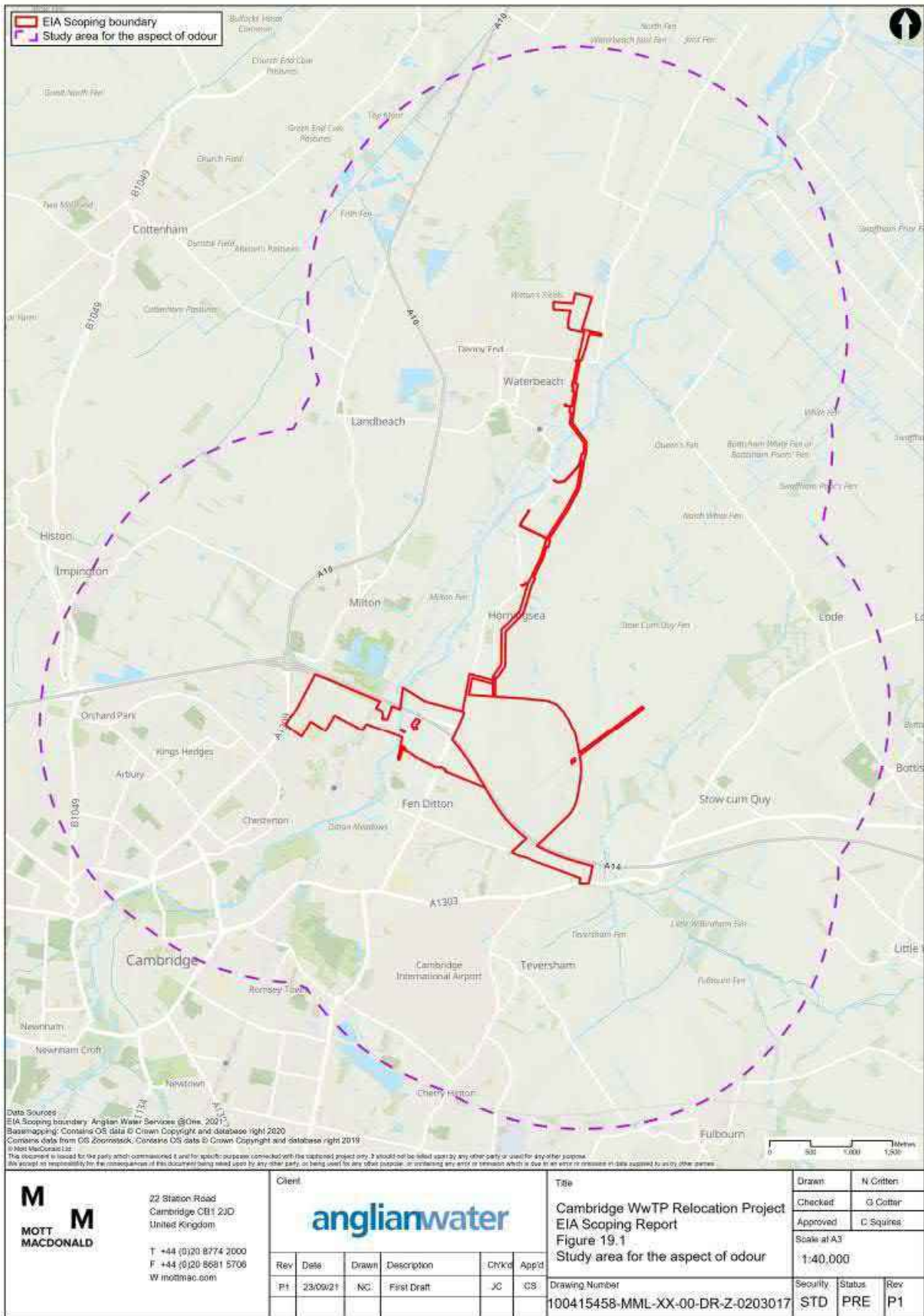


Figure 19-1: Odour assessment study area

19.4 Legislation, planning policy context and guidance

19.4.1 Legislation, planning policy and guidance relating to odour and pertinent to the Proposed Development comprises the following.

LEGISLATION

Statutory Nuisance

19.4.2 Section 79(1)(d) of the Environmental Protection Act 1990²⁶⁷ defines one type of 'statutory nuisance' as "any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance". Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, it must serve an abatement notice. Failure to comply with an abatement notice is an offence. Best practicable means is a widely-used defence by operators, if employed to prevent or to counteract the effects of the nuisance.

19.5 Planning policy

19.5.1 National planning policy of relevance to the Proposed Development includes:

- NPS for Waste water with particular reference to:
 - Paragraph 4.3.4: the decision maker should consider the impacts of odour from waste water treatment.
 - Paragraph 4.3.11: the decision maker should satisfy itself that all reasonable steps have been taken and will be taken, to minimise any detrimental impact on amenity from odours on surrounding uses of land and development including housing, hospitals, schools, commercial premises, recreational facilities and open spaces.
 - Paragraph 4.3.6: the assessment provided by the applicant should include: measures to be employed to prevent or mitigate odorous emissions.
 - Paragraph 4.3.15: where it believes it appropriate, the decision maker may consider that a requirement should be placed in a development consent order to secure certain mitigation measures, which may include: locating the main odour sources away from sensitive receptors, selection of 'low odour' technologies, enclosing the odorous sources on the site or an Odour Management Plan (OMP) documenting the measures to be employed by the site operator to anticipate the formation of odours and to control their release from the site.

19.5.2 Local planning policy of relevance to the Proposed Development includes:

19.5.3 SCDC Local Plan 2018 with particular reference to:

²⁶⁷ Parliament of the United Kingdom (1990) Environmental Protection Act 1990

- Policy SC/12: (p216) ‘Air Quality’ seeks to ensure that new developments do not exacerbate or be negatively impacted by air pollution and pollution from odour²⁶⁸.
- Policy SC/14: (p219) ‘Odour and Other Fugitive Emissions to Air’ states that all major developments required an odour impact risk assessment or detailed odour impact assessment. Both odour-generating and odour-sensitive development should be considered when assessing odour impacts.

19.5.4 Cambridge City Council Local Plan 2018 with reference to:

- Policy 36: (p134) ‘Air quality, odour and dust’ details that development will only be permitted where it will not lead to significant adverse effects on health, the environment or amenity and that any sources of odour generated by the development are appropriately mitigated and monitored.

19.6 The influence of Planning Policy on EIA Scope

19.6.1 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or influence the methodology of the EIA. For the aspect of odour, planning policy has directly influenced the EIA scope as follows:

- Methodology – The NPS provides prescriptive guidance on the factors to be considered within an odour assessment. These will be used in conjunction with the IAQM’s odour guidance to form the methodology for the odour assessment.
- Mitigation – The NPS states that the odour assessment must contain mitigation measures to prevent or mitigate odour.

19.7 National Policy Statement requirements

19.7.1 Table 19-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 19-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.3.6 The assessment provided by the applicant should include: <ul style="list-style-type: none"> ● a description of the component plant and processes of the development which will give rise to odour; ● nature of the odour emissions from the identified sources; 	An odour assessment will be undertaken and summarised in the ES chapter. This will include a description of plant and processes which create odour, the odour character, consideration of the local features such as topography and meteorological data. The local worst-case receptors and their sensitivities will be assessed to determine the likelihood of impacts or significant effects

NPS requirement	Compliance of EIA scope with NPS requirements
<ul style="list-style-type: none"> • consideration of the prevailing wind conditions; • premises or locations that may be affected by the emissions; • effects of the odour on identified premises or locations; and • measures to be employed to prevent or mitigate odorous emissions. 	<p>from odour at these locations. Mitigation measures will be proposed to prevent and mitigate against odour emissions. This will comprise mitigation in design (covered processes, positioning odorous processes away from receptors) and management practices (Odour Management Plan).</p>
<p>Paragraph 4.3.7 These factors should be examined and assessed by means of a thorough and objective source receptor pathway risk assessment of potential odour impacts.</p>	<p>A source-pathway-receptor assessment will be undertaken as part of the odour assessment.</p>
<p>Paragraph 4.3.8 Odour impacts should be assessed using appropriate odour impact standards that reflect whether the odour source is highly offensive, moderately offensive or less offensive.</p>	<p>The IAQM's 'Guidance on the assessment of odour for planning' will be used to quantify the offensiveness of odour. This guidance is considered best practice.</p>
<p>Paragraph 4.3.9 The odour impact assessment should also include consideration of:</p> <ul style="list-style-type: none"> • ancillary activities associated with the project, for example, transport of sludge; and • the effects of abnormal operations (e.g. a major plant failure) and emergencies such as loss of sludge disposal route. 	<p>Consideration of ancillary activities and abnormal operations will be incorporated into the odour assessment.</p>

GUIDANCE

- 19.7.2 The National Planning Practice Guidance includes a section on air quality²⁶⁹, which sets out the information local planning authorities may require in relation to air quality and odour and matters for determining whether they are relevant to a planning decision. It also states that 'odour and dust can be a planning concern, for example, because of the effect on local amenity'.
- 19.7.3 The IAQM published the 'Guidance on the assessment of odour for planning' for assessing odour impacts in 2018²⁷⁰, providing appropriate best-practice odour methods for use in assessing odour for planning applications. The guidance presents a range of tools for the assessment of odour, from Source-Pathway-Receptor risk assessments to atmospheric modelling. The guidance emphasises the importance of combining assessment tools where possible to

²⁶⁹ National Planning Practice Guidance 'Air Quality.' Accessible at: <https://www.gov.uk/guidance/air-quality--3>

²⁷⁰ Bull et al (2018). IAQM Guidance on the assessment of odour for planning – version 1.1, Institute of Air Quality Management, London.

minimise uncertainty and increase confidence in the overall assessment conclusions. The IAQM guidance and the Environment Agency's 'H4 Odour Management' guidance both provide information on best practice management of odour at waste facilities.

19.8 Baseline conditions

19.8.1 The baseline conditions for odour are described for the three zones within the EIA Scoping boundary as set out below.

CORE ZONE

19.8.2 The proposed WWTP site is located within an area where agricultural practices could be expected, which can be associated with intermittent odours. The River Cam could also be a local source of odour, although this is assumed to be minimal at the Proposed Development site. The existing Cambridge WWTP, the Waterbeach Recycling Centre and the Milton Landfill may also produce odour, although these sources are anticipated to be too great a distance to have an impact on the baseline at the proposed WWTP.

TRANSFERS ZONE

19.8.3 The existing Cambridge WWTP site is managed to reduce odour impacts at local receptors through embedded odour control measures and an Odour Management Plan. Assessment of odour from the current processes at the existing Cambridge WWTP site is outside the scope of the assessment, however decommissioning of the existing Cambridge WWTP will be assessed within the scope of the odour assessment, as detailed below in section 19.9.8.

19.8.4 Existing baseline odour at the waste water transfer tunnels and final effluent pipeline outfall are similar to those identified at the Core Zone (proposed WWTP area).

WATERBEACH ZONE

19.8.5 Existing baseline odour at the Waterbeach waste water transfer pipeline zone is similar to those identified at the Core proposed WWTP area.

BASELINE DATA COLLECTION

19.8.6 Odour monitoring is not proposed to be undertaken to establish baseline conditions at the Proposed Development, as no sources of odour have been identified at which would likely cause cumulative impacts or influence the outcome of the odour assessment.

FUTURE BASELINE

19.8.7 The methodology relating to the project's approach to future baseline is presented in Chapter 5, Future Baseline, alongside a list of proposed

CONSTRUCTION PHASE MITIGATION

- 19.9.5 The Construction Phase would be mitigated by secondary mitigation in the form of the CoCP. This plan will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to odour. Control measures may include:
- spill prevention measures/ spill response and clean up protocols;
 - best practice measures in terms of waste handling;
 - appropriate storage of all wastes and regular removal of waste; and
 - requirements for general housekeeping and cleaning of work areas.
- 19.9.6 The potential for odour impacts during the decommissioning of the existing Cambridge WWTP and existing Waterbeach WRC will be mitigated by:
- emptying and making safe all tanks and equipment once all flows have been transferred to the new site, to allow demolition or removal, as required;
 - ensuring that the methodology for decommissioning reflects odour-related sources and considers the decommissioning sequence; and
 - the existing site continuing to operate with its operational odour management plan, monitoring, and reporting measures until all the flows have been transferred.
- 19.9.7 The potential for odour impacts during the commissioning of the proposed WWTP will be mitigated through the incorporated design, including the proposed odour control units.

OPERATION PHASE POTENTIAL IMPACTS

- 19.9.8 The Proposed Development has the potential to cause odour impacts from the operation of the proposed WWTP. The odours associated with the waste streams (sewage, septage, sludge and trade waste waters) result from the biodegradation of the materials, which in turn provides treatment for the flows, and creates the biological activity that allows for the capture of biogas and extraction of bio-methane.
- 19.9.9 The transfer tunnel from the existing Cambridge WWTP to the proposed WWTP may have the potential for odorous emissions from the transfer tunnel vents if unmanaged.
- 19.9.10 Sewer air valves present within the Waterbeach transfer pipeline sub-surface chambers may result in very localised, likely infrequent odour at the location of the surface manhole.

POTENTIAL IMPACTS PER ZONE

- 19.9.11 Potential impacts presented in Table 19-4 are divided by zone.

Table 19-4: Potential operational impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Operational odour impacts from the proposed WWTP	✓	✗	✗
Operational odour impacts from vents	✗	✓	✗
Operational odour impacts from surface manholes	✗	✗	✓

OPERATION PHASE MITIGATION

- 19.9.12 Risk areas where odour generation and release typically occur and may cause nuisance or impact on amenity will be presented within the PEIR and measures taken forward described within the ES. Mitigation measures will be included within the design of the proposed WWTP. From the start of the project, throughout the design process, an odour risk identification, impacts risk assessment and mitigation procedure will be followed.
- 19.9.13 Primary mitigation measures (design) intended to avoid or reduce odour emissions in operation, including those identified as part of consultation, include:
- selection of a site for the proposed WWTP in an area furthest away from receptors (see Chapter 3: Alternatives Considered);
 - selecting processes and process technologies with a low 'odour potential' such as selecting aeration equipment for appropriate portions of the treatment process as a low-pressure system, which reduces turbulence;
 - flow handling techniques to prevent odour dispersion (for example diffused aeration causes less turbulence than surface aerators and thus less emissions dispersion and odour impact) and pumping of flows to uncovered tanks below water level to reduce turbulence;
 - 'straightening' the design of the inlet to reduce potential turbulent flow areas;
 - covering the processes most likely to generate offensive odours (extracting the odorous air to odour control units or the biogas system, as appropriate). The enclosed/covered tanks connected to the odour control system (for example bio-scrubbers combined with activated carbon polishing units) will be designed to ensure high enough extraction rates are maintained to control fugitive leaks;
 - designing odour control facilities (which are considered critical equipment) to operate continuously, day and night, in all conditions. Their power supply will be protected, and standby equipment will be brought on-line automatically should duty equipment fail; and

- locating processes with treated effluent (and thus unoffensive odours) near the boundary and processes with higher odour risk nearer to the centre of the proposed WWTP.

- 19.9.14 The operation of the proposed WWTP would be subject to an Environmental Permit, regulated by the Environment Agency. The Environmental Permit for the proposed WWTP will require the operator to have a written Environmental Management System (EMS), which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by permit. This will include an Odour Management Plan (OMP). As part of the Environmental Permitting requirements the operator would continually monitor treatment performance, prevent and respond to any on-site issues at the earliest opportunity.
- 19.9.15 In line with the NPS requirements, the OMP will be prepared prior to the commissioning of the new facility, to ensure the operation and maintenance measures include the required controls to operate the facility with due consideration of odour risks. Intended as a 'living document' for regular revision and updates, the OMP will outline operational odour management, monitoring and reporting measures and will include controls to be implemented in the event of an incident such as spillage.
- 19.9.16 In the case of potential odour from the vents associated with the transfer tunnel from the existing Cambridge WWTP to the proposed WWTP, the design, location and height of vents will be modified as appropriate to mitigate against odour impacts where possible, and a suitable maintenance regime will be put in place to minimise the potential for odour.

19.10 Proposed scope of the assessment

MATTERS PROPOSED TO BE SCOPED IN

- 19.10.1 Odour from the existing Cambridge WWTP transfer tunnel vents is expected to be fully mitigated through design, but until the design is confirmed this will be considered within the assessment. Once finalised design information is available regarding the location and design of the vents, assessment of the vents may be scoped out.
- 19.10.2 The impact of odour from the operational processes of the Core Zone, and the future decommissioning of the existing Cambridge WWTP site (transfer and final effluent zone) and Waterbeach WRC will be scoped into the assessment.

MATTERS PROPOSED TO BE SCOPED OUT

- 19.10.3 The matters presented in Table 19-5 are proposed to be scoped out. The justification is provided in the preceding paragraphs.

Table 19-5: Matters proposed to be scoped out

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping out
Construction odour impacts	Out	Out	Out	Minimal odour is anticipated from normal construction works. Application of best practice site management within the CoCP during construction.
Commissioning activities	In	Out	Out	Commissioning activities will only be taking place at the Core site.
Decommissioning activities	Out	In	In	Decommissioning activities will only be taking place at the Waterbeach WRC and existing WWTP.
Operational odour impacts from the transfers zone vents	Out	In	Out	No vents within the Core Zone or Waterbeach zone
Operational odour impacts from surface manholes valves	Out	Out	Out	Infrequent odour emissions anticipated with very localised release.

Construction Odour

- 19.10.4 Release of odours from construction activities are considered to be minimal as these activities do not typically involve odorous materials. Construction odours are not therefore proposed to be assessed.

Operation Odour

- 19.10.5 Operational odour impacts from surface manholes valves are scoped out of the ES assessment as any odour releases are anticipated to be infrequent, with very localised release; adverse impacts at local receptors are therefore considered unlikely.

19.11 Evidence of agreements reached with consultation bodies

- 19.11.1 The following consultation has been carried out in relation to the EIA scope and where agreements have been reached these are indicated.

Table 19-6: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made or feedback received
South Cambridgeshire District Council (24/06/2021)	Agreed method of assessment (Section 19.12) with South Cambridgeshire District Council.	Agreement on assessment methodology in June 2021 SCDC Consultation 2 response reiterated odour modelling expectations. Including a consideration of the occurrence of septicity.

19.12 Assessment methodology

- 19.12.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst-case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.
- 19.12.2 Sewage, septage, sludge and trade-waste waters will be received at the proposed WWTP. It is anticipated that the worst odours will occur at the reception points of the most odorous components and that any odours will reduce throughout the treatment process.
- 19.12.3 An Odour Impact Assessment covering the Operational Phase of the Proposed Development will be undertaken in accordance with the IAQM Guidance on the Assessment of Odour for Planning (July 2018) methodology. The IAQM guidance states that ‘Best practice is to use a multi-tool approach where practicable’; as such, a qualitative risk assessment approach will be applied in combination with quantitative odour forecasting using a dispersion model to evaluate the potential for odour impacts on the surrounding area.
- 19.12.4 The qualitative risk assessment will follow the method set out in the IAQM odour guidance. This method draws upon the Source-Pathway-Receptor concept, considering the emission source, any odour controls (engineering controls and/or odour management procedures), the locations and distances of receptors relative to the prevailing wind direction, and their sensitivity to the odour type.
- 19.12.5 The quantitative odour modelling will be undertaken in accordance with the Environment Agency’s ‘H4 Odour Management’ guidance²⁷² and the IAQM odour guidance. Site-specific odour emission data will be input to the AERMOD dispersion model, and odour concentrations in the surrounding area will be predicted using five years of meteorological data from Cambridge Airfield and

272 Environment Agency (2011) ‘Additional guidance for H4 Odour Management: How to comply with your environmental permit’. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296737/geho0411btqm-e.pdf. Accessed January 2021.

RAF Mildenhall. Local meteorological data has been gathered from the existing Cambridge WWTP site to provide data by which to compare the other meteorological data and confirm appropriateness.

SIGNIFICANCE CRITERIA

Receptor sensitivity

- 19.12.6 The receptor sensitivities for odour are shown in Table 19-7 as described in the IAQM guidance.

Table 19-7: Receptor sensitivities

Receptor	Study Area
High Sensitivity Receptor	Surrounding land where people could reasonably expect a high level of amenity and would reasonably be expected to be present here continuously, or at least regularly for extended periods. (e.g. residential dwellings, hospitals and schools).
Medium Sensitivity Receptor	Surrounding land where people could expect to enjoy a reasonable level of amenity but not the same level as amenity as in their own home. People would not reasonably be expected to be present here continuously or regularly for extended periods. (e.g. places of work, commercial/retail premises and playing fields).
Low Sensitivity Receptor	Surrounding land where the enjoyment of amenity would not reasonably be expected or there is transient exposure and people would reasonably be expected to be present but only for limited periods of time (e.g. farms, footpaths, roads).

Qualitative Assessment

- 19.12.7 The qualitative risk assessment results in a prediction of the likely odour effect at each sensitive receptor. Relative exposure to odour and magnitude will be considered in accordance with the IAQM guidance (Table 19-8). The significance of the overall odour effect on the surrounding area, considering the different magnitude of effects at different receptors, will then be evaluated using professional judgement. Where the overall effect is greater than 'slight adverse', the effect is likely to be considered significant.

Table 19-8: IAQM descriptors for magnitudes of odour effects

Relative Odour Exposure (Impact)	Receptor Sensitivity		
	Low	Medium	High
Very Large	Moderate adverse	Substantial adverse	Substantial adverse
Large	Slight adverse	Moderate adverse	Substantial adverse
Medium	Negligible	Slight adverse	Moderate adverse
Small	Negligible	Negligible	Slight adverse
Negligible	Negligible	Negligible	Negligible

Quantitative Assessment

- 19.12.8 In the case of the odour modelling, impacts will be described at local receptors based on the predicted odour exposure level from the modelling. The IAQM descriptors for odour effect are presented in Table 19-9. ‘Adverse’ or ‘beneficial’ are added to the descriptors depending on whether there is an increase or decrease in odour exposure, respectively. As described in item 19.8.2, background odour sources are expected to be minimal, and therefore will not be included within the modelling.
- 19.12.9 The IAQM guidance provides a range of tables for determining significance based on the type of odour and how it is perceived. The guidance states that “odours from sewage treatment works plant operating normally, i.e. non-septic conditions, would not be expected to be at the ‘most offensive’ end of the spectrum and can be considered on par with ‘moderately offensive’ odours such as intensive livestock rearing”. The Proposed WWTP would be non-septic under normal operating conditions and therefore is considered to fall into the ‘moderately offensive’ category for assessment, as shown in Table 19-9.

Table 19-9: IAQM odour effect descriptors for impacts predicted by modelling – ‘Moderately Offensive’ odours

Odour Exposure Level $C_{98,OU}/m^3$	Receptor Sensitivity		
	Low	Medium	High
≥10	Moderate	Substantial	Substantial
5-<10	Slight	Moderate	Moderate
3-<5	Negligible	Slight	Moderate
1.5-<3	Negligible	Negligible	Slight
0.5-<1.5	Negligible	Negligible	Negligible
<0.5	Negligible	Negligible	Negligible

19.12.10 The conclusion on the overall significance of likely odour effects will be determined on the basis of the 'weight-of-evidence' provided by both odour assessment tools, with consideration to their inherent strengths, weakness and uncertainties and will be quantified as either 'significant' or 'not significant'.

19.13 Approach to cumulative effects assessment

19.13.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section also includes details of the proposed developments identified to date that may give rise to potential cumulative effects.

19.13.2 As described in item 19.8.2, the existing Cambridge WWTP, Milton Landfill and the Waterbeach Recycling centre is deemed to be outside the area of the proposed WWTP odour impact. The background odours from agricultural activities and the River Cam are expected to be low and intermittent and will not be considered within the baseline or cumulatively.

19.13.3 It is not proposed to consider assessment of cumulative odour emissions from other developments as any odorous emissions would originate from alternative source types and would not be additive.

19.14 Assumptions, limitations and uncertainties

19.14.1 The odour modelling predictions will be based on the most reasonable, robust and representative methodologies. There is an inherent level of uncertainty associated with the model predictions, however, due to:

- Uncertainties with model input parameters such as surface roughness length (defined by land use);
- Uncertainties with odour emission predictions for the proposed WWTP;
- Uncertainties with recorded meteorological data; and
- Simplifications made in the model algorithms or post processing of the data that represent atmospheric dispersion.

19.14.2 In order to best manage these uncertainties, the odour model will use a conservative approach:

- 5 years of meteorological data will be assessed, with the worst-case year results presented within the EIA; and
- all potentially odorous on-site sources, regardless of the magnitude or nature of the odour omitted from them, will be modelled within the assessment.

20 Traffic and Transport

20.1 Introduction

- 20.1.1 This chapter of the EIA Scoping Report identifies the resources and receptors, referred to by the Planning Inspectorate as 'matters' relevant to the aspect of Traffic and Transport. The study area for the assessment of likely significant effects on these resources or receptors is also defined. The purpose of the EIA Scoping is to ensure the proportionate assessment, appropriately focused on aspect and matters where a likely significant effect may occur.
- 20.1.2 This chapter will set out the methodology for the assessment of Traffic and Transport impacts associated with temporary construction traffic and the final operational site access to the proposed WWTP.
- 20.1.3 The approach to the assessment of impacts on traffic and transport has been discussed with Cambridge County Council (CCC) and broad agreement reached as to the methodology to be used. The discussions with CCC determined that the Construction Phase would trigger the need for a Transport Assessment due to the threshold of 400 person trips per day at peak construction times being reached and in addition the Proposed Development was over 4000m².
- 20.1.4 The assessment of Traffic and Transport will consider construction and operation phases of the Proposed Development. The following options are under consideration for access to the Proposed Development:
- Construction
 - Each of the zones within the EIA Scoping boundary will require temporary access arrangements during construction of the Proposed Development (see Figure 5 in Appendix A).
 - The Core Zone contains the main construction access to the proposed WWTP, termed 1a, which connects the B1047 Horningsea Road to the Core Zone. This would be used until the permanent access has been constructed (if different to the location of the Construction Phase access).
 - The Transfers Zone and Waterbeach Zone require a number of temporary access points across the Construction Phase. Temporary access to these zones will be from the public highway and then along existing farm and field access tracks where available. These access points are identified in Figure 5 in Appendix A.
 - Following a commitment made in Phase Two consultation, heavy goods vehicle HGV traffic associated with the Proposed Development would not use the B1047 Horningsea Road through Horningsea. Instead, vehicles would access construction areas North of Horningsea from the A10 and access South of Horningsea from the A14. HGV traffic would also avoid

Fen Ditton. The construction vehicle routing will be agreed through a Construction Traffic Management Plan, as set out in Chapter 2, Section 2.16 and paragraph 20.9.13 of this chapter.

- Operation

- For the Core Zone, four options for access are under consideration. These are described in detail in Chapter 2, section 2.8 and shown in more detail on Figures 1 to 4 at Appendix A including the routing of vehicles on the highway. For the purposes of scoping the two options of 1a and 1b are combined due to proximity These options are summarised as:
 - Option 1a/1b: Access from junction 34 of the A14 (Fen Ditton) via B1047 Horningsea Road (see Figures 1 and 2 in Appendix A);
 - Option 2: Access from junction 35 (Quy interchange) of the A14 via High Ditch Road and Low Fen Drove Way (see Figure 3 in Appendix A); and
 - Option 3: Access directly to and from the eastbound carriageway via a new junction on the A14 (see Figure 4 in Appendix A).
- Once built, the infrastructure in the Transfers Zone and Waterbeach Zone would not require regular vehicular access as the requirements here relate to occasional maintenance checks or emergency access only. It is expected these would be made via existing access tracks.
- For the proposed WWTP within the Core Zone, access will be required for:
 - deliveries to the Proposed WWTP, such as chemicals for use within the proposed WWTP and sludge arriving for treatment from elsewhere;
 - staff travelling to and from work;
 - occasional visitors to the Discovery Centre; and
 - collection of biosolids from the Proposed WWTP to be re-used offsite.
 - As per Figure 2-22 in Chapter 2, a new bridleway route is proposed depending on Phase Two Consultation feedback. This would improve connectivity of existing PRow as part of the Proposed Development.

20.1.5 The rationale for the options for the permanent access to the proposed WWTP in the operation phase are described in Chapter 3, Alternatives Considered.

20.1.6 A proposed study area for the assessment of likely significant effects on road users during the Construction Phase is set out in Figure 20-1²⁷³ and three alternatives are proposed in relation to the operation phase (Figure 20-2). The study area is not yet confirmed for the operation phase as the preferred permanent access option to the proposed WWTP within the Core Zone is yet to be confirmed.

20.1.7 A Transport Assessment will be completed to assess the impact of the Proposed Development on the capacity of highway infrastructure. The approach

²⁷³ EIA Scoping boundary is wholly within 13k aviation safeguarding boundary - 5km shown for scale only

to the Transport Assessment is described in this chapter, with further detail as to the content of the Transport Assessment at 20.12.14.

- 20.1.8 The findings of the Transport Assessment will be used to inform the impact assessment for the Traffic and Transport assessment to be presented in the ES. The Traffic and Transport ES chapter will set out the existing and future baseline conditions based on the local transport network associated with the Proposed Development (**Figure 20-1** and Figure 20-2). It will include an overview of the Proposed Development and how the selected access option for the proposed WWTP, together with local committed developments and growth in the corridor, are expected to impact on users of the surrounding highway network, compared to future baseline scenario without the Proposed Development. It will also set out how the Construction Phase traffic movements will temporarily impact on users of the surrounding highway network. This assessment will be drawn from the Transport Assessment which will be included as an Appendix to the ES.
- 20.1.9 The Proposed Development is wholly within the 13km aviation safeguarding zone for Cambridge Airport. Matters relating to safety in relation to tall structures (such as cranes in construction, and permanent infrastructure and planting at operation) are covered within Chapter 16: Major Accidents and Disasters, and not considered within the Traffic and Transport assessment.
- 20.1.10 The Proposed Development will require pipeline crossings under the Fen Line railway. This matter is scoped out of the Traffic and Transport assessment for the EIA as routine mitigation and Network Rail controls would be in place and adhered to in order to avoid impacts on the railway.
- 20.1.11 The Proposed Development includes two proposed pipeline crossings under the River Cam and works to create the proposed outfall. The River Cam is a navigable waterway but is not identified as being used as a transport corridor and therefore users of the River Cam are considered to be recreational and the scope for assessment of effects on these users is set out within Chapter 11: Community, and not considered within the Traffic and Transport assessment.
- 20.1.12 The Proposed Development may require the transport of hazardous loads during construction (and decommissioning) as well as in operation. Movements of hazardous loads will be incorporated into trip numbers, however; where there is a risk of accidents and the subsequent potential effects associated with traffic accidents involving hazardous loads will be significant, a risk analysis will be undertaken to illustrate the potential for an accident to happen and the likely effect of such an event.
- 20.1.13 Scoping considers four scenarios (A-D) which are based on the zones within the EIA Scoping boundary and the access options relating to construction and operation. The main construction phase vehicular access for the core zone would be via Horningsea Road (option 1a) until the permanent operational

access has been constructed (if different to construction phase access) as shown on the parameter plans presented in Appendix A (Figures 1 to 4 inclusive). The duration of time the construction phase vehicular access would be needed and in use depends on the choice of operational access as each permanent operational access requires a different duration of construction based on elements such as the complexity of the route design and need for associated infrastructure. Chapter 2, Table 2-22 illustrates the indicative timescales for construction of the permanent access points and when they would become available for use during the construction period. Table 20-1 sets out the construction and operation scoping scenarios. The construction scenarios are numbered A1 to A4 to illustrate the different Core Zone access options and how they are potentially brought into use through the construction period.

Table 20-1: Traffic and transport scoping scenarios

Scoping scenario	Access Arrangements (Ref Chapter 2, Table 2-22)	Assessment Years	Peak vehicle movement on network for assessment purposes	Scoping considerations
Construction				
A1	<ul style="list-style-type: none"> Core Zone access option 1a Alongside construction access points as shown in Figure 5, Appendix A. 	2025	8-9am 5-6pm	<ul style="list-style-type: none"> Typical construction traffic peak High volume construction traffic peak Temporary traffic management measures (signalling/speed controls) Temporary PRow diversions and or closures
A2	<ul style="list-style-type: none"> Core Zone access option 1a Followed by Core Zone access option 1b Alongside construction access points as shown in Figure 5, Appendix A 	2025	8-9am 5-6pm	<ul style="list-style-type: none"> Typical construction traffic peak High volume construction traffic peak Temporary traffic management measures (signalling/speed controls)

Scoping scenario	Access Arrangements (Ref Chapter 2, Table 2-22)	Assessment Years	Peak vehicle movement on network for assessment purposes	Scoping considerations
				<ul style="list-style-type: none"> Temporary PRow diversions and or closures
A3	<ul style="list-style-type: none"> Core Zone access option 1a Core Zone access option 2 Alongside construction access points as shown in Figure 5, Appendix A 	2025 2026	8-9am 5-6pm	<ul style="list-style-type: none"> Typical construction traffic peak High volume construction traffic peak Temporary traffic management measures (signalling/speed controls) Temporary PRow diversions and or closures
A4	<ul style="list-style-type: none"> Core Zone access option 1a Core Zone access option 3 Alongside construction access points as shown in Figure 5, Appendix A 	2025 2026	8-9am 5-6pm	<ul style="list-style-type: none"> Typical construction traffic peak High volume construction traffic peak Temporary traffic management measures (signalling/speed controls) Temporary PRow diversions and or closures
Operation				
B	<ul style="list-style-type: none"> Core Zone access option 1a/1b 	2028 2032 2038	8-9am 5-6pm	<ul style="list-style-type: none"> Typical operational traffic peak Traffic reassignment
C	<ul style="list-style-type: none"> Core Zone access option 2 	2028 2032 2038	8-9am 5-6pm	<ul style="list-style-type: none"> New traffic management measures (signalling / speed controls)
D	<ul style="list-style-type: none"> Core Zone access option 3 	2028 2032	8-9am 5-6pm	<ul style="list-style-type: none"> New traffic management measures (signalling / speed controls)

Scoping scenario	Access Arrangements (Ref Chapter 2, Table 2-22)	Assessment Years	Peak vehicle movement on network for assessment purposes	Scoping considerations
		2038		<ul style="list-style-type: none"> New connections to the PRow network

20.2 Matters (resources and receptors)

20.2.1 For the aspect of traffic and transport, the common matters, or resources and receptors, across all the assessment scenarios include:

- Users of the following sections of local road network (including motorists, pedestrians, cyclists, and equestrians):
 - B1047 Horningsea Road
 - Clayhithe Road
 - High Ditch Road
 - A1303 Newmarket Road
 - Low Fen Drove Way
 - the A14 (where appropriate)
 - A1309 Milton Road
 - Cowley Road
 - Green End Road
 - Water Lane
 - Water Street
 - Fen Road
 - the A10 (where appropriate)
 - Car Dyke Road
 - High Street and / or Way Lane
 - Burgess Road
 - Burgess Drove
 - Bannold Road
 - Bannold Drove
- Users of local PRow. The following are footpaths unless noted otherwise. These routes are shown in Chapter 11: Community, Figure 11-4:
 - 39/192 (Bridleway)
 - 247/23 (Bridleway)
 - 247/10 (Bridleway)
 - 85/5 (Byway)

- 130/17 (Byway)
- 85/14 (Byway)
- 39/15
- 39/24
- 39/13
- 162/5
- 85/6
- 85/7
- 85/3
- 130/1
- 85/7
- 85/6
- 85/8
- 130/2
- 130/6
- 130/11
- 130/12
- 130/13
- 247/13
- 24721
- 247/1
- 247/2
- 247/5

20.2.2 The Fen Line railway crosses the Waterbeach Zone and the Transfers Zone within the EIA Scoping boundary. Cambridge North railway station lies approximately 860m to the south of the existing Cambridge WWTP. Waterbeach railway station lies 650m to the east of the Waterbeach Zone (see Figure 20-1). As noted in paragraph 20.1.10, there is no direct impact to the Fen Line railway, and users accessing transport nodes, such as the railway stations, will be part of the overall highway or PRow users' assessment.

20.2.3 The River Cam crosses the Waterbeach and Transfers Zone within the EIA Scoping boundary. The river is used for recreational purposes and will be covered in the Community chapter of the ES. Chapter 20: Traffic and Transport will consider impacts on the PRow (85/6 and 162/1), on either side of the River Cam, will be included in the PRow assessment. Where any temporary closures or restrictions to the PRow (85/6 and 162/1) running along the banks of the River Cam or the Cam navigation itself are required, arrangements will be agreed with the navigation authority (Cam Conservators and Environment Agency). It is assumed that there should be no stoppages to navigation or

closure of the PRow (86/6 and 162/1) except for technical and or safety reasons.

20.2.4 Guidelines for the Environmental Assessment of Road Traffic (Guidance Note 1) (GEART) from The Institute of Environmental Management & Assessment (IEMA) identifies the following receptors to be sensitive to the potential impact of traffic increase:

- people at home;
- people in workplaces;
- sensitive groups such as children;
- older people or people with mobility impairments;
- sensitive locations such as hospitals, churches, schools, or historical buildings;
- people walking or cycling;
- open spaces;
- recreational sites;
- shopping areas;
- sites of ecological/nature conservation value; and
- sites of tourist/visitor attraction

20.2.5 In relation to the above, the Traffic and Transport assessment will be consistent with the receptors identified as part of the Community assessment.

20.3 Study area

20.3.1 The study area set out within Figure 20-1 and Figure 20-2 for the assessment of Traffic and Transport effects will be adjusted in accordance with GEART. The rules set out within GEART will be applied to determine the scale and extent of the assessment:

- Rule 1: include highways links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%)
- Rule 2: include any other sensitive areas (see 20.2.4) where traffic flows have increased by 10% or more

20.3.2 The 30% threshold provides a level for development flows to be assessed against to determine whether additional assessment is needed to establish the significance of the impact. Development flows above the 30% level do not automatically indicate the impacts as significant, therefore professional judgement (taking into account factors such as duration of impact, absolute number of vehicles and type of vehicle to determine the significance) will also be applied.

20.3.3 As stated in the GEART assessment guidance traffic flow changes that are less than 10% are generally accepted as being similar in magnitude to daily variation

in traffic flows and are therefore considered to have no discernible environmental impact.

- 20.3.4 The above criteria will be used for both construction and operational traffic to finalise the extent of the study area for the preferred access option and determine where further assessment may be required.
- 20.3.5 The study area also incorporates parts of the PRow network that may be affected by the temporary and permanent use of land within the EIA Scoping boundary. A desk-study will also be undertaken to identify PRow which may need to be closed or diverted (temporarily or permanently) in order to remove any potential conflict between non-motorised users and development generated traffic and ensure the new proposed routes are integrated within the existing PRow route network.
- 20.3.6 A study area for all the scenarios (Table 20-1), includes junction 33 (The Milton Interchange), and junction 35 (The Quay interchange) of the A14 as these junctions are common to all scenarios and all zones in enabling access to other zones or for turning of construction or operational vehicles.
- 20.3.7 The routing of the ancillary transfer infrastructure, such as whether intermediate shafts are required and traffic movements to and from them has not yet been finalised. Construction vehicle movements for these activities and their distribution on the highway network will be considered for both construction within the EIA Scoping boundary and movements to any off site locations to define the study area and understand the transport impacts fully. The following paragraphs, 20.3.9 to 20.3.13 set out the indicative routes for each of the assessment scenarios that are likely to comprise the study area.

CONSTRUCTION PHASE

- 20.3.8 For scenario A1-4, the relevant users of the highway and PRow list is set out in paragraph 20.2.1. Figure 20-1, define the extents of the study area. This includes junction 33 (The Milton interchange), and junction 35 (the Stow-cum-Quay interchange) of the A14, which are common to all zones.
- 20.3.9 For the main Construction Phase, vehicular access for the Core Zone would be via Horningsea Road (option 1a) until the permanent operational access has been constructed (if it is different to the Construction Phase access). This is shown on the parameter plans presented in Appendix A (Figures 1 to 4 inclusive). The duration of time the Construction Phase vehicular access would be needed, and in-use depends on the choice of operational access, as each permanent operational access requires a different duration of construction, based on elements such as the complexity of the route design and need for associated infrastructure as set out in Chapter 2, Section 2.11 vehicular access.

OPERATION PHASE

- 20.3.10 For scenario B, access to the proposed WWTP using access option 1a or 1b, B1407 Horningsea Road, would result in users of the following roads being included as receptors (see Figure 20-2):
- B1047 Horningsea Road
 - the A14 (where appropriate)
 - A1309 Milton Road
 - Cowley Road
 - the A10 (where appropriate)
 - Car Dyke Road
 - High Street and/or Way Lane
 - Burgess Road
 - Burgess Drove
- 20.3.11 Receptors (users of the PRow) would be the same as those described in paragraph 20.2.1.
- 20.3.12 For scenario C access to the proposed WWTP via access option 2, High Ditch Road and Low Fen Drove Way, would result in users of the following roads being included as receptors (see Figure 20-2):
- High Ditch Road
 - A1303 Newmarket Road
 - Low Fen Drove Way
 - the A14 (where appropriate)
 - A1309 Milton Road
 - Cowley Road
 - Green End Road
 - Water Lane
 - Water Street
 - Fen Road
 - the A10 (where appropriate)
 - Car Dyke Road
 - High Street and/ or Way Lane
 - Bannold Road
 - Bannold Drove
- 20.3.13 Users of the PRow would be the same as those set out in paragraph 20.2.1, with the following additions (see Figure 20-2).
- 218/2

- 229/6
- 85/10

20.3.14 For scenario D, access to the proposed WWTP using access option 3, direct access to and from the eastbound carriageway of the A14, would result in users of the following roads being included as receptors (see Figure 20-2).

- the A14 (between junction 34 and 35)
- A1309 Milton Road
- Cowley Road
- Green End Road
- Water Lane
- Water Street
- Fen Road
- the A10 (where appropriate)
- Car Dyke Road
- High Street and / or Way Lane
- Burgess Road
- Burgess Drove
- The PRow receptors would be the same as those set out in paragraph 20.2.1.

20.3.15 An overview of the study area transport features relevant to scenario A is provided within Figure 20-1 and for scenarios B-D in Figure 20-2.

20.3.16 This study area for the selected access option will be finalised through the Transport Assessment methodology, in consultation with CCC and National Highways. The study area update will be completed once detailed traffic surveys have been undertaken and the extent of potential impacts on the receptors, as set out in paragraph 20.2.4.

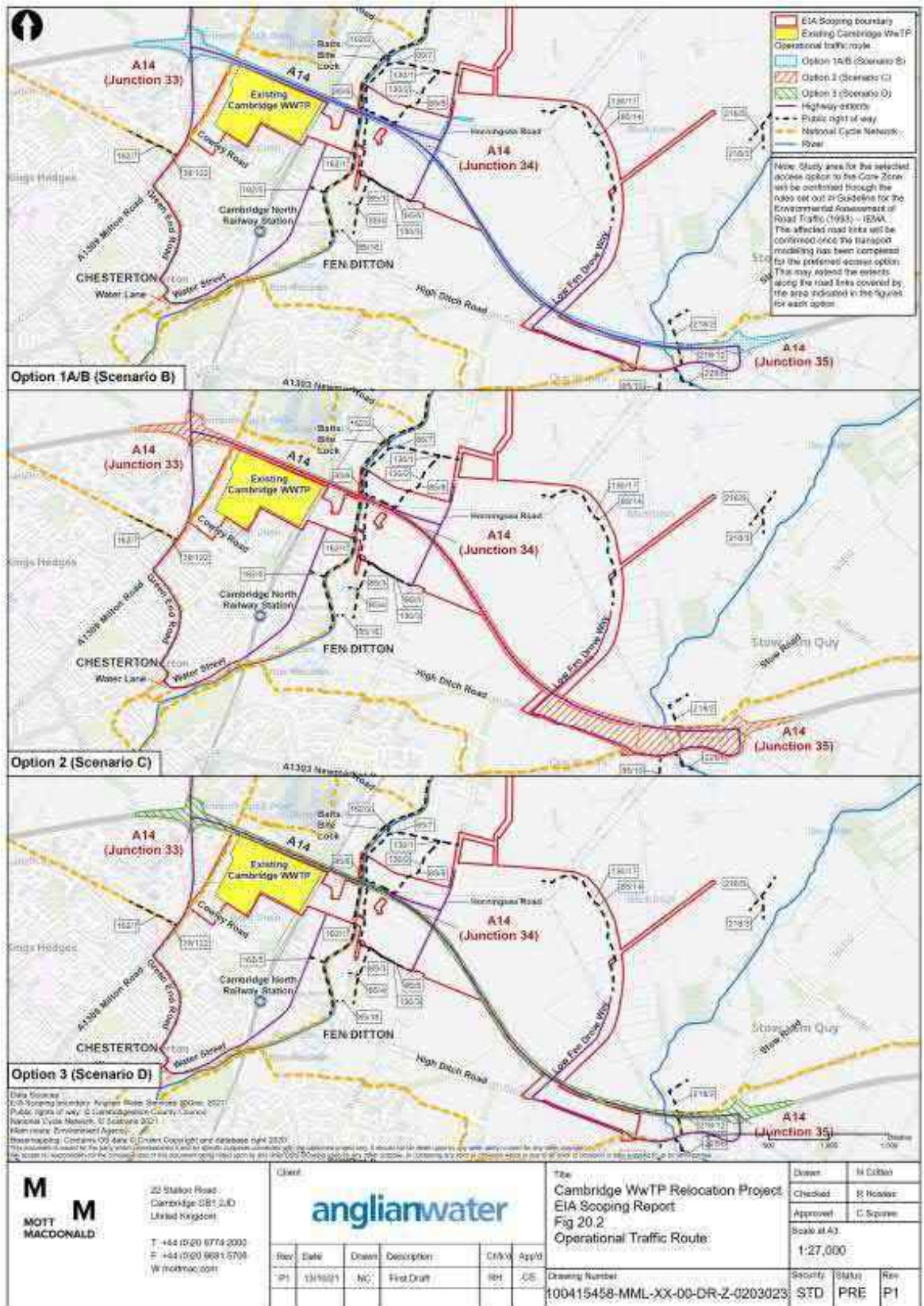


Figure 20-2: Indicative study area operation (by access option)

20.4 Legislation, planning policy context and guidance

20.4.1 National planning policy relating to traffic and transport and pertinent to the Proposed Development includes:

LEGSLATION

- Highways Act (1980) (Parliament of the United Kingdom, 1980). There are general powers in the Highways Act 1980 – see PINS RoW Section Advice Note No 9 (9th Revision January 2018) “General Guidance on Public Rights of Way Matters” at paras. 16-38;
- New Roads and Street Works Act (1991) (Department for Transport, 1991);
- Traffic Management Act (2004) (Department for Transport, 2004);
- Planning Act (2008) (Parliament of the United Kingdom, 2008);
- Local Transport Act (2008) (Parliament of the United Kingdom, 2008); and
- Infrastructure Planning (Environmental Impact Assessment) Regulation (2017) (Secretary of State, 2017); and
- The Countryside and Rights of Way Act 2000 (CRoW Act 2000) establishes statutory rights of access to designated rights of way and ‘open access land’ comprising mountain, moor, heath, down and registered common land. This right may be exercised only by foot.

NATIONAL PLANNING POLICY

- NPS for Waste water with particular reference to section 4.13-Traffic and Transport Impacts; and
- NPPF, with particular reference to Section 9 Promoting Sustainable Transport paragraph 108(c), which states that any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

LOCAL PLANNING POLICY

- South Cambridgeshire District Council Local Plan 2018 with particular reference to policy SS/4 (Cambridge Northern Fringe) Chapter 3.34 and policy TI/8 (Infrastructure and New Developments) Chapter 10.49;
- Cambridge City Council Local Plan 2018 with particular reference to policy 5 (Sustainable transport and infrastructure);
- Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 with particular reference to Policy 23: traffic, highways, and rights of way;
- Cambridgeshire and Peterborough Combined Authority Local Transport Plan 2020; and
- Emerging North East Cambridge Area Action Plan 2020, with reference to policies 16 and 17;

GUIDANCE

- 20.4.2 The methodology and significance criteria to be used for the assessment of Traffic and Transport impacts will also be based upon the following guidance and best practice in accordance with industry standards, with particular reference to:
- National Planning Practice Guidance: Travel Plans, Transport Assessments and Statements²⁷⁴;
 - Guideline for the Environmental Assessment of Road Traffic (1993) – Institute of Environmental Management and Assessment (IEMA);
 - LA 104 ‘Environmental assessment and monitoring’, Design Manual for Roads and Bridges” (DMRB) “Sustainability & Environment Appraisal” 2020;
 - Cambridgeshire County Council Transport Assessment Guidance (2019); and
 - Department for Transport (DfT) Transport Appraisal Guidance-WebTAG 2018
- 20.4.3 The guideline for the Environment for the Environmental Assessment of Road Traffic (1993) has been used to set the impacts to be assessed and the significance of their effect.
- 20.4.4 LA104 ‘Environmental assessment and monitoring’, DMRB (2020) has been used to determine the sensitivity of the receptors.
- 20.4.5 The remaining guidance documents provide background information on how the transport elements are assessed in the EIA.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

- 20.4.6 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation or influence on the methodology of the EIA. For the aspect of traffic and transport, the planning policies, as set out in 20.4.1, have influenced the EIA scope to ensure all forms of transport for the construction and Operational Phases are given due consideration in the appraisal and assessment process to determine effects of the Proposed Development.
- 20.4.7 The NPS for Waste water, references (particularly in relation to projects with a significant impact), that an application should include a transport assessment, which uses WebTAG methodology and ensures sufficient consultation with appropriate highway authorities on assessment and mitigation measures for construction, operation, and decommissioning stages of a project.
- 20.4.8 Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 further develops NPPF guidance on sustainable transport to include provision for

²⁷⁴ <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>

electric vehicle charging for Heavy Commercial Vehicles (HCV), safe and suitable access for all users. Further, that increases in traffic or highway improvements should not cause unacceptable harm to environment, road safety or residential amenity and that agreements should be put in place to ensure use of appropriate roads for HCVs.

20.4.9 CCC Transport Assessment Guidance includes thresholds that trigger the need for a TA and specifies for the approach to be set out in a separate scoping note. The trigger thresholds for a Transport Assessment below confirm the requirement for a Transport Assessment:

- Any development generating 60 or more two-way vehicle movements in any peak hour; and
- Any development generating approximately 400 person trips per day.

20.4.10 In recognition of this, the EIA scope includes the completion of a scoping note for the Transport Assessment as part of ongoing dialogue to agree the Transport Assessment approach with CCC and National Highways.

20.4.11 The Transport Assessment and therefore EIA scope will also align with the CCC guidance in relation to design years. Design year is 5 years post-full operation, and for the strategic network, the design year is 10 years post-full operation.

20.4.12 In Cambridgeshire, a Travel Plan (TP) is expected wherever a Transport Assessment is required and therefore, an outline Travel Plan will be prepared and considered when completing the assessment of traffic and transport impacts. This is in line with the NPS for waste water that sets out a travel plan including demand management measures to mitigate transport impacts is required. It further adds that it should include details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts.

NATIONAL POLICY STATEMENT REQUIREMENTS

20.4.13 Table 20-2 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 20-2: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.13.3 Transport Assessment	If a project is likely to have significant transport implications, a Transport Assessment will be prepared.
Paragraph 4.13.3 An agreed methodology of assessment (with National Highways and the Local Highway Authority)	A Transport Assessment Scoping Note will be submitted to the highways team at Cambridgeshire County Council and National Highways to inform the scope of the Transport Assessment and the associated methodology through pre-application discussions.
Paragraph 4.13.3 Use of WebTAG as stipulated in DfT's Transport Assessment Guidance or any successor to such methodology	The Transport Assessment will follow Department for Transport (DfT's) Transport Assessment Guidance and use WebTAG.

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.13.4 Preparation of a Travel Plan including details of proposed measures to improve access by public transport, walking and cycling.	As the project meets the criteria for requiring transport assessment, a Travel Plan will be prepared and will include demand management measures to mitigate transport impacts and reduce the need for parking.

20.5 Baseline conditions

20.5.1 The baseline conditions for Traffic and Transport are described for the three zones within the EIA Scoping boundary as set out below.

CORE ZONE

20.5.2 The proposed WWTP is located 2km to the east of the existing Cambridge WWTP, within the administrative boundary of South Cambridgeshire Council, immediately north of the A14.

20.5.3 The proposed WWTP is located approximately 2.8km due east of the Milton Interchange (junction 33 of the A14) and immediately east of both the River Cam, junction 34 of the A14 and the B1047 (Horningsea Road).

20.5.4 To the east (approximately 2km), lies the rural village of Stow-Cum-Quy. To the southeast sits junction 35 of the A14 and the A1303, a key radial route for access to Cambridge City.

20.5.5 South of the A14 itself resides the village of Fen Ditton. Whilst further south, and south of the A1303, sits Cambridge Airport. Approximately 1.5km northwest of the core site sits the village of Horningsea, which is connected to Fen Ditton via Horningsea Road. To the west of Horningsea Road, as shown in **Figure 20-1**, there is a shared use pedestrian and cycleway approximately 2km in length-The Fen Ditton Horningsea Cycleway, which is planned to become part of the Horningsea Greenway. Further, this provides wider connections to other planned greenways, the Waterbeach and Bottisham Greenway schemes, respectively.

20.5.6 The proposed WWTP site is currently accessed via Low Fen Drove Way, a local access track surrounding the site, which is part byway and part local access route. Low Fen Drove Way is connected to both B1047 Horningsea Road to the west and to High Ditch Road to the South (via a bridge over the A14). Due to part of the route having Public Right of Way (PRoW) status, Low Fen Drove Way is noted to be used by pedestrians, cyclists, and equestrians. There is no dedicated cycle infrastructure currently present along Low Fen Drove Way.

20.5.7 Prior to the lockdowns associated with the Covid-19 pandemic, the strategic road network serving the proposed WWTP (particularly junction 34 and 35 of the A14), were known to experience congestion and delay. The local highway

Cambridge WWTP -approximately 1km on foot. Green End, Fen Ditton, is served by the Landbeach-Cambridge bus route 19 (bus stop is at the junction of Wrights Close and Green End). The route is shown in Figure 20-3.

- 20.5.14 There are local bus routes that run along Green End Lane, Water Lane, and Fen Road. These are the Citi 2, 114 and 606 routes. The Citi 2 route provides access to the centre of Cambridge through to Milton and Waterbeach. The 114 route provides access from the city centre to Addenbrookes Hospital, Monday to Friday. The 606 is a school bus route that runs early morning and afternoon and provides access from the city centre to Impington, Monday to Friday. These routes are shown in Figure 20-3.

WATERBEACH ZONE

- 20.5.15 The Waterbeach waste water transfer pipeline is proposed to run south from the existing Waterbeach WRC to the northern boundary of the Core Zone. The pipeline will cross underneath the Ely to Cambridge railway line and the River Cam, running largely adjacent to Clayhithe Road and B1047 Horningsea Road before entering the Core Zone.
- 20.5.16 The zone is crossed by a number of PRoW as shown in **Figure 20-1**.
- 20.5.17 Waterbeach rail station is located towards the northern extent of the Waterbeach Zone. Waterbeach, to the west of the Waterbeach Zone is served by the bus route 9 and 19. Route 9, Cambridge – Littleport, has a stop on Station Road (junction with Lode Road), Landbeach-Cambridge bus route 19, has stops on the High Street and Bannold Road. Both routes have stops on Denny End Road. The routes are shown in Figure 20-3.

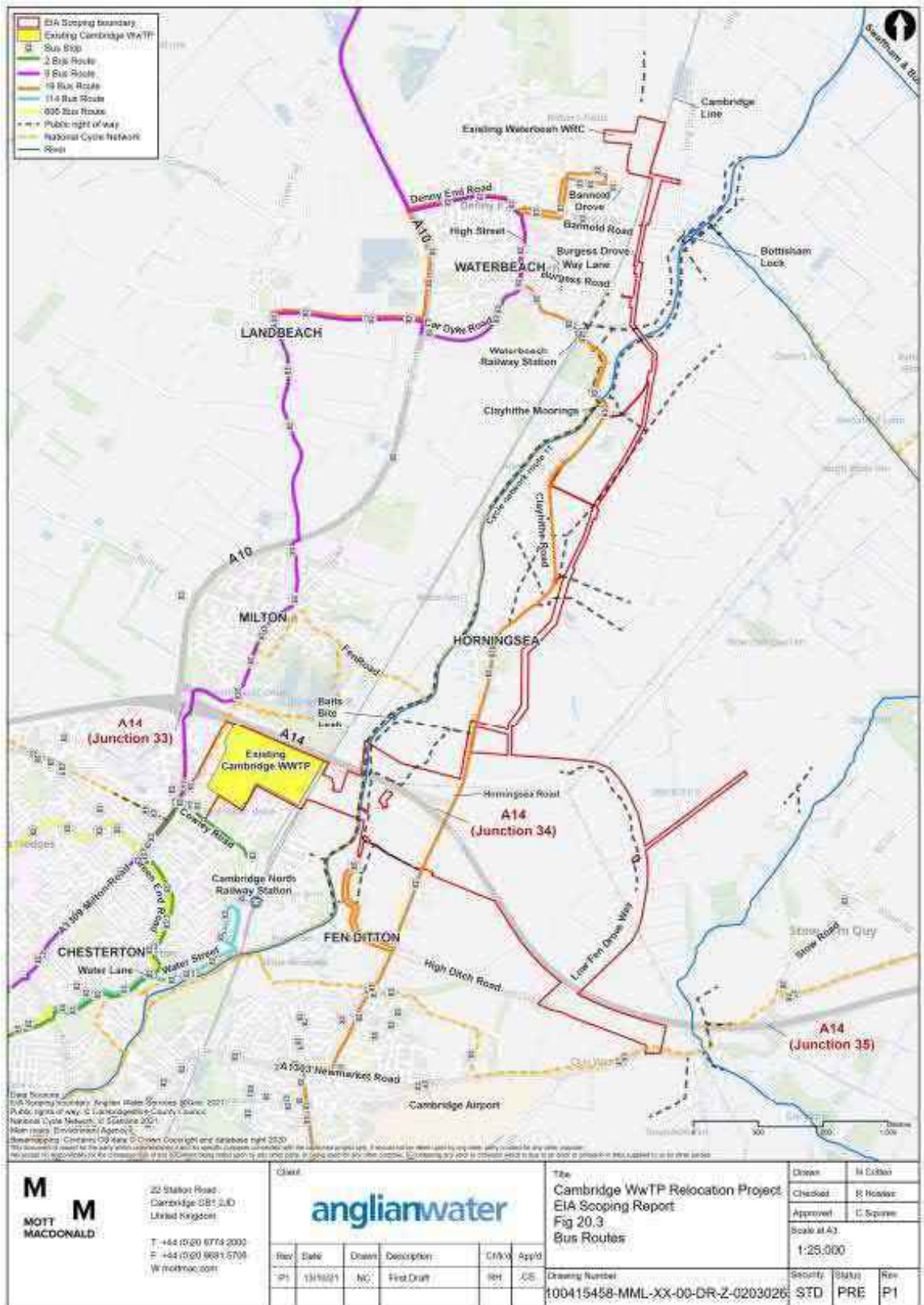


Figure 20-3: Bus routes in proximity to EIA Scoping boundary

20.6 Future baseline

- 20.6.1 The Transport Assessment supporting the assessment of Traffic and Transport effects embeds a consideration of future baseline. Therefore, the method for considering the future baseline deviates from Chapter 5: Assessment Method. The Transport Assessment considers the current baseline which will be 2021 and will be informed by survey data collected for the Proposed Development. The peak construction year is 2025.
- 20.6.2 The future year assessment will be undertaken for two forecast years, this is in line with WebTAG guidance: the year of commencing operation and a second forecast year, typically 5 years after the first year of operation. In recognition of CCC TA assessment guidance, when considering the strategic network, a design year 10 years post-full operation shall also be considered for all access options. Therefore, the operation year will be 2028, year 5 will be 2032 and year 10 will be 2038. Assessment years are summarised as:
- Existing (2021) - Existing/surveyed conditions to understand prevailing conditions (as per surveys undertaken and CCC counts).
 - Baseline (existing plus committed development) - peak construction year (2025) - existing baseline (as above scenario), plus cumulative schemes which are forecast to be built by 2025.
 - Future baseline (existing plus committed development)-operation year (2028)-existing/surveyed baseline plus cumulative schemes which are forecast to be built in the coming years.
 - Future baseline 2032 (existing plus committed development)-operation year (2028)-existing/surveyed baseline plus cumulative schemes which are forecast to be built in the coming years.
 - Future baseline 2038 which takes account of the changes which are expected to arise because of the Proposed Development in the future design year of 2038. The Proposed Development is considered in context of both the net change from the existing baseline scenario and future baseline scenario to account for the changes associated with the cumulative schemes.
- 20.6.3 The construction of additional infrastructure along A1303 Newmarket Road and any future changes to either junction 34 or junction 35 (the Quy Interchange) may need to be considered when identifying a future baseline to compare the proposed construction and operational traffic against. Pre-application discussions with the Greater Cambridgeshire Partnership (GCP), Cambridgeshire County Council (CCC) and National Highways will be needed to agree the most appropriate method for considering the future impact of Cambridge Eastern Access Scheme (CEAS) in the context of the Transport Assessment.
- 20.6.4 Any improvements or alterations associated with National Highways plans for the A10 and junction 33 (the Milton Interchange) may also need to be

considered, depending on the preferred access option, and considered as part of any future baseline to be assessed during Transport Assessment.

20.6.5 Evolution of the baseline will consider committed development growth and any impact it may have upon the local transport network as part of development of any future baseline. A full list of committed developments is set out in Chapter 5, Table 55, but key developments to be accounted for in terms of cumulative demand on the transport network include (these will be reviewed for further schemes and proposals that may come forward):

- Waterbeach New Town, including the relocation of the Waterbeach Station;
- Marleigh Development;
- Land north of Cherry Hinton; and
- Cambridge Eastern Access Scheme (CEAS).

20.6.6 Any improvements or alterations associated with either CCC's Local Cycling and Walking Infrastructure Plan and GCP's, this includes plans for the CEAS and Greater Cambridge Greenways project, will be considered as part of any future baseline to be considered with the assessment for traffic and transport.

20.6.7 For the aspect of Traffic and Transport, a combination of historic traffic data acquired from CCC and National Highways, new traffic survey data and model outputs from ongoing design activities will be used as the basis of assessment of potential impacts arising during construction and operation of the Proposed Development.

20.7 Baseline

20.7.1 As set out in paragraph 20.6.7 and discussed with CCC Highways, a combination of historic traffic survey data, transport model outputs and new traffic survey data will be used to define a current 2021 baseline condition relevant to all zones within the EIA Scoping boundary, dependent upon the preferred access option.

20.7.2 The Proposed Development will be assessed against a future baseline condition - 2028, that reflects the potential changes in road traffic flows, public transport flows, and pedestrian and cycle route changes. The information from other committed developments and highway changes will inform this future baseline.

20.8 Baseline data collection

20.8.1 An initial review of local traffic data (including the road safety record) held by CCC and National Highways has been undertaken. These include:

- Pedestrian and motor vehicle traffic counts from 2014 to 2018; and
- Road traffic collision data from 2017 and 2018.

- 20.8.2 Owing to the age and location of the existing data further traffic surveys are required, which are proposed to be completed prior to December 2021 (locations indicated within Figure 20-4). Data collected will be used to quantify baseline vehicular demand along key routes to and from the Proposed Development. These data will also form the basis of calculations to quantify the impact of construction traffic on the surrounding road network.
- 20.8.3 Table 20-3 sets out the Manual Classified Counts (MCC) data collection locations for each scenario. These locations will be confirmed through consultation with CCC and National Highways. Surveys are to be conducted across two consecutive weekdays, covering both the AM and PM peak periods at a time deemed to represent close to “normal flow” conditions.
- 20.8.4 An Automatic Number Plate Recognition (ANPR) survey exercise will be conducted at junction 33 of the A14, the Milton Interchange and junction 35, Quy Interchange, to determine the origins and destinations of existing trips at the roundabouts and will determine current level of U-turn movements. This is required irrespective of the permanent operational access option selected.
- 20.8.5 Personal Injury Collision (PIC) data will be acquired for the period 2015 — 2021 for the area indicated within Figure 20-4. The extended data period has been selected to account for the covid-19 pandemic influence during the 2020 — 2021.
- 20.8.6 Pedestrian crossing counts and cyclist counts data for B1047 Horningsea Road and Low Fen Drove Way would also be included as part of all highway surveys in Table 20-3 (locations TS16 and TS24 respectively on Figure 20-4).

Table 20-3: Potential MCC locations by scenario

Scoping scenario	Zone	MCC and queue survey locations
Construction		
A1-4	Core -access option 1a/1b*	<ul style="list-style-type: none"> ● junction 33 of the A14 (TS11) ● junction 34 of the A14 (TS16) ● Horningsea Road/Low Fen Drove Way Junction (TS14)
	Transfers Waterbeach corridor	<ul style="list-style-type: none"> ● Cowley Road (TS12, TS15) ● Green End Road (TS18, TS19) ● Water Lane (TS19) ● Water Street/Fen Road junction (TS20) ● the A10 (TS09, TS01) ● Cambridge Road (TS08)

Scoping scenario	Zone	MCC and queue survey locations
		<ul style="list-style-type: none"> ● A10/Car Dyke Road (TS09) ● Clayhithe Rad/Level Crossing (TS10) ● Burgess Road/Way Lane (TS05) ● Burgess Road junction with Bannold Drove (TS04) ● Burgess Drove (TS06)
Operation		<ul style="list-style-type: none"> ●
B	Core -access option 1a/1b	<ul style="list-style-type: none"> ● junction 33 of the A14 (TS11) ● junction 34 of the A14 (TS16) ● Horningsea Road/Low Fen Drove Way Junction (TS14)
	Transfers Waterbeach corridor	<ul style="list-style-type: none"> ● Cowley Road (TS12, TS15) ● Green End Road (TS18, TS19) ● Water Lane (TS19) ● Water Street/Fen Road junction (TS20) ● the A10 (TS09, TS01) ● Cambridge Road (TS08) ● A10/Car Dyke Road (TS09) ● Clayhithe Rad/ Level Crossing (TS10) ● Burgess Road junction with Bannold Drove (TS04)
C	Core – access option 2	<ul style="list-style-type: none"> ● junction 35 of the A14 (the Quy Interchange) (TS22) ● Horningsea Road/Low Fen Drove Way Junction (TS14) ● A1303 Newmarket Road/High Ditch Road Junction (ts23) ● High Ditch Road/Low Fen Drove Way Junction (TS21) ● Low Fen Drove Way (TS24).
	Transfers Waterbeach corridor	<ul style="list-style-type: none"> ● Cowley Road (TS12, TS1) ● Green End Road (TS18, TS19) ● Water Lane (TS19)

Scoping scenario	Zone	MCC and queue survey locations
		<ul style="list-style-type: none"> Water Street/Fen Road junction (TS20) the A10 (TS09, TS01) Cambridge Road (TS08) A10/Car Dyke Road (TS09) Clayhithe Rad/Level Crossing (TS10) Burgess Road junction with Bannold Drove (TS04)
D	Core – access option 3	<ul style="list-style-type: none"> junction 33 of the A14 (TS11) junction 35 of the A14 (the Quy Interchange) (TS22) Low Fen Drove Way (TS24, TS16).
	Transfers Waterbeach corridor	<ul style="list-style-type: none"> Cowley Road (TS12, TS15) Green End Road (TS18, TS19) Water Lane (TS19) Water Street/Fen Road junction (TS20) the A10 (TS09, TS01) Cambridge Road (TS08) A10/Car Dyke Road (TS09) Clayhithe Rad/Level Crossing (TS10) Burgess Road junction with Bannold Drove (TS04)

20.8.7 Public transport accessibility will be reviewed using information available from CCC and National Rail information.

20.8.8 Information on the number and distribution of new trips associated with the cumulative schemes considered will be taken from the Transport Assessment for the relevant schemes where the information is publicly available.

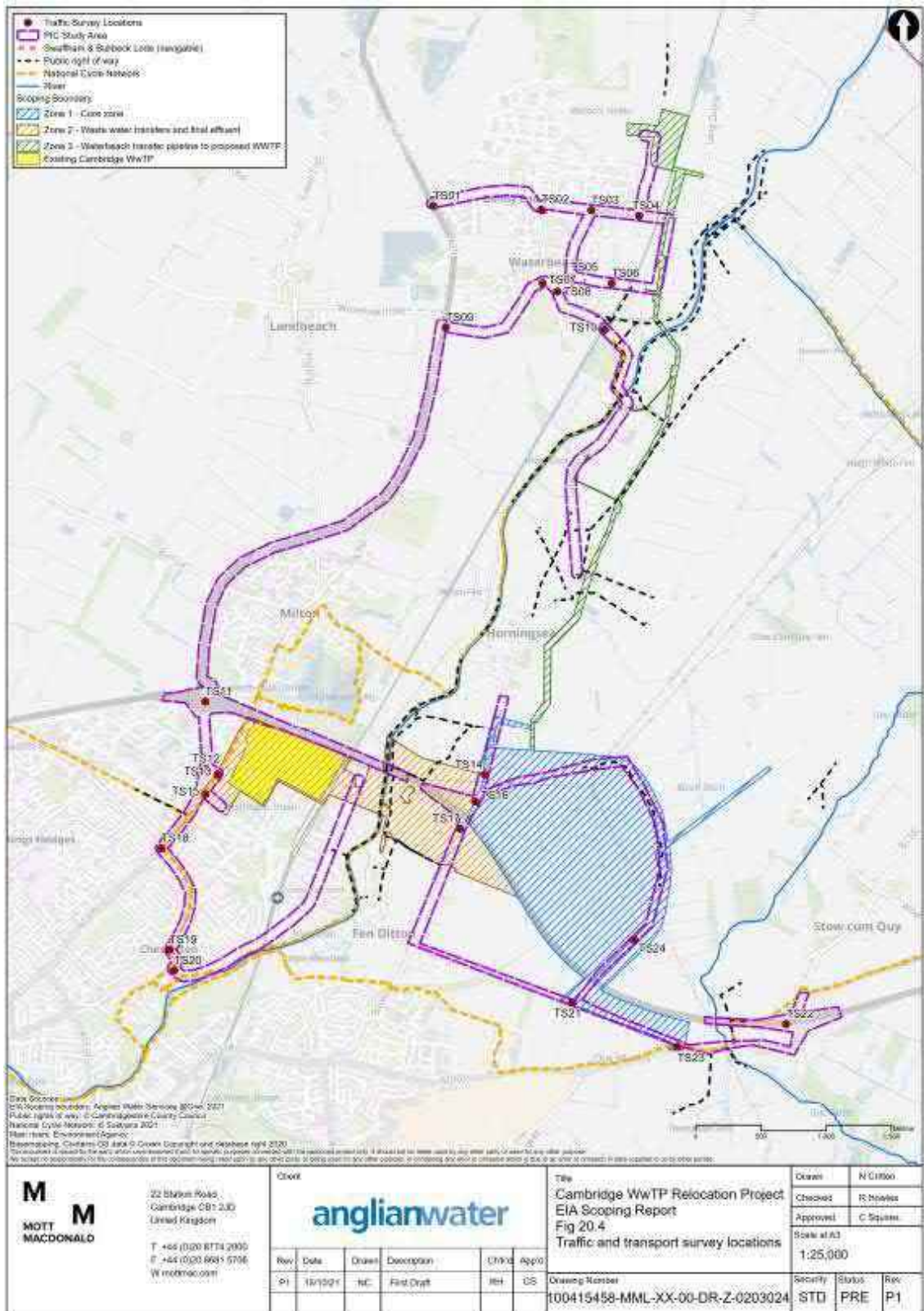


Figure 20-4: PIC data and traffic survey locations

20.9 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

- 20.9.1 The following potential impacts may be associated with construction of the Proposed Development:
- Generation of traffic during construction affecting the local and strategic road network (which includes cycleways and PRoW); and
 - Construction of pipelines and waste water and effluent transfers within all zones affecting road links and PRoW.
- 20.9.2 The main increase in additional vehicle movements associated with the Proposed Development will be during the construction phase. The construction phase is represented by scenarios A1 to A4 set out in Table 20-1.
- 20.9.3 The construction of the proposed WWTP, will bring increases in traffic flow upon the local and strategic highway network as Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs) and works vehicles access the site from the A14 along the B1047 Horningsea Road.
- 20.9.4 There is likely to be a requirement for occasional abnormal loads to be delivered. Vehicles carrying abnormal loads would follow the same route as standard heavy goods vehicles. Details of specific impacts and how these are managed would be set out in the construction management plan.
- 20.9.5 There is likely to be a requirement for occasional abnormal loads to be delivered, this is detailed in Chapter 2. These would follow the same route as standard heavy goods vehicles. Details of specific impacts and how these are managed would be set out in the construction management plan.
- 20.9.6 In considering the surrounding strategic road network, particularly junction 33 (Milton Interchange) and junction 35 (The Quay Interchange) of the A14, an increase in HGV movements has the potential to result in impacts by increasing delay and accident rates at these locations.
- 20.9.7 There is also the potential for construction vehicle movements to impact the local road network if not properly managed. Each of the assessment scenarios, as set out in paragraphs 20.3.9 — 20.3.13 indicates which highway links may be impacted by construction movements.
- 20.9.8 Construction works within the Transfers Zone and the Waterbeach Zone will require temporary construction works including the use of compounds. Works in these zones would therefore result in HGV movements to and from construction access locations on B1407 Horningsea Road and on Fen Road (see Figure 5, Appendix A). Construction work associated with the Waterbeach Zone, will require deliveries to compounds within the Waterbeach Zone, illustrated in Figure 5 (Appendix A) Construction Access and Vehicle routing. Construction

would result in movements of HGVs at junction 34 (Milton Interchange), the A10, Car Dyke Lane, High Street, Way Lane, Burgess Road, Bannold Road, Station Road and Clayhithe Lane. Chapter 2 section 2.11, Construction Phase vehicular access, details the estimates of expected construction vehicle movements in construction.

- 20.9.9 During construction, there will be a temporary disruption to pedestrians, cyclists, road vehicle users, and people living or working along construction routes arising from the construction works for the site access and on-site works. The use of the local and strategic road network by construction vehicles may contribute to fear and intimidation experienced by pedestrians, cyclists, and equestrians. There may be a requirement for the use of temporary traffic management measures, which could contribute to severance, change amenity, and also result in journey delay.
- 20.9.10 During the Construction Phase there may be a requirement to temporarily divert the routes of PRoW. Diversion may result in increased journey time and or change to pedestrian, equestrian and cyclist amenity.

POTENTIAL IMPACTS PER ZONE

- 20.9.11 The potential impacts presented in Table 20-4 are divided by zone.

Table 20-4: Potential construction impacts by zone

Potential impact	Core Zone	Transfer s Zone	Waterbeach zone
Delay Temporary increase in road users, including HGV and LGVs resulting in potential impacts on driver delay, delay to walkers, equestrians, and cyclists.	✓	✓	✓
Delay Use of temporary traffic management measures on the strategic road network and resulting in a potential impact on delays for drivers and walkers, equestrians, and cyclists	✓	✓	✓
Severance Use of temporary traffic management measures on the strategic road network resulting in a potential impact on severance to road users including walkers, equestrians, and cyclists	✓	✓	✓
Accidents and safety Increase in HGVs on local road network leading to increased likelihood of accidents and impact on drivers, pedestrians, and cyclists.	✓	✓	✓
Amenity Temporary diversions of or restrictions to footpaths, cycleways and PRoW are of reduced quality (i.e.,	✓	✓	✓

Potential impact	Core Zone	Transfer s Zone	Waterbeach zone
surfacing, widths, gradient) has potential impact on amenity to walkers, cyclists, and equestrians			
Delay Temporary diversions of PRow resulting in potential impacts on journey time to walkers, cyclists, and equestrians	✓	✓	✓
Fear and intimidation Temporary increase in road users including HGV and LGVs and resulting impact on fear and intimidation to walkers, cyclists, and equestrians	✓	✓	✓

CONSTRUCTION PHASE MITIGATION

20.9.12 For the Construction Phase the primary measures to eliminate, minimise or control impacts may include:

- selection of construction access routes to avoid most sensitive receptors;
- design of temporary connections to the road network to enable construction vehicle manoeuvres and maintain walking and cycling routes;
- reducing peak vehicle movements by implementing innovative construction methods such as pre-casting of project components and on-site storage of material;
- reuse of excavated material on site in landscaping and construction of the earth bund in the Core Zone;
- design of diversion routes (for PRow) to minimise impact of construction vehicles on existing transport routes; and
- selecting construction access routes to avoid rural communities.

20.9.13 The Construction Phase would be mitigated by secondary mitigation in the form of the Code of Construction Practice (CoCP). This document will detail the environmental controls, environmental protection measures and safety procedures adopted during construction which will include measures in relation to traffic and transport. Control measures may include:

- A requirement to prepare A Construction Traffic Management Plan (CTMP) which is expected to include:
 - an HGV and LGV route assignment strategy, supported by appropriate measures to ensure vehicles follow the prescribed routes;
 - a requirement to agree monitoring arrangements with local highway authorities for public roads, cycleways, and PRow;
 - timing of construction deliveries and / or specific activities to avoid peak transport network periods;

- limiting the number of HGVs required for delivery during peak construction
- limiting the number of HGVs, LGVs and cars allowed to access active worksites during peak periods; phasing construction activities to minimise the impact upon the local road network;
- measures relating to the upkeep of public roads, cycleways, and PRoW so that they do not deteriorate as a result of use by construction traffic;
- measures specify criteria for highway reinstatement;
- approaches to engagement with vulnerable road users (pedestrians, motorcyclists, cyclists, equestrians), to provide for road safety for all modes for the public and construction staff during traffic management works and temporary traffic control measures;
- requirement to follow procedures for the temporary closure or diversion of PRoW or accesses;
- preparation of a consents and permits register for works affecting highways, rivers, railway lines, and PRoW;
- emergency access protocols for the Proposed Development;
- monitoring approaches for deviation of construction traffic from authorised routes; and
- controls on reversing alarms.
- A requirement to prepare a detailed Travel Plan which is expected to include:
 - Background detailing construction work and programme;
 - Scope of site access requirements;
 - Current travel patterns and expected workforce locations;
 - Aims and objectives;
 - Targets;
 - Mitigation measures and implantation action plan; and
 - Monitoring and reporting.

20.9.14 Tertiary mitigation would be implemented and adhered to in the form of required permits and consents such as those required to work under railways, highways, and rivers or those required for the stopping up or diversion of PRoW. The appointed contractor would be obligated to obtain all required permits and agreements and comply with any associated conditions.

20.9.15 Compliance with the CoCP would be secured via a requirement included within the Development Consent Order. The CoCP would then form the basis of more detailed plans and method statements, to be prepared during the pre-construction period by the appointed contractor. These plans would include a detailed Construction Environment Management Plan (CEMP) together with a suite of management plans for specific controls, such as a CTMP and detailed Construction Workers' Travel Plan. The detailed plans would be subject to agreement with relevant stakeholders.

20.9.16 An outline Construction Workers' Travel Plan will be prepared and included as part of the ES. An outline will be included within the information provided at PEIR and final outline plan will form part of the ES documents and referred to when assessing effects.

OPERATION PHASE POTENTIAL IMPACTS

20.9.16 Potential impacts that may arise as a result of the Proposed Development during operation in relation to all access options are:

- Displacement of vehicle trips from the exiting Cambridge WWTP to the road links associated with operational requirements of the Proposed Development which may affect capacity, highway safety, and driver and pedestrian delay, and severance;
- Very low infrequent operational vehicle movements (including HGVs and or the movement of specialist equipment) to permanent assets for the purpose of planned servicing and maintenance which may result in short term driver and pedestrian delay and/or short-term closure of PRow;
- permanent changes to the strategic road network depending on the access option taken forward, which for example may also require the use of signal-controlled junctions, permanent speed control measures, changes to sequencing of existing traffic signals impacting on delay; and
- provision of new active travel connections to the existing PRow network which may improve connectivity and or provide active travel route sections with improved amenity.

20.9.17 Once the existing Cambridge WWTP and existing Waterbeach Water Recycling Centre (WRC) cease to operate this will result in a reassignment of all relevant operational vehicle trips. Very few trips are currently made to and from the existing Waterbeach WRC therefore trip reassignment will be almost entirely from on the existing Cambridge WWTP. Vehicle trips, and trips made by other modes (pedestrians and cyclists) that currently travel to and from the existing Cambridge WWTP and existing Waterbeach WRC will mostly reassign on the highway network to routes to and from the proposed WWTP. An increase in road traffic in areas, including HGV and LGVs in areas where traffic displaces to, could impact on delay and accident rates as well as fear and intimidation of other highway users including cyclists, pedestrians, and equestrians.

20.9.18 The proposed connections to the existing PRow network through the introduction of new active travel paths within the Core Zone may provide improved connectivity for pedestrians additional opportunities for active travel.

POTENTIAL IMPACTS PER ZONE

20.9.19 The potential impacts presented in Table 20-5 are divided by zone.

Table 20-5: Potential operational impacts by zone

Potential impact	Relevant scenarios	Core Zone	Transfer and final effluent zone	Waterbeach Transfers Zone
<p>Delay Displacement of vehicle trips to the proposed WWTP access point. Increase in road users including HGV and LGVs and resultant potential impact on delay.</p>	B, C, D	✓	✓	✗
<p>Delay New or change in the traffic management measures on the local road network and resultant potential impact on delay to road users including walkers, equestrians, and cyclists.</p>	B, C	✓	✗	✗
<p>Delay New or change in traffic management measures on the A14 junction 34 and resultant potential impact on delays to journeys to road users including walkers, equestrians, and cyclists.</p>	C	✓	✗	✗
<p>Accidents and safety New or change in traffic management measures on the A14 between junction 34 and 35 and resultant impact on accident potential on the strategic road network which would affect road users.</p>	D	✓	✗	✗
<p>Severance New or change in traffic management measures on the local road network and resultant potential impact on severance to road users including walkers, equestrians, and cyclists.</p>	B, C	✓	✗	✗
<p>Connectivity and access New connections to the existing PRow network with improved access for walkers, equestrians, and cyclists.</p>	B, C, D	✓	✗	✗
<p>Pedestrian, cyclist amenity Potential improvement to sections of footpaths and cycleways which may benefit journey amenity for cyclists, walkers, and equestrians.</p>	C	✓	✗	✗

20.9.20 Specific impacts for the Core Zone are set out for each scenario:

- Scenario B (access option 1a/1b)
 - Increase to delay to both vehicle users and pedestrians, cyclists, and equestrians from changes to movements on B1047 Horningsea Road from increased vehicle movements;
 - Severance caused by increased vehicle movements along B1047 Horningsea Road; and
 - Fear and Intimidation caused by the increase in HGV movements along B1047 Horningsea Road and at the A14 on and off slip roads; and
 - Increase in accidents due to increase in HGV volumes along Horningsea Road.
 - Potential increase in accident rates at junction 33 (Milton Interchange) as a result of turning traffic which would affect all road users.
- Scenario C (access option 2)
 - Increase to delay to vehicle, pedestrian, cyclist, and equestrian users along High Ditch Road due to increase in vehicle volumes;
 - Increase in delay at Quy Interchange, junction 35 of the A14 due to increase in vehicle volumes;
 - Severance caused by increased vehicle movements along High Ditch Road and at its junction with High Ditch Road/Low Fen Drove Way;
 - Fear and Intimidation, caused by the increase in HGV movements along High Ditch Road and its junctions with A1303 Newmarket Road and Low Fen Drove Way;
 - Improvement of amenity in the form of wider footway or cycleway or better quality of surface along High Ditch Road and Low Fen Drove Way; and
 - Increase in accidents due to increase in HGV volumes along High Ditch Road and Low Fen Drove Way.
- Scenario D (access option 3)
 - Increase in delay to vehicle users with increased turning HGVs at junction 33 of the A14-the Milton Interchange and junction 35 of the A14-the Quy Interchange;
 - Impact on delay through the removal of HGV and staff vehicles travelling to and from the existing WWTP from the local road network at Milton Road and Cowley Road;
 - Increase in vehicles using A14 and raised potential for impact on accident and delay rates on the strategic road network (A14 between junction 34 and junction 35) affecting all eastbound motorised road users on the A14; and
 - Potential for increase in accident rates at Junction 33 and 35 as a result of use for turning which would impact all road users.

OPERATION PHASE MITIGATION

- 20.9.21 The traffic and transport assessment will follow the below mitigation hierarchy as outlined in the Construction Phase mitigation.
- 20.9.22 Primary mitigation measures intended to avoid traffic and transport impacts in operation may include:
- Design of connections from the proposed WWTP to the existing road network:
 - in accordance with DMRB guidance and good practice examples of junction design that combines motorised and non-motorised users;
 - supported by assessment of future trip generation accounting for the established trip generation from the existing Cambridge WWTP and allowances for any operational changes associated with the Proposed Development (and committed development); and
 - Identifying alternative design and access route options that provide improved opportunities for walking, cycling and equestrian provision and avoid introducing or worsening severance by reducing walking, cycling and horse-riding provisions. Changes to traffic control measures (in agreements with National Highways and CCC).
- 20.9.23 Where avoidance of impacts is not possible, then measures to reduce the severity and or magnitude of impacts may involve altering alignments of roads to minimise severance to communities and disruption to pedestrian, cyclist, and equestrians.
- 20.9.24 Secondary measures to mitigate impact at operation may include the use of an operational worker's travel plan or similar.

20.10 Proposed scope of the assessment

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED IN

- 20.10.1 An assessment of the traffic level changes during the construction and Operational Phases of the Proposed Development will be considered based on all types of highway users (including pedestrians, cyclists, and equestrians) being the affected receptor.
- 20.10.2 The scope of the assessment of the temporary or permanent impacts on the users of the River Cam is set out in Chapter 11: Community.
- 20.10.3 The assessment of traffic and transport impacts focused on non-motorised users will be considered as follows:
- Construction
 - Identification of journey delay impacts on movements made by non-motorised users (walkers, cyclists, and equestrians) as a result of

increases in journey length due to any temporary diversions of roads and/or PRow;

- Identification of journey delay resulting from traffic control measures in construction (for example temporary signals); and
- Identification of whether there are any changes to how pleasant the journey is for non-motorised users, such as from changes to the condition of the road or pathway surface and/or width or gradient of the route.

- Operation

- Identification of journey delay impacts on movements made by non-motorised users (walkers, cyclists, and equestrians) as a result of increases in journey length due to any permanent changes to PRow;
- Identification of journey delay resulting from new or different traffic control measures that may be required as a result of the Proposed Scheme permanent access; and
- Identification of whether there are any changes to how pleasant the journey is for non-motorised users, such as from changes to the condition of the road or pathway surface following any reinstatement works; and
- Identification of new or improved connectivity.

20.10.4 The Community chapter of the ES will draw on the findings of the non-motorised user assessments to determine the degree of disruption to non-motorised users in relation to the ability for people to access key community resources, such as schools and businesses, and undertake recreational activities.

RESOURCES AND RECEPTORS PROPOSED TO BE SCOPED OUT

20.10.5 The matters presented in Table 20-6 are proposed to be scoped out. The justification is provided in the subsequent paragraphs.

Table 20-6: Receptors and resources proposed to be scoped out

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach zone	Justification for scoping out
In-combination impacts to amenity on pedestrian, equestrian and cyclists and impacts on ability to access community resources and social infrastructure	Out	Out	Out	To be assessed in detail as part of the Community chapter
Disruption to railway operations in construction	Out	Out	Out	<ul style="list-style-type: none"> ● No track possessions will be required. Works for construction underneath the

Matter proposed to be scoped out	Core Zone	Transfers Zone	Waterbeach zone	Justification for scoping out
				<p>Cambridge Line railway would be managed through the Basic Asset Protection Agreement (BAPA) process with Network Rail/Great British Railways.</p> <ul style="list-style-type: none"> No impact pathway for Core Zone as not interface with railway
Disruption to aviation operations at Cambridge airport	Out	Out	Out	<ul style="list-style-type: none"> All construction works involving tall equipment and cranes to comply with aviation safeguarding controls as agreed with Cambridge Airport. Landscaping and lighting changes in safeguarding zone considered in assessment chapter for Biodiversity and Landscape and visual Considered in Chapter 16: Major Accidents and Disasters.

20.10.6 Hazardous waste quantities, for both construction and operation phases, will be detailed in the Project Description of the ES and this will include details on how it will be transported to and from site. The movement of hazardous loads will be accounted for in the general vehicle movements in both the construction and Operational Phase assessments in terms of likelihood of an accident to occur. The accident risk associated with the spill of hazardous loads is considered in Chapter 16: Major accidents and disasters.

- 20.10.7 Works requiring passing underneath the railway have been subject to discussions with Network Rail and would require a Basic Asset Protection Agreement (BAPA) permit. No track possessions will be necessary during the works. Required monitoring and safeguards will be agreed with Network Rail/Great British Railways.
- 20.10.8 Construction works within the safeguarding zone of Cambridge Airport will be subject to a 'Crane and Tall Permit Application' for the use of cranes and any other equipment meeting the criteria. As a minimum, this application will include specification for obstacle lighting required for all temporary structures subject to controls. Permit applications will include plans for using cranes and other tall plant. Aviation hazards are discussed in Chapter 16: Major accidents and disasters.
- 20.10.9 Permanent features of the Proposed Development that could cause disruption to aviation include:
- intermittent flaring of gases from the proposed WWTP which would represent an aviation hazard.
 - changes to attractants for wildlife including avifauna as a result of landscaping around the proposed WWTP. The assessment of changes to wildlife will be assessed within Chapter 8: Biodiversity.
 - presence of new tall structures (notably digestors and lighting columns).
 - presence of lighting which could be mistaken for aeronautical lighting; and
 - presence of photovoltaic panels that may result in glint and glare.
- 20.10.10 Aviation hazards (such as from flaring, temporary and permanent lighting, and tall structures) are discussed in Chapter 16: Major Accidents and Disasters.

20.11 Evidence of agreements reached with consultation bodies

- 20.11.1 The following consultation has been carried out in relation to EIA scope.
- 20.11.2 Any consultation prior to EIA scope, such as during site selection stage have been excluded.

Table 20-7: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Purpose/Outcome
Cambridgeshire County Council and National Highways (was Highways England) 03/03/2021.	Preferred Site location and access optioneering presentation.	Updating statutory consultees on preferred site location to allow for early comment on the preferred site location and a number of its potential access options.

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Purpose/Outcome
Cambridgeshire County Council and National Highways (was Highways England) 13/04/2021.	Traffic Survey Data and access optioneering presentation.	Further consultation of access options as well as in-depth discussions surrounding available survey data and future survey locations/times.
Cambridgeshire County Council and National Highways (was Highways England) 19/05/2021.	Transport Assessment Scope.	Comments received and agreement in principle made regarding Transport Assessment scope.
Cambridgeshire County Council, South Cambridgeshire District Council and National Highways (was Highways England) 06/19/2021.	Transport Assessment - Access options development.	Set out the four alternatives for operational access.
Network Rail	Discussion about the required railway crossings for the transfer tunnel and Waterbeach pipeline.	Requirement to submit a Basic Asset Protection Agreement (BAPA).
Cambridge Airport	Discussion on Proposed Development Reference to safeguarding zones and use restrictions, need to notify for venting, need for tell equipment permits.	Reference to preparation of Wildlife Hazard Management Plan Reference to requirement for crane/tall equipment permits.

20.11.3 Chapter 16: Major Accidents and Disasters and Chapter 8: Biodiversity, refer to discussions with Cambridge Airport representatives.

20.11.4 A programme of continued engagement is planned with CCC and National Highways in relation to the Transport Assessment and the preferred access solution.

20.12 Assessment methodology

20.12.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5. The traffic data for the RWCS for Construction Phase are set out in Chapter 2, Table 5-3 Summary of Operation Phase Realistic Worst-Case Scenarios and

operation phase in Table 5-2. Further Table 20-1 sets out the morning and arrival peak hours for construction and operational traffic that represents a likely busiest case for workers arriving and leaving each day.

- 20.12.2 The Traffic and Transport assessment will set out the existing and future baseline conditions of the local transport network associated with the Proposed Development (Construction Phase and selected option for operation), providing an overview of the Proposed Development and how this, together with local committed developments, will impact on the surrounding highway network. This assessment will be drawn from the Transport Assessment which will be appended to the ES.

ASSESSMENT STEPS

Assessment year

- 20.12.3 The Traffic and Transport assessment will assess the Construction Phase (scenario A1-4, Table 20-1) and one of the operation phases, scenarios B, C or D, for construction year and peak hours.
- 20.12.4 The construction and operation phase assessment years are detailed within paragraph 20.6.2. These will be considered within the assessment modelling for the following time periods to test the peak road network traffic movements combined with the project traffic at these times:
- Weekday morning road network peak, 8am to 9am
 - Weekday evening road network peak, 5pm to 6pm
 - Weekend peak road network peak, 1pm to 2pm

Assessment area

- 20.12.5 The road links within the study area will be confirmed through the rules set out in paragraph 20.3.1. The affected road links will be confirmed once the transport modelling has been completed for the preferred access option.
- 20.12.6 The sensitive areas/receptors affected (detailed within paragraph 20.3.2) in the proximity of the identified links will also be confirmed following the completion of the modelling.

Traffic reassignment

- 20.12.7 To assess traffic reassignment, information on operations at the existing Cambridge WWTP and the associated trips by all modes of transport will be sought to establish the current trip generation associated with the existing Cambridge WWTP. The trip generation for the existing Cambridge WWTP may need to be adjusted to reflect the proposed WWTP in operation. These adjusted trips would be reassigned on the network to the proposed WWTP via

appropriate routing options to assess the increase in traffic levels to and from the proposed WWTP.

- 20.12.8 Any potential for trip movements to change in the construction or Operational Phases will also be considered, resulting in the scale of trips re-considered as part of the ES.

Traffic model

- 20.12.9 The assessment of transport-related effects resulting from the Proposed Development will be based on the changes in traffic volumes on the local and wider highway network as informed by the traffic modelling.
- 20.12.10 The assessment will be based on the use of a local transport models to determine the changes in traffic volumes, delay, and queuing in the study area. The models will be built, with input from CCC and stakeholders as necessary, to ensure they suitably reflect the respective scenarios, baseline, future baseline, etc.
- 20.12.11 Vehicle traffic associated with the construction and operation of the Proposed Development will use the strategic road network, A10 or A14 as its main route to access the construction and operational points. All construction and operational vehicles will use the shortest reasonably-practicable route on the local road network, notwithstanding restrictions imposed as mitigation to rural communities.

Transport assessment

- 20.12.12 To understand impacts of the Proposed Development on the highway capacity, a Transport Assessment will be produced. An updated Transport Assessment method will be confirmed following selection of the preferred access option. The scope for the Transport Assessment will follow the guidelines set out in the CCC Transport Assessment Guidelines (2019).
- 20.12.13 The updated Transport Assessment methodology will be provided to CCC (as a requirement within their Transport Assessment Guidance) and National Highways so that their specific requirements can be accommodated within the scope and the associated methodology. Other stakeholders, such as the emergency services, Network Rail/Great British Railways, and Cambridge Airport a will be consulted as part of the transport assessment process.
- 20.12.14 The scope of the Transport Assessment will include:
- identification of the baseline transport conditions of the study area though obtaining existing transport information from CCC and National Highways where possible and commissioning additional surveys if required. Data gathering would cover all modes of transport relevant to the Proposed Development;

- a review of Personal Injury Collision data in the study area (to be agreed with CCC and National Highways) from the last 7 years to identify any noticeable accident patterns on the network. Data would be obtained from CCC and/or Department for Transport (DfT);
- identification of vehicle trip generation to and from the existing Cambridge WWTP to establish the redistribution of vehicle trips;
- adding future increases in vehicle trips resulting from the proposal where required to inform future year transport impacts of the site in the Construction Phase and projected opening year (which will feed into other aspects of the EIA including noise and air quality);
- identification of public transport infrastructure serving the Proposed Development;
- collection of relevant information from nearby developments, such as the Waterbeach New Town and station relocation planning application, CTMP and other relevant evidence related to that development;
- an initial assessment of traffic generation from the Proposed Development, and resultant changes of traffic to the network and an initial assessment of effects to the highway;
- confirmation of the access needs of the Proposed Development and refining of the traffic generation assessment using baseline traffic data (including survey outputs and reassessment of effects);
- incorporation consultation outcomes with key stakeholders including statutory consultees, other key stakeholders, and local residents;
- identification of mitigation measures to the highway, if it is shown that there would be an unacceptable highway impact in accordance with relevant policy;
- assessment of residual effects following the application of primary mitigation, and any required residual mitigation needs; and
- identification and assessment of the cumulative effects based on other known developments.

Impact assessment

- 20.12.15 The Traffic and Transport chapter in the ES will use the findings of the Transport Assessment to assess significance of impacts in terms of capacity, highway safety, and driver and pedestrian delay and severance (in line with the IEMA guidance). Outputs will also be used to determine any temporary impacts to public transport and effects on users.
- 20.12.16 It will also identify the impact of the Proposed Development on the local PRow network and effects on the journey delay or amenity of users and identification of impacts to public transport and effects on users.

20.12.17 Preliminary environmental information in relation to Traffic and Transport will be published with Phase Three consultation. This will cover the selected access option, associated data and receptors, and mitigation proposals.

SENSITIVITY OF RECEPTORS

20.12.18 The sensitivity of a road or other type of transport link, such as a footpath, can be defined by the vulnerability of the groups who use it, e.g., older, or younger people. A sensitive area may be where pedestrian activity is high or where there is already an existing accident issue.

20.12.19 Table 20-8 below provides a summary of the types of receptors and the sensitivity of each, defined as very high, high, medium, low, or negligible.

Table 20-8: Sensitivity of Receptors

Receptor Sensitivity	Receptor Type
Very High	The receptor/resource has little to no ability to absorb change without fundamentally altering its present character or is of international or national importance.
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance. Receptors of high sensitivity to traffic flow are those which include schools, colleges, playgrounds, retirement homes, hospitals, or accident clusters, or are roads without footways that are used by pedestrians.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance. Receptors of moderate sensitivity to traffic flow include those with congested junctions, doctors' surgeries, shopping areas, roads with narrow footways, recreation facilities.
Low	The receptor is tolerant of change without detriment to its character and is of low or local importance. Receptors of low sensitivity to traffic flow include places of worship, public open space, tourist attractions and residential areas with adequate footway provision.
Negligible	The receptor is tolerant of change without any detriment to its character and is of low or local importance.

Source: LA104 "Environmental Assessment and Monitoring" from Volume 11 of the DMRB (2020)

20.12.20 The sensitivity of receptors in the study area will be identified based on professional judgement.

MAGNITUDE OF EFFECT

20.12.21 To assist with the judgement of magnitude of effects, reference will be made to GEART guidelines. This guidance sets out consideration and in some cases thresholds in respect to changes in the volume and composition of traffic to facilitate a subjective judgement of traffic effect and significance. These

thresholds are guidance only and should provide a starting point to inform a subjective assessment of the magnitude of effect, as stated in DMRB LA104 'Environmental Assessment and Monitoring.

20.12.22 Table 20-9 below summarises the criteria that will be used to determine the magnitude of effect for severance, driver delay, fear and intimidation, and accidents and safety.

Table 20-9: Magnitude of impact (based on IEMA Guidance)

Effect	Negligible	Minor	Moderate	Major
Severance	Change in total traffic or HGV flows of less than 30%.	Change in total traffic or HGV flows of 30-60%.	Change in total traffic or HGV flows of 60-90%.	Change in total traffic or HGV flows over 90%.
Pedestrian delay*	Journey length increase <100m.	Journey lengths being increased by up to 100-250m.	Journey lengths being increased by 250 - 500m.	Journey lengths being increased by over 500m.
Driver delay	Professional judgement based on the results of junction capacity assessment and following the IEMA guidance that delays are only likely to be significant if the road network is at, or close to capacity. Junctions will be identified at the modelling stage and impact magnitude ascribed based on their Ratio of flow to Capacity (RFC) or Degree of Saturation (DoS) depending on junction control type.			
Fear and Intimidation	Based on thresholds for fear and intimidation contained within GEART (1993) matrix.			
Accidents and safety	Professional judgement based on qualitative analysis making use of acquired data (PIC), model outputs, and alignment with suitable design criteria, such as DMRB CD123 Geometric design of at-grade priority and signal-controlled junctions and CD143 Designing for Walking, cycling and horse riding.			
Hazardous Loads	Based on the probability of a personal injury collision, categorised as fatal or serious, involving a hazardous load occurring.			

Source: Guidance Note 1: Guidelines for the Environmental Assessment of Road Traffic (1993) * Criteria from HS2 Phase 2b: Crewe to Manchester and West Midlands to Leeds Environmental Impact Assessment Report Scope and Methodology Report Chapter 19 Traffic and transport.pdf²⁷⁷

20.12.23 Although percentage change is an important tool to determine the magnitude of effect, the absolute value is also required to provide context. For the purposes of assessment, large relative increases should be considered negligible, if total flow on an existing minor link remains low.

²⁷⁷ HS2 (2018) HS2 Phase 2b: Crewe to Manchester and West Midlands to Leeds Environmental Impact Assessment Report Scope and Methodology Report Chapter 19 Traffic and transport [online] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/745450/HS2_Phase_2b_Working_Draft_ES_EIA_Scope_and_Methodology_Report.pdf Accessed September 2021

SIGNIFICANCE CRITERIA

- 20.12.24 The significance of effect will be determined through a combination of the Environmental Value (sensitivity) of the asset/receptor and the magnitude of the impact. Table 20-10 below shows how the above magnitudes of impact relate to the significance of effect.
- 20.12.25 Effects have the potential to be adverse, beneficial, negligible, or neutral.
- 20.12.26 Any resultant effects are deemed to be significant in terms of EIA, if they are evaluated as having a moderate, large, or very large level of effect, whether adverse or beneficial.

Table 20-10: Significance Matrix

		Magnitude				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity	Very High	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Source - LA104 "Environmental Assessment and Monitoring" from Volume 11 of the DMRB (2020)

20.13 Approach to cumulative effects assessment

- 20.13.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction, and accumulation of effects. This section also includes details of the Proposed Developments identified to date that may give rise to potential cumulative effects.
- 20.13.2 The cumulative assessment for traffic and transport will consider any other Proposed Developments that have potential to affect the capacity of the highway capacity and result in temporary and permanent changes to the local and strategic road network, for instance highway improvement proposals such as the Cambridge Eastern Access Scheme project which could modify the highway, footway and cycleway network in the vicinity of the Proposed Development.

20.14 Assumptions, limitations, and uncertainties

- 20.14.1 At this stage, a study area has been defined for the Construction Phase and three potential operational access options, however the final extent of the study

area will only be confirmed once the permanent access solution has been selected.

- 20.14.2 The study area proposed for each scenario has been determined by the understanding of the road network and an assumption as to where the likely construction and operation impacts will extend. Further roads or junctions may be identified by the assessment work and as part of the ongoing discussions with National Highways or CCC regarding the Transport Assessment and the ES.
- 20.14.3 To assess the above Traffic and Transport Impacts associated with the Proposed Development, the following assumptions have been made:
- there will be no major change to the origins and destinations of external operational movements between the time of survey for the existing Cambridge WWTP and the first year of operation of the proposed WWTP;
 - an agreement can be reached during consultation with CCC and GCP on a list of relevant committed developments and proposed transport infrastructure to be considered for assessment; and
 - relevant survey data and/or junction models held by CCC will be made available for the purpose of this assessment if required.
- 20.14.4 It is intended to make use of PIC data for a longer period, 2014 - 2021 if possible, in recognition that a 5-year period would be affected by the Covid-19 pandemic. These data will be reviewed to understand any limitations and the use in the Transport Assessment will be agreed through consultation with CCC and National Highways.
- 20.14.5 The above methodology for assessment is likely to rely on the commissioning of additional traffic surveys, proposed for November 2021, to observe what is expected to be neutral baseline traffic flow conditions. If, due to the ongoing impact of Covid, the chosen month is not considered to be exhibiting neutral traffic flow conditions by the stakeholders, then survey dates may need to be postponed and/or additional comparative surveys may need to be re-commissioned.

21 Water Resources

21.1 Introduction

- 21.1.1 This chapter of the EIA Scoping report identifies the water resources and receptors, referred to by the Planning Inspectorate as 'matters', relevant to the aspect of surface water and groundwater resources. The study area for the assessment of likely significant effects on these resources and receptors is also defined. The purpose of EIA Scoping is to ensure a proportionate assessment appropriately focused where likely significant effects may occur.
- 21.1.2 Potential impacts to groundwater due to the Proposed Development, including changes in groundwater resources and groundwater levels, and accidental spills or construction activities leading to groundwater contamination, are considered in this section.
- 21.1.3 Compliance with the requirements of the Water Framework Directive (WFD) will be presented in an appendix to the ES and the results used in the assessment.
- 21.1.4 Receptors potentially affected by changes in water quality and river processes include fish, mammals and birds dependent on the aquatic environment, other species and aquatic habitats. The assessment of effects on these receptors, as a result of potential changes in the water environment, are discussed in Chapter 8: Biodiversity.
- 21.1.5 Potential impacts on the water resources supporting water dependent features, present in designated nature conservation sites, are discussed in this chapter. However, the assessment of effects on these designated nature conservation sites, as a result of potential changes to the water dependent features, are discussed in Chapter 8: Biodiversity.
- 21.1.6 A separate Flood Risk Assessment (FRA) will be carried out to identify the impact of the Proposed Development on flood risk in nearby watercourses as a result of:
- new infrastructure; and
 - changes to effluent and storm water discharges to the River Cam.
- 21.1.7 The FRA will be undertaken in line with the requirements of the NPS and NPPF. It will follow the Environment Agency's guidance which includes allowances for future climate change. The results and conclusions from the FRA will be summarised in the ES.
- 21.1.8 Impacts of climate change on flooding are also referred to in Chapter 10: Climate Resilience.
- 21.1.9 Some receptors within this aspect are proposed to be scoped out of further assessment. Justification is provided based on, for example, the absence of a pathway from impact on resources to the receptor, taking into account

consultation with the relevant statutory consultee or the level of confidence in impact avoidance methods.

21.2 Matters (Resources and receptors)

21.2.1 For the aspect of surface water and groundwater resources, the resources and receptors, are:

- Groundwater levels, flows and quality in the Chalk and Lower Greensand Principal aquifers;
- Groundwater levels, flows and quality in superficial deposits comprising Secondary A aquifers;
- Water quality, flows, levels and hydromorphological characteristics for the River Cam between A14 crossing and Waterbeach, which includes a part of the River Cam County Wildlife Site (CWS);
- Water quality, flows and levels in other surface water features located close to the Proposed Development, including Black Ditch and Quy Water;
- Water resources supporting water dependent features present in other designated nature conservation sites, including Stow-cum-Quy Fen SSSI and Allicky Farm Pond CWS (considered in Chapter 8: Biodiversity);
- Floodplain, including land, infrastructure and properties in the study area which might be affected by any changes relating to flood risk;
- Users of any private groundwater abstractions from the Chalk, or other aquifers in the water resources study area; and
- Users of any surface water abstractions from the River Cam, or from other surface water features in the study area.

21.3 Study Area

21.3.1 The study area includes water bodies located within a distance of 1km from the boundaries for the three zones comprising the EIA Scoping boundary, shown on Figure 21-1. However, the following additional provisions extend the study over a greater area in relation to some water resources features:

- An upstream reach of the Quy Water, together with a reach of the Bottisham Lode downstream of the Quy Water, are located within 1km of the boundary for zones comprising the EIA Scoping boundary. The study area will, however, be extended to include the entire length of the Quy Water between these upstream and downstream areas. Although no significant effects are expected, any impact on flows or water quality in the upstream reach of Quy Water could impact the whole watercourse.
- As a result, the study area will also include the whole of the area of the Stow-cum-Quy Fen SSSI.
- Some flood zones along the western side of the River Cam, indicated on

- Figure 21-1, extend more than 1km from the boundary for zones comprising the EIA Scoping boundary. The full extent of these flood zones has also been included in the study area as the flood zones might potentially be affected by changes in storm water discharge from the proposed WWTP. Inclusion of the flood zones has been achieved by setting the study area boundary at a minimum of 1km from the River Cam on the western side of the river between the A14 crossing and Waterbeach.

21.3.2 The full extent of the study area is also shown on Figure 21-1. This area is considered sufficient to include all surface water and groundwater features which may be affected by Proposed Development components. It includes the approximate 5km reach of the River Cam between:

- the treated effluent discharge outfalls from the existing WWTP and the proposed WWTP; and
- the current downstream location of discharge of effluent, originating from the Waterbeach WRC, to the River Cam.

21.3.3 Flows and water quality in this 5km reach will be affected by:

- the additional discharge of treated effluent resulting from the transfer of waste water from Waterbeach to the Proposed WWTP; and
- increasing final effluent discharge due to changes to the population in the area served by the Proposed WWTP.

21.3.4 Impacts on water quality and flows in the River Cam will be included in the EIA. However, it is reasonable to assume, at this stage, there would be no adverse impact on water quality downstream of the current location of the effluent discharge, originating from the existing Waterbeach WRC.

21.3.5 Furthermore, there may be improvements in water quality downstream of the study area, although a detailed assessment of impacts on water quality is still to be carried out. It is possible, however, that the flood risk might increase marginally downstream of the study area. A marginal increase in flood risk could occur as a result of the increase in discharge over time from the proposed WWTP.

- 21.3.6 Accidental discharge of effluent with a high contaminant load could occur during operation which, in theory, might affect reaches of the River Cam downstream of the study area. However, this is considered to be highly unlikely and could only result from unexpected circumstances, for example due to a major design or construction flaw in the Proposed Development, substantial errors in operational practice, or a major incident which could not be foreseen and reasonably protected against.
- 21.3.7 Although highly unlikely, the river downstream of the study area could be affected by high sediment load or contamination during construction of the final effluent outfall to the River Cam. This assumes that no precautions are taken to control any impacts on river water quality as a result of construction in the river bank and river bed. Rigorous protection measures will, however, be included in a Construction Environmental Management Plan (CEMP) and implemented during construction of the outfall. These will include measures which are standard practice in construction works to prevent contamination of water resources. As a result, it can reasonably be assumed that the potential temporary impacts in more distant reaches of the river, downstream of the study area, would be negligible and do not need further assessment.
- 21.3.8 It is proposed, therefore, that the assessment is limited for the River Cam, and any receptors dependent on the River Cam, to the study area shown on Figure 21-1. The study area will, however, be reviewed once water quality and flood risk assessments have been completed. Full justification for the extent of the study area, including reference to the results of the water quality and flood risk assessments, will be presented in the ES.

21.4 Legislation, planning policy context and guidance

- 21.4.1 Legislation, planning policy and guidance relating to water resources, and pertinent to the Proposed Development, is listed and described in this section. Relevant European Legislation, which was implemented during the period in which UK was a member of the European Union, is set out first, followed by National Legislation. Cross-references to the European Legislation are indicated in the list for National Legislation.
- 21.4.2 Relevant planning policies are then indicated in a separate section followed by discussion of the influence of planning policy on EIA scope.

LEGISLATION

European Legislation

- 21.4.3 The Water Framework Directive (WFD) 2000/60/EC²⁷⁸ provides a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. The Directive requires Member

²⁷⁸ Water Framework Directive (WFD) 2000/60/EC

States to establish river basin districts and, for each district, a river basin management plan (RBMP) which is revised, implemented and reviewed every six years. The current period from 2015 to 2021 is Cycle 2 of the RBMP.

- 21.4.4 The Groundwater Daughter Directive 2006/118/EC²⁷⁹ establishes a regime which sets groundwater quality standards and introduces measures to prevent or limit the input of pollutants into groundwater. Amended by Directive 2014/80/EU.
- 21.4.5 The Floods Directive 2007/60/EC²⁸⁰ requires Member States to assess all watercourses for risk from flooding, to map the flood extent and assets and humans at risk in these areas, and to take adequate and coordinated measures to reduce this flood risk. The Directive requires that flood risk management plans are prepared, implemented and reviewed every six years for each river basin district, in coordination with RBMPs prepared under the WFD.
- 21.4.6 The Priority Substances Directive 2013/39/EU²⁸¹ amends WFD 2000/60/EC and the Directive on Environmental Quality Standards (Directive 2008/105/EC) by updating the list of priority substances that would apply to WFD assessment.
- 21.4.7 The Urban Waste Water Treatment Directive 91/271/EEC²⁸² (as amended) (UWWTD (consolidated)) concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors. The objective of the Directive is to protect the environment from the adverse effects of these waste water discharges.

NATIONAL LEGISLATION

- 21.4.8 The Environmental Protection Act 1990²⁸³ makes provision to control pollution arising from industrial and other processes for waste management.
- 21.4.9 The Water Industry Act 1991²⁸⁴ relates to water supply and the provision of waste water services in England and Wales.
- 21.4.10 The Land Drainage Act 1991²⁸⁵ (as amended) assigns functions to internal drainage boards (IDBs) and local authorities to manage watercourses and provide consenting powers for proposed works to watercourses associated with development.
- 21.4.11 The Environment Act 1995²⁸⁶ sets standards for environmental management and includes legislation for the establishment of the Environment Agency.

279 Groundwater Daughter Directive 2006/118/EC ()

280 Floods Directive 2007/60/EC ()

281 Priority Substances Directive 2013/39/EU ()

282 Urban Waste Water Treatment Directive 91/271/EEC ()

283 Environmental Protection Act 1990 (<https://www.legislation.gov.uk/ukpga/1990/43/contents>)

284 Water Industry Act 1991 (<http://www.legislation.gov.uk/ukpga/1991/56/contents>)

285 Land Drainage Act 1991 (<http://www.legislation.gov.uk/ukpga/1991/59/contents>)

286 Environment Act 1995 (<http://www.legislation.gov.uk/ukpga/1995/25/contents>)

- 21.4.12 The Water Resources Act (England and Wales) 1991²⁸⁷ (Amended 2009) (WRA) sets out the responsibilities of the Environment Agency (and, prior to 1995, the National Rivers Authority) in relation to water pollution, resource management, flood defence, fisheries, and navigation.
- 21.4.13 The Water Act 2003²⁸⁸ amends the Water Resources Act 1991 and the Water Industry Act 1991.
- 21.4.14 The Flood and Water Management Act 2010²⁸⁹ includes provisions concerning the management of risks in connection with flooding and coastal erosion.
- 21.4.15 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017²⁹⁰ transposes the WFD from European legislation. The WFD is delivered in England and Wales through a framework of River Basin Management Plans (RBMPs). England and Wales are divided into 11 River Basin Districts (RBDs), each consisting of smaller management units known as water bodies. These water bodies include all river, lake, groundwater, coastal, and transitional water features located within the RBD.
- 21.4.16 The Water Resources (Abstraction and Impounding) Regulations SI 2006/641²⁹¹ contain provisions relating to the licensing of abstraction and impounding of water in England and Wales.
- 21.4.17 The Flood Risk Regulations 2009²⁹² transpose the EC Floods Directive (Directive 2007/60/EC) on the assessment and management of flood risk into domestic law in England and Wales. The regulations designate a Local Lead Flood Authority (LLFA) and impose duties to prepare documents including:
- Preliminary flood risk assessment;
 - Flood hazard and flood risk maps; and
 - Flood risk management plans.
- 21.4.18 The Groundwater (England and Wales) Regulations 2009²⁹³ implement parts of the WFD that apply to groundwater (such as the Groundwater Directive).
- 21.4.19 The Private Water Supplies (England) Regulations 2016²⁹⁴ set out the framework for drinking water quality in England in respect of supplies of water intended for human consumption and not provided directly by a water undertaker or licensed water supplier. Private supplies to single households are

287 Water Resources Act (England and Wales) 1991 (<https://www.legislation.gov.uk/ukpga/1991/57/contents>)

288 Water Act 2003 (http://www.legislation.gov.uk/ukpga/2003/37/pdfs/ukpga_20030037_en.pdf)

289 Flood and Water Management Act 2010 (<https://www.legislation.gov.uk/ukpga/2010/29/contents>)

290 Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (<http://www.legislation.gov.uk/uksi/2017/407/contents/made>)

291 Water Resources (Abstraction and Impounding) Regulations SI 2006/641 (<http://www.legislation.gov.uk/uksi/2006/641/made>)

292 Flood Risk Regulations 2009 (http://www.legislation.gov.uk/uksi/2009/3042/pdfs/uksi_20093042_en.pdf)

293 The Groundwater (England and Wales) Regulations 2009 (<http://www.legislation.gov.uk/uksi/2009/9780111480816/contents>)

294 The Private Water Supplies (England) Regulations 2016 No. 618 (<https://www.legislation.gov.uk/uksi/2016/618/made/data.pdf>)

exempt from monitoring and risk assessment unless requested by the owner or occupier. Local authorities enforce the legislation.

- 21.4.20 The Water Framework Directive (Standards and Classification) Directions England and Wales) 2015²⁹⁵ present the updated environmental standards to be used in the second cycle of the Water Framework Directive (2000/60/EC) river basin management planning process. The environmental standards help assess risks to the ecological quality of the water environment.
- 21.4.21 The Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2016²⁹⁶ amend the Environmental Permitting (England and Wales) Regulations 2010. They extend the requirement for an environmental permit to flood risk activities, in addition to polluting activities included under the previous regulations.

PLANNING POLICY

- 21.4.22 National planning policy of relevance to surface and groundwater resources, and pertinent to the Proposed Development are listed below.
- 21.4.23 National Policy Statement (NPS) for Waste Water (2012)²⁹⁷, with particular reference to:
- Section 4.2 (water quality and resources); and
 - Section 4.4 (Flood risk).
- 21.4.24 National Planning Policy Framework (NPPF)²⁹⁸, with particular reference to:
- paragraphs 20(b), 43, 120(b), 149, 159-169 in relation to flood risk; and
 - paragraph 174(e) regarding water pollution.
- 21.4.25 Local planning policy of relevance to the Proposed Development includes:
- South Cambridgeshire District Council Local Plan 2018 with particular reference to Policy CC/7: Water Quality, Policy CC/8: Sustainable Drainage Systems, and Policy CC/9: Managing Flood Risk.
 - Cambridge City Council Local Plan 2018 with particular reference to Policy 31: Integrated water management and the water cycle and Policy 32: Flood risk.
 - Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 contains Policy 1: sustainable development and climate change, which requires all proposed developments to include measures such as managing water resources efficiently, and incorporating sustainable drainage schemes to minimise flood risk.

295 The Water Framework Directive (Standards and Classification) Directions England and Wales 2015 (http://www.legislation.gov.uk/ukSI/2015/1623/pdfs/ukSIod_20151623_en_auto.pdf)

296 The Environmental Permitting Regulations 2016 (<http://www.legislation.gov.uk/ukSI/2016/1154/contents/made>)

297 Defra (2012) National Policy Statement for Waste Water available at [pb13709-waste-water-nps.pdf](http://www.publishing.service.gov.uk/pb13709-waste-water-nps.pdf) (publishing.service.gov.uk)

298 Ministry of Housing, Communities and Local Government (February 2019). National Planning Policy Framework

- Cambridge and South Cambridgeshire Level 1 Strategic Flood Risk Assessment (2010): provides an assessment of the extent and nature of the risk of flooding and its implications for land use planning.
- Cambridgeshire's Local Flood Risk Management Strategy (2015-2020). As lead local flood authority, Cambridgeshire County Council is responsible for implementation of the 2010 Flood and Water Management Act, in understanding, managing and warning about flood risk from surface water and groundwater sources.

THE INFLUENCE OF PLANNING POLICY ON EIA SCOPE

21.4.26 Planning Policy can influence the sensitivity of receptors (and therefore the significance of effects), requirements for mitigation or the methodology of the EIA. For the aspect of water resources, planning policy has influenced the EIA scope as follows:

- Section 4.2 (water quality and resources) of the NPS for Waste Water (2012) states that 'Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on water quality, water resources and physical characteristics of the water environment as part of the ES or equivalent'. In relation to discharges, the NPS indicates in paragraph 4.2.3 that the ES should describe 'existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges'.
- In meeting these requirements, the EIA will take account of all potential effects on surface water and groundwater resources as well as surface water and groundwater quality in the study area. Impacts on physical characteristics of the water environment, for example potentially caused by scour at the treated effluent discharge outfall to the River Cam, will be assessed during design. Potential for temporary additional sediment load in watercourses, caused by disturbance to the ground during construction, will be assessed and requirements for mitigation included in the CEMP.
- The NPS sets out in broad terms what should be included in the EIA in relation to water quality and water resources. It makes reference to consideration by the 'decision maker' of impacts and the mitigation which is put forward in the ES. All potential impacts on water resources will be set out in the ES, with mitigation measures indicated where assessed as necessary.
- Section 4.4 (Flood risk) of the NPS for Waste Water states that 'The aims of planning policy on development and flood risk are to ensure that flood risk from all sources of flooding is taken into account at all stages in the planning process...and Applications for projects of 1 hectare or greater in Flood Zone 1, and All proposals for projects located in Flood Zones 2 and 3 in England should be accompanied by a flood risk assessment (FRA)'. A flood risk

assessment is being carried out to determine the impact of the final effluent and storm water discharges on flood conditions in the River Cam.

- In paragraph 4.4.5, the NPS provides a list of 12 bullet points setting out clearly the minimum requirements for the FRA. The NPS also indicates the tests that should be applied by the decision maker to the assessment. Mitigation measures are discussed with a listing of Sustainable Drainage Systems (SuDS) measures. The FRA will meet all the requirements of the NPS, in consultation with the Environment Agency. SuDS measures, where considered appropriate, following consultation with the Environment Agency, will be incorporated in the design for the proposed WWTP.

SUMMARY

- 21.4.27 These policies identify the need for a flood risk assessment, to assess the risk from all types of flooding both to, and resulting from, the development. They require the FRA to:
- assess the vulnerability of users of the proposed infrastructure;
 - consider the impacts of climate change; and
 - confirm whether flood risk is increased elsewhere as a result of the development.
- 21.4.28 The policies also identify measures to mitigate flood risk through sustainable surface water management.
- 21.4.29 With regard to water quality and water resources, the policies require consideration of the impacts of pollution from development on the water environment by assessing features which include water bodies, protected areas under the Water Framework Directive (WFD), source protection zones around potable groundwater abstractions and ecological sites. The policies also consider mitigation of pollution in the water environment through careful design to facilitate good pollution control practice.
- 21.4.30 As already indicated, the National Policy Statement for Waste Water (2012) provides a useful summary of the scope of work required for EIA and the considerations to be made in assessing impacts and the need for mitigation.
- 21.4.31 Consideration will also be given to:
- UK Government's 25 Year Environment Plan;
 - the UK Government's Future Water Strategy (2011); and
 - Non-statutory technical standards for Sustainable Drainage Systems (SuDS).

NATIONAL POLICY STATEMENT REQUIREMENTS

- 21.4.32 Table 21-1 sets out how the scope proposed in this chapter complies with the NPS for waste water.

Table 21-1: Scope and NPS Compliance

NPS requirement	Compliance of EIA scope with NPS requirements
Paragraph 4.2.2. Assess the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment.	Each characteristic will be considered thoroughly in the environmental impact assessment, with some aspects such as water quality, potential for scour in the River Cam and flood risk considered in detail in separate assessments and design.
Paragraph 4.2.3. Assess impacts of the proposed project on water bodies or protected areas under the Water Framework Directive.	An assessment will be carried out to identify any impacts on the status of WFD water bodies in the study area including the River Cam. The assessment will follow the three stage screening/scoping and detailed assessment approach outlined in the Planning Inspectorate Advice Note Eighteen: The Water Framework Directive.
Paragraph 4.2.4. Assess the potential water resources benefits that could arise from changes to effluent discharges.	A separate assessment will be carried out of the impacts of effluent discharge on water quality in the River Cam.
Paragraph 4.4.4. Applications for projects of 1 hectare or greater in Flood Zone 1 and all proposals for projects located in Flood Zones 2 and 3 in England should be accompanied by a flood risk assessment (FRA).	A separate FRA will be carried out. The results and conclusions of the assessment will be used in the EIA and summarised in the ES.

GUIDANCE

- 21.4.33 The National Planning Practice Guidance includes sections on flood risk and coastal change²⁹⁹, and water supply, waste water and water quality³⁰⁰.
- 21.4.34 The Environment Agency's guide H1 Annex E – Surface Water discharges (complex)³⁰¹ gives advice on assessing impacts of complex surface water discharges arising from the operation of sewage treatment works.
- 21.4.35 Water Framework Directive assessment guidance includes National Infrastructure Planning Advice Note 18: The Water Framework Directive³⁰², and a risk assessment document produced by the Environment Agency (2016)³⁰³.

21.5 Baseline conditions

- 21.5.1 The baseline data which will be reviewed in the assessment is indicated in Table 21-2.

299 <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

300 <https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality>

301 [REDACTED]

302 https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf

303 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/522426/LIT_10445.pdf

Table 21-2: Baseline data reviewed

Baseline data	Data sets to review	Available for review	Data owner
Surface water features and designations	Main river map	Yes	Environment Agency
	Detailed river network (DRN)		Environment Agency
	SSSIs		Natural England
	Nature conservation sites with other designations (e.g. county wildlife sites, local nature reserves)		Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire
	Topographical mapping		Ordnance Survey
	Monitoring data – flows, water levels, water quality	No	Environment Agency
	Water level and flow data at Baits Bite Lock	Yes	Environment Agency
	Mapping and details of drainage networks	No	Internal Drainage Boards
WFD status	Catchment data explorer River Basin Management Plans / Catchment Management Plans	Yes	Environment Agency
Abstractions	Surface water licences and unlicensed private abstractions	Yes	Environment Agency (licensed)
	Groundwater licences and unlicensed private abstractions		Environment Agency / Local Authority (unlicensed <20m ³ /d)
Discharges	Surface water consents Groundwater consents/ permits	No	Environment Agency
Geology and hydrogeology	Aquifer extent (vertical and horizontal) and hydraulic parameters	Part (BGS data)	Information held by Environment Agency, water companies, British Geological Survey (BGS)
Protective designations	Nitrate vulnerable zones Groundwater SPZ Groundwater vulnerability maps	Yes	Environment Agency
Flood zone	Flood risk mapping	Yes	Environment Agency

21.5.2 The following sections provide a description of water resources within the study area based on information currently available. All water bodies in this area fall within the Anglian River Basin District as defined under the Water Framework

Directive³⁰⁴ (WFD) and are covered by the Anglian River Basin Management Plan³⁰⁵. However, the baseline description is not divided up using the three zones within the EIA Scoping boundary as in other topic chapters. This is because water resources are best considered on a regional basis. An overall understanding of the links between various water resources components present across different zones is important for the assessment. However, following the baseline descriptions, Table 21-3 indicates which water resources receptors are located in, or may be affected by construction or operations within, the three zones.

SURFACE WATER

- 21.5.3 Surface water features in the study area are shown in Figure 21-1, together with the extent of flood zones. The main hydrological feature in the study area, the River Cam, is located approximately 1km to the west of the proposed WWTP. The river flows north from the Cambridge area towards Waterbeach. Downstream of the A14 crossing, the elevation of the River Cam is below 5m AOD. The River Cam is located within the Environment Agency's Cam Lower operational catchment in the study area. Information on the status of the River Cam water body within the Cam Lower operational catchment is provided in Table 21-3. The River Cam is classified as a main river by the Environment Agency.
- 21.5.4 The proposed WWTP is located at approximately 10m AOD in an area which is flat lying but slightly elevated above surrounding surface water features. The western part of the core site drains towards the River Cam. However, there is a general reduction in elevation from west to east across much of the core site, towards a set of drainage channels connected to Black Ditch at or just below 5m AOD. The drainage channels and Black Ditch are understood to be managed by Swaffam IDB. Black Ditch discharges to the north along the boundary of Stow-cum-Quy Fen to Bottisham Lode.
- 21.5.5 Quy Water, located to the east of the core site and Black Ditch, is the principal watercourse contributing to Bottisham Lode. Bottisham Lode discharges to the River Cam near Waterbeach, about 5km downstream of the A14 crossing. Quy Water and Bottisham Lode are classified as main river. Information on the combined status of the Bottisham Lode - Quy Water waterbody is also included in Table 21-3.

304 European Parliament and European Council (2000). Water Framework Directive- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, Strasbourg, European Parliament and European Council.

305 Environment Agency (2015). River Basin Management Plan, Anglian River Basin District.

Table 21-3: Summary for water bodies in the study area

	River Cam	Bottisham Lode - Quy Water
WFD ID	GB105033042750	GB105033042700
Hydromorphological designation	heavily modified	heavily modified
Length (km)	28.617	13.533
Catchment Area (km ²)	36.815	99.59
Waterbody classification (2019)		
Overall	Moderate	Moderate
Ecological	Moderate	Moderate
Chemical	Fail	Fail

Source: Environment Agency Catchment Data Explorer³⁰⁶

21.5.6 Some open, still water bodies are located in the Black Ditch drainage area. These include:

- Allicky Farm Pond, a County Wildlife Site, adjacent to Black Ditch and about 1km north-east of the site of the proposed WWTP; and
- ponds, together with a rectangular water body (The Cut), on the Stow-cum-Quy Fen SSSI (also referred to as Quy Fen SSSI), about 1.5km north-east of the site of the proposed WWTP.

21.5.7 A small part of the study area, close to the western boundary in the vicinity of the existing Cambridge WWTP, is drained by ditches which are may be located in the catchment the River Great Ouse rather than the River Cam. However, no impacts are anticipated on water resources receptors in this part of the study area.

21.5.8 The existing Waterbeach WRC discharges to the Bannold Drain located to the northern extent of the EIA Scoping boundary. This discharge will cease once flows are transferred to the Waterbeach transfer pipeline.

21.5.9 Information on licensed abstraction sources for surface water (and groundwater) has been provided by the Environment Agency. Abstractions will be reviewed as part of the environmental impact assessment.

GROUNDWATER

Bedrock

21.5.10 The bedrock geology is shown in Figure 21-2. It comprises the following sequence, listed from youngest to oldest formations:

- Grey Chalk (a Sub-group of the Chalk), comprising:
 - Zig Zag Chalk Formation

³⁰⁶ Environment Agency (2016). Catchment Data Explorer [online]. Available at: <https://environment.data.gov.uk/catchment-planning/>. Accessed 22 July 2021.

- Totternhoe Stone
- West Melbury Marly Chalk Formation
- Gault Formation
- Lower Greensand (Woburn Sands Formation)
- Kimmeridge Clay Formation (underlain by the Ampthill Clay and West Walton Formations)

21.5.11 The bedrock formations dip gently (at approximately 0.5°) to the south east, with the youngest beds, the Zig Zag Chalk Formation and Totternhoe Stone present only outside the study area on the eastern side of the Quy Water catchment. The Totternhoe Stone is a hard band in the Grey Chalk and an important aquifer flow horizon in south Cambridgeshire. Several Chalk springs are located close to the outcrop of the Totternhoe Stone, to the east of Quy Water and low lying areas further north along the River Cam. Watercourses fed by these springs contribute to channels, including Bottisham Lode, which drain to the River Cam. However, the Totternhoe Stone does not extend any further west than the outcrop between the Zig Zag Chalk Formation and the West Melbury Marly Chalk Formation.

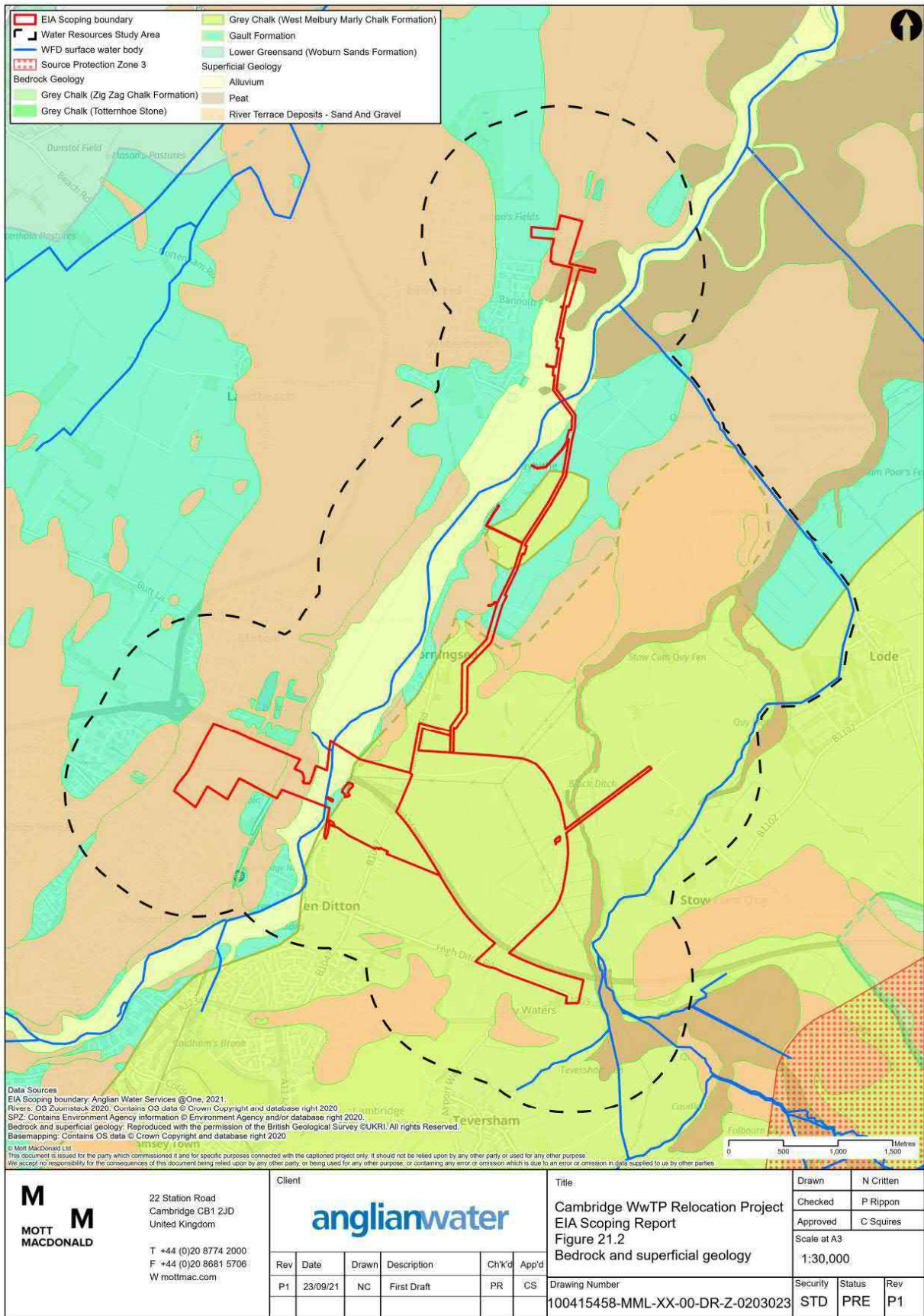


Figure 21-2: Geology and groundwater

- 21.5.12 The West Melbury Marly Chalk Formation is located in the Grey Chalk Subgroup in the lowest part of the Chalk. It comprises the uppermost bedrock formation across much of the study area and underlies the proposed WWTP. The base of the West Melbury Marly Chalk Formation, overlying Gault Formation, was recorded at a depth of 10.9m in a borehole constructed as part of a ground investigation at the site of the proposed WWTP in 2020. The geology was described as comprising off-white chalk with infilled fractures with some extremely weak rock throughout.
- 21.5.13 The Cambridge Greensand Member (previously known as the Upper Greensand) is found in some areas in the base of the West Melbury Marly Chalk Formation, at the boundary of the Grey Chalk with the underlying Gault Formation. The Cambridge Greensand Member is not present in outcrop in the Cambridge area but is described by British Geological Survey (BGS)³⁰⁷ as comprising fine grained sandstones or siltstones elsewhere in the region. There is, however, no indication of any distinctive sandstone or siltstone in geological logs for existing boreholes which have been drilled for other works through the contact between the Grey Chalk and Gault Formation in the vicinity of the proposed WWTP³⁰⁸. In addition, no sandstone or siltstone is indicated close to the contact in the log for the borehole constructed at the site of the proposed WWTP in 2020.
- 21.5.14 BGS indicates that there are no significant abstractions solely from the Cambridge Greensand Member in the region covered by the hydrogeological map. In addition, no significant aquifer horizons would be expected in the West Melbury Marly Chalk Formation. Testing of the borehole constructed at the site in 2020 indicated that the formation has a very low permeability. As a result, groundwater yields and any discharges from the West Melbury Marly Chalk Formation are also likely to be small.
- 21.5.15 The Gault Formation, comprising mainly a pale grey marl to dark grey silty clay, underlies the West Melbury Marly Chalk Formation. It comprises the uppermost bedrock formation in the west of the study area. The total thickness of the Gault Formation in the area is about 35m, based on geological logs for existing boreholes close to the contact with the overlying Grey Chalk. Structures located in the Gault Formation will include the waste water transfer tunnel, shafts associated with the tunnel, and some deep foundations at the proposed WWTP.
- 21.5.16 The Lower Greensand (Woburn Sands Formation) is present in a narrow outcrop to the north-west of the study area and dips below the Gault Formation to the south-east. It is also present in an anticlinal structure along the River Cam to the north of the study area. Geological logs available on the BGS Geology of Britain viewer indicate the Lower Greensand is about 8m to 10m thick where it underlies the Gault Formation to the west of the River Cam. In a

307 Hydrogeological Map of the area between Cambridge and Maidenhead (British Geological Survey, 1984)

308 British Geological Survey, Geology of Britain viewer

borehole drilled as part of site investigations for construction of the A14, the formation is described as generally comprising sandy clay, clayey sand or sandstone. The deepest engineering works, comprising the waste water transfer tunnel, excavations for shafts associated with the tunnel, and deep foundations at the proposed WWTP, are not expected to extend down to the Lower Greensand. However, designs and construction methods for these structures need to be checked during the EIA to confirm there will be no impact on the aquifer.

- 21.5.17 The Lower Greensand is underlain by the Kimmeridge Clay which is present in outcrop to the west of the Lower Greensand outcrop.
- 21.5.18 Both the Chalk and the Lower Greensand are classified by the Environment Agency as Principal aquifers. However, based on the testing at the site in 2020 and available geological logs for locations in and around the study area, significant aquifer horizons are unlikely to be present in the West Melbury Marly Chalk Formation. Seepages from the West Melbury Marly Chalk Formation may, however, contribute to local drains and watercourses. The materials are fine and variable in the Lower Greensand aquifer, and the formation is of limited thickness. The aquifer is unlikely, therefore, to produce substantial yields at any groundwater abstraction sites in the study area.
- 21.5.19 The Gault Formation is classified by the Environment Agency as an unproductive aquifer (effectively a non-aquifer).

Superficial deposits

- 21.5.20 Superficial river terrace deposits, comprising sand and gravel, overlie the bedrock across a substantial part of the study area, as indicated in Figure 21-2. However, the proposed WWTP is located directly over Grey Chalk bedrock below the soil/sub-soil.
- 21.5.21 BGS mapping indicates that alluvium, comprising clay, silt, sand and gravel, is present in low-lying areas along the course of the River Cam, with extensive river terrace deposits at a slightly higher elevation, particularly along the western side of the river. Geological logs for existing boreholes indicate that sandy clay and peat are present to a depth of 6m to 7m in parts of the valley floor at the A14 crossing, overlying sand and gravel to a depth of up to about 8m. About 0.5km further downstream however, the superficial deposits have a depth of approximately 3.2m, indicating that there is considerable variability in thickness (and composition) of superficial deposits along the watercourse. The river terrace deposits on the western side of the River Cam are typically 2.5m to 4m in depth. Peat is present in some areas to the east of Waterbeach.
- 21.5.22 River terrace deposits and alluvium are classified by the Environment Agency as Secondary A aquifers. Peat is classified as an unproductive aquifer.

GROUNDWATER ABSTRACTION AND AQUIFER VULNERABILITY

- 21.5.23 There are no groundwater abstractions for public water supply within the study area. No part of the study area is within an Environment Agency designated source protection zone (SPZ) for any public water supply groundwater abstraction. The nearest source protection zone in the Chalk outcrop (SPZ3, the total contributing recharge catchment around a source) extends into the south east corner of the area shown on Figure 21-2, approximately 3km from the proposed WWTP.
- 21.5.24 No source protection zones associated with the Lower Greensand aquifer are located in the study area.
- 21.5.25 The Environment Agency has mapped aquifer vulnerability nationally using information on recharge, soil leaching properties, superficial cover and the unsaturated zone above the groundwater table. Aquifer vulnerability mapping indicates that the proposed WWTP site is located directly on the Grey Chalk in a high-risk area, which the Agency identifies as being 'able to easily transmit pollution to groundwater'. High risk areas are 'characterised by high leaching soils and the absence of low permeability superficial deposits'. The proposed WWTP is also identified as being in an area with 'soluble rock risk' in which 'solution features that enable rapid movement of a contaminant may be present'. However, as indicated by testing of the borehole constructed in 2020, the West Melbury Marly Chalk Formation underlying the proposed WWTP would be expected to have very low permeability.
- 21.5.26 The study area is also within a nitrate vulnerable zone for the Anglian Chalk groundwater.
- 21.5.27 The following information has been obtained on groundwater abstractions:
- licensed groundwater sources, provided by the Environment Agency; and
 - unlicensed private sources (abstraction less than 20 m³/d), provided by local councils.
- 21.5.28 The information will be analysed during the EIA. However, an initial review of the data indicates that the source for both licensed and unlicensed private groundwater abstractions located within the study area is likely to be the Lower Greensand rather than the Chalk. The location of many abstractions is to the west of the Grey Chalk outcrop, or close to the contact of the Grey Chalk outcrop with the Gault Formation.
- 21.5.29 Where present in the study area, low permeability and, hence, only very low borehole yields would be expected from the Grey Chalk. One unlicensed groundwater source, located approximately 0.5km to the east of the proposed WWTP, may be supplied by groundwater from the Grey Chalk, although the Lower Greensand is a more likely source.

- 21.5.30 All groundwater abstractions identified in the study area, which may be dependent on the Grey Chalk for supply, will be included in site survey visits. In addition, groundwater abstractions located in the vicinity of proposed pipeline routes will be included in the surveys; the objective would be to obtain additional information regarding the construction of the groundwater sources, particularly through the shallow deposits in which the pipelines would be located.

FLOOD RISK

Fluvial

- 21.5.31 The study area is located within Environment Agency Flood Zones 1, 2 and 3. Flood risk associated with the zones can be summarised as follows:
- Flood Zone 1 has a less than 1 in 1000 year (0.1%) annual exceedance probability (AEP).
 - Flood Zone 2 has an AEP of 1 in 1000 year to 1 in 100 year (0.1% to 1%).
 - Flood Zone 3 has an AEP greater than 1 in 100 year (1%).
- 21.5.32 The proposed WWTP is located predominantly within Flood Zone 1, but with corridors within Flood Zones 2 and 3, linking existing and proposed infrastructure, as shown in Figure 21-1. Fluvial flood defences along the River Cam are predominantly to a 1 in 10 year standard protection within the study area. However, within the vicinity of Waterbeach, fluvial flood defences are to a 1 in 100 year standard of protection.
- 21.5.33 There are no fluvial flood defences associated with Black Ditch. There may be some defences along Quy Water, although the design standard of protection is not available, presumably implying it is quite low. The standard of protection on Bottisham Lode alternates between 1 in 50 years and 100 years.

Surface Water

- 21.5.34 According to the Environment Agency risk of flooding from surface water (RoFSW) maps, the risk of surface water flooding within the proposed WWTP may be considered "Very Low". Areas identified to be at "Very Low" risk have a less than 1 in 1,000-year (0.1%) annual risk of flooding from surface water sources.

Historic flooding

- 21.5.35 The South Cambridgeshire and Cambridge City Strategic Flood Risk Assessment (SFRA) (South Cambridgeshire District Council & Cambridge City Council, 2010) indicates that there have been no recorded incidents of historical flooding from fluvial, groundwater, surface water or sewer sources within the proposed WWTP in the years preceding 2010.

21.5.36 The Environment Agency holds historic records of fluvial flooding. These indicate fluvial flooding in 1947 and 2001, due to exceedance of channel capacity on the River Cam.

Residual risk

21.5.37 Residual risks are the risks remaining after applying a sequential test approach to the location of development, also taking into account mitigating actions. Examples of residual flood risk include:

- the failure of flood management infrastructure such as a breach of a raised flood defence;
- overtopping of an upstream storage area;
- failure of a pumped drainage system;
- a severe flood event that exceeds a flood management design standard, for example a flood that overtops a raised flood defence; and
- an intense rainfall event which exceeds the drainage system capacity.

21.5.38 As most of the study area does not benefit from flood defences to a 1 in 100 year standard of protection, the risk from a failure of flood defences would be considered low across much of the area. However, in the Waterbeach area, flood defences are to a 1 in 100 year standard of protection. The impacts of any increased discharge upon flood defences in the Waterbeach area would need to be considered in the FRA.

WATER DEPENDENT NATURE CONSERVATION SITES

21.5.39 Several designated nature conservation sites, which may be partly or wholly dependent on surface water and groundwater, are located within the study area. A list of these sites is included in Chapter 8: Biodiversity. The sites include:

- statutory designated sites, comprising Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR); and,
- non-statutory designated sites, comprising County Wildlife Sites (CWS).

21.5.40 In particular, the following three sites, shown on Figure 21-1, are either located downgradient of the proposed WWTP or, in the case of the River Cam CWS, could be directly affected by final effluent discharge:

- Stow-cum-Quy Fen SSSI is located adjacent to Black Ditch and partly within Flood Zone 3 along the ditch. Water features in the centre of the SSSI are connected to the Black Ditch via a one-way valve which allows flow into Black Ditch during periods of high water levels in the fen. During periods of particularly high flow in Black Ditch, however, over-bank flow is understood to occur in the reverse direction from the ditch onto the fen;
- Some pools at Quy Fen SSSI are formed on Chalk Marl and support a range of aquatic plants, including some uncommon species;

- The Allicky Farm Pond county wildlife site (CWS) is located close to Black Ditch and within Flood Zone 3 along the ditch. However, it is not known whether there is a surface water connection between the pond and the ditch, other than in flood conditions; and
- The River Cam CWS comprises river reaches together with some adjacent semi-natural habitat, including concentrations of mature pollard willows.

WATER RESOURCES RECEPTORS ASSESSED BY ZONE

21.5.41 Table 21-4 indicates which water resources receptors are located in, or may be affected by construction or operations within, each of the three zones.

Table 21-4: Baseline water resources components related to zones

Baseline component	Core Zone	Transfers Zone*	Waterbeach Zone
Surface water			
River Cam	x	✓	✓
Black Ditch	✓	x	x
Quy Water	✓	x	x
Flooding			
Fluvial flooding	x	✓	✓
Surface water runoff	✓	x	x
Groundwater			
Chalk aquifer	✓	✓	✓
Lower Greensand aquifer	✓	✓	x
Aquifer in superficial deposits	x	✓	✓
Designated sites			
Stow-cum-Quy Fen SSSI	✓	✓	x
Allicky Farm Pond CWS	✓	✓	x
River Cam CWS	x	✓	x
Other sites	✓	✓	x
Abstractions			
Surface water	x	✓	x
Groundwater	x	✓	✓

*Assumes the shaft on the waste water transfer tunnel at the site is part of the 'transfer and final effluent zone' and not the Core Zone.

21.6 Future baseline

- 21.6.1 The methodology relating to the project’s approach to future baseline is presented in Chapter 5, Future Baseline, alongside a list of proposed developments that, at this time, are expected to fall into this category. As such, these developments would form part of the baseline for assessment within the EIA.
- 21.6.2 For the aspect of water, all developments are required to comply with the National Planning Policy Framework (NPPF)³⁰⁹, development plans and other legislation and guidance. As such, any future developments should have a neutral effect on water resources and flood risk.
- 21.6.3 Climate change scenarios will also be considered when assessing flood risk for the future baseline at the time of the start of construction of the Proposed Development. Chapter 10: Climate Resilience identifies the climate change allowances for peak river flow in England which should be referred to for the FRA. Flood risk modelling will consider the 1 in 100 year event with a 20% allowance for climate change.

21.7 Potential environmental impacts and mitigation

CONSTRUCTION PHASE POTENTIAL IMPACTS

- 21.7.1 Table 21-5 provides a summary of the receptors, potential impacts and mitigation during construction.

Table 21-5: Summary of potential impacts and mitigation during construction

Receptor	Impact identified	Potential mitigation
Chalk aquifer (groundwater flows and groundwater levels)	<p>Minor reduction in groundwater flows and levels due to dewatering in the Chalk during:</p> <ul style="list-style-type: none"> • construction of shafts and some foundations; and • excavation of trenches during pipeline installations. 	None required. Temporary changes as a result of dewatering and drawdown in groundwater levels, which are not expected to have a significant effect on the aquifer. Subsequent recharge would compensate for the temporary loss of groundwater.
Lower Greensand aquifer (groundwater flows, groundwater levels and groundwater quality)	No impact expected. The aquifer is overlain and confined throughout the study area by the unproductive Gault Formation, comprising mainly clays and silts. The aquifer should not, therefore, be affected by any works in the Grey Chalk or the Gault Formation. Neither the proposed waste water transfer tunnel from the existing WWTP	None required. However, plans for the waste water transfer tunnel from the existing WWTP to the proposed WWTP (and associated shafts), and deep foundations for structures at the proposed WWTP, will be reviewed and discussed with geotechnical specialists as the design progresses to ensure

309 Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework.

Receptor	Impact identified	Potential mitigation
	to the proposed WWTP (and associated shafts), nor foundations for any structures at the proposed WWTP, will be located at depths within, or in close proximity to, the Lower Greensand aquifer.	there is no potential impact on the Lower Greensand aquifer.
Nature conservation sites dependent on groundwater from the Chalk	Possible temporary reduction in groundwater levels at Quy Fen SSSI and Allicky Farm Pond CWS due to dewatering in the Chalk during construction of shafts. Initial calculations of dewatering quantities for the terminal pumping station shaft presented in a Hydrogeological Impact Assessment ³¹⁰ indicate that impacts would not extend as far as these sites. Any other dewatering required in the Chalk would be on a smaller scale.	None expected. However, the calculations of shaft dewatering and potential impacts, including potential impacts at nature conservation sites in the study area, will be checked using hydrogeological data obtained from a ground investigation completed in 2021. Monitoring and assessment of variations in water levels would be undertaken at Quy Fen SSSI and Allicky Farm Pond CWS during dewatering activities and set out in a CEMP.
Watercourses in the study area around the proposed WWTP	No impact expected on flows or water levels in the River Cam or Quy Water due to dewatering in the Chalk during construction of shafts. An impact might occur, though likely to be insignificant and unmeasurable, on flows and water levels in Black Ditch.	None required, although shaft dewatering calculations and assessment of impacts to be updated for the EIA. Monitoring of water levels would be undertaken in the nearest potential surface water drainage receptor, Black Ditch, during dewatering activities.
Groundwater in superficial deposits	Reduction in groundwater flows and levels due to dewatering of trenches during pipeline installations.	None required. Short term changes only, which should have no significant effect on the superficial deposits or any nature conservation sites receiving discharges from the superficial deposits. A water features survey would, however, be undertaken prior to construction in order to identify any other natural, un-designated features (ponds, springs etc) which might potentially be affected by dewatering and would require monitoring.
Chalk aquifer and superficial deposits (groundwater quality)	Spillages of potentially contaminating materials used	Rigorous groundwater protection measures, which are standard practice to prevent contamination, to be

Receptor	Impact identified	Potential mitigation
	<p>in construction giving rise to contamination of the aquifer.</p> <p>Use of drilling fluids in borehole construction and piling.</p>	<p>implemented during all construction. The measures would be included in a CEMP.</p> <p>Only proprietary drilling fluids, accepted for use in groundworks in the UK, would be used in construction.</p>
<p>Groundwater abstractions</p>	<p>Details obtained for licensed groundwater abstractions indicates that there are no licensed abstractions in which groundwater levels could be affected by dewatering in the Chalk. Local council records indicate there is one private groundwater abstraction located close to the core site which might be dependent on groundwater from the Chalk, although the source is more likely to be in the deeper lower Greensand which is separated from the Chalk by low permeability Gault Formation comprising mainly clays and silts.</p>	<p>Groundwater abstractions to be included in the water features survey, together with any other possible private groundwater sources, subsequently identified, which might be affected.</p> <p>Monitoring of groundwater levels in any abstraction sources which might be affected.</p> <p>In the unlikely event that the private supply from any groundwater source could be significantly affected, measures would be taken to maintain a supply.</p>
<p>River Cam and other surface water features including the Black Ditch.</p> <p>Any surface water abstractions dependent on these features</p>	<p>Spillages of potentially contaminating materials used in construction giving rise to contamination of surface water features including the River Cam CWS.</p> <p>Discharge of silt-laden water from dewatering of pits and excavations, or in run-off from construction areas, affecting surface water quality.</p> <p>Construction of the treated effluent discharge outfall to the River Cam affecting river water quality.</p>	<p>Rigorous protection measures, which are standard practice to prevent contamination, to be implemented during all construction. The measures would be included in a CEMP.</p>
<p>River Cam close to and downstream of crossing of proposed waste water transfer tunnel from the existing WWTP to the proposed WWTP (and associated access shafts)</p>	<p>Crossing to be constructed in Gault Formation below the river. No impact expected on the river.</p> <p>Access shafts, one of which is located about 50m from the River Cam, likely to be constructed using caissons. The method should produce little inflow and requirement for dewatering during installation.</p>	<p>None proposed.</p>

Receptor	Impact identified	Potential mitigation
River Cam at and downstream of crossings in transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach	Leakage of river flows caused by disturbance of river bed materials. Increase in flood risk caused by construction within flood plain or disruption to flood defences.	Environment Agency Activity Permit required for construction within 8m of EA flood defences. Boreholes drilled as part of ground investigations, prior to construction, will be used to assess: <ul style="list-style-type: none"> shallow groundwater conditions; and measures needed to construct the crossing without affecting river flows.
Floodplain, including land, infrastructure, properties, people and access potentially affected by flood risk	Potential for construction sites to cause adverse impacts to the existing surface flooding risk to third parties in surrounding areas by increasing surface runoff during periods of high rainfall.	A Flood Risk Assessment would identify any flood risks resulting from construction sites. A flood risk management plan would be incorporated in the CEMP, setting out requirements in construction areas to: <ul style="list-style-type: none"> minimise impacts to the works from flooding; and prevent any significant effects on the existing flood risk in the surrounding area.
Watercourses within or close to the Waterbeach transfer pipeline corridor	Discharge of fluids used for pipeline testing affecting water quality	Permit to discharge into local watercourses will be agreed and obtained from the Environment Agency.

POTENTIAL IMPACTS PER ZONE

21.7.2 The potential impacts presented in Table 21-5 are divided by zone. The shaft on the waste water transfer tunnel from the existing WWTP at the proposed WWTP is included as part of the ‘transfer and final effluent zone’ and not the ‘Core Zone’ as it connects below ground with the tunnel. In addition, as the intermediate shafts along the length of the tunnel are part of the ‘transfer and final effluent zone’, it seems reasonable to include the shaft at the proposed WWTP in the ‘transfer and final effluent zone’.

Table 21-6: Potential construction impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Temporary reduction in groundwater flows and levels due to dewatering in the Chalk	✓	✓	✓
Lower Greensand aquifer (possible changes to groundwater flows, levels and quality)	x	✓	x
Possible temporary reduction in groundwater levels at Quy Fen SSSI and Allicky Farm Pond CWS due to dewatering in the Chalk during construction of shafts	x	✓	x
Possible temporary reduction in flows in some watercourses due to dewatering in the Chalk during construction of shafts	x	✓	x
Reduction in groundwater flows and levels in superficial deposits due to dewatering of trenches during pipeline installations.	x	✓	✓
Spillages of potentially contaminating materials and drilling fluids giving rise to contamination of aquifers or surface water features	✓	✓	✓
Temporary reduction in yield of groundwater abstractions (if present in the Chalk)	x	✓	x
Change in flows in the River Cam close to and downstream of crossing of proposed waste water transfer tunnel from the existing WWTP to the proposed WWTP (and associated access shafts)	x	✓	x
Change in flows in the River Cam at and downstream of crossings of transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach, and flood risk in the vicinity of the crossings	x	x	✓
Temporary change to flood risk receptors (including land, infrastructure, properties, people and access) during construction	x	✓	✓
Short term releases of sediment during construction and commissioning of the proposed outfall	x	✓	x
Discharge of silt-laden water from dewatering of pits and excavations, or in run-off from construction areas, affecting surface water quality.	✓	✓	✓
Abstractions from surface water features affected by spillages of potentially contaminating materials or discharge of silt-laden water	✓	✓	✓
Discharge of final effluent used for pipeline testing into watercourses within or close to the Waterbeach transfer pipeline corridor	x	x	✓

CONSTRUCTION PHASE MITIGATION

- 21.7.3 Potential mitigation measures considered likely to be appropriate for particular impacts during the Construction Phase are included in Table 21-5.
- 21.7.4 Likely significant effects arising during the Construction Phase would be dealt with by secondary mitigation in the form of measures set out in the CoCP. The CoCP will set out environmental management measures which the appointed contractor would be required to adopt and implement, including measures in relation to water resources. These measures will be identified through the EIA process and will comprise principally environmental controls, protection measures and monitoring, as well as safety procedures adopted during construction. The measures will be recorded within the mitigation schedule as part of the DCO application. Control measures may include:
- Requirement for site runoff and dewatering from excavations to be intercepted on site and ensuring the sediment content is at an acceptably low level when discharged to the drainage system.
 - Prevention of runoff from soil and excavated material stockpiles discharging directly into drainage systems.
 - Obtaining approvals necessary for the discharge of dewatering, surface water run-off and waste water from construction sites to soakaway or filtration systems, watercourses, foul sewers or disposal off-site.
 - Prevention of leakage of fuels and oils using adequately sized secure storage, checking and maintaining plant in good condition at all times, and using drip trays and other measures to prevent contamination from plant which is stationary when in use.
 - Inclusion of provision for construction of site drainage which may include ditches and sustainable drainage systems, or equivalent, with appropriately sized treatment facilities such as settlement or detention basins.
 - Adoption of appropriate measures, such as use of bunds of non-erodible material or silt or sediment fences, in work areas adjacent to watercourses.
 - Maintenance of suitable exclusion zones from watercourses and ponds.
 - Provision of adequate protection of any monitoring stations or boreholes.
 - Incorporation of a flood risk management plan within a CEMP, setting out requirements in construction areas to:
 - minimise impacts to the construction works from flooding;
 - prevent any significant effects on the existing flood risk in the surrounding area (including safeguarding existing defences); and
 - protect temporary worksites and people (including the workforce) from flood risk.
- 21.7.5 Compliance with the CoCP would be secured via a requirement included within the Development Consent Order. The CoCP would then form the basis for more

detailed plans and method statements, to be prepared during the pre-construction period by the appointed contractor. These plans would include a detailed CEMP together with a suite of management plans for specific controls, such as a Water Quality Management Plan. The detailed plans would be subject to agreement with relevant stakeholders

21.7.6 In the unlikely event that the private supply from any groundwater source could be significantly affected by construction, actions would be taken to ensure the required supply could be maintained. These actions might comprise:

- lowering the pump in a borehole;
- combining this action with provision of a replacement pump; or,
- providing an alternative water supply, for example by tankering, and providing storage at the property for the duration of dewatering and the period of subsequent groundwater level recovery.

21.7.7 Any measures identified during the EIA, related to the protection of private water supplies, will be recorded within the mitigation schedule as part of the DCO application.

OPERATION PHASE POTENTIAL

21.7.8 Table 21-7 provides an indication of the potential impacts and mitigation during operation.

Table 21-7: Summary of potential impacts and mitigation during operation

Receptor	Impact identified	Potential mitigation
Chalk aquifer (groundwater flow and groundwater quality)	Minor inflow of groundwater to shafts, or outflow of waste water from shafts.	Robust design and construction of shafts.
Chalk aquifer and superficial deposits (groundwater flow)	Pipeline trenches intercepting land drains and diverting drainage to the trenches. Backfill materials installed in pipeline trenches acting as groundwater drains. Foundations intercepting groundwater flows in the Chalk in some areas of the proposed WWTP, possibly giving rise to groundwater flooding at times of high groundwater levels.	Modify land drainage prior to trench excavation. Install impermeable partitions (clay stanks) at regular intervals to prevent the transfer of water along trenches. Drains installed to ensure that groundwater flow is re-directed around foundations.
Chalk aquifer (groundwater quality) and local surface water features	Accidental spills or leakages to ground of potential contaminants associated with a WWTP. Preliminary contaminant transport modelling presented in the Hydrogeological Impact	The contaminant transport modelling will be updated for the environmental impact assessment with hydrogeological data obtained from a ground investigation. For any land drains present in the area of the proposed

Receptor	Impact identified	Potential mitigation
	Assessment ³¹¹ indicated that, should any contamination occur in the Chalk underlying the site, it is unlikely to reach Black Ditch at significant concentrations, or in a foreseeable period (transmission through the aquifer modelled as unlikely to occur within 1,000 years). Therefore, no significant impact would be expected on groundwater or surface water resources surrounding the site as a result of contamination in the Chalk.	WWTP, measures would be implemented to prevent the potential rapid transfer of any contaminants to surrounding surface water drainage. Any monitoring of groundwater quality, if required, would be agreed with the Environment Agency. In the event of any accidental spills or leakages, or detection of significant contamination in groundwater, an immediate investigation and clean-up programme would be implemented.
Aquifer in superficial deposits (groundwater quality)	Leakage from waste water transfer or effluent pipelines giving rise to groundwater contamination.	Robust design and construction of pipelines.
Groundwater abstractions	No impacts expected during operation as no significant impacts likely to groundwater flows or groundwater quality on which the abstractions are dependent.	Groundwater abstractions to be investigated in a water features survey and the results of the survey to be included in the EIA. Appropriate mitigation to be applied in the unlikely event mitigation is needed.
River Cam (water quality)	Potential for water quality, including WFD status, to be impacted, particularly in the reach between the proposed new outfall and the existing Waterbeach outfall, as a result of effluent and storm water discharges to the river. These discharges would include the additional discharge resulting from transfer of waste water from Waterbeach to the new WWTP.	Assessment methodology agreed with the Environment Agency in determining discharge consent conditions relating to effluent quality. A WFD assessment will be carried out to identify any impacts on the water body status of the River Cam and determine mitigation measures based on the outcome of the assessment. Further mitigation may be identified as part of the WFD assessment methodology described below.
River Cam hydromorphology	Potential scour of the river bed and banks as a result of final effluent inputs and intermittent storm flows. Mobilisation of river sediments.	Design of outfall to prevent scour (developed using CIRIA guide C786 'Culvert, Screen and Outfall Manual', 2019). A WFD assessment will be carried out to identify any impacts on the water body status of the River Cam and

Receptor	Impact identified	Potential mitigation
		determine mitigation measures based on the outcome of the assessment.
Surface water abstractions	Potential impacts as a result of changes to water quality, resulting from increased effluent discharge to the River Cam, on surface water abstractions.	Requires assessment. Determine whether there are any surface water abstractions which might be affected. If so, assessment methodology to be agreed with the Environment Agency.
Flood risk to land, infrastructure, properties, people and access downstream of treated effluent discharge outfall to the River Cam	Potential for flows and, hence, flood risk to be affected, particularly in the reach between the proposed new outfall and the existing Waterbeach outfall, as a result of increased treated effluent and storm water discharges. These discharges would include the additional discharge resulting from transfer of waste water from Waterbeach to the proposed WWTP, as well as population increase in the area.	To be determined as part of the FRA and discharge consent conditions. Discharges from the proposed WWTP would be required not to give rise to significant increases to flood levels and extent. However, if increases were found to be potentially significant, the FRA would be used to determine suitable mitigation, possibly in the form of flood storage compensation measures.
Surface water flood risk in the catchments for River Cam and Black Ditch	Additional runoff from buildings, other structures and areas of hardstanding from the proposed WWTP.	SuDS measures to be included in design to restrict runoff to greenfield runoff rates, taking into account impacts due to climate change (See Chapter 10: Climate Resilience).
River Cam (flow upstream of treated effluent discharge outfall to the River Cam)	Reduction in flow in a river reach between the outfall from the existing WWTP and the treated effluent discharge outfall to the River Cam from the proposed WWTP (located less than 100m downstream of the existing outfall).	None required. No significant effect expected as the water level in this section of the River Cam is controlled by Baits Bite Lock, located approximately 0.4km downstream of the proposed outfall site.
Ditch (Bannold Drain) adjacent to Waterbeach WRC, and any surface water abstractions from the ditch.	Reduced flows and water levels in Bannold Drain as final effluent discharge from existing Waterbeach WRC is transferred to the proposed WWTP.	Discuss possible changes in pumping regime and water level controls with the Internal Drainage Board.

POTENTIAL IMPACTS PER ZONE

21.7.9 The potential impacts presented in Table 21-8 are divided by zone.

Table 21-8: Potential operational impacts by zone

Potential impact	Core Zone	Transfers Zone	Waterbeach Zone
Minor inflow of groundwater to shafts, or outflow of waste water from shafts affecting the Chalk aquifer.	✓	✓	x
Pipeline trenches diverting land drainage. Backfill materials installed in trenches acting as groundwater drains.	x	✓	✓
Foundations intercepting groundwater flows in the Chalk, possibly giving rise to groundwater flooding.	✓	x	x
Accidental spills or leakages associated with the proposed WWTP giving rise to contamination of the Chalk aquifer and local surface water features.	✓	x	x
Leakage from waste water transfer or effluent pipelines giving rise to groundwater contamination	x	✓	✓
Potential for River Cam water quality, and WFD status, to be affected as a result of increased effluent and storm water discharges from the proposed WWTP.	x	✓	x
Potential for surface water abstractions to be affected by changes to River Cam water quality	x	✓	x
Fluvial flood risk to land, infrastructure, properties, people and access as a result of increased treated effluent and storm water discharges to the River Cam downstream of treated effluent discharge outfall	x	✓	x
Additional runoff from buildings, other structures and areas of hardstanding increasing surface water flood risk.	✓	x	x
Reduction in flow in a reach of the River Cam between the outfall from the existing WWTP and the treated effluent discharge outfall to the River Cam from the proposed WWTP.	x	✓	x
Reduction in flows and levels as a result of ceasing discharge to the ditch on eastern side of Bannold Drove adjacent to Waterbeach WRC, also affecting any surface water abstractions from the ditch.	x	x	✓
Scour of river bed (River Cam) as a result of final effluent and storm discharges	x	✓	x

OPERATION PHASE MITIGATION

21.7.10 Potential mitigation measures considered likely to be appropriate for particular impacts during the Operational Phase are included in Table 21-7.

21.7.11 Potential primary mitigation comprises measures described below:

- Modification of any existing land drainage prior to or during trench excavation and construction of the proposed WWTP to prevent:
 - Trenches acting as drains in the land drainage system; and
 - Rapid transfer of any contamination occurring at the site as a result of accidental spill or leaks of potentially contaminating materials associated with the proposed WWTP.
- Installation of impermeable partitions (clay stanks) at regular intervals in trenches / pipeline routes to prevent the transfer of water (including shallow groundwater) along trenches the pipeline routes;
- Drains installed to ensure that groundwater flow is re-directed around deeper foundations in the proposed WWTP and to prevent groundwater flooding on the site;
- Robust design and construction of waste water transfer and effluent pipelines, limiting leakage to a negligible level, such that no significant groundwater contamination would occur;
- If increases in river levels and flooding were found to be potentially significant as a result of the discharge from the proposed WWTP, the FRA would be used to determine suitable mitigation, possibly in the form of flood storage compensation measures;
- Outfall design to be informed by modelling and inclusion of features to dissipate energy and prevent scour; and
- Incorporating SuDS measures within the design of the proposed WWTP to restrict runoff to greenfield runoff rates. The measures would take into account impacts due to climate change, and would prevent any adverse impact on surface water flood risk in the catchments for River Cam and Black Ditch.

21.7.12 The Environmental Permit for the proposed WWTP will require the operator to have a written management system. This is an Environmental Management System (EMS) which typically includes a set of plans and procedures describing measures to avoid, reduce and eliminate potential environmental impacts associated with the activities covered by the permit.

21.7.13 The EMS may cover general management of the proposed WWTP, equipment maintenance, contingency plans, accident prevention and emergency response (including pollution response), as well as defining monitoring activities.

21.7.14 It is expected that contingency measures, as part of EMS, would include, but not be limited to:

- the response and management of accidental spills or leakages;

- response and management measures in the event significant contamination is identified as affecting groundwater. These measures would include for an immediate investigation and clean-up programme to be implemented;
- a defined surveillance regime monitoring the integrity of pipelines; and
- an associated maintenance programme (including planned and reactive) to limit leakage from waste water transfer or effluent pipelines such that no significant groundwater contamination could occur.

21.7.15 Tertiary measures in relation to water resources, during operation, also include compliance with all Environmental Permitting Regulations referring to:

- flood risk activities; and
- works on or close to watercourses, and likely to include post-construction monitoring of the outfall.

21.8 Proposed scope of the assessment

RECEPTORS PROPOSED TO BE SCOPED IN

21.8.1 A summary of water resources receptors scoped into the EIA is included in Table 21-9 and Table 21-10 below.

Table 21-9: Resources or receptors proposed to be scoped in (for Construction)

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
Groundwater				
Lower Greensand aquifer (possible changes to groundwater flows, levels and quality)	In	In	Out	Precautionary – no impact anticipated but, based on evidence from ground investigation, confirm whether waste water transfer tunnel and deep foundations could affect the aquifer
Temporary reductions in groundwater flows and levels in superficial deposits due to dewatering of trenches during pipeline installations.	Out	In	In	Reductions in flows and levels may have impacts on surface water features close to the trenches

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
Groundwater abstractions	In	In	In	No significant impacts expected during construction, although groundwater abstractions to be investigated in a water features survey and the results included in the EIA. Appropriate mitigation to be applied in the unlikely event mitigation is needed.
Groundwater and surface water features				
Vulnerable to spillages of potentially contaminating materials and drilling fluids during construction.	In	In	In	Rigorous protection measures, which are standard practice to prevent contamination, to be assessed for the EIA.
River Cam				
Short term releases of sediment during construction and commissioning of the proposed outfall	Out	In	Out	Need to review sections of the CEMP dealing with outfall construction
Other surface water features				
Discharge of silt-laden water from dewatering of pits and excavations, or in run-off from construction areas, affecting surface water quality.	In	In	In	Need to review sections of the CEMP setting out measures for sediment control in run-off.

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
Surface water abstractions	In	In	In	Potential for abstractions from surface water features to be affected by spillages of contaminating materials or discharge of silt-laden water during construction.
Discharge of final effluent used for pipeline testing into watercourses within or close to the Waterbeach transfer pipeline corridor	Out	In	In	Impact requires assessment for permit to discharge into local watercourses to be agreed and obtained from the Environment Agency.
Flood risk				
Temporary change to flood risk receptors (including site works, access routes, nearby properties) during construction	In	In	In	Need to review flood risk assessments for construction
Nature conservation sites				
Allicky Farm Pond CWS Silt-laden water discharged during construction to Black Ditch, which may be connected to Allicky Farm Pond CWS	In	Out	Out	Review measures for sediment control in CEMP. Any connection to Black Ditch needs to be assessed.
Quy Fen SSSI. Silt-laden water discharged during	In	Out	Out	Precautionary, as could only occur in high flow/flood conditions. Review

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
construction to Black Ditch, which can be connected to Quy Fen SSSI.				measures proposed for sediment control.

Table 21-10: Resources or receptors proposed to be scoped in (for Operation)

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
Groundwater				
Pipeline trenches diverting land drainage. Backfill materials installed in trenches acting as groundwater drains.	Out	In	In	Review proposals for dealing with existing land drainage and for trench backfilling. Confirm monitoring of drainage to be carried out during construction.
Leakage from waste water transfer or effluent pipelines giving rise to groundwater contamination	Out	In	In	Expected that pipeline design and construction methods will avoid these impacts but this needs to be confirmed.
Minor inflow of groundwater to shafts, or outflow of waste water from shafts, affecting the Chalk aquifer.	Out	In	Out	Expected that shaft design and construction methods will avoid these impacts but this needs to be confirmed.
Groundwater abstractions	In	In	In	No significant impacts expected during operation, although groundwater abstractions to be investigated in a water features survey and the results included in the EIA. Appropriate mitigation to be applied in the unlikely event mitigation is needed.

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
Groundwater and surface water features				
Accidental spills or leakages associated with operation of the proposed WWTP giving rise to contamination of the Chalk aquifer and local surface water features.	In	Out	Out	Update contaminant transport modelling, review land drainage, set out requirements for long term monitoring and emergency clean up procedures.
River Cam				
Flows in the river, close to and downstream of crossings for: proposed waste water transfer tunnel from the existing WWTP to the proposed WWTP (and associated access shafts); and, transfer pipeline from pumping station off Bannold Drove, Waterbeach.	Out	In	In	River bed leakage might be affected by tunnel and pipeline installation methods, although no impact expected. Need to review final designs.
Potential for water quality, and WFD status, to be affected as a result of increased effluent and storm water discharges from the proposed WWTP.	Out	In	Out	Impacts resulting from effluent and storm water quality and quantities need to be assessed.
Scour of river bed as a result of final effluent and storm water discharges	Out	In	Out	Need to review final designs and impact on water body WFD status

Resource or receptor proposed to be scoped in	Core Zone	Transfers Zone	Waterbeach Zone	Justification for scoping in
Abstractions	Out	In	Out	Potential for surface water abstractions to be affected by changes to River Cam water quality as a result of increased effluent discharge during operation.
Other surface water features				
Ditch on eastern side of Bannold Drove adjacent to Waterbeach WRC, and any surface water abstractions from the ditch.	Out	Out	In	Reduction in flows and water levels as a result of ceasing discharge to the ditch.
Flood risk				
Foundations intercepting groundwater flows in the Chalk, possibly giving rise to groundwater flooding.	In	Out	Out	Need to assess variations in Chalk groundwater levels, foundation designs and proposed drainage measures.
Flood risk to land, infrastructure, properties, people and access	Out	In	Out	Increased treated effluent and storm water discharges to the River Cam

RESOURCES OR RECEPTORS PROPOSED TO BE SCOPED OUT

21.8.2 The resources and receptors presented in Table 21-11 below are proposed to be scoped out.

Table 21-11: Resources or receptors proposed to be scoped out for all zones

Receptor proposed to be scoped out	Justification for scoping out
Groundwater Temporary reduction in groundwater flows and levels, and, as a result, in flows in nearby	Extent of impact on groundwater calculated to be confined to areas close to the proposed WWTP. Impacts on

Receptor proposed to be scoped out	Justification for scoping out
watercourses, due to dewatering in the Chalk during construction of shaft	watercourses should be negligible or minor and temporary.
Quy Fen SSSI and Allicky Farm Pond CWS Possible temporary reduction in groundwater levels at Quy Fen SSSI and Allicky Farm Pond CWS due to dewatering in the Chalk during construction of shaft	Initial calculations of dewatering quantities for the terminal pumping station shaft presented in a Hydrogeological Impact Assessment ³¹² indicate that impacts would not extend as far as these sites. Any other dewatering required in the Chalk would be on a smaller scale.
River Cam Reduction in flow in a reach of the River Cam between the outfall from the existing WWTP and the treated effluent discharge outfall to the River Cam from the proposed WWTP.	No significant impact anticipated.

21.9 Evidence of agreements reached with consultation bodies

21.9.1 The following consultation has been carried out in relation EIA scope and where agreements have been reached these are indicated in Table 21-12.

Table 21-12: EIA Scoping consultation carried out

Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
Environment Agency 28-Aug-2021	Pre scoping meetings	No objections to approach
Environment Agency TWG 10-Jun- 2021	Future environmental permit limits for water discharge activities	Advice provided
Environment Agency TWG 10-Jun-2021	Flood risk activities permits and considerations for outfall design, flood risk, navigation in follow up email Flood risk assessment and reference to option to use River Cam model	Advice provided
Environment Agency TWG 18-Mar-2021	River Cam water quality (project overview and discussion of initial expectations on effluent discharge limits)	No objections raised, initial expectation on quality limits indicated by the Environment Agency.
Natural England TWG 19-Aug-2021	Pre scoping meeting Discussion on enhancement opportunities on River Cam.	No objections to approach

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Consultation body and dates of consultation	Content of consultation in relation to Scoping	Reference to agreement made
	Natural England indicated enhancement might be more worthwhile in reaches further downstream from the already heavily modified outfall area.	
Natural England	River Cam water quality (project overview and discussion of initial expectations on effluent discharge limits)	Further study agreed in order to consider changes to the existing WWTP discharge consent and effects in relation to the proposed WWTP.
Waterbeach Level and Swaffham Internal Drainage Board 21-Sep-2021	Advice provided that water within Bannold Drain is used for agriculture downstream. IDB indicated active water level management and reliance on water (including flows from existing Waterbeach WRC) for the summer months.	No objections raised to scoping approach
Cam Conservators 23-Jul-2021	General review of CWWTPR and explanation of differences between CWWTPR and other local improvement works. Overview of outfall proposals. Advice from Cam Conservators to ensure good weed control at outfall. Overview of surveys and general project programme	

21.9.2 There have been the following additional engagements and discussions with stakeholders:

- Environment Agency received and reviewed and commented on the water resources statement and hydrogeological impact assessment produced prior to site selection;
- Natural England received and reviewed the hydrogeological impact assessment produced prior to site selection;
- Letter setting out 'Enhanced level of pre-application advice' received from the Environment Agency;
- Quy Fen Trustees have been contacted regarding water resources connections on the SSSI and existing monitoring boreholes; and,

- Fen Ditton parish council has reviewed and commented on the hydrogeological impact assessment.

21.9.3 Further consultation is planned with Waterbeach Level and Swaffham IDB with responsibilities for drainage in the study area.

21.9.4 Water resources specialists will also be involved in consultations with Natural England regarding potential impacts on the water resources of some nature conservation sites and, possibly, with additional organisations concerned with nature conservation. However, it is expected these consultations will be led by biodiversity specialists.

21.10 Assessment methodology

21.10.1 In alignment with the Rochdale Envelope approach set out in Chapter 5, where the details of the Proposed Development cannot be defined precisely, a realistic worst-case scenario (RWCS) will be used for assessment, taking into account the relevant spatial and temporal project design parameters for each receptor/aspect group, as detailed in Tables 5-2 and 5-3 presented in Chapter 5.

21.10.2 Water Resources reporting will follow the legislation, policy and guidance identified in section 21.4.

21.10.3 A walkover survey will be undertaken in the study area at the start of the assessment to investigate water features including private water supplies, any surface water bodies which might be affected by temporary dewatering in connection with pipelines or shaft construction, and any surface water connection between Black Ditch and Allicky Farm pond CWS.

21.10.4 Results from a ground investigation started in August 2021 will be used in a more detailed assessment of the hydrogeology of the proposed WWTP site and other components of the Proposed Development. The additional data obtained from the investigation will be used to reassess technical issues including the impacts of shaft dewatering during construction and potential for contaminant transport in groundwater during operation of the Proposed Development. It is not anticipated, however, that the reassessments will significantly affect any conclusions already reached in relation to these issues.

21.10.5 Consultation will continue throughout the EIA process with parties listed in Table 21-12.

21.10.6 Assessments of the potential impacts of final effluent and storm discharges on the flow, associated flood risk, water quality and hydromorphology of the River Cam will be undertaken in separate studies in consultation with the Environment Agency. A WFD assessment will be carried out to identify any impacts on the water body status of the River Cam and other relevant WFD classified water bodies including Bottisham Lode - Quy Water and the Cam and Ely Ouse Chalk

groundwater body which underlies the proposed WWTP. The WFD assessment will follow the three stage screening/scoping and detailed assessment approach outlined in the Planning Inspectorate Advice Note Eighteen: The Water Framework Directive³¹³, and relevant consultation with the Environment Agency. The outcome of all these assessments will be used in undertaking the EIA and will contribute to determining the need for any mitigation measures.

SIGNIFICANCE CRITERIA

- 21.10.7 The method of assessment for each receptor will follow a standard procedure in EIA, applied separately for temporary effects during construction, and permanent effects occurring during operation of the Proposed Development. Each receptor will be assigned a sensitivity (or value), based on quality and importance of the receptor for environmental reasons, or for operational reasons as would be the case for water-related infrastructure such as licensed or private abstractions.
- 21.10.8 Table 21-13 provides a summary of the sensitivity of the water resources under assessment, together with examples of the various receptors to be assigned to each level of sensitivity.

Table 21-13: Potential sensitivity rating

Sensitivity	Criteria	Examples
Low	Lower quality	Surface water drain, watercourses with Q_{95} flow < 0.002m ³ /s, unproductive/non-aquifer
Medium	Moderate quality and rarity	Watercourses not having a WFD classification shown in RBMP, Secondary aquifer, abstraction for industrial/agricultural use.
High	Locally significant attribute of high value	Watercourse having a WFD classification shown in RBMP and Q_{95} < 1.0m ³ /s*, Principal aquifer, private drinking water supply.
Very high	Nationally significant attribute of high value	Watercourse having a WFD classification shown in RBMP and Q_{95} ≥ 1.0m ³ /s*, licensed groundwater abstractions for public water supply.

Note: * Q_{95} is the flow exceeded for 95% of the time.

- 21.10.9 The impact of the scheme will be assessed for each receiving water body or receptor (the 'attribute') separately for construction and operation. Impacts may be assessed as either adverse or beneficial. Table 21-14 provides an indication of the magnitude of impact for water resource features under assessment.

313 <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/>

Table 21-14: Magnitude of impact

Magnitude of impact	Criteria	Examples
Negligible	No change to integrity of attribute	Changes to discharges and water quality in watercourses, or groundwater flow and quality in an aquifer, which cannot be measured and produce no change to the attribute's integrity.
Minor	Adverse: some measurable change in integrity of an attribute	Adverse: measurable decrease in surface water ecological or chemical quality, or flow; some decrease in yield or groundwater quality within an aquifer. Impact not affecting existing users or changing any WFD status.
	<i>Beneficial:</i> measurable increase, or reduced risk of negative effect of an attribute	<i>Beneficial:</i> measurable increase in surface water ecological or chemical quality; increase in yield or quality of aquifer. Impact not affecting existing users or changing WFD status.
Moderate	Adverse: loss of part of attribute or decrease in integrity of attribute	Adverse: measurable decrease in surface water ecological or chemical quality, or flow; reversible change in yield or groundwater quality for an aquifer. Impact affects existing users, but WFD status unchanged.
	<i>Beneficial:</i> moderate improvement in quality of attribute	<i>Beneficial:</i> measurable increase in surface water quality or in the yield or groundwater quality for an aquifer, benefiting existing users but not changing WFD status.
Major	Adverse: loss of attribute and/or quality and integrity of attribute	Adverse: decrease in surface water ecological or chemical quality and WFD status; decrease in groundwater qualitative or quantitative WFD status.
	<i>Beneficial:</i> creation of new attribute or major improvement in quality of attribute	<i>Beneficial:</i> increase in surface water ecological or chemical WFD status; increase in groundwater qualitative or quantitative WFD status

21.10.10 Effects are defined by the magnitude of impact and overall sensitivity of the receiving water body or receptor (the 'attribute'). Significant effects on the water environment are those that are assessed as 'moderate', 'large' or 'very large'. Significant effects are highlighted in bold in Table 21-15.

Table 21-15: Significance of effects

Magnitude of impacts	Sensitivity of Resources / Receptors			
	Low	Medium	High	Very High
Negligible	Neutral Not significant	Neutral Not significant	Slight Not significant	Slight Not significant
Minor	Neutral Not significant	Slight Not significant	Slight Not significant / OR Moderate Significant	Moderate or Large Significant
Moderate	Slight Not significant	Moderate Significant	Moderate or Large Significant	Large or Very Large Significant
Major	Slight Not significant / OR Moderate Significant	Moderate OR Large Significant	Large OR Very Large Significant	Very Large Significant

21.10.11 The assessment of significance of effects is based on methods developed in assessing impacts and effects on water resources for many major infrastructure projects. However, the assessment is intended as a guide and a means for comparing differing impacts on water resources receptors of varying sensitivity, rather than providing a complete and definitive assessment. The assessment of significance of effects will be supplemented and checked using professional judgement and extensive technical experience in water resources.

21.10.12 Only impacts, and not effects, will be assessed in relation to surface water or groundwater resource attributes supporting nature conservation sites. These impacts on water resources within the nature conservation sites will then be taken forward to the biodiversity assessment. The effects on the nature conservation receptors will be determined taking into account the resulting impacts of any changes in water resources on the qualifying features and biodiversity of the sites.

21.11 Approach to cumulative assessment

21.11.1 The methodology relating to the project's approach to the assessment of cumulative effects is presented in Chapter 5, Interaction and accumulation of effects. This section discusses some potential impacts from other proposed developments which might give rise to significant cumulative effects.

21.11.2 The cumulative assessment will consider any other proposed developments that, during construction, could affect water resources in the study area. Potential cumulative impacts will be assessed using available scoping, or similar, documents. In the event that the timing of construction of other such

proposed developments overlapped with construction of the CWWTPR project, then a cumulative assessment would be made of the temporary impacts. In particular, there might be concerns regarding the temporary impact of other developments, including the discharge of silt-laden water from construction sites, on water quality in the River Cam.

- 21.11.3 It is assumed that any new development would be required to include mitigation measures to prevent significant adverse effects on sensitive water resources receptors (including receptors connected to or dependent on groundwater, surface water or flooding) when in use or operation. Comprehensive legislation applies to the assessment and requirement for mitigation in relation to flooding. In addition, the Environment Agency would be expected to raise concerns in relation to long term, significant effects on other water resources receptors, including water quality in the River Cam.
- 21.11.4 The review of documents for other proposed developments which could affect water resources in the study area should indicate any potential long term effects of these developments on water resources. The review could include some developments located in the catchments upstream of the proposed WWTP water resources study area, which might affect water quality within the study area. These long term effects would then be combined with the operational effects of the Proposed Development in a cumulative assessment. Water quality in the River Cam and flooding may be particular issues for the cumulative assessment.

21.12 Assumptions, limitations and uncertainties

- 21.12.1 In assessing flood risk, it is assumed that river flow and flood model data is available from the Environment Agency to support preparation of the FRA.
- 21.12.2 With regard to impacts on groundwater and surface water receptors, it is assumed the results of the ground investigation started in August 2021, and further assessments of shaft dewatering and contaminant transport based on the findings of the ground investigation, will confirm the conclusions already presented in the hydrogeological impact assessment³¹⁴.
- 21.12.3 Methods used for calculation of shaft and trench dewatering and contaminant transport, based on aquifer details obtained from ground investigations and other sources, produce approximate estimates of potential impacts on receptors. However, the estimates of potential impacts should be sufficiently well defined to provide reasonable confidence in the assessments.
- 21.12.4 There are no other concerns which would appear likely to limit the effectiveness of the EIA and confidence in the assessment.

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22 Summary

- 22.1.1 This EIA Scoping report has been prepared by Mott MacDonald on behalf of Anglian Water Services Limited in relation to the Cambridge Waste Water Treatment Plant Relocation Project.
- 22.1.2 This report has been prepared to support a request from Anglian Water Services Limited for an EIA Scoping Opinion in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended). The EIA Scoping Opinion will inform the Preliminary Environmental Information report and Environmental Statement submitted with an application for a Development Consent Order (DCO) for the Proposed Development.
- 22.1.3 Following consideration of available baseline information, a scoping exercise has been undertaken to identify what potential environmental effects may result from construction and operation of the Proposed Development, and to determine where specific resources or receptors (matters) require further assessment as part of the EIA.
- 22.1.4 The environmental aspects or matters (resources and receptors) that are proposed to be ‘scoped out’ across all zones for the EIA are summarised in Table 22-1 and justifications for these requests is set out in Chapters 6 to 21. The below table provides the key outcomes to avoid the duplication of details recorded within Chapters 6 to 21.
- 22.1.5 In the instances whereby resources and receptors that are scoped out of some zones and not others, this level of detail can also be found in Chapters 6 to 21.
- 22.1.6 If the design of the Proposed Development changes substantially during the EIA, then a review of all environmental matters will be undertaken. Based on professional judgment and following consultation with the relevant statutory organisations, if required, aspects or matters previously excluded could be ‘scoped back’ into the EIA.

Table 22-1: Summary of EIA Scoping

Aspect	Matters proposed to be scoped out across all zones
Agriculture and Soils	<ul style="list-style-type: none">• Effects on soil structure and quality during construction as suitable soil handling measures would be implemented and secured via a Soil Management Plan.• Effects of odour on agricultural businesses as there are no agricultural receptors considered likely to be sensitive to odour.
Air Quality	<ul style="list-style-type: none">• Construction plant emissions as emissions from site plant likely so minor as to merit disregard.• Emergency emissions (digester safety valves) as these emissions would not occur during normal WWTP operation and should only be required during an emergency. These are covered in Chapter 16: Major Accidents and Disasters.
Biodiversity	<ul style="list-style-type: none">• Hazel Dormouse as not likely to be present within the study area.• White-clawed crayfish as not likely to be present within the study area.• Newmarket Heath Site of Special Scientific Interest (SSSI) due to a lack of hydrological or ecological pathway.

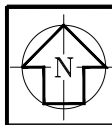
	<ul style="list-style-type: none"> ● The following Local Nature Reserves (LNR), as illustrated in Figure 8-1, due to a lack of hydrological or ecological pathway: <ul style="list-style-type: none"> – Bramblefields LNR – Coldham's Common LNR – Barnwell II LNR – Barnwell LNR – Logan's Meadow LNR – Lime Kiln Close (and West Pit) LNR – East Pit LNR – Sheep's Green and Coe Fen LNR – The Beechwoods LNR – Paradise LNR – Nine Wells LNR – Byron's Pool LNR – Worts Meadow LNR ● The following County Wildlife Sites (CWS), as illustrated in Figure 8-2, due to a lack of hydrological or ecological pathway: <ul style="list-style-type: none"> – Anglesey Abbey CWS – Cambridge Road Willow Pollards CWS – Swaffham's Poor's Fen CWS – Bottisham Park CWS – Landbeach Pits Willow Wood CWS – Beach Ditch and Engine Drain CWS – Twenty Pence Pit CWS – Cow Bridge Pollard Willows CWS – River Great Ouse CWS
Carbon	<ul style="list-style-type: none"> ● None
Climate Resilience	<ul style="list-style-type: none"> ● Resilience to climate change (rainfall) during construction given the short construction timeframe in the 2020s whereby events are considered tolerable under current construction practices and associated construction management approaches. Any impacts arising from severe weather events in the present-day climate would be managed by measures secured through the Code of Construction Practice. ● Resilience to drought as buried assets are to be designed and built in line with industry standards and designed to accommodate variable ground conditions and treatment processes managed in accordance with established practices. ● Resilience to high winds as the Proposed Development will comply with industry standards regarding wind loading. ● Resilience to fluvial flood risk as this will be assessed in the Flood Risk Assessment with impacts reported in Chapter 20: Water Resources. ● Resilience to surface water flood risk as this will be assessed in the Flood Risk Assessment with impacts reported in Chapter 20: Water Resources. In addition, the Waterbeach transfer pipeline will be a buried asset which would not be impacted by surface water flooding. ● Resilience to climate change (rainfall and drought) during decommissioning activities due to the construction timeframe in the 2020s whereby events are considered tolerable under current construction practices and associated construction management approaches. ● In-combination climate impacts as agricultural land, carbon, historic environment, noise and vibration, material resources and waste, soils, geology and land quality, traffic and transport, major accidents and disasters are not considered to have significant interaction with climate, thereby not leading to in-combination climate impacts.
Community	<ul style="list-style-type: none"> ● Displacement of local residents as the Proposed Development does not require the acquisition of residential properties and there would be no displacement of local residents. ● Requirement for land used by community facilities as the Proposed Development does not require land from community facilities. ● Operational employment as the Proposed Development is intended to replace the existing Cambridge Waste Water Treatment Plant. Given that the proposed WWTP would operate at a similar capacity and given the proximity of the existing site, it is not considered likely that there will be a notable change in operational employment.

	<ul style="list-style-type: none"> Security as it is assumed that site security arrangements for the Proposed Development will be in line with the requirements set out the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided. Furthermore, appropriate levels of security (personnel / CCTV) will be implemented during the Operational Phase.
Health	<ul style="list-style-type: none"> Impacts from pests during construction and operation as the potential health impacts from increases in pests are unlikely to be significant with appropriate implementation of mitigation and management processes. In relation to construction, pest control measures will be included within the Code of Construction Practice. This would include implementing best practice construction methods (such as having a tidy site and restricting what is stored on site). Changes to access to services during operation as any changes in road layout or volumes of traffic associated with the operation of the Proposed Development are unlikely to result in changes to travel routes or delays that would affect the ability of people to access services, including health, social care and educational facilities during operation. Operational employment as there is unlikely to be a significant increase in the operational workforce. Demand for local accommodation and public services due to temporary workers or a permanent workforce during construction and operation as during construction, no specific construction worker accommodation is being provided as part Proposed Development. Although affordable housing within the area is limited, it is unlikely that the Proposed Development will create sizable demand for accommodation during construction. It is also anticipated that construction workers will remain registered with their existing healthcare centres and that construction site occupational health services will deal with the vast majority of construction-related incidences, therefore avoiding placing additional pressure on local healthcare services. Security as during construction and operation, it is not anticipated that crime and personal security are likely to be affected as a result of the Proposed Development. Site security arrangements for the Proposed Development will be in line with the requirements set out the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided.
Historic Environment	<ul style="list-style-type: none"> No matters are scoped out across all zones.
Landscape and Visual	<ul style="list-style-type: none"> No matters are scoped out across all zones.
Land Quality	<ul style="list-style-type: none"> The aspect of land quality is scoped out due to limited sources.
Major Accidents and Disasters	<ul style="list-style-type: none"> All scoped out, as per screening table in Appendix I, with the exception of: <ul style="list-style-type: none"> Flood risk and extreme rainfall Rail accidents Aviation Tunnel failure Flood defence failure Utilities failure Anaerobic digestion/gas storage fire and explosion Terrorism and cyber threat Vandalism
Materials, Resources and Waste	<ul style="list-style-type: none"> Access to allocated mineral sites during construction and operation as shows that the site production capacities across Cambridgeshire and Peterborough is sufficient to ensure the future provision of sand and gravel supply at levels above the minimum requirement. Operational materials as no impacts associated with maintenance during operation are anticipated and only minor impacts are anticipated for raw materials relating to the operation of the treatment process, decommissioning of the existing Cambridge WWTP/Waterbeach WRC. Operational depletion of non-renewable resources as no impacts associated with maintenance during operation are anticipated and only minor impacts are anticipated for raw materials relating to the operation of the treatment process, decommissioning of the existing Cambridge WWTP/Waterbeach WRC.
Noise and Vibration	<ul style="list-style-type: none"> Operational vibration as the level of vibration from operational sources is expected to be negligible at nearest receptors due to the large distance (>100m) from sources to receptors and would not result in significant adverse effects and no significant sources of vibration in the existing baseline that would result in

	<p>cumulative significant adverse vibration effects due to operation of the proposed WWTP</p>
Odour	<ul style="list-style-type: none"> • Release of odours from construction activities as minimal odour is anticipated from normal construction works. Best practice site management, as set out within a Code of Construction Practice, would be applied during construction. • Intermittent odour emissions from air valves within manhole chambers as the intermittent and localised occurrence, and the location of manholes, are not close enough to properties or gardens to cause an adverse impact.
Traffic and Transport	<ul style="list-style-type: none"> • In-combination impacts to amenity on pedestrian, equestrian and cyclists and impacts on ability to access community resources and social infrastructure as this is covered in Chapter 11: Community. • Disruption to railway operations in construction as no track possessions will be required. Works for construction underneath the railway would be managed through the Basic Asset Protection Agreement (BAPA) process with Network Rail/Great British Railways. In addition, there is no impact pathway for the Core Zone as it does not interface with the railway. • Disruption to aviation operations at Cambridge Airport as all construction works to comply with aviation safeguarding controls as agreed with Cambridge Airport. This is also considered in Chapter 16: Major Accidents and Disasters.
Water Resources	<ul style="list-style-type: none"> • Reduction in groundwater flows and levels (and in flows in nearby watercourses as a result) due to dewatering in the Chalk during construction of shafts as changes resulting from dewatering and drawdown are calculated to be confined to areas close to the proposed WWTP and are not expected to have a significant effect on the aquifer. • Reduction in groundwater levels at Quy Fen Site of Special Scientific Interest (SSSI) and Allicky Farm Pond County Wildlife Site (CWS) due to dewatering in the Chalk during construction of shaft. Scoped out as initial calculations of dewatering quantities for the terminal pumping station shaft presented in a Hydrogeological Impact Assessment indicate that impacts would not extend as far as these sites. • Reduction in flow in a reach of the River Cam between the outfall from the existing WWTP and the treated effluent discharge outfall to the River Cam from the proposed WWTP as no significant effect expected as the water level in this section of the River Cam is controlled by Baits Bite Lock, located approximately 0.4km downstream of the proposed outfall site.

Appendices

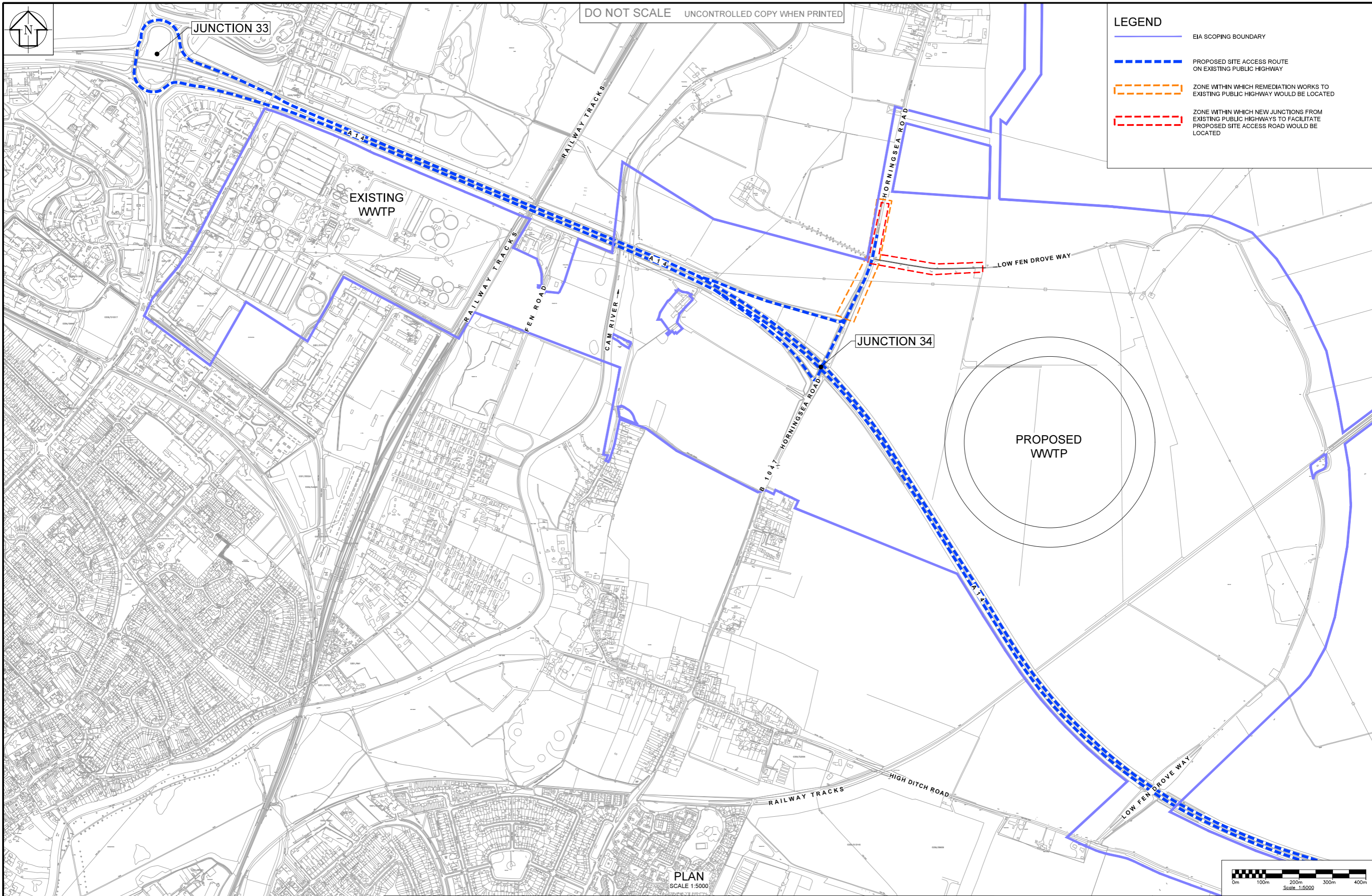
A. Figures for Chapter 2 Project Description



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LEGEND

- EIA SCOPING BOUNDARY
- PROPOSED SITE ACCESS ROUTE ON EXISTING PUBLIC HIGHWAY
- ZONE WITHIN WHICH REMEDIATION WORKS TO EXISTING PUBLIC HIGHWAY WOULD BE LOCATED
- ZONE WITHIN WHICH NEW JUNCTIONS FROM EXISTING PUBLIC HIGHWAYS TO FACILITATE PROPOSED SITE ACCESS ROAD WOULD BE LOCATED



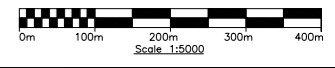
JUNCTION 33

EXISTING WWTP

JUNCTION 34

PROPOSED WWTP

PLAN
SCALE 1:5000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 01
 OPERATIONAL ACCESS OPTIONS &
 VEHICLE ROUTING - OPTION 1A**

anglianwater
 @one
 Thorpe Wood House, Thorpe Wood, Peterborough,
 Cambridgeshire, PE3 6WT
 Tel 01733 414100 Fax 01733 414111

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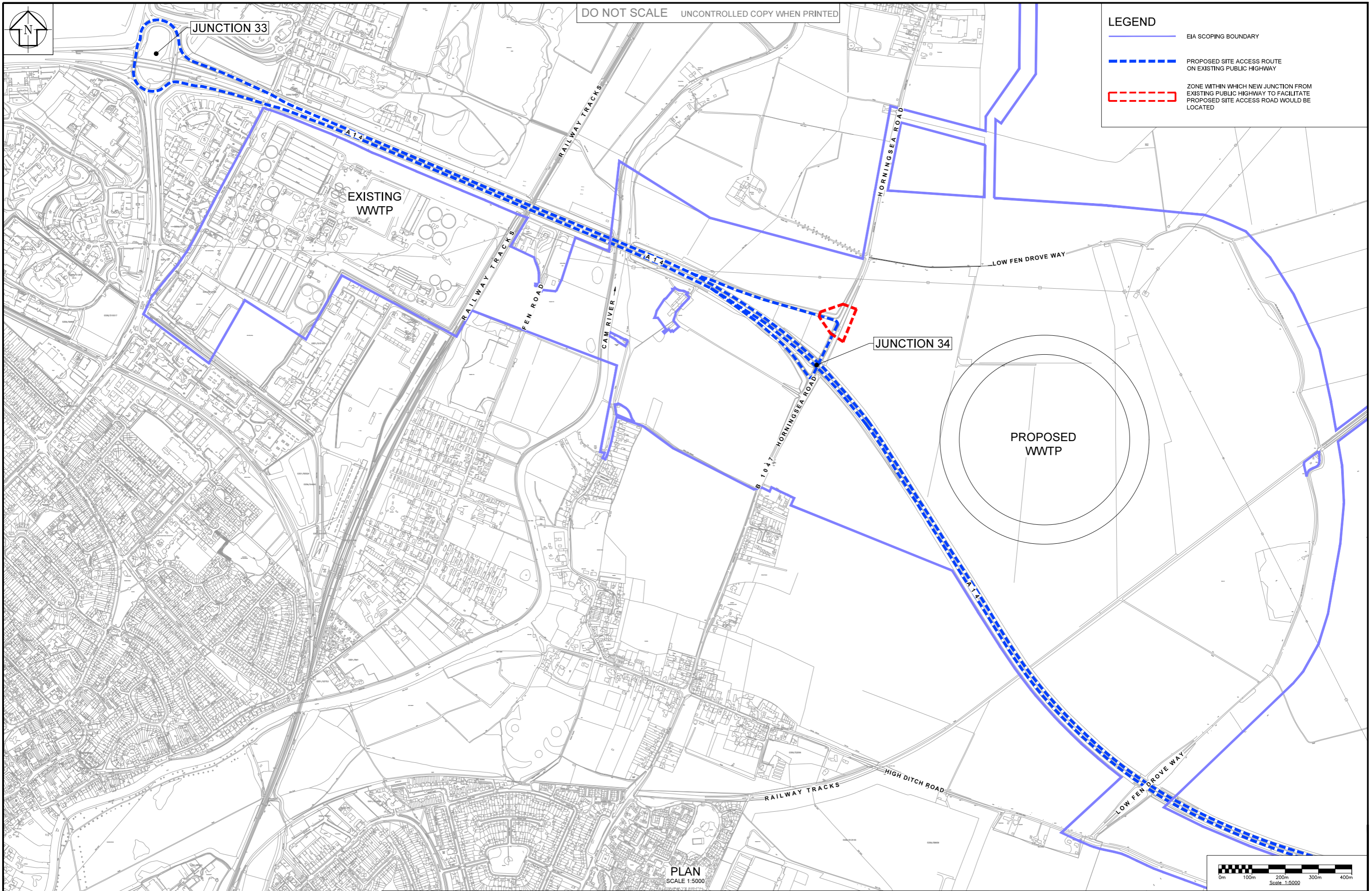
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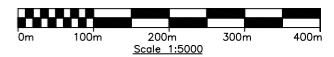


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- LEGEND**
- EIA SCOPING BOUNDARY
 - PROPOSED SITE ACCESS ROUTE ON EXISTING PUBLIC HIGHWAY
 - ZONE WITHIN WHICH NEW JUNCTION FROM EXISTING PUBLIC HIGHWAY TO FACILITATE PROPOSED SITE ACCESS ROAD WOULD BE LOCATED



PLAN
SCALE 1:5000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 02
 OPERATIONAL ACCESS OPTIONS &
 VEHICLE ROUTING - OPTION 1B**

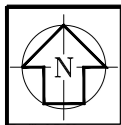


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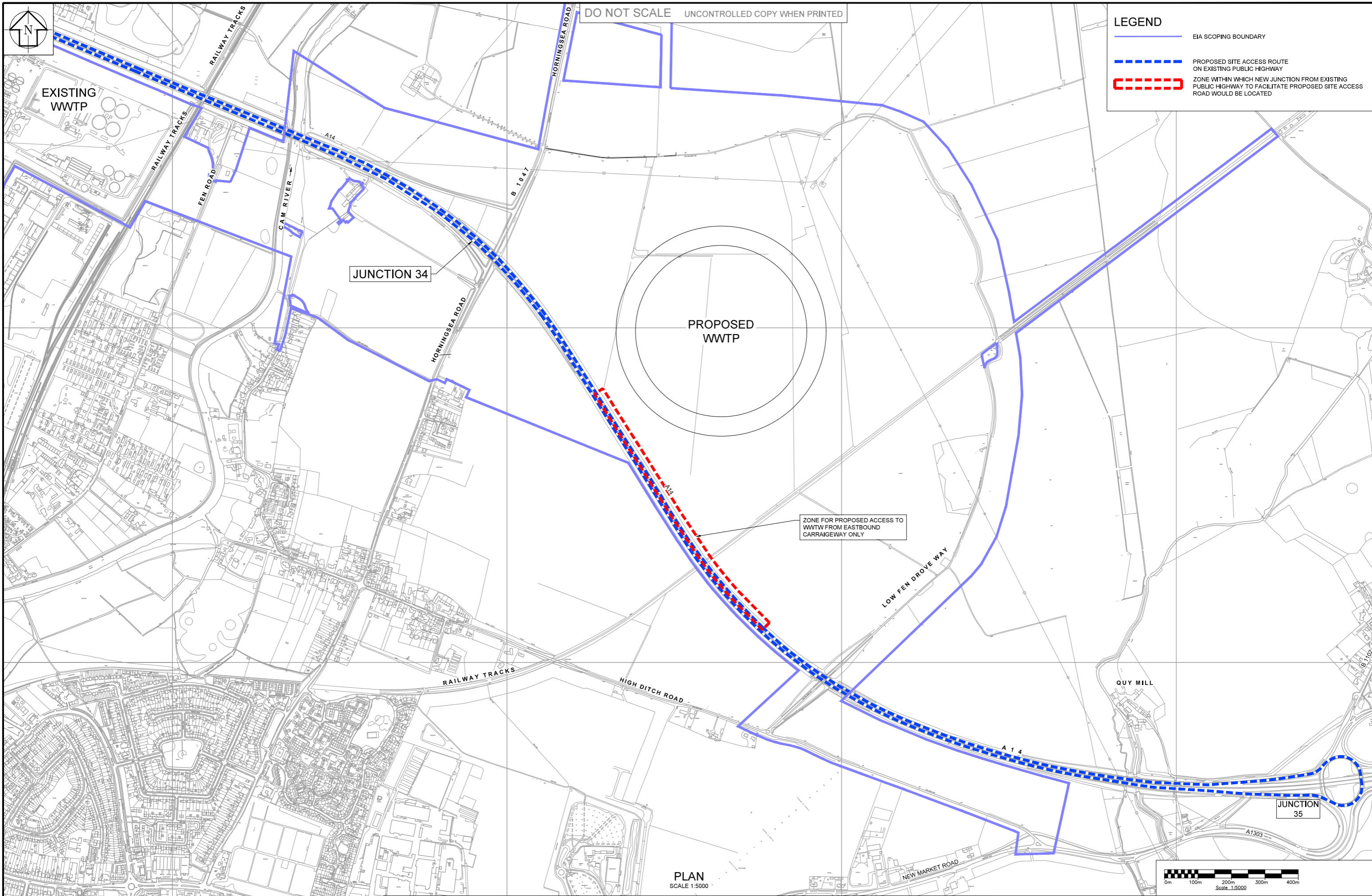
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LEGEND

-  EIA SCOPING BOUNDARY
-  PROPOSED SITE ACCESS ROUTE ON EXISTING PUBLIC HIGHWAY
-  ZONE WITHIN WHICH NEW JUNCTION FROM EXISTING PUBLIC HIGHWAY TO FACILITATE PROPOSED SITE ACCESS ROAD WOULD BE LOCATED



PLAN
SCALE 1:5000

PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 04
 OPERATIONAL ACCESS OPTIONS &
 VEHICLE ROUTING - OPTION 3**

anglianwater
 @one
 Thorpe Wood House, Thorpe Wood, Peterborough,
 Cambridgeshire, PE3 6WT
 Tel 01733 414100 Fax 01733 414111

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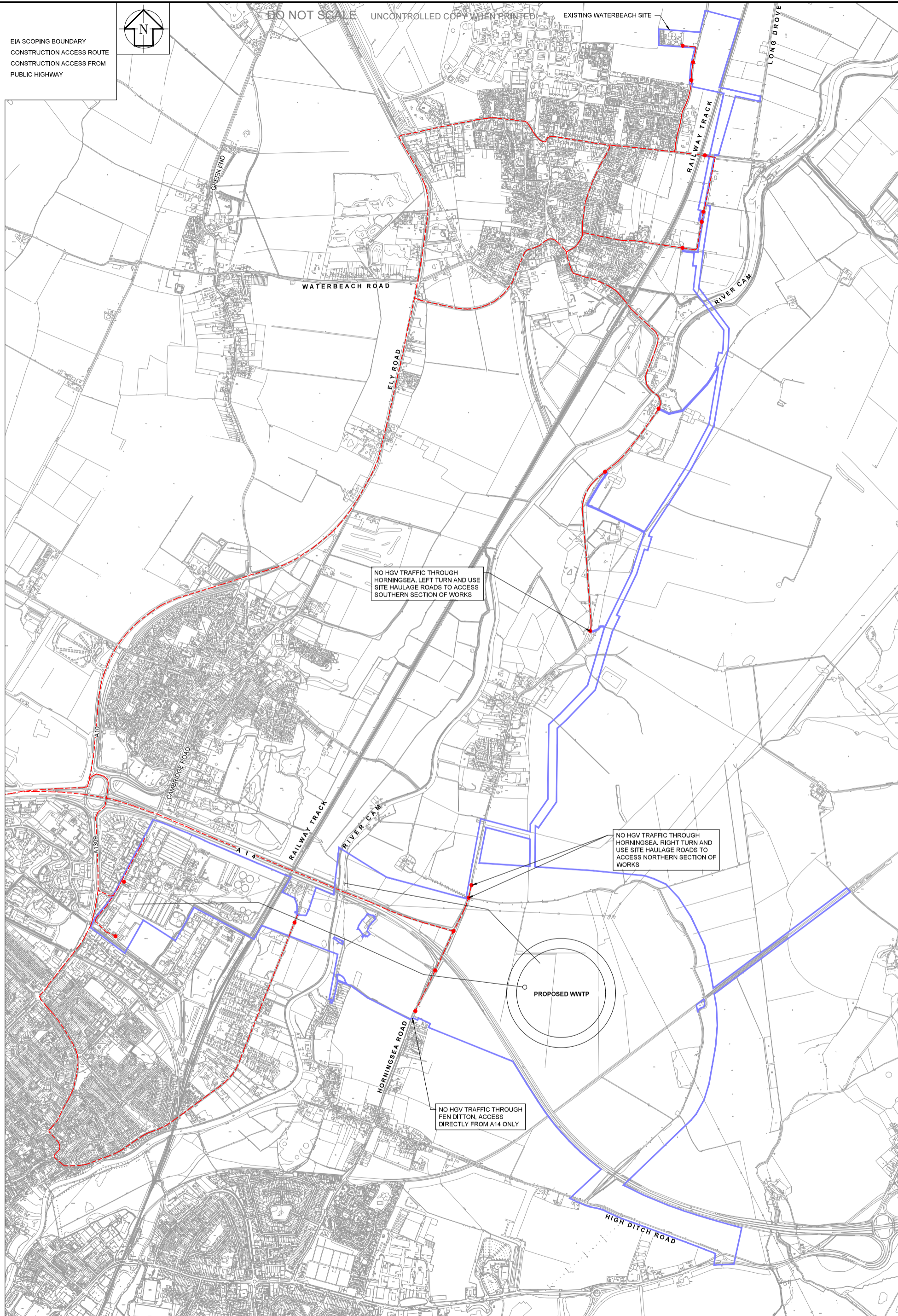
LEGEND

- EIA SCOPING BOUNDARY
- CONSTRUCTION ACCESS ROUTE
- CONSTRUCTION ACCESS FROM PUBLIC HIGHWAY

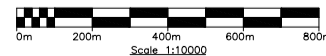


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EXISTING WATERBEACH SITE



PLAN
SCALE 1:10000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
TREATMENT PLANT
RELOCATION PROJECT (CWWTPRP)**

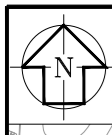
DRAWING TITLE
**EIA SCOPING REPORT - FIG 05
CONSTRUCTION ACCESS
AND VEHICLE ROUTING**

anglianwater
@one
Thorp Wood House, Thorpe Wood, Peterborough,
Cambridgeshire, PE3 9HT
Tel: 01733 414100 Fax: 01733 454111

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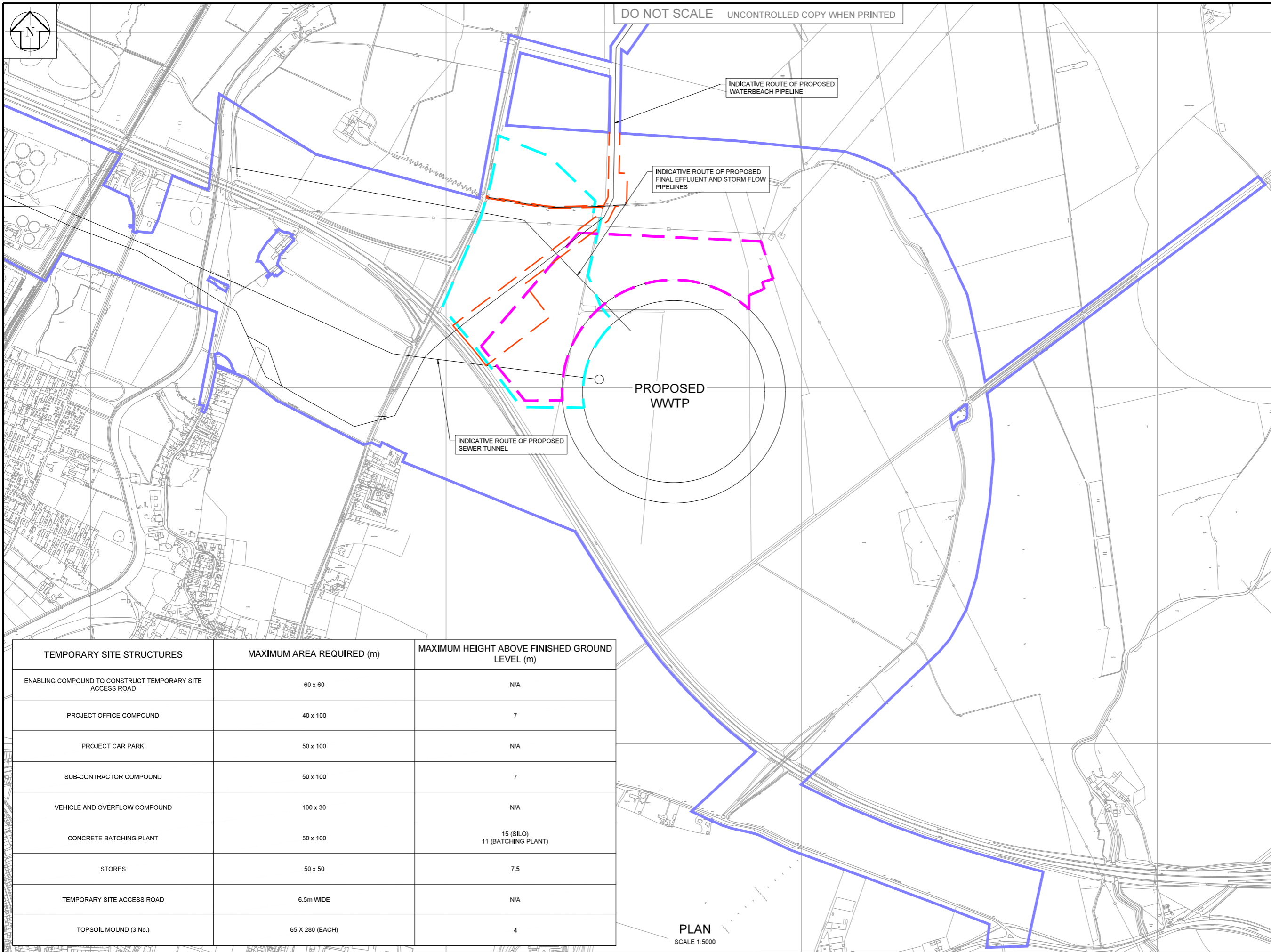
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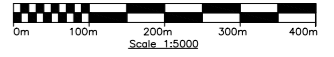
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- LEGEND**
- EIA SCOPING BOUNDARY
 - ZONE WITHIN WHICH TEMPORARY COMPOUND AND ACCESS ROAD WOULD BE LOCATED
 - ZONE WITHIN WHICH TOPSOIL MOUNDS WOULD BE LOCATED
 - ZONE WITHIN WHICH WATERBEACH TEMPORARY COMPOUND AND WORKING AREAS WOULD BE LOCATED



TEMPORARY SITE STRUCTURES	MAXIMUM AREA REQUIRED (m)	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL (m)
ENABLING COMPOUND TO CONSTRUCT TEMPORARY SITE ACCESS ROAD	60 x 60	N/A
PROJECT OFFICE COMPOUND	40 x 100	7
PROJECT CAR PARK	50 x 100	N/A
SUB-CONTRACTOR COMPOUND	50 x 100	7
VEHICLE AND OVERFLOW COMPOUND	100 x 30	N/A
CONCRETE BATCHING PLANT	50 x 100	15 (SILO) 11 (BATCHING PLANT)
STORES	50 x 50	7.5
TEMPORARY SITE ACCESS ROAD	6.5m WIDE	N/A
TOPSOIL MOUND (3 No.)	65 X 280 (EACH)	4

PLAN
SCALE 1:5000



PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
**EIA SCOPING REPORT - FIG 07
PARAMETER PLAN - TEMP CONSTRUCTION
AREAS, DEPTHS & HEIGHTS - ZONE 1 OPT 1B**

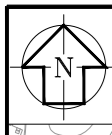


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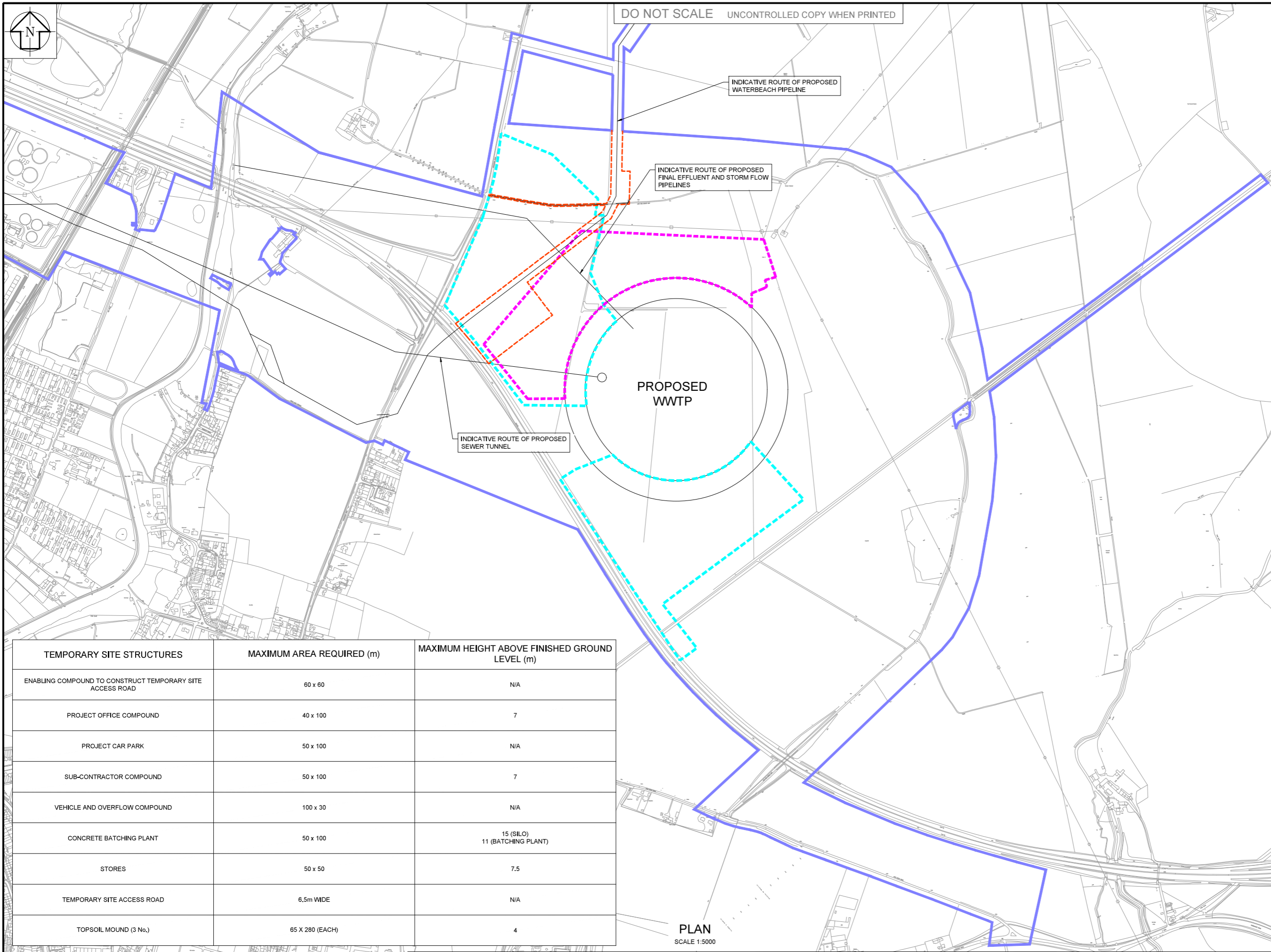
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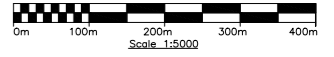
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- LEGEND**
- EIA SCOPING BOUNDARY
 - ZONE WITHIN WHICH TEMPORARY COMPOUND AND ACCESS ROAD WOULD BE LOCATED
 - ZONE WITHIN WHICH TOPSOIL MOUNDS WOULD BE LOCATED
 - ZONE WITHIN WHICH WATERBEACH TEMPORARY COMPOUND AND WORKING AREAS WOULD BE LOCATED



TEMPORARY SITE STRUCTURES	MAXIMUM AREA REQUIRED (m)	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL (m)
ENABLING COMPOUND TO CONSTRUCT TEMPORARY SITE ACCESS ROAD	60 x 60	N/A
PROJECT OFFICE COMPOUND	40 x 100	7
PROJECT CAR PARK	50 x 100	N/A
SUB-CONTRACTOR COMPOUND	50 x 100	7
VEHICLE AND OVERFLOW COMPOUND	100 x 30	N/A
CONCRETE BATCHING PLANT	50 x 100	15 (SILO) 11 (BATCHING PLANT)
STORES	50 x 50	7.5
TEMPORARY SITE ACCESS ROAD	6.5m WIDE	N/A
TOPSOIL MOUND (3 No.)	65 X 280 (EACH)	4

PLAN
SCALE 1:5000



PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
**EIA SCOPING REPORT - FIG 09
PARAMETER PLAN - TEMP CONSTRUCTION AREAS, DEPTHS & HEIGHTS - ZONE 1 OPT 3**



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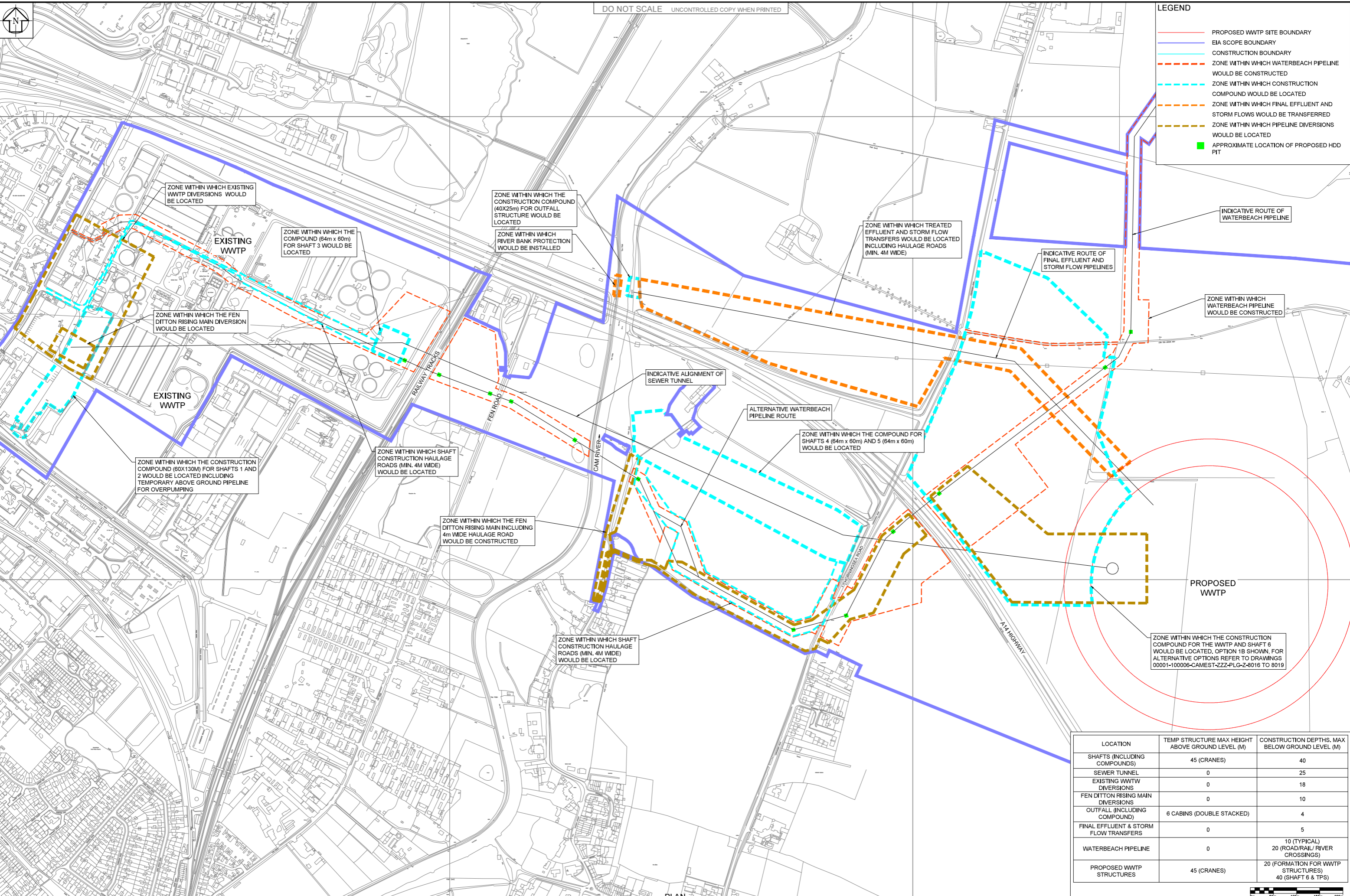
DRAWING No. **00001-100006-CAMEST-ZZZ-PLG-Z-8019**

A1



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- LEGEND**
- PROPOSED WWTP SITE BOUNDARY
 - EIA SCOPE BOUNDARY
 - CONSTRUCTION BOUNDARY
 - - - ZONE WITHIN WHICH WATERBEACH PIPELINE WOULD BE CONSTRUCTED
 - - - ZONE WITHIN WHICH CONSTRUCTION COMPOUND WOULD BE LOCATED
 - - - ZONE WITHIN WHICH FINAL EFFLUENT AND STORM FLOWS WOULD BE TRANSFERRED
 - - - ZONE WITHIN WHICH PIPELINE DIVERSIONS WOULD BE LOCATED
 - APPROXIMATE LOCATION OF PROPOSED HDD PIT



ZONE WITHIN WHICH EXISTING WWTP DIVERSIONS WOULD BE LOCATED

EXISTING WWTP

ZONE WITHIN WHICH THE COMPOUND (64m x 60m) FOR SHAFT 3 WOULD BE LOCATED

ZONE WITHIN WHICH THE CONSTRUCTION COMPOUND (40x25m) FOR OUTFALL STRUCTURE WOULD BE LOCATED

ZONE WITHIN WHICH RIVER BANK PROTECTION WOULD BE INSTALLED

ZONE WITHIN WHICH TREATED EFFLUENT AND STORM FLOW TRANSFERS WOULD BE LOCATED INCLUDING HAULAGE ROADS (MIN. 4M WIDE)

INDICATIVE ROUTE OF FINAL EFFLUENT AND STORM FLOW PIPELINES

INDICATIVE ROUTE OF WATERBEACH PIPELINE

ZONE WITHIN WHICH WATERBEACH PIPELINE WOULD BE CONSTRUCTED

ZONE WITHIN WHICH THE FEN DITTON RISING MAIN DIVERSION WOULD BE LOCATED

EXISTING WWTP

INDICATIVE ALIGNMENT OF SEWER TUNNEL

ALTERNATIVE WATERBEACH PIPELINE ROUTE

ZONE WITHIN WHICH THE COMPOUND FOR SHAFTS 4 (64m x 60m) AND 5 (64m x 60m) WOULD BE LOCATED

ZONE WITHIN WHICH THE CONSTRUCTION COMPOUND (60x130M) FOR SHAFTS 1 AND 2 WOULD BE LOCATED INCLUDING TEMPORARY ABOVE GROUND PIPELINE FOR OVERPUMPING

ZONE WITHIN WHICH SHAFT CONSTRUCTION HAULAGE ROADS (MIN. 4M WIDE) WOULD BE LOCATED

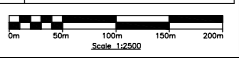
ZONE WITHIN WHICH THE FEN DITTON RISING MAIN INCLUDING 4m WIDE HAULAGE ROAD WOULD BE CONSTRUCTED

ZONE WITHIN WHICH SHAFT CONSTRUCTION HAULAGE ROADS (MIN. 4M WIDE) WOULD BE LOCATED

PROPOSED WWTP

ZONE WITHIN WHICH THE CONSTRUCTION COMPOUND FOR THE WWTP AND SHAFT 6 WOULD BE LOCATED. OPTION 1B SHOWN, FOR ALTERNATIVE OPTIONS REFER TO DRAWINGS 00001-100006-CAMEST-ZZZ-PLG-Z-8016 TO 8019

LOCATION	TEMP STRUCTURE MAX HEIGHT ABOVE GROUND LEVEL (M)	CONSTRUCTION DEPTHS, MAX BELOW GROUND LEVEL (M)
SHAFTS (INCLUDING COMPOUNDS)	45 (CRANES)	40
SEWER TUNNEL	0	25
EXISTING WWTP DIVERSIONS	0	18
FEN DITTON RISING MAIN DIVERSIONS	0	10
OUTFALL (INCLUDING COMPOUND)	6 CABINS (DOUBLE STACKED)	4
FINAL EFFLUENT & STORM FLOW TRANSFERS	0	5
WATERBEACH PIPELINE	0	10 (TYPICAL) 20 (ROAD/RAIL/ RIVER CROSSINGS)
PROPOSED WWTP STRUCTURES	45 (CRANES)	20 (FORMATION FOR WWTP STRUCTURES) 40 (SHAFT 6 & TPS)



PLAN SCALE 1:2500

PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
EIA SCOPING REPORT - FIG 10
PARAMETER PLAN - TEMP CONSTRUCTION AREAS, DEPTHS & HEIGHTS - ZONE 2






DRAWING NO.
00001-100006-CAMEST-ZZZ-PLG-Z-8020

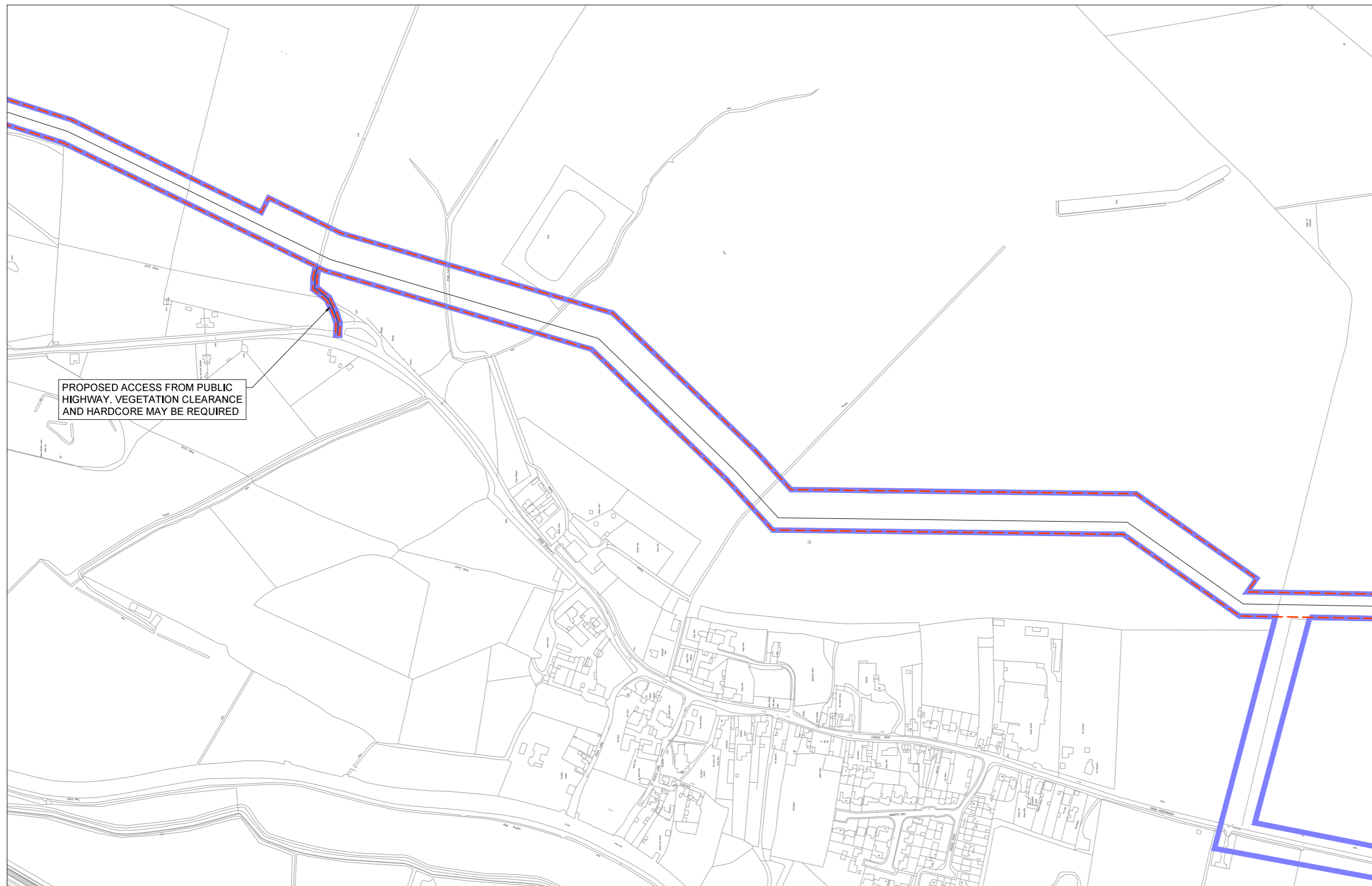
A0



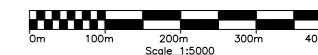
LEGEND

-  EIA SCOPING BOUNDARY
-  ZONE WITHIN WHICH WATERBEACH TEMPORARY COMPOUND AND WORKING AREAS WOULD BE LOCATED
-  APPROXIMATE LOCATION OF PROPOSED HDD PIT

LOCATION	MAX STRUCTURE HEIGHT ABOVE GROUND LEVEL (M)	CONSTRUCTION DEPTHS, MAX BELOW GROUND LEVEL (M)
TEMPORARY COMPOUNDS	6	0
WATERBEACH PIPELINE	0	10



PROPOSED ACCESS FROM PUBLIC HIGHWAY. VEGETATION CLEARANCE AND hardcore MAY BE REQUIRED



PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 11
 PARAMETER PLAN - TEMP CONSTRUCTION
 AREAS, DEPTHS & HEIGHTS - ZONE 3 (SHT 1/3)**

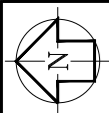


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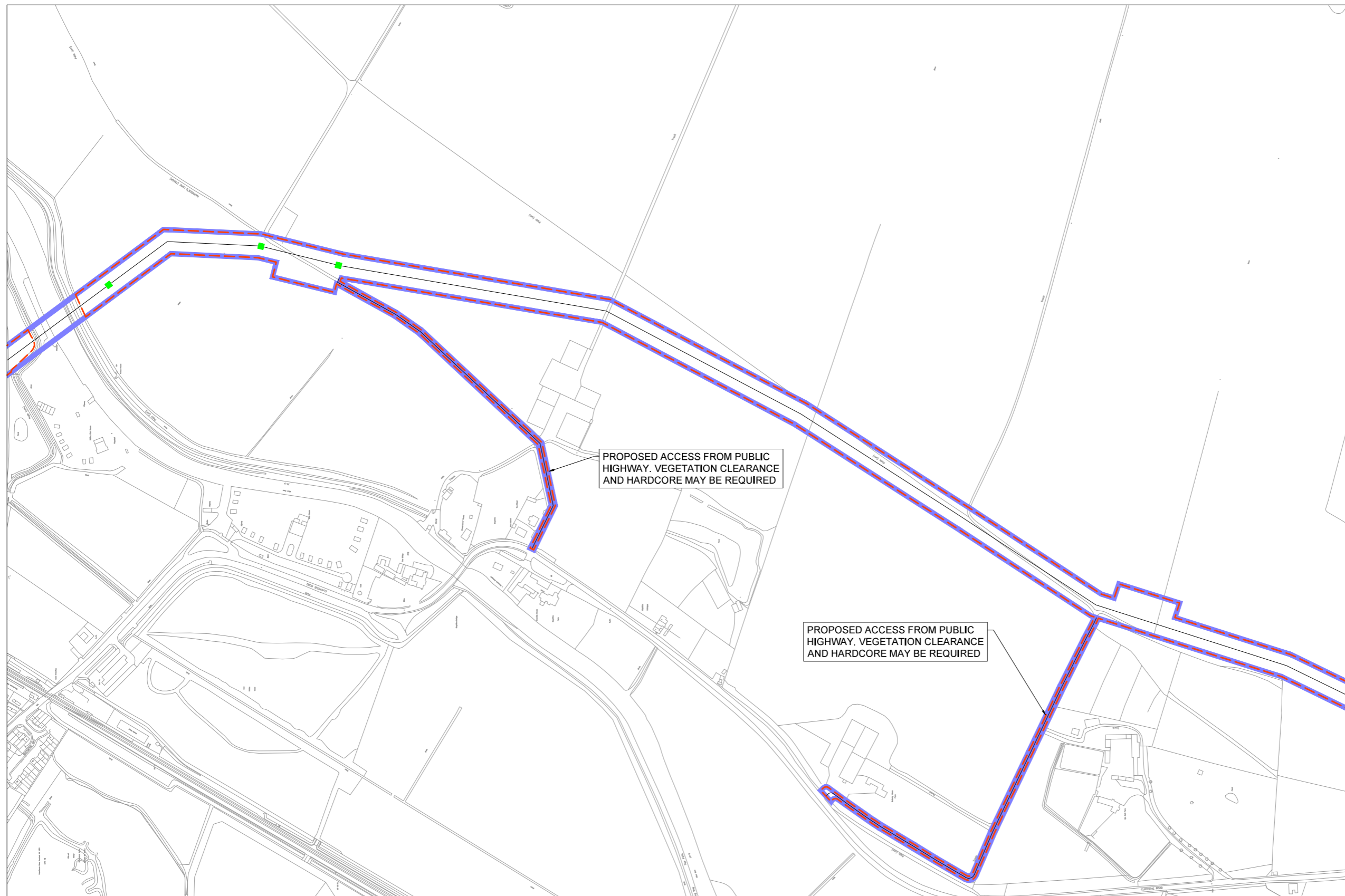
A1



LEGEND

-  EIA SCOPING BOUNDARY
-  ZONE WITHIN WHICH WATERBEACH TEMPORARY COMPOUND AND WORKING AREAS WOULD BE LOCATED
-  APPROXIMATE LOCATION OF PROPOSED HDD PIT

LOCATION	MAX STRUCTURE HEIGHT ABOVE GROUND LEVEL (M)	CONSTRUCTION DEPTHS, MAX BELOW GROUND LEVEL (M)
TEMPORARY COMPOUNDS	6	0
WATERBEACH PIPELINE	0	10 (TYPICAL) 20 (ROAD/RAIL/RIVER CROSSINGS)



PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 12
 PARAMETER PLAN - TEMP CONSTRUCTION
 AREAS, DEPTHS & HEIGHTS - ZONE 3 (SHT 2/3)**

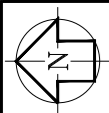


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A1

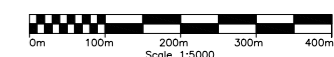
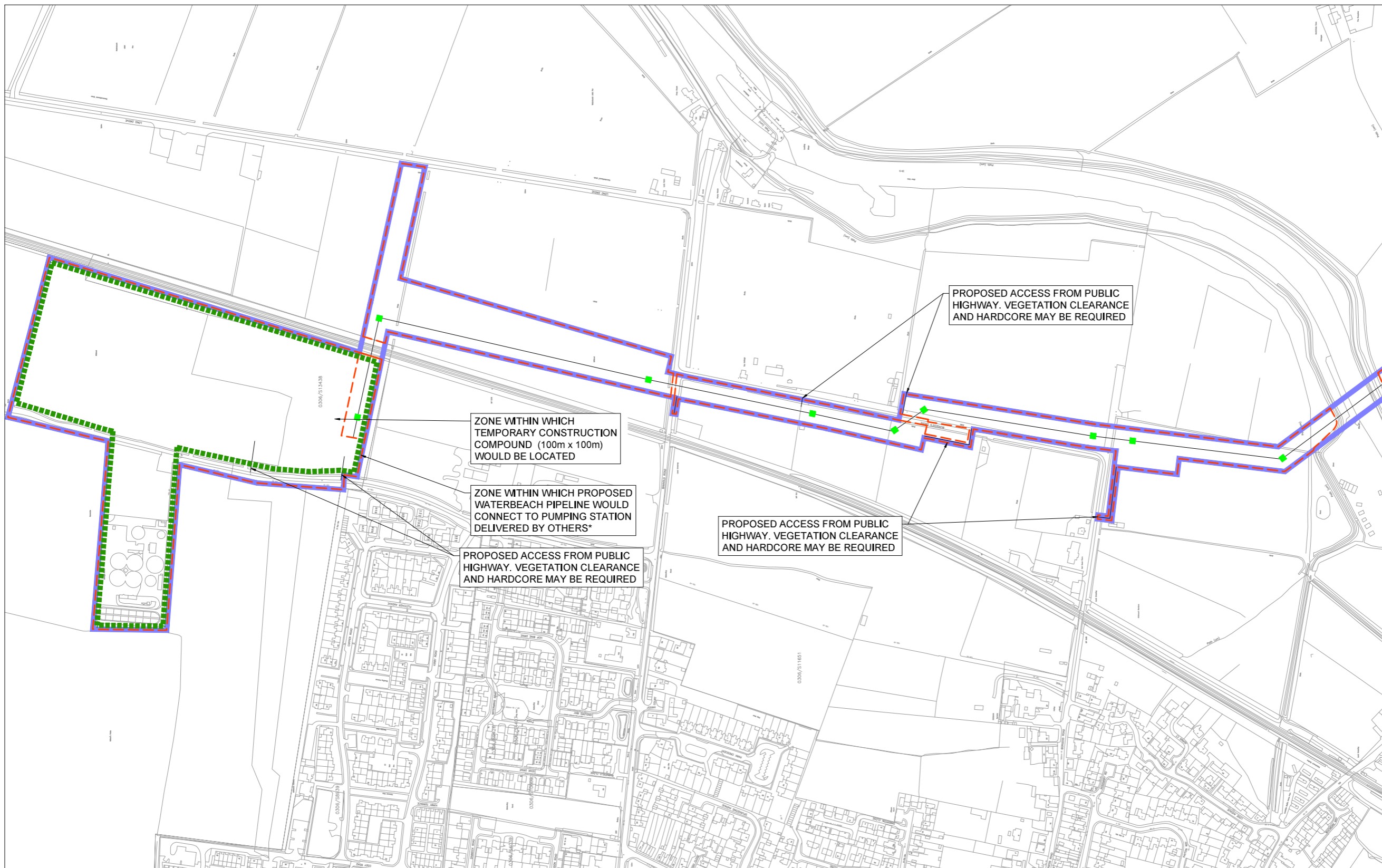


LEGEND

-  EIA SCOPING BOUNDARY
-  ZONE WITHIN WHICH WATERBEACH TEMPORARY COMPOUND AND WORKING AREAS WOULD BE LOCATED
-  ZONE WITHIN WHICH CONSTRUCTION COMPOUND WOULD BE LOCATED AND PROPOSED WATERBEACH PIPELINE WOULD CONNECT TO PUMPING STATION DELIVERED BY OTHERS*
-  APPROXIMATE LOCATION OF PROPOSED HDD PIT

LOCATION	MAX STRUCTURE HEIGHT ABOVE GROUND LEVEL (M)	CONSTRUCTION DEPTHS, MAX BELOW GROUND LEVEL (M)
TEMPORARY COMPOUNDS	6	0
WATERBEACH PIPELINE	0	10 (TYPICAL) 20 (ROAD/RIVER/RAIL CROSSINGS)

* PERMISSION TO BE GRANTED UNDER SEPARATE PLANNING APPLICATION SUBMITTED BY RLW ESTATES (Ref: S/2078/18/OL WATERBEACH NEW TOWN EAST), CONSTRUCTED AND MAINTAINED BY OTHERS, NOT PART OF THE PROPOSED CWWTPRP PROPOSED DEVELOPMENT..



PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
**EIA SCOPING REPORT - FIG 13
PARAMETER PLAN - TEMP CONSTRUCTION AREAS, DEPTHS & HEIGHTS - ZONE 3 (SHT 3/3)**



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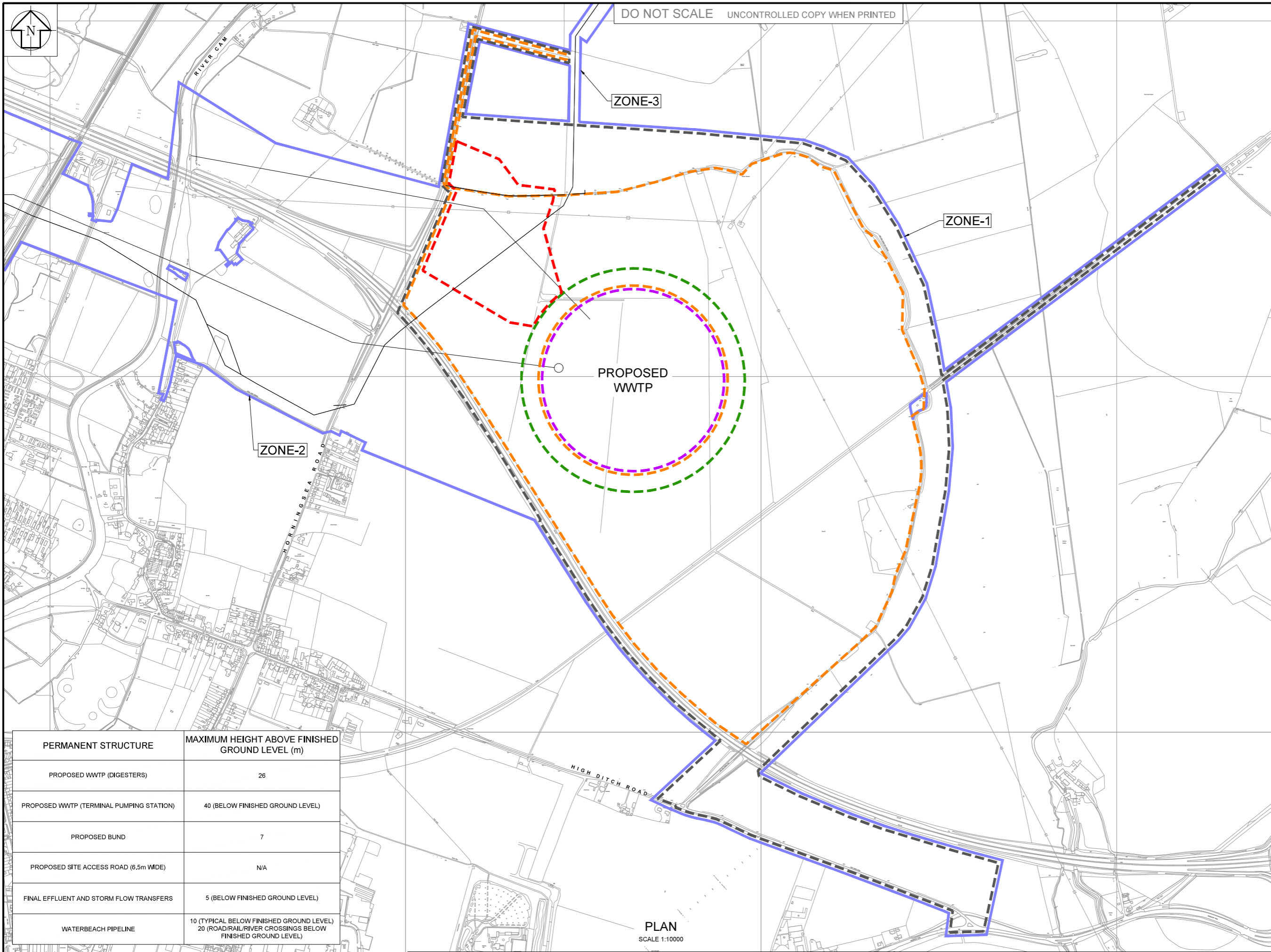
DRAWING No. **00001-100006-CAMEST-ZZZ-PLG-Z-8040**

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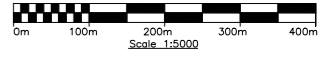
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- LEGEND**
-  EIA SCOPING BOUNDARY
 -  EXTENT OF ZONE 1
 -  ZONE WITHIN WHICH PROPOSED WWTP WOULD BE LOCATED
 -  ZONE WITHIN WHICH REQUIRED LANDSCAPING WOULD BE LOCATED
 -  ZONE WITHIN WHICH PROPOSED BUND WOULD BE LOCATED
 -  ZONE WITHIN WHICH PROPOSED ACCESS ROAD FROM PUBLIC HIGHWAY TO PROPOSED WWTP WOULD BE LOCATED



PERMANENT STRUCTURE	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL (m)
PROPOSED WWTP (DIGESTERS)	26
PROPOSED WWTP (TERMINAL PUMPING STATION)	40 (BELOW FINISHED GROUND LEVEL)
PROPOSED BUND	7
PROPOSED SITE ACCESS ROAD (6.5m WDE)	N/A
FINAL EFFLUENT AND STORM FLOW TRANSFERS	5 (BELOW FINISHED GROUND LEVEL)
WATERBEACH PIPELINE	10 (TYPICAL BELOW FINISHED GROUND LEVEL) 20 (ROAD/RAIL/RIVER CROSSINGS BELOW FINISHED GROUND LEVEL)

PLAN
SCALE 1:10000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
TREATMENT PLANT RELOCATION
PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 14
PARAMETER PLAN - PERMANENT STRUCTURES
AREAS, DEPTHS & HEIGHTS - ZONE 1 OPT 1A**



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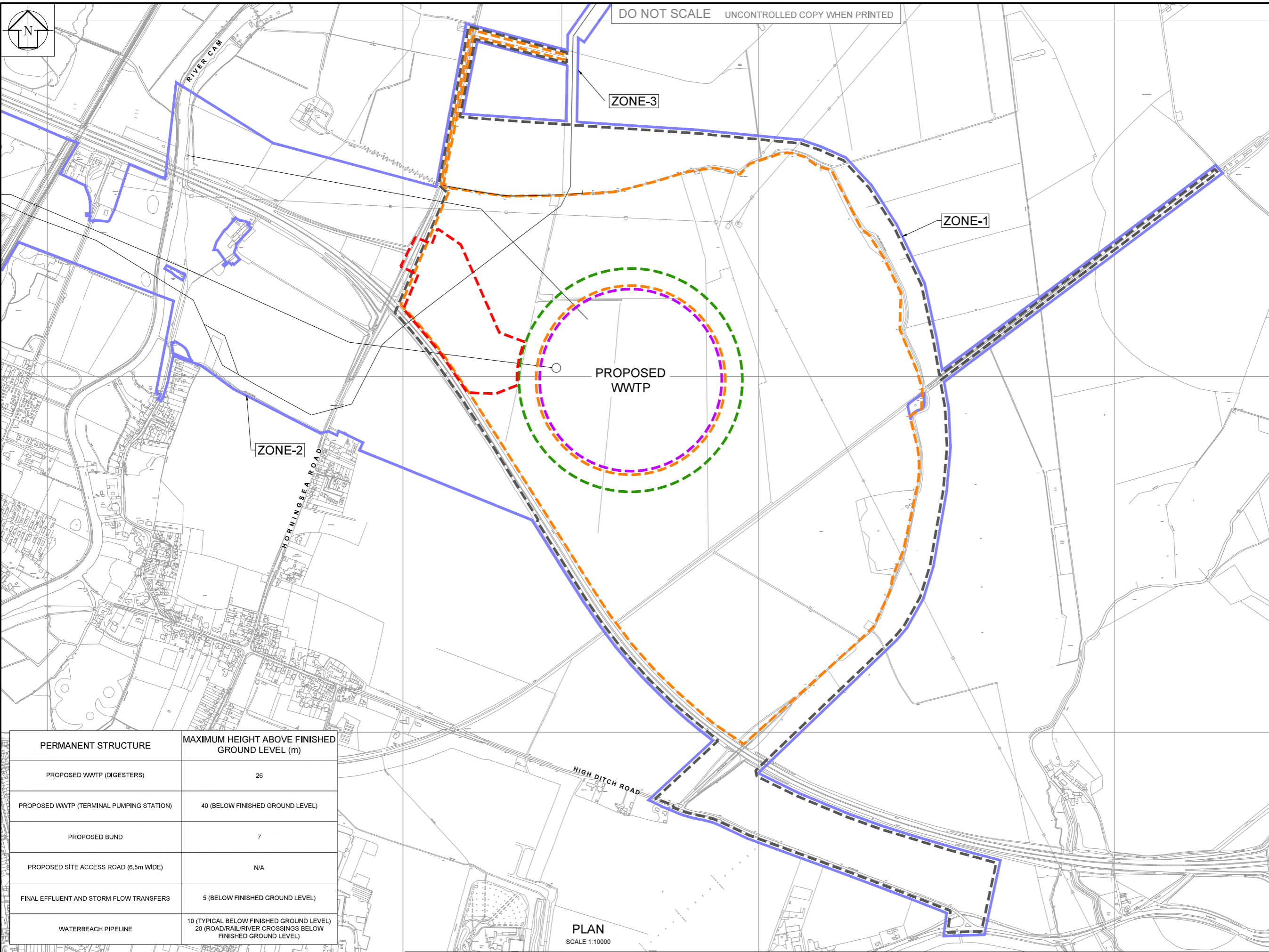
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A1



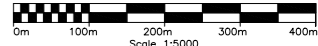
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- LEGEND**
-  EIA SCOPING BOUNDARY
 -  EXTENT OF ZONE 1
 -  ZONE WITHIN WHICH PROPOSED WWTP WOULD BE LOCATED
 -  ZONE WITHIN WHICH REQUIRED LANDSCAPING WOULD BE LOCATED
 -  ZONE WITHIN WHICH PROPOSED BUND WOULD BE LOCATED
 -  ZONE WITHIN WHICH PROPOSED ACCESS ROAD FROM PUBLIC HIGHWAY TO PROPOSED WWTP WOULD BE LOCATED

PERMANENT STRUCTURE	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL (m)
PROPOSED WWTP (DIGESTERS)	26
PROPOSED WWTP (TERMINAL PUMPING STATION)	40 (BELOW FINISHED GROUND LEVEL)
PROPOSED BUND	7
PROPOSED SITE ACCESS ROAD (6.5m WDE)	N/A
FINAL EFFLUENT AND STORM FLOW TRANSFERS	5 (BELOW FINISHED GROUND LEVEL)
WATERBEACH PIPELINE	10 (TYPICAL BELOW FINISHED GROUND LEVEL) 20 (ROAD/RAIL/RIVER CROSSINGS BELOW FINISHED GROUND LEVEL)

PLAN
SCALE 1:10000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 15
 PARAMETER PLAN - PERMANENT STRUCTURES
 AREAS, DEPTHS & HEIGHTS - ZONE 1 OPT 1B**

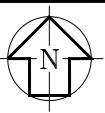


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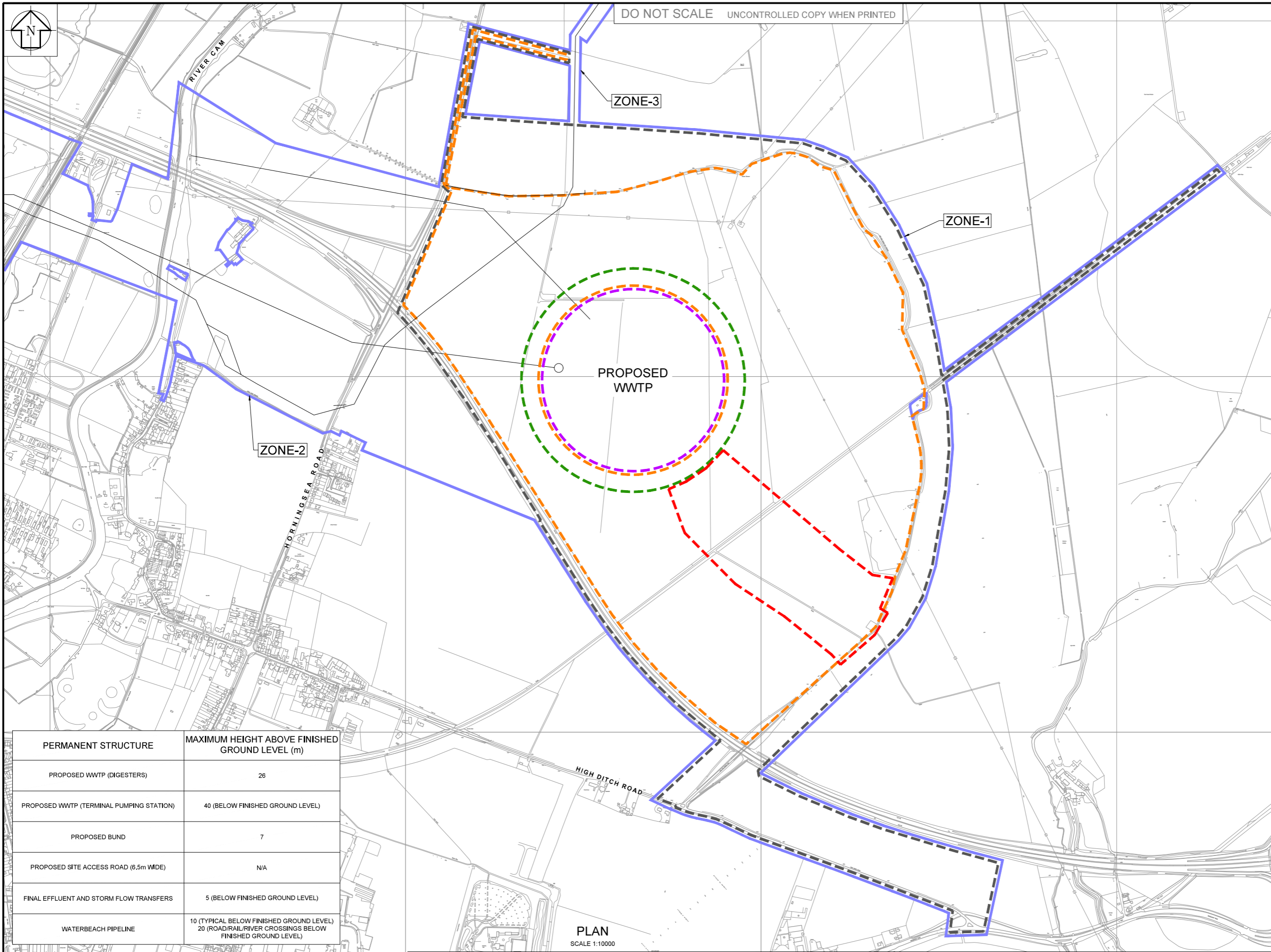
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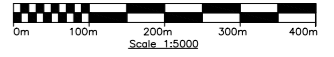
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- LEGEND**
- EIA SCOPING BOUNDARY
 - EXTENT OF ZONE 1
 - ZONE WITHIN WHICH PROPOSED WWTP WOULD BE LOCATED
 - ZONE WITHIN WHICH REQUIRED LANDSCAPING WOULD BE LOCATED
 - ZONE WITHIN WHICH PROPOSED BUND WOULD BE LOCATED
 - ZONE WITHIN WHICH PROPOSED ACCESS ROAD FROM PUBLIC HIGHWAY TO PROPOSED WWTP WOULD BE LOCATED

PERMANENT STRUCTURE	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL (m)
PROPOSED WWTP (DIGESTERS)	26
PROPOSED WWTP (TERMINAL PUMPING STATION)	40 (BELOW FINISHED GROUND LEVEL)
PROPOSED BUND	7
PROPOSED SITE ACCESS ROAD (6.5m WDE)	N/A
FINAL EFFLUENT AND STORM FLOW TRANSFERS	5 (BELOW FINISHED GROUND LEVEL)
WATERBEACH PIPELINE	10 (TYPICAL BELOW FINISHED GROUND LEVEL) 20 (ROAD/RAIL/RIVER CROSSINGS BELOW FINISHED GROUND LEVEL)

PLAN
SCALE 1:10000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
TREATMENT PLANT RELOCATION
PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 16
PARAMETER PLAN - PERMANENT STRUCTURES
AREAS, DEPTHS & HEIGHTS - ZONE 1 OPT 2**



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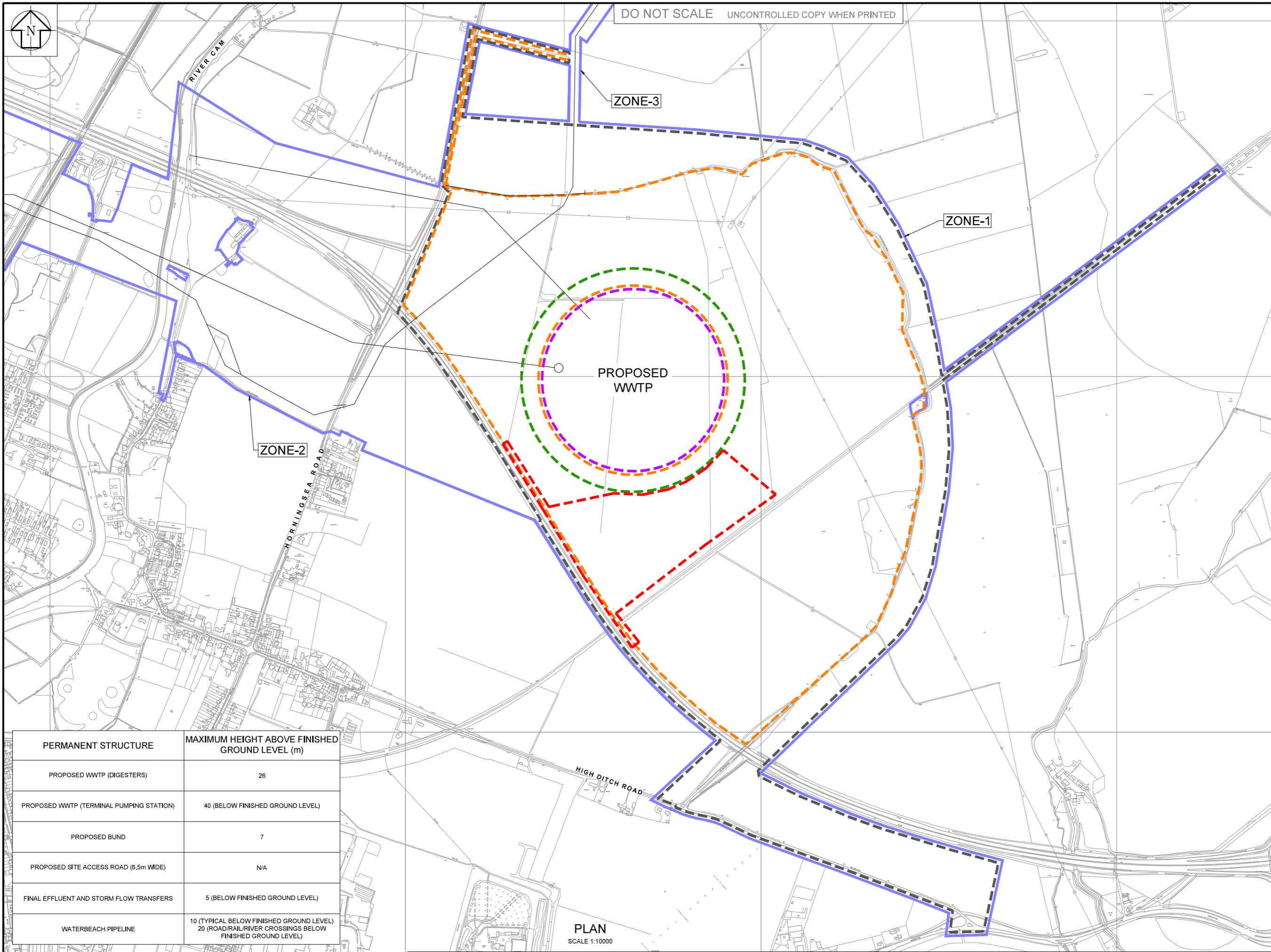
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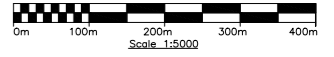
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- LEGEND**
-  EIA SCOPING BOUNDARY
 -  EXTENT OF ZONE 1
 -  ZONE WITHIN WHICH PROPOSED WWTP WOULD BE LOCATED
 -  ZONE WITHIN WHICH REQUIRED LANDSCAPING WOULD BE LOCATED
 -  ZONE WITHIN WHICH PROPOSED BUND WOULD BE LOCATED
 -  ZONE WITHIN WHICH PROPOSED ACCESS ROAD FROM PUBLIC HIGHWAY TO PROPOSED WWTP WOULD BE LOCATED



PERMANENT STRUCTURE	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL (m)
PROPOSED WWTP (DIGESTERS)	26
PROPOSED WWTP (TERMINAL PUMPING STATION)	40 (BELOW FINISHED GROUND LEVEL)
PROPOSED BUND	7
PROPOSED SITE ACCESS ROAD (6.5m WDE)	N/A
FINAL EFFLUENT AND STORM FLOW TRANSFERS	5 (BELOW FINISHED GROUND LEVEL)
WATERBEACH PIPELINE	10 (TYPICAL BELOW FINISHED GROUND LEVEL) 20 (ROAD/RAIL/RIVER CROSSINGS BELOW FINISHED GROUND LEVEL)

PLAN
SCALE 1:10000



PROJECT TITLE
**CAMBRIDGE WASTEWATER
TREATMENT PLANT RELOCATION
PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 17
PARAMETER PLAN - PERMANENT STRUCTURES
AREAS, DEPTHS & HEIGHTS - ZONE 1 OPT 3**



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A1

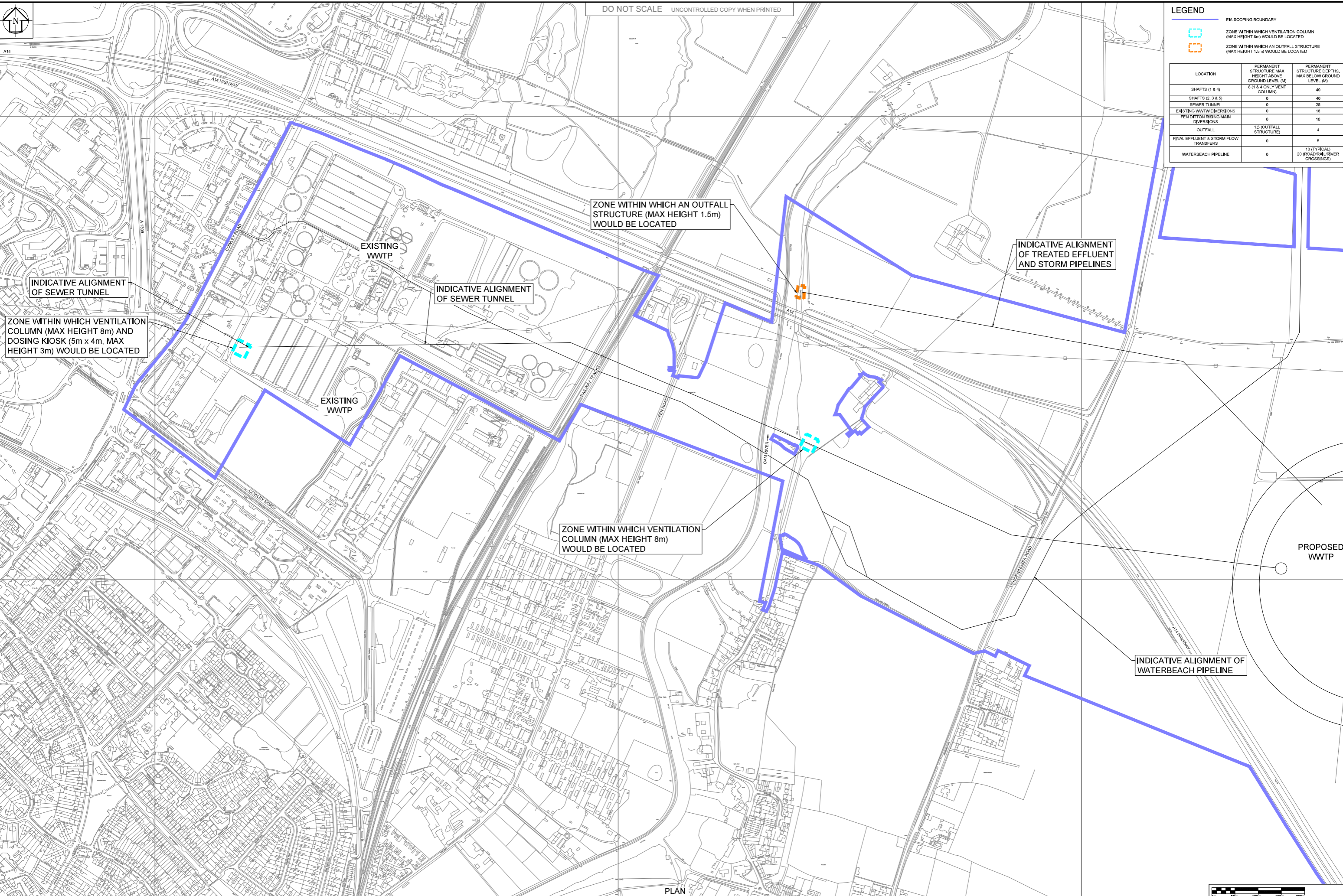


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LEGEND

- EIA SCOPING BOUNDARY
- ZONE WITHIN WHICH VENTILATION COLUMN (MAX HEIGHT 8m) WOULD BE LOCATED
- ZONE WITHIN WHICH AN OUTFALL STRUCTURE (MAX HEIGHT 1.5m) WOULD BE LOCATED

LOCATION	PERMANENT STRUCTURE MAX HEIGHT ABOVE GROUND LEVEL (M)	PERMANENT STRUCTURE DEPTHS, MAX BELOW GROUND LEVEL (M)
SHAFTS (1 & 4)	8 (1 & 4 GILTY VENT COLUMN)	40
SHAFTS (2, 3 & 5)	0	40
SEWER TUNNEL	0	25
EXISTING WWTP DIVERSIONS	0	18
FEN DITCH RISING MAIN DIVERSIONS	0	10
OUTFALL	1.5 (OUTFALL STRUCTURE)	4
FINAL EFFLUENT & STORM FLOW TRANSFERS	0	5
WATERBEACH PIPELINE	0	10 (TYPICAL) 20 (ROAD/RAIL/RIVER CROSSINGS)



INDICATIVE ALIGNMENT OF SEWER TUNNEL

ZONE WITHIN WHICH VENTILATION COLUMN (MAX HEIGHT 8m) AND DOSING KIOSK (5m x 4m, MAX HEIGHT 3m) WOULD BE LOCATED

EXISTING WWTP

INDICATIVE ALIGNMENT OF SEWER TUNNEL

ZONE WITHIN WHICH AN OUTFALL STRUCTURE (MAX HEIGHT 1.5m) WOULD BE LOCATED

INDICATIVE ALIGNMENT OF TREATED EFFLUENT AND STORM PIPELINES

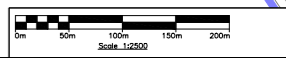
EXISTING WWTP

ZONE WITHIN WHICH VENTILATION COLUMN (MAX HEIGHT 8m) WOULD BE LOCATED

INDICATIVE ALIGNMENT OF WATERBEACH PIPELINE

PROPOSED WWTP

PLAN SCALE 1:2500



PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
EIA SCOPING REPORT - FIG 18
PARAMETER PLAN - PERMANENT STRUCTURES AREAS, DEPTHS & HEIGHTS - ZONE 2

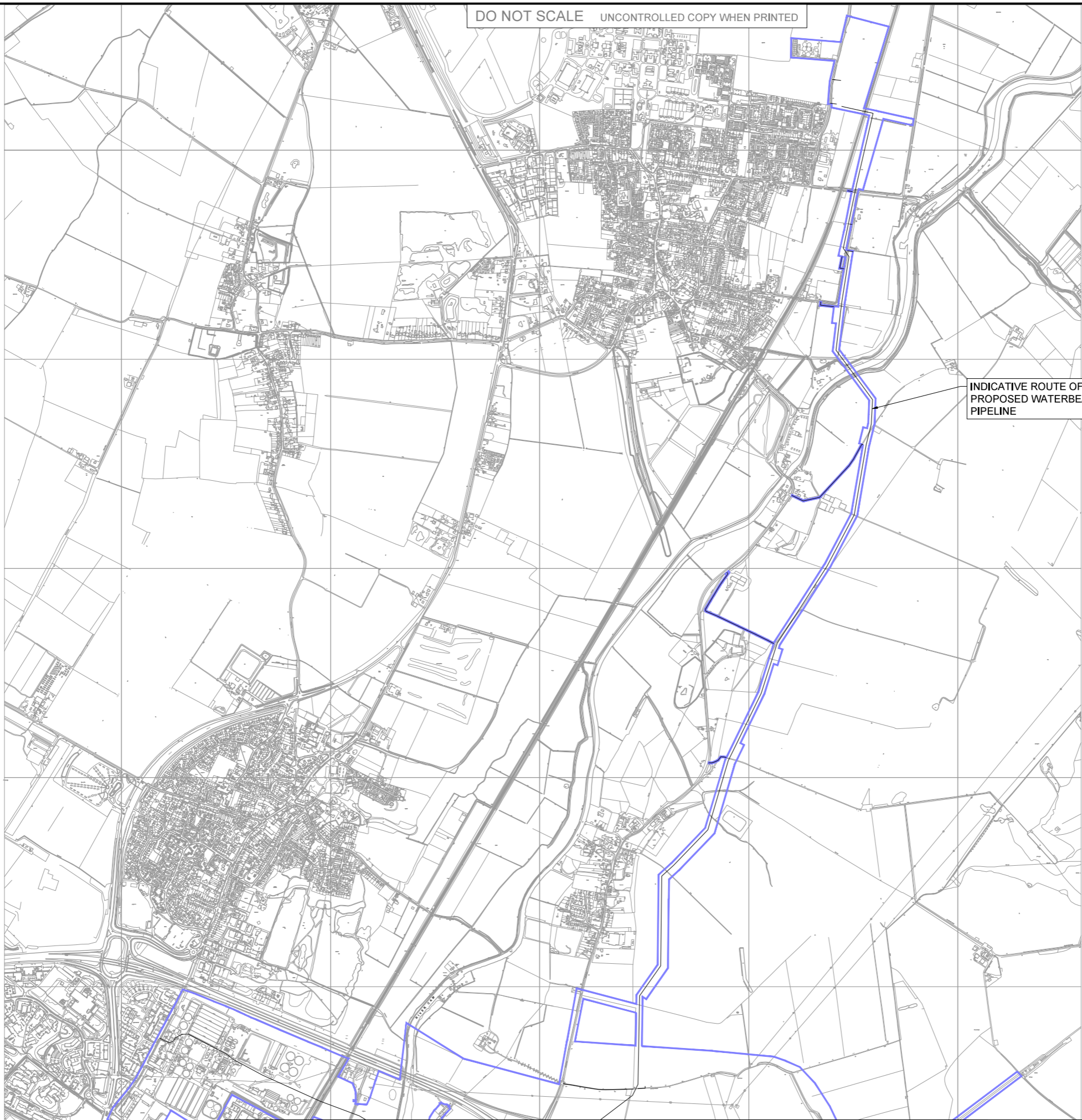


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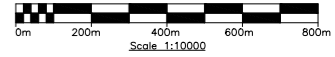
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INDICATIVE ROUTE OF PROPOSED WATERBEACH PIPELINE

LEGEND

 EIA SCOPING BOUNDARY		
PERMANENT STRUCTURES	MAXIMUM HEIGHT ABOVE FINISHED GROUND LEVEL	MAXIMUM DEPTH BELOW FINISHED GROUND LEVEL
WATERBEACH PIPELINE (UNDERGROUND) & GROUND LEVEL MANHOLES/AR VALES	0m	10m (TYPICAL) 20m (ROAD/RAIL/RIVER CROSSINGS)



PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
**EIA SCOPING REPORT - FIG 19
 PARAMETER PLAN - PERMANENT STRUCTURES
 AREAS, DEPTHS & HEIGHTS - ZONE 3**



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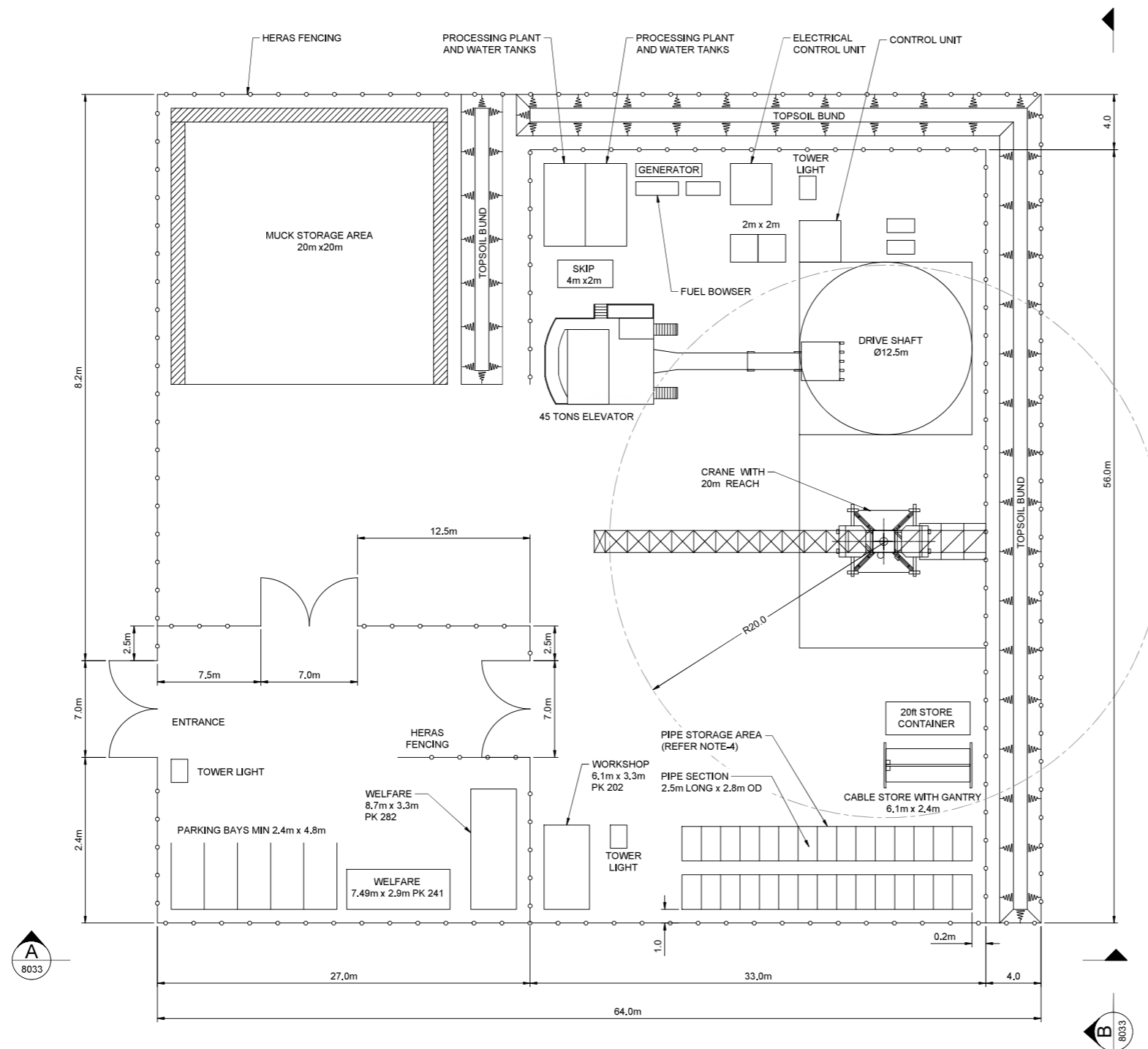
A1

GENERAL NOTES

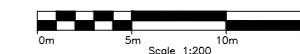
1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS IN METRES RELATIVE TO ORDNANCE DATUM NEWLYN.
3. THE SITE LAYOUT IS INDICATIVE, EQUIPMENT SPACING ALLOWS FOR ESTIMATED DSEAR ZONING AND EXCLUSION ZONES FROM HEAT SOURCES. THE INFORMATION SHOULD BE TREATED WITH CAUTION AND SUPERSEDED BY A SITE SPECIFIC DSEAR STUDY.
4. PIPE STORAGE AREA REQUIRED AT DRIVE SHAFT COMPOUNDS ONLY.
5. SEE DRAWING 00001-100006-CAMEST-PUM-PLG-Z-8033 (FIG 21) FOR ELEVATIONS.

REFERENCE DRAWING

00001-100006-CAMEST-PUM-PLG-Z-8033 EIA SCOPING REPORT - FIG 21
TYPICAL CONSTRUCTION COMPOUND (SHAFT) ELEVATIONS



PLAN
SCALE 1:200



PROJECT TITLE
**CAMBRIDGE WASTEWATER
TREATMENT PLANT RELOCATION
PROJECT (CWWTPRP)**

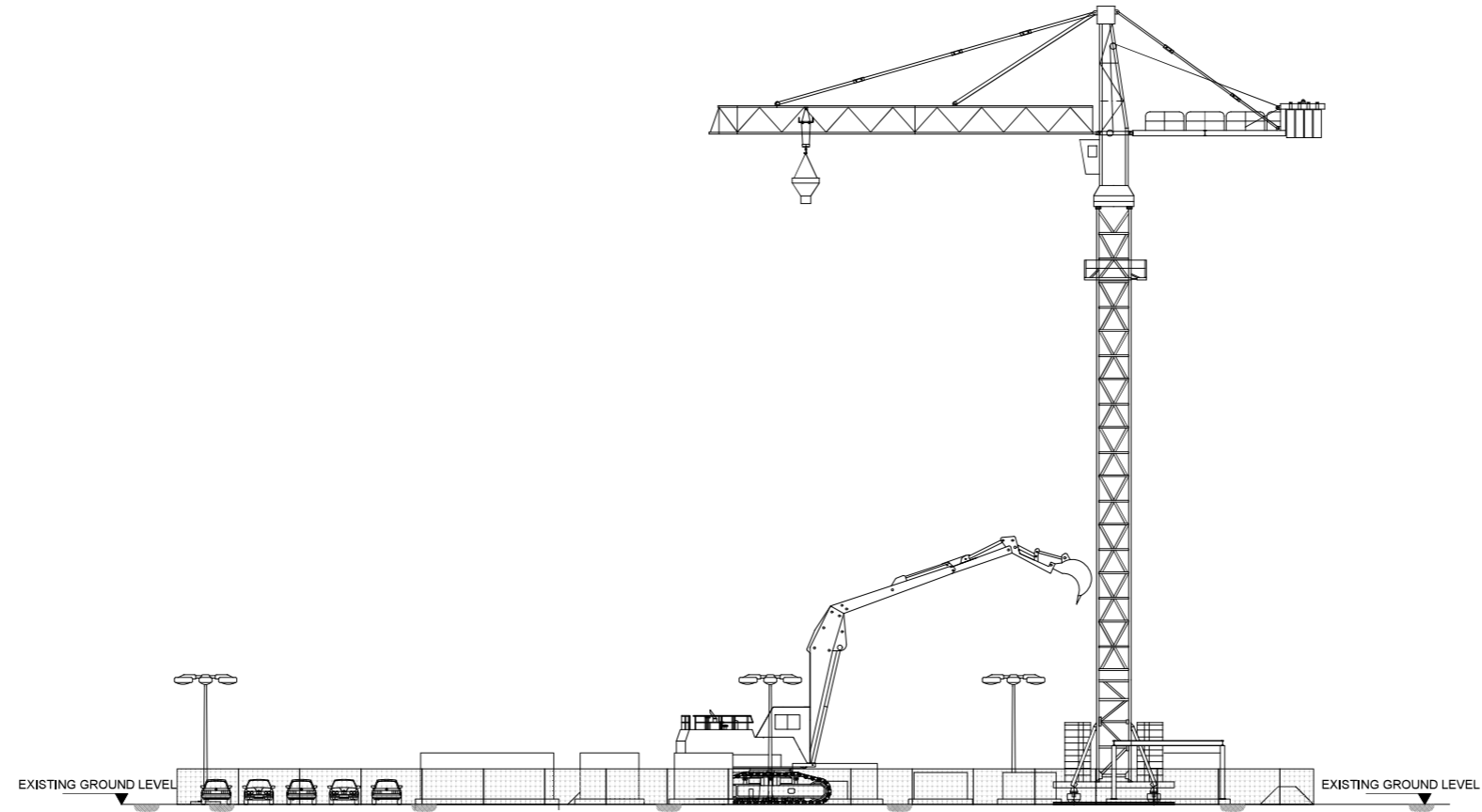
DRAWING TITLE
**EIA SCOPING REPORT - FIG 20
TYPICAL CONSTRUCTION
COMPOUND (SHAFT) PLAN**

anglianwater
@one
Thorpe Wood House, Thorpe Wood, Peterborough,
Cambridgeshire, PE3 6WJ
Tel: 01733 414100 Fax: 01733 414111

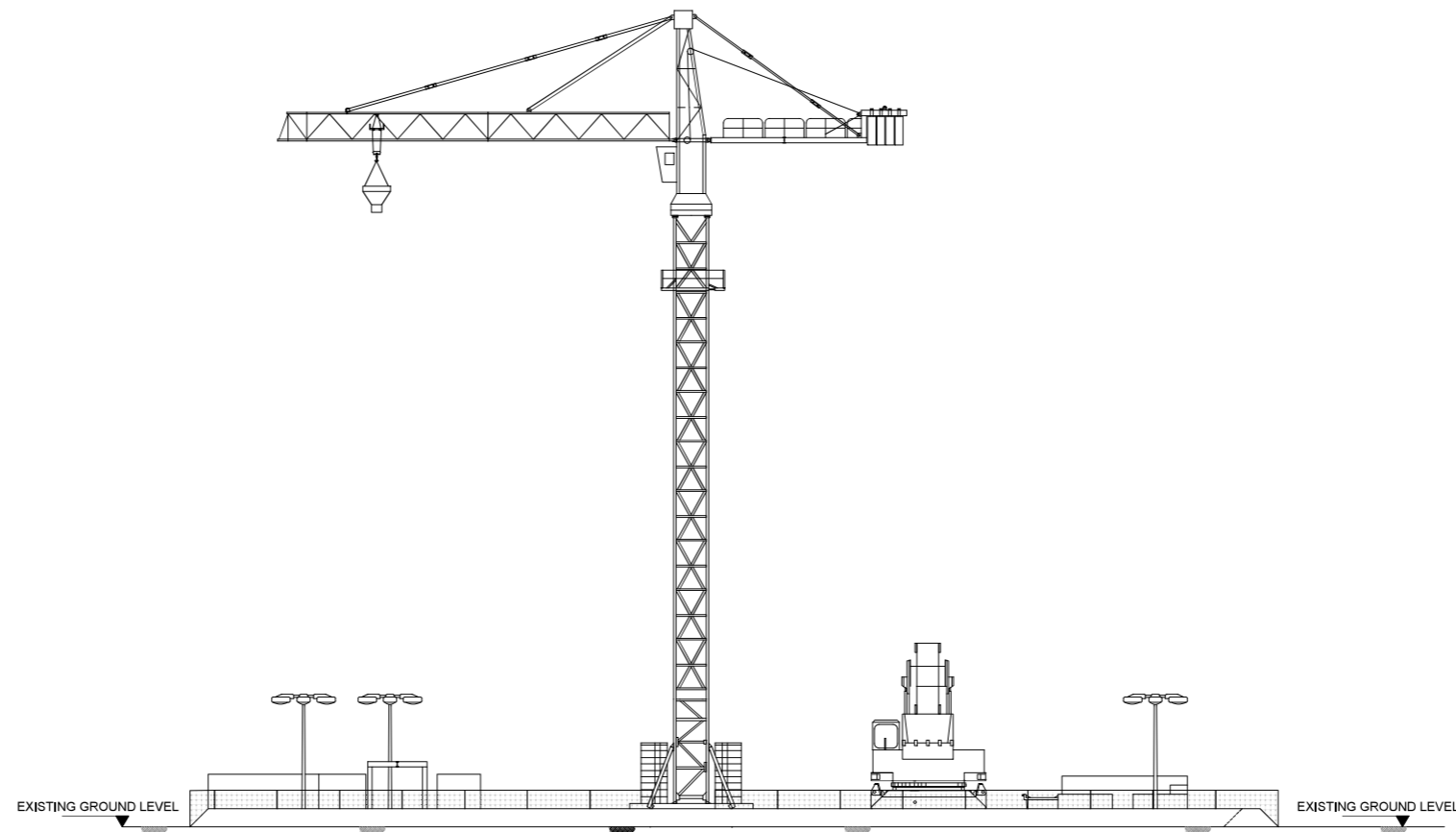
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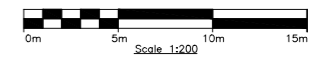
A1



ELEVATION A-A
SCALE 1:200



ELEVATION B-B
SCALE 1:200



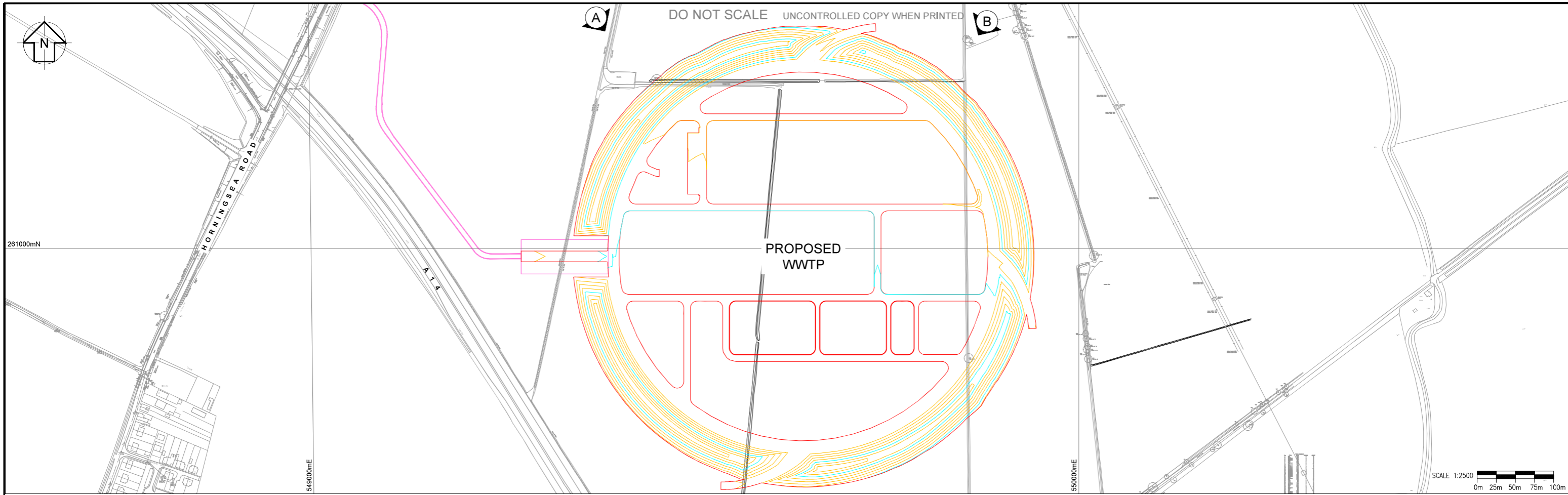
PROJECT TITLE
**CAMBRIDGE WASTEWATER
 TREATMENT PLANT RELOCATION
 PROJECT (CWWTPRP)**

DRAWING TITLE
**EIA SCOPING REPORT - FIG 21
 TYPICAL CONSTRUCTION
 COMPOUND (SHAFT) ELEVATIONS**

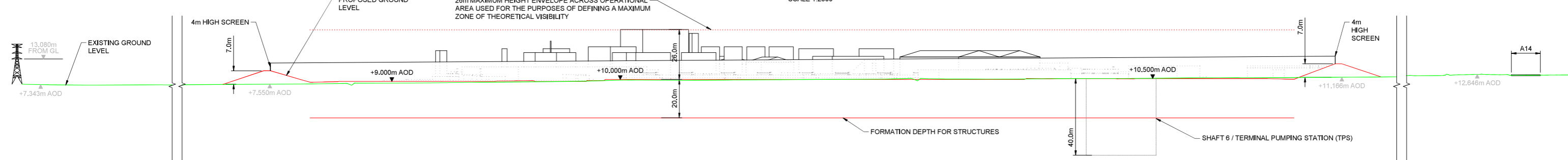


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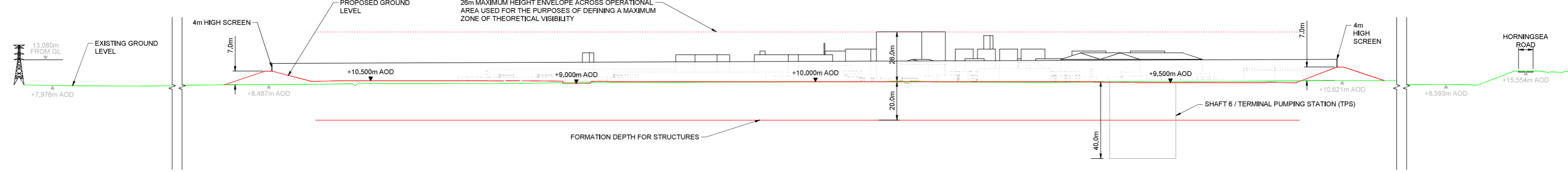
WWTP PLAN VIEW
SCALE 1:2500



PROPOSED WWTP ELEVATION A
SCALE 1:1000

A14 SECTION
SCALE 1:1000

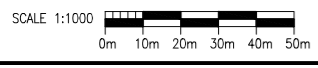
EXISTING OVERHEAD POWER CABLE PYLON SECTION
SCALE 1:1000



PROPOSED WWTP ELEVATION B
SCALE 1:1000

HORNINGSEA ROAD / A14 SECTION
SCALE 1:1000

EXISTING OVERHEAD POWER CABLE PYLON SECTION
SCALE 1:1000



PROJECT TITLE
CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION PROJECT (CWWTPRP)

DRAWING TITLE
EIA SCOPING REPORT - FIG 22 PARAMETER PLAN - PERMANENT STRUCTURES HEIGHTS AND DEPTHS - ZONE 1 (SHOWING ACCESS OPTION 1B FOR CONTEXT)

anglianwater
@one
Thorpe Wood House, Thorpe Wood, Peterborough, Cambridgeshire, PE3 6WT
Tel: 01733 414100 Fax: 01733 414111

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A1

B Transboundary Effects Screening Matrix

- 1.1.1 Regulation 32 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires the consideration of any likely significant effects on the environment of another European Economic Association (EEA) State.
- 1.2.1 Guidance upon the consideration of transboundary effects is provided in the Planning Inspectorate’s Advice Note 12: Development with significant transboundary impacts consultation²⁹².
- 1.3.1 The following screening matrix provides the consideration of transboundary effects for the proposed development, taking guidance from Advice Note 12 (Annex).

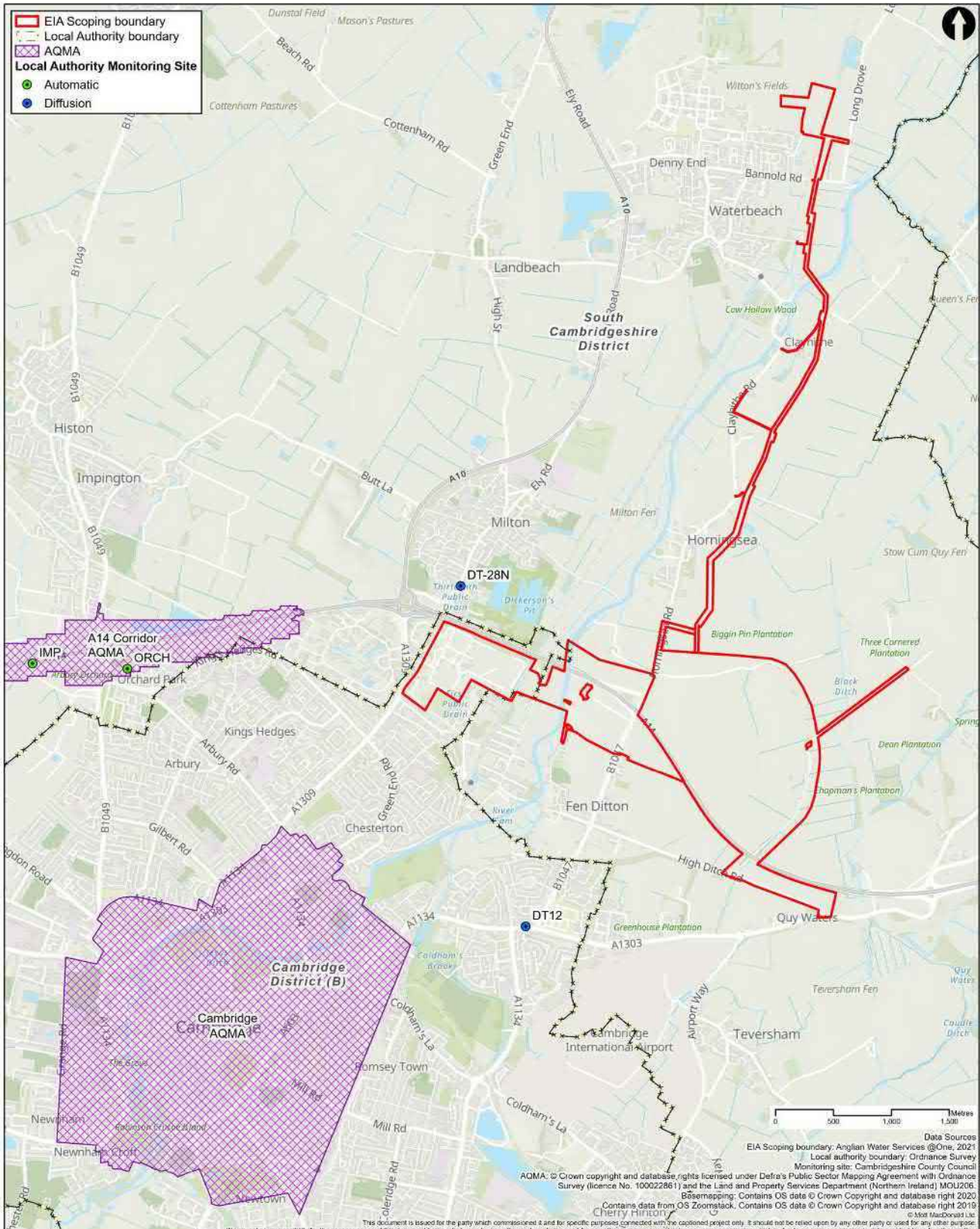
Table B1: Screening Matrix for Possible Substantial Effects on the Environment of Another EEA State

Criteria and relevant considerations	Commentary with regard to the Proposed Development
Characteristics of the development <ul style="list-style-type: none"> ● Size of the development ● Use of natural resources ● Production of waste ● Pollution and nuisance ● Risk of accidents · ● Use of technologies 	The resources required for the construction of the Proposed Development are likely to be obtained from the global market but it is envisaged that materials would be obtained locally wherever possible. No waste, nuisances or accidents are likely to extend beyond the border of the UK. No novel technologies are proposed that have potential for transboundary effects.
Location of development (including existing use) and Geographical area · What is the existing use? · What is the distance to another EEA state? (Name EEA state)? · What is the extent of the area of a likely impact under the jurisdiction of another EEA state?	The closest EEA boundary to the Proposed Development is France, located approximately 175km to the south-east. No impacts are likely to extend beyond the jurisdiction of the UK, with the exception of potential greenhouse gas emissions. The latter is expected to be minimal given the nature of the Proposed Development, which will minimise GHG emissions during its operation (except for any emissions associated with maintenance vehicles and repair works).
Environmental importance <ul style="list-style-type: none"> ● Are particular environmental values (e.g. protected areas – name them) likely to be affected? ● Capacity of the natural environment. ● Wetlands, coastal zones, mountain and forest areas, nature reserves and parks, Natura 2000 sites, areas where environmental quality standards already exceeded, densely populated areas, landscapes of historical, cultural or archaeological significance. 	There are a number of European statutory designated nature conservation sites within 10km of the Proposed Development. The potential for significant effects relating to these designated sites will be accounted for in the EIA. However, it is not anticipated that there is potential for transboundary effects (and therefore any effects on important environmental receptors beyond the UK).

²⁹² [Advice Note Twelve: Transboundary Impacts and Process | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk/advice-note-12-transboundary-impacts-and-process/)

Criteria and relevant considerations	Commentary with regard to the Proposed Development
Potential impacts and carrier <ul style="list-style-type: none"> ● By what means could impacts be spread (i.e. what pathways)? 	The only potential transboundary environmental impact which is considered likely is from greenhouse gas (GHG) emissions. These emissions would be spread by atmospheric processes and are anticipated to be minimal given the nature of the Proposed Development.
Extent <ul style="list-style-type: none"> ● What is the likely extent of the impact (geographical area and size of the affected population)? 	The only potential transboundary environmental impact which is considered likely is from greenhouse gas emissions, which are known to contribute to changes on climate on a global scale. The impact of GHG emissions is considered irreversible within human lifetimes. The temporal pattern of GHG emissions is likely to be relatively constant during the construction and decommissioning phases. It is proposed to calculate the likely greenhouse gas emissions as part of the EIA. Greenhouse gas impacts will be put into context in terms of their impact on the UK's 5-year carbon budgets which set legally binding targets for greenhouse gas emissions. In any event, the receptor for GHG emissions is the global atmosphere rather than individual countries, and it is not currently possible to determine if GHG emissions would change atmospheric processes or affect a particular country or state. There is therefore no potential for significant effects on the environment of any EEA State or group of EEA States resulting from GHG emissions from the Proposed Development. The assessment will present the GHG emissions and compare them with the UK national emissions inventory; transboundary effects from GHG emissions will not be considered further in the EIA.
Magnitude <ul style="list-style-type: none"> ● What will the likely magnitude of the change in relevant variables relative to the status quo, taking into account the sensitivity of the variable? 	
Probability <ul style="list-style-type: none"> ● What is the degree of probability of the impact? · Is the impact likely to occur as a consequence of normal conditions or exceptional situations, such as accidents? 	
Duration <ul style="list-style-type: none"> ● Is the impact likely to be temporary, short-term or long-term? · Is the impact likely to relate to the construction, operation or decommissioning phase of the activity? 	
Frequency <ul style="list-style-type: none"> ● What is likely to be the temporal pattern of the impact? 	
Reversibility <ul style="list-style-type: none"> ● Is the impact likely to be reversible or irreversible? 	
Cumulative impacts · Are other major developments close by?	Other Proposed Developments will be taken into consideration in the Environmental Impact Assessment (EIA). However, it is not anticipated that there is potential for significant cumulative transboundary effects.

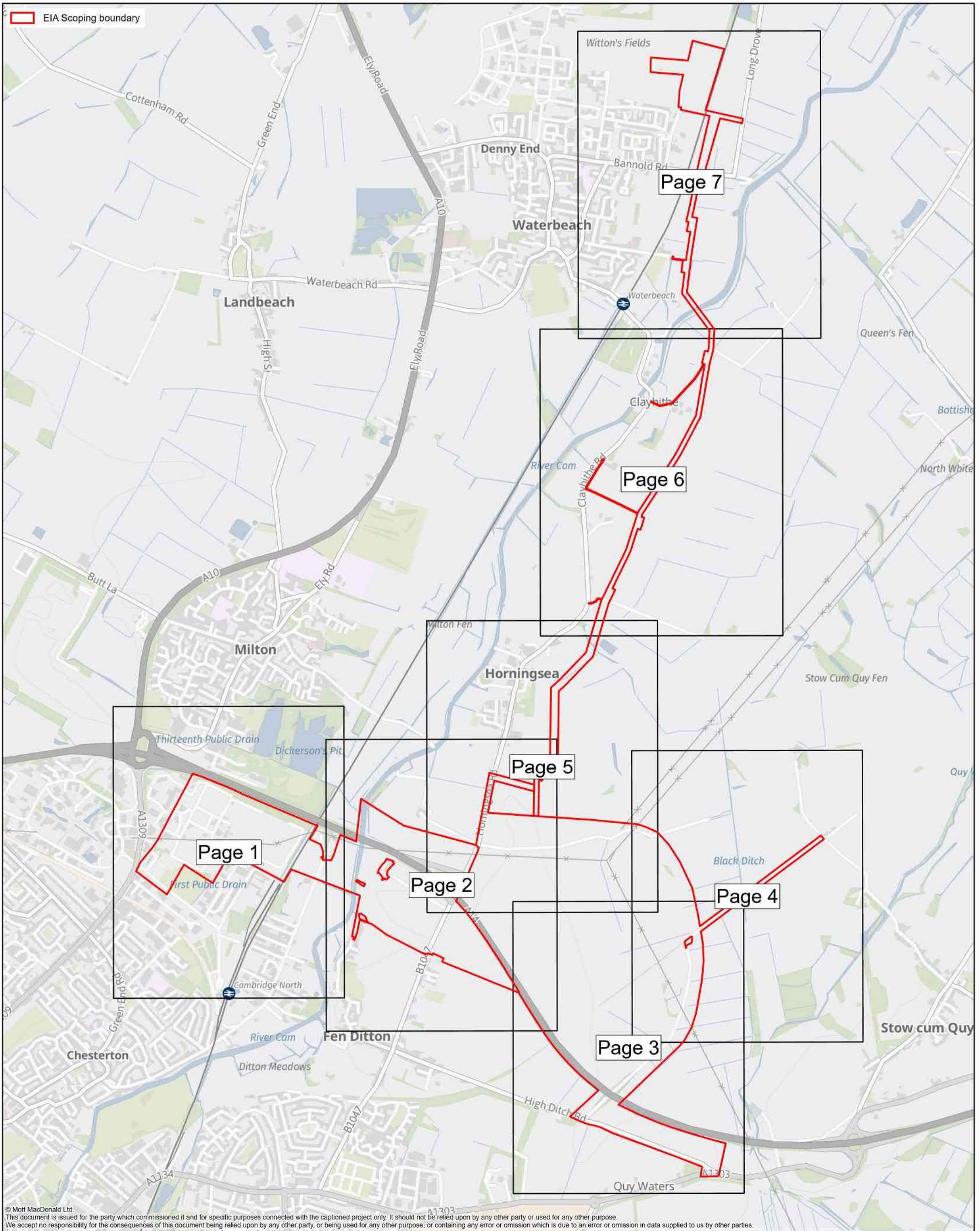
C. Local Authority Monitoring & AQMAs



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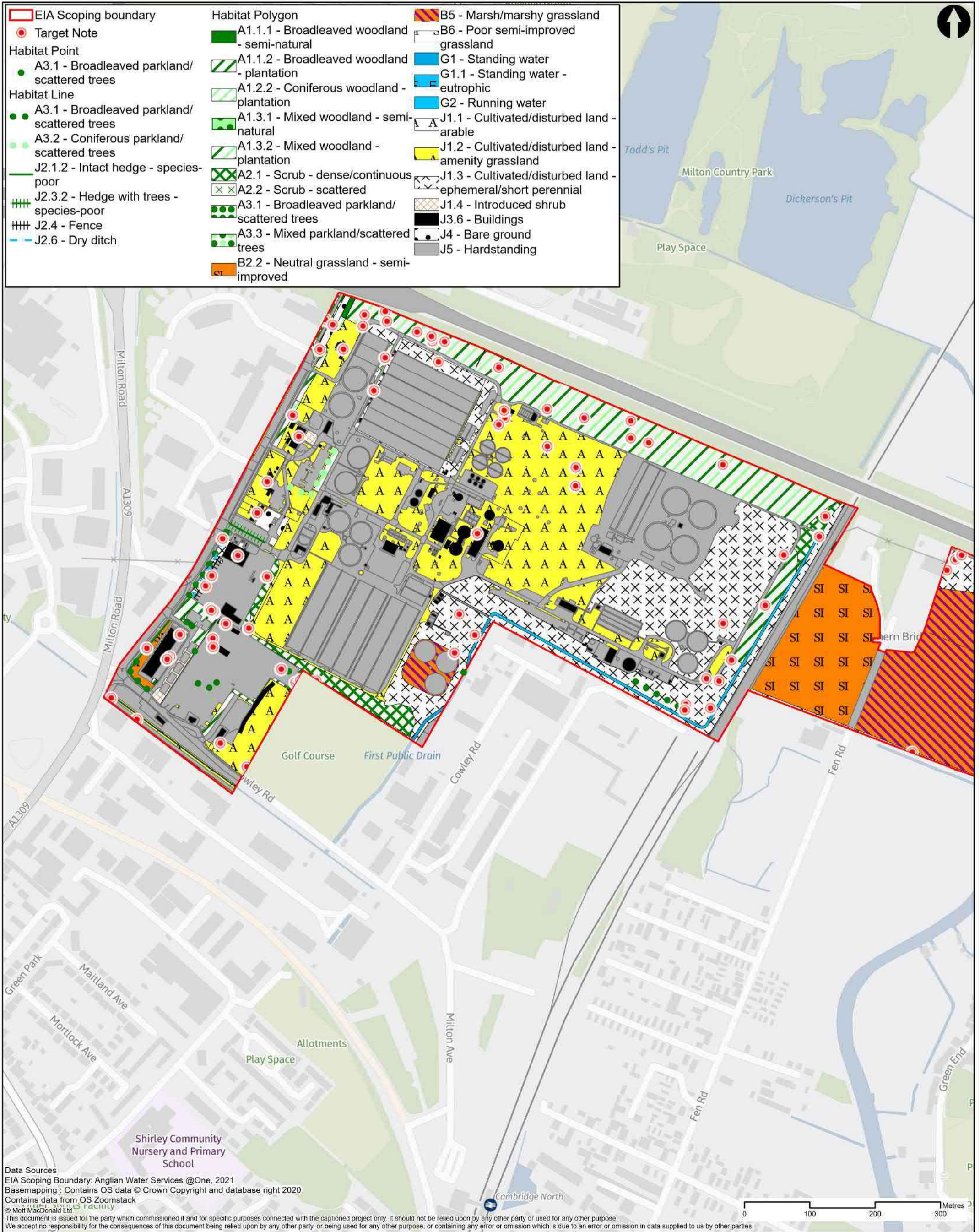
Data Sources: EIA Scoping boundary: Anglian Water Services @One, 2021
 Local authority boundary: Ordnance Survey
 Monitoring site: Cambridgeshire County Council
 AQMA: © Crown copyright and database rights licensed under Defra's Public Sector Mapping Agreement with Ordnance Survey (licence No. 100022861) and the Land and Property Services Department (Northern Ireland) M0J206.
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D. Biodiversity Phase 1 Map



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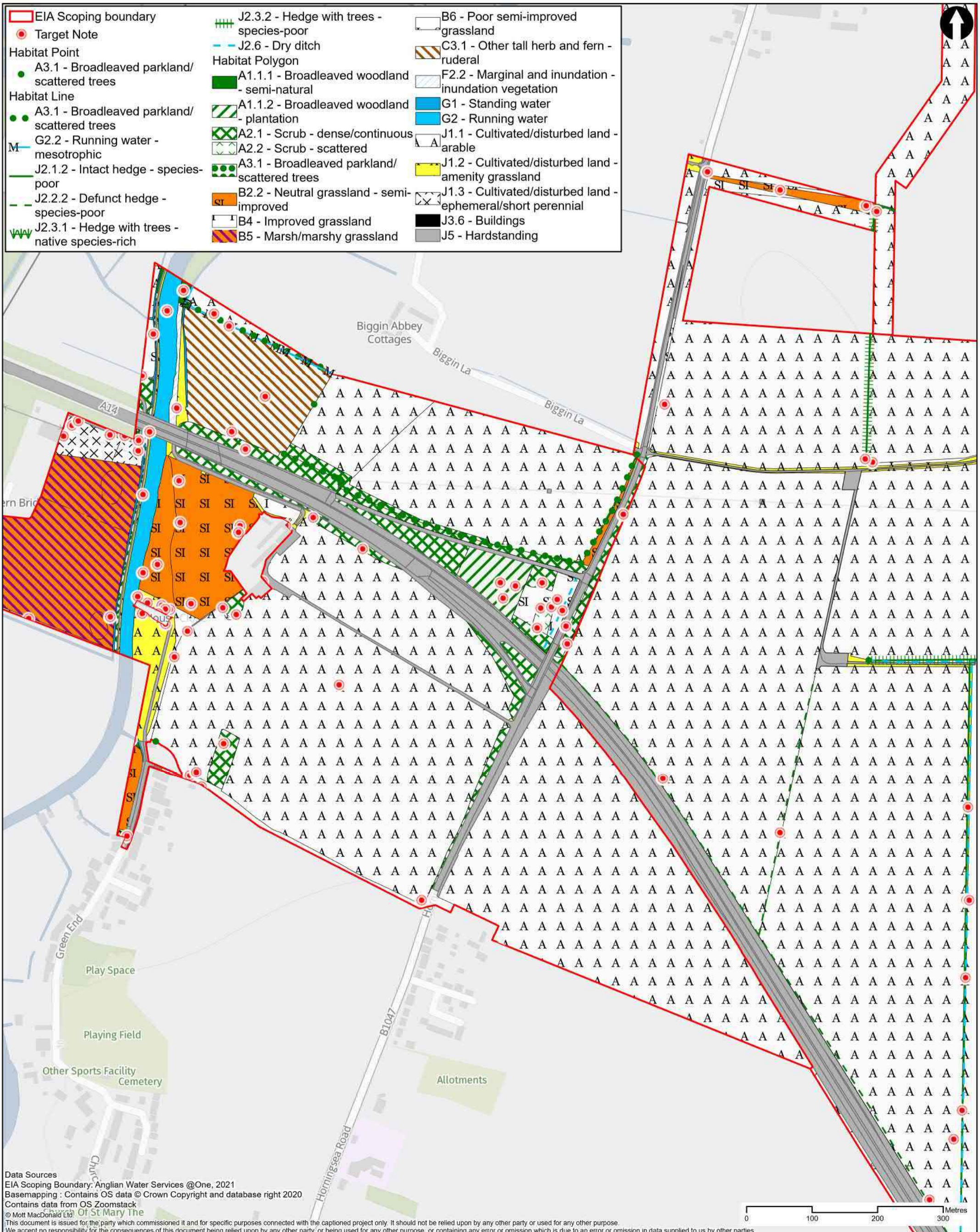
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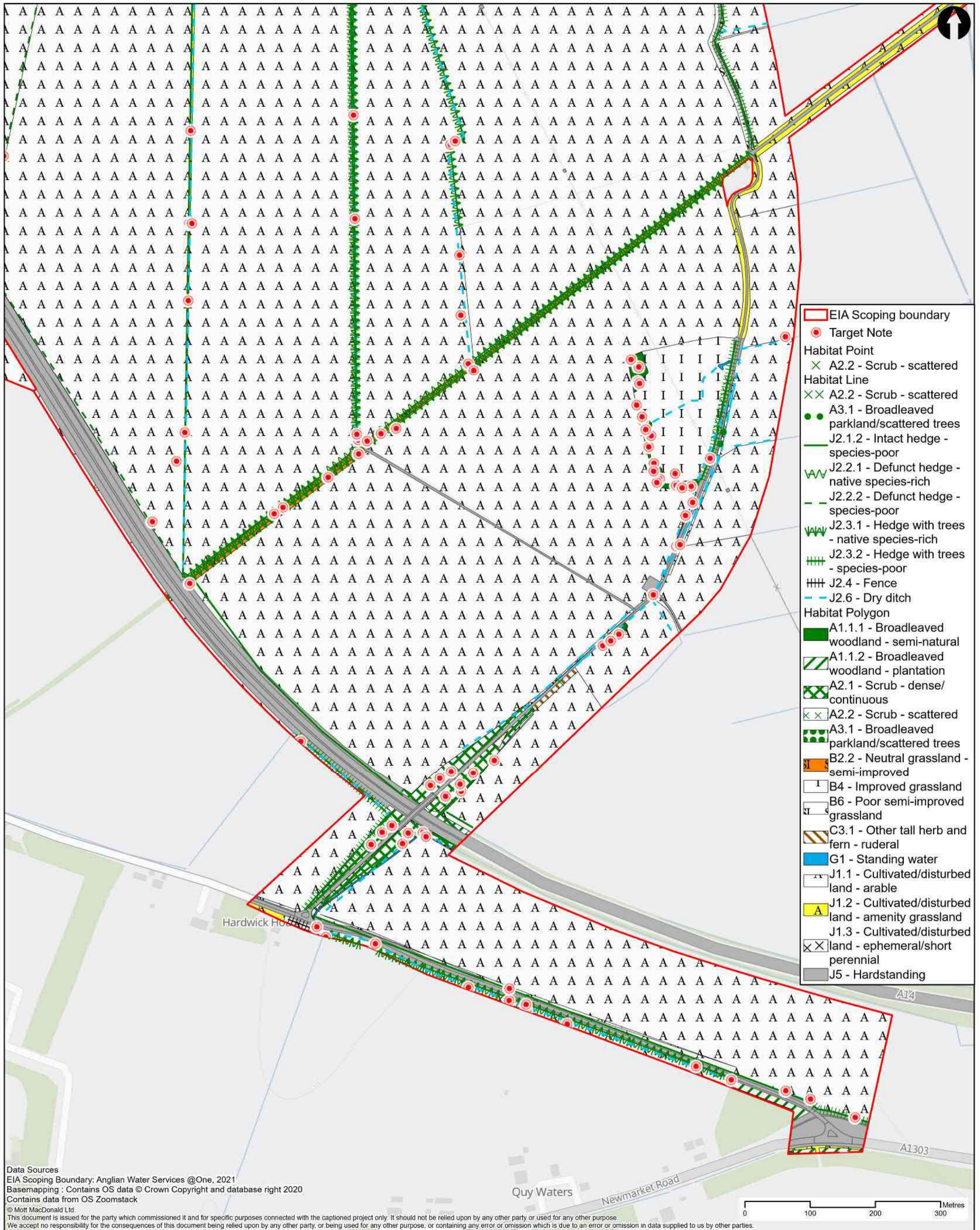
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EIA Scoping boundary	J2.3.2 - Hedge with trees - species-poor	B6 - Poor semi-improved grassland
Target Note	J2.6 - Dry ditch	C3.1 - Other tall herb and fern - ruderal
Habitat Point	Habitat Polygon	F2.2 - Marginal and inundation - inundation vegetation
A3.1 - Broadleaved parkland/ scattered trees	A1.1.1 - Broadleaved woodland - semi-natural	G1 - Standing water
Habitat Line	A1.1.2 - Broadleaved woodland - plantation	G2 - Running water
A3.1 - Broadleaved parkland/ scattered trees	A2.1 - Scrub - dense/continuous	J1.1 - Cultivated/disturbed land - arable
G2.2 - Running water - mesotrophic	A2.2 - Scrub - scattered	J1.2 - Cultivated/disturbed land - amenity grassland
J2.1.2 - Intact hedge - species-poor	A3.1 - Broadleaved parkland/ scattered trees	J1.3 - Cultivated/disturbed land - ephemeral/short perennial
J2.2.2 - Defunct hedge - species-poor	B2.2 - Neutral grassland - semi-improved	J3.6 - Buildings
J2.3.1 - Hedge with trees - native species-rich	B4 - Improved grassland	J5 - Hardstanding
	B5 - Marsh/marshy grassland	

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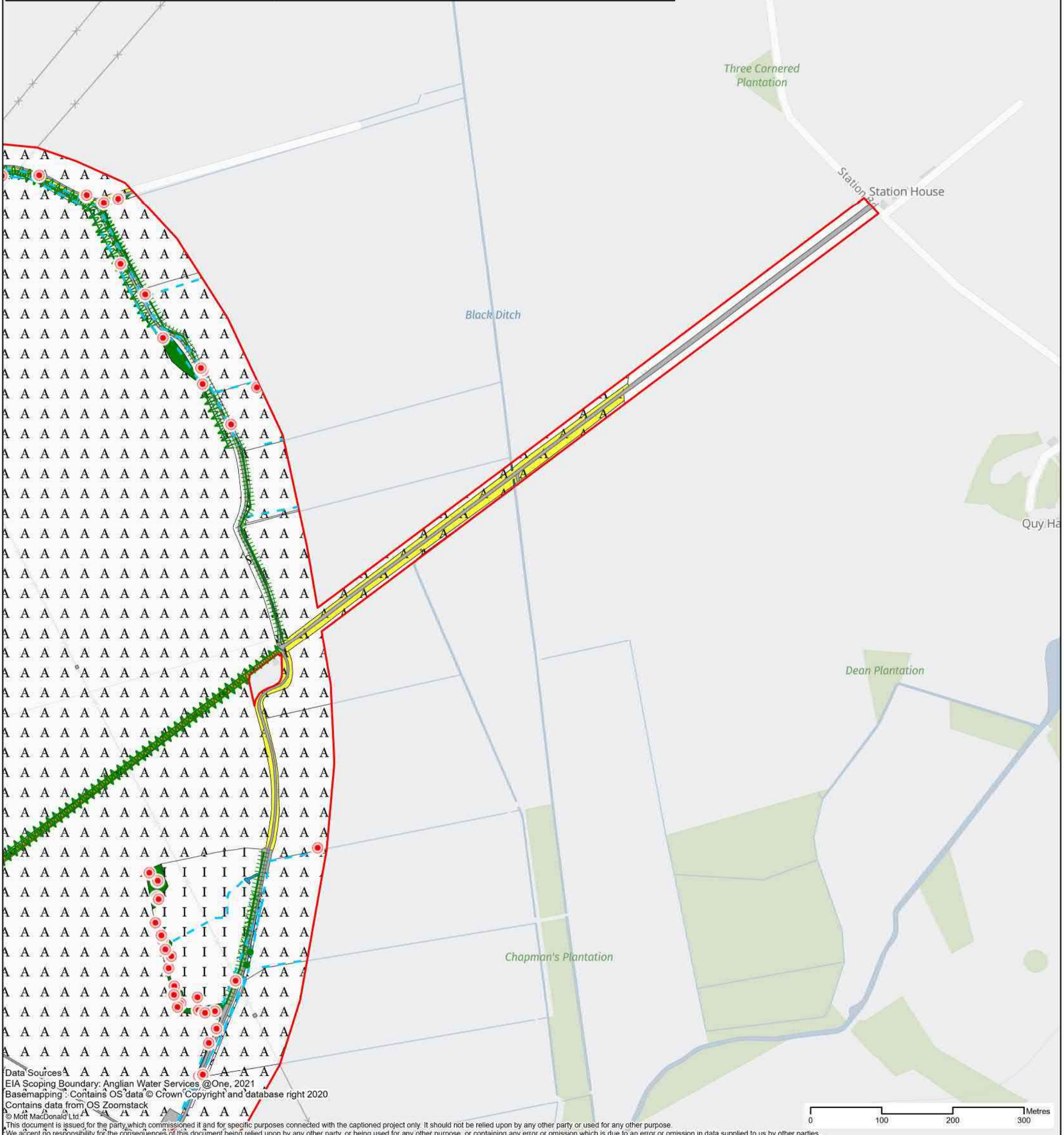


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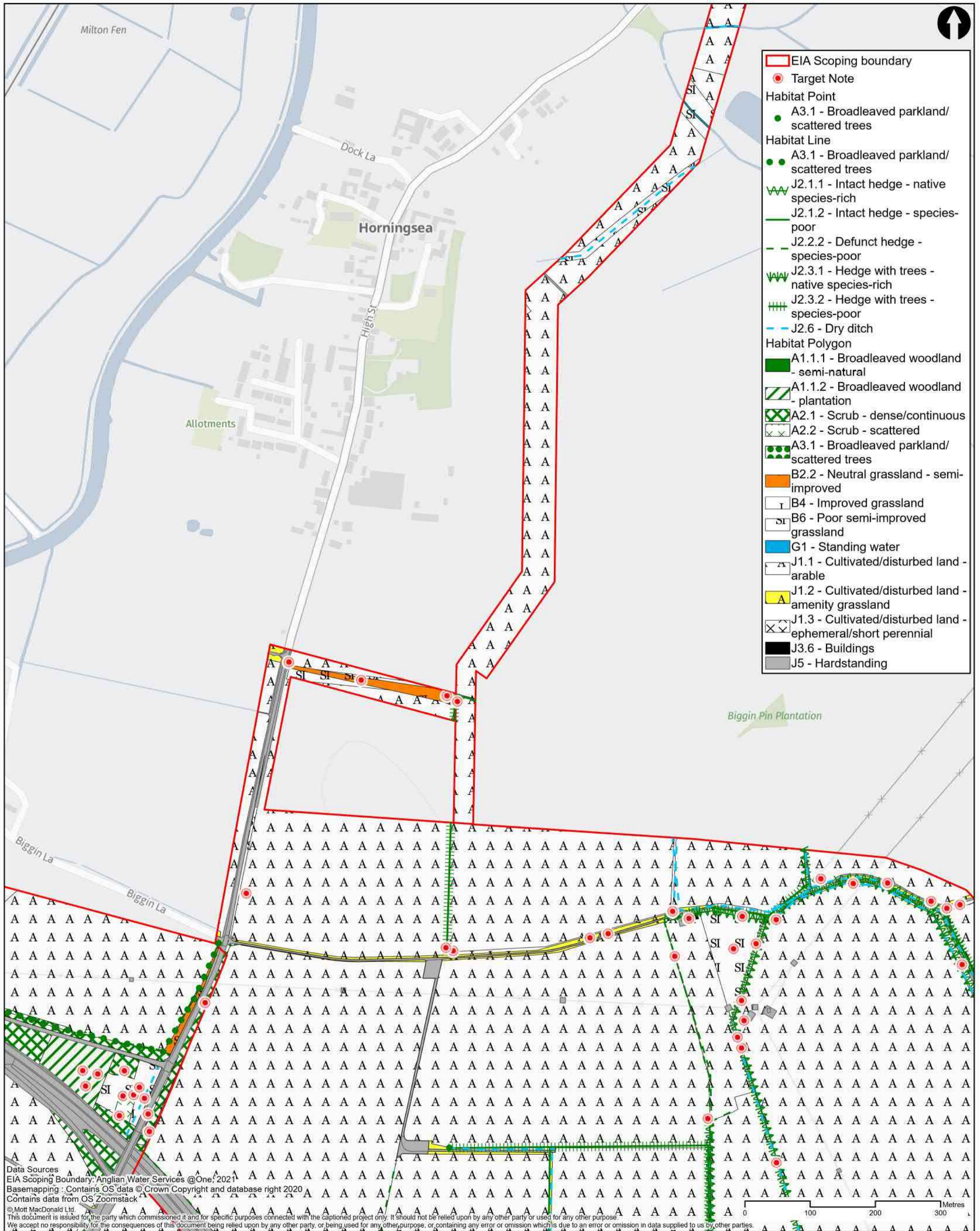
EIA Scoping boundary	J2.3.2 - Hedge with trees - species-poor	B4 - Improved grassland
Target Note	J2.6 - Dry ditch	B6 - Poor semi-improved grassland
Habitat Line	Habitat Polygon	G1 - Standing water
A2.2 - Scrub - scattered	A1.1.1 - Broadleaved woodland - semi-natural	J1.1 - Cultivated/disturbed land - arable
A3.1 - Broadleaved parkland/ scattered trees	A1.1.2 - Broadleaved woodland - plantation	J1.2 - Cultivated/disturbed land - amenity grassland
J2.1.1 - Intact hedge - native species-rich	A3.1 - Broadleaved parkland/ scattered trees	J1.3 - Cultivated/disturbed land - ephemeral/short perennial
J2.3.1 - Hedge with trees - native species-rich	B2.2 - Neutral grassland - semi-improved	J5 - Hardstanding



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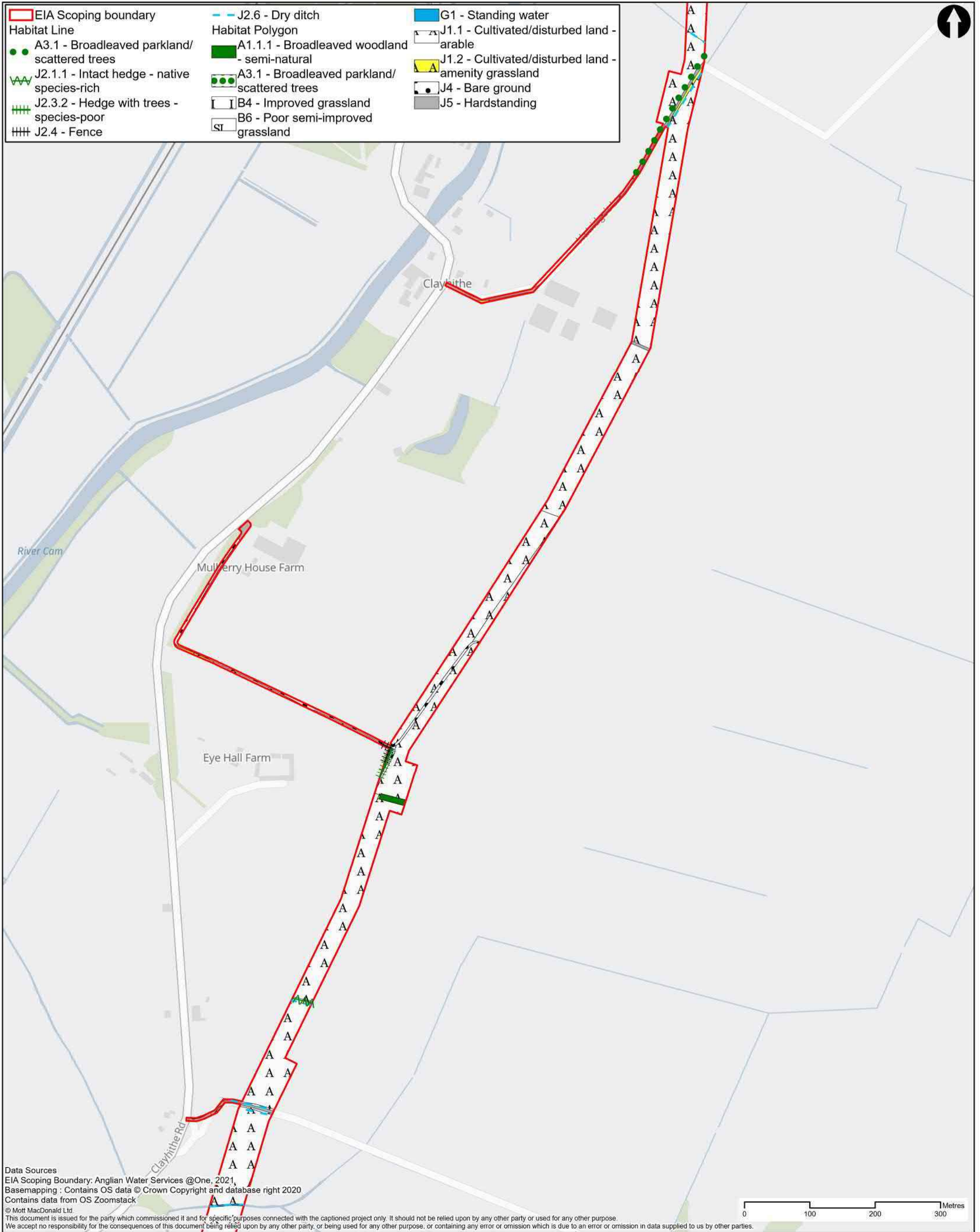
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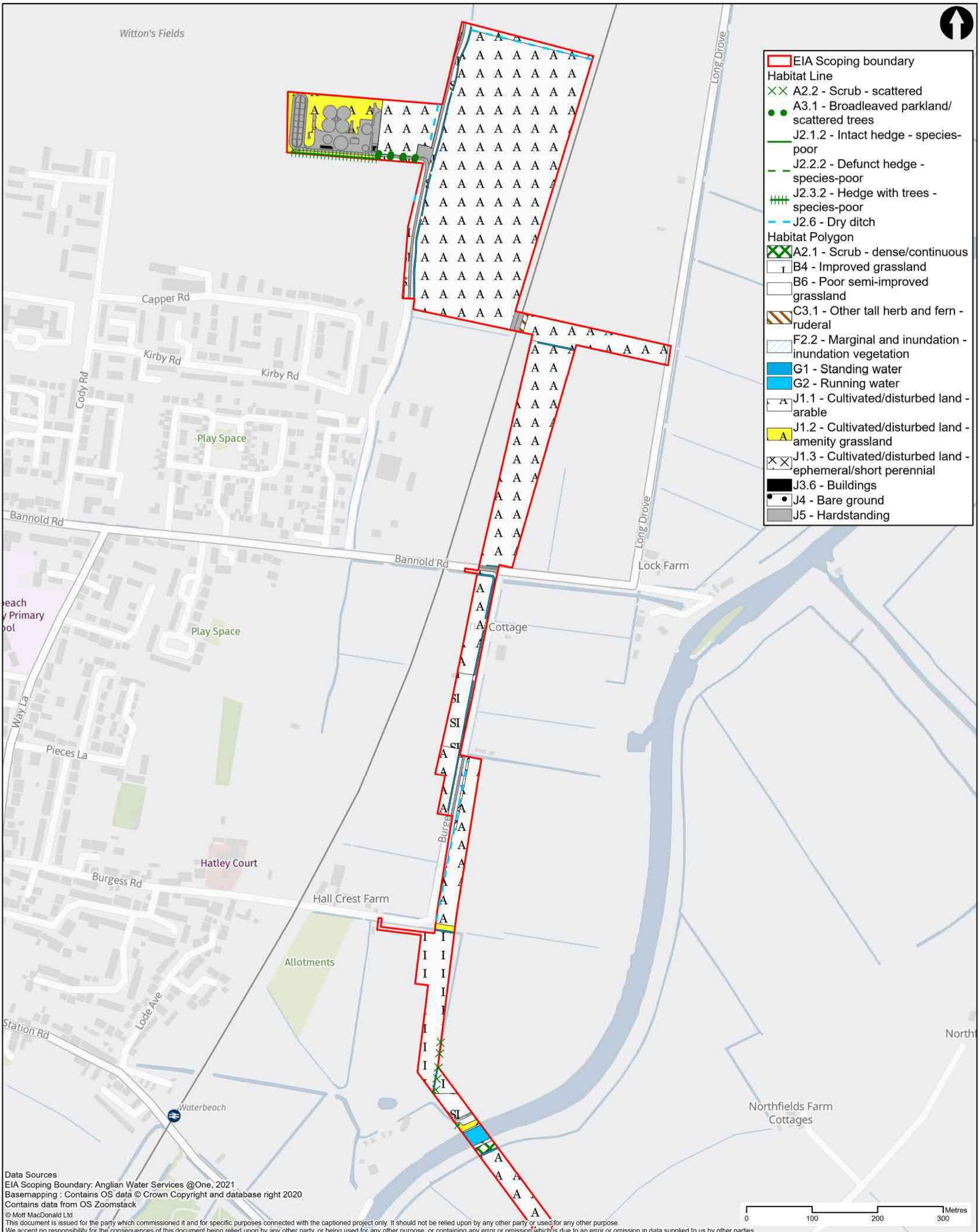
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P1	29/09/21	NC	First Draft	DR	CS																	



Data Sources
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P1	29/09/21	NC	First Draft	DR	CS																	

E. BTO Report



BTO data report for site: Site 3 Option A

1 Data sources and generic methods

This report uses data from *Bird Atlas 2007–11* (BTO, BirdWatch Ireland and the Scottish Ornithologists' Club) and *BirdTrack* (BTO, RSPB, BirdWatch Ireland, SOC and Welsh Ornithological Society) to summarise bird occurrence and breeding information in the vicinity of the site of interest. Unless otherwise stated 'the site' is the area defined by the spatial information provided by the requester. The boundary of the site, and how it intersects Ordnance Survey grid squares and administrative boundaries are the basis for the searches and analyses conducted on BTO data archives (see Section 1.1).

The report considers 269 species that regularly occur in Britain and Ireland. This comprises 221 breeding species and 226 wintering species. It includes BOU Category C established non-native species but excludes exotic non-native species (i.e. those without self-sustaining populations). Breeding species are defined as all species that were recorded with confirmed breeding evidence in at least one 10-km square in Britain & Ireland during *Bird Atlas 2007–11*. Wintering species are defined as all species recorded in at least 50 10-km squares during *Bird Atlas 2007–11*, plus six rare residents that the 50-square rule excluded (e.g. Cirl Bunting).

Species on designated lists, such as Schedule 1, Birds of Conservation Concern, or Section 7 (Wales) are highlighted (but see section 2.5 for particularly sensitive species). Some lists consider subspecies or populations (e.g. Greenland White-fronted Goose, Hebridean Song Thrush) which *Bird Atlas* and *BirdTrack* data are not ideally suited for. We include the parent species in these analyses to ensure appropriate warnings are raised and dedicated surveying may be required.

1.1 Site location in relation to OS grid squares and administrative boundaries

To help interpret the results presented in this report, please review Figure 1 which shows the site in relation to focal 2-km squares (hereafter 'tetrads') and 10-km squares. **Note that all data are summarised for grid squares not the precise footprint of the site.** For figures showing counties, Government Office Regions (NUTS Level 1) and countries that the site falls within, see Appendix 1. The grid squares are used to extract relevant data from BTO data archives and the larger polygons are used for relative analyses, for example to determine the percentage of a regional population found at a site. Take special note of how your site intersects the different grid squares as this will help you to interpret whether the records summarised here can be attributed directly to the site's footprint or also to its immediate surroundings.

The following administrative boundaries are relevant for this site:

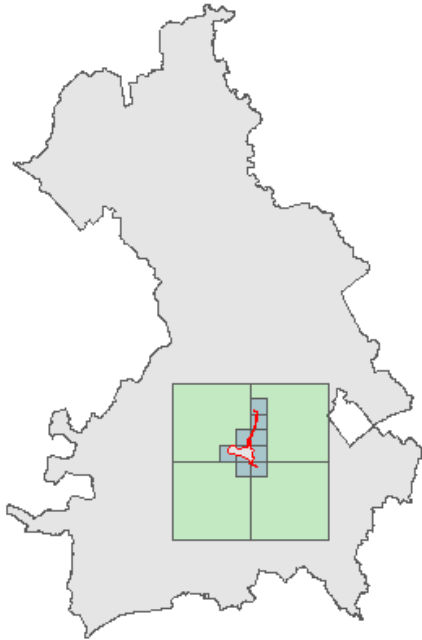
- Watsonian Vice Counties spanned: **Cambridgeshire**
- Counties and Administrative areas spanned: **Cambridgeshire**
- NUTS Level 1 Government Office Regions spanned: **East of England**
- Countries spanned: **England**

The following Ordnance Survey grid squares are relevant for this site:

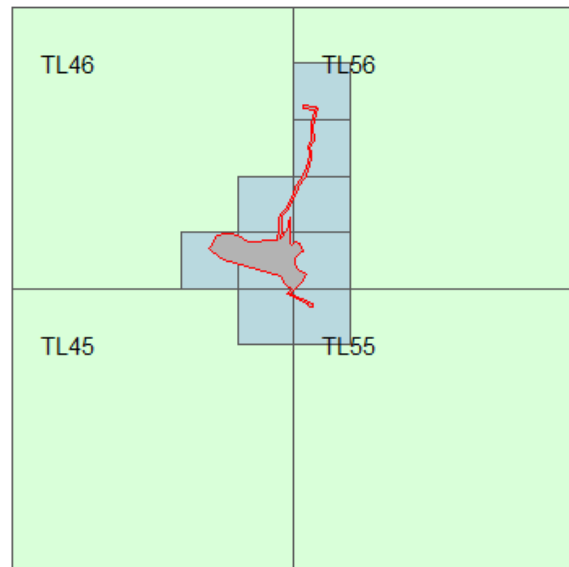
- 9 tetrads: TL45Z, TL46Q, TL46V, TL46W, TL55E, TL56A, TL56B, TL56C, TL56D
- 4 10-km squares: TL45, TL46, TL55, TL56
- 2 20-km squares: TL_M, TL_N
- 2 50-km squares: TLNE, TLNW

Figure 1. The site in relation to administrative polygons and Ordnance Survey grid squares used to extract and summarise data. In A these scale up from the site, to tetrad, 10-km square and Vice County. B shows a zoomed map focussing on the site, tetrads and 10-km square.

A



B



2 Bird Atlas 2007–11

2.1 Methods and interpretation

Although fieldwork for *Bird Atlas 2007–11* was completed 9 years ago, that fieldwork involved visits to every 10-km square in Britain and Ireland and it is still the only data source that provides a complete stock-take of birds at this spatial scale. We also do not expect distributions of most species to have changed substantially in the interim. This report uses summarised information from winter fieldwork spanning the four winters 2007/08 to 2010/11 and breeding season fieldwork in the seasons 2008 to 2011. It is rarely wise to infer a species is completely absent from a location but *Bird Atlas* data get close in providing comprehensive species lists based on a large amount of recording effort by skilled volunteers in every 10-km square.

In addition to species recording at the 10-km scale, two types of recording were undertaken at the tetrad (2-km) resolution: 1) *Roving records* providing presence and breeding evidence information were often provided at this finer resolution but there was not an expectation to visit all tetrads, so it is not possible to infer absences. 2) a sample of tetrads (at least eight in each 10-km square) were surveyed using the *Timed Tetrad Visit* ('TTV') method (see Balmer et al. 2012), providing fixed effort information on relative abundance. The latter can be used to compare abundance between different areas, and for the breeding season, with the previous atlas undertaken in 1988–91.

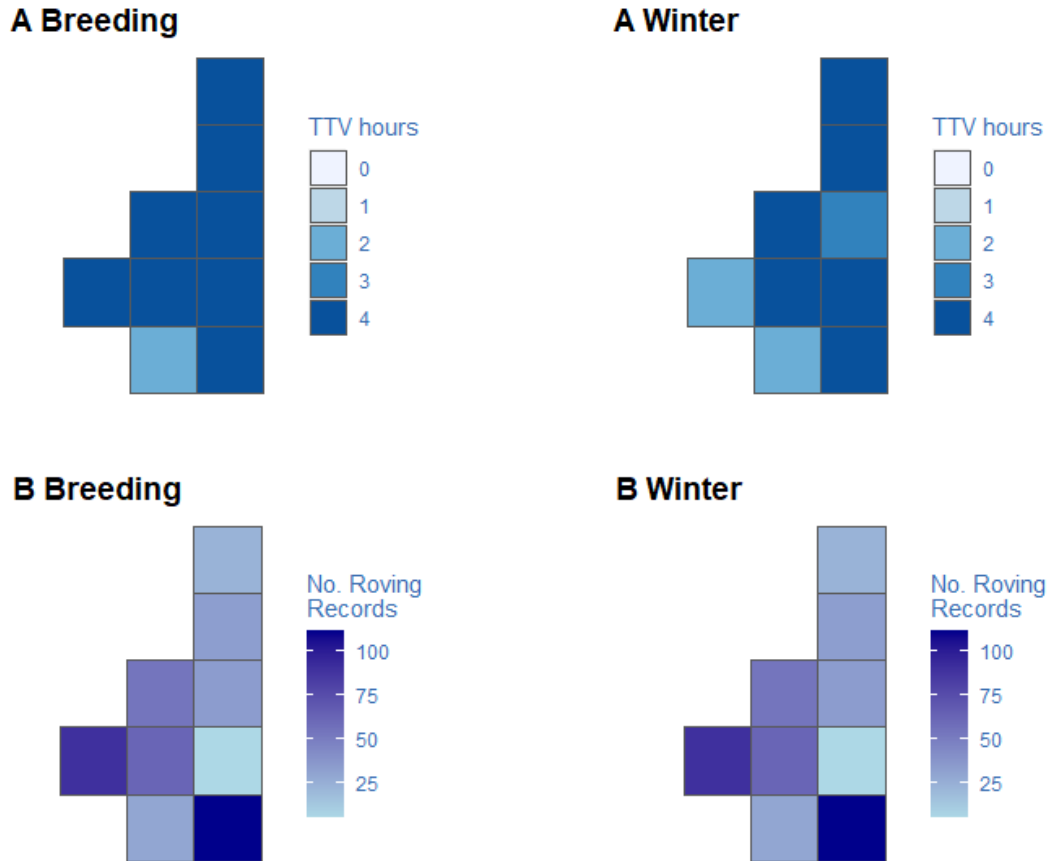
These analyses identify **Notable species**, defined as those which occur disproportionately in the vicinity of the site compared to across a larger region (a county, region or country). To determine notability we calculate the proportion of each species's range (or abundance) associated with the site (e.g. proportion of the county range associated with the site) and compare this with the proportional footprint of the site (i.e. proportion of county's 10-km squares spanned by the site). Notable species are those for which proportional range is at least twice the proportional footprint. For example, consider a site that spans two 10-km squares, and the site falls in a county of 20 10-km squares. The site's 10-km squares account for 10% of the county, and the threshold used to identify notable species will be 20%. Species X occurs in 15 10-km squares in the county, of which one is a site 10-km square. The site therefore accounts for 6.7% of the species' county range and the species is not **Notable**. Species Y occurs in eight 10-km squares, including both squares that span the site. The site therefore accounts for 25% (2/8) of the species' county range, exceeding the 20% threshold, so species Y is **Notable**. The exception to this is at the scale of Great Britain where any species with a small range will be identified as **Notable**. Here we mark species as **Notable** if the site accounts for 2% or more of its GB range.

2.2 Bird Atlas coverage

As mentioned above, all 4 10-km squares that the site spans will have been surveyed in winter and the breeding season. Of the 9 tetrads that the site spans, 9 tetrads received Timed Tetrad Visits in the breeding season (34 hours of recording effort) and 9 in winter (31 hours). Roving records were provided for 9 of the site's tetrads in the breeding season and for 9 tetrads in winter. The amount of

recording effort by the TTV and the number of Roving Records submitted for each tetrad are shown in Figure 2.

Figure 2. Maps showing the site's tetrads and the level of recording effort at tetrad resolution by A) the TTV method and B) the Roving Records method. In A shading shows the number of hours of TTV recording effort in each tetrad. In B, the number of Roving Records submitted for the tetrad is shown; tetrads with no Roving Record data are shown in grey.



2.3 Site-level assemblage information based on 10-km resolution data

Bird Atlas 2007–11 distribution data at 10-km resolution for the 10-km square(s) spanned by the site show that 110 species were recorded with some level of breeding evidence (See Table 1 for breakdown). In winter, 127 species were recorded using the 10-km square. Species totals are summarised for different definitions of important features in the Table 1. The full list of species recorded can be seen in Appendix 2.

Table 1. Numbers of species recorded in the 10-km square(s) spanned by the site. Rows give figures for all species, and according to various lists of important features.

A Breeding season

Species category	Flyover	Present	Possible breeding	Probable breeding	Confirmed breeding
All species	2	26	6	16	88
Annex 1	0	8	1	0	7
BoCC Amber List	0	15	1	4	22
BoCC Red List	1	7	2	7	14
RBBP	0	9	3	3	9
Schedule 1	0	6	2	2	11
Schedule ZA1	0	1	0	0	0
Section 41	1	3	1	4	15

B Winter

Species category	Flyover	Present
All species	2	127
Annex 1	1	14
BoCC Amber List	2	41
BoCC Red List	0	26
RBBP	1	32
Schedule 1	1	21
Schedule ZA1	0	0
Section 41	2	21

2.4 Site-level assemblage information based on 2-km resolution data

Bird Atlas 2007–11 distribution data at 2-km resolution for the tetrad(s) spanned by the site show that 88 species were recorded with some level of breeding evidence (See Table 1 for breakdown). In winter, 90 species were recorded using the tetrad(s). Species totals are summarised for different definitions of important features in the Table 2A. The full species lists can be seen in Appendix 3.

Table 2. Numbers of species recorded in the tetrad(s) spanned by the site. Rows give figures for all species, and according to various lists of important features.

A Breeding season

Species category	Flyover	Present	Possible breeding	Probable breeding	Confirmed breeding
All species	0	14	14	17	57
Annex 1	0	3	1	0	2
BoCC Amber List	0	7	4	4	11
BoCC Red List	0	4	2	7	8
RBBP	0	5	3	2	2
Schedule 1	0	4	2	2	3
Schedule ZA1	0	0	0	0	0
Section 41	0	1	1	8	8

B Winter

Species category	Flyover	Present
All species	1	90
Annex 1	1	6
BoCC Amber List	1	23
BoCC Red List	0	20
RBBP	1	14
Schedule 1	1	10
Schedule ZA1	0	0
Section 41	1	17

2.5 Confidential species

Some species are too sensitive to be publicly mapped at 10-km resolution. In *Bird Atlas 2007–11* these species were mapped at either 20-km or 50-km resolution by collating all 10-km square records within these large grid squares and plotting a single summary dot on the map. For this site, and the 20-km square(s) in which it falls (see Section 1, above), the number of species mapped at 20-km resolution was zero. The number of 50-km species for the relevant 50-km square(s) was zero.

2.6 Importance, Notable species and Abundance change

Species' importance and the identification of **Notable species** based on proportional range and proportional abundance are calculated for the site relative to a larger parent area, such as a country, region or county. This provides contextual information for the site ranging from national to local scales. The following sections present this information for each extent relevant to the site.

2.6.1 National: Great Britain

Overall, four of the site's 10-km squares fall in Great Britain, accounting for 0.141% of Britain's squares. According to *Bird Atlas* data, these squares support between 0.05% and 2.44% of GB range of all the species considered (breeding and winter combined). In terms of abundance, these squares support between 0% and 1.6% of GB abundance. It is not possible to list **Notable species** in the standard way because this is strongly influenced by the GB range size of the species. Instead, any species for which the site accounts for at least 2% of the GB range are listed below:

- Breeding range, one species: Bearded Tit
- Winter range, 0 species:
- Breeding abundance, zero species:
- Winter abundance, zero species:

Between 1988–91 and 2008–11, there were 48 species for which relative abundance increased more (or declined less) at the site compared to across the rest of Great Britain. The ten species with the most positive difference in trend between site and region were:

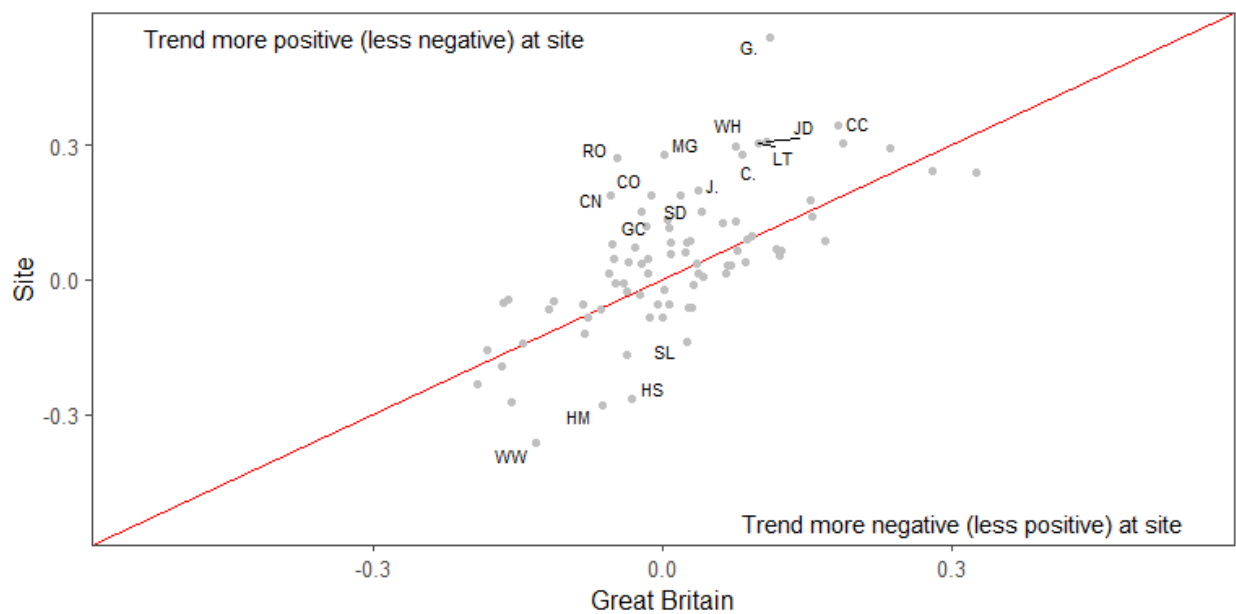
- Coot, Common Tern, Green Woodpecker, Magpie, Jackdaw, Rook, Carrion Crow, Long-tailed Tit, Whitethroat, Goldcrest

There were 34 species for which the opposite was the case, i.e. that they were declining more (or increasing less) at the site compared to the rest of the GB. The ten species with the most negative difference in trend between site and region were:

- Red-legged Partridge, Shelduck, Cuckoo, Buzzard, Swallow, House Martin, Willow Warbler, Song Thrush, House Sparrow, Bullfinch

Figure 3 shows all species and highlights those with more positive or more negative trends at the site. Full details for all species can be found in Appendix 4.

Figure 3. Scatter plot showing relative abundance changes at the site compared to the rest of Great Britain. Each point is a species, and points above the diagonal line of equality indicate species where the trend is more positive (or less negative) than in the rest of the GB. Species deviating most strongly from the line are labelled by their two-letter code (see Appendix 4 for list).



2.6.2 National: countries/devolved administrations

10-km squares associated with the site fall in one country(s) Results are summarised below.

2.6.2.1 England

Overall, four of the site's 10-km squares overlap with England, accounting for 0.268% of the 10-km squares in England. According to *Bird Atlas* data, these squares support between 0.08% and 2.67% of England's ranges (breeding and winter combined). In terms of abundance, these squares support between 0% and 1.79% of country abundance. **Notable species** for England are listed below:

- Breeding range, 13 species: Garganey, Turtle Dove, Avocet, Little Ringed Plover, Cormorant, Bittern, Marsh Harrier, Long-eared Owl, Bearded Tit, Cetti's Warbler, Nightingale, Black Redstart, Corn Bunting

- Winter range, nine species: Taiga/Tundra Bean Goose, Caspian Gull, Bittern, Marsh Harrier, Bearded Tit, Cetti's Warbler, Black Redstart, Snow Bunting, Corn Bunting
- Breeding abundance, 14 species: Grey Partridge, Woodpigeon, Turtle Dove, Collared Dove, Moorhen, Marsh Harrier, Kingfisher, Green Woodpecker, Hobby, Reed Warbler, Grasshopper Warbler, Mistle Thrush, Corn Bunting, Reed Bunting
- Winter abundance, 12 species: Red-legged Partridge, Gadwall, Stock Dove, Woodpigeon, Collared Dove, Moorhen, Marsh Harrier, Long-eared Owl, Kingfisher, Skylark, Corn Bunting, Reed Bunting

Between 1988–91 and 2008–11, there were 50 species for which relative abundance increased more (or declined less) at the site compared to across the rest of England. The ten species with the most positive difference in trend between site and region were:

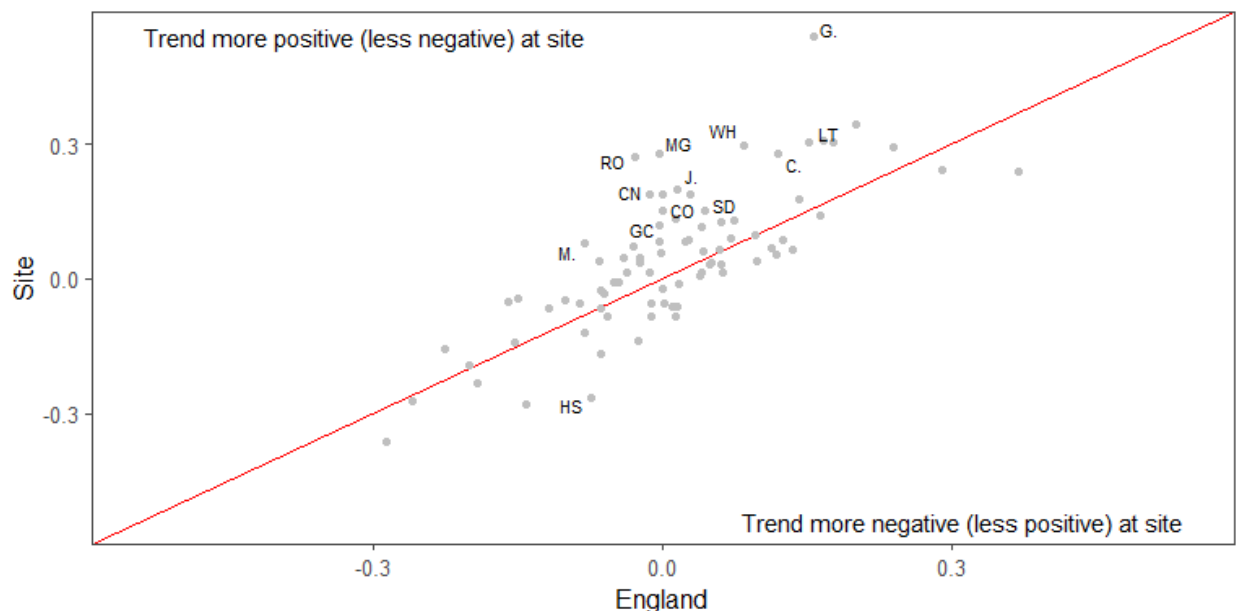
- Coot, Common Tern, Green Woodpecker, Magpie, Jackdaw, Rook, Carrion Crow, Long-tailed Tit, Whitethroat, Goldcrest

There were 32 species for which the opposite was the case, i.e. that they were declining more (or increasing less) at the site compared to the rest of England. The ten species with the most negative difference in trend between site and region were:

- Red-legged Partridge, Shelduck, Cuckoo, Buzzard, Swallow, House Martin, Willow Warbler, Song Thrush, House Sparrow, Bullfinch

Figure 4 shows all species and highlights those with more positive or more negative trends at the site. Full details for all species can be found in Appendix 5.

Figure 4. Scatter plot showing relative abundance changes at the site compared to the rest of the England. Each point is a species, and points above the diagonal line of equality indicate species where the trend is more positive (or less negative) than in the rest of the England. Species deviating most strongly from the line are labelled by their two-letter code (see Appendix 5 for list).



2.6.3 Regional: Government Office Regions

10-km squares associated with the site fall in one Government Office Region(s). Results are summarised below.

2.6.3.1 East of England

Overall, four of the site's 10-km squares overlap with East of England, accounting for 1.77% of the 10-km squares in East of England. According to *Bird Atlas* data, these squares support between 0.61% and 4.92% of East of England's ranges (breeding and winter combined). In terms of abundance, these squares support between 0.02% and 7.91% of region abundance. **Notable species** for East of England are listed below:

- Breeding range, five species: Curlew, Cormorant, Long-eared Owl, Peregrine, Bearded Tit
- Winter range, one species: Black Redstart
- Breeding abundance, three species: Grasshopper Warbler, Mistle Thrush, Corn Bunting
- Winter abundance, five species: Snipe, Long-eared Owl, Kingfisher, Blackcap, Corn Bunting

Between 1988–91 and 2008–11, there were 56 species for which relative abundance increased more (or declined less) at the site compared to across the rest of East of England. The ten species with the most positive difference in trend between site and region were:

- Coot, Common Tern, Green Woodpecker, Magpie, Jackdaw, Rook, Carrion Crow, Long-tailed Tit, Whitethroat, Goldcrest

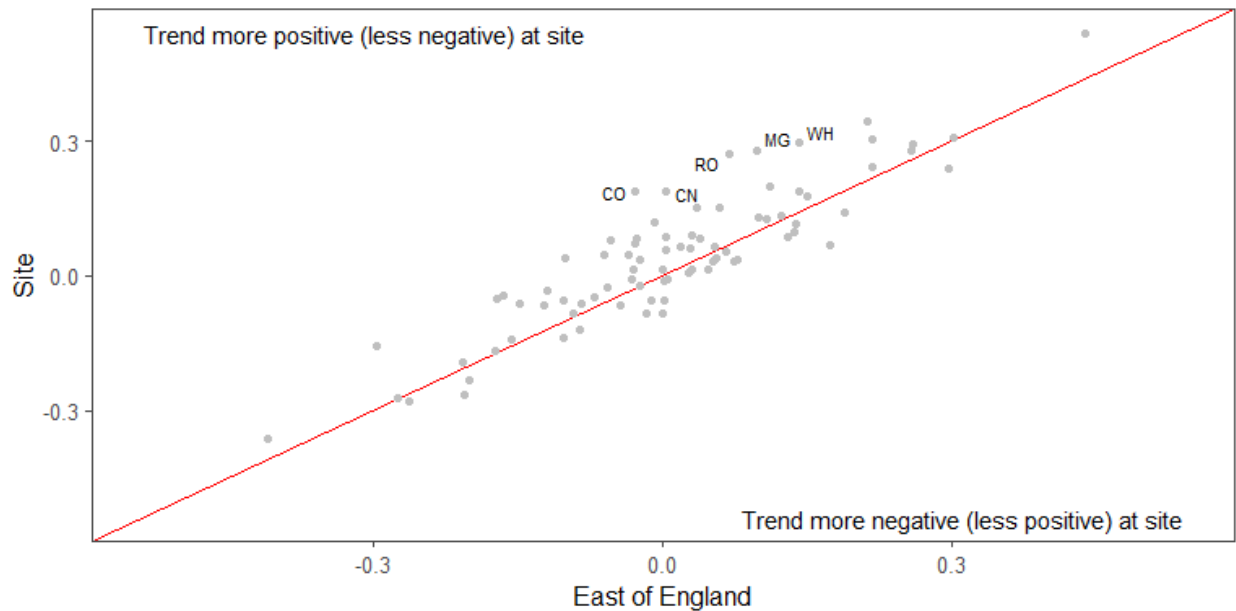
There were 26 species for which the opposite was the case, i.e. that they were declining more (or increasing less) at the site compared to the rest of East of England. The ten species with the most negative difference in trend between site and region were:

- Red-legged Partridge, Shelduck, Cuckoo, Buzzard, Swallow, House Martin, Willow Warbler, Song Thrush, House Sparrow, Bullfinch

Figure 5 shows all species and highlights those with more positive or more negative trends at the site. Full details for all species can be found in Appendix 6.

Figure 5. Scatter plot showing relative abundance changes at the site compared to the rest of East of England. Each point is a species, and points above the diagonal line of equality indicate species where the trend is more positive (or less negative) than in the rest of East of England. Species

deviating most strongly from the line are labelled by their two-letter code (see Appendix 6 for list).



2.6.4 County: Counties and Administrative areas

10-km squares associated with the site fall in one County(ies). Results are summarised below.

2.6.4.1 Cambridgeshire

Overall, four of the site's 10-km squares overlap with Cambridgeshire, accounting for 8% of the 10-km squares in Cambridgeshire. According to *Bird Atlas* data, these squares support between 3.57% and 100% of Cambridgeshire's ranges (breeding and winter combined). In terms of abundance, these squares support between 0.05% and 60.32% of county abundance. **Notable** species for Cambridgeshire are listed below:

- Breeding range, two species: Peregrine, Bearded Tit
- Winter range, six species: Mediterranean Gull, Ring-necked Parakeet, Great Grey Shrike, Firecrest, Black Redstart, Snow Bunting
- Breeding abundance, four species: Cetti's Warbler, Mistle Thrush, Stonechat, Grey Wagtail
- Winter abundance, seven species: Mandarin Duck, Snipe, Mediterranean Gull, Long-eared Owl, Kingfisher, Cetti's Warbler, Blackcap

Between 1988–91 and 2008–11, there were 41 species for which relative abundance increased more (or declined less) at the site compared to across the rest of Cambridgeshire. The ten species with the most positive difference in trend between site and region were:

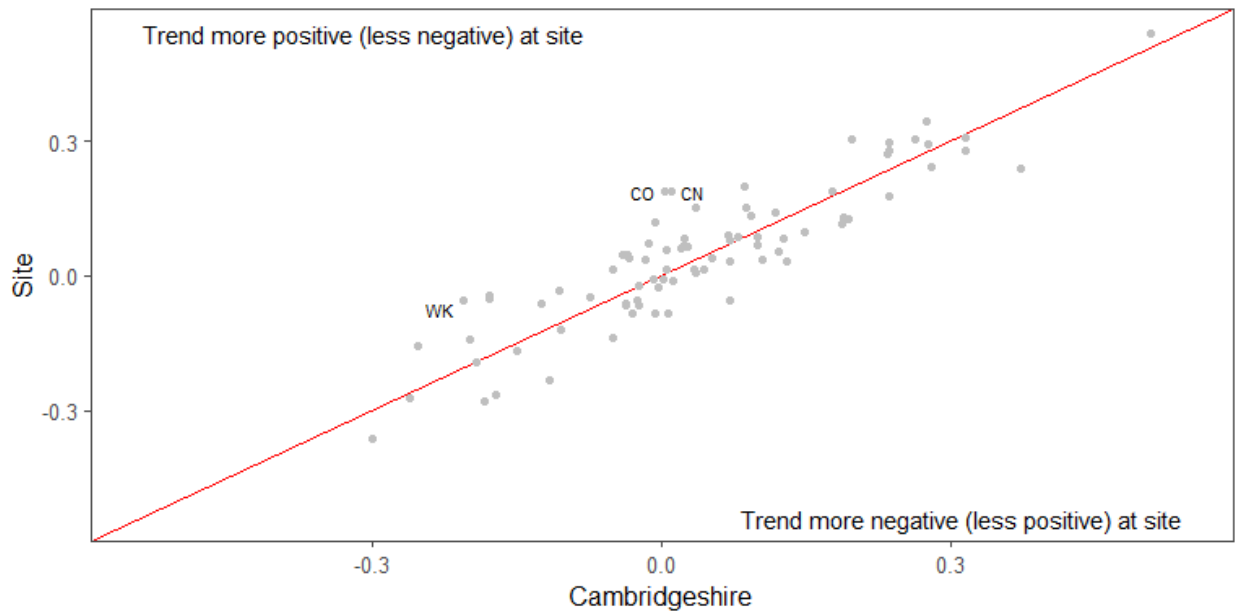
- Coot, Common Tern, Green Woodpecker, Magpie, Jackdaw, Rook, Carrion Crow, Long-tailed Tit, Whitethroat, Goldcrest

There were 41 species for which the opposite was the case, i.e. that they were declining more (or increasing less) at the site compared to the rest of Cambridgeshire. The ten species with the most negative difference in trend between site and region were:

- Red-legged Partridge, Shelduck, Cuckoo, Buzzard, Swallow, House Martin, Willow Warbler, Song Thrush, House Sparrow, Bullfinch

Figure 6 shows all species and highlights those with more positive or more negative trends at the site. Full details for all species can be found in Appendix 7.

Figure 6. Scatter plot showing relative abundance changes at the site compared to the rest of Cambridgeshire. Each point is a species, and points above the diagonal line of equality indicate species where the trend is more positive (or less negative) than in the rest of Cambridgeshire. Species deviating most strongly from the line are labelled by their two-letter code (see Appendix 7 for list).



2.6.5 Local: Watsonian Vice Counties

10-km squares associated with the site fall in one Vice County(ies). Results are summarised below.

2.6.5.1 Cambridgeshire

Overall, four of the site's 10-km squares overlap with Cambridgeshire, accounting for 9.5% of the 10-km squares in Cambridgeshire. According to *Bird Atlas* data, these squares support between 3.85% and 100% of Cambridgeshire's ranges (breeding and winter combined). In terms of abundance, these squares support between 0.05% and 60.32% of Vice County abundance. **Notable** species for Cambridgeshire are listed below:

- Breeding range, three species: Cormorant, Peregrine, Bearded Tit

- Winter range, six species: Mediterranean Gull, Ring-necked Parakeet, Great Grey Shrike, Firecrest, Black Redstart, Snow Bunting
- Breeding abundance, three species: Goldcrest, Stonechat, Grey Wagtail
- Winter abundance, five species: Mandarin Duck, Snipe, Mediterranean Gull, Long-eared Owl, Blackcap

Between 1988–91 and 2008–11, there were 40 species for which relative abundance increased more (or declined less) at the site compared to across the rest of Cambridgeshire. The ten species with the most positive difference in trend between site and region were:

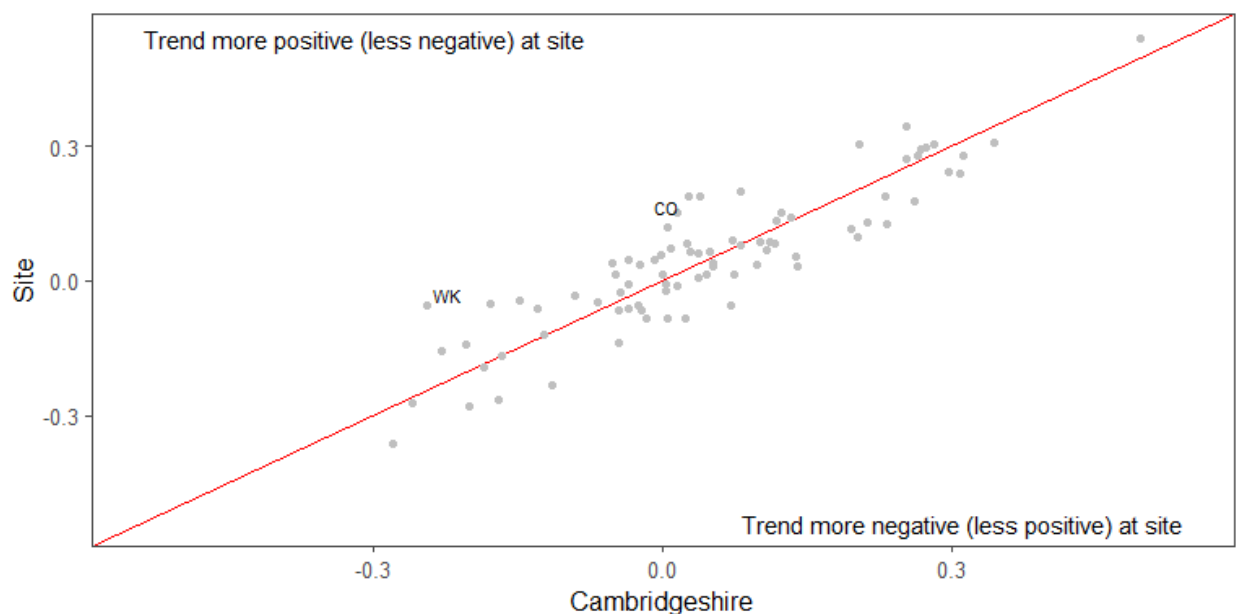
- Coot, Common Tern, Green Woodpecker, Magpie, Jackdaw, Rook, Carrion Crow, Long-tailed Tit, Whitethroat, Goldcrest

There were 42 species for which the opposite was the case, i.e. that they were declining more (or increasing less) at the site compared to the rest of Cambridgeshire. The ten species with the most negative difference in trend between site and region were:

- Red-legged Partridge, Shelduck, Cuckoo, Buzzard, Swallow, House Martin, Willow Warbler, Song Thrush, House Sparrow, Bullfinch

Figure 7 shows all species and highlights those with more positive or more negative trends at the site. Full details for all species can be found in Appendix 8.

Figure 7. Scatter plot showing relative abundance changes at the site compared to the rest of Cambridgeshire. Each point is a species, and points above the diagonal line of equality indicate species where the trend is more positive (or less negative) than in the rest of Cambridgeshire. Species deviating most strongly from the line are labelled by their two-letter code (see Appendix 8 for list).



3 BirdTrack

3.1 Methods and interpretation

BirdTrack provides information on recent sightings of birds throughout Britain and Ireland. Observers are free to birdwatch where they choose, and can provide records with varying levels of spatial precision, from pin-pointed records, to large polygons that may span multiple grid squares. We have extracted breeding-season *BirdTrack* data for the last five years and summarised the spatial precision of records for each species and level of breeding evidence. We classify records according to the certainty that the record came from a particular 10-km square or tetrad: 'High' means we can be certain from their geometry that records relate directly to the square; 'Low' means although the centre of the site visited fell in a particular square, the site is large (or undefined) so the individual record could come from outside the square. Importantly, in the latter case and with reference to large sites spanning multiple grid square, although the record cannot be guaranteed to fall in the particular square, it could fall in a neighbouring square which may also be part of the site. These records provide a valuable summary of the likelihood that different species are associated with the site based on recent data. For example, we might be able to say that Barn Owl has been confirmed to breed in a 10-km square associated with the site (but cannot be more precise where the bird actually bred). We might also know that possible breeding evidence was submitted for a tetrad (2-km) associated with the site.

Unlike *BirdAtlas*, which has a structured component ensuring complete coverage of 10-km squares, *BirdTrack* is unstructured and coverage is strongly associated with the distribution and birdwatching preferences of observer. The consequent variation in recording effort means that some areas will have much less information to generate this report. A further difference from *BirdAtlas* is that observers are not required to provide breeding evidence information. Consequently, some searches may yield only Present information; it should not be assumed that lack of breeding evidence means species were not breeding at or near the site.

3.2 Site-level assemblage information based on 10-km resolution data

In the last 5 years, 159 species have been recorded at sites whose centroid falls within 10-km squares associated with the site. Of these, 140 were definitely recorded within the 10-km squares associated with the site; a further 19 species were recorded which may have fallen outside the 10-km square. Full details are given in Appendix 9.

Table 3. Numbers of species recorded by *BirdTrack* in the 10-km square(s) spanned by the site. Rows give figures for all species, and according to various lists of important features.

Species category	Present	Possible	Probable	Confirmed
All species	28	4	25	83
Annex 1	7	0	2	6
BoCC Amber List	7	2	10	21
BoCC Red List	13	0	2	18
RBBP	13	2	4	12

Species category	Present	Possible	Probable	Confirmed
Schedule 1	11	3	5	8
Schedule ZA1	0	0	0	0
Section 41	7	0	4	15

3.3 Site-level assemblage information based on 2-km resolution data

In the last 5 years, 118 species have been recorded at sites whose centroid falls within tetrad(s) associated with the site. Of these, 103 were definitely recorded within the tetrad(s) associated with the site; a further 15 species were recorded which may have fallen outside the tetrad. Full details are given in Appendix 9.

Table 4. Numbers of species recorded by *BirdTrack* in the tetrad(s) spanned by the site. Rows give figures for all species, and according to various lists of important features.

Species category	Present	Possible	Probable	Confirmed
All species	23	10	34	36
Annex 1	2	0	2	0
BoCC Amber List	7	1	10	7
BoCC Red List	7	3	11	5
RBBP	5	1	1	1
Schedule 1	1	1	2	2
Schedule ZA1	0	0	0	0
Section 41	3	2	12	4

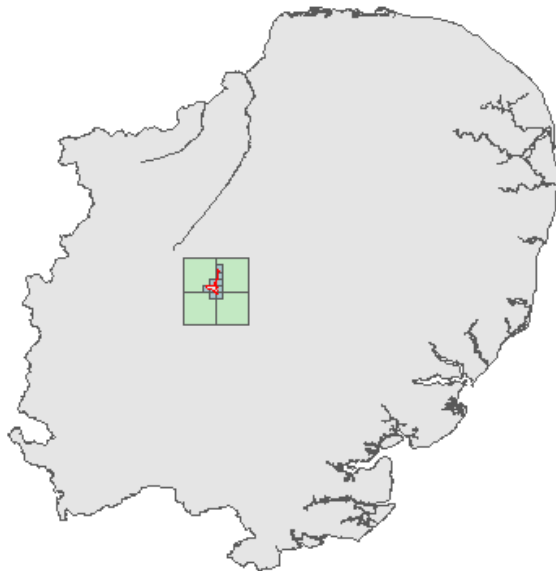
Appendix 1

Maps of the site in relation to each of the spatial extents used in comparisons. The whole site is shown but only the 10-km squares overlapping the region are used in the analyses.

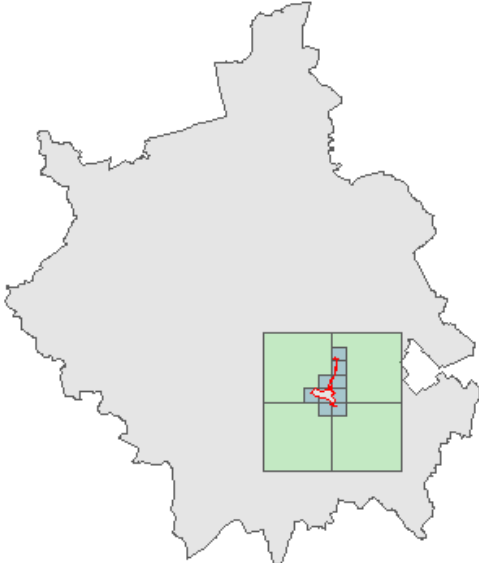
Country = England



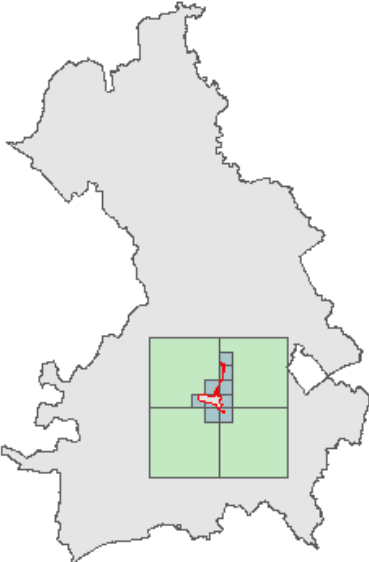
Government Office Region = East of England



County = Cambridgeshire



Vice County = Cambridgeshire



Appendix 2

List of species recorded in the site's 10-km squares during *Bird Atlas 2007–11*.

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Red-legged Partridge	C							Confirmed breeding	Present
Grey Partridge	A	Y					Red	Probable breeding	Present
Quail	A			Y		Y	Amber	Possible breeding	
Pheasant	C							Confirmed breeding	Present
Brent Goose	A	Y					Amber		Flyover
Canada Goose	C							Confirmed breeding	Present
Barnacle Goose	A				Y		Amber		Present
Greylag Goose	A						Amber	Confirmed breeding	Present
Pink-footed Goose	A					Y	Amber		Present
Taiga/Tundra Bean Goose	A						Amber		Present
White-fronted Goose	A	Y					Red		Present
Mute Swan	A						Amber	Confirmed breeding	Present
Bewick's Swan	A	Y		Y	Y	Y	Amber		Flyover
Whooper Swan	A			Y	Y	Y	Amber		Present
Egyptian Goose	C							Probable breeding	Present
Shelduck	A						Amber	Confirmed breeding	Present
Mandarin Duck	C							Probable breeding	Present
Garganey	A			Y		Y	Amber	Probable breeding	
Shoveler	A					Y	Amber	Confirmed breeding	Present
Gadwall	A						Amber	Confirmed breeding	Present
Wigeon	A					Y	Amber	Present	Present
Mallard	A						Amber	Confirmed breeding	Present
Pintail	A					Y	Amber		Present
Teal	A						Amber	Probable breeding	Present
Pochard	A					Y	Red	Possible breeding	Present
Tufted Duck	A							Confirmed breeding	Present
Scaup	A	Y		Y		Y	Red		Present
Goldeneye	A					Y	Amber		Present
Smew	A				Y	Y	Amber		Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Goosander	A								Present
Swift	A						Amber	Confirmed breeding	
Cuckoo	A	Y					Red	Confirmed breeding	
Rock Dove	A							Confirmed breeding	Present
Stock Dove	A						Amber	Confirmed breeding	Present
Woodpigeon	A							Confirmed breeding	Present
Turtle Dove	A	Y				Y	Red	Probable breeding	
Collared Dove	A							Confirmed breeding	Present
Water Rail	A							Confirmed breeding	Present
Moorhen	A							Confirmed breeding	Present
Coot	A							Confirmed breeding	Present
Little Grebe	A							Confirmed breeding	Present
Great Crested Grebe	A							Confirmed breeding	Present
Oystercatcher	A						Amber	Probable breeding	Present
Avocet	A			Y	Y	Y	Amber	Confirmed breeding	
Lapwing	A	Y					Red	Confirmed breeding	Present
Golden Plover	A				Y			Present	Present
Ringed Plover	A						Red	Probable breeding	
Little Ringed Plover	A			Y		Y		Confirmed breeding	
Whimbrel	A			Y		Y	Red	Present	
Curlew	A	Y					Red	Probable breeding	Present
Black-tailed Godwit	A			Y		Y	Red		Present
Dunlin	A				Y		Amber	Present	
Woodcock	A						Red	Confirmed breeding	Present
Jack Snipe	A					Y			Present
Snipe	A						Amber	Probable breeding	Present
Common Sandpiper	A						Amber	Present	
Green Sandpiper	A			Y		Y	Amber		Present
Redshank	A						Amber	Confirmed breeding	Present
Greenshank	A			Y		Y	Amber	Present	
Black-headed Gull	A						Amber	Present	Present
Mediterranean Gull	A			Y	Y	Y	Amber	Present	Present
Common Gull	A						Amber	Present	Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Great Black-backed Gull	A						Amber	Present	Present
Glaucous Gull	A					Y	Amber		Present
Iceland Gull	A						Amber		Present
Herring Gull	A	Y					Red	Present	Present
Caspian Gull	A						Amber		Present
Yellow-legged Gull	A					Y	Amber	Present	Present
Lesser Black-backed Gull	A						Amber	Present	Present
Sandwich Tern	A				Y		Amber	Present	
Common Tern	A				Y		Amber	Confirmed breeding	
Arctic Tern	A				Y		Amber	Present	
Cormorant	A							Probable breeding	Present
Bittern	A	Y		Y	Y	Y	Amber	Confirmed breeding	Present
Grey Heron	A							Confirmed breeding	Present
Little Egret	A				Y	Y		Possible breeding	Present
Osprey	A		Y	Y	Y	Y	Amber	Present	
Sparrowhawk	A							Confirmed breeding	Present
Marsh Harrier	A			Y	Y	Y	Amber	Confirmed breeding	Present
Hen Harrier	A	Y		Y	Y	Y	Red		Present
Red Kite	A			Y	Y			Confirmed breeding	Present
Buzzard	A							Confirmed breeding	Present
Barn Owl	A			Y				Confirmed breeding	Present
Tawny Owl	A						Amber	Confirmed breeding	Present
Little Owl	C							Confirmed breeding	Present
Long-eared Owl	A					Y		Confirmed breeding	Present
Short-eared Owl	A				Y	Y	Amber	Present	Present
Kingfisher	A			Y	Y		Amber	Confirmed breeding	Present
Great Spotted Woodpecker	A							Confirmed breeding	Present
Green Woodpecker	A							Confirmed breeding	Present
Kestrel	A						Amber	Confirmed breeding	Present
Merlin	A			Y	Y	Y	Red	Present	Present
Hobby	A			Y		Y		Confirmed breeding	
Peregrine	A			Y	Y	Y		Confirmed breeding	Present
Ring-necked Parakeet	C							Flyover	Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Great Grey Shrike	A					Y			Present
Jay	A							Confirmed breeding	Present
Magpie	A							Confirmed breeding	Present
Jackdaw	A							Confirmed breeding	Present
Rook	A							Confirmed breeding	Present
Carrion Crow	A							Confirmed breeding	Present
Waxwing	A					Y			Present
Coal Tit	A							Confirmed breeding	Present
Marsh Tit	A	Y					Red	Possible breeding	Present
Blue Tit	A							Confirmed breeding	Present
Great Tit	A							Confirmed breeding	Present
Bearded Tit	A			Y		Y		Confirmed breeding	Present
Skylark	A	Y					Red	Confirmed breeding	Present
Sand Martin	A							Probable breeding	
Swallow	A							Confirmed breeding	
House Martin	A						Amber	Confirmed breeding	
Cetti's Warbler	A			Y				Confirmed breeding	Present
Long-tailed Tit	A							Confirmed breeding	Present
Willow Warbler	A						Amber	Confirmed breeding	
Chiffchaff	A							Confirmed breeding	Present
Sedge Warbler	A							Confirmed breeding	
Reed Warbler	A							Confirmed breeding	
Grasshopper Warbler	A	Y					Red	Probable breeding	
Blackcap	A							Confirmed breeding	Present
Garden Warbler	A							Probable breeding	
Lesser Whitethroat	A							Confirmed breeding	
Whitethroat	A							Confirmed breeding	
Firecrest	A			Y				Possible breeding	Present
Goldcrest	A							Confirmed breeding	Present
Wren	A							Confirmed breeding	Present
Nuthatch	A							Possible breeding	Present
Treecreeper	A							Confirmed breeding	Present
Starling	A	Y					Red	Confirmed breeding	Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Ring Ouzel	A	Y					Red	Present	
Blackbird	A							Confirmed breeding	Present
Fieldfare	A			Y		Y	Red	Present	Present
Redwing	A			Y		Y	Red		Present
Song Thrush	A	Y					Red	Confirmed breeding	Present
Mistle Thrush	A						Red	Confirmed breeding	Present
Spotted Flycatcher	A	Y					Red	Confirmed breeding	
Robin	A							Confirmed breeding	Present
Nightingale	A						Red	Probable breeding	
Black Redstart	A			Y		Y	Red	Probable breeding	Present
Redstart	A						Amber	Present	
Whinchat	A						Red	Present	
Stonechat	A							Confirmed breeding	Present
Wheatear	A							Present	
House Sparrow	A	Y					Red	Confirmed breeding	Present
Tree Sparrow	A	Y					Red	Flyover	Present
Dunnock	A	Y					Amber	Confirmed breeding	Present
Yellow Wagtail	A	Y					Red	Confirmed breeding	
Grey Wagtail	A						Red	Confirmed breeding	Present
Pied/White Wagtail	A							Confirmed breeding	Present
Meadow Pipit	A						Amber	Confirmed breeding	Present
Chaffinch	A							Confirmed breeding	Present
Brambling	A			Y		Y			Present
Bullfinch	A	Y					Amber	Confirmed breeding	Present
Greenfinch	A							Confirmed breeding	Present
Linnet	A	Y					Red	Confirmed breeding	Present
Common Redpoll	A					Y	Amber		Present
Lesser Redpoll	A	Y					Red	Present	Present
Common/Lesser Redpoll	A								Present
Unidentified crossbill	A							Present	
Goldfinch	A							Confirmed breeding	Present
Siskin	A							Present	Present
Snow Bunting	A			Y		Y	Amber		Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Corn Bunting	A	Y					Red	Confirmed breeding	Present
Yellowhammer	A	Y					Red	Confirmed breeding	Present
Reed Bunting	A	Y					Amber	Confirmed breeding	Present

Appendix 3

List of species recorded in the site's tetrads during *Bird Atlas 2007–11*.

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Red-legged Partridge	C							Confirmed breeding	Present
Grey Partridge	A	Y					Red	Probable breeding	Present
Quail	A			Y		Y	Amber	Present	
Pheasant	C							Confirmed breeding	Present
Canada Goose	C							Confirmed breeding	Present
Greylag Goose	A						Amber	Confirmed breeding	Present
Mute Swan	A						Amber	Confirmed breeding	Present
Bewick's Swan	A	Y		Y	Y	Y	Amber		Flyover
Shoveler	A					Y	Amber	Possible breeding	Present
Gadwall	A						Amber	Probable breeding	Present
Wigeon	A					Y	Amber		Present
Mallard	A						Amber	Confirmed breeding	Present
Teal	A						Amber		Present
Pochard	A					Y	Red		Present
Tufted Duck	A							Probable breeding	Present
Scaup	A	Y		Y		Y	Red		Present
Goldeneye	A					Y	Amber		Present
Goosander	A								Present
Swift	A						Amber	Probable breeding	
Cuckoo	A	Y					Red	Probable breeding	
Rock Dove	A							Possible breeding	Present
Stock Dove	A						Amber	Confirmed breeding	Present
Woodpigeon	A							Confirmed breeding	Present
Turtle Dove	A	Y				Y	Red	Probable breeding	
Collared Dove	A							Confirmed breeding	Present
Water Rail	A							Possible breeding	Present
Moorhen	A							Confirmed breeding	Present
Coot	A							Confirmed breeding	Present
Little Grebe	A							Confirmed breeding	Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Great Crested Grebe	A							Confirmed breeding	Present
Oystercatcher	A						Amber	Possible breeding	
Lapwing	A	Y					Red	Probable breeding	Present
Golden Plover	A				Y				Present
Little Ringed Plover	A			Y		Y		Possible breeding	
Woodcock	A						Red		Present
Jack Snipe	A					Y			Present
Snipe	A						Amber		Present
Common Sandpiper	A						Amber	Present	
Green Sandpiper	A			Y		Y	Amber		Present
Black-headed Gull	A						Amber	Present	Present
Common Gull	A						Amber	Present	Present
Herring Gull	A	Y					Red	Present	Present
Lesser Black-backed Gull	A						Amber	Present	Present
Common Tern	A				Y		Amber	Possible breeding	
Cormorant	A							Possible breeding	Present
Grey Heron	A							Confirmed breeding	Present
Little Egret	A				Y	Y			Present
Sparrowhawk	A							Confirmed breeding	Present
Hen Harrier	A	Y		Y	Y	Y	Red		Present
Buzzard	A							Confirmed breeding	Present
Barn Owl	A			Y				Confirmed breeding	Present
Tawny Owl	A						Amber	Possible breeding	Present
Little Owl	C							Confirmed breeding	Present
Short-eared Owl	A				Y	Y	Amber	Present	Present
Kingfisher	A			Y	Y		Amber	Confirmed breeding	Present
Great Spotted Woodpecker	A							Confirmed breeding	Present
Green Woodpecker	A							Confirmed breeding	Present
Kestrel	A						Amber	Confirmed breeding	Present
Jay	A							Confirmed breeding	Present
Magpie	A							Confirmed breeding	Present
Jackdaw	A							Confirmed breeding	Present
Rook	A							Confirmed breeding	Present

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Carrion Crow	A							Confirmed breeding	Present
Coal Tit	A							Possible breeding	Present
Marsh Tit	A	Y					Red		Present
Blue Tit	A							Confirmed breeding	Present
Great Tit	A							Confirmed breeding	Present
Bearded Tit	A			Y		Y		Probable breeding	
Skylark	A	Y					Red	Probable breeding	Present
Sand Martin	A							Possible breeding	
Swallow	A							Confirmed breeding	
House Martin	A						Amber	Confirmed breeding	
Cetti's Warbler	A			Y				Probable breeding	Present
Long-tailed Tit	A							Confirmed breeding	Present
Willow Warbler	A						Amber	Confirmed breeding	
Chiffchaff	A							Confirmed breeding	Present
Sedge Warbler	A							Confirmed breeding	
Reed Warbler	A							Confirmed breeding	
Grasshopper Warbler	A	Y					Red	Probable breeding	
Blackcap	A							Confirmed breeding	Present
Garden Warbler	A							Possible breeding	
Lesser Whitethroat	A							Probable breeding	
Whitethroat	A							Confirmed breeding	
Goldcrest	A							Probable breeding	Present
Wren	A							Confirmed breeding	Present
Treecreeper	A							Confirmed breeding	Present
Starling	A	Y					Red	Confirmed breeding	Present
Blackbird	A							Confirmed breeding	Present
Fieldfare	A			Y		Y	Red	Present	Present
Redwing	A			Y		Y	Red		Present
Song Thrush	A	Y					Red	Confirmed breeding	Present
Mistle Thrush	A						Red	Confirmed breeding	Present
Spotted Flycatcher	A	Y					Red	Possible breeding	
Robin	A							Confirmed breeding	Present
Nightingale	A						Red	Possible breeding	

Species	BOU	S41	SZA1	S1	A1	RBBP	BoCC	Breeding	Winter
Redstart	A						Amber	Present	
Whinchat	A						Red	Present	
Stonechat	A								Present
Wheatear	A							Present	
House Sparrow	A	Y					Red	Confirmed breeding	Present
Dunnock	A	Y					Amber	Confirmed breeding	Present
Yellow Wagtail	A	Y					Red	Confirmed breeding	
Grey Wagtail	A						Red	Confirmed breeding	Present
Pied/White Wagtail	A							Confirmed breeding	Present
Meadow Pipit	A						Amber	Probable breeding	Present
Chaffinch	A							Confirmed breeding	Present
Brambling	A			Y		Y			Present
Bullfinch	A	Y					Amber	Probable breeding	Present
Greenfinch	A							Probable breeding	Present
Linnet	A	Y					Red	Confirmed breeding	Present
Lesser Redpoll	A	Y					Red		Present
Goldfinch	A							Confirmed breeding	Present
Siskin	A							Present	
Corn Bunting	A	Y					Red	Probable breeding	Present
Yellowhammer	A	Y					Red	Confirmed breeding	Present
Reed Bunting	A	Y					Amber	Confirmed breeding	Present

Appendix 4

Summary table for range and abundance importance for Great Britain. Percentage of the Great Britain range and abundance that are associated with the 10-km squares of the site that fall within GB. Colour-coded text indicates BoCC listing category. Species for which the site's 10-km squares account for at least 2% of its GB range are highlighted.

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Red-legged Partridge	RL	0.25	0.25	0.45	0.85	-0.091
Grey Partridge	P.	0.33	0.33	0.51	0.37	
Quail	Q.	0.35				
Pheasant	PH	0.17	0.17	0.19	0.12	-0.057
Canada Goose	CG	0.22	0.24	0.15	0.084	0.0039
Barnacle Goose	BY		0.13			
Greylag Goose	GJ	0.24	0.16	0.22	0.051	-0.081
Pink-footed Goose	PG		0.096			
Taiga/Tundra Bean Goose	BE		0.51			
White-fronted Goose	WG		0.18			
Mute Swan	MS	0.23	0.21	0.22	0.16	-0.023
Whooper Swan	WS		0.23		0.013	
Egyptian Goose	EG	0.43	0.51	0.089		
Shelduck	SU	0.088	0.088	0.028	0.011	-0.085
Mandarin Duck	MN	0.2	0.17		0.17	
Garganey	GY	0.5				
Shoveler	SV	0.39	0.28	0.14	0.068	-0.072
Gadwall	GA	0.14	0.27	0.25	0.61	-0.051
Wigeon	WN		0.16		0.12	
Mallard	MA	0.15	0.15	0.25	0.14	0.038
Pintail	PT		0.13			
Teal	T.	0.17	0.14	0.0095	0.12	
Pochard	PO	0.31	0.24		0.064	
Tufted Duck	TU	0.23	0.17	0.027	0.11	-0.022
Scaup	SP		0.31			
Goldeneye	GN		0.06			
Smew	SY		0.25			
Goosander	GD		0.11		0.0068	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Swift	SI	0.19		0.28		0.0021
Cuckoo	CK	0.17		0.084		-0.12
Rock Dove	DV	0.18	0.17	0.15	0.088	
Stock Dove	SD	0.21	0.21	0.34	0.5	0.17
Woodpigeon	WP	0.16	0.16	0.46	0.64	-0.036
Turtle Dove	TD	0.65		0.94		
Collared Dove	CD	0.17	0.18	0.58	0.53	0.0042
Water Rail	WA	0.3	0.31			-0.048
Moorhen	MH	0.19	0.2	0.56	0.56	0.099
Coot	CO	0.25	0.24	0.23	0.19	0.2
Little Grebe	LG	0.24	0.22	0.18	0.14	0.05
Great Crested Grebe	GG	0.3	0.26	0.23	0.096	0.029
Oystercatcher	OC	0.15	0.12	0.0017		
Avocet	AV	0.71				
Lapwing	L.	0.19	0.18	0.25	0.13	0.12
Golden Plover	GP		0.21		0.11	
Ringed Plover	RP	0.11				
Little Ringed Plover	LP	0.5		0.075		0.062
Curlew	CU	0.12	0.18			
Black-tailed Godwit	BW		0.22			
Woodcock	WK	0.12	0.16		0.028	0.029
Jack Snipe	JS		0.26		0.15	
Snipe	SN	0.13	0.16	0.0051	0.21	
Green Sandpiper	GE		0.45		0.12	
Redshank	RK	0.1	0.078	0.038	0.0028	0.065
Black-headed Gull	BH		0.18		0.3	
Mediterranean Gull	MU		0.3		0.05	
Common Gull	CM		0.17		0.048	
Great Black-backed Gull	GB		0.21		0.012	
Glaucous Gull	GZ		0.22			
Iceland Gull	IG		0.21			
Herring Gull	HG		0.17		0.0055	
Caspian Gull	YC		0.59			
Yellow-legged Gull	YG		0.48			
Lesser Black-backed Gull	LB		0.22		0.28	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Common Tern	CN	0.31		0.16		0.24
Cormorant	CA	0.57	0.13	0.12	0.068	
Bittern	BI	1.2	0.61			
Grey Heron	H.	0.21	0.15	0.26	0.14	0.14
Little Egret	ET	0.31	0.35	0.1	0.056	
Sparrowhawk	SH	0.17	0.16	0.26	0.19	0.13
Marsh Harrier	MR	0.83	0.9	0.65	0.57	-0.016
Hen Harrier	HH		0.23		0.057	
Red Kite	KT	0.28	0.1			
Buzzard	BZ	0.16	0.15	0.044	0.052	-0.084
Barn Owl	BO	0.21	0.2	0.29	0.32	0.0021
Tawny Owl	TO	0.18	0.18	0.078		-0.037
Little Owl	LO	0.32	0.34	0.22	0.39	0.043
Long-eared Owl	LE	0.41	0.23		1.2	
Short-eared Owl	SE		0.35			
Kingfisher	KF	0.3	0.25	0.6	0.75	0.058
Great Spotted Woodpecker	GS	0.17	0.17	0.15	0.13	0.057
Green Woodpecker	G.	0.24	0.26	0.55	0.43	0.43
Kestrel	K.	0.16	0.16	0.33	0.35	-0.0044
Merlin	ML		0.26			
Hobby	HY	0.39		0.99		0.059
Peregrine	PE	0.069	0.19		0.082	
Ring-necked Parakeet	RI		0.42			
Great Grey Shrike	SR		0.34			
Jay	J.	0.2	0.19	0.19	0.2	0.16
Magpie	MG	0.19	0.19	0.18	0.2	0.28
Jackdaw	JD	0.17	0.17	0.14	0.2	0.2
Rook	RO	0.19	0.18	0.2	0.28	0.32
Carrion Crow	C.	0.17	0.16	0.18	0.16	0.2
Waxwing	WX		0.18			
Coal Tit	CT	0.16	0.16	0.021	0.015	-0.04
Marsh Tit	MT	0.19	0.17	0.024	0.024	
Blue Tit	BT	0.16	0.16	0.18	0.16	-0.035
Great Tit	GT	0.16	0.16	0.16	0.17	0.024
Bearded Tit	BR	2.4	0.65			-0.06
Skylark	S.	0.15	0.17	0.27	0.5	-0.00095
Sand Martin	SM	0.11		0.0036		

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Swallow	SL	0.15		0.087		-0.16
House Martin	HM	0.16		0.13		-0.22
Cetti's Warbler	CW	0.72	0.81	0.39	0.21	-0.049
Long-tailed Tit	LT	0.18	0.17	0.41	0.26	0.2
Willow Warbler	WW	0.15		0.023		-0.23
Chiffchaff	CC	0.17	0.17	0.15		0.16
Sedge Warbler	SW	0.19		0.27		-0.0074
Reed Warbler	RW	0.37		0.61		0.056
Grasshopper Warbler	GH	0.24		0.21		
Blackcap	BC	0.17	0.28	0.28	0.19	0.12
Garden Warbler	GW	0.19		0.074		
Lesser Whitethroat	LW	0.28		0.49		0.1
Whitethroat	WH	0.17		0.42		0.22
Firecrest	FC	0.47	0.34			
Goldcrest	GC	0.16	0.16	0.085	0.085	0.17
Wren	WR	0.15	0.15	0.2	0.15	0.11
Nuthatch	NH	0.063	0.12		0.0031	
Treecreeper	TC	0.14	0.18	0.031	0.026	0.01
Starling	SG	0.16	0.16	0.2	0.08	-0.027
Blackbird	B.	0.15	0.15	0.29	0.25	-0.044
Fieldfare	FF		0.15		0.36	
Redwing	RE		0.16		0.23	
Song Thrush	ST	0.15	0.16	0.2	0.22	-0.09
Mistle Thrush	M.	0.16	0.16	0.38	0.25	0.13
Spotted Flycatcher	SF	0.18		0.034		0.026
Robin	R.	0.15	0.15	0.21	0.21	0.054
Nightingale	N.	0.82		0.14		
Black Redstart	BX	0.76	0.51			
Stonechat	SC	0.054	0.13	0.0069	0.046	-0.046
House Sparrow	HS	0.16	0.16	0.12	0.092	-0.23
Tree Sparrow	TS		0.35		0.01	
Dunnock	D.	0.15	0.15	0.24	0.18	-0.011
Yellow Wagtail	YW	0.51		0.27		0.052
Grey Wagtail	GL	0.18	0.19	0.053	0.11	0.072
Pied/White Wagtail	PW	0.15	0.17	0.1	0.23	0.11
Meadow Pipit	MP	0.16	0.15	0.017	0.17	0.033
Chaffinch	CH	0.15	0.15	0.18	0.16	0.063

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Brambling	BL		0.2		0.03	
Bullfinch	BF	0.17	0.17	0.11	0.18	-0.13
Greenfinch	GR	0.16	0.16	0.27	0.3	-0.066
Linnet	LI	0.17	0.2	0.19	0.19	0.074
Common Redpoll	FR		0.19			
Lesser Redpoll	LR		0.21		0.015	
Common/Lesser Redpoll	FQ		0.19		0.044	
Goldfinch	GO	0.16	0.16	0.25	0.43	-0.036
Siskin	SK		0.16		0.027	
Snow Bunting	SB		0.21			
Corn Bunting	CB	0.67	0.72	1.6	1.2	0.12
Yellowhammer	Y.	0.21	0.22	0.3	0.36	-0.041
Reed Bunting	RB	0.17	0.18	0.37	0.33	0.077

Appendix 5

Summary table for range and abundance importance and notable species for countries.

Appendix 5.1 England

Percentage of the country's range and abundance that are associated with the four 10-km squares of the site that fall within the country. Colour-coded text indicates BoCC listing category. Shading highlights **Notable species**. These are species for which the percentage of the country's range or abundance (winter or the breeding season) associated with the site is at least twice the percentage of the country's 10-km squares associated with the site (0.268%).

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Red-legged Partridge	RL	0.32	0.33	0.49	0.98	-0.071
Grey Partridge	P.	0.4	0.41	0.59	0.45	
Quail	Q.	0.49				
Pheasant	PH	0.27	0.27	0.26	0.18	-0.069
Canada Goose	CG	0.31	0.32	0.18	0.098	0.02
Barnacle Goose	BY		0.2			
Greylag Goose	GJ	0.42	0.28	0.51	0.29	-0.036
Pink-footed Goose	PG		0.17			
Taiga/Tundra Bean Goose	BE		0.62			
White-fronted Goose	WG		0.28			
Mute Swan	MS	0.34	0.32	0.3	0.22	-0.026
Whooper Swan	WS		0.51		0.032	
Egyptian Goose	EG	0.43	0.52	0.089		
Shelduck	SU	0.15	0.14	0.04	0.015	-0.099
Mandarin Duck	MN	0.22	0.18		0.18	
Garganey	GY	0.61				
Shoveler	SV	0.52	0.36	0.18	0.081	-0.074
Gadwall	GA	0.17	0.33	0.27	0.63	-0.048
Wigeon	WN		0.27		0.2	
Mallard	MA	0.27	0.27	0.32	0.21	0.02
Pintail	PT		0.17			
Teal	T.	0.36	0.23	0.024	0.19	
Pochard	PO	0.36	0.32		0.082	
Tufted Duck	TU	0.35	0.25	0.037	0.16	-0.02
Scaup	SP		0.47			

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Goldeneye	GN		0.13			
Smew	SY		0.31			
Goosander	GD		0.19		0.014	
Swift	SI	0.28		0.33		0.012
Cuckoo	CK	0.3		0.22		-0.013
Rock Dove	DV	0.3	0.28	0.24	0.16	
Stock Dove	SD	0.28	0.28	0.37	0.55	0.16
Woodpigeon	WP	0.27	0.27	0.55	0.74	-0.034
Turtle Dove	TD	0.65		0.94		
Collared Dove	CD	0.28	0.28	0.67	0.62	0.0013
Water Rail	WA	0.48	0.43			-0.04
Moorhen	MH	0.28	0.28	0.63	0.61	0.089
Coot	CO	0.32	0.32	0.25	0.21	0.19
Little Grebe	LG	0.36	0.34	0.26	0.2	0.061
Great Crested Grebe	GG	0.37	0.34	0.26	0.11	0.029
Oystercatcher	OC	0.36	0.26	0.0051		
Avocet	AV	0.72				
Lapwing	L.	0.32	0.28	0.45	0.17	0.11
Golden Plover	GP		0.32		0.16	
Ringed Plover	RP	0.29				
Little Ringed Plover	LP	0.58		0.092		0.07
Curlew	CU	0.29	0.34			
Black-tailed Godwit	BW		0.31			
Woodcock	WK	0.21	0.28		0.092	0.033
Jack Snipe	JS		0.39		0.38	
Snipe	SN	0.35	0.29	0.036	0.52	
Green Sandpiper	GE		0.52		0.14	
Redshank	RK	0.2	0.15	0.086	0.0046	0.052
Black-headed Gull	BH		0.28		0.36	
Mediterranean Gull	MU		0.38		0.052	
Common Gull	CM		0.29		0.095	
Great Black-backed Gull	GB		0.38		0.031	
Glaucous Gull	GZ		0.4			
Iceland Gull	IG		0.4			
Herring Gull	HG		0.29		0.012	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Caspian Gull	YC		0.6			
Yellow-legged Gull	YG		0.53			
Lesser Black-backed Gull	LB		0.31		0.33	
Common Tern	CN	0.5		0.2		0.2
Cormorant	CA	0.9	0.23	0.2	0.1	
Bittern	BI	1.3	0.7			
Grey Heron	H.	0.36	0.28	0.45	0.28	0.12
Little Egret	ET	0.33	0.41	0.12	0.065	
Sparrowhawk	SH	0.28	0.27	0.35	0.27	0.12
Marsh Harrier	MR	0.93	0.95	0.65	0.57	-0.024
Hen Harrier	HH		0.44		0.29	
Red Kite	KT	0.46	0.16			
Buzzard	BZ	0.28	0.28	0.09	0.11	-0.13
Barn Owl	BO	0.32	0.31	0.36	0.41	-0.014
Tawny Owl	TO	0.29	0.29	0.11		-0.038
Little Owl	LO	0.34	0.36	0.23	0.4	0.039
Long-eared Owl	LE	0.71	0.33		1.8	
Short-eared Owl	SE		0.47			
Kingfisher	KF	0.38	0.32	0.71	0.9	0.06
Great Spotted Woodpecker	GS	0.28	0.28	0.2	0.16	0.053
Green Woodpecker	G.	0.3	0.31	0.59	0.46	0.38
Kestrel	K.	0.27	0.27	0.43	0.48	-0.025
Merlin	ML		0.42			
Hobby	HY	0.42		1		0.06
Peregrine	PE	0.14	0.31		0.16	
Ring-necked Parakeet	RI		0.44			
Great Grey Shrike	SR		0.44			
Jay	J.	0.3	0.29	0.24	0.26	0.18
Magpie	MG	0.27	0.27	0.22	0.24	0.28
Jackdaw	JD	0.27	0.27	0.2	0.3	0.14
Rook	RO	0.28	0.28	0.3	0.43	0.3
Carrion Crow	C.	0.27	0.27	0.26	0.22	0.16
Waxwing	WX		0.27			
Coal Tit	CT	0.29	0.28	0.051	0.041	-0.03
Marsh Tit	MT	0.22	0.19	0.028	0.026	
Blue Tit	BT	0.27	0.27	0.24	0.22	-0.017
Great Tit	GT	0.27	0.27	0.22	0.22	0.035

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Bearded Tit	BR	2.7	0.68			-0.055
Skylark	S.	0.27	0.28	0.49	0.66	-0.00048
Sand Martin	SM	0.25		0.0085		
Swallow	SL	0.27		0.15		-0.11
House Martin	HM	0.27		0.19		-0.14
Cetti's Warbler	CW	0.81	0.89	0.45	0.25	-0.044
Long-tailed Tit	LT	0.28	0.27	0.49	0.32	0.15
Willow Warbler	WW	0.28		0.079		-0.077
Chiffchaff	CC	0.27	0.21	0.19		0.14
Sedge Warbler	SW	0.33		0.49		0.029
Reed Warbler	RW	0.42		0.64		0.057
Grasshopper Warbler	GH	0.46		0.66		
Blackcap	BC	0.27	0.37	0.35	0.23	0.13
Garden Warbler	GW	0.29		0.12		
Lesser Whitethroat	LW	0.33		0.53		0.1
Whitethroat	WH	0.28		0.53		0.21
Firecrest	FC	0.49	0.39			
Goldcrest	GC	0.29	0.27	0.17	0.16	0.15
Wren	WR	0.27	0.27	0.29	0.24	0.11
Nuthatch	NH	0.081	0.16		0.0041	
Treecreeper	TC	0.23	0.29	0.055	0.046	0.037
Starling	SG	0.27	0.27	0.34	0.14	0.0075
Blackbird	B.	0.27	0.27	0.37	0.34	-0.028
Fieldfare	FF		0.27		0.46	
Redwing	RE		0.27		0.3	
Song Thrush	ST	0.27	0.27	0.31	0.33	-0.078
Mistle Thrush	M.	0.28	0.27	0.6	0.37	0.16
Spotted Flycatcher	SF	0.32		0.083		0.069
Robin	R.	0.27	0.27	0.3	0.3	0.056
Nightingale	N.	0.82		0.14		
Black Redstart	BX	0.81	0.7			
Stonechat	SC	0.13	0.23	0.026	0.11	-0.058
House Sparrow	HS	0.27	0.27	0.17	0.13	-0.19
Tree Sparrow	TS		0.47		0.014	
Dunnock	D.	0.27	0.27	0.31	0.24	0.0073
Yellow Wagtail	YW	0.52		0.27		0.051

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Grey Wagtail	GL	0.33	0.29	0.12	0.16	0.053
Pied/White Wagtail	PW	0.27	0.27	0.21	0.28	0.075
Meadow Pipit	MP	0.32	0.27	0.074	0.27	0.043
Chaffinch	CH	0.27	0.27	0.3	0.29	0.064
Brambling	BL		0.3		0.059	
Bullfinch	BF	0.29	0.28	0.16	0.27	-0.1
Greenfinch	GR	0.27	0.27	0.35	0.41	-0.063
Linnet	LI	0.27	0.29	0.29	0.33	0.1
Common Redpoll	FR		0.27			
Lesser Redpoll	LR		0.32		0.034	
Common/Lesser Redpoll	FQ		0.29		0.099	
Goldfinch	GO	0.27	0.27	0.32	0.52	-0.046
Siskin	SK		0.28		0.064	
Snow Bunting	SB		0.59			
Corn Bunting	CB	0.76	0.79	1.7	1.3	0.11
Yellowhammer	Y.	0.3	0.31	0.4	0.48	-0.041
Reed Bunting	RB	0.3	0.29	0.55	0.54	0.088

Appendix 6

Summary table for range and abundance importance and notable species for Government Office Regions.

Appendix 6.1 East of England

Percentage of the region's range and abundance that are associated with the four 10-km squares of the site that fall within the region. Colour-coded text indicates BoCC listing category. Shading highlights **Notable species**. These are species for which the percentage of the region's range or abundance (winter or the breeding season) associated with the site is at least twice the percentage of the region's 10-km squares associated with the site (1.77%).

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Red-legged Partridge	RL	1.8	1.8	1.5	2.6	0.023
Grey Partridge	P.	2.1	2.1	2.4	2.2	
Quail	Q.	2.8				
Pheasant	PH	1.8	1.8	1.2	0.92	0.012
Canada Goose	CG	1.9	1.9	1.1	0.54	0.061
Barnacle Goose	BY		0.93			
Greylag Goose	GJ	2	1.5	1.7	0.98	-0.042
Pink-footed Goose	PG		0.95			
Taiga/Tundra Bean Goose	BE		1.5			
White-fronted Goose	WG		1.1			
Mute Swan	MS	2	1.9	1.3	0.96	0.015
Whooper Swan	WS		2.9		0.049	
Egyptian Goose	EG	0.82	1.3	0.12		
Shelduck	SU	0.66	0.67	0.15	0.058	-0.084
Mandarin Duck	MN	1.4	1.1		1.2	
Garganey	GY	1.9				
Shoveler	SV	2	1.8	0.36	0.25	-0.069
Gadwall	GA	0.65	1.6	0.84	2	-0.032
Wigeon	WN		1.6		0.57	
Mallard	MA	1.8	1.8	1.8	1.2	0.034
Pintail	PT		0.88			
Teal	T.	2.2	1.5	0.093	0.65	
Pochard	PO	1.2	1.8		0.26	
Tufted Duck	TU	1.9	1.5	0.19	0.66	0.0035

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Scaup	SP		2.4			
Goldeneye	GN		0.85			
Smew	SY		1.3			
Goosander	GD		1.4		0.3	
Swift	SI	1.8		1.3		0.015
Cuckoo	CK	1.8		0.92		0.002
Rock Dove	DV	1.9	1.8	1.8	1.1	
Stock Dove	SD	1.8	1.8	1.5	2.1	0.046
Woodpigeon	WP	1.8	1.8	2	2.2	-0.022
Turtle Dove	TD	1.9		1.8		
Collared Dove	CD	1.8	1.8	2.5	2.2	-0.04
Water Rail	WA	2	2.2			-0.042
Moorhen	MH	1.8	1.8	2.5	2.4	0.11
Coot	CO	1.8	1.9	1.3	1.1	0.22
Little Grebe	LG	2.1	2.1	1	0.74	0.056
Great Crested Grebe	GG	1.8	1.8	1.2	0.69	0.045
Oystercatcher	OC	1.9	1.6	0.024		
Avocet	AV	1.6				
Lapwing	L.	1.9	1.8	3.4	0.59	0.12
Golden Plover	GP		1.8		0.44	
Ringed Plover	RP	1.4				
Little Ringed Plover	LP	3		0.68		0.081
Curlew	CU	4.2	2.4			
Black-tailed Godwit	BW		1.2			
Woodcock	WK	1.6	1.8		0.35	0.05
Jack Snipe	JS		2.2		2.6	
Snipe	SN	2.6	1.8	0.35	3.9	
Green Sandpiper	GE		2.4		0.55	
Redshank	RK	1	0.79	0.2	0.019	0.022
Black-headed Gull	BH		1.8		1.4	
Mediterranean Gull	MU		2.2		0.47	
Common Gull	CM		1.8		0.42	
Great Black-backed Gull	GB		2.1		0.22	
Glaucous Gull	GZ		2.3			
Iceland Gull	IG		2.9			

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Herring Gull	HG		1.8		0.1	
Caspian Gull	YC		2			
Yellow-legged Gull	YG		2.3			
Lesser Black-backed Gull	LB		1.8		1.7	
Common Tern	CN	1.5		0.58		0.18
Cormorant	CA	4.9	1.4	1.8	0.62	
Bittern	BI	2.8	2.8			
Grey Heron	H.	2.2	1.8	2.4	1.7	0.13
Little Egret	ET	1	1.9	0.25	0.24	
Sparrowhawk	SH	1.8	1.8	1.6	1.3	0.0088
Marsh Harrier	MR	1.9	2.7	0.96	0.94	-0.05
Hen Harrier	HH		2.3		1.2	
Red Kite	KT	2.1	0.75			
Buzzard	BZ	1.8	1.8	1.3	1.8	-0.055
Barn Owl	BO	1.9	1.8	1.1	1	-0.041
Tawny Owl	TO	1.9	1.9	0.75		-0.033
Little Owl	LO	1.9	1.8	0.76	1.4	-0.012
Long-eared Owl	LE	3.6	1.7		7.9	
Short-eared Owl	SE		2.7			
Kingfisher	KF	2.2	1.9	3.4	4.5	0.06
Great Spotted Woodpecker	GS	1.8	1.8	1.3	0.95	0.033
Green Woodpecker	G.	1.8	1.8	1.8	1.4	0.1
Kestrel	K.	1.8	1.8	2	2.3	0.0099
Merlin	ML		2.6			
Hobby	HY	2		2.9		0.045
Peregrine	PE	3.7	2.2		1.9	
Ring-necked Parakeet	RI		2.1			
Great Grey Shrike	SR		2.9			
Jay	J.	1.8	1.8	1	1	0.088
Magpie	MG	1.8	1.8	1.4	1.5	0.18
Jackdaw	JD	1.8	1.8	1.4	1.9	0.0051
Rook	RO	1.8	1.8	1.6	2	0.2
Carrion Crow	C.	1.8	1.8	1.9	1.6	0.02
Waxwing	WX		1.5			
Coal Tit	CT	1.9	1.9	0.44	0.38	-0.021
Marsh Tit	MT	1.2	1.1	0.14	0.12	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Blue Tit	BT	1.8	1.8	1.5	1.3	-0.042
Great Tit	GT	1.8	1.8	1.3	1.2	0.027
Bearded Tit	BR	4.9	1.6			-0.055
Skylark	S.	1.8	1.8	2.2	2.5	-0.022
Sand Martin	SM	1.7		0.056		
Swallow	SL	1.8		1.3		-0.034
House Martin	HM	1.8		1.3		-0.018
Cetti's Warbler	CW	2.4	3	1.2	0.87	-0.11
Long-tailed Tit	LT	1.8	1.8	2.2	1.5	0.086
Willow Warbler	WW	1.8		1.3		0.045
Chiffchaff	CC	1.8	1.2	1.3		0.13
Sedge Warbler	SW	1.9		1.8		0.089
Reed Warbler	RW	1.9		1.8		0.081
Grasshopper Warbler	GH	2.6		4.9		
Blackcap	BC	1.8	2.3	1.8	4.5	0.088
Garden Warbler	GW	1.9		0.73		
Lesser Whitethroat	LW	1.8		1.6		0.1
Whitethroat	WH	1.8		2.1		0.15
Firecrest	FC	1.4	2			
Goldcrest	GC	1.9	1.8	1.4	1	0.12
Wren	WR	1.8	1.8	1.9	1.5	0.094
Nuthatch	NH	0.61	1.2		0.068	
Treecreeper	TC	1.5	1.9	0.37	0.32	0.031
Starling	SG	1.8	1.8	1.6	1.1	0.013
Blackbird	B.	1.8	1.8	2.4	1.9	-0.012
Fieldfare	FF		1.8		2.3	
Redwing	RE		1.8		2.5	
Song Thrush	ST	1.8	1.8	2.4	2.5	0.086
Mistle Thrush	M.	1.8	1.8	3.8	2.4	0.13
Spotted Flycatcher	SF	2		0.61		0.14
Robin	R.	1.8	1.8	2	2	0.03
Nightingale	N.	2.2		0.28		
Black Redstart	BX	2.6	4.6			
Stonechat	SC	1.8	1.6	0.93	0.9	-0.016
House Sparrow	HS	1.8	1.8	1.3	0.98	-0.059
Tree Sparrow	TS		2.8		0.37	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Dunnock	D.	1.8	1.8	1.9	1.4	0.048
Yellow Wagtail	YW	2.2		0.82		0.057
Grey Wagtail	GL	2.4	1.9	1.9	1.8	-0.014
Pied/White Wagtail	PW	1.8	1.8	1.2	1.5	-0.024
Meadow Pipit	MP	2	1.8	1.6	1.5	0.024
Chaffinch	CH	1.8	1.8	1.7	1.7	0.017
Brambling	BL		1.9		0.29	
Bullfinch	BF	1.9	1.9	1.1	1.6	0.0081
Greenfinch	GR	1.8	1.8	1.6	1.7	-0.012
Linnet	LI	1.8	1.8	2	1.9	0.14
Common Redpoll	FR		1.1			
Lesser Redpoll	LR		2		0.4	
Common/Lesser Redpoll	FQ		1.6		0.75	
Goldfinch	GO	1.8	1.8	2.1	2.5	0.027
Siskin	SK		1.9		0.39	
Snow Bunting	SB		3.5			
Corn Bunting	CB	3.1	3.2	5	3.6	0.12
Yellowhammer	Y.	1.8	1.8	2	2.1	-0.033
Reed Bunting	RB	1.8	1.8	2.3	2.2	0.11

Appendix 7

Summary table for range and abundance importance and notable species for Counties and Administrative areas.

Appendix 7.1 Cambridgeshire

Percentage of the county's or administrative area's range and abundance that are associated with the four 10-km squares of the site that fall within the county. Colour-coded text indicates BoCC listing category. Shading highlights **Notable species**. These are species for which the percentage of the county's range or abundance (winter or the breeding season) associated with the site is at least twice the percentage of the county's 10-km squares associated with the site (8%).

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Red-legged Partridge	RL	8	8	6.1	11	-0.024
Grey Partridge	P.	8.2	8.3	9.6	9.3	
Quail	Q.	9.4				
Pheasant	PH	8	8	5.8	4.5	0.04
Canada Goose	CG	8.5	9.1	8.9	4.6	0.023
Barnacle Goose	BY		5.9			
Greylag Goose	GJ	8.9	6.8	9.1	7.3	-0.011
Pink-footed Goose	PG		5.9			
Taiga/Tundra Bean Goose	BE		9.1			
White-fronted Goose	WG		6.2			
Mute Swan	MS	8.9	8.5	4.4	2.4	-0.03
Whooper Swan	WS		12		0.05	
Egyptian Goose	EG	5.6	9.1	5.5		
Shelduck	SU	4	3.7	4.7	5.4	-0.054
Mandarin Duck	MN	12	9.1		38	
Garganey	GY	7.1				
Shoveler	SV	9.5	9.4	0.95	1.2	-0.078
Gadwall	GA	4.2	8.1	3.7	7.6	-0.019
Wigeon	WN		8.6		2.1	
Mallard	MA	8	8	8.9	5.4	0.042
Pintail	PT		4.5			
Teal	T.	11	6.8	0.76	6.5	
Pochard	PO	5.9	8.6		0.53	
Tufted Duck	TU	8.3	7	0.98	1.7	0.0031

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Scaup	SP		12			
Goldeneye	GN		4.3			
Smew	SY		7.1			
Goosander	GD		6.9		0.84	
Swift	SI	8		9.5		0.056
Cuckoo	CK	8		3.5		-0.0098
Rock Dove	DV	8	8	11	8.8	
Stock Dove	SD	8	8	5.1	6.2	0.0098
Woodpigeon	WP	8	8	8.8	8.5	-0.03
Turtle Dove	TD	8		8		
Collared Dove	CD	8	8	9.5	7.7	-0.051
Water Rail	WA	9.1	12			-0.028
Moorhen	MH	8	8	11	9.6	0.085
Coot	CO	8	8.2	4.8	2.7	0.18
Little Grebe	LG	10	9.8	7.2	7.5	0.054
Great Crested Grebe	GG	7.5	8.3	4.1	2.9	0.066
Oystercatcher	OC	9.4	9.1	2.1		
Avocet	AV	6.7				
Lapwing	L.	8.2	8	13	2.9	0.14
Golden Plover	GP		8		3	
Ringed Plover	RP	7.1				
Little Ringed Plover	LP	12		3		0.087
Curlew	CU	9.5	14			
Black-tailed Godwit	BW		7.1			
Woodcock	WK	10	8.3		3.7	0.15
Jack Snipe	JS		11		10	
Snipe	SN	8.7	8.3	0.51	18	
Green Sandpiper	GE		13		3	
Redshank	RK	4.5	3.7	3.4	1.9	0.026
Black-headed Gull	BH		8		10	
Mediterranean Gull	MU		25		47	
Common Gull	CM		8		4	
Great Black-backed Gull	GB		9.3		4.5	
Glaucous Gull	GZ		14			
Iceland Gull	IG		14			

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Herring Gull	HG		8.2		1.4	
Caspian Gull	YC		9.1			
Yellow-legged Gull	YG		12			
Lesser Black-backed Gull	LB		8		8.9	
Common Tern	CN	7.7		4		0.18
Cormorant	CA	16	6.4	7.4	3.9	
Bittern	BI	7.7	11			
Grey Heron	H.	9.3	8	9	6	0.13
Little Egret	ET	6.7	9.3	2.5	3.9	
Sparrowhawk	SH	8.2	8	8.4	6.4	0.04
Marsh Harrier	MR	6.7	12	5.4	12	0.021
Hen Harrier	HH		8.1		6.4	
Red Kite	KT	7.1	3.6			
Buzzard	BZ	8	8	4.1	5.5	-0.13
Barn Owl	BO	8.2	8	4.4	5.5	-0.068
Tawny Owl	TO	9.3	8.7	3.8		-0.013
Little Owl	LO	8.5	8.3	3	6.8	-0.0081
Long-eared Owl	LE	10	9.1		31	
Short-eared Owl	SE		9.7			
Kingfisher	KF	9.3	9.1	11	17	0.055
Great Spotted Woodpecker	GS	8	8	7.5	5.4	0.016
Green Woodpecker	G.	8	8	9.3	7.3	0.031
Kestrel	K.	8	8	6.7	6.9	-0.09
Merlin	ML		10			
Hobby	HY	8.7		9.5		0.06
Peregrine	PE	33	9.8		8	
Ring-necked Parakeet	RI		100			
Great Grey Shrike	SR		25			
Jay	J.	8.2	8	11	12	0.11
Magpie	MG	8	8	8.7	9.2	0.043
Jackdaw	JD	8	8	7	8.5	-0.0084
Rook	RO	8	8	7.6	8.1	0.037
Carrion Crow	C.	8	8	9.4	7.8	-0.037
Waxwing	WX		7.5			
Coal Tit	CT	10	8.9	5.2	4.3	-0.04
Marsh Tit	MT	6.7	6.1	0.74	0.76	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Blue Tit	BT	8	8	8.3	7.7	-0.098
Great Tit	GT	8	8	7.1	7.5	-0.06
Bearded Tit	BR	33	7.7			-0.12
Skylark	S.	8	8	8.2	10	-0.042
Sand Martin	SM	7.7		0.41		
Swallow	SL	8		5.8		-0.085
House Martin	HM	8		6.5		-0.096
Cetti's Warbler	CW	10	15	16	19	-0.031
Long-tailed Tit	LT	8.2	8	14	9.7	0.11
Willow Warbler	WW	8.2		5.1		-0.064
Chiffchaff	CC	8.2	6.7	9.1		0.068
Sedge Warbler	SW	8.7		5		0.074
Reed Warbler	RW	8.2		4.6		0.0054
Grasshopper Warbler	GH	10		9.9		
Blackcap	BC	8	11	9.3	31	0.042
Garden Warbler	GW	8.7		3.7		
Lesser Whitethroat	LW	8.2		9		0.087
Whitethroat	WH	8		8.9		0.06
Firecrest	FC	6.7	25			
Goldcrest	GC	8.7	8.3	14	10	0.12
Wren	WR	8	8	9.6	8.3	0.065
Nuthatch	NH	3.7	7.7		0.7	
Treecreeper	TC	7.9	9.3	2.4	2.6	-0.023
Starling	SG	8	8	7.9	5.1	-0.00091
Blackbird	B.	8	8	11	9.3	-0.022
Fieldfare	FF		8		6.2	
Redwing	RE		8		9.9	
Song Thrush	ST	8	8	10	11	0.061
Mistle Thrush	M.	8	8	17	10	0.0083
Spotted Flycatcher	SF	8.9		3.2		0.096
Robin	R.	8	8	11	11	-0.059
Nightingale	N.	10		3.4		
Black Redstart	BX	8.3	50			
Stonechat	SC	14	6.7	60	6.3	-0.012
House Sparrow	HS	8	8	4.9	3.7	-0.092
Tree Sparrow	TS		9.1		0.59	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Dunnock	D.	8	8	9	7.5	0.044
Yellow Wagtail	YW	8.5		1.7		-0.029
Grey Wagtail	GL	11	8.9	19	12	0.01
Pied/White Wagtail	PW	8	8	6.2	6.7	-0.072
Meadow Pipit	MP	8.2	8	7.3	7	-0.00043
Chaffinch	CH	8	8	8.4	8.4	-0.068
Brambling	BL		9.8		3.1	
Bullfinch	BF	8.5	8.3	5	7.8	-0.017
Greenfinch	GR	8	8	8.3	8.7	-0.067
Linnet	LI	8	8	7.2	5.5	0.072
Common Redpoll	FR		10			
Lesser Redpoll	LR		11		2.5	
Common/Lesser Redpoll	FQ		10		4.3	
Goldfinch	GO	8	8	7.1	7.7	-0.035
Siskin	SK		9.3		7	
Snow Bunting	SB		67			
Corn Bunting	CB	8.9	9.5	10	7.9	0.13
Yellowhammer	Y.	8	8	7.7	7.8	-0.12
Reed Bunting	RB	8	8	5.1	4.5	-0.043

Appendix 8

Summary table for range and abundance importance and notable species for Watsonian Vice Counties.

Appendix 8.1 Cambridgeshire

Percentage of the Vice County's range and abundance that are associated with the four 10-km squares of the site that fall within the vice county. Colour-coded text indicates BoCC listing category. Shading highlights **Notable species**. These are species for which the percentage of the vice county's range or abundance (winter or the breeding season) associated with the site is at least twice the percentage of the vice county's 10-km squares associated with the site (9.52%).

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Red-legged Partridge	RL	9.5	9.5	6.9	12	-0.026
Grey Partridge	P.	9.8	10	11	9.8	
Quail	Q.	11				
Pheasant	PH	9.5	9.5	6.7	5.2	0.017
Canada Goose	CG	10	11	12	5.8	0.02
Barnacle Goose	BY		6.7			
Greylag Goose	GJ	11	8.1	11	8.1	-0.023
Pink-footed Goose	PG		6.7			
Taiga/Tundra Bean Goose	BE		10			
White-fronted Goose	WG		7.7			
Mute Swan	MS	11	11	4.7	2.5	-0.06
Whooper Swan	WS		12		0.05	
Egyptian Goose	EG	6.7	11	5.5		
Shelduck	SU	4.3	3.8	4.7	5.4	-0.067
Mandarin Duck	MN	17	12		43	
Garganey	GY	7.7				
Shoveler	SV	11	11	0.95	1.2	-0.091
Gadwall	GA	4.8	9.7	3.7	7.9	-0.031
Wigeon	WN		10		2.1	
Mallard	MA	9.5	9.5	9.9	5.6	0.025
Pintail	PT		5.3			
Teal	T.	13	8.1	0.78	6.6	
Pochard	PO	7.1	10		0.54	
Tufted Duck	TU	10	8.1	1	2.1	-0.024

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Scaup	SP		12			
Goldeneye	GN		5.9			
Smew	SY		9.1			
Goosander	GD		8.7		0.99	
Swift	SI	9.5		11		0.062
Cuckoo	CK	9.5		4.2		-0.012
Rock Dove	DV	9.5	9.5	13	9.8	
Stock Dove	SD	9.5	9.5	5.7	6.7	-0.043
Woodpigeon	WP	9.5	9.5	10	10	-0.032
Turtle Dove	TD	9.5		9.5		
Collared Dove	CD	9.5	9.5	11	8.4	-0.11
Water Rail	WA	11	15			-0.028
Moorhen	MH	9.5	9.5	12	11	0.056
Coot	CO	9.5	10	5.4	3.1	0.16
Little Grebe	LG	11	11	7.5	8	0.06
Great Crested Grebe	GG	9.1	10	4.7	3.8	0.063
Oystercatcher	OC	11	11	2.1		
Avocet	AV	7.1				
Lapwing	L.	9.8	9.8	13	3.1	0.11
Golden Plover	GP		9.5		3.4	
Ringed Plover	RP	8.3				
Little Ringed Plover	LP	13		3		0.082
Curlew	CU	12	16			
Black-tailed Godwit	BW		8.3			
Woodcock	WK	14	10		5.1	0.19
Jack Snipe	JS		12		10	
Snipe	SN	11	10	0.51	20	
Green Sandpiper	GE		15		3	
Redshank	RK	5.3	4.2	3.5	1.9	0.019
Black-headed Gull	BH		9.5		11	
Mediterranean Gull	MU		29		47	
Common Gull	CM		9.5		4.3	
Great Black-backed Gull	GB		11		4.7	
Glaucous Gull	GZ		17			
Iceland Gull	IG		17			

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Herring Gull	HG		9.8		1.4	
Caspian Gull	YC		12			
Yellow-legged Gull	YG		14			
Lesser Black-backed Gull	LB		9.5		9.3	
Common Tern	CN	10		4.7		0.15
Cormorant	CA	20	7.7	8.2	4.3	
Bittern	BI	8.3	14			
Grey Heron	H.	11	9.5	9.6	6.4	0.12
Little Egret	ET	7.1	11	2.4	3.9	
Sparrowhawk	SH	9.8	9.5	9.6	7.6	0.015
Marsh Harrier	MR	7.1	13	5.5	12	0.0064
Hen Harrier	HH		9.4		6.4	
Red Kite	KT	11	5			
Buzzard	BZ	9.5	9.5	6.3	7.7	-0.068
Barn Owl	BO	9.8	9.5	4.6	5.7	-0.061
Tawny Owl	TO	11	11	4.6		0.0043
Little Owl	LO	10	10	3.6	8.3	-0.0095
Long-eared Owl	LE	12	10		31	
Short-eared Owl	SE		11			
Kingfisher	KF	11	11	13	18	0.061
Great Spotted Woodpecker	GS	9.5	9.5	9.3	6.9	0.023
Green Woodpecker	G.	9.5	9.5	11	8.9	0.043
Kestrel	K.	9.5	9.5	7.7	8	-0.11
Merlin	ML		12			
Hobby	HY	11		11		0.059
Peregrine	PE	33	11		10	
Ring-necked Parakeet	RI		100			
Great Grey Shrike	SR		25			
Jay	J.	9.8	9.5	13	15	0.12
Magpie	MG	9.5	9.5	10	10	0.016
Jackdaw	JD	9.5	9.5	8.7	10	-0.036
Rook	RO	9.5	9.5	9.1	9.5	0.019
Carrion Crow	C.	9.5	9.5	11	9.3	-0.034
Waxwing	WX		9.1			
Coal Tit	CT	13	11	7	5.5	-0.021
Marsh Tit	MT	9.1	8	1.2	1.2	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Blue Tit	BT	9.5	9.5	11	9.7	-0.11
Great Tit	GT	9.5	9.5	8.7	9.2	-0.085
Bearded Tit	BR	33	8.3			-0.12
Skylark	S.	9.5	9.5	9.6	11	-0.021
Sand Martin	SM	8.7		0.53		
Swallow	SL	9.5		7		-0.091
House Martin	HM	9.5		8		-0.08
Cetti's Warbler	CW	12	18	19	19	-0.039
Long-tailed Tit	LT	9.8	9.5	17	12	0.099
Willow Warbler	WW	9.8		7.3		-0.084
Chiffchaff	CC	9.8	8	11		0.091
Sedge Warbler	SW	10		5.4		0.06
Reed Warbler	RW	9.8		4.7		-0.016
Grasshopper Warbler	GH	12		14		
Blackcap	BC	9.5	14	12	58	0.024
Garden Warbler	GW	11		5.4		
Lesser Whitethroat	LW	9.8		11		0.066
Whitethroat	WH	9.5		10		0.022
Firecrest	FC	7.7	29			
Goldcrest	GC	11	10	20	12	0.14
Wren	WR	9.5	9.5	11	9.5	0.029
Nuthatch	NH	5.3	11		1.1	
Treecreeper	TC	10	11	3.3	3.4	0.018
Starling	SG	9.5	9.5	8.8	5.8	-0.0078
Blackbird	B.	9.5	9.5	13	11	-0.026
Fieldfare	FF		9.5		8.1	
Redwing	RE		9.5		14	
Song Thrush	ST	9.5	9.5	12	13	0.066
Mistle Thrush	M.	9.5	9.5	19	11	-0.0013
Spotted Flycatcher	SF	11		4.4		0.073
Robin	R.	9.5	9.5	13	13	-0.083
Nightingale	N.	13		4.7		
Black Redstart	BX	10	50			
Stonechat	SC	17	7.9	60	6.7	-0.012
House Sparrow	HS	9.5	9.5	5.6	4.3	-0.094
Tree Sparrow	TS		11		0.68	

Species	Code	% range (B)	% range (W)	% abund (B)	% abund (W)	Trend diff (B)
Dunnock	D.	9.5	9.5	11	9.1	0.038
Yellow Wagtail	YW	11		1.8		-0.045
Grey Wagtail	GL	13	11	22	14	0.016
Pied/White Wagtail	PW	9.5	9.5	7	7.5	-0.08
Meadow Pipit	MP	9.8	9.5	8	7.5	0.027
Chaffinch	CH	9.5	9.5	10	10	-0.11
Brambling	BL		12		3.6	
Bullfinch	BF	10	10	6.4	10	-8.8e-06
Greenfinch	GR	9.5	9.5	10	9.4	-0.084
Linnet	LI	9.5	9.8	8.3	6.3	0.09
Common Redpoll	FR		11			
Lesser Redpoll	LR		13		2.9	
Common/Lesser Redpoll	FQ		12		6.6	
Goldfinch	GO	9.5	9.5	8.5	9.1	-0.052
Siskin	SK		11		8.9	
Snow Bunting	SB		67			
Corn Bunting	CB	10	11	11	8	0.13
Yellowhammer	Y.	9.5	9.5	9.8	9.1	-0.12
Reed Bunting	RB	9.5	9.5	5.7	5.1	-0.032

Appendix 9

List of species recorded through *BirdTrack* which can be related to the site's tetrads and 10-km squares with varying degrees of precision. Here high certainty means the records definitely fell within the focal squares; low certainty means the records could have fallen in the focal squares but could also have been outside (e.g. due to the site being larger than a tetrad or 10-km square). Colour-coded text indicates BoCC listing category. Sensitive species that cannot be mapped at 2-km or 10-km may have been removed. It may be possible to access more detailed or up to date information on rare breeding birds from the Rare Breeding Birds Panel. Information on the work of the RBBP and their data holdings can be found at rbbp.org.uk, and the secretary contacted at [secretary\[at\]rbbp.org.uk](mailto:secretary[at]rbbp.org.uk).

Species	2-km high certainty	2-km low certainty	10-km high certainty	10-km low certainty
Red-legged Partridge	Probable		Probable	
Grey Partridge	Probable		Probable	
Quail		Present	Possible	Present
Pheasant	Probable	Possible	Probable	
Canada Goose	Confirmed	Probable	Confirmed	
Greylag Goose	Confirmed		Confirmed	
Mute Swan	Confirmed	Probable	Confirmed	
Whooper Swan				Present
Egyptian Goose	Present		Confirmed	
Shelduck	Probable	Present	Probable	Confirmed
Mandarin Duck			Probable	
Garganey			Confirmed	
Shoveler	Present		Confirmed	
Gadwall		Probable	Confirmed	
Wigeon		Present	Confirmed	
Mallard	Confirmed	Possible	Confirmed	
Pintail			Probable	Present
Teal	Probable		Probable	
Pochard	Present		Confirmed	
Tufted Duck	Present		Confirmed	
Common Scoter				Present
Goosander	Present		Confirmed	

Species	2-km high certainty	2-km low certainty	10-km high certainty	10-km low certainty
Red-breasted Merganser				Present
Swift	Confirmed	Present	Probable	Confirmed
Cuckoo	Probable		Confirmed	
Rock Dove	Probable	Possible	Confirmed	Probable
Stock Dove	Probable	Present	Confirmed	
Woodpigeon	Present	Confirmed	Probable	Confirmed
Turtle Dove	Probable		Confirmed	Possible
Collared Dove	Probable		Probable	Confirmed
Water Rail	Probable	Present	Probable	Confirmed
Corncrake			Present	
Moorhen	Confirmed	Probable	Confirmed	
Coot	Confirmed		Confirmed	
Little Grebe	Probable		Confirmed	
Great Crested Grebe	Confirmed		Confirmed	
Black-necked Grebe			Confirmed	Present
Oystercatcher		Present	Confirmed	
Avocet		Present	Confirmed	Probable
Lapwing	Confirmed	Probable	Confirmed	
Golden Plover		Present	Present	
Ringed Plover	Probable	Present	Confirmed	
Little Ringed Plover	Confirmed	Possible	Probable	Confirmed
Whimbrel				Present
Curlew	Present			Present
Dunlin	Present		Present	
Woodcock	Present		Present	
Snipe	Possible		Probable	
Common Sandpiper		Present	Possible	
Redshank	Probable	Present	Probable	Possible
Greenshank			Present	
Kittiwake				Present
Black-headed Gull	Present	Probable	Confirmed	Probable
Mediterranean Gull			Present	
Common Gull		Present	Present	
Great Black-backed Gull		Present		Present

Species	2-km high certainty	2-km low certainty	10-km high certainty	10-km low certainty
Herring Gull		Present	Present	
Yellow-legged Gull	Present		Present	
Lesser Black-backed Gull	Present		Probable	
Sandwich Tern				Present
Common Tern	Probable		Confirmed	
Arctic Tern				Present
Fulmar				Present
Shag			Present	
Cormorant		Present	Present	Probable
Spoonbill			Present	
Bittern			Probable	Present
Grey Heron	Confirmed		Confirmed	
Purple Heron			Present	
Little Egret			Confirmed	
Osprey				Present
Sparrowhawk	Possible	Probable	Probable	Confirmed
Goshawk			Present	
Marsh Harrier			Confirmed	
Red Kite			Probable	
Buzzard	Possible	Probable	Confirmed	
Barn Owl	Confirmed	Present	Confirmed	
Tawny Owl			Confirmed	Probable
Little Owl	Probable		Confirmed	
Long-eared Owl			Confirmed	Possible
Short-eared Owl	Present			Present
Kingfisher	Probable		Confirmed	
Lesser Spotted Woodpecker			Present	
Great Spotted Woodpecker	Probable		Confirmed	
Green Woodpecker	Confirmed	Probable	Confirmed	
Kestrel	Probable	Possible	Probable	Confirmed
Merlin			Present	
Hobby			Probable	
Peregrine			Confirmed	

Species	2-km high certainty	2-km low certainty	10-km high certainty	10-km low certainty
Ring-necked Parakeet				Present
Jay	Possible	Probable	Confirmed	
Magpie	Possible	Confirmed	Confirmed	
Jackdaw	Probable	Confirmed	Probable	Confirmed
Rook	Confirmed	Present	Confirmed	Probable
Carrion Crow	Confirmed	Probable	Confirmed	
Hooded Crow			Present	
Raven				Present
Coal Tit	Confirmed		Confirmed	
Blue Tit	Confirmed	Probable	Confirmed	
Great Tit	Confirmed	Probable	Confirmed	
Bearded Tit	Possible		Possible	
Skylark	Probable	Possible	Confirmed	
Sand Martin	Present		Present	Confirmed
Swallow	Probable	Confirmed	Probable	Confirmed
House Martin	Confirmed	Present	Confirmed	
Cetti's Warbler	Probable		Probable	
Long-tailed Tit	Confirmed	Present	Confirmed	
Willow Warbler	Probable		Confirmed	
Chiffchaff		Probable	Confirmed	
Sedge Warbler	Confirmed		Confirmed	
Reed Warbler	Confirmed		Confirmed	
Marsh Warbler			Present	
Grasshopper Warbler	Probable		Confirmed	Present
Savi's Warbler			Present	Possible
Blackcap	Confirmed	Possible	Confirmed	
Garden Warbler	Present	Possible	Confirmed	
Lesser Whitethroat	Possible	Probable	Confirmed	
Whitethroat	Confirmed	Possible	Confirmed	
Firecrest			Possible	
Goldcrest	Confirmed		Confirmed	
Wren	Confirmed	Probable	Confirmed	
Nuthatch	Present		Confirmed	

Species	2-km high certainty	2-km low certainty	10-km high certainty	10-km low certainty
Treecreeper	Probable		Confirmed	
Starling	Confirmed		Confirmed	
Ring Ouzel	Present		Present	
Blackbird	Confirmed	Possible	Confirmed	
Fieldfare	Present		Present	
Redwing			Present	
Song Thrush	Confirmed	Probable	Confirmed	
Mistle Thrush	Confirmed	Possible	Confirmed	
Spotted Flycatcher	Probable	Present	Confirmed	Probable
Robin	Confirmed	Probable	Confirmed	
Nightingale	Possible		Present	Possible
Pied Flycatcher				Present
Black Redstart			Confirmed	Present
Redstart	Present		Present	
Whinchat	Present			Present
Stonechat	Present		Confirmed	
Wheatear	Present		Present	
House Sparrow	Possible	Probable	Confirmed	
Tree Sparrow	Possible		Probable	
Duncock	Confirmed	Probable	Confirmed	
Yellow Wagtail	Probable	Present	Confirmed	Probable
Grey Wagtail	Confirmed	Possible	Confirmed	
Pied/White Wagtail	Confirmed	Possible	Confirmed	
Meadow Pipit	Confirmed		Confirmed	
Tree Pipit		Present		Present
Chaffinch		Probable	Confirmed	
Bullfinch	Probable		Confirmed	
Greenfinch	Probable	Possible	Confirmed	
Twite				Present
Linnet	Probable		Confirmed	
Common Redpoll				Present
Lesser Redpoll	Present		Present	
Goldfinch	Confirmed	Possible	Confirmed	

Species	2-km high certainty	2-km low certainty	10-km high certainty	10-km low certainty
Siskin		Present	Present	
Corn Bunting	Probable		Confirmed	
Yellowhammer	Probable	Possible	Confirmed	
Reed Bunting	Probable	Confirmed	Probable	Confirmed

F. Health Impact Assessment Screening

Name of proposed development	Cambridge Waste Water Treatment Plant Relocation
Location of project	South Cambridgeshire
Planning reference (if applicable)	n/a
Date template completed	February 2021

- F.2.1 The tables below comprise the Health Impact Assessment Screening, in-line with South Cambridgeshire District Council Health Impact Assessment Supplementary Planning Document and the HUDU Rapid Health Impact Assessment Tool. The Supplementary Planning Document encourages using tools to inform the scope of assessments, in order to make sure that the appropriate range of health and wellbeing issues are considered. The HUDU Rapid Health Impact Assessment tool has been used to help identify the issues that are relevant to the construction and operation activities associated with building and operating the Proposed Development.

Table 21-1 Housing quality and design

Criteria	Relevant to this proposal?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposed development meet (or exceed) Building Regulation M4 (2)?	No	These regulations are understood to be applicable to residential dwellings, so are not applicable to the Proposed Development.	Not applicable	Not applicable
Does the proposed development address the housing needs of older people, ie extra care housing, sheltered housing, lifetime homes and wheelchair accessible homes?	No	Addressing the housing needs of older people is not part of the scope of the Proposed Development.	Not applicable	Not applicable
Does the proposed development include homes that can be adapted to support independent living for older and disabled people?	No	The development of homes is not part of the Proposed Development.	Not applicable	Not applicable
Does the proposed development promote good design through layout and orientation, meeting internal space standards?	No	Housing does not form part of the Proposed Development so the application of internal space standards, and good design in relation to housing is not applicable.	Not applicable	Not applicable
Does the proposed development include a range of housing types and sizes, including affordable housing responding to local housing needs?	No	Housing does not form part of the Proposed Development.	Not applicable	Not applicable
Does the proposed development contain homes that are highly energy efficient (eg a high SAP rating)?	No	Housing does not form part of the Proposed Development so this criteria is not applicable.	Not applicable	Not applicable
Does the housing quality and design of the proposal impact on health inequalities?	No	Housing does not form part of the Proposed Development so housing	Not applicable	Not applicable

Criteria	Relevant to this proposal?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
		quality and the impact of this on health inequalities is not applicable.		

Table 21-2 Access to healthcare services and other social infrastructure

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development retain or re-provide existing social infrastructure?	No	The Proposed Development does not remove or re-provide any existing social infrastructure.	Not applicable	Not applicable
Does the proposed development assess the impact on healthcare services (both primary and acute)?	No	The Proposed Development will not directly impact any existing healthcare services (both primary and acute). There is no requirement for land affecting healthcare services, there is no change in operational activity that would increase demand for healthcare services. Occupational health services provided by the contractor are expected to deal with the majority of construction health and safety issues.	Not applicable	Not applicable
Does the proposed development include the provision, or replacement, of a healthcare facility meeting NHS requirements (and/or does the proposed development provide a financial contribution for this)?	No	The Proposed Development does not include the provision, or replacement, of a healthcare facility.	Not applicable	Not applicable
Does the proposed development assess the capacity, location and accessibility of other social infrastructure, eg schools, social care and community facilities?	Yes	As no additional social infrastructure is being provided as part of the Proposed Development, and there is not anticipated to be an increase in demand on social infrastructure as a result of the construction and operation of the Proposed Development, assessment of the capacity is not considered to be	To be determined	To be determined

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
		applicable. During construction, there is the potential for increased traffic on some routes around the Proposed Development. As such, nearby social infrastructure will be identified in the assessment baseline and significant effects arising from changes in traffic and transport will be reported within the assessment.		
Does the proposed development explore opportunities for shared community use and co-location of services?	No	The Proposed Development does not include opportunities for shared community use and co-location of services.	Not applicable	Not applicable
Does the proposed development contribute to meeting primary, secondary and post 19 education needs (either financially or in kind)?	No	The Proposed Development will not contribute to meeting primary, secondary and post 19 education needs.	Not applicable	Not applicable
Do the effects of the proposed development on access to healthcare services and other social infrastructure impact on health inequalities?	No	The Proposed Development is not predicted to affect access to healthcare services and other social infrastructure, and therefore there impacts on health inequalities are not anticipated. In the event that the assessment identifies that some user population groups may experience effects that would exacerbate health inequalities, then mitigation for significant effects will be identified.	Not applicable	Not applicable

Table 21-3 Access to open space and nature

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development affect, retain or enhance existing open and natural spaces?	Yes	The Proposed Development is in close proximity (within 500 m) of areas of open and natural spaces. There is the potential for an impact on these spaces during construction, from potential disruption to access and amenity effects.	To be determined	Construction and Environmental Management Plan to outline how access to areas of open and natural spaces will be maintained and potential amenity effects be mitigated through management of noise, air quality, traffic and visual effects (where possible).
In areas where they are deficient, does the proposed development provide new open or natural space, or improve access to existing spaces?	Yes	The design of the Proposed Development is ongoing and may include new open or natural space.	Neutral	Landscape design to investigate opportunities to improve access to existing spaces.
Does the proposed development provide a range of accessible play spaces for children and young people?	Yes	The Proposed Development will not provide a range of accessible play spaces for children and young people.	Not applicable	To be determined
Does the proposed development provide links between open and natural spaces and the public realm?	Yes	The design of the Proposed Development may include new open or natural space. Further details around landscaping and open space are currently being investigated.	Neutral	Landscape design to provide links between spaces and the public realm.
Are the open and natural spaces welcoming and safe and accessible for all?	Yes	The design of the Proposed Development is ongoing and design and accessibility to any open and natural spaces will be considered in landscape design.	Not applicable	Landscape design to be safe and accessible.
Does the proposed development set out how new open space will be managed and maintained?	Yes	If applicable, further details around landscaping and open space, including (how it will be managed and maintained) will be agreed as the design develops. This will be detailed in Landscape and Ecological management plans.	None	Not applicable
Do the effects of the proposed development on access to	Yes	In the event of additional provision of open space as part of the Proposed Development is likely to have a	To be determined	Not applicable

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
open space and nature impact on health inequalities?		positive impact on the health of users, although is unlikely to impact health inequalities. .		

Table 21-4 Air quality, noise and neighbourhood amenity

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development minimise construction impacts such as dust, noise, vibration and odours?	Yes	The Scoping Report contains chapters on air quality (including odour and dust) and noise (including vibration). These chapters outline the potential for significant effects and proposed scope of assessment for the Environment Statement. These potential effects will be further assessed within the Environment Statement, including identification of mitigation to minimise construction impacts.	To be determined	Actions to be confirmed and contained within the Environmental Statement.
Does the proposed development minimise long term air pollution caused by traffic and energy facilities (e.g. power stations)?	Yes	The potential for long term air pollution will be assessed and reported in the Environmental Statement, including (if required), how the Proposed Development will minimise long term air pollution caused by traffic and energy facilities.	To be determined	Actions to be confirmed and contained within the Environmental Statement.
Does the proposed development minimise long term noise pollution caused by traffic and commercial uses?	Yes	The Scoping Report includes a chapter outlining the potential for significant noise effects caused by traffic, including commercial uses. These will be further assessed within the Environment Statement.	To be determined	Actions to be confirmed and contained within the Environmental Statement.
Has the proposed development been assessed for any potential risk to construction workers and/or the future users of the development by possible land contamination (e.g. by a desk study or site investigation)?	Yes	The proposed development will comply with the requirements of the Health and Safety at Work Act 1974 which will manage the risk to construction works from possible land contamination. The Scoping Report contains a chapter on land quality which outline the potential contaminant sources in relation to areas included within the Proposed Development. As there is considered to be no significant effects from land contaminated, this is proposed to be scoped out of the Environmental Assessment.	To be determined	Actions to be confirmed and contained within the Environmental Statement.

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Do the effects of the proposed development on air quality, noise and neighbourhood amenity impact on health inequalities?	Yes	As with most construction projects, there is the potential for significant air quality, noise, traffic and visual effects. As a result, there is the potential for neighbourhood amenity impacts from a combination of effects (air quality, noise traffic or visual) at a particular location. This may have an impact on health inequalities.	To be determined	Actions to be confirmed and contained within the Environmental Statement.

Table 21-5 Accessibility and active travel

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development prioritise and encourage walking and cycling?	Yes	There are proposed to be improved connectivity and linkages between PROW and new paths which are outlined in the Landscape Masterplan. This is likely to encourage walking and cycling. Based on the current design, the Proposed Development does not include specific measures to encourage walking and cycling.	To be determined	Ambitions to encourage and prioritise walking and cycling to be included in design development.
Does the proposed development connect public realm and internal routes to local and strategic cycle and walking networks?	Yes	There are proposed to be improved connectivity and linkages between PROW and new paths which are outlined in the Landscape Masterplan.. Access to the site of the Proposed Development will be considered.	To be determined	Ambitions to encourage and prioritise walking and cycling to be included in design development.
Does the proposed development include traffic management and calming measures to help reduce and minimise road injuries e.g. designed to 20mph zones?	Yes	The design of the internal road network of the Proposed Development has not yet been designed. Measures adopted by the project to manage traffic and safety will be included within Traffic and Transport reporting.	To be determined	Traffic and transport reporting to include measures to manage traffic and promote safety.
Is the proposed development well connected to public transport, local services and facilities?	Yes	There is a bus from Horningsea, the closest village to the Proposed Development, to Milton Park and Ride. The Milton Park and Ride has a regular bus service to Cambridge. The Traffic and Transport assessment will consider any changes to public transport as a result of the Proposed Development.	Neutral	Not applicable

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development seek to reduce car use e.g. by using travel plans to maximise single car use and other alternatives?	Yes	Details about how the Proposed Development may seek to reduce car use are likely to be included in any travel plan developed for the site in the construction and operation phases.	Neutral	Not applicable
Does the proposed development allow people with mobility problems or a disability to access places and buildings?	Yes	As an operational workplace, the Proposed Development will comply with relevant legislation and standards. The wastewater treatment works will not be accessible to the public.	To be determined	To be determined
Do the effects of the proposed development on accessibility and active travel impact on health inequalities?	No	The proposed development is not predicted to impact on health inequalities as a result of changes to access and active travel. If this is the case, it will be reported in the assessment,	Not applicable	Not applicable

Table 21-6 Crime and community safety

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Is the proposed development designed in ways that reduce the opportunities for crime?	Yes	The Proposed Development will seek to avoid creating unsafe spaces. Further considerations to design-out crime will be considered as the design progresses. As an operational wastewater treatment works, the Proposed Development is not publicly accessible and will have appropriate security provisions in place.	Neutral	Not applicable
Does the proposed development incorporate design techniques to help people feel secure and avoid creating 'gated communities'?	No	As the Proposed Development does not have a residential component, design techniques to help people feel secure and avoid creating 'gated communities' are not considered to be relevant.	Neutral	Not applicable

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development include attractive, multi-use public spaces and buildings?	Yes	Proposed Development includes a Discovery Centre for visitors which could have a multi-use function where local children and communities can interact and learn about the importance of water and role it plays in the circular economy. The details of the functionality of the space will be refined as part of design development.	To be determined	Ambitions to provide an educational space where communities can interact and learn about the importance of water to be included within design development.
Has engagement and consultation been carried out with the local community?	Yes	During site selection, consultation has been carried out with key stakeholders including the local planning authority and local residents. There will be ongoing engagement and consultation with the local community and the process for seeking consent will include publishing documents such as the Preliminary Environmental Information Report and Environmental Statement. https://cwwtpr.com/	Neutral	Not applicable
Do the effects of the crime reduction and the community safety design elements of the proposed development impact on health inequalities?	No	As an operational wastewater treatment works, the Proposed Development is not publicly accessible and will have appropriate security provisions in place. No impact on health inequalities is expected.	Not applicable	Not applicable

Table 21-7 Access to healthy food

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development facilitate the supply of local food, ie allotments, community farms and farmers' markets?	No	The Proposed Development will not facilitate local food supply.	Not applicable	Not applicable
Is there a range of retail uses, including food stores and smaller affordable shops for social enterprises either within the scheme or nearby and easily accessible?	No	The Proposed Development will not provide retail space.	Not applicable	Not applicable
Does the proposed development avoid contributing towards an over-concentration of hot food takeaways in the local area and in close proximity to schools and learning centres?	No	The Proposed Development will not provide retail space.	Not applicable	Not applicable
Do the effects of the proposed development on access to healthy food impact health inequalities?	No	The Proposed Development will not facilitate local food supply and will not provide retail space.	Not applicable	Not applicable

Table 21-8 Access to work and training

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development provide access to local employment and	Yes	Construction: The Proposed Development will require a construction workforce to deliver it. For the duration of the	Positive	Construction: Work with potential contractors to

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
training opportunities, including temporary construction and permanent 'end-use' jobs?		<p>construction process, there would be a number of construction workers on site.</p> <p>The construction employment for the Proposed Development would not be permanent and the number of jobs that this Proposed Development will create is currently unknown.</p> <p>Operation: It is expected that the operational workforce for the Proposed Development will be similar to the existing wastewater treatment works and that there may be a small number of additional permanent jobs.</p>		understand the likely scale of employment and how local people could access new opportunities.
Does the proposed development provide childcare facilities?	No	Childcare facilities will not be provided as part of this Proposed Development.	Not applicable	Not applicable
Does the proposed development include managed and affordable workspace for local businesses?	No	Workspace will not be provided as part of this Proposed Development.	Not applicable	Not applicable
Do the effects of the proposed development on access to work and training impact on health inequalities?	Yes	<p>Potential for direct employment during construction: At present there is no clear information on whether these workers would be existing employees of the appointed contractor, whether they would be new employees, or the area where these employees would be drawn from.</p> <p>However, there is the potential for the Proposed Development to create new construction employment or safeguard existing construction employment on a temporary basis in the local area if labour is locally sourced.</p> <p>Potential for access to employment during operation.</p>	Neutral	Construction: Further consideration through the procurement process on how to improve access to procurement opportunities for local people / business.

Table 21-9 Social cohesion and lifetime neighbourhoods

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development connect with existing communities, ie layout and movement which avoids physical barriers and severance and land uses and spaces which encourage social interaction?	No	The purpose of the Proposed Development is to operate as a waste water treatment plant. As such, is it not considered relevant to consider how the development physically connects with existing communities.	Not applicable	Not applicable
Does the proposed development include a mix of uses and a range of community facilities?	No	The Proposed Development does not include a mix of uses and a range of community facilities.	Not applicable	Not applicable
Does the proposed development provide opportunities for the voluntary and community sectors?	Yes	There may be opportunities during both construction and operation for the voluntary and community sectors. These are yet to be confirmed.	To be determined	To be determined
Does the proposed development address the key components of Lifetime Neighbourhoods?	Yes	The scheme will not deliver any neighbourhood design.	Not applicable	Not applicable
Do the effects of the proposed development on social cohesion impact on health inequalities?	No	No effects of the Proposed Development on social cohesion are anticipated and therefore no impact on health inequalities is anticipated.	Not applicable	Not applicable

Table 21-10 Minimising the use of resources

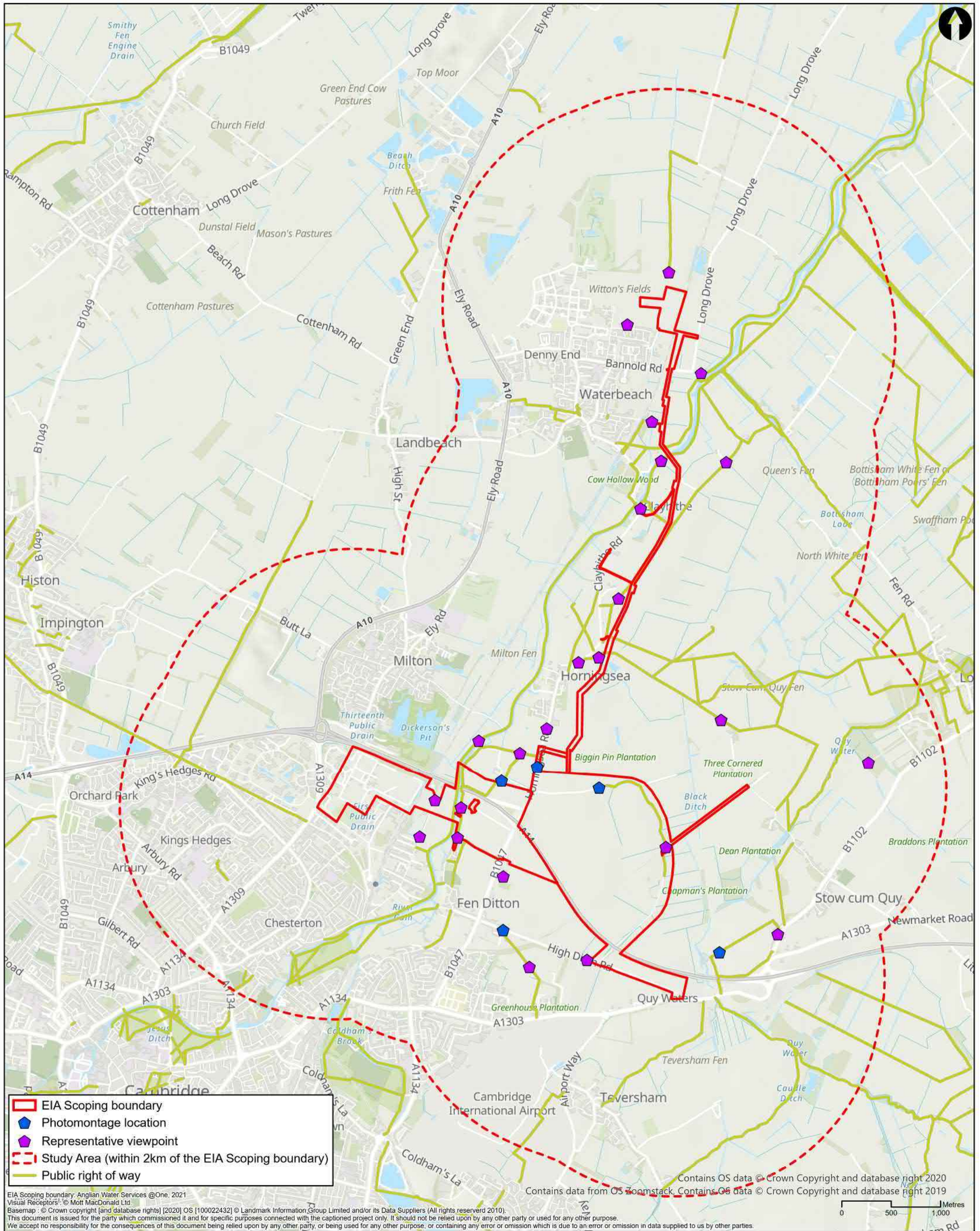
Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development make the most efficient and effective use of existing land?	No	The wastewater treatment works is being relocated from its original site due to the opportunities to make the most of that land. A site selection process has been undertaken to identify the most appropriate site for the relocated wastewater treatment works. The Proposed Development has sought to deliver a suitable scheme that meets the requirements of policy making	Neutral	Not applicable.

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
		effective use of the existing agricultural land to provide a water asset that is required nationally.		
Does the proposed development encourage recycling (including building materials)?	No	The nature and quantity of materials to be used for the Proposed Development currently.	Not applicable	Opportunity to use sustainable materials and circular economy principles in material use.
Does the proposed development incorporate sustainable design and construction techniques?	No	Details around sustainable design and construction techniques are currently unknown.	Not applicable	Opportunity to use sustainable materials and circular economy principles in material use.
Do the effects of minimising the use of resources for the proposed development impact on health inequalities?	No	No impacts on health inequalities as a result of the use of resources for the Proposed Development have been identified.	Not applicable	Not applicable

Table 21-11 Climate change

Assessment criteria	Relevant to this proposal?	Details/evidence	Potential health impact	Recommended mitigation or enhancement actions
Does the proposed development incorporate renewable energy?	Yes	Currently the Proposed Development does not incorporate renewable energy, although it is understood that this is being considered.	Neutral	Opportunity to consider renewable energy in the design.
Does the proposed development ensure that buildings and public spaces are designed to respond to winter and summer	Yes	Details on how buildings and public spaces are design to respond to Proposed Development during winter and summer temperature are not yet confirmed.	Not applicable	Opportunity to consider climate adaptation measures are incorporated in the design.

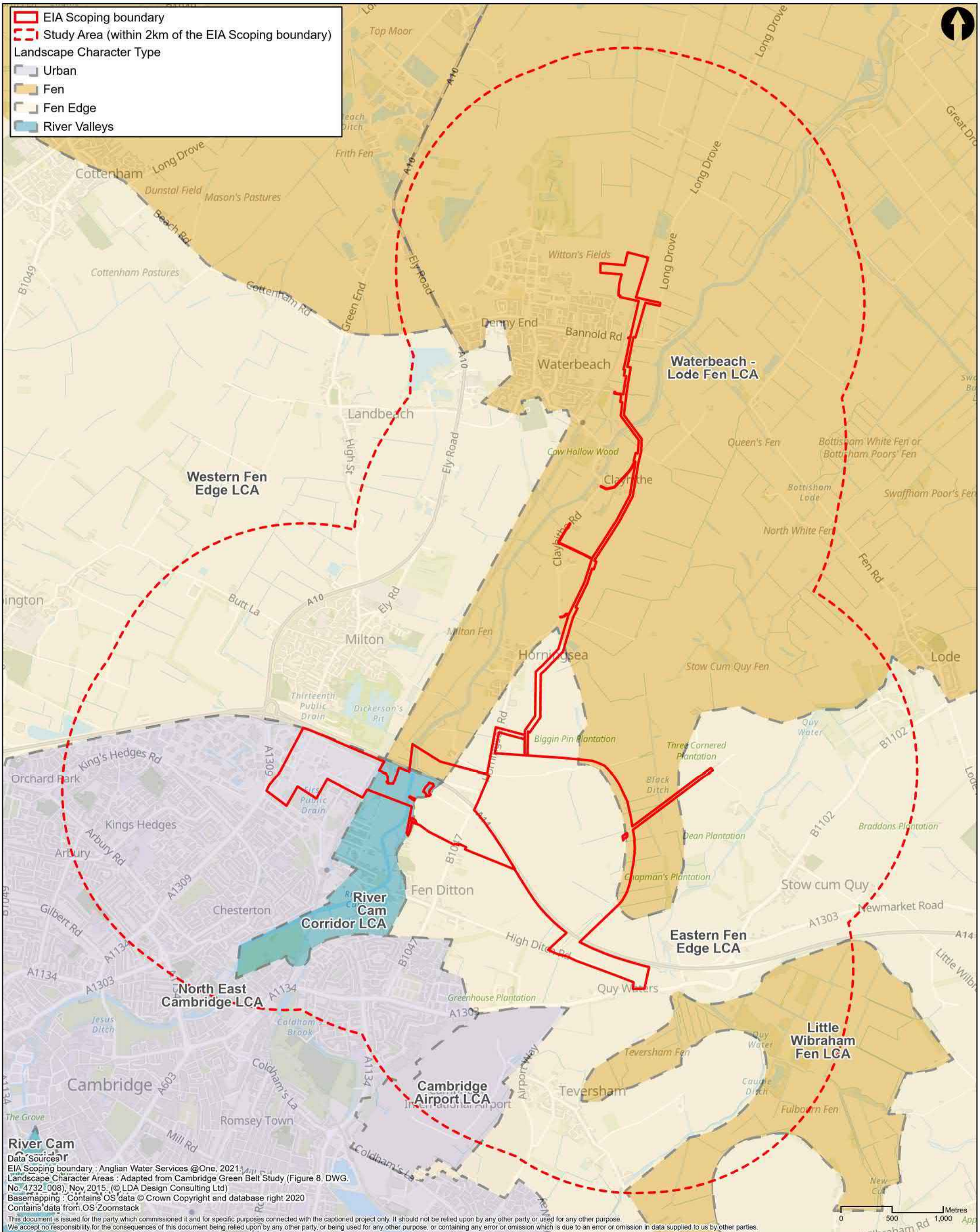
G. Landscape Figures



EIA Scoping boundary: Anglian Water Services @One, 2021
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	22 Station Road Cambridge CB1 2JD United Kingdom T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com	Client					Title			Drawn	A Briggs
							Cambridge WwTP Relocation Project EIA Scoping Report Appendix G.1 Representative Viewpoints			Checked	J Morrison
										Approved	C Squires
		Rev	Date	Drawn	Description	Ch'kd	App'd	Scale at A3			
		P1	23/09/21	AB	First Draft	JM	CS	1:35,000			
		Drawing Number						Security	Status	Rev	
		100415458-MML-XX-00-DR-Z-0203025						STD	PRE	P1	



EIA Scoping boundary
Study Area (within 2km of the EIA Scoping boundary)

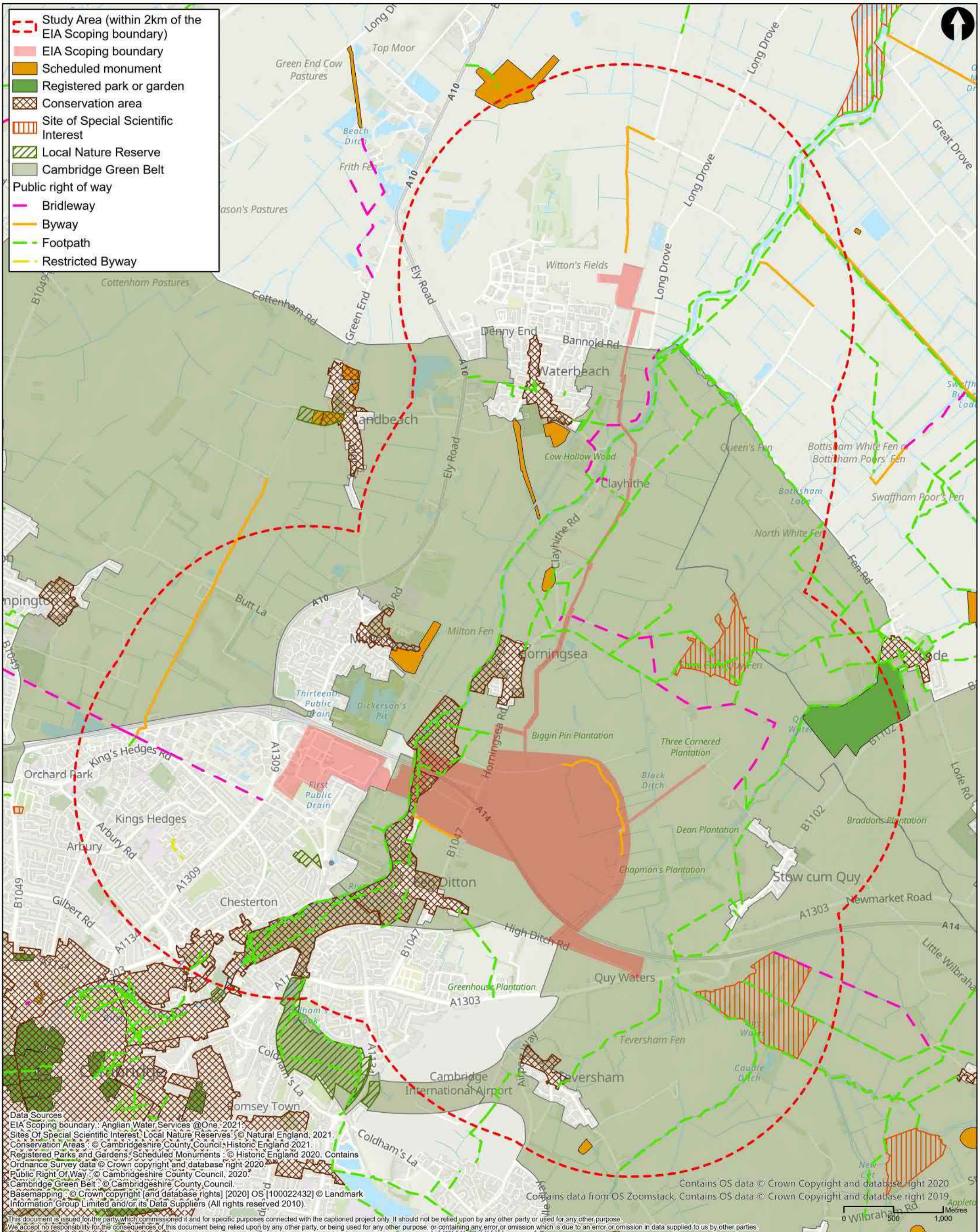
Landscape Character Type

- Urban
- Fen
- Fen Edge
- River Valleys

River Cam
 Data Sources:
 EIA Scoping boundary : Anglian Water Services @One, 2021,
 Landscape Character Areas : Adapted from Cambridge Green Belt Study (Figure 8, DWG. No. 4732-008), Nov, 2015, (© LDA Design Consulting Ltd)
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	22 Station Road Cambridge CB1 2JD United Kingdom T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com		Client 			Title Cambridge WwTP Relocation Project EIA Scoping Report Appendix G.2 Landscape Character Types and Landscape Character Areas (LCA)			Drawn A Briggs														
							Checked J Morrison																
							Approved C Squires																
						Scale at A3 1:34,000																	
			<table border="1"> <thead> <tr> <th>Rev</th> <th>Date</th> <th>Drawn</th> <th>Description</th> <th>Ch'k'd</th> <th>App'd</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>23/09/21</td> <td>AB</td> <td>First Draft</td> <td>JM</td> <td>CS</td> </tr> </tbody> </table>			Rev	Date	Drawn	Description	Ch'k'd	App'd	P1	23/09/21	AB	First Draft	JM	CS	Drawing Number 100415458-MML-XX-00-DR-Z-0203026			Security STD	Status PRE	Rev P1
Rev	Date	Drawn	Description	Ch'k'd	App'd																		
P1	23/09/21	AB	First Draft	JM	CS																		



Data Sources
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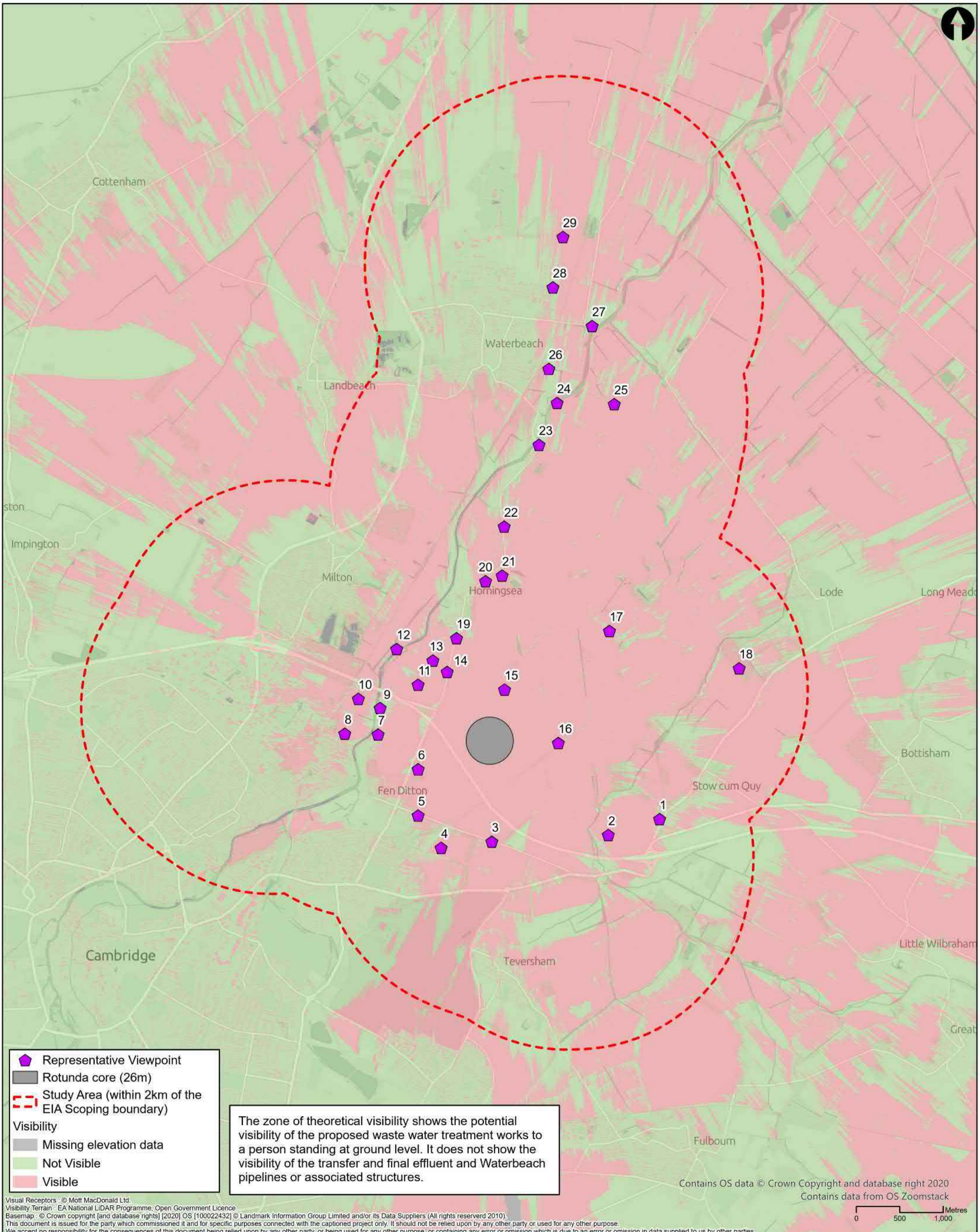
22 Station Road
 Cambridge CB1 2JD
 United Kingdom

T +44 (0)20 8774 2000
 F +44 (0)20 8681 5706
 W mottmac.com

Client					
anglianwater					
Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	23/09/21	AB	First Draft	JM	CS

Title		
Cambridge WwTP Relocation Project EIA Scoping Report Appendix G.3 Key Features of the Landscape		
Drawing Number		
100415458-MML-XX-00-DR-Z-0203027		

Drawn	A Briggs	
Checked	J Morrison	
Approved	C Squires	
Scale at A3		
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Security	Status	Rev
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Representative Viewpoint
 Rotunda core (26m)
 Study Area (within 2km of the EIA Scoping boundary)

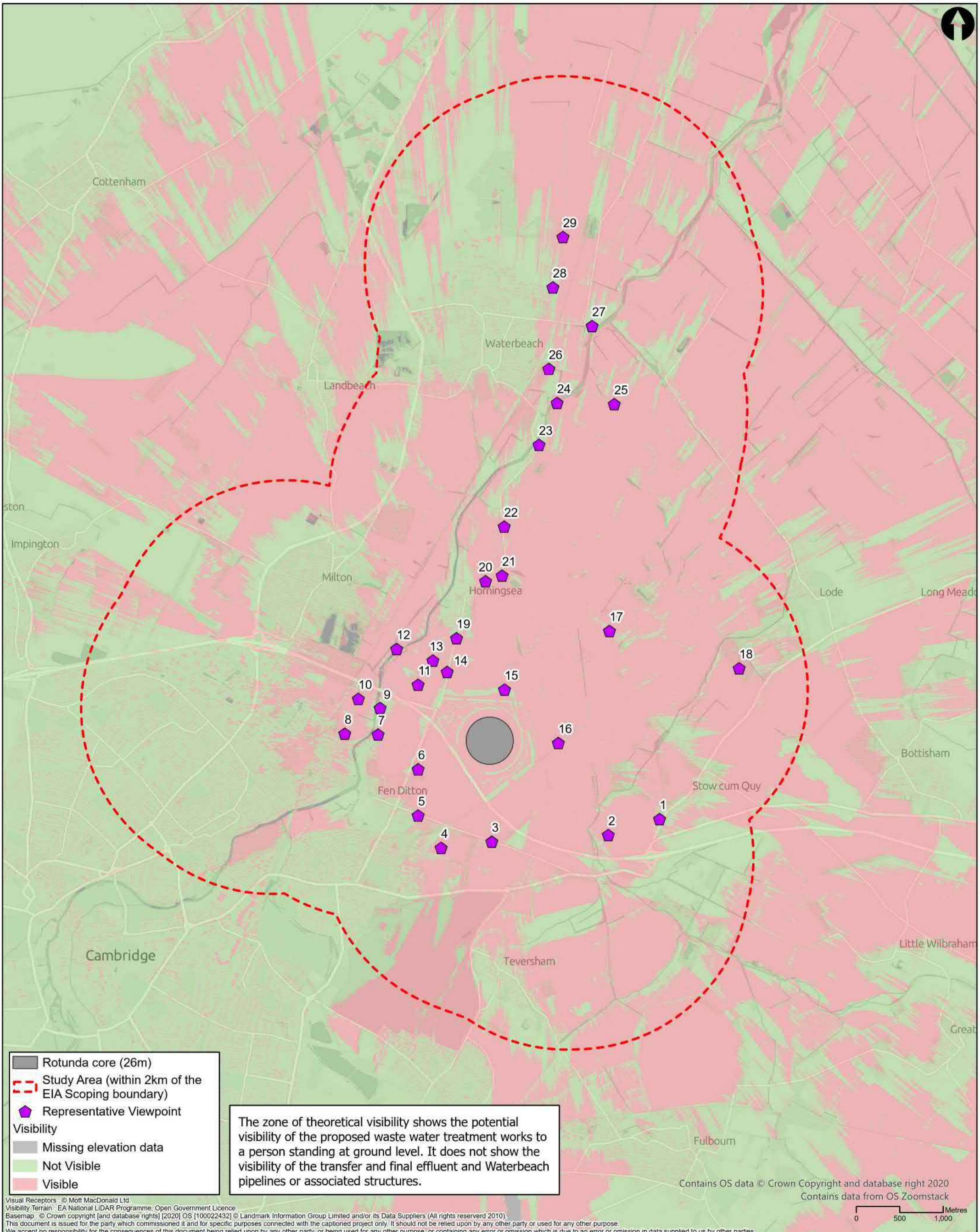
Visibility
 Missing elevation data
 Not Visible
 Visible

The zone of theoretical visibility shows the potential visibility of the proposed waste water treatment works to a person standing at ground level. It does not show the visibility of the transfer and final effluent and Waterbeach pipelines or associated structures.

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	22 Station Road Cambridge CB1 2JD United Kingdom		Client 			Title Cambridge WwTP Relocation Project EIA Scoping Report Appendix G.4 Potential Zone of Theoretical Visibility in Year 1 of Operation (without mitigation)			Drawn A Briggs												
	T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com		<table border="1"> <thead> <tr> <th>Rev</th> <th>Date</th> <th>Drawn</th> <th>Description</th> <th>Ch'k'd</th> <th>App'd</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>23/09/21</td> <td>AB</td> <td>First Draft</td> <td>JM</td> <td>CS</td> </tr> </tbody> </table>			Rev	Date	Drawn	Description	Ch'k'd	App'd	P1	23/09/21	AB	First Draft	JM	CS	Checked J Morrison			Approved C Squires
	Rev	Date	Drawn	Description	Ch'k'd	App'd															
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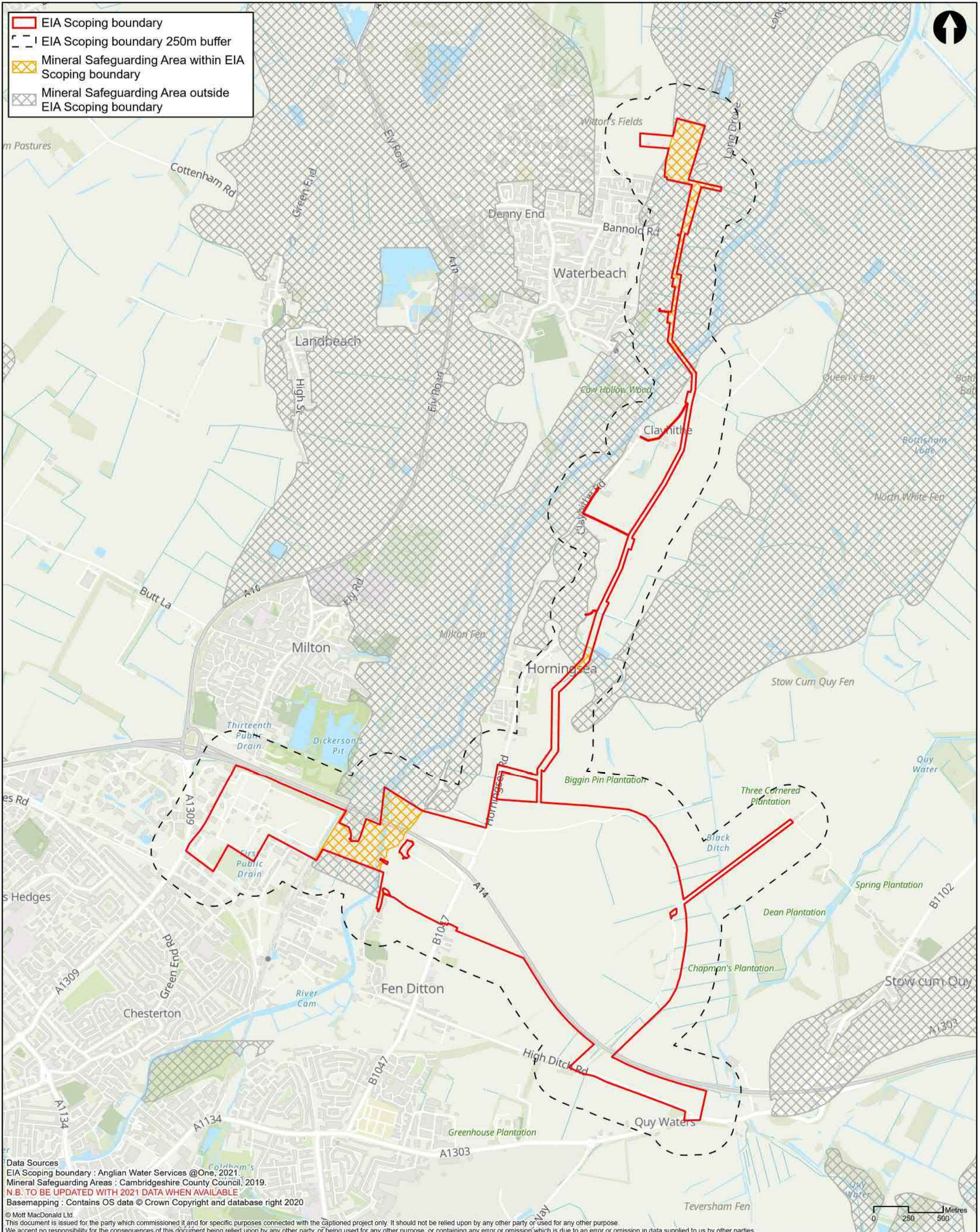
- Rotunda core (26m)
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The zone of theoretical visibility shows the potential visibility of the proposed waste water treatment works to a person standing at ground level. It does not show the visibility of the transfer and final effluent and Waterbeach pipelines or associated structures.

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	T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Rev</th> <th>Date</th> <th>Drawn</th> <th>Description</th> <th>Ch'k'd</th> <th>App'd</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>23/09/21</td> <td>AB</td> <td>First Draft</td> <td>JM</td> <td>CS</td> </tr> </tbody> </table>			Rev	Date	Drawn	Description	Ch'k'd	App'd	P1	23/09/21	AB	First Draft	JM	CS	Checked J Morrison			Approved	C Squires	
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						Drawing Number 100415458-MML-XX-00-DR-Z-0203029			STD	PRE	P1												

H. Land Quality Figure



- EIA Scoping boundary
- EIA Scoping boundary 250m buffer
- Mineral Safeguarding Area within EIA Scoping boundary
- Mineral Safeguarding Area outside EIA Scoping boundary



Data Sources
 EIA Scoping boundary : Anglian Water Services @One, 2021.
 Mineral Safeguarding Areas : Cambridgeshire County Council, 2019.
N.B. TO BE UPDATED WITH 2021 DATA WHEN AVAILABLE
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	22 Station Road Cambridge CB1 2JD United Kingdom T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com	Client 					Title Cambridge WwTP Relocation Project EIA Scoping Report Appendix H.1 Mineral Safeguarding Areas			Drawn	A Briggs													
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Rev</th> <th>Date</th> <th>Drawn</th> <th>Description</th> <th>Ch'k'd</th> <th>App'd</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>23/09/21</td> <td>AB</td> <td>First Draft</td> <td>JS</td> <td>CS</td> </tr> </tbody> </table>					Rev	Date	Drawn	Description	Ch'k'd	App'd	P1	23/09/21	AB	First Draft	JS	CS	Checked J Southall Approved C Squires Scale at A3 1:25,000			Security	Status	Rev
		Rev	Date	Drawn	Description	Ch'k'd	App'd																	
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I. Long list of major accidents or disasters

I.1 Screening

- I.1.1 In general, major accidents or disasters, as they relate to the Proposed Development, fall into three categories:
- Events that could not realistically occur, due to the nature of the Proposed Development or its location.
 - Events that could realistically occur, but for which the Proposed Development, and associated receptors, are no more vulnerable than any other development.
 - Events that could occur, and to which the Proposed Development is particularly vulnerable, or which the Proposed Development has a particular capacity to exacerbate.
- I.1.2 An exercise has been completed to identify all possible major accidents or disasters that could be relevant to the Proposed Development. This list was drawn from a number of sources, including the UK Government's Risk Register of Civil Emergencies³¹⁵. This long list was screened to a shortlist of events to be taken forward for further consideration. The shortlist considers events that may be exacerbated by the Proposed Development
- I.1.3 In accordance with the IEMA guidance, major accidents or disasters can be scoped out of the assessment if it can be clearly demonstrated that:
- There is no source-pathway-receptor linkage of a hazard that could trigger a major accident and/ or disaster or potential for the scheme to lead to a significant environmental effect.
 - All possible major accidents and/or disasters are adequately covered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice.
- I.1.4 Although the majority of the major accidents or disasters on the long list are already considered under other legislative or design requirements, this is not considered to be sufficient reason to automatically eliminate the major accident or disaster from any further consideration. This is consistent with the approach for other topics, for example that the need to comply with nature conservation legislation does not mean that ecology and nature conservation do not need to be considered in EIA. However, where it is concluded that the need for compliance is so fundamental, and the risk of any receptors being affected differently so remote, major accidents or disasters on the long list are not included on the shortlist.
- I.1.5 Likewise, it is considered reasonable and proportionate to exclude certain receptor groups from the outset. Construction workers, as a receptor, can be excluded from the assessment, because existing legal protection is considered to be sufficient to minimise any risk from major accidents or disasters to a reasonable level.

³¹⁵ National Risk Register of Civil Emergencies, 2020 Edition. Cabinet Office (20207).
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952959/6.6920_CO_CCS_s_National_Risk_Register_2020_11-1-21-FINAL.pdf

Table I-1: Major accidents screening

	Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?
1	Geological disasters				
1.1	Landslides	No	<p>The risk of landslides will be considered as part of the geotechnical design, ensuring that the risk is designed out, in terms of the vulnerability of the Proposed Development to these types of event. Unlikely given the topography.</p> <p>In designing the Proposed Development to applicable standards, environmental resources and receptors would not be put at a greater risk as a consequence of the Proposed Development.</p> <p>The Proposed Development is therefore not anticipated to increase the risk of landslip happening onsite or elsewhere.</p>	N/A	N/A
1.2	Earthquake	No	The Proposed Development is not located in a geologically active area and as such earthquakes are not considered to be a real risk or serious possibility.	N/A	N/A
1.3	Sinkholes	No	The risk of sinkholes will be considered as part of the geotechnical design, ensuring that the risk is designed out, both in terms of the vulnerability of the Project to these types of event, and also in terms of the potential for the Project to increase the risk of such an event happening.	N/A	N/A
2	Hydrological disasters				
2.1	Floods	Yes	<p>Both the vulnerability of the Proposed Development to flooding, and its potential to exacerbate flooding, will be covered in the Flood Risk Assessment, and also reported in the ES (both in terms of the risk to the Proposed Development and increased risk caused by the Project).</p> <p>Add to scoping short list</p>	Property and people in areas of increasing flood risk. Proposed project infrastructure	Water resources assessment and FRA Designers risk assessment/Project Description
2.2	Limnic eruptions	No	Not applicable as there are no lakes nearby.	N/A	N/A
2.3	Tsunami/Storm surge	No	Not applicable as the Project is not in a coastal location.	N/A	N/A
3	Meteorological disasters				
3.1	Blizzards	No	The Proposed Development is considered to be no more vulnerable than any other development. The risk to the proposed WWTP is similar to the risk for the existing Cambridge WWTP.	N/A	N/A
3.2	Cyclonic storms	No	Although there are storms in the UK, their destructive force tends to be much less than in other parts of the world and the Project is not	N/A	N/A

	Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?
			particularly vulnerable to any potential effects.		
3.3	Droughts	No	Droughts are only considered as a disaster due to water shortages for essential services and where there are indirect impacts on food production, loss of soils etc. Operation of the Proposed Development is not considered to be vulnerable to drought. Sub surface structures may be vulnerable to extreme drought through soil shrinkage and subsequent cracking / damage to assets.	Soils Groundwater	Climate resilience chapter of ES
3.4	Thunderstorms	Yes	As the Proposed Development includes metal components, there is a risk of lightning strikes. However, these risks will be removed or reduced through inbuilt control systems and are scoped out at this stage. The risk to the proposed WWTP is similar to the risk for the existing Cambridge WWTP	Proposed Project assets	Chapter 2 Project Description – Details on lighting protection in design
3.5	Hailstorms	No	The Project is considered to be no more vulnerable than any other development.	N/A	N/A
3.6	Heat waves	No	While impacts are expected as a result of projected temperature increases (due to climate change), these temperature increases are not expected to have a significant impact of the Proposed Development. It is anticipated that the offices and welfare areas will be climate controlled.	N/A	Chapter 2 Project Description Details on lighting resilience in design
3.7	Tornadoes	No	Although there are tornados in the UK, their destructive force tends to be much less than in other parts of the world and the Project is not particularly vulnerable to any potential effects.	N/A	N/A
3.8	Fires	Yes	There may be some potential for fires as a result of some of the processes elements of the Proposed Development (such as biogas digestion). Fire detection and suppression features would be installed to minimise the effect of any fire. Site drainage can be designed to allow suitable retention of fire water/foams used in an emergency to be retained and thereby minimise discharges to the surrounding environment. The risk to the proposed WWTP is similar to the risk for the existing Cambridge WWTP.	Local residents, property, habitats and species.	Chapter 2 Project Description Works Plans Designers risk assessment
3.9	Air Quality Events	No	The project is not located within any Air Quality Management Areas (AQMA). The nearest AQMA is in Cambridge City and A14 corridor, both approximately 3km to the west	Local airshed	Chapter 2:Project Description CoCP

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?	
		<p>and south west of the site. This AQMA will not be affected by the Project.</p> <p>Similar emissions to existing Cambridge WWTP.</p> <p>Although there are likely to be emissions during construction and decommissioning of the Project, it is considered that these would be managed through the implementation of a Construction Environmental Management Plan. Good practice measures will be set out in a Framework Construction Environmental Management Plan to be appended to the ES.</p>		Air quality impact assessment Chapter	
4 Transport					
4.1	Road Accidents	Yes	<p>Relocation changes local and strategic road network interaction from the existing Cambridge WWTP. The proposed Development requires new assets to be constructed under major highways.</p> <p>Use of road network for construction traffic to access site including deliveries of materials.</p> <p>The potential for glint and glare to affect road users will be considered within a technical appendix to the ES if any risks are identified.</p> <p>Works in proximity to, or effecting existing road or rail infrastructure will be only undertaken subject to obtaining the appropriate approval from the appropriate body (for instance the Highways Agency for main roads) and in accordance with applicable national design codes / regulations.</p> <p>Add to scoping short list</p>	<p>Road users</p> <p>Local community</p> <p>Aquatic environment</p>	<p>Chapter 2:Project Description</p> <p>CoCP</p>
		Yes	<p>The risk posed by spillage from hazardous loads as a result of a road traffic accident during construction or decommissioning would be similar to existing risks of vehicle movements associated with the existing Cambridge WWTP. The established management framework to respond to and manage spills and spill clean-up would remain.</p> <p>The risks to WWTP posed by materials washed to drainage networks including sewers remain unchanged. The Props pod Development is no more vulnerable to such occurrences than the existing Cambridge WWTP.</p>	<p>Road users</p> <p>Local community</p> <p>Aquatic and terrestrial environment</p>	<p>Chapter 2:Project Description</p> <p>Designers risk assessment</p>
4.2	Rail Accidents	Yes	<p>Risk associated with construction traffic using level crossings. This will be managed via Traffic Management Plan.</p> <p>The Proposed Development requires interface with the railway by tunnelling underneath to install the</p>	<p>Rail users, people, environment</p>	<p>Managed through Basic Asset Protection Agreement (BAPA)</p>

	Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?
			waste water transfer. This activity presents a further risk when compared to the existing Cambridge WWTP. Add to scoping short list		
4.3	Aircraft Disasters	Yes	Existing and proposed development are within the 13km safeguarding zone for Cambridge Airport. The proposed WWTP may have slightly increased vulnerability to aviation risk owing to proximity. The Proposed Development also includes landscaping proposals which may change species assemblages within 1km of the airport. New lighting would be introduced to the area. All proposals subject to meeting safeguarding requirements and requirements for tall structures permits. The potential for glint and glare to affect aircraft will be considered within a technical appendix to the ES if any risks are identified. Add to scoping short list	Pilots and aircrafts Community Roads users	Chapter 2 Project Description Wildlife assessment within the Biodiversity assessment Landscape assessment to consider glint and glare.
5 Engineering Accidents/Failures					
5.1	Bridge Failure	No	The risk posed by bridge use for construction access will be considered in traffic management measures within the CoCP. The existing Cambridge WWTP and proposed WWTP are considered to have similar risks in terms of bridge strike as similar areas of the local and strategic road network would be used by traffic moving to and from them. The established multi agency management framework to respond, manage and clean-up such an event would apply. The risks to WWTP posed by materials washed to drainage networks including sewers remain unchanged. The Proposed Development is no more vulnerable to such occurrences than the existing Cambridge WWTP.	Road users, communities, environment	Travel Plan
5.2	Tunnel Failure or Fire	No	No road / rail tunnels within vicinity of Proposed Development. Tunnelling for pipeline crossings is covered in 4.2	N/A	N/A
5.3	Dam Failure	No	The site is not located within or near any registered reservoirs (assumed with volumes >10,000m ³). The site is therefore at a very low risk of flooding from reservoirs.	N/A	N/A
5.4	Flood Defence Failure	Yes	Existing Cambridge WWTP lies close to Flood Zone 2 of the River Cam. The proposed WWTP is located out of the flood plain, approximately 800m from the flood zone River Cam although the area	Property, people in areas of increasing flood risk.	Chapter 20 Water resources. FRA

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?	
		<p>to the east of the Core Zone is within approximately 50m of Flood Zone for smaller tributaries. Overall, the location is expected to render the proposed WWTP less vulnerable to flooding than the existing Cambridge WWTP.</p> <p>Proposed outfall has a similar level of risk to existing.</p> <p>Flood risk will be covered in the Flood Risk Assessment and will also be reported in the ES, both in terms of the risk to the Proposed Development and increased risk caused by the Proposed Development</p> <p>Add to scoping short list</p>			
5.5	Mast and Tower Entanglement	Yes	<p>The Proposed Development would have additional hazards in the form of overhead line equipment presence within the Core Zone.</p> <p>Construction presents an increase in risk from the existing situation as activity in the area with the potential for interaction with this hazard will increase. Similarly in operation infrequent maintenance activity of the Proposed Development may mean an increase in opportunity for interaction with this hazard.</p> <p>Add to scoping short list</p>	People Utility consumers	Chapter 2 Project Description
5.6	Building failure or fire	Yes	<p>No buildings close enough to the Proposed Development for it to be affected by building failure or fire.</p> <p>Proposed WWTP to be designed in accordance with legal requirements in terms of fire safety. The Proposed Development would have a similar fire risk as the existing Cambridge WWTP. The Proposed Development is located further from people and property than the existing Cambridge WWTP.</p>	People Utility consumers, environment	Chapter 2 Project Description
5.7	Utilities failure (gas, electricity, water, sewage, oil, communications)	Yes	<p>The Proposed Development will affect the existing utility infrastructure below ground and may accidentally affect infrastructure above ground. To identify any existing infrastructure constraints, both consultation and a desk based study will be undertaken. Diversions and relocation are not uncommon activities.</p> <p>Works on, or within the easement of, utilities (for instance gas or electrical transmission assets or within their assessment will be undertaken in accordance with the requirements of the applicable utility company and in accordance with applicable national design codes / regulations.</p> <p>All energy network operators have plans in place to deal with any interruptions to supply. This includes</p>	Local residents. utility consumers	Chapter 2 Project Description

	Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?
			restoring power supplies after a national electricity failure. Water companies in Great Britain are required by legislation to manage risks of failure, through the: Security and Emergency Measures (Water and Sewerage Undertakers) Direction (1998) Security and Emergency Measures (Scottish Water) Direction (2002) Add to scoping short list		
6	Industrial Accidents				
6.1	Defence industry	No	Not applicable as there is no defence manufacturing nearby.	N/A	N/A
6.2	Energy Industry (fossil fuel)	No	Not applicable as there are no power stations within 2km	NA	NA
6.3	Nuclear Power	No	Not applicable as there are no nuclear power stations within 2km	N/A	N/A
6.4	Oil and gas refinery/storage	No	Not applicable as there is no relevant industry nearby	N/A	N/A
6.5	Food Industry	No	Not applicable as there is no relevant industry nearby.	N/A	N/A
6.6	Chemical Industry	No	Not applicable as there is no relevant industry nearby	N/A	N/A
6.7	Manufacturing Industry	No	Not applicable as there is no relevant industry nearby.	N/A	N/A
6.8	Mining / Extractive Industry	No	Not applicable as there is no relevant industry nearby.	N/A	N/A
6.9	Anaerobic digestion/gas storage	Yes	Project includes anaerobic digestion processes and gas storage. Established management and safety protocols would be similar or proposed WWTP. Similar risk to existing Cambridge WWTP although storage volumes would be different. The Proposed Development is moving to an area with fewer receptors (people/property) in proximity. Add to scoping short list	Local residents, property, habitats and species	Chapter 2: Project Description
7	Malicious attack				
7.1	Terrorism/Crime/Civil unrest	No	The Proposed Development is unlikely to be more of a target than existing Cambridge WWTP. All critical infrastructure has inherent risk. Site security (physical measures and management measures) and emergency response planning managed through existing regulatory regime. Flagship nature of Proposed Development may change vulnerability as Proposed Development is seen as more attractive target.	N/A	Chapter 2: Project Description – details of security features and management practices

	Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	To be covered in proposed ES? If so, where?
Add to scoping short list					
7.2	War	No	The Proposed Development is no more vulnerable than any other infrastructure.	N/A	N/A
7.3	Vandalism	Yes	The Proposed Development is unlikely to be more of a target than existing Cambridge WWTP. Potentially for increased vulnerability in construction as boundaries and perimeters may be less challenge to breach.	Habitats, watercourses, people	Chapter 2: Project Description – details of security features and management practices
Add to scoping short list					
9	Disease				
9.1	Human disease	Yes	Pandemics and lesser outbreaks may reduce mean staffing levels are below critical mass required for normal operations. Similar level of risk to disruption between existing Cambridge WWTP and proposed WWTP. WWTP are vulnerable to supply chain interruptions which could be compounded by pandemic affecting other sectors. Reduced staffing in construction could have subsequent effects on security of the site leading to increased vulnerability to vandalism, theft, or absence of staff to manage incidents i.e. flooding.	Local residents People, property, environment	The risk of human disease will be considered in chapter 11: Health and in the ES.
Add to scoping short list					
9.2	Animal disease	No	The Project is no more vulnerable than any other infrastructure	N/A	N/A
9.3	Plant disease	No	New planting may be susceptible to biosecurity issues, such as the increased prevalence of pests and diseases, due to climate change. Established biosecurity controls to be part of management framework enacted through CoCP.	Habitats and species	Chapter 14: Landscape and visual (including Landscape and Ecological Management Plan) The planting design will take account of biosecurity risks through a wider mix of species including some non-natives.

I.2 Assessment of shortlist

Major accident or disaster feature	Hazards	Potential impact	Receptors	Project phase	Location	Consequence
Hydrological disaster						
Flood and extreme rainfall	Construction materials, equipment, people in floodplain	Extreme river flooding affects construction works Construction activities create secondary impact through contamination of floodwater and introducing debris into floodwater	Property and people in areas of increasing flood risk Proposed development	C	Part of project footprint Downstream areas from Proposed Development	Release of contaminants onto environmental receptors (for instance surface water (rivers) or ground water) outside construction site Debris causes blockages and worsens flooding downstream Roads and access are affected which could prevent the movement and treatment of sewage with associated secondary effects
	Flood water	Flood defence damaged by construction and worsens flooding event		C	Downstream of Project	Damage to equipment and Risks to site workers.
	Flood water	Extreme flood event impairs normally functioning of proposed WWTP including outfall		O	River Cam at and downstream of proposed outfall	Abnormal operations and contamination risk Damage to asset or containment within the DCO order limits. Hazardous working conditions
Physical damage to infrastructure	Extreme / heat and cold	Extreme heat/ cold damages utilities assets to impair function - loss of power to Proposed Development / impaired process functions	Utilities consumers	O&C	Wider area	Abnormal operations and contamination risk Damage to asset or containment within the DCO order limits.
Transport						
Proximity to A10	HGV or light goods vehicle movements associated with Proposed Development	Road accident on local or strategic road network prevents access/egress to Proposed Development affecting staffing needed for operations	Road users and aquatic environments	C&O	Local /regional network used by vehicles	Injury or fatality to a member of public. Damage to assets and property Spillage of pollutants and associated secondary effects (pollution, fire hazard).
		Road accident involving traffic associated with Proposed Development and the risk of spillage from hazardous loads		C&O	Local /regional network used by vehicles	
		Road accident involving project operational traffic (including sludge tankers and or delivery of process		O	Local /regional	

Major accident or disaster feature	Hazards	Potential impact	Receptors	Project phase	Location	Consequence
		chemicals and LPG) including spills to highway and surface water			network used by vehicles	
Collision risk . derailment	Interface / proximity to rail line	Off-track and outside boundary derailment causing severe disruption to rail transportation, major accident causing harm to staff, passengers and adjacent receptors.	staff, rail passengers and adjacent receptors (people, infrastructure, environment).	C	Cambridge line section within 1km of Proposed Project	Injury or fatality to a member of public. Damage to assets and property Spillage of pollutants and associated secondary effects (pollution, fire hazard).
Cambridge airport	Tall structures	Aircraft hazard (collision risk with cranes or tall equipment used during construction of Proposed Development) or new taller structures as part of Proposed Development	Aviation operations including people	C&O	Outside of boundary, local area	Loss of life, injury Operational disruption and secondary effects
	New or different wildlife	Aircraft hazard (new or different bird attractants from expanse of cleared landscape / earthworks/water ponding)	Aviation operations including people	C&O	Outside of boundary, local area	Loss of life, injury Operational disruption and secondary effects Use of fire water/foams, which could be released into the surrounding environment with potential secondary effects
	Lighting	Introduction of new lighting in previously unlit area creates lighting confusion risk	Aviation operations including people	C&O	Outside of boundary, local area	Loss of life, injury Operational disruption and secondary effects Use of fire water/foams, which could be released into the surrounding environment with potential secondary effects
Engineering accident / failure						
Tunnelling	Geotechnical risk and hydrogeological conditions	Disruption to rail or strategic road network asset during pipe crossings under rail and road	Road and rail users, people	C	Outside of boundary, far reaching impact on network	Loss of life, injury Operational disruption to railway Ground contamination
Flood defence	Geotechnical risk to flood bund	Flood defence damaged by construction and worsens flooding event	People, property	C	Downstream of Project	Damage to asset (scour and structure undermined) Pollution

Major accident or disaster feature	Hazards	Potential impact	Receptors	Project phase	Location	Consequence
Mast tower	Overhead asset clearance zone	Cranes or tall equipment entangle in overhead lines with impact to people (industrial accident) and utility consumers	Employees and utilities consumers including businesses and critical services	O	Core Zone Wider area affected by outages	Loss of life, injury Disruption to critical services Secondary effects from plant operational interruption
Utilities	Infrastructure easements i encroached and containment breached	Pipeline and cable strike results in outage. Utilities failure affects power supply to works with resultant operational impairment	Employees and utilities consumers including businesses and critical services	C	Outside of boundary, far reaching impact on network	Loss of life, injury Disruption to critical services Secondary effects from plant operational interruption Effects on the movement and treatment of sewage with associated secondary effects
Industrial accidents						
Fire and explosion	Gas storage and digestion processes	Fires affect proposed project in construction and create secondary impact through contamination by fire water	Local residents, property, habitats and species River Cam	C	Local airshed Local catchment	Loss of life, injury Disruption to critical services Secondary effects from plant operational interruption and fire water resulting in effects on soils, water, habitats
		Fire / explosion risk from digestors and gas storage	Local residents, property, habitats and species	O		Loss of life, injury Disruption to critical services Secondary effects from plant operational interruption and fire water resulting in effects on soils, water, habitats
Malicious attack						
Terrorism	Critical infrastructure target	Malicious attack on infrastructure and or staff and compromised operation of proposed WWTP resulting if fire / explosion/ contamination event(s)	Utility consumers, local residents, residents, property, habitats and species	O	Outside of boundary, far reaching impact on network	Fatalities and physical and / or psychological casualties Damage to property and infrastructure Loss of personal data Disruption to essential services, such as energy, transport and telecommunications Economic impacts

Major accident or disaster feature	Hazards	Potential impact	Receptors	Project phase	Location	Consequence
Terrorism / cyber threat	Critical infrastructure target	ICT and information assets are compromised leading to plant failure or irregular operation resulting if fire / explosion/ contamination event(s)	Utility consumers, local residents, residents, property, habitats and species	O	Outside of boundary, far reaching impact on network	Possible evacuation and shelter of local residents or employees
Vandalism /trespass	Critical infrastructure target	Deliberate vandalism or accidental damage from trespass to the Proposed Development and subsequent leaks, spills or hazardous conditions	Local residents, property, habitats and species	C&O	Depends on activity, effect could extend beyond Proposed Development	Fatalities and physical and / or psychological casualties Damage to property and infrastructure Economic impacts Possible evacuation and shelter of local residents or employees
Disease						
Human disease	Loss of critical mass	Human disease (pandemic) affects ability of operational activities to continue	Utility consumers Environment (River Cam)	C&O	Downstream of outfall and at proposed project site	Operational interruption and abnormal operations lead to secondary effects such as to effluent quality ability to response to emergencies (flood / storm events) Supply chain issues for critical process chemical and with secondary effect of pollution through effluent of poorer quality Disruption to critical services Unknown or novel pathogens within waste water present new risk to people

Get in touch

You can contact us by:



Emailing at info@cwwtpr.com



Calling our Freephone information line on **0808 196 1661**



Writing to us at **Freepost: CWWTPR**



Visiting our website at 

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/>