MVV Environment Ltd

Medworth Energy from Waste Combined Heat and Power Facility

EIA Scoping Report

Wood Environment & Infrastructure Solutions UK Limited – December 2019

Report for

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1	Draft Report	November 2019
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1. Introduction

1.1 Overview

1.1.1 MVV Environment Ltd (the 'Applicant') intends to make an application to the Secretary of State for a Development Consent Order (DCO) for an Energy from Waste (EfW) combined heat and power (CHP) facility (the 'Proposed Development') on the industrial estate, Algores Way, Wisbech, Cambridgeshire.

1.1.2 The Proposed Development will recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous Municipal and Commercial and Industrial waste each year. Generating over 50 megawatts, the electricity will be exported to the grid. The facility will also have the capability to export steam and electricity to users on the surrounding industrial estates. Further information is provided in **Chapter 2: Description of the Proposed Development**.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (hereafter referred to as the '2008 Act')[1] by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (see section 15(2) of the 2008 Act. It, therefore, requires an application to be submitted for a DCO.

1.1.4 This Scoping Report supports a request to the Secretary of State for a Scoping Opinion under Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations')[2].

1.2 The need for EIA

1.2.1 EIA is a process required by UK law which brings together information about the likely significant effects of a development. It provides decision-makers and the public with the environmental information needed to make sustainable decisions when determining applications for certain developments. The legal basis for EIA lies in European Community Directive 85/337/EEC[3] (the 'EIA Directive') and subsequent amendments. The EIA Directive is transposed into UK law through several pieces of legislation.

1.2.2 Concerning NSIPs, EIA is required for certain developments under the EIA Regulations. The stages of the DCO EIA process include:

- Screening and/or notification of EIA development;
- Scoping (discretionary) (this stage);
- Preparation of and consultation on a Preliminary Environmental Information Report (PEIR); and

[1] Planning Act 2008. Available online at: http://www.legislation.gov.uk/ukpga/2008/29/contents [Accessed 25 November 2019]

[2] The Infrastructure Planning (Environmental Impact Assessment Regulations) 2017. Available online at: http://www.legislation.gov.uk/uksi/2017/572/contents/made [Accessed 25 November 2019]

[3] Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment. Available online at: https://ec.europa.eu/environment/eia/eia-legalcontext.htm [Accessed 25 November 2019]

- Preparation of an Environmental Statement (ES).

1.2.3 Some NSIPs require EIA compulsorily (the EIA Regulations define these under Schedule 1), others only require EIA if they are likely to have significant effects on the environment by virtue of their nature, size or location (the EIA Regulations define these in Schedule 2).

1.2.4 In this instance, the Proposed Development falls within paragraph 10 of Schedule 1 of the EIA Regulations, which refers to:

> *"Waste disposal installations for the incineration or chemical treatment (as defined in Annex I to Directive 2008/98/EC under heading D9) of non-hazardous waste with a capacity exceeding 100 tonnes per day."*

1.2.5 As such, an EIA will be prepared in respect of the Proposed Development in support of the DCO application. The Secretary of State has been notified in writing, pursuant to Regulation 8(1) (b) of the EIA Regulations that the Applicant proposes to provide an ES in respect of the Proposed Development.

1.3 Purpose of this Scoping Report

1.3.1 This report identifies the potential likely significant effects of the Proposed Development that need to be considered in depth as part of the EIA and the proposed scope of the assessment in relation to these effects. It has been prepared in order to assist the Secretary of State in preparing a Scoping Opinion under the EIA Regulations setting out the scope of the information that should be contained in the ES.

1.3.2 Regulation 10(3) of the EIA Regulations defines the information that must be provided when a Scoping Opinion request is made, as shown in **Table 1.1**.

Table 1.1 Infrastructure Planning (Environmental Impact Assessment) Regulations requirements for Scoping

Requirement	Location in this Scoping Report
(a) A plan sufficient to identify the land	**Figure 1.1**
(b) A description of the Proposed Development, including its location and technical capacity	**Chapter 2: Description of the Proposed Development**
(c) An explanation of the likely significant effects of the development on the environment	Contained in individual topics, **Chapter 5** to **Chapter 18**
(d) Such other information or representations as the person making the request may wish to provide or make	**n/a**

1.3.3 This Scoping Report has been prepared to satisfy this element of the EIA Regulations and is in line with PINS Advice Note Seven: EIA Screening, Scoping and Preliminary Environmental Information[4]. Further details are provided in **Chapter 4: Approach to EIA Scoping**.

1.4 Applicant and the project team

1.4.1 The Applicant for this project is MVV Environment Ltd, a subsidiary of MVV. MVV Environment Ltd has engaged Wood Environment and Infrastructure Solutions UK Limited (hereafter referred to as 'Wood') to produce the EIA Scoping Report for the Proposed Development, and Pinsent Masons to provide legal support.

1.4.2 MVV Environment is part of the MVV Energie group of companies, providing sustainable and efficient solutions for waste-fired energy generation to publicly and privately-owned waste disposal companies as well as to Local Authorities.

1.4.3 The UK business retains the overall group ethos of 'belonging' to the communities we serve whilst benefitting from over 50 years' experience gained by our German sister companies. In the UK, MVV currently consists of five separate companies (see **Table 1.2**)

1.4.4 MVV's largest project in the UK so far is the Devonport Energy from Waste Combined Heat and Power Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 250,000 tonnes of household, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth.

1.4.5 In Dundee, MVV has taken over the existing Baldovie Energy from Waste facility and are is in the process of developing a new, state of the art facility. From 2020, each year, it will use up to 110,000 tonnes of municipal, commercial and industrial waste as fuel for the generation of usable energy.

1.4.6 Biomass is another key focus of MVV's activities in the British market and demonstrates our responsibility towards society when it comes to promoting the use of renewable energy. Their biomass power plant at Ridham Dock, Kent, uses 175,000 tonnes of waste and non-recyclable wood per year to generate green electricity and potentially heat as well.

Table 1.2 MVV Environment UK Group of Companies

Company	Detail
MVV Environment Ltd	The UK development company and core business support functions.
MVV Environment Baldovie	Energy from Waste CHP Facility, diverting 110,000 tonnes per annum of residual waste from landfill for Dundee and Angus Councils.
MVV Environment Devonport	Energy from Waste CHP Facility, diverting 200,000 tonnes per annum of residual waste from landfill for the South West Devon Waste Partnership as well as 50,000 tonnes per annum of residual waste for private waste disposal companies.

[4] The Planning Inspectorate *Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping* 2017. Available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/12/Advice-note-7.pdf [Accessed 25 November 2019]

Company	Detail
MVV Environment Ridham	Merchant biomass facility generating energy from approximately 175,000 tonnes per annum of waste wood that would otherwise be landfilled or exported for energy generation abroad.
MVV Environment Services	The UK electricity trading subsidiary of MVV.

1.5 Competence

1.5.1 Regulation 14(4) of the EIA Regulations requires that an ES is prepared by 'competent experts' and that the ES is accompanied by a statement outlining the relevant expertise or qualifications of such experts. This information will be provided in the ES, and confirmation is also provided below on how competence expertise has been taken account in the Scoping Report.

1.5.2 This Scoping Report has been co-ordinated by environmental consultants who are members of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark scheme. The Quality Mark requires its members to provide evidence of their EIA activities and adhere to certain commitments set out by IEMA. IEMA carry out an independent audit of those commitments each year by reviewing the ES's produced by Quality Mark members.

1.6 Structure of the Scoping Report

1.6.1 The report is structured as follows:

- **Chapter 1** sets out the structure of the Scoping Report, the need for an EIA, the purpose of the Scoping Report and the Applicant and project team;
- **Chapter 2** outlines information on the Proposed Development, including its need, the alternatives under consideration as well as a detailed description of the Site and proposals;
- **Chapter 3** outlines planning policies that have informed the scope of the assessment and other consents that may be required for the Proposed Development;
- **Chapter 4** summarises the general approach to the EIA; and
- **Chapters 5** to **15** outline the proposed scope of the assessment for each of the technical topics.

1.6.2 A glossary of abbreviations used in this report is provided in **Appendix A.**

1.6.3 Figures not embedded within the text are included as separate appendices to each respective technical chapter.

2. Description of the Proposed Development

2.1 The need for the Proposed Development

2.1.1 The Energy from Waste CHP Facility would be located in the Medworth ward of Fenland District Council. It is currently an operational waste recycling and transfer station and aggregates storage facility and is allocated in the adopted Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Development Plan Document (2012) for 'Waste Recycling and Recovery' use (site WC1). In the emerging Cambridgeshire and Peterborough Minerals and Waste Local Plan Proposed Submission (Publication) Draft (Nov 2019) the Site for the Energy from Waste CHP Facility is proposed to be a safeguarded existing waste management facility (Policy 10).

2.1.2 Overarching National Policy Statement for Energy (EN-1)[5] identifies that there is a clear and pressing need to change the UK's approach to energy generation and reduce reliance on fossil fuels. By diversifying the energy sector, the UK will be able to reduce greenhouse gas emissions, improve energy security and diversify its range and type of power stations. Failure to decarbonise and diversify the energy sector will mean the UK could become locked into a system of high carbon fossil fuels and consequently fail to reach its target to reduce net greenhouse gas emissions to zero by 2050[6].

2.1.3 EN-1 promotes the role of renewable energy generation to diversify the energy sector. In addition to commonly recognised 'intermittent' renewable energy generation, such as wind and solar, Energy from Waste is a recognised key component generating 'dispatchable' renewable energy from the biomass content within the residual waste. EN-1. Paragraph 3.4.3 of EN-1 states:

2.1.4 *"the principal purpose of the combustion of waste, or similar processes (for example pyrolysis or gasification) is to reduce the amount of waste going to landfill in accordance with the Waste Hierarchy and to recover energy from that waste as electricity or heat. Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery."*

2.1.5 In addition, the National Policy Statement for Renewable Energy (EN-3)[7] supports the recovery of energy from the combustion of waste:

2.1.6 *The recovery of energy from the combustion of waste, where in accordance with the waste hierarchy, will play an increasingly important role in meeting the UK's energy needs. Where the waste burned is deemed renewable, this can also contribute to meeting the UK's renewable energy targets. Further, the recovery of energy from the combustion of waste forms an important element of waste management strategies in both England and Wales.*

[5] Department for Energy and Climate Change *Overarching National Policy Statement for Energy (EN-1)* 2011. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf [Accessed 25 November 2019]

[6] *The Climate Change Act 2008 (2050 Target Amendment) Order 2019* (SI 2019/1056). Available online at: https://www.legislation.gov.uk/uksi/2019/1056/contents/made [Accessed 25 November 2019]

[7] Development for Energy and Climate Change National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf [Accessed 25 November 2019]

2.1.7 A key thread and a legal requirement[8] of the National strategy on sustainable waste management is, the concept of the Waste Hierarchy[9]. Simply put, the Waste Hierarchy ranks waste management options according to what is best for the environment, giving top priority to prevention and reuse, then recycling, then recovery and finally disposal e.g. landfill.

2.1.8 Contrary to the principles of the Waste Hierarchy, currently in the UK around 12.4 million tonnes of solid, non-hazardous waste which remains after recycling and is suitable to be used as a fuel in Energy from Waste facilities' is landfilled[10].

2.1.9 In the UK, around 3.5 million tonnes of solid, non-hazardous waste which, remains after recycling either treated (Refuse Derived Fuel / Solid Recovered fuel) or untreated (black bag) is exported overseas to fuel power stations[11]. The existing waste recycling and transfer station on the site of the proposed Energy from Waste CHP Facility is part of this market, bailing Refuse Derived Fuel (RDF) for export to Europe. The proposed Energy from Waste CHP Facility, subject to this Scoping Report, will assist in reducing part of the amount of residual waste exported by generating energy from residual waste in the UK.

2.1.10 Within Cambridgeshire and Peterborough and their surrounding counties, around 2.5[12] million tonnes of residual waste was landfilled in 2017, and with ambitious growth agendas, additional residual waste will ultimately be generated and need to be suitably treated in accordance with the Waste Hierarchy.

2.1.11 In summary, the Proposed Development will make a significant contribution to delivering critical energy and waste infrastructure for the UK, in accordance with National Policy.

2.1.12 The industrial area in the Wisbech ward of Medworth offers a perfect opportunity to achieve high efficiencies with Combined Heat and Power (CHP). The steam produced by burning the waste could be used for both electricity and heating or industrial processes, avoiding the use of fossil fuels. Such steam supplies would also increase the efficiency of the proposed facility by increasing the amount of energy put to good use. The CHP proposals would be developed to accord with the requirements of EN-1, which states that generating stations must either include CHP or contain evidence that it has been fully explored (paragraph 4.6.6).

2.1.13 A statement on the need for the Proposed Development will be provided as part of the DCO application. Further information on the policies relevant to the Proposed Development is provided in Chapter 3 of the Scoping Report.

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[8] *The Waste (England and Wales) Regulations 2011* (SI 2011/988). Available online at: http://www.legislation.gov.uk/uksi/2011/988/contents/made [Accessed 25 November 2019]

[9] Defra *Guidance on Applying the Waste Hierarchy* 2011. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf [Accessed 25 November 2019]

[10] Tolvik Consulting *Filling the Gap the Future for Residual Waste in the UK 2019*. Available to purchase at https://www.tolvik.com/published-reports/view/filling-the-gap-the-future-for-residual-waste-in-the-uk/ [Accessed 25 November 2019]

[11] See footnote 9

[12] Amey *Waterbeach Waste Recovery Facility: Planning Application Document* (S/3372/17/CW) 2017. Available online at: https://planning.cambridgeshire.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=ZZZZZCDYDR131 [Accessed 25 November 2019]

2.2 Main alternatives considered

2.2.1 This section sets out the proposed approach to considering 'reasonable alternatives' as part of the Proposed Development and reporting these within the ES.

2.2.2 The EIA Regulations set out within Schedule 4, Paragraph 2 the need to outline the main alternatives considered as part of the Environmental Impact Assessment (EIA) process, it must include:

> *"a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects".*

2.2.3 Whilst there is no statutory requirement to include an assessment of alternatives in support of a request for a Scoping Opinion, PINS Advice Note Seven recommends that a Scoping Report includes "*an outline of the reasonable alternatives considered and the reasons for selecting the preferred option*".

2.2.4 At this stage, consideration is being given to the following alternatives:

- Internal site layout;
- Design of the Energy from Waste CHP Facility;
- Access arrangements;
- Location of the Temporary Construction Compound; and
- Grid Connection.

2.2.5 Further information on these aspects of the development is provided in **Section 2.3**. The ES will fulfil the requirements of the EIA Regulations and include a description of the alternatives considered, and the main reasons why the preferred option has been selected including a comparison of the environmental effects.

2.3 Characteristics of the Proposed Development

The Site and its surroundings

2.3.1 The Proposed Development would include a number of principle elements within the Red Line Boundary (the 'Site'), including

- Energy from Waste CHP facility (**Figure 2.1**);
- CHP Connection (**Figure 2.4**);
- Grid Connection (**Figure 2.5**);
- Access Improvements (**Figure 2.4**); and
- Temporary Construction Compound (including potential additional land for a substation) (**Figure 2.3**).

2.3.2 The area incorporating the Energy from Waste CHP facility, CHP Connection and Access Improvements is referred to as the 'Main Development Site', to distinguish this from the Grid Connection Corridor. Sub-sets of the Main Site include the Energy from Waste CHP Facility Site, the CHP Connection Site and Access Improvements Site.

2.3.3 A description of the site conditions for each element of the development is described below.

Energy from Waste CHP Facility Site

2.3.4 This element of the development is approximately 3.9ha in size and is located southwest of Wisbech, centred at National Grid Reference TF 45881 08219 (see **Figure 2.1**). It is within the boundary of Fenland District Council and Cambridgeshire County Council.

2.3.5 It forms part of a wider industrial estate (see **Figure 2.2**). It is currently operated by Frimstone Ltd as a waste recycling and transfer station. It is accessed off Algores Way. It includes a materials reception facility (MRF), approximately 30m wide, 50m length and 11.5m in height which includes office and welfare facilities. It also contains a weighbridge and vehicle parking. Parts of the Energy from Waste CHP Facility Site outside of the MRF are used for aggregate storage, and the use of a concrete crusher is permitted.

2.3.6 The Energy from Waste CHP Facility Site is predominantly hard-standing. The soil has been scraped back from the working area and forms bunds along the perimeter. A number of drainage ditches run through and around the Energy from Waste CHP Facility Site, including one separating the northeast and southwest sections. This is culverted on the southwest perimeter to provide vehicular access. The operational area to the immediate southwest of the building is partly bounded by a 4m tall mesh fence. The north-eastern corner of the Energy from Waste CHP Facility Site is marked by a 1.8m high metal palisade fence. The southeast section of the Energy from Waste CHP Facility Site is bounded by trees.

2.3.7 The Energy from Waste CHP Facility Site is bounded directly to the north by the BJ Brooks Ltd and Floorspan Contracts warehouses and other industrial business units. A unit of Cambian Wisbech School is located approximately 200m to the northeast of the Energy from Waste CHP Facility Site. TBAP Unity Academy is located approximately 500m to the northeast of the Energy from Waste CHP Facility Site, and the Thomas Clarkson Academy approximately 750m to the northeast of the Energy from Waste CHP Facility Site. Residential areas of Wisbech lie beyond the industrial estate further to the north and the east.

2.3.8 To the east is the main access to the Energy from Waste Facility Site, located along Algores Way and connecting to the wider road network via Weasenham Lane. Adjacent to this are further industrial warehouses, including Linage Logistics and James Mackle (UK), including a cold store with an approximate height of 36m.

2.3.9 The southern end of the Energy from Waste CHP Facility Site is bound by New Bridge Lane, connecting with Cromwell Road to the west which provides direct access to the A47 via a four-arm roundabout. To the east, New Bridge Lane terminates after the T-junction with New Drove Lane and before reaching the A47.

2.3.10 A residential property (10 New Bridge Lane) is located to the 70m south of Energy from Waste CHP Facility Site, and is also located on land identified as a potential location for the Temporary Construction Compound (see **Figure 2.3**) One residential property known as 'Potty Plants' with associated farmland is located 340m from the southeast of the Energy from Waste CHP Facility Site along New Bridge Lane. This is bordered by the A47 along its southern and southeastern perimeter. In addition, Oakdale Place Travellers Site and Caravan Site are located south east of the intersection of New Bridge Lane and the A47, 400m and 500m respectively.

2.3.11 Beyond the A47 the landscape becomes predominantly agricultural in nature, interspersed with small villages and towns such as Begdale (approximately 1.6km to the south), Friday Bridge (approximately 3.4km to the south) and Elm (approximately 1.71km to the southeast).

2.3.12 Land to the south of New Bridge Lane and north of the A47, east of the junction of New Bridge Lane and the A47 is also allocated in the Fenland Local Plan[13] (2014) as an urban extension (Policy LP8) for predominantly business purposes and residential development.

2.3.13 To the west the Energy from Waste CHP Facility Site is boarded by scrubland and a mature strip of vegetation, likely to comprise trees and undergrowth. Within this lies the disused railway, known as the 'Brambley Line' which ran between Wisbech and March. West of the railway line, the industrial estate extends for a further 300m until it reaches Cromwell Road, after which there is a retail park comprising of cinema, Tesco Extra superstore and restaurants. The retail park is constrained to the west by the River Nene.

CHP Connection Site

2.3.14 The proposed CHP Connection (see **Figure 2.4**) would run up the disused railway line, known as the 'Bramley' Line as far as the Nestle factory. This element of the CHP Connection Site includes disused infrastructure from the old railway line, including track. It is heavily overgrown with vegetation. The CHP Connection Site is bounded on both sides by further industrial uses. At the northeast end of the CHP Connection Site lies residential properties such as Victory Road.

Access Improvements

2.3.15 The southern end of the Energy from Waste CHP Facility Site is bound by New Bridge Lane, the location of potential southern access to. New Bridge Lanes connects to Cromwell Road to the west which provides direct access to the A47 via a four-arm roundabout. This road is bounded by further industrial premises; it narrows at the disused railway crossing and there are bollards to prevent through vehicular access. A single residential property (9 New Bridge Lane) lies approximately 20m to the southwest boundary of the site (see **Table 6.3** and **Appendix B**), on the western side of the disused railway line to the north of New Bridge Lane. Further residential properties are located close to the New Bridge Lane / Cromwell Road Junction (93 & 97 South Brink, 25 Cromwell Road), adjacent to the location of the potential Access Improvements.

Grid Connection Corridor

2.3.16 There are currently two options whereby the Energy from Waste CHP Facility could be connected to the National Grid, a 132kV connection or a 400kV connection (see Description of the Proposed Development below). Starting at the Main Development Site, both options share a common Grid Connection Corridor running east of Wisbech. The corridor then splits; the 132kV route continuing north to Walpole, and the 400kV connection continuing east to meet an existing 400 kV line beyond Emneth Hungate.

2.3.17 The Overall Grid Connection Corridor subject to Scoping covers a broad area as identified in **Figure 2.5**. This area would be refined as part of the route selection process during the assessment phase.

2.3.18 The Grid Connection Corridor crosses the Fenland / Cambridgeshire Administrative boundary into Kings Lynn and West Norfolk Borough Council, and Norfolk County Council. It includes both urban industrial and agricultural land. The land is generally flat, arable land outside of smaller settlements and isolated dwellings. There is some tree cover and a number of orchards. The majority of fields within this area are bordered by ditches, managed by the relevant Internal Drainage Board. The A47 lies within the corridor area.

[13] Fenland District Council *Fenland Local Plan* 2014. Available online at: https://www.fenland.gov.uk/article/11023/Fenland-Local-Plan-Adopted [Accessed 25 November 2019]

2.3.19 The Grid Connection Corridor already contains the 132kV double circuit overhead line between West March to Walpole which is routed close to the east and south of Wisbech close to Elm, and further to the east the 400kV overhead line between Burwell Main and Walpole.

2.3.20 The village of Elm is located immediately to the south of the Grid Connection Corridor, to the south of Wisbech and the A47. The Grid Connection Corridor continues further east of Wisbech. The villages of Emneth and Emneth Hungate lie to the south of the corridor, and Marshland St James to the northwest.

2.3.21 Walton Highway is located further up the Grid Connection Corridor to the north. Other small settlements lie outside of the Grid Connection Corridor, including West Walton and Ingleborough to the west.

Temporary Construction Compound Sites

2.3.22 One potential location for the Temporary Construction Compound and permanent 400kV substation (if required) is located immediately adjacent to the southeast of the Energy from Waste CHP Facility Site. This comprises of small areas of scrubland and trees, and drainage ditches (see **Figure 2.3**).

2.3.23 The second potential Temporary Construction Compound is located to the south of New Bridge Lane, on land currently used for agricultural purposes. A single property, 10 New Bridge Lane, is also located on this land. Overhead lines cross this area, and it includes a number of drainage ditches.

Description of the Proposed Development

2.3.24 The Proposed Development is an Energy from Waste Combined Heat and Power facility, which would be located on land at Algores Way industrial estate (**Figure 2.2**).

2.3.25 It is proposed that it would be capable of handling approximately 523,500 (nominal) tonnes of residual (non-recyclable) waste per annum at 10.9MJ/kg (approximately 625,600 per annum at 9.8MJ/kg). It is intended that this facility would be able to export up to 53 Megawatt electrical (MWe) net (58.1 MWe gross) and potentially up to 250 per hour of steam (heat) energy.

2.3.26 As stated earlier, the key elements of the Proposed Development are:

- Energy from Waste CHP facility (**Figure 2.1**);
- CHP Connection (**Figure 2.4**);
- Grid Connection (**Figure 2.5**);
- Access Improvements (**Figure 2.4**); and
- Temporary Construction Compound (including potential additional land for a substation) (**Figure 2.3**).

Energy from Waste CHP Facility

2.3.27 The principle components of the operational Energy from Waste CHP facility are likely to include:

- 3 storey administration block (including, meeting rooms and visitor facility) with total floorspace of approximately 1,000m^2;
- Workshops and stores with a total floorspace of approximately 500m^2;
- Central control room, with a total floorspace of approximately 150m^2;

- Tipping hall, with an approximate area of 3,000m^2;
- Waste bunker, with an approximate area of 3,000m^2;
- Boiler house, comprising of the main hall enclosing the furnaces and heat recovery boilers with an approximate area of 2,6400m^2;
- Incinerator bottom ash (IBA) storage bunker and two drive through lanes for loading vehicles under cover of approximately 700m^2;
- Turbine hall, with an approximate area of 1,600m^2;
- Air pollution control (APC) system (including residue silo and Bag House), with a proposed area of approximately 1,300m^2 and a chimney with a maximum height of 95m;
- Air cooled condenser (ACC), with a proposed area of 1,400m^2;
- Water treatment plant, with an approximate area of 500m^2;
- Transformer compound for the export of electricity from the facility, either integrated into the building or located externally approximately 800m^2 or 1,150m^2 respectively;
- Emergency diesel generator enclosure with an approximate area of 75m^2;
- Electricity cables, switchgear rooms and steam and condensate pipework for connection to the relevant networks;
- External transformer compound for private wire supply with an approximate area 150 m^2; and
- 2-storey maintenance prefabricated buildings with an approximate area of 200m^2 and a maximum height of 6m.

2.3.28 Some of the components above will be contained in the main building. The height of the main building would range from 17m to a maximum height of 50m. The exact components within and the final floor space of the main building will be confirmed during the iterative design and procurement process.

2.3.29 Other development to support the functioning of the facility is likely to include car parking, electric vehicle charging points, cycle storage, internal access roads, footpaths, lighting, weighbridge, fencing, drainage and other utility connections consisting of mains water and foul sewerage.

2.3.30 Based on the anticipated staff and visitor requirements for the facility, space for 50 vehicles would be incorporated into the development.

2.3.31 Vehicles carrying waste to the Energy from Waste CHP Facility would be required to stop at the weighbridge before following the internal access roads running around the Energy from Waste CHP Facility Site to the waste reception building.

2.3.32 Surface water runoff will drain into the existing drainage ditches on the Energy from Waste CHP Facility Site. Sustainable Drainage Systems (SUDS) storage will be provided onsite to support drainage attenuation and required discharge rates.

2.3.33 The location of the proposed SUDS storage on the Energy from Waste CHP Facility Site will take account of site conditions, including the location of existing drainage ditches, and the final volume of SUDS storage will depend on the extent of the impermeable surface. The drainage design will then be agreed with Cambridgeshire County Council as the Lead Local Flood Authority and the local Internal Drainage Board.

2.3.34 Water and foul sewerage disposal are already connected to the Energy from Waste CHP Facility Site by local utility providers. Discussions will be held with these providers to ensure the supply is maintained and sufficient for the onsite operations.

2.3.35 Site lighting requirements for safety purposes will be defined as part of the design process, and will be factored into the relevant assessments, including landscape and visual and biodiversity.

Combined Heat and Power Connection

2.3.36 The Energy from Waste CHP Facility will be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables. Potential end users of the heat and power have been identified along the line of the disused railway corridor, and discussions have commenced with these users, such as Nestlé.

2.3.37 Land along the disused railway corridor would facilitate pipeline and cable access to end-users (see **Figure 2.4**).

2.3.38 The steam infrastructure would comprise two insulated pipes, one to export the steam, and the other to return the condensate to the Energy from Waste CHP Facility for reuse. The pipes would each have an approximate diameter of 0.2m. The pipeline would be suspended approximately 1.5m above ground on a frame. Connection infrastructure would be installed for each end-user, the requirements of which would be determined through ongoing discussions.

2.3.39 If opportunities for exporting electricity to local end-users are secured this would be provided via a cable tray suspended from the pipeline along the disused railway corridor. The specification of the cables would be determined during the detailed design phase.

Grid Connection

2.3.40 There are currently two options whereby the Energy from Waste CHP Facility could be connected to the National Grid. Both options share a common Grid Connection Corridor running east of Wisbech. The corridor then splits; the 132kV route continuing north to Walpole, and the 400kV connection continuing east to land beyond Emneth Hungate (see **Figure 2.5**):

- 132kV connection to Walpole substation approximately 10km to the northeast of the Main Development Site, operated by UK Power Networks (UKPN); or
- 400kV connection directly to the 400kV overhead line approximately 4.5km to the west of the Main Development Site beyond the A47, owned by National Grid.

2.3.41 Discussions are ongoing with both UKPN and National Grid to determine the connection point for the facility, and whether it could be delivered by either of these options via a separate agreement or will be included within the DCO application. Notwithstanding the approach to delivering this aspect of the development, it is anticipated that the connection to the grid will be adopted by UK Power Networks (UKPN) or National Grid and will be operated and maintained by one of them. Our preferred strategy for the Grid Connection will be published when the outcomes of the connection applications are known. Both options are therefore included in the scope of the environmental assessment at this stage.

2.3.42 If the Grid Connection is pursued as part of the DCO application, then the ES would include a description of the development and assess the potential impacts as part of the ES. Otherwise, the Grid Connection would form part of the cumulative assessment of effects within the ES. Both approaches would provide a detailed view of the potential significant impacts associated with the works and likely mitigation required. Consideration would also be given to the alternative routing and design options considered to justify the final choice made, which would take account of

environmental factors. Each topic chapter in the Scoping Report defines how the effects associated with the Grid Connection would be assessed.

2.3.43 Regardless of the connection route, both options would comprise of:

- Section of underground cable route (width and length to be determined), using either open cut or horizontal directional drilling (HDD) techniques with associated HDD launch and reception pits and working areas. Depth range to be defined. Insulated cables laid into ducts;
- Potential section of overhead line (OHL) of a length to be determined, comprising potentially single and double wooden poles (132kV maximum height of 20m to include approximately 2.7m, underground) or steel pylons (400kV 49m above ground maximum height), insulators and conductors. The span length would be determined on topographical conditions and conductor loading;
- Infrastructure to connect into the substation or OHL;
- Temporary access and Temporary Construction Compounds, storage and laydown areas; and
- Potential permanent access.

Access Improvements

2.3.44 The Energy from Waste CHP Facility Site is currently accessed from the north off Algores Way within the industrial estate, which leads off Weasenham Lane running east to west south of central Wisbech. Weasenham Lane connects to the A47 both to the east via the A1101 Elm High Road, and the west via the B198 Cromwell Road (see **Figure 2.2**).

2.3.45 Consideration will be given to the creation of a southern access point to the Energy from Waste CHP Facility Site (see **Figure 2.4**) from New Bridge Lane, which leads to the B198 Cromwell Road. Works to widen New Bridge Lane would be required to facilitate this access point.

2.3.46 This stretch of road is already identified in the Wisbech Access Study for road widening and junction improvement, known at the 'Southern Access Road'[14]. It intended to provide access to Wisbech South extension allocated in the Fenland Local Plan (2014), to the south of New Bridge Lane. The wider package of improvements which comprise the Access Study are also listed in the Cambridgeshire and Peterborough Combined Authority Local Transport Plan Table A.5, which was consulted upon between June and September 2019. Engagement with Cambridgeshire County Council and Fenland District Council will take place to understand the phasing and timescales for the Southern Access Road to determine the scope of works which may be required within the DCO. The outcomes of the non-statutory and statutory consultation will also be taken into account as part of this process.

2.3.47 If the southern access point is pursued in the DCO, a description of the size and nature of the works will be provided in the ES, together with an assessment of the effects informed by the traffic modelling. The scope set out in the topic chapters assumes that the Access Improvements would form part of the DCO.

[14] Skanska *Southern Access Road Wisbech Access Study* 2017. Available online at: https://www.fenland.gov.uk/media/14296/Skanska-Report---Southern-Access-Road/pdf/Skanska_Report_-_Southern_Access_Road.pdf [Accessed 25 November 2011]

Temporary Construction Compound

2.3.48 Land for the Temporary Construction Compound may be included within the application unless separate permission is obtained via another consenting route. Notwithstanding the chosen consenting route, an assessment of the impact associated with the set-up and use of the Temporary Construction Compound will be provided in the ES, either as part of the Proposed Development or on a cumulative basis.

2.3.49 Two areas have been identified for the Temporary Construction Compound as illustrated on **Figure 2.3**:

- Land to the southeast of the Energy from Waste CHP Facility Site, approximately 4.3ha; and
- Land to the south of New Bridge Lane, approximately 5.8ha.

2.3.50 Access to the Temporary Construction Compound would be confirmed as part of the iterative design and assessment process, taking account of the work ongoing to define the potential Access Improvements.

2.3.51 The Temporary Construction Compound would comprise of temporary storage of materials, fabrication, site cabins and offices, fencing, lighting and parking. Utility provision (electricity, water and foul sewerage) would be required.

Construction

2.3.52 The DCO application would include a construction strategy which would provide details of construction activities and their anticipated duration. It is anticipated that all elements of the Proposed Development including the Grid Connection would be completed within 3 years from the commencement of construction, with an expected start date of Q2 2022.

2.3.53 Over the duration of construction, there are likely to be around 700 construction personnel from a range of disciplines. During the peak periods of construction for all elements of the Proposed Development, there would likely be up to 350 construction personnel present onsite at any one time. Proposed working hours for these staff would be 07:00 to 19:00 Monday to Friday, 08:00 to 16:00 on Saturdays, and no work on Sundays or Public holidays. In the instance where works are required outside this window, such as continuous concrete pours, weld testing, internal mechanical and electrical fit out, Horizontal Directional Drilling (Grid Connection) and abnormal load deliveries, then agreement would be sought from the Local Planning Authority. The impact of works which may take place outside of the standard working hours will be assessed within the relevant chapters in the ES.

2.3.54 A Construction Environmental Management Plan (CEMP) for the Main Development Site and the Grid Connection would be implemented by the contractor to cover all aspects of construction works during the construction works. This would outline measures to control and minimise the risk of adverse environmental effects from construction activities by for example, minimising the risk of pollution spillage and generation of dust. A Construction Traffic Management Plan (CTMP) would be implemented to control the routes that construction traffic uses to deliver materials and access the site, management the movement of construction staff, and limit construction work to standard daytime working hours.

Energy from Waste CHP Facility, CHP Connection and Access Improvements construction

2.3.55 The construction phase, which would commence following the grant of the DCO and the discharge of relevant requirements would comprise of four key stages, as follows:

- Mobilisation; Temporary Construction Compound set-up, including site offices, stores and car parking, utility supply set up, boundary creation and access arrangements;
- Main works; site clearance and demolition, investigations and pre-construction environmental surveys (as required), foundation and hard standing creation, site grading, erection of main and ancillary buildings; CHP pipeline installation;
- Process installation; of components in the main building; and
- Commissioning; process start up and testing.

2.3.56 At this stage, the precise details of the construction methods to be utilised are not known, however, they would likely include:

- Removal of the existing building on the Energy from Waste CHP Facility Site;
- Limited earthworks to create finished ground levels prior to construction work;
- Installation of the utility services and foundations for roads, areas of hardstanding, pathways and site buildings;
- Planting and landscaping works;
- Construction of the main building and administration block, alongside other supporting facilities on the Energy from Waste CHP Facility Site, using potentially three tower cranes 75m high and six mobile cranes; and
- Installation of internal features (once buildings are weather-tight) and connections to utility services.

Grid Connection construction

2.3.57 The Grid Connection and potential 132kV or 400kV substation would be constructed in tandem with the works on the Main Development Site.

2.3.58 The following typical construction activities would occur:

- Construction of temporary access tracks, access points, set up of laydown, working areas and construction compounds;
- Overhead lines:
  - Vegetation clearance;
  - Excavation of foundations for poles/pylons:
  - Pole/pylon erection, backfilling with soil, or use of concrete and on granular filling dependent on the ground conditions;
  - Stringing of conductors;
  - Traffic management and scaffolding / netting for potential road crossings.
- Underground cables:
  - Assume open cut trenching with HDD if significant constraints are identified. The worst case to be defined; and
  - Existing top and sub-soil removed and stored
  - Cable trench excavated

- Cable laying into ducts, joint bays and backfilling with store soils.

2.3.59 Mobile plant requirements may include:

- Excavator;
- Drilling rig (for HDD);
- Winch to pull through ducts and cables
- Support vehicles to deliver the poles: either a short wheel base lorry or tractor and trailer; and
- Vans for construction team transport.

2.3.60 The number and location of any satellite compounds required to facilitate the construction of the Grid Connection is unknown at this stage but would be facilitated within the red line boundary.

Operation

2.3.61 Concerning the operation of the plant, the key stages of the waste management process are described below:

i. Tipping Hall

Waste is delivered to the facility in lorries. They enter the enclosed tipping hall and reverse up to the bunker edge and tip the waste into the Waste Bunker. Air is sucked through the tipping hall and bunker and into the furnace where it is used as primary combustion air so that odours do not escape. An alternative system will be provided to treat malodorous air when the Energy from Waste CHP facility is off-line.

ii. Waste Bunker

The waste is stored in the bunker waiting to be loaded into the furnace by crane. Up to 11.5 days' worth of waste can be stored here. Air is sucked through the tipping hall and bunker and used in the furnace so that odours do not escape.

iii. Furnace

The waste is burnt under very carefully controlled conditions to ensure safe and complete combustion and maximise the amount of heat recovered as useful energy. The furnace walls are made up of pipes within which water is heated and turned into steam in the boiler drum.

iv. Bottom Ash

Those bits of the waste that do not burn, for example metals and bricks, are part of the ash that falls off the furnace grate. This falls into water to cool it and is then put into a separate bunker before being taken away for recycling.

v. Boiler

The very hot gases from the furnace are passed through the boiler. The steam from the boiler drum goes through tubes in the boiler to superheat it, ready to be sent to the turbine.

vi. Air Pollution Control System

Having given up most of their energy to create useful heat in the form of steam, the flue gases have to be cleaned before they enter the chimney. The flue gases are injected with activated carbon and lime which react with pollutants such as acidic gases. The filters at the end of the system ensure that the residues, together with dust from the furnace, are captured so that the

flue gas entering the chimney is well within the limits set by law. The system is controlled "real time".

vii. Chimney

viii. Once the flue gas has been cleaned, it is analysed using a comprehensive system of continuous emissions monitoring equipment and periodic manual sampling. The treatment process will be adjusted to ensure that the emissions meets the strict emission limits in the Regulations and permit (see **Table 7.3**). Finally, the treated flue gases will be discharged to the atmosphere, via the 95m high chimney.

ix. Turbine Hall

Superheated steam from the boiler is sent to the turbine where it is used to drive an alternator, generating useful electrical energy. Steam can also be taken from the turbine at pressures and temperatures suitable for use by local industry. This reduces their dependence on fossil fuels and improves the overall efficiency of the facility.

x. Air Cooled Condenser

The condenser takes the exhaust steam from the turbine. Very quiet fans send cool air up through the condenser tubes. Warm water goes back to the boiler, where it is used to make steam again.

xi. Energy Distribution

The energy in the waste has finally been turned into useful electricity and steam for use by local industry. Any excess electricity is sent to the grid locally, displacing fossil fuels. Steam would be sent to local industry through an above ground pipeline.

2.3.62 Once operational, the Energy from Waste CHP Facility would be capable of processing residual commercial, industrial and household waste 24 hours a day, 365 days a year. Operational hours for the acceptance of waste would be limited to 07:00 to 20:00. Hence, the need for some of the 40 full-time staff to be onsite outside of hours when waste is received.

2.3.63 The operation of the Energy from Waste CHP Facility would be in accordance with an Environmental Permit (see **Section 4.8**) and there would be periods of plant shut down to allow for annual maintenance activities to occur.

2.3.64 The Description of the Development in the ES will include a detailed description of the works within the operational phase. Each environmental topic chapter in the Scoping Report describes how the potential operational effects of the assessment will be assessed in the ES.

Decommissioning

2.3.65 For the purpose of the ES, a working assumption has been made that the Proposed Development has an operation lifespan of approximately 40 years. However, it should be noted that it is common for such developments to be operational for longer periods. It is anticipated that the process of decommissioning would involve the termination of operational activity, following which there would be electrical and process isolation and demolition activities. The Energy from Waste CHP Facility Site and CHP Connection Site would be left in a clear and secure condition in accordance with a Decommissioning Plan. The decommissioning process is anticipated to last for one year.

2.3.66 Unless otherwise indicated in the environmental topic chapters in this Scoping Report, the environmental effects associated with the decommissioning phase would be of a similar level to those reported for the construction phase works, albeit with a lesser duration of one year.

3. Planning policy

3.1 Introduction

3.1.1 This section sets out the overarching planning policies for the Proposed Development.

3.1.2 Each topic chapter in the Scoping Report includes a summary of the relevant planning policies where pertinent to the assessment. Planning policy will be used to guide the scope of the assessment and to inform the value ascribed to receptors.

3.1.3 The Environmental Statement (ES) will identify all the relevant policies which will be used to inform the scope and assessment of each environmental topic. The extent to which the Proposed Development complies with the relevant planning policies will be presented within a separate Planning Statement.

3.2 National planning policy

National Policy Statements

3.2.1 The National Policy Statements relevant to the Proposed Development include:

- Overarching National Policy Statement for Energy (EN-1);
- National Policy Statement for Renewable Energy Infrastructure (EN-3)[15]; and
- National Policy Statement for Electricity Networks Infrastructure (EN-5)[16].

3.2.2 These were produced by the former Department of Energy and Climate Change (DECC), now the Department for Business, Energy and Industrial Strategy (BEIS), and designated in July 2011.

3.2.3 Section 104 of The Act 2008 requires that applications for DCO must be decided in accordance with the relevant NPSs except in the case that specific defined exceptions apply.

National Planning Policy Framework

3.2.4 Whilst NPSs provide the main policy basis for decisions on nationally significant infrastructure projects other policy may be considered relevant. The main national planning policy is the Revised National Planning Policy Framework[17] (NPPF). The NPPF was published in July 2018 and updated in February 2019. It sets out the Government's planning policies for England.

[15] Department for Energy and Climate Change *National Policy Statement for Renewable Energy Infrastructure (EN-3)* 2011. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf [Accessed 25 November 2019]

[16] Department for Energy and Climate Change *National Policy Statement for Electricity Networks Infrastructure (EN-5)* 2011. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf [Accessed 25 November 2019]

[17] Ministry of Housing, Communities & Local Government *Revised National Planning Policy Framework* 2019. Available online at: https://www.gov.uk/government/collections/revised-national-planning-policy-framework. [Accessed 25 November 2019]

3.2.5 The NPPF is supported by The National Planning Practice Guidance (NPPG), which was first published in March 2014[18]. NPPG is available as a web-based resource and is updated as and when required.

3.3 Local planning policy

3.3.1 The Main Development Site for the facility is located within Fenland District in Cambridgeshire County. Local development plans may be a relevant consideration for nationally significant infrastructure projects, although like the NPPF, they are not the primary policy. The current adopted development plans relevant to this area include:

- The Cambridgeshire and Peterborough Minerals and Waste Core Strategy[19] and Proposals Map C: Mineral Safeguarding Areas (adopted by Cambridgeshire County Council and Peterborough City Council on 19 July 2011); and
- Site Specific Proposals Development Plan Document[20] (adopted by Cambridgeshire County Council and Peterborough City Council on 22 February 2012).

3.3.2 The Energy from Waste CHP Facility Site is currently allocated in the Core Strategy for 'Waste Recycling and Recovery' use (site WC1).

3.3.3 Weight may be given to emerging planning policy according to their stage of preparation, the level of objections and the degree of consistency with the NPPF. Cambridgeshire County Council and Peterborough City Council are in the process of reviewing their joint Minerals and Waste Development Plan. Consultation on the Further Draft Cambridgeshire and Peterborough Minerals and Waste Plan ran from 15 March to 9 May 2019. The Proposed Submission (Publication) Draft Local Plan[21] has been published for consultation between 15 November 2019 to 9 January 2020. Policy 10 of the Draft safeguards the Energy from Waste CHP Facility Site for waste management use. The emerging Plan is estimated to be adopted in November 2020.

3.3.4 The Main Development Site is also located within an area covered by the Fenland Local Plan (May 2014). This Local Plan is also under review, and is currently at the Issues and Options stage[22], which was consulted upon from 11 October 2019 to 21 November 2019. This has an estimated adoption in February 2022.

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[18] Ministry of Housing, Communities & Local Government *Planning Practice Guidance* 2019. Available online at: https://www.gov.uk/government/collections/planning-practice-guidance [Accessed 25 November 2019]

[19] Cambridgeshire County Council and Peterborough City Council *Cambridgeshire and Peterborough Minerals and Waste Development Plan* 2011. Available online at: https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/business/planning-and-development/Core_Strategy_Adopted_19July_2011.pdf?inline=true [Accessed 25 November 2019]

[20] Cambridgeshire County Council and Peterborough City Council *Site Specific Proposals Development Plan Document* Part 2 2012. Available online at: https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/business/planning-and-development/SSPAdoption120208Web2.pdf?inline=true [Accessed 25 November 2019]

[21] Cambridgeshire County Council and Peterborough City Council Cambridgeshire and Peterborough Minerals and Waste Local Plan – Proposed Submission (Publication) Draft 2019. Available online at: https://drive.google.com/drive/folders/16Ex6yhTEoNwKsNVWasVVyi-HXIDKfU7e [Accessed 25 November 2019]

[22] Fenland District Council Fenland Local Plan 2019 – 2040 Issues and Options Consultation October 2019. Available online at: https://www.fenland.gov.uk/media/16017/Issues--Options-Consultation-Document/pdf/Final_Issues__Options_Cons_Doc_Oct_19.pdf [Accessed 25 November 2019]

3.3.5 The Wisbech Access Strategy is a package of individual transport schemes that aim to improve the transport network in Wisbech and support future housing and job growth as identified within the Fenland Local Plan.

3.3.6 Should a Grid Connection be included within the DCO application, this would partially fall within the boundary of King's Lynn and West Norfolk Borough Council. Their current adopted Local Plan comprises of:

- The Core Strategy[23] (adopted in 2011); and
- The Site Allocations and Development Management Policies Plan[24] (adopted 2016).

3.3.7 This is currently under review; a draft Local Plan[25] was subject to consultation from 4 March 2019 to 29 April 2019. A further consultation on the draft plan is expected to take place at the end of 2019 or early 2020.

3.3.8 Norfolk County Council has an adopted Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010 – 2026[26]. This Plan is currently under review. A draft Preferred Options document[27] was subject to consultation between September to October 2019. It is expected to be adopted in September 2021.

[23] King's Lynn and West Norfolk Borough Council *Local Development Framework – Core Strategy* 2011. Available online at https://www.west-norfolk.gov.uk/download/downloads/id/712/core_strategy_document.pdf [Accessed 25 November 2019

[24] King's Lynn and West Norfolk Borough Council *King's Lynn and West Norfolk Local Plan – Site Allocations & Development Management Policies* 2016. Available online at: https://www.west-norfolk.gov.uk/download/downloads/id/2491/sadmp_plan_adopted_2016.pdf [Accessed 25 November 2019]

[25] King's Lynn and West Norfolk Borough Council Local Plan Review 2019. Available online at: https://west-norfolk.objective.co.uk/portal/lpr2019/lpr2019?pointId=5170767 [Accessed 25 November 2019]

[26] Norfolk County Council *Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010 – 2026* Available online at: https://www.norfolk.gov.uk/-/media/norfolk/downloads/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/minerals-and-waste-planning/core-strategy-and-minerals-and-waste-development-management-policies-development-20102026.pdf?la=en&hash=2B9DE42FADAE96E23E1105DE7EE570C51431DCDC [Accessed 27 November 2019]

[27] Norfolk County Council *Norfolk Minerals and Waste Local Plan – Preferred Options*. Available online at: https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/minerals-and-waste-planning-policies/norfolk-minerals-and-waste-local-plan-review [Accessed 27 November 2019]

4. Scope of the assessment

4.1 Approach to scoping

4.1.1 Paragraph 5 of Schedule 4 of the EIA Regulations states that the description of likely significant effects in the EIA must identify, describe and assess, the direct and any indirect, secondary, cumulative, transboundary, short–term, medium-term and long-term, positive and negative significant effects of the Proposed Development upon specific environmental factors. It also provides a checklist (with reference to paragraph 5(2)) of topics to include in EIA derived from the relevant European Directives setting out those aspects of the environment which are considered likely to be significantly affected by the Proposed Development.

4.1.2 *"...identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of proposed development on the following factors—*

4.1.3 *(a) population and human health;*

4.1.4 *(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC(1) and Directive 2009/147/EC(2);*

4.1.5 *(c) land, soil, water, air and climate;*

4.1.6 *(d) material assets, cultural heritage and the landscape; and*

4.1.7 *(e) the interaction between the factors listed in sub-paragraphs (a) to (d)."*

4.1.8 The EIA Regulations also state (Schedule 4, paragraph 8) that the ES should include "*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 which are relevant to the project concerned*".

4.1.9 **Table 4.1** lists the environmental factors outlined in Paragraph 5 of Schedule 4 of the EIA Regulations as requiring consideration and highlights where these have been considered in this Scoping Report.

Table 4.1 Environmental Topics to be Addressed in an EIA

Factor	Relevant sections in this EIA scoping report
Population	Traffic and transport (Chapter 5), air quality (Chapter 7), noise and vibration (Chapter 6), landscape and visual (Chapter 8), socio-economics (Chapter 14)
Human health	Traffic and transport (Chapter 5), air quality (Chapter 7), noise and vibration (Chapter 6), socio-economics (Chapter 14), geology, hydrogeology and contaminated land (Chapter 12) and hydrology (Chapter 11).
Biodiversity	Biodiversity (Chapter 10)
Land	Geology, hydrogeology and contaminated land (Chapter 12)
Soil	Geology, hydrogeology and contaminated land (Chapter 12)
Water	Hydrology (Chapter 11)
Air	Air quality (Chapter 7)

Factor	Relevant sections in this EIA scoping report
Climate	Air quality (Chapter 7) Landscape and visual (section 4.5), Biodiversity (Chapter 10), climate change (section 4.11), water (section 4.10), all topics (effects of climate change on the future baseline)
Material assets	Historic environment (Chapter 9), socio-economics (Chapter 14), geology, hydrogeology and contaminated land (Chapter 12),
Cultural heritage	Historic environment (Chapter 9)
Landscape	Landscape and visual (Chapter 8)
Major accidents and disasters	Major accidents and disasters (Chapter 15)
The inter-relationship between the above factors	These are discussed within each topic as relevant
Cumulative effects	Cumulative effects (Chapter 4)

Presentation of information within the technical chapters

4.1.10 This Scoping Report includes the following information within the chapter for each topic:

- A review of the legislation, policies and guidance relevant to the topic that will guide the scope of the assessment;
- A summary of main data sources used to inform the definition of the current baseline conditions;
- An overview of the baseline conditions including:
  - Defining the zone of influence for the topic;
  - Identifying factors influencing baseline conditions; and
  - Outlining any additional information requirements.
- A summary of the scope of the assessment to be carried out and definition of the potential likely significant effects including:
  - Identification of the receptors that could be subject to potential likely significant effects;
  - A summary of the likely significant effects requiring further assessment;
  - A summary of the potential effects assessed as not requiring further assessment with appropriate justification; and
  - The proposed assessment methodology.

4.1.11 The technical chapters will provide information to enable the Secretary of State to determine if the scope of the assessment and the proposed approach is appropriate. The following sections outline the overarching approach taken to determining the significance of effects.

4.2 Approach to defining the baseline environment

4.2.1 The assessment of potentially significant effects requires a comparison to be made between the likely environmental conditions predicted in the presence of the Proposed Development and the likely environmental conditions predicted in its absence (i.e. the 'baseline'). It cannot be assumed

that the baseline conditions in the absence of the Proposed Development will remain the same and hence, it is necessary to define both the current and future baseline.

Current baseline

4.2.1 To establish the current baseline for each topic and to facilitate the identification of potential likely significant effects, a summary description of the aspects of the environment likely to be significantly affected by the Proposed Development is presented in **Chapters 5 to 18**. Where available, existing desk top studies, field surveys and consultation have been used to identify the current conditions and environmental character of the area and study areas.

4.2.2 The baseline as outlined in each topic chapter of this Scoping Report will be described within the corresponding ES chapter, drawing upon the information sources noted.

Factors influencing the baseline

4.2.1 When considering a long-term development, it is often appropriate to consider the changing nature of the environment in the event that the Proposed Development is not constructed or operated or when the life of the construction period may be sufficiently long that changes to the baseline environment could occur. These changes are captured by considering the influencing factors on the existing site, resulting in a future baseline.

4.2.2 The nature of the future baseline varies between topics and is influenced by a combination of natural and man-made processes. It might include development proposals which have been granted consent where there is an expectation that they will come forward during the construction of the proposed development. In such instances, these proposals may be factored into the definition of the baseline or be identified as receptors. For some topics, the future baseline may be the same as the current baseline. The future baseline as outlined in each topic chapter of this report will be described in the corresponding ES chapter.

4.3 Approach to identifying likely significant effects

4.3.1 The approach taken to the preparation of this Scoping Report has been informed by PINS Advice Note 7. It also reflects the EIA Regulations which require an ES to focus on the aspects of the environment likely to be subject to significant environmental effects.

4.3.2 Following the Advice Note, and to ensure that legislative requirements are met, this Scoping Report outlines how the baseline will be established, the approach that has been taken in identifying likely significant effects and the approach that will be adopted for the assessment of significant effects to be presented in the ES.

4.3.3 For the scoping in or out of likely significant effects, reference is made to the following information (if available at this stage):

- The receptors that could be affected by the Proposed Development;
- The activities expected to be involved in constructing and operating the Proposed Development;
- Changes that could result from these activities;
- The expected magnitude and other characteristics of these environmental changes and the susceptibility of relevant receptors to exposure to these changes; and

- The extent to which the design of the Proposed Development avoids, reduces, enhances or improves any likely effects.

4.3.4 Drawing upon the above, the identification of likely significant effects has been based upon professional judgement and where relevant, topic specific methodologies and established practice.

4.3.5 If, before the assessment of an effect is complete, professional judgement concludes that the effect is not likely to be significant, no further assessment will be carried out and the effect will be 'scoped out' (i.e. it will not be considered further in the EIA). The respective topic chapters clarify the environmental factors proposed to scope out of the assessment (**Chapter 5** to **Chapter 15**).

4.3.6 For effects that are likely to be significant, the report sets out the work that is needed to take forward the assessment. As much detail as possible is also provided about the scope of work in order to make it easier for consultees to comment on the proposals and thereby help reduce the risk that they will identify new issues or alternative assessment methodologies later in the EIA process; such a situation can lead to additional expense, both for the developer and consultees, and significant delays.

4.3.7 If the information that is available at the Scoping Report stage does not enable a robust conclusion to be reached that a potential effect is not likely to be significant, the effect is carried forward for further assessment, which will be presented within the PEIR and ES.

4.3.8 All assessments carried out and presented within each topic chapter are based on the best available information at the time. As required by the EIA Regulations, the ES will be based on the Secretary of State's Scoping Opinion. However, as EIA is by its nature an iterative process, the process of refining the scope will continue through targeted consultation with relevant organisations. Any changes that are made to the conclusions in this report about the proposed scope of the EIA will be summarised and justified in the ES. If there are any material changes to the design of the Proposed Development that may significantly affect the conclusions of the Scoping Opinion, these will be discussed with PINS.

Significance criteria

4.3.9 For those effects identified as potentially significant and included in the scope of the assessment, significance criteria will be applied to determine the likely significance of each effect.

4.3.10 The level of significance of an effect is commonly derived from combining measures evaluating the magnitude of impact and the value and sensitivity of the resource(s) and/or receptor(s) affected.

4.3.11 Magnitude of impact is defined as the overall level of change in the environment and includes matters such as the extent over which that impact occurs, duration, likelihood, frequency and reversibility. For the purposes of the Proposed Development, magnitude is categorised as either high, medium, low or negligible, unless stated otherwise. Topic chapters provide further detail on what represents a high, medium, low or negligible impact for individual topics, drawing on topic specific guidelines as appropriate.

4.3.12 The value or sensitivity of a receptor is generally defined as a function of a number of factors such as rarity, fragility, replaceability and importance of the resource, and is generally determined in a geographical context. The sensitivity is also a function of the capacity of the resource and/or receptor to accommodate changes or recover. For the purposes of this assessment, value or sensitivity is categorised as either high, medium or low, unless stated otherwise. Topic chapters provide further detail on what represents a high, medium or low sensitivity for individual topics, drawing on topic-specific guidelines as appropriate.

4.3.13 In order to provide a consistent approach to expressing the outcomes of each of the topic assessments undertaken, a series of generic significance criteria descriptors have been developed in the form of a significance matrix as shown in **Table 4.2**.

4.3.14 Effects can be positive or negative. For each effect, this combines the impact magnitude with the value and sensitivity of the resource/receptor affected by the impact(s) to determine the level of significance. Where necessary, the evaluation of effects has also been informed by expert professional judgement to reach a balanced conclusion on the ultimate significance of each effect. This is particularly the case for certain topics where there may not be clear boundaries between the sensitivity or magnitude of effect, meaning that topic specific guidance and professional judgement is needed to provide clarity on the resulting level of effect.

4.3.15 Topics use the above generic significance criteria unless otherwise specified in the topic chapter, for example, if there are topic-specific guidelines that specify significance criteria to be used which are based on topic-specific guidelines, which are different to those shown in **Table 4.2**.

Determination of significance

4.3.16 The significance of effects is determined with reference to the nature of the development, the receptors that could be significantly affected and their sensitivity, importance or value, together with the magnitude of environmental change that are likely to occur.

4.3.17 Other than for environmental topics where significance evaluation does not involve the use of matrices, sensitivity/value and the characteristics of environmental changes can be combined using a matrix (refer to **Table 4.2**). In addition, professional judgement is applied since, for certain environmental topics, the distinction between the sensitivities or magnitudes of change may not be clearly defined. Consequently, the resulting assessment conclusions explain how professional judgement has been applied to arrive at the level of effect.

4.3.18 Variations to this approach, which may be applicable to specific environmental topics, are detailed in the relevant sub-section contained in each topic chapter (**Chapters 5-18**).

4.3.19 Within the matrix that is used in most significance evaluation exercises, reference is made to:

- Major effects, which will always be determined as being significant in EIA terms;
- Moderate effects are likely to be significant, although there may be circumstances where such effects are considered not significant on the basis of professional judgement; and
- Minor or negligible effects, which will always be determined as not significant.

Table 4.2 Significance evaluation matrix

		Magnitude of change				
		Very high	**High**	**Medium**	**Low**	**Very low**
Sensitivity/importance/value	**Very high**	Major (Significant)	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably significant)
	High	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)
	Medium	Major	Major	Moderate	Minor	Negligible

		(Significant)	(Significant)	(Probably significant)	(Not significant)	(Not significant)
	Low	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)
	Very Low	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)

Note: Significant effects are those identified as 'Major'. 'Moderate' effects would normally be deemed to be significant. However, there may be some exceptions, depending on the environmental topic and the application of professional judgment.

4.4 Spatial and temporal scope

Spatial scope

4.4.1 The geographic location and context within which the Proposed Development sits is described in **Chapter 2: Description of the Proposed Development.**

4.4.2 The spatial scope for each topic assessment will depend on the nature of the potential effects and the location of receptors that could be affected. These study areas are described within each of the topic chapters. The spatial scope of the technical assessments will therefore take account of:

- The physical area of the Proposed Development;
- Nature of the baseline environment; and
- Manner and extent to which environmental effects may occur.

4.4.3 The topic chapters (**Chapter 5** to **Chapter 18**) describe the methodology for defining the study area relevant to the environmental factor. These will be adopted in the ES.

4.4.4 Where relevant, the topic chapters also describe where, as the design of the Proposed Development evolves, these study areas may need to be refined to ensure they still adequately reflect the area of potential influence for likely significant environmental effects.

Temporal scope

4.4.5 The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur; they are typically defined as either being temporary or permanent.

4.5 Cumulative effects assessment

4.5.1 Schedule 4 of the EIA Regulations set out the information for inclusion in the ES. This is to include a description of the likely significant effects of a development on the environment, which should cover, amongst others, cumulative effects. Paragraph 5(e) describes cumulative as:

"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources."

4.5.2 While there is no standard approach to the assessment of cumulative effects, PINS has issued an advice note for undertaking cumulative effects assessment for NSIPs, Advice Note Seventeen[28]. This provides useful guidance, setting out a four-stage process for the identification and assessment of other development.

4.5.3 The note also refers to three tiers of other development ranging from Tier 1 (most certain) to Tier 3 (least certain) to consider in the cumulative effects assessment:

- Tier 1 development: under construction, permitted application(s) but not yet implemented, and submitted application(s) not yet determined;
- Tier 2 development: projects on the PINS Programme of Projects where a scoping report has been submitted; and
- Tier 3 development: projects on the PINS Programme of Projects where a scoping report has not been submitted, development identified in relevant Development Plans (including emerging Development Plans), and development in other plans and programmes where such development is reasonably likely to come forward. It is acknowledged in Advice Note Seventeen that there may be limited publicly available information for plans, policies and programmes.

4.5.4 The approach for the assessment of cumulative effects for the Proposed Development will follow the staged approach set out in Advice Note Seventeen, although it is proposed to agree the inclusion/exclusion criteria at an early stage (as part of the first stage) to ensure that only those developments that have the potential to lead to likely significant cumulative effects are included in the assessment. A summary of the proposed approach to the cumulative effects assessment is provided in **Table 4.3**.

Table 4.3 Cumulative effects assessment approach

Stage	Description
1a Establish the Proposed Development's Zone of Influence (ZoI) by topic	Establish the Proposed Developments ZoI by topic. Each environmental topic will identify the likely spatial ZoI for cumulative effects associated with their topic.
1b identify inclusion/exclusion criteria	***Tier 1 developments:*** proposed inclusion/exclusion criteria will be identified to recognise those developments that have the potential to lead to likely significant effects. All developments to include within the assessment will be agreed with the relevant Local Planning Authorities. The criteria will be applied to all planning applications submitted (and are either consented or pending determination) in the last 5 years over the maximum extent of all topic ZoIs (i.e. the widest topic ZoI area). ***Tier 2 developments:*** developments on the PINS programme of projects where a scoping report has been submitted ***Tier 3 developments***: developments on the PINS Programme of Projects where a scoping report has not been submitted will be considered as Tier 3 development (subject to sufficient comprehensive information being available for a development to enable a robust assessment). Regarding local development plans, a review of plans, policies and programmes will be undertaken to determine the level of available information and identify whether it is reasonably practicable to make

[28] The Planning Inspectorate Advice Note seventeen: Cumulative Effects Assessment (2019)

Stage	Description
	accurate predictions about how the proposals in plans, policies and programmes may interact with the Proposed Development to impact on environmental receptors.
2 Identify other development in ZoIs using inclusion/exclusion criteria	An initial list of other developments will be prepared using the criteria which will be defined in Stage 1.
3 Information gathering	Following scoping and stakeholder feedback, the list of other developments will be updated, and any further publicly available information will be collected on each of the developments to be included in the cumulative effects assessment, to allow topics to undertake a robust assessment of cumulative effects. This will include temporal information on each development so the years in which there is the potential for cumulative effects can be determined. Where a development is built out before the Proposed Development construction works begin, the development will form part of the future baseline.
4 Assessment	In the ES environmental topics will consider the cumulative effects of the Proposed Development with each of the other developments identified as relevant in turn. A summary of the cumulative effects assessment will be provided in a tabular format, which would include the identification of any mitigation measures and residual cumulative effects.

4.5.5 For environmental assessment purposes it will be necessary to freeze the cumulative development list, to allow environmental topics to undertake assessments to be reported ES. This is expected to be approximately 4 months prior to the submission of the DCO application.

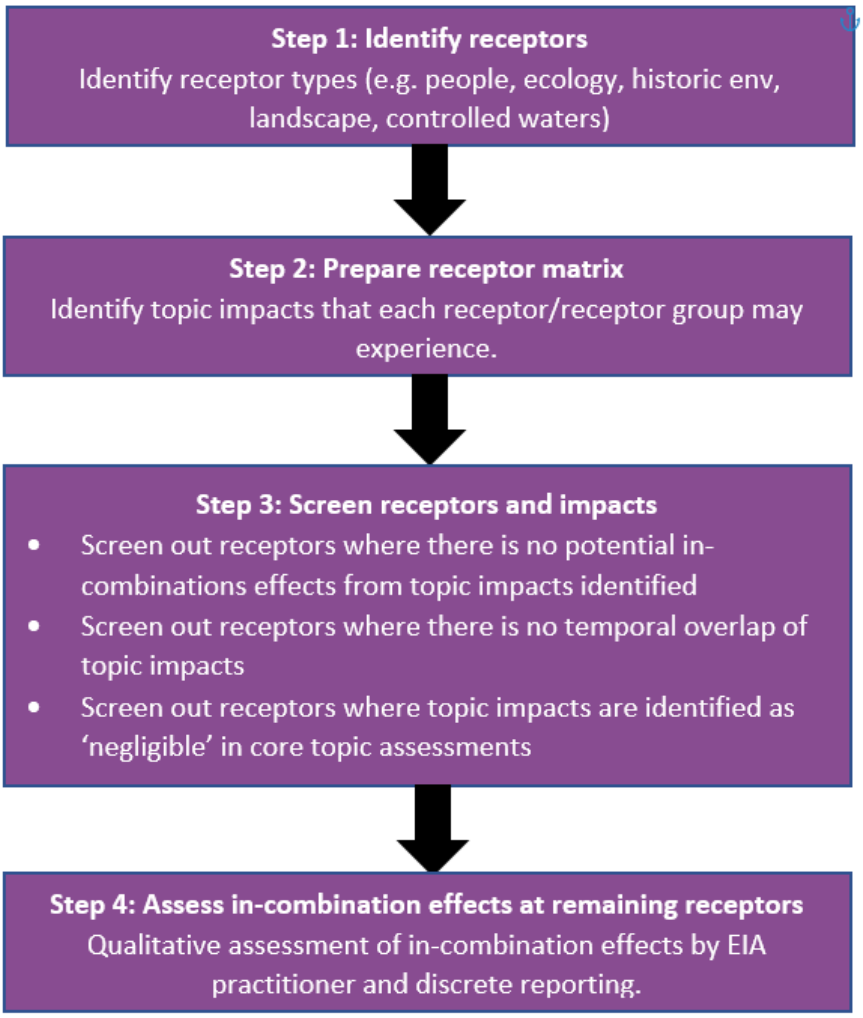
Inter-related cumulative effects

4.5.6 Regulation 5(2) (e) requires that the EIA must consider the interaction of environmental effects associated with a Proposed Development and described in regulation 5(2)(a) to (d). For the purposes of the EIA for the Proposed Development, these are termed 'inter-related effects, referring to the combined environmental effects from the Proposed Development (i.e. interaction of environmental factors such as air quality, noise, health etc.) on a single receptor at a single point in time.

4.5.7 There is no standard approach to the assessment of in-combination effects although it should be carried out with reference to the guidance explained above and to professional judgement. The main difficulty in the assessment of in-combination effects is the inability to undertake the assessment in a quantitative or standardised way given the range of differing impacts that may occur at a receptor as a result of a Proposed Development. Effects are very rarely additive (i.e. X + Y = Z), instead being a collection of impacts on a receptor that need to be drawn together in a meaningful way. Consideration also needs to be given to the potential for 'synergistic' effects whereby different types of impact affecting a receptor may interact together to increase their combined significance.

4.5.8 The proposed approach for the assessment of inter-related effects for the Proposed Development is shown in **Figure 4.1**. This follows a receptor-based approach for the consideration of inter-related effects.

Figure 4.1 Inter-related effects assessment process



4.5.9 Inter-related effects will be reported in each topic chapter in a stand-alone sub-section, as part of the wider assessment of effects.

4.6 Consultation

4.6.1 Consultation specific to the Proposed Development is being commenced with the submission of the formal request for an EIA Scoping Opinion to PINS. A Statement of Intended Community Consultation is also in preparation and it will be submitted to the host authorities to seek agreement on the MVV's proposed approach to a first round of non-statutory consultation. This consultation will be held with all stakeholders for a period to be agreed with the host authorities. It is intended that this consultation will be held in the spring of 2020.

4.6.2 The non-statutory consultation will be followed in the summer of 2020 with a second round of statutory consultation. The approach to be taken to this consultation will be agreed with the host authorities via the submission of the Statement of Community Consultation required under section 47(1) of the 2008 Act. Statutory consultation will engage all prescribed consultees and it will be accompanied by a preliminary environmental information report.

4.6.3 At the end of both rounds of non-statutory and statutory consultation MVV will consider all the responses received and review its proposals for the Proposed Development. This information will be presented in a non-statutory and a statutory consultation report. The latter will be submitted to the Secretary of State as part of the DCO application.

4.7 Content of the ES

4.7.1 In accordance with the EIA Regulation 14 and good practice, the ES will contain:

- a non-technical summary (which will be available as a standalone document);
- a description of the Proposed Development, including location, its characteristics and land-use requirements, considering demolition, construction and operation;
- an explanation of the need for the Proposed Development, a description of the main reasonable alternatives and the main reasons for the choice of the preferred option.
- a description of the approach that has been adopted in preparing the ES, including the various steps in the EIA process, terminology, and the overarching assessment methodology;
- an overview of the legislation and policies that are relevant to the EIA, and a summary of the consents required if the development is to proceed;
- separate chapters setting out the assessment relating to those environmental topics scoped in to the assessment, each of which will include:
  - a description of baseline conditions, including information about how these might evolve in the absence of the development;
  - a description of any measures that have been embedded into the Proposed Development with a view to avoiding or minimising environmental effects, or delivering environmental benefits;
  - the scope of the assessment and the methodologies adopted;
  - a description of any limitations to the assessment;
  - a description of the likely significant effects and evaluations of significance of predicted effects for each receptor/resource that has been assessed in detail;
  - proposals for any additional measures to mitigate or compensate for significant adverse effects, including any required monitoring;
- an assessment of cumulative effects; and
- a list of references.

4.8 Other assessments and consents

4.8.1 In addition to the EIA, the DCO application will also include the following assessments subject to agreement with the relevant consultees:

- Water Framework Directive (WFD) compliance;
- Habitat Regulations Assessment (HRA); and
- Flood Risk Assessment (FRA).

4.8.2 Opportunities to coordinate the assessment processes, including the data collection will be sought through agreement with consultees,

4.8.3 The Proposed Development will require other consents, licences, permits, etc. These will be identified during the course of the EIA and appropriate consultations will take place with organisations such as the local planning and highway authorities, Natural England, the Environment Agency and others, as appropriate.

4.8.4 At this stage, it is known that an Environmental Permit will be required to operate the Energy from Waste CHP facility. The Environmental Permit will be issued by the Environment Agency and will sit alongside the DCO. Pre-application engagement will commence with the Environmental Agency imminently to ensure the necessary assurance can be provided during the DCO process.

5. Traffic and Transport

5.1 Introduction

5.1.1 This chapter describes the scope of the assessment for traffic and transport. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with respect to relevant parts of other chapters, namely **Chapter 6: Noise and Vibration** and **Chapter 7: Air Quality**, where common receptors have been considered and where there is an overlap or relationship.

5.2 Relevant legislation, planning policy, technical guidance

Planning policy context

5.2.1 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 5.1**.

Table 5.1 Planning Policy Context

Guidance reference	Implications
National Policy	
Overarching National Policy Statement (NPS) for Energy (EN-1)	The policy identifies that *if a project is likely to have significant transport implications, the applicant's ES should include a transport assessment*. Where mitigation is needed, EN-1 identifies that possible demand management measures must be considered in preference to new transport infrastructure, subject to feasibility and cost effectiveness. An assessment will be undertaken of the traffic and transport related effects of the construction and operational traffic and consideration will be given to appropriate demand management measures.
NPS for Renewable Energy Infrastructure (EN-3)	EN-3 identifies that biomass or EfW generating stations are likely to generate considerable transport movements, particularly HGVs. The site should be located in the vicinity of existing transport routes and any application should incorporate suitable access leading off from the main highway network. The assessment will include the assessment parameters included in EN-3.
NPS for Electricity Networks Infrastructure (EN-5)	There is no technology specific information relating to transport and traffic identified in EN-5.
National Planning Policy Framework (NPPF)	The NPPF identifies the need to favour sustainable transport modes to enhance travel choice, and to locate developments that generate significant movement where the need to travel will be minimised and the use of sustainable transport modes can be maximised. The NPPF sets out that all developments that generate significant amounts of movement should be supported by a Transport Statement or a TA and a Travel Plan

Guidance reference	Implications
	(paragraph 111), the latter being identified as a key tool to deliver sustainable transport objectives. With specific regards to highway considerations in decision making, the NPPF (Paragraph 109) states: *"Development should only be prevented or refused on highway grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe".*
Local Policy	
Fenland Local Plan **Policy LP8: Wisbech**	Transport Infrastructure required to serve the South Wisbech area must ensure that there will be no unacceptable adverse impact on the local and strategic highway network.
Fenland Local Plan **Policy LP15** **Facilitating the Creation of a More Sustainable Transport Network in Fenland**	All development proposals should demonstrate that they have regard to the following criteria: • Development on a site should be located and designed so that it can maximise accessibility and help to increase the use of non-car modes; • Proposals which include new public highway should ensure such new highway complements and enhances the character of the area, possibly through the preparation of a public realm strategy for larger development schemes; • Development schemes should provide well designed, safe and convenient access for all, giving priority to the needs of pedestrians, cyclists, people with impaired mobility and users of public transport by providing a network of pedestrian and cycle routes and green corridors including habitat connectivity (linking to existing routes where opportunities exist) that give easy access and permeability to adjacent areas; and • Development schemes should provide well designed car and cycle parking appropriate to the amount of development proposed, ensuring that all new development meets the Council's defined parking standards. Any development that has transport implications will not be granted planning permission unless deliverable mitigation measures have been identified, and arrangements secured for their implementation, which will make the development acceptable in transport terms.
The Cambridge and Peterborough Combined Authority Local Transport Plan Consultation June-September 2019 - Wisbech Access Strategy	Appendix Table A.5 lists proposed transport projects for Wisbech. These include the reopening of the railway line between March and Wisbech, capacity improvements to the A47 and the Wisbech Access Study package of measures which include for New Bridge Lane/Cromwell Road signals, Weasenham Lane Junction improvement and a proposed roundabout at its junction with Elm High Road, a Western Link Road and a Southern Access Road.
Cambridge and Peterborough Waste Adopted Core Strategy	Section 11 considers traffic and highways and Policy C32 states that applications for either waste or minerals developments will only be permitted where opportunities for alternative modes of transport have been evaluated, that the access and highway network is suitable to accommodate the levels of traffic proposed and that the increase in traffic would not give rise to unacceptable harm to the environment, road safety or amenity.

Guidance reference	Implications
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 23 Traffic Highways and Rights of Way, states that appropriate arrangements have been considered to promote alternative transport modes including electric HCV if available. Safe access to the site is also sought whilst rights of way enhancement will be sought where. The environmental effects, road safety and residential amenity arising from any increases in traffic must not be unacceptable.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	Policy CS11 Transport establishes how the Council will deal with transport issues arising from new development promoting sustainable forms of transport appropriate to the location and providing for safe and convenient access.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM1 provides a presumption in favour of development taking into account whether the adverse effects of granting permission would significantly outweigh the benefits when assessed against the NPPF. There is no specific traffic and transport related DM policy other than DM 12 Strategic Road Network.

Technical guidance

5.2.2 The assessment has been conducted with reference to guidance contained in Table 5.2. Whilst NPS EN-1 specifies the use of the use of NATA/WebTAG methodology stipulated in Department for Transport guidance this is used more for modelling and the production of Transport Assessments.

Table 5.2 Relevant Technical Guidance

Guidance reference	Implications
Guidelines for the Environmental Assessment of Road Traffic (GEART) 1993[29]	Sets standards for the assessment of road traffic on the environment.

5.3 Data gathering methodology

Study area

Main Development Site

5.3.1 The study area for the assessment will be based on the road network in the vicinity of the Main Development Site, as follows:

- Algores Way;
- The B198 Cromwell Road;

[29] Institute of Environmental Assessment Guidelines for the Environmental Assessment of Road Traffic (GEART) 1993

- New Bridge Lane
- Weasonham Lane;
- Elm High Road; and
- The A47.

5.3.2 The study area will be reviewed once the origins of the waste are known. The temporal scope of the assessment of traffic and transport is consistent with the period over which the development would be carried out and therefore covers the construction and operational periods.

Grid Connection

5.3.3 Roads that will be crossed and impacted upon by the Grid Connection Corridor will be included with in the study area once the alignment is identified and the type of connection is confirmed. The scope of the assessment relative to the connection will be agreed with the appropriate highway authorities. Consideration will also be given to the implications of the Wisbech Access Study once its phasing and timescales are understood.

Summary of data sources

5.3.4 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- OS mapping of the road and rights of way network as well as The Definitive Map;
- Google Traffic which provides an indication of traffic conditions on the road network in terms of levels of congestion and queuing;
- Crashmap which provides summary information on personal injury accidents (PIA) on the road network;
- Street View which enables a desk top based review of street conditions and characteristics;
- Public transport mapping and timetables available online; and
- Cycle route mapping available online.

5.4 Overall baseline

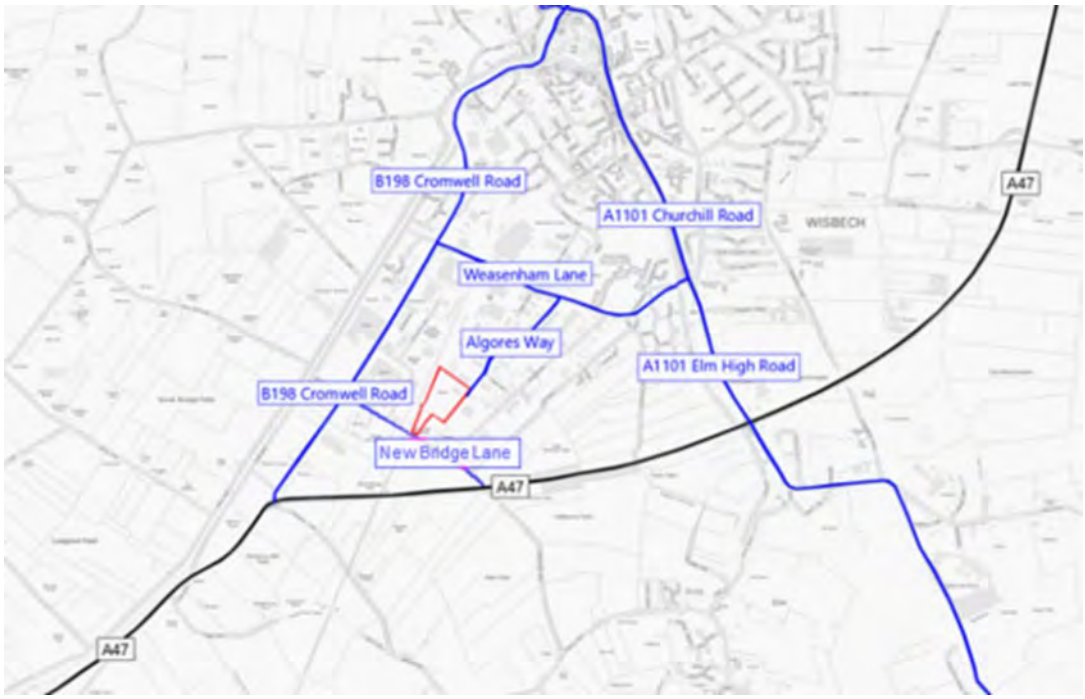
Current baseline

Main Development Site

5.4.1 The Main Development Site is situated to the south of Wisbech, north of the A47, which forms part of the Strategic Road Network (SRN) and routes east to King's Lynn and Norwich, and west to Peterborough and the A1(M).

5.4.2 The following sections provide a description of the road network, which is shown in **Figure 5.1**.

Figure 5.1 Local Road Network



Algores Way

5.4.3 Access to the Energy from Waste CHP Facility Site is currently via Algores Way which routes north from the site, through the wider industrial estate to Weasenham Lane. The access is formed of a priority T-junction and has a width of approximately 25m at the bell mouth, leading to an internal access road with an approximate width of 7m. Algores Way is a single carriageway road with a 30mph speed limit, pedestrian footways on both sides and is street lit along its entirety. Crashmap indicates that there have been two 'slight' accidents along Algores Way in the past five years. This will be investigated further in the traffic and transport assessment.

New Bridge Lane

5.4.4 The southern end of the Energy from Waste CHP Facility Site is bound by New Bridge Lane, connecting with Cromwell Road to the west. The western section of the road is approximately 6m in width and is bounded by industrial premises. The road narrows to the south west of the site and has bollards to prevent car access. To the east, New Bridge Lane terminates after the T-junction with New Drove Lane before the A47.

Weasenham Lane

5.4.5 Weasenham Lane is a single carriageway road that routes east to the A1101 (Churchill Road/Elm High Road) and west to the B198 Cromwell Road. The road has a 30mph speed limit when approaching from the east which is increased to 40mph approximately 140m east of the Algores Way junction. A Department for Transport (DfT) manual traffic count undertaken on the 02/05/2018 on Weasenham Lane has evidenced daily traffic flows of 3636 (of which 7% are HGVs) eastbound and 3644 westbound (of which 7% are HGVs) between the hours of 07:00 and 19:00. Google Traffic indicates slow moving traffic along sections of Weasenham Lane in the AM and PM peak hours. Crashmap indicates that there have been 17 PIAs along Weasenham Lane in the past five years, one of which was a fatality, and four were serious. This will be investigated further in the traffic and transport assessment.

B198 Cromwell Road

5.4.6 The B198 Cromwell Road is a single carriageway road that forms a major route within Wisbech between the town centre and the A47 to the south west. The road also forms a signalised cross roads junction with Weasenham Lane to the west of the Energy from Waste CHP Facility Site, providing the most direct route from the Strategic Road Network from the west. Within the vicinity of the Main Development Site the road holds a 40mph speed limit which increases to national speed limit further south on approach to the A47.

A1101 Elm High Road

5.4.7 The A1101 Elm High Road is a single carriageway road that routes between the A1101 Churchill Road/Ramnoth Road/ A1101 Elm High Road/Weasenham Lane signalised junction in the north and the A1101 Outwell Road to the south, whilst also linking to the A47 to the south east of the Energy from Waste CHP Facility Site and therefore providing the most direct route from the Strategic Road Network from the east. From the northern extent of Elm High Road the A1101 becomes duelled and continues north to the town centre. Within the vicinity of the Main Development Site the road holds a 40mph speed limit.

A47

5.4.8 The A47 forms part of the SRN and routes east to King's Lynn and Norwich, and west to Peterborough and the A1(M). The A47 links to two junctions within the vicinity of the Main Development Site, namely the B198 Cromwell Road/A47/Redmoor Lane roundabout to the south west and the A1101 Elm High Road/A47 roundabout to the south east. This section of the A47 is a single carriageway road with national speed limit designation.

Other facilities

5.4.9 No public transport facilities are currently located within an acceptable walking distance (400m) of the Energy from Waste CHP Facility Site.

5.4.10 National Cycle Network (NCN) route 63 is located an approximate cycle distance of 1.3km to the northeast of the Energy from Waste CHP Facility Site on Weasenham Lane. This routes south to March and subsequently west to Peterborough and north to Wisbech town centre and subsequently King's Lynn to the northeast and Boston to the northwest. A shared cycle/footway runs along Weasenham Lane on the northern side of the carriageway between the NCN route 63 and a shared cycle/footway on the eastern side of the B198 Cromwell Road.

5.4.11 No Public Rights of Way are located within or in the immediate vicinity of the Energy from Waste CHP Facility Site.

Future baseline

5.4.12 In accordance with GEART, the period in which the level of traffic (future baseline + development) is at its peak will be considered within the assessment. The future baseline will take into account traffic growth as a result of new development which will be based on growth factors from the DfT National Trip End Model (NTEM) derived from the Trip End Model Presentation Programme (TEMPro).

5.4.13 The future baseline will also consider the implications of changes to the transport infrastructure.

5.4.14 The Wisbech Access Strategy proposes a new Southern Access Road (SAR) linking New Bridge Lane and Boleness Road due to limited east-west vehicle routes within Wisbech, as identified in the Fenland Local Plan and the Cambridgeshire and Peterborough Combined Authority Local Transport

Plan Appendix Table A.5. The scheme is considered to reduce local traffic congestion on the network, alleviate pressure on Weasenham Lane and provide access to the Wisbech South Local Plan development area. As part of this scheme a new roundabout junction is proposed adjacent to the southern boundary of the Energy from Waste CHP Facility Site and therefore would facilitate a new access at this location, whilst the proposed widening of the road would allow site traffic a direct route from the A47. MVV proposes to engage with the Combined Authority, Cambridgeshire and Fenland Councils to better understand the phasing and timescale for delivery.

5.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

5.5.1 The spatial scope of the assessment includes the following highways that are located on routes that development traffic would use based on the distribution of traffic. In relation to the Main Development Site, these will comprise:

- Algores Way;
- New Bridge Lane;
- The B198 Cromwell Road;
- Weasonham Lane;
- Elm High Road; and
- The A47.

5.5.2 These highways provide comprehensive coverage of the routes surrounding the Main Development Site. Beyond these roads, traffic from the Energy from Waste CHP Facility Site would access the wider road network where its effect would be diluted by existing traffic on these routes or would distribute to a point where the effects from traffic would be minimal.

5.5.3 Consideration for the implications of the construction of the Grid Connection will also be included within the ES assessment and receptors with the potential to be affected will be identified and agreed with the relevant highway authorities.

5.5.4 The receptors along the highways will form the scope of the assessment in relation to potentially traffic-related effects.

5.5.5 Receptors are the users or beneficiaries of highway network assets and facilities such as pedestrians, cyclists, equestrians and drivers who travel within the vicinity of the Proposed Development.

5.5.6 GEART identifies the following groups and special interest groups that may be affected:

- People at home;
- People at work;
- Sensitive groups including children, elderly and disabled;
- Sensitive locations such as hospitals, churches, schools and historical buildings;
- Pedestrians;
- Cyclists;
- Open spaces, recreational areas and shopping areas;

- Sites of ecological and nature conservation value; and
- Sites of tourist/visitor attractions.

Potential significant effects requiring further assessment

5.5.7 The potential effects of the Proposed Development that are likely to be significant with regards to traffic and transport, and those which will be subject to further assessment are set out below.

- Severance: the separation of people from places and other people and places or impede pedestrian access to essential facilities;
- Driver delay: traffic delays to non-development traffic;
- Pedestrian amenity: the effect on the relative pleasantness of a pedestrian journey as a result of changes in traffic flow, traffic composition and pavement width / separation from traffic;
- Pedestrian delay: the ability of people to cross roads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions of the Proposed Development;
- Fear and intimidation: these may be experienced by people as a result of an increase in traffic volume and its proximity or the lack of protection caused by such factors as narrow pavement widths; and
- Accidents and safety: the risk of accidents occurring where the Proposed Development is expected to produce a change in the character of traffic.
- Abnormal indivisible load (AIL) vehicles (over 18.3m length and/or over 2.9m width) are not anticipated as part of the construction works. The largest vehicles anticipated to require access are standard articulated lorries, including low loaders importing construction equipment (note: construction equipment such as excavators to be deployed will be within the legal width where possible). Where abnormal loads with regards to vehicle weight (over 44 tonnes) are required to access the development, they will be subject to a Special Types General Order (STGO). The weight of these loads will depend on the plant machinery used.

Construction

5.5.8 The volume of construction HGVs and staff vehicles will be compared with the future baseline to assess the impacts of construction.

Operation

5.5.9 The volume of operational HGVs and staff vehicles will be compared with the future baseline to assess the impacts of operation.

Receptors and effects scoped out of the assessment

5.5.10 At this stage, receptors and effects have not been scoped out of the assessment.

5.6 Assessment methodology

General approach

5.6.1 The guidance that is followed when assessing the potential significance of road traffic effects is summarised in GEART (IEA, 1993), which states that:

> "*The detailed assessment of impacts is…likely to concentrate on the period during which the absolute level of an impact is at its peak, as well as the hour at which the greatest level of change is likely to occur.*" (Paragraph 3.10).

5.6.2 To assess the impact at its peak, the likely percentage increase in traffic is determined by comparing estimates of traffic generated by the Proposed Development with future predicted baseline traffic flows on the road links within the defined study area. Consideration will be given to changes in traffic flows as a result of the New Bridge Lane widening proposals should they included within the DCO.

Determination of significance

5.6.3 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

5.6.4 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

5.6.5 GEART provides two rules that are used to establish whether an environmental assessment of traffic effects should be carried out on receptors:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
- Rule 2: Include sensitive areas where traffic flows are predicted to increase by 10% or more.

5.6.6 It should be noted that, according to GEART, predicted traffic flow increases below 10% are generally not considered to be significant as daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flows below this level are, therefore, assumed not to result in significant environmental effects and have therefore not been assessed further as part of this study.

Receptor Sensitivity

5.6.7 The sensitivity of each highway link included in the assessment has been assigned a sensitivity in accordance with GEART. This is based on the proximity of sensitive receptors to the highway link and the highway environment. **Table 5.2** summarises the rationale used to determine the sensitivity against the corresponding receptors as part of the assessment as contained in GEART. Professional judgement is also used to determine the sensitivity of the receptor.

Table 5.3 Receptor sensitivity

Sensitivity	Description/Reason	Receptor
High	Receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident blackspots, retirement homes and urban/residential homes without footways that are used by pedestrians and cyclists	Residents/workers travelling to and from work or home on foot and by bicycle, school children, leisure walkers and equestrians
Medium	Traffic flow sensitive receptors including: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycle ways, community centres, parks, recreation facilities	Residents/workers travelling to and from work or home on foot and by bicycle, people visiting these land uses
Low	Receptors with some sensitivity to traffic flows: places of worship, public open space, nature conservation areas, listed buildings, tourist/visitor attractions and residential areas with adequate footway provision	Residents/workers travelling to and from work or home on foot or bicycle and people visiting these land uses
Negligible	Receptors with low sensitivity to traffic flows: Motorway and Dual Carriageways and/or land uses sufficiently distant from affected routes and junctions	Residents/workers travelling by foot or by bicycle

5.6.8 In accordance with GEART sensitivity judged as High or Medium results in Rule 2 (sensitive areas where traffic flows are predicted to increase by 10% or more) being considered for that junction. Sensitivity judged as Low or Negligible results in Rule 1 being considered for that junction (where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%)).

5.6.9 Given the potential receptors described, **Table 5.3** identifies the sensitivity of highway link and the GEART Rule that applies.

Table 5.4 Magnitude of Change

	Magnitude of change			
Transport effect	**High**	**Medium**	**Low**	**Negligible**
Severance[1]	Change in total traffic or HGV flows over 91%	Change in total traffic or HGV flows of 61-90%	Change in total traffic or HGV flows of 31-60%	Change in total traffic or HGV flows of less than 30%
Driver delay[2]	High increase in queuing at junctions and/or congestion on road links	Medium increase in queuing at junctions and/or congestion on road links	Low increase in queuing at junctions and/or congestion on road links	Low or no increase in queuing at junctions and/or congestion on road links

	Magnitude of change			
Transport effect	**High**	**Medium**	**Low**	**Negligible**
Pedestrian amenity and delay[3]	Based on general level of pedestrian activity, visibility and physical conditions such as traffic flow, traffic composition, crossing points and pavement width/separation from traffic			
Accident and safety[4]	Informed by a review of existing collision patterns and trends based upon the existing personal injury accident records and the forecast increase in traffic.			

Notes

1 Based on approach set out in GEART
2 GEART does not provide thresholds but identifies that junction modelling can inform the estimation of increased vehicle delays.
3 GEART suggests does not provide thresholds and recommends that assessors use their judgement to determine whether pedestrian delay is a significant impact.
4 GEART suggests that professional judgement will be needed to assess the implications of local circumstances or factors which may elevate or lessen risks of accidents, e.g. junction conflicts.

Methodology for assessing environmental effects

5.6.10 In relation to traffic and transport, the significance of each effect identified in paragraph 5.5.7 has been considered against the criteria within GEART, where possible. However, GEART states that:

> *'For many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources.' (Paragraph 4.5, IEA, 1993).*

Severance

5.6.11 There are no predictive formulae which give simple relationships between traffic factors and levels of severance. GEART states that changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance. In general, marginal (slight) changes in traffic flow are, by themselves, unlikely to create or remove severance.

Driver delay

5.6.12 GEART states that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. The capacity of a road or a particular junction can be determined by establishing the ratio of flow to capacity (RFC).

5.6.13 For this assessment, criteria from GEART has been used to assess the effects on traffic levels and driver delay, which states the need for assessment where changes in traffic flows exceed 30%.

Pedestrian delay

5.6.14 Given the range of local factors and conditions which can influence pedestrian delay, GEART does not recommend that thresholds be used as a means to establish the significance of pedestrian delay but recommend that reasoned judgements be made instead. However, GEART suggests a lower

threshold of 10 seconds delay and upper threshold of 40 seconds delay which, for a link with no crossing facilities, equates to the lower threshold of a two-way flow of 1,400 vehicles per hour.

Pedestrian amenity

5.6.15 GEART notes that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a positive effect and the latter a negative effect.

Fear and intimidation

5.6.16 There are no commonly agreed thresholds by which to determine the significance of this effect. GEART notes that special consideration should be given to areas where there are likely to be particular problems, such as high-speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Accidents and safety

5.6.17 This is informed by a review of existing collision patterns and trends based upon the existing personal injury collision records and the forecast increase in traffic.

Assumptions

5.6.18 At this stage the number of construction and operational vehicle movements has not been defined in order to inform the assessment, and thus the following will be obtained during the assessment process:

- Preliminary construction method statement; including estimations of daily HGV and staff numbers;
- Estimation of operational traffic volumes to be provided, broken down into HGVs and light vehicles;
- Grid Connection Corridor and construction methodology, including location of compounds and laydown areas.

5.6.19 The maximum tonnage of waste will be assessed in order to present a worst-case scenario and robust assessment.

5.6.20 Operational and construction vehicle routes to the Site are yet to be confirmed and as a result no roads can be scoped out of the assessment at this time. The anticipated roads used for these development phases are described in Section 5.3.1. Further clarity and a timescale for implementation of the Wisbech Access Study will be sought from the highway authority.

6. Noise and Vibration

6.1 Introduction

6.1.1 This chapter describes the scope of the assessment for Noise and Vibration. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Description of the Development** and with respect to relevant parts of other chapters, particularly **Chapter 5: Traffic and Transport**, where common receptors have been considered and where there is an overlap or relationship.

6.2 Relevant legislation, planning policy, technical guidance

Legislative context

6.2.1 The following legislation is relevant to the assessment of the effects on noise and vibration sensitive receptors:

- Control of Pollution Act 1974 (COPA);[30]
- Environmental Protection Act 1990 (EPA)[31]; and
- Environmental Permitting Regulations 2018[32] (EPR).

Planning policy context

6.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 6.1**.

Table 6.1 Planning Policy Context

Policy reference	Implications
National Policy	
Overarching National Policy Statement (NPS) for Energy (EN-1)	EN-1 advises the use of the Noise Policy Statement for England (NPSE) to consider noise as the overarching noise policy statement. EN-1 advises that noise should be considered in the short-term (construction phase) and the longer term (operation).
NPS for Renewable Energy Infrastructure (EN- 3)	There are specific considerations which apply to biomass and EfW generating stations as set out below. Sources of noise and vibration may include: • Delivery and movement of fuel and materials;

[30] *Control of Pollution Act 1974*. Available online at: https://www.legislation.gov.uk/ukpga/1974/40 [Accessed 25 November 2019].

[31] *Environmental Protection Act 1990.* Available online at: http://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 25 November 2019]

[32] *Environmental Permitting Regulations 2016* (as amended). Available online at: http://www.legislation.gov.uk/uksi/2016/1154/contents/made [Accessed 25 November 2019]

Policy reference	Implications
	• Processing waste for fuel at EfW generating stations; • The gas and steam turbines that operate continuously during normal operation; and • External noise sources such as externally-sited air-cooled condensers that operate continuously during normal operation.
NPS for Electricity Networks Infrastructure (EN-5)	The NPS sets out specific information in relation to Noise and Vibration. Section 2.9 states that the applicant's assessment requires an alternative noise assessment method to deal with rain-induced noise of corona discharge, as BS4142 (for example) may not be appropriate. It notes the method developed by National Grid as described in report TR(T)94,1993[33] and that this follows recommendations broadly outlined in ISO 1996 (BS 7445:1991)[34] and as such is consistent with BS 4142:1997. The examining authority is likely to be able to regard it as acceptable for the applicant to use this or another methodology that appropriately addresses these particular issues.
National Planning Policy Framework (NPPF)[35]	The NPPF advises that significant adverse impacts on health and the quality of life as a result of noise from new development should be avoided. It also advises that other adverse impacts on health and quality of life arising from noise from new development should be reduced to a minimum. Paragraph 170 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by, (amongst other considerations): *"Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability".* The NPPF goes on to state in Paragraph 180 that "*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:* • *mitigate and reduce to a minimum 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;* • *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."* Paragraph 182 advises that "*Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.*" This should be taken into account when considering whether proposed development is an acceptable use of land. The NPPF document does not refer to any other documents regarding noise other than the NPSE.

[33] National Grid. *TR(T)94 – A Method for Assessing the Community Response to Overhead Line Noise*. Issue1 (1993)/

[34] International Standards Organization. *ISO 1996: 1982 (BS7445:1991) Description and Measurement of Environmental Noise* (1991)

[38] British Standards Institution (BSI, 2014b) *British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* London, BSI.

Policy reference	Implications
Noise Policy Statement for England (NPSE)[36]	The NPSE introduces concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are: NOEL – No Observed Effect Level This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. LOAEL – Lowest Observed Adverse Effect Level This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of the NPSE leads to the concept of a significant observed adverse effect level. SOAEL – Significant Observed Adverse Effect Level This is the level above which significant adverse effects on health and quality of life occur. It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. The first aim of the NPSE is *"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"* The second aim is: 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. The third aim of the NPSE is *"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"* Further guidance on the different effect levels is provided in Planning Practice Guidance – Noise (PPG-N).
Local Policy	
Cambridgeshire CC and Peterborough CC Draft MWLP[37] **Policy 18**	Policy 18 states that new development must not result in unacceptable adverse impacts on the amenity of existing occupiers of any land or property, including noise and/or vibration levels resulting in disturbance to the occupiers or users of any nearby property or land.
Cambridge and Peterborough Waste Adopted Core Strategy	Policy CS24 states that all proposals for either minerals or waste management development will be required to achieve high standards in their design and mitigation of environmental impacts

[38] British Standards Institution (BSI, 2014b) *British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* London, BSI.

[38] British Standards Institution (BSI, 2014b) *British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* London, BSI.

Policy reference	Implications
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 18 Amenity Considerations states that new development must not result in unacceptable adverse impacts on the amenity of existing occupiers of any land or property, to include noise and vibration resulting in disturbance.
Fenland Local Plan (Adopted)	Policy LP16 Delivering and Protecting High Quality Environments across the District permits development subject to a number of criteria including that they should not adversely impact on the amenity of neighbouring uses such as noise. It also states that proposals should set out how to mitigate risks from noise
King's Lynn and West Norfolk Local Development Framework – Core Strategy	There is no specific reference to noise within the Core Strategy.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM15 Environment, Design and Amenity recognises that noise can give rise to impacts upon amenity and that proposals will be assessed against this as a factor. Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to noise.

Technical guidance

6.2.3 The standards and guidance listed in **Table 6.2** will be referred to when planning and undertaking the surveying, assessment and reporting.

Table 6.2 Relevant Technical Guidance

Guidance reference	Implications
BS 5228–1:2009+A1:2014[38]	Standard for construction noise magnitude of impact and threshold of sensitivity.
BS 5228–2:2009+A1:2014[39]	Standard for construction vibration magnitude of impact and threshold of sensitivity

[38] British Standards Institution (BSI, 2014b) *British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* London, BSI.

[39] British Standards Institution (BSI, 2014b) *British Standard BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.* London, BSI.

Guidance reference	Implications
CRTN (1988)[40]	The 'Calculation of Road Traffic Noise' (CRTN), provides a methodology for predicting noise levels due to road traffic.
DMRB (2011)[41]	The 'Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7' (DMRB) contains methods and criteria for the assessment of noise and vibration impacts which may arise from road schemes, including new roads, road improvements and maintenance. The criteria contained within DMRB will be used to consider the influence the scheme will have on changes in traffic flows on the local highway network.
BS 4142:2014+A1:2019[42]	Standard for determining magnitude of impact of the operational noise upon local receptors
ISO 9613-2:1996[43]	This standard details the prediction methodology implemented in the noise modelling software.
NANR116: Open/ Closed Window Research – Sound Insulation through Ventilated Domestic Windows[44]	This document contains the results of research carried out in order to determine sound reduction due to windows in different states of opening and will be referred to when considering likely internal sound levels due to a particular external sound level.
WHO Guidelines for Community Noise[45]	Presents guideline noise levels for community noise in specific residential environments. The criteria presented in this guidance will be referred to when considering potential impacts due to absolute sound levels
TR(T)94 A Method for Assessing the Community Response to Overhead Line Noise 1993	Will be used to assess potential impacts due to overhead line noise.

[40] HMSO (1988) *Calculation of Road Traffic Noise*. Available online at: http://bailey.persona-pi.com/Public-Inquiries/M4-Newport/C%20-%20Core%20Documents/14.%20Noise%20and%20Vibration/14.2.1%20-%20Department%20of%20Transport%20and%20Welsh%20Office%20Calculation%20of%20Road%20Traffic%20Noise.%201988.pdf [Accessed 25 November 2019].

[41] Highways Agency, Transport Scotland, Welsh Government, The Department for Regional Development Northern Ireland (Highways Agency et al., 2011) *DMRB, Volume 11: Environmental Assessment. Section 3: Environmental Assessment Techniques - Part 7: Noise and Vibration (HD 213/11)*.

[42] BSI (2019) *British Standard 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound* (June 2019)
[43] International Standards Organisation (ISO, 1996). *International Standard ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation.*

[44] The Building Performance Centre, School of the Built Environment, Napier University (Napier University, 2007). NANR116: Open/Closed Window Research – Sound Insulation through Ventilated Domestic Windows.

[45] WHO (1999). Guidelines for Community Noise. 1999.

6.3 Data gathering methodology

Study area

6.3.1 The study area is defined by the proximity of the nearest noise and vibration sensitive receptors to the Main Development Site and Grid Connection Corridor and using professional judgement. The study area is approximated by a circle of 1km radius, centred on the centroid of the Energy from Waste CHP Facility Site plus those receptors nearest the CHP Connection and Grid Connection Corridor. Potential adverse noise effects will likely be confined to those receptors in closest proximity to the Site, therefore baseline data gathering will be limited to locations representative of the nearest receptors.

6.3.2 The nearest receptors, and the basis for baseline data gathering, are detailed in **Table 6.3**. Proposed baseline monitoring locations are provided in **Appendix B**.

Table 6.3 Receptors & Basis for Baseline Data Gathering

Receptor Group, Direction & Approximate Distance from Site Boundary	Data Gathering Approach
Residential Receptors nearest to the Energy from Waste CHP Facility (New Bridge Lane) **9 & 10 New Bridge Lane.** **Southwest of Energy from Waste CHP Facility Site.** **20 m and 70 m, respectively.**	Subject to agreement with local residents, one long term unattended sound level monitor to be sited at one of the receptors identified, to measure sound levels for at least 5 days (to include a weekend) [Measurement location 'LT1']
Residential Receptors nearest to the Energy from Waste CHP Facility (near the A47) **Dwelling known as 'Potty Plants' off new Bridge Lane, north of the A47, Oakdale Place Travellers Site and Caravan Site south east of the intersection of New Bridge Lane and the A47.** **South of Energy from Waste CHP Facility Site.** **340 m, 400 m & 500 m, respectively.**	Subject to agreement with local residents, one long term unattended sound level monitor to be sited at one of the receptors identified, to measure sound levels for at least 5 days (to include a weekend) [Measurement location 'LT2']
Residential Receptors nearest to the Energy from Waste CHP Facility **The Chalet, New Drove.** **South East of Energy from Waste CHP Facility Site.** **350 m.**	Sample short term attended measurement, concurrent with long term monitors. Derive correction based on comparison of results of long term monitoring to correct results from long term dataset to be representative of this location. [Measurement location 'ST1']
Residential Receptors nearest to the Energy from Waste CHP Facility (West of Energy from Waste CHP Facility Site) **93 & 97 South Brink, 25 Cromwell Road.** **West of Energy from Waste CHP Facility Site.** **550 m.**	Subject to agreement with local residents, one long term unattended sound level monitor to be sited at one of the receptors identified, to measure sound levels for at least 5 days (to include a weekend) [Measurement location 'LT3']
Educational Receptors nearest to the Energy from Waste CHP Facility and Vehicular Access Route	No Baseline data gathering at these locations as the nearest of these receptors is further distance from the

Receptor Group, Direction & Approximate Distance from Site Boundary	Data Gathering Approach
TBAP Unity Academy, Algores Way / Weasenham Lane, NW, approx. 620 m, Cambian Education Foundation Learning Centre, Anglia Way, approx. 200m **Thomas Clarkson Academy, NW, approx. 750 m**	Energy from Waste CHP Facility Site as the residential receptors 9 and 10 New Bridge Lane. Assessment of site noise emissions based on predicted absolute sound levels. Potential adverse impacts due to traffic generation assessed via calculation only, subject to confirmation of vehicular access route and provision of appropriate data.
<u>Other Nearest Receptors to the Energy from Waste CHP Facility</u> **27 to 37 Cox Close, 23 Victory Road, Bruce Close, 50 – 60 Weasenham Lane, 125 New Drove.** **North, North East and East of Energy from Waste CHP Facility Site.** **450 m, 900 m, 1000 m, 850 m & 500 m, respectively.**	No baseline data gathering at these locations. Assessment of site noise emissions at closer receptors will ensure appropriate control of site noise emissions at these receptors also. Potential adverse impacts due to traffic generation assessed via calculation only, subject to confirmation of vehicular access route and provision of appropriate data.
<u>Residential Receptors on Vehicular Access Route</u> **64 & 66 Weasenham Lane.** **North East of Energy from Waste CHP Facility Site.** **700 m.**	No baseline data gathering at this location. Assessment of site noise emissions at closer receptors will ensure appropriate control of site noise emissions at these receptors also. Potential adverse impacts due to traffic generation assessed via calculation only, subject to confirmation of vehicular access route and provision of appropriate data.
<u>Residential Receptors nearest to CHP Connection</u> **Properties on western boundary of Hillburn Road with Nestlé Purina Petfoods.** **Properties on western boundary of Burdett Road and Great Eastern Road with Nestlé Purina Petfoods.** **Properties on eastern boundary of Oldfield Lane with Nestlé Purina Petfoods (CHP Connection)** **Properties on western boundary of Victory Road Lane with disused "Bramley Line" Railway** **closest receptor separation varies between 5 and 50 m dependent on location of boundary.**	Sample short term attended measurements during the daytime and night-time. [Measurement location 'ST2']

Receptor Group, Direction & Approximate Distance from Site Boundary	Data Gathering Approach
Receptors within Grid Connection Corridor **Receptors within the Grid Connection Corridor may be subject to construction noise and operational noise. At this stage all receptors within the boundary plus 100m buffer may be impacted and so have not been scoped out of the assessment yet.** **The receptors to be scoped in will be refined once the draft line route is prepared.**	Measurement locations to be agreed once line of route and methodology are tabled.

6.3.3 The temporal scope of the assessment of the Proposed Development, including works on the Main Development Site and the Grid Connection covers the construction and operational periods.

Summary of data sources

6.3.4 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects is:

- Aerial imagery Google Earth Pro (imagery date September 2019);
- Ordnance Survey maps; and
- Site visit (12 November 2019).

6.4 Overall baseline

Current baseline

Main Development Site

6.4.1 Short term attended baseline monitoring has been undertaken in the vicinity of the receptors closest to the Energy from Waste CHP Facility Site. The monitoring consisted of snap-shot measurements representative of 9 and 10 New Bridge Lane, 'Potty Plants' and 'The Chalet' on New Drove during the daytime, evening and night-time. The data was acquired in addition to the scope of the EIA for the purpose of informing the design of the Proposed Development. The data acquired during this monitoring may be referred to and used in the EIA.

6.4.2 The results of the surveying outlined above indicated that, at the receptors in closest proximity to Energy from Waste CHP Facility (9 and 10 New Bridge Lane), the baseline environment is dominated by road noise during the daytime and evening, and by industrial sound during the night-time. At Potty Plants C the baseline environment is dominated by road noise with a contribution from industrial sound during the night-time. At The Chalet on New Drove the baseline environment tended to be dominated by industrial sound during all periods. The lowest measured night-time background sound levels were 42 to 43 dB $L_{A90,T}$ at 9 & 10 New Bridge Lane and Potty Plants, respectively. A summary of the baseline data acquired is provided in **Table 6.4** below.

Table 6.4 Average Monitoring Results: All Locations

Location	Period	Residual Sound Level, dB $L_{Aeq,15m}$ (Log. Avg.)	Background Sound Level, dB $L_{A90,15m}$ (Arithmetic Avg.)
9 New Bridge Lane	Day	53	50
	Evening	50	47
	Night	47	43
10 New Bridge Lane	Day	54	50
	Evening	51	48
	Night	47	43
Potty Plants	Day	59	55
	Evening	54	47
	Night	49	42
The Chalet, New Drove	Day	58	54
	Evening	53	51
	Night	54	52

6.4.3 The measured sound levels are considered to be typical of an urban fringe area influenced by a mixture of transport, industrial and commercial sound sources.

CHP Connection & Grid Connection

6.4.4 There is currently no data available on baseline conditions at receptors potentially influenced by the CHP ducting and Grid Connection.

6.4.5 On the basis of an initial desk-based review of the CHP Connection Site and surrounding area, and the proposed route of the CHP ducting, receptor locations influenced by CHP ducting are anticipated to experience similar baseline conditions to those closest to the Main Development Site, comprising of sound from a mixture of transport and industrial/ commercial sources.

6.4.6 An initial desk-based review of the Grid Connection Corridor and surrounding area indicates that baseline conditions at receptors influenced by the Grid Connection Corridor are likely to consist of lower sound levels, with (in some cases) minimal or no contribution from industrial and commercial sound, with transport sources being the main contributors.

Future baseline

6.4.7 It is considered unlikely there would be any significant change in baseline conditions during the construction and operation of the Proposed Development. This is on the basis that the Energy from Waste CHP Facility is located in existing industrial area with numerous industrial and commercial sound sources which are anticipated to remain in operation during the construction and operation of the Proposed Development. The area within the Grid Connection Corridor is likely to remain in agricultural use. Changes in traffic flows in the absence of the Proposed Development are unlikely to affect baseline conditions, as proposals to implement the Wisbech Access Strategy and improvements to the A47 would need to generate a significant uplift in vehicle numbers to give rise

to a significant effect. The potential for changes to the future baseline as a result of these highways proposals will however be discussed and agreed with the host authorities.

6.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

6.5.1 An initial desk-based review of the Site and surrounding area has been undertaken to identify receptors that could be subject to significant effects due to the construction and operation of the Proposed Development.

6.5.2 The results of this review are provided in **Table 6.3**. All receptors identified in **Table 6.3** are considered to be of medium sensitivity to noise and vibration effects.

6.5.3 Industrial and commercial receptors adjacent to the Energy from Waste CHP Facility Site are not considered to be noise sensitive.

6.5.4 Uses which could be considered to be of high sensitivity to noise and/ or vibration effects are hospital operating theatres, recording studios and specialised vibration sensitive processes. The desk-based review has not identified any such higher sensitivity receptors within the study area.

Potential significant effects requiring further assessment

6.5.5 The potential effects of the Proposed Development that are likely to be significant, and those which will be subject to further assessment are set out below.

Construction

6.5.6 Significant effects due to construction traffic and construction noise may occur at the nearest receptors adjacent to the Site. Based on experience of similar developments, the phases with the greatest potential to give rise to significant adverse effects are site preparation, concrete pours (which may occur during the night-time) and construction of the superstructure.

6.5.7 Significant construction vibration effects due to construction of the Energy from Waste CHP Facility are most unlikely, as piling is not proposed to take place immediately adjacent to any existing buildings. Groundborne vibration attenuates rapidly with distance and is therefore unlikely to give rise to any significant effects except in cases where the distance between piling and receptors is negligible and high energy percussive piling is required, or where there are particularly vibration sensitive processes in very close proximity to percussive piling. As such, if percussive piling may be required, further investigation will be undertaken to determine if any vibration sensitive processes are ongoing at any location within 100m of proposed piles. If no vibration sensitive processes are identified then assessment of construction vibration due to construction activities for the Energy from Waste CHP Facility will be scoped out.

6.5.8 In order to route the CHP steam ducts along the 'Bramley Line' railway it may be necessary for piling. This would require vibration assessment due to proximity of receptors.

6.5.9 If any new transmission pylons are required to be located within 100m of sensitive receptors, then construction vibration assessment may be required. Installation of wood poles should not give rise to vibration effects. The need for and scope of any assessment will be agreed with the host authorities.

6.5.10 The Grid Connection may potentially include some underground sections which may be constructed using Horizontal Directional Drilling (HDD). Depending on the connection route, location of underground sections and the drill sites, HDD activities may have the potential to give

rise to significant adverse effects, particularly at night time, as mud pumps are required to be operated 24 hours a day to ensure the drilled route does not collapse.

Operation

6.5.11 Significant effects due to operational noise may occur due to site noise emissions and due to traffic generation, i.e. deliveries of waste to the Energy from Waste CHP Facility.

6.5.12 High voltage lines and substation plant are noise sources which have with the potential to give rise to adverse noise impacts. NPS EN-5 section 2.9 provides advice and guidance on the approaches to be taken to assessing operational noise arising from electricity connections. This will be followed in the scope of the Grid Connection noise assessment, which will also be agreed with the host authorities once the location and type of connection is confirmed. Should the connection not form part of the application, it will be considered within the cumulative assessment.

6.5.13 A summary of the assessments proposed for each receptor is provided in **Table 6.5**.

Table 6.5 Proposed Assessments per Receptor

Receptor Group	Assessment of Effects due to Construction & Operation (All traffic noise assessments subject to confirmation of vehicular access route and provision of appropriate data)
Residential Receptors nearest to the Energy from Waste CHP Facility (New Bridge Lane) **9 & 10 New Bridge Lane.** **Southwest of Energy from Waste CHP Facility Site.** **20 m and 70 m, respectively.**	Construction noise, construction traffic and operational assessments (site noise and traffic noise) required.
Residential Receptors nearest to the Energy from Waste CHP Facility (near the A47) **Dwelling known as 'Potty Plants' off new Bridge Lane, north of the A47, Oakdale Place Travellers Site and Caravan Site south east of the intersection of New Bridge Lane and the A47.** **South of Energy from Waste CHP Facility Site.** **340 m, 400 m & 500 m, respectively.**	Construction noise, construction traffic and operational assessments (site noise and traffic noise) required.
Residential Receptors nearest to the Energy from Waste CHP Facility (South East of Energy from Waste CHP Facility Site) **The Chalet, New Drove.** **South East of Energy from Waste CHP Facility Site.** **350 m.**	Construction noise, construction traffic and operational assessments (site noise and traffic noise) required.
Residential Receptors nearest to the Energy from Waste CHP Facility (West of Energy from Waste CHP Facility Site)	Construction noise, construction traffic and operational assessments (site noise and traffic noise) required.

Receptor Group	Assessment of Effects due to Construction & Operation (All traffic noise assessments subject to confirmation of vehicular access route and provision of appropriate data)
93 & 97 South Brink, 25 Cromwell Road. West of Energy from Waste CHP Facility Site. 550 m.	
<u>Educational Receptors nearest to the Energy from Waste CHP Facility and Vehicular Access Route</u> **TBAP Unity Academy, Algores Way & Weasenham Lane, NW, approx. 620 m, Cambian Education Foundation Learning Centre, Anglia Way, approx. 200m** **Thomas Clarkson Academy, NW, approx. 750 m**	Assessment of predicted absolute operational sound levels required. Construction and operation traffic noise assessments required. Potential adverse impacts due to traffic generation assessed via calculation only, subject to confirmation of vehicular access route and provision of appropriate data.
<u>Other Nearest Receptors to the Energy from Waste CHP Facility</u> **27 to 37 Cox Close, 23 Victory Road, Bruce Close, 50 – 60 Weasenham Lane, 125 New Drove. North, North East and East of Energy from Waste CHP Facility Site. 450 m, 900 m, 1000 m, 850 m & 500 m, respectively.**	No assessments required – traffic effects most unlikely as receptors not near main routes or already represented by other receptors requiring assessment. Assessment of site noise emissions not required as assessment at closer receptors will ensure appropriate control of site noise emissions at these receptors also.
<u>Residential Receptors on Vehicular Access Route</u> **64 & 66 Weasenham Lane. North East of Energy from Waste CHP Facility Site. 700 m.**	No baseline data gathering at this location as assessment by calculation is considered sufficient. Assessment of site noise emissions at closer receptors will ensure appropriate control of site noise emissions at these receptors also. Potential adverse impacts due to traffic generation assessed via calculation only, subject to confirmation of vehicular access route and provision of appropriate data.
<u>Residential Receptors nearest to CHP connection</u> **Properties on western boundary of Hillburn Road with Nestlé Purina Petfoods.** **Properties on western boundary of Burdett Road and Great Eastern Road with Nestlé Purina Petfoods.** **Properties on eastern boundary of Oldfield Lane with Nestlé Purina Petfoods** **Properties on western boundary of Victory Road Lane with disused "Bramley Line" Railway closest receptor separation varies between 5 and 50 m dependent on location of boundary.**	Construction noise, and operational assessments likely required. Potential for construction vibration assessment to be required if piling required. To be confirmed once design and routing of steam ducts confirmed

Receptor Group	Assessment of Effects due to Construction & Operation (All traffic noise assessments subject to confirmation of vehicular access route and provision of appropriate data)
Receptors within Grid Connection Corridor **Receptors within the Grid Connection Corridor may be subject to construction noise and operational noise. At this stage all receptors within the boundary plus 100m buffer may be impacted and so have not been scoped out of the assessment yet.** **The receptors to be scoped in will be refined once the connection route is selected.**	Construction noise, construction traffic and operational assessments required. Potential for construction vibration assessment to be required if piling required. To be confirmed once design and routing of transmission infrastructure confirmed.

Receptors and effects scoped out of the assessment

6.5.14 As outlined in paragraph 6.5.7, significant construction vibration effects during construction of the Energy from Waste CHP Facility are unlikely, subject to further investigation into vibration sensitive processes adjacent to the Energy from Waste CHP Facility Site. If further investigation indicates there are no vibration sensitive processes adjacent to the Energy from Waste CHP Facility Site, then assessment of construction vibration from construction activities at the Energy from Waste CHP Facility Site will be scoped out.

6.5.15 If the routing of CHP ducting or location of transmission towers requires piling less than 100m from receptors, this will be accompanied by construction vibration assessment. If no such piling is required, significant construction vibration effects will be most unlikely, and will therefore be scoped out of the assessment.

6.5.16 There are no significant sources of operational vibration. It is therefore proposed that operational vibration effects are scoped out of the assessment.

6.5.17 Residential receptors, referred to in **Table 6.3** and **Table 6.5** as 'Other nearest receptors to the Energy from Waste CHP Facility' to the north, northeast and east of the Energy from Waste CHP Facility Site (with the exception of the nearest receptor to the east, 'The Chalet' on New Drove) are scoped out of the assessment of effects arising from the Energy from Waste CHP Facility Site noise emissions during both construction and operation phases. This is on the basis that these receptors are a significant distance from the Energy from Waste CHP Facility Site, with many intervening structures which would serve to attenuate noise emissions, and that assessment at closer receptors will ensure appropriate control of noise emissions at these receptors also.

6.6 Assessment methodology

General approach

6.6.1 The assessment methodology will be agreed, through the scoping process, with Fenland District Council and Cambridgeshire County Council, the Borough Council of Kings Lynn & West Norfolk and Norfolk County Council.

6.6.2 The assessment of construction effects will be undertaken with reference to BS 5228 on the basis of the information provided and the representative baseline sound levels. Construction noise levels will be predicted based on the construction schedule and information on the likely plant

requirements. Where information on plant is unavailable assumptions will be made using professional judgement and reference to other sites and types of plant of a similar nature.

6.6.3 The assessment of operational effects due to site noise will be assessed using the methodology provided in BS 4142, on the basis of the information provided, specific sound levels predicted according to ISO 9613-2, the measured baseline sound levels, and the guidance contained in the PPG-N. In accordance with BS 4142 the assessment result will depend on consideration of context.

6.6.4 The assessment of operational effects due to traffic generated by the operation of the Energy from Waste CHP Facility will be based on the predicted change in Basic Noise Level (BNL), calculated in accordance with CRTN. The criteria used to determine the magnitude of impact will be based on criteria contained within DMRB.

Determining Baseline Conditions

Main Development Site

6.6.5 Baseline sound levels will be quantified through baseline sound level monitoring. Long term monitoring (at least five days in duration, to include a weekend) is proposed at three locations (LT1, LT2 and LT3), as outlined in **Table 6.3**. Short term measurements will be undertaken at one location (ST1), concurrent with the long-term monitors. Representative sound levels will be determined at ST1 based on comparison of measurement results acquired at LT2.

CHP Ducting

6.6.6 Short term measurements will be undertaken at one location (ST2), concurrent with the long-term monitors, during daytime and night-time.

6.6.7 A series of baseline measurements at a receptor location, or locations, potentially affected by the Grid Connection will be undertaken at location(s) to be agreed once further information on the Grid Connection is available. Measurements will be undertaken during daytime and night-time.

Determination of significance

6.6.8 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

6.6.9 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

6.6.10 The precise determination of sensitivity of receptor relies on professional judgement.

6.6.11 **Table 6.6** details the basis for assessing receptor sensitivity which has been produced on the basis of experience of assessing similar facilities and professional judgement.

Table 6.6 Establishing the sensitivity of receptors

Sensitivity	Examples
High	Hospital operating theatres, recording studios
Medium	Dwellings, schools, hotels.
Low	Offices, public amenity areas.
Negligible	Industrial and commercial premises.

6.6.12 The precise determination of impact magnitudes for construction and operational noise effects will be based on relevant guidance and will use professional judgement. For example, whilst DMRB provides criteria which may be directly transposed to different impact magnitude categories for the purpose of carrying out an assessment of changes in road traffic noise within an EIA, the assessment methodology for assessing operational site noise does not readily transpose in this way.

6.6.13 **Table 6.7** below provides the proposed impact magnitude categories for assessing operational site noise, determined based on the guidance contained within BS 4142 and using professional judgement. The final determination of impact magnitude would depend on consideration of the context in accordance with BS 4142.

Table 6.7 Proposed Indicative Impact Magnitude Categories for Assessing Operational Site Noise

Impact Magnitude	Initial Estimate of Impact
High	Rating levels significantly exceeding receptor background sound levels.
Medium	Rating levels moderately exceeding receptor background sound levels.
Low	Rating levels just exceeding receptor background sound levels.
Negligible	Rating levels equal to, or lower than, background sound levels.

Assumptions

6.6.14 It is assumed that the information in the following list will be provided to inform the assessment. Where any of the following data are unavailable, assumptions will be made which favour a typical worst-case scenario:

- Preliminary construction method statement will be provided to facilitate the assessment of potential construction impacts;
- Manufacturer's sound data in third octave bands for all proposed construction and operational plant items;
- Details of the construction of the building(s), including any housing/enclosure/mitigation of the plant;

- Confirmation of the height of sound sources above local ground level; and
- Night-time and weekend working.

7. Air quality

7.1 Introduction

7.1.1 This chapter describes the scope of the assessment for air quality. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with respect to relevant parts of other chapters, including **Chapter 10: Biodiversity** and **Chapter 5: Traffic and Transport,** where common receptors have been considered and where there is an overlap or relationship.

7.2 Relevant legislation, planning policy, technical guidance

Legislative context

7.2.1 The following legislation is relevant to the assessment of the effects on air quality receptors:

- *Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe*[46];
- The *Air Quality Standards (England) Regulations 2010*[47] *(Statutory Instrument (SI) 2010/1001)*, as amended;
- The *Air Quality (England) Regulations 2000*[48] *(SI 2000/928), as amended*;
- The *Environment Act 1995*[49] *(c. 25)*;
- The *Environmental Protection Act 1990 (c. 43);*
- *Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control)*[50] *later referred to as the Industrial Emissions Directive*;
- The *Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154);* and
- The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018/764[51], as amended.

Planning policy context

7.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 7.1**.

[46] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.

[47] The Air Quality Standards Regulations 2010 (SI 2010/1001) (as amended)

[48] The Air Quality (England) Regulations 2000 (SI 200/928) (as amended)

[49] The Environment Act 1995.

[50] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

[51] The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018/764).

Table 7.1 Planning policy context

Policy reference	Implications
National Policy	
Overarching National Policy Statement for Energy (EN-1)	Paragraph 5.2.6 in Section 5.2 of EN-1 establishes that where a project is likely to have adverse effects on air quality, an assessment of such impacts must be considered in the Environmental Statement. Paragraph 5.2.7 further establishes that 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; • the predicted absolute emission levels of the proposed project, after mitigation methods have been applied; • existing air quality levels and the relative change in air quality from existing levels; and • any potential eutrophication impacts The proposed scope of the air quality assessment in this Section has been developed having considered these requirements.
NPS for Renewable Energy Infrastructure (EN-3)	Paragraph 2.5.40 establishes that developments incorporating combustion of waste should include an assessment of the air emissions resulting from the Proposed Development to demonstrate compliance with the relevant standards having given consideration to Section 5.2 of EN-1 (described above). Paragraph 2.5.43 states: "*Where a proposed waste combustion generating station meets the requirements of WID [Waste Incineration Directive] and will not exceed the local air quality standards, the IPC should not regard the proposed waste generating station as having adverse impacts on health.*" The ES will assess emissions to air from the stack of the Proposed Development at the respective emission limit values in Annex VI of the Industrial Emissions Directive (WID was incorporated in to this Directive in 2010) with an assessment of resulting ground level concentrations and associated impacts on human health made against relevant air quality standards, objectives and guideline values.
NPS for Electricity Networks Infrastructure (EN-5)	There is no technology specific information relating to Air Quality.
National Planning Policy Framework (NPPF)	Paragraph 181 states *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."* There are four AQMAs in Fenland District Council's jurisdictional area, including three within Wisbech for nitrogen dioxide, particulate matter and sulphur dioxide. These pollutants will be emitted from the stack (all three pollutants) and from the exhausts of construction and operational traffic. As such, it is imperative that appropriate mitigation measures are embedded in the design to ensure the Proposed Development does not prevent the achievement of strategic objectives within Fenland District Council's air quality action plan.

Policy reference	Implications
Clean Air Strategy 2019[52]	Defra's Clean Air Strategy outlines the Government's proposed ambitions relating to reducing air pollution in order to protect health and nature, whilst boosting the economy. The strategy sits alongside three other UK government strategies: the Industrial Strategy, the Clean Growth Strategy and the 25 Year Environment Plan. Amongst others, the Clean Air Strategy proposes to halve the number of people living in locations where concentrations of particulate matter are above the World Health Organisation (WHO) guideline limit of 10 µg m^{-3} by 2025 and work in close collaboration with industry to explore further opportunities for industrial emissions reductions by developing a series of sector roadmaps to set standards aimed at making UK industry world leaders in clean technology. The Proposed Development should not conflict with Government's aims of reducing exposure to $PM_{2.5}$ below the WHO guideline, whilst emissions from the stack should be consistent with the desire for UK industry to be world leaders in clean technology.
Local Policy	
Cambridge and Peterborough Waste Adopted Core Strategy	Poor air quality resulting from increases in traffic movements is referenced in the supporting text to Policy CS32 Traffic and Highways. In addition, air is referenced in the preamble to Policy CS34 Protecting Surrounding Uses.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 18 Amenity Considerations states that new development must not result in unacceptable adverse impacts on the amenity of existing occupiers of any land or property, to include air quality.
Fenland Local Plan (Adopted)	Policy LP16 Delivering and Protecting High Quality Environments across the District permits development subject to a number of criteria and states that proposals should set out how to mitigate risks from odour and dust.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	No specific policy references. Key sustainability issues recognise that Air Quality targets are unlikely to be met for nitrogen dioxide and PM10.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM15 Environment, Design and Amenity states that development must protect and enhance the amenity of the wider environment and that proposals will be assess against their impact on neighbouring uses and their occupants across a range of subjects including air quality. Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference air quality.

Technical guidance

7.2.3 Technical guidance that has been used to define the assessment is set out in **Table 7.2** below.

Table 7.2 Relevant Technical Guidance

Guidance reference	Implications
Ministry of Housing, Communities & Local Government *Air Quality*	This guidance provides guiding principles on how planning can take account of the impact of new development on air quality.

[52] Defra. *Clean Air Strategy* 2019.

Guidance reference	Implications
Planning Practice Guidance[53]	
Guidance from Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) ***Land-Use Planning & Development Control: Planning for Air Quality***[54]	Although no official procedure exists for classifying the magnitude and significance of air quality effects from a new development for planning purposes, this guidance issued by the IAQM and EPUK suggests ways to address the issue.
IAQM's ***Guidance on the assessment of dust from demolition and construction***[55]	This guidance presents a series of steps to be undertaken to determine whether dust effects associated with construction and demolition activities are likely to be considered significant.
IAQM's ***A guide to the assessment of air quality impacts on designated nature conservation sites***[56]	This guidance document was produced to assist air quality practitioners to assess the air quality impacts of development on designated nature conservation sites. The guidance clarifies that the overall assessment of the significance of effects on such sites should be made by a suitably qualified ecologist, not the air quality practitioner.
IAQM's ***Guidance on the assessment of odour for planning***[57]	This guidance was introduced by the IAQM as a means for air quality practitioners to assess the significance of odour effects specific to planning applications.
The Environment Agency's ***Air emissions risk assessment for your environmental permit***[58]	Although this guidance is specifically drafted for environmental permit applications and is not directly applicable to planning applications, it does provide guidance in a number of areas which is considered to represent best practice, including, amongst others; • screening criteria for protected conservation areas; • guidelines, known as Environmental Assessment Levels (EALs), for certain pollutants that do not have a specified AQS or AQO; and maximum deposition rates (MDRs) for certain metals.
Local Air Quality Management Technical Guidance (LAQM.TG16)[59]	This document provides guidance for technical officers and local authorities to discharge their obligations under the LAQM regime. It contains guidance on numerous areas including, for example:

[53] Ministry of Housing, Communities & Local Government. (2019). *Air Quality Planning Practice Guidance*.
[54] IAQM (2017). *Land-Use Planning & Development Control: Planning for Air Quality.* Version 1.2. Institute of Air Quality Management, London.
[55] IAQM. (2016). *Guidance on the assessment of dust from demolition and construction*. Version 1.1. Institute of Air Quality Management, London.
[56] IAQM. (2019). *A guide to the assessment of air quality impacts on designated nature conservation sites.* Version 1.0. Institute of Air Quality Management, London.
[57] IAQM. (2018). *Guidance on the assessment of odour for planning*. Version 1.1. Institute of Air Quality Management, London.
[58] Environment Agency. (2016). *Air emissions risk assessment for your environmental permit*. [online]. Available at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit [Accessed 06 November 2019].
[59] Defra. (2018). *Local Air Quality Management Technical Guidance (TG16)*. February 2018. [online]. Available at: https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf [Accessed 06 November 2019].

Guidance reference	Implications
	• screening tools and methodologies; • air quality monitoring; • estimating emissions; and • dispersion modelling.
The Environment Agency's *Environmental permitting: air dispersion modelling reports guidance*[60]	Although this guidance has been drafted specifically for air quality assessments supporting environmental permit applications, it does provide best practice methods and approaches for modelling the dispersion of emissions from industrial stacks.
World Health Organisation (WHO) *Air Quality Guidelines for Europe*[61] and WHO *Air Quality Guidelines Global Update 2005*[62]	These documents provide health-based air quality guidelines for a number of pollutants and critical levels for biodiversity receptors.
Her Majesty's Inspectorate of Pollution (HMIP) *Risk Assessment of Dioxin releases from Municipal Waste Incinerators*[63] and US Environmental Protection Agency (US EPA) *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*[64] ("HHRAP")	These documents provide procedures for assessing the risk to human health from total bodily uptake of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), also known as dioxins and furans.

7.2.4 **Table 7.3** presents the air quality objectives and environmental assessment levels that are relevant to this assessment.

Table 7.3 Air Quality Standards, Objectives and Environmental Assessment Levels

Pollutant	AQS/AQO/EAL	Averaging Period	Value ($\mu g\ m^{-3}$ unless stated)
	AQS	Annual mean	40

[60] Environment Agency. (2019). *Environmental permitting: air dispersion modelling reports.* [online]. Available at: https://www.gov.uk/guidance/environmental-permitting-air-dispersion-modelling-reports [Accessed 06 November 2019].
[61] WHO. (2000). *Air Quality Guidelines for Europe.* [online]. Available at: http://www.euro.who.int/__data/assets/pdf_file/0005/74732/E71922.pdf?ua=1 [Accessed 06 November 2019]
[62] WHO. (2005). *Air Quality Guidelines Global Update 2005.* [online]. Available at http://www.euro.who.int/__data/assets/pdf_file/0005/78638/E90038.pdf?ua=1 [Accessed 06 November 2019]
[63] HMIP. (1996). *Risk Assessment of Dioxin releases from Municipal Waste Incinerators*. Her Majesty's Inspectorate of Pollution, Report HMIP/CPR2/41/1/181
[64] US EPA. (2005). *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.* United States Environmental Protection Agency, Report EPA530-R-05-006

Pollutant	AQS/AQO/EAL	Averaging Period	Value ($\mu g\ m^{-3}$ unless stated)
Nitrogen dioxide (NO_2)	AQS	1-hour mean, no more than 18 exceedances a year (equivalent of 99.79 Percentile)	200
Oxides of nitrogen (NO_x) – Biodiversity Receptors	AQS	Annual mean	30
	EAL	Daily mean	75-200[A]
Carbon monoxide (CO)	AQS	8-hour mean	10,000
	EAL	1-hour mean	30,000
Particulate matter less than 10 microns (PM_{10})	AQS	Annual mean	40
	AQS	24-hour mean, no more than 35 exceedances per year (90.41 percentile)	50
Particulate matter less than 2.5 microns ($PM_{2.5}$)	AQS	Annual Mean	25
Sulphur dioxide (SO_2) – Human Receptors	AQO	1-hour mean not to be exceeded more than 24 times a year (equivalent to 99.73 percentile)	350
	AQS	24-hour mean, not to be exceeded more than 3 times a year (equivalent to 99.18 percentile)	125
	AQS	15-min mean, not to be exceeded more than 35 times a year (equivalent to 99.9 percentile)	266
Sulphur dioxide (SO_2) – Biodiversity Receptors	AQS	Annual mean	20
Volatile organic compounds (as Benzene)	AQS	Annual mean	5
	EAL	1-hour mean	195
Hydrogen Chloride (HCl)	EAL	1-hour mean	750
Hydrogen Fluoride (HF)	EAL	1-hour mean	160
Hydrogen Fluoride (HF) – Ecological Receptors	EAL	24-hour mean	5
	EAL	Weekly mean	0.5
Group 1 Metals (Cadmium)	EAL	Annual mean	5 ($ng\ m^{-3}$)
Group 2 Metals (Mercury)	EAL	Annual mean	0.25
	EAL	1-hour mean	7.5
Group 3 Metals (Arsenic)	EAL	Annual mean	3 ($ng\ m^{-3}$)
Group 3 Metals (Antimony)	EAL	Annual mean	5
	EAL	1-hour mean	150
Group 3 Metals (Chromium III)	EAL	Annual mean	5
	EAL	1-hour mean	150
Group 3 Metals (Chromium VI)	EAL	Annual mean	0.2 ($ng\ m^{-3}$)
Group 3 Metals (Copper)	EAL	Annual mean	10
	EAL	1-hour mean	200
Group 3 Metals (Lead)	EAL	Annual mean	0.25

Pollutant	AQS/AQO/EAL	Averaging Period	Value (µg m^{-3} unless stated)
Group 3 Metals (Manganese)	EAL	Annual mean	0.15
	EAL	1-hour mean	1500
Group 3 Metals (Nickel)	EAL	Annual mean	20 (ng m^{-3})
Group 3 Metals (Vanadium)	EAL	Annual mean	5
	EAL	1-hour mean	1
PAHs (as B(a)P)	EAL	Annual mean	0.25 (ng m^{-3})
Polychlorinated Biphenyls (PCBs)	EAL	Annual mean	0.2
	EAL	1-hour mean	6
Ammonia (NH_3) – Human Receptors	EAL	Annual mean	180
	EAL	1-hour mean	2500
Ammonia (NH_3) – Biodiversity Receptors	EAL	Annual mean	1-3[B]

[A] As per the IAQM's *A guide to the assessment of air quality impacts on designated nature conservation sites,* the critical level can increase to 200 µg m^{-3} when sulphur dioxide and ozone are not above their critical levels.
[B] The lower level applies where lichens and bryophytes are present.

7.3 Data gathering methodology

Study area

7.3.1 The spatial extent of the Study Area has been informed by the guidance detailed in **Section 7.2**. As the Energy from Waste CHP Facility incorporates a combustion activity with a thermal input exceeding 50 MW, in accordance with the EA's *Air emissions risk assessment for your environmental permit* guidance, the assessment is required to consider nature conservation sites up to 15km from this emission source. Consequently, the study area will include an area encompassing 15km from the location of the chimney emissions and up to 350 m from the boundary of any construction activity (including that related to the Grid Connection) in accordance with the IAQM's *Guidance on the assessment of dust from demolition and construction*.

7.3.2 The temporal scope of the assessment of air quality is consistent with the period over which the Proposed Development will be carried out and therefore covers the construction and operational periods. The construction phase assessment considers the peak year of construction, whilst the operational assessment considers the first complete opening year of the Proposed Development.

Summary of data sources

7.3.3 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- Reports issued by Fenland District Council under the LAQM regime, including their 2019 Air Quality Annual Status Report [65](ASR);

[65] Fenland District Council. (2016). 2019 Air Quality Annual Status Report (ASR). [online]. Available at: https://www.fenland.gov.uk/media/15768/Air-Quality-Annual-Status-Report-2019/pdf/Air_Quality_Annual_Status_Report_(2019).pdf [Accessed 05 November 2019].

- Ambient monitoring data collected by Fenland District Council;
- Mapped estimates of background concentrations provided by Defra's UK Air Information Resource (UK-air)[66];
- Monitored data on heavy metals, polycyclic aromatic hydrocarbons (PAHs), PCDD/Fs, ammonia and acid gases from national monitoring networks extracted from UK-air
- Mapped estimates of background concentrations and deposition rates provided by the UK Air Pollution Information System (APIS)[67]; and
- Aerial imagery (Google Earth Pro (imagery date September 2018) and Ordnance Survey maps.

7.4 Overall baseline

Current baseline

Local Air Quality Management

7.4.1 In line with LAQM requirements, Fenland District Council carry out air quality monitoring and produce ASRs.

7.4.2 Fenland District Council has declared three AQMAs in Wisbech:

- Wisbech AQMA No.1 (SO_2) approximately 1.0km north of the Main Development Site;
- Wisbech AQMA No.2 (PM_{10}) approximately 1.7km northeast of the Main Development Site; and
- Wisbech AQMA No.3 (NO_2) approximately 1.2km northeast of the Main Development Site.

7.4.3 As stated in the 2019 ASR, Fenland District Council expect to revoke Wisbech AQMAS No. 1 & 2 due to the source of pollution being removed.

Continuous monitoring

7.4.4 There are currently two continuous monitors operated by Fenland District Council located in Whittlesea, approximately 21km to the southwest of Wisbech. **Table** 7. **7.4** provides details about the monitoring sites, whilst **Table 7.5** provides monitoring data collected between 2014 and 2018.

Table 7.4 Fenland District Council continuous monitors

Site ID	Site location	Site type	X	Y	Pollutants
AM1	Park Lane	Urban Background	526382	296859	SO_2
AM2	Bradley Fen	Industrial	523924	297974	SO_2

[66] Defra. (2019). *Background mapping data for local authorities*. [online]. Available at: https://uk-air.defra.gov.uk/data/laqm-background-home [Accessed 05 November 2019].
[67] APIS. (2019). *Air Pollution Information Service*. [online]. Available at: http://www.apis.ac.uk/ [Accessed 05 November 2019].

Table 7.5 Monitored exceedances of SO_2 AQOs at Fenland District Council monitoring sites

Site ID	National objective	Number of exceedances				
		2014	2015	2016	2017	2018
AM1	15 minute average – 35 exceedances of 266 µg m^{-3} permitted	4	1	1	4	0
	Hourly average – 24 exceedances of 350 µg m^{-3} permitted	0	0	0	0	0
	Daily average – 3 exceedances of 125 µg m^{-3} permitted	0	0	0	0	0
AM2	15 minute average – 35 exceedances of 266 µg m^{-3} permitted	2	0	8	2	9
	Hourly average – 24 exceedances of 350 µg m^{-3} permitted	0	0	0	0	0
	Daily average – 3 exceedances of 125 µg m^{-3} permitted	0	0	0	0	0

7.4.5 **Table 7.3** shows that there have been no exceedances of the SO_2 AQS and AQO in recent years.

Passive monitoring

7.4.6 Fenland District Council undertake passive diffusion tube monitoring of NO_2 at 25 locations across the District. Details of the monitoring sites closest to the Energy from Waste CHP Facility are included in **Table 7.6**, with data collected between 2014 and 2018 are included in **Table 7.7**.

Table 7.6 Details of passive monitoring in Wisbech

Site ID	Site location	Site type	X	Y	In AQMA?	Distance to kerb (m)	Distance to site (km)
S3	Ramnoth	Kerbside	546857	308553	Y	1	1.38
S5	Bowthorpe	Kerbside	546414	309585	Y	2	1.74
S8	Westmead Avenue	Kerbside	546886	308366	Y	1	1.38
S12	AWS Lynn Road	Industrial	546588	310192	Y	N/A	2.38
S13	Lynn Road / Mt Pleasant	Roadside	546661	310396	Y	1	2.60

Site ID	Site location	Site type	X	Y	In AQMA?	Distance to kerb (m)	Distance to site (km)
S15	Weasenham Lane JCN	Roadside	546828	308543	Y	2	1.35
S16	Lynn Road R'about	Roadside	546260	309987	Y	2	2.07
S17	Weasenham / Cromwell	Roadside	545509	308731	N	2	0.71
S20	Napier	Roadside	546485	309389	Y	2	1.61

Table 7.7 Monitored annual mean concentrations of NO_2

Site ID	Data capture 2018 (%)	Annual mean concentrations of NO_2 (μgm^{-3})				
		2014	2015	2016	2017	2018
#	100	25.7	27.8	24.4	25.7	21.1
S5	100	28.6	33.4	35.4	35.7	28.2
S8	100	18.3	18.4	18.5	20.3	29.1
S12	100	16.7	16.7	16.1	16.1	14.8
S13	100	31.8	29.8	27.1	26.3	27.2
S15	100	33.0	34.9	34.4	33.7	29.7
S16	100	32.7	32.1	30.5	29.7	30.6
S17	92	20.7	19.2	20.3	20.4	17.6
S20	92	36.4	31.4	31.8	29.0	27.3

7.4.7 **Table 7.5** shows annual mean concentrations of NO_2 were below the 40 µg m^{-3} annual mean AQS for NO_2 at all monitoring locations in Wisbech between 2014 and 2018. Despite this, Wisbech AQMA No. 3 has not been revoked.

Estimated background concentrations

7.4.8 Defra has made estimates of background pollutant concentrations on a $1km^2$ grid for the UK for seven of the main pollutants, including NO_X, NO_2, PM_{10} and $PM_{2.5}$. **Table 7.8** shows the estimated values of these pollutants for 2019 for the grid square containing the Energy from Waste CHP Facility (545500, 307500).

Table 7.8 Defra mapped annual mean background concentrations for 2019

Pollutant	Concentration (µgm^{-3})
NO_X	14.5
NO_2	10.6
PM_{10}	15.2
$PM_{2.5}$	9.1

Hydrogen chloride (HCl)

7.4.9 Hydrogen chloride concentrations are routinely measured at 30 sites across the UK as part of the Acid Gas and Aerosol Network (AGANet). The closest monitoring site to the Energy from Waste CHP Facility is Stoke Ferry, approximately 25km southeast. The concentrations measured at this monitoring site are likely to be representative of the regional background. The annual mean concentration of HCl in 2016, the year in which monitoring ceased at this location, was 0.21 µg m^{-3}. The monitor at Stoke Ferry is classified as rural background.

Ammonia

7.4.10 Ammonia (NH_3) is measured at 85 sites across the UK under the National Ammonia Monitoring Network (NAMN). There are four monitoring locations in the vicinity of the Energy from Waste CHP Facility and the 2018 annual mean concentration of NH_3 is as follows:

- Stoke Ferry (28km southeast) – 1.13 µg m^{-3};
- Pointon (38km northwest) – 3.84 µg m^{-3};
- Monks Wood (39km southwest) – 1.94 µg m^{-3}; and
- Stamford 2 (43km west) – 2.69 µg m^{-3}.

Hydrogen fluoride

7.4.11 Hydrogen fluoride concentrations are not routinely measured in the UK. In heavily polluted urban areas, the World Health Organisation (WHO) report that total fluoride concentrations in air can reach 3 µg m^{-3} (WHO, 2000).

Metals

7.4.12 Metal concentrations are measured in the UK by Defra under the Heavy Metals Network.

7.4.13 The closest monitoring site to the Energy from Waste CHP Facility with recent data is Heigham Holmes, approximately 97km to the east of the Energy from Waste CHP Facility.

Table 7.9 2018 monitored metal concentrations at Heigham Holmes

Metal	2018 Annual Mean Concentration (ng m^{-3})
Antimony	0.09
Arsenic	0.22

Metal	2018 Annual Mean Concentration (ng m^{-3})
Cadmium	0.03
Chromium	0.15
Cobalt	0.03
Copper	1.98
Lead	0.66
Manganese	3.35
Mercury	0.01
Nickel	0.17
Vanadium	0.35

7.4.14 The Heavy Metals Network monitors chromium concentrations as total Cr. EPAQS report that ambient Cr(VI) concentrations may typically constitute 3-8% of total Cr. The higher value of this range will be used to derive a Cr(VI) background concentration from the total monitored Cr.

PCDD/Fs

7.4.15 In the UK, Defra's Toxic Organic Micropollutants (TOMPS) survey is the principal source of data on the measured concentrations of PCDD/Fs, dioxin-like PCBs and PAHs in ambient air at five locations (one urban background site and four rural background sites). The closest monitoring station to the Energy from Waste CHP Facility is the rural background station High Muffles.

7.4.16 The most recent (2010) annual mean dioxin PCDD/F data measured is 2.76 fg I-TEQ m^{-3}.

PAHs

7.4.17 PAHs are measured at 31 sites in the UK. The nearest urban background monitoring station to the Energy from Waste CHP Facility which has recent data is Stoke Ferry approximately 28 km to the south east. The 2018 monitored PAH concentration (as B(a)P) was 0.10 ng m^{-3}.

Dust

The construction of the Proposed Development, including the Grid Connection may give rise to construction phase dust. There are no national or local monitoring networks for dust and as such the baseline levels of dust deposition cannot be defined.

Future baseline

7.4.18 In the absence of the Proposed Development, it is expected there would be a gradual decline in current baseline concentrations recorded as a result of expected improvements in air quality, such as the Government's Clean Air Strategy objectives are implemented, improvements in real world emissions performance of road vehicles and more stringent emission limits for industrial sources as environmental permits for operators covering the various industrial sectors are updated in a phased manner to bring them in line with the requirements of the Industrial Emissions Directive. However, as a conservative approach, it is proposed that such anticipated reductions are not reflected in the future baseline.

7.4.19 With regard to the potential effects of climate change on the future air quality baseline, the 2007 report produced by the Air Quality Expert Group (AQEG)[68] indicated that the winter season may become windier with fewer less stable weather conditions in the future, whilst summer seasons are anticipated to become hotter and sunnier, with an increase in unstable weather conditions by the 2040s. The net effect of these anticipated changes on the baseline air quality is difficult to establish but is unlikely to significantly alter the baseline air quality to an extent that it would affect the outcome of any assessment. Other factors such as changes in technology and the move away from combusting fossil fuels, driven by climate change mitigation, would potentially lead to decreases in emissions of the key pollutants considered in this assessment and a corresponding decrease in background concentrations of air pollutants into the future.

7.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

7.5.1 Receptors potentially affected by the Proposed Development comprise residents living in close proximity to the Site, schools and recreational areas. In addition, there are also statutory and non-statutory biodiversity sites in the locality which may be susceptible to direct exposure to air pollutants emitted from the Proposed Development and through indirect effects associated with nitrogen and acid deposition.

7.5.2 Guidance from Defra in LAQM.TG16 establishes that exceedances of the human health-based objectives should only be assessed at outdoor locations where members of the general public are regularly present over the averaging time of the objective. **Table 7.10** provides an indication of those locations that may be relevant for different averaging periods, as extracted from LAQM.TG16.

Table 7.10 Typical examples of relevant exposure for different averaging periods

Averaging period	Objectives should apply	Objectives should not apply
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades 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 mean, and 8-hour mean	All locations where the annual mean objectives 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 mean	All locations where the annual mean and: 24 and 8-hour mean objectives would apply. Kerbside sites (e.g. pavements of busy shopping streets).	Kerbside sites where the public would not be expected to have regular access.

[68] Air Quality Expert Group (AQEG) *Air Quality and Climate Change A UK Perspective*. Defra, London (2007)

Averaging period	Objectives should apply	Objectives should not apply
	Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend one hour or more. Any outdoor locations at which the public may be expected to spend one hour or longer.	
15-min mean	All locations where members of the public might reasonably be expected to spend a period of 15 minutes or longer.	

Source: directly extracted from LAQM.TG16

7.5.3 The human receptors proposed to be included in the assessment for the purposes of assessing chimney and road traffic emissions have been chosen based on the above guidance by identifying places where people may be located, judged in terms of the likely duration of their exposure to pollutants, and proximity to the Site based upon experience and professional judgement. These human receptor locations are displayed in **Figure 7.1** and include residential properties, schools (including, but not limited to, TBAP Unity Academy and Thomas Clarkson Academy), residential care homes, hospitals, places of worship etc. It should be noted that this list of receptors is by no means exhaustive, with certain receptors grouped together to represent exposure over a wider area, rather than at specific residential properties, for example.

7.5.4 There are several receptors on the adjacent business park and industrial estate where there is no fixed habitation but where members of the general public (i.e., excluding the workforce) may be present for short periods of time. Such receptors would include schools, gyms, restaurants and cinemas, for example. Potential short-term air quality impacts, i.e., the impact from those pollutants with an AQS averaging period of 1 hour or less, at these locations will be assessed with reference to the outputs from the gridded concentration data produced by the dispersion model (discussed further in more detail in the following sections). Long-term impacts will not be considered at these receptors as members of the public would be unlikely to be present over the full duration of the AQS averaging period at such locations.

7.5.5 In line with the IAQM's guidance, receptors within 350m of dust generating activities (including those associated with the Main Development Site and Grid Connection construction) will be considered (50m for biodiversity receptors).

7.5.6 The locations of the statutory and non-statutory biodiversity sites within the vicinity of the Proposed Development can be found in **Chapter 10: Biodiversity**. Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites and Sites of Special Scientific Interest (SSSIs) within 15km of the Proposed Development will be considered in the scope of the assessment of chimney emissions, with all further statutory and non-statutory biodiversity sites within 2km also included. These distances will be reduced to 50m for the purposes of assessing construction dust effects as stated in the paragraph above.

Potential significant effects requiring further assessment

Construction

Construction dust

7.5.7 Dust generated during the construction phase of the Proposed Development will be assessed using the IAQM's *Guidance on the assessment of dust from demolition and construction* to assess the dust risk and recommend appropriate mitigation measures to be included in a Dust Management Plan. The construction phase dust assessment will consider construction activities associated with the Main Development Site, CHP Connection and Grid Connection.

Construction traffic

7.5.8 The IAQM's *Land-Use Planning & Development Control: Planning for Air Quality* will be used to screen the requirement for a more detailed assessment of construction traffic emissions using the criteria established by Table 6.2 of this guidance. The screening criteria relating to changes in vehicle movements will be applied to cumulative traffic flows (i.e., the Proposed Development plus other committed development) rather than the Proposed Development flows in isolation.

7.5.9 Should it be determined a more detailed assessment of construction traffic emissions is required, incremental changes to concentrations of oxides of nitrogen (NO_X), nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter less than 10 µm (PM_{10}) and particulate matter with an aerodynamic diameter less than 2.5 µm ($PM_{2.5}$) associated with construction phase road traffic movements will be predicted at receptors within 200 m of affected roads using the ADMS Roads dispersion model and the latest emission factors from Defra's Emissions Factor Toolkit (EFT) that are available at the time of the assessment.

7.5.10 The output from the model will be verified using the results from roadside diffusion tube monitoring undertaken in the vicinity of the Energy from Waste CHP Facility by Fenland District Council.

7.5.11 Receptors within and outwith the Wisbech AQMA No.3 will be considered.

Operation

Chimney emissions

7.5.12 Chimney emissions during the operational phase of the Energy from Waste CHP Facility will be assessed using the ADMS 5.2 dispersion model. Prior to undertaking the full modelling assessment, an initial chimney height assessment will be undertaken to identify the optimum chimney height by predicting the maximum ground level concentration for a range of different chimney heights in the range 50 – 150 m in order to encompass the likely design chimney height of 95m.

7.5.13 Releases to air from developments of this nature are controlled by emission limit values (ELVs) provided by the Environmental Permitting (England and Wales) Regulations 2016, as amended, which implement the requirements of Annex VI of the Industrial Emissions Directive. These ELVs will be used as the basis for defining the pollutant emission concentrations discharged from the chimney. Where ELVs are not specified for certain pollutants, but it is known emissions of these pollutants may occur from EfW facilities (e.g. PAHs), emissions data will be derived from manufacturer data or from typical levels monitored at other similar UK facilities.

7.5.14 Updated BAT Conclusions for incineration activities have not been published as a Commission Implementing Decision at the time of drafting. However, BAT Conclusions have been recommended

in the Final Draft of the BAT Reference (BREF) document for waste incineration activities[69]. Should these BAT Conclusions be finalised prior to the assessment taking place, the BAT Associated Emission Levels (BAT-AELs) established by the BAT Conclusions will be used as the basis for defining the pollutant emission concentrations in preference to the ELVs in Annex VI of the Industrial Emissions Directive.

7.5.15 The assessment will assume that the plant is emitting at these concentrations and at maximum waste throughput continually for 24 hours a day, 365 days a year. This will provide a conservative estimate of annual mean impacts, since the Energy from Waste CHP Facility is only expected to achieve an annual availability of 90%.

7.5.16 The pollutants to be assessed will include:

- Oxides of nitrogen (NO_X as NO_2);
- Particulate matter (PM_{10} and $PM_{2.5}$);
- Carbon monoxide (CO);
- Sulphur dioxide (SO_2);
- Hydrogen chloride (HCl);
- Hydrogen fluoride (HF);
- Group 1 metals (cadmium (Cd) and thallium (Tl));
- Group 2 metals (mercury (Hg));
- Group 3 metals (antimony (Sb), arsenic (As), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), nickel, (Ni) and vanadium (V));
- Volatile organic compounds (VOCs);
- Ammonia (NH_3);
- Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs);
- Polychlorinated biphenyls (PCBs); and
- Polycyclic aromatic hydrocarbons (PAHs).

7.5.17 Given that the speciation of VOCs and PAHs will not be known, it will be assumed that VOCs are emitted as benzene and compared against the benzene Air Quality Standard in line with Environment Agency guidance, whilst it will also be assumed that all PAHs are emitted as benzo [a] pyrene (B[a]P) for comparison against the B[a]P Environmental Assessment Level. Similarly, it will be assumed that all particles are emitted in the PM_{10} and $PM_{2.5}$ fractions for comparison against the PM_{10} and $PM_{2.5}$ Air Quality Standards.

7.5.18 An assessment of chimney emissions will be made during normal operation of the facility but also in respect of abnormal operating scenarios which may have the potential for emissions to temporarily increase above ELVs; such scenarios could include failure a secondary combustion air fan or bursting of a filter bag in the flue gas treatment section. Article 46(6) of the Industrial Emissions Directive does permit ELVs to be exceeded for no more than 4 hours uninterrupted and

[69] European Commission. (2019). *Best Available Techniques (BAT) Reference Document for Waste Incineration.* Final Draft (December 2018) [online] Available at: https://eippcb.jrc.ec.europa.eu/reference/BREF/WI/WI_BREF_FD_Black_Watermark.pdf [Accessed 06 November 2019]

up to 60 hours per annum, so consideration of emissions during such abnormal operating periods is considered important.

7.5.19 The chimney emissions model will use 5 years of hourly sequential meteorological data from the Met Office's Numerical Weather Prediction (NWP) model interpolated for the specific location of the Site. The nearest synoptic weather station that provides model-quality monitored meteorological data is located at RAF Marham, approximately 27 km to the east of Wisbech. Due to this distance, data from this station may not necessarily be representative of conditions within Wisbech. Hence, use of NWP data is preferred.

7.5.20 The model will include appropriate treatments for buildings, terrain and surface characteristics. Sensitivity analysis will be undertaken to investigate how these treatments and other assumptions incorporated in to the modelling approach affect the predictions of the model.

7.5.21 The chimney emissions model (and road traffic emissions model) will give due consideration to emissions from other cumulative development where such information exists to allow cumulative emission sources to be included within the model.

7.5.22 Receptors within and outside of the three Wisbech AQMAs will be considered.

Assessment of deposition to land of emissions to air of metals

7.5.23 The dispersion model described above will be used to predict the deposition rate of metals emitted from the chimney using the methodology in the Environment Agency's *Air emissions risk assessment for your environmental permit* guidance. The resultant deposition rates will be compared against the Maximum Deposition Rates (MDR) in the same guidance.

Human health risk assessment for exposure to PCDD/Fs

7.5.24 NPS EN-3 establishes the human-health based air quality standards can be used to assess the potential effects on human health associated with emissions from EfW plants. However, in the case of PCDD/Fs, no air quality standards or other guideline values exist. This is because the overwhelming majority of human exposure to PCDD/Fs originates via ingestion, rather than inhalation.

7.5.25 In order to assess the total human bodily uptake of PCDD/Fs as a result of chimney emissions from the Energy from Waste CHP Facility, the risk assessment procedure contained within the HMIP's *Risk Assessment of Dioxin releases from Municipal Waste Incinerators* will be used. This procedure uses the output from the dispersion model to estimate the total bodily uptake through both inhalation and ingestion pathways. The HMIP risk assessment was developed in 1996 and, consequently, PCDD/F congener specific physical and chemical properties and bio-transfer factors will instead be taken from the 2005 US EPA HHRAP method which includes research which post-dates 1996.

7.5.26 The resultant prediction of total daily bodily uptake will be compared against the Food Standards Agency Committee on Toxicity's Tolerable Daily Intake (TDI) for PCDD/Fs.

Assessment of operational road traffic emissions

7.5.27 An assessment of the effects of operational road traffic emissions will be undertaken using the same methodology described for construction traffic movements.

Assessment of odour during abnormal operation

7.5.28 During normal operation of the plant, odorous air within the building will be used as the primary and secondary combustion air requirement for the furnace. This will ensure any odours are destroyed at the high temperatures within the combustion chamber.

7.5.29 However, during abnormal periods of abnormal operation, which may require a temporary shutdown of the furnace, waste is likely to remain within the storage bunker. In this event, building air will be extracted through carbon beds via roof-mounted vents. An assessment of discharges via these vents will be undertaken using the ADMS 5.2 dispersion model.

7.5.30 The odour assessment will adopt a conservative approach whereby it will be assumed that the carbon beds are partially exhausted resulting in partial 'breakthrough' and an elevated odour emission concentration – an assumed emission concentration of 3,000 ou_E/m^3 will be adopted, whereas emissions from carbon-based odour control units operating efficiently are typically less than 1,000 ou_E/m^3. Procedures in an Odour Management Plan to be developed as a condition of the installation's environmental permit will ensure full breakthrough does not occur.

Assessment of concentrations of NO_X, SO_2 and HF, and nitrogen and acid deposition rates at biodiversity sites

7.5.31 The chimney emissions and road traffic dispersion models described above will be used to enumerate the incremental contributions to baseline concentrations of NO_X, SO_2 and HF, in addition to nitrogen and acid deposition rates, at the biodiversity sites considered in the assessment. These predictions will be compared against critical levels and critical loads provided by APIS.

7.5.32 However, in accordance with IAQM guidance, the assessment of significant of any resultant effects will be made in the biodiversity chapter of the ES.

Receptors and effects scoped out of the assessment

7.5.33 Based upon professional experience of other similar developments, the level of construction activity and numbers of diesel plant and equipment items likely to be present on the Energy from Waste CHP Facility Site and the Temporary Construction Compound Site, together with the control and management of emissions under the NRMM Regulations, air quality effects arising at human receptors are not likely to be significant. The following receptors have therefore been scoped out from being subject to further assessment;

- Construction plant emissions during the construction phase;
- Operational effects relating to the Grid Connection;
- Dust emissions during the operational phase;
- Odour emissions during normal operation; and
- Effects of climate change on air quality.

Operational effects relating to the Grid Connection

7.5.34 Other than limited and infrequent maintenance works, there are no activities associated with the Grid Connection that would result in emissions to air.

Construction plant emissions during the construction phase

7.5.35 These effects have been scoped out since construction plant emissions are controlled by the *Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018/764* and the scale, duration and distance of construction activity to relevant receptors is not considered to be of a magnitude that would require detailed assessment.

Dust emissions during the operational phase

7.5.36 These effects have been scoped out since all waste, incinerator bottom ash and fly ash handling and storage will be within enclosed buildings.

Odour emissions during the operational phase (normal operations)

7.5.37 It is not possible to quantitatively assess the emissions to atmosphere of odour from this proposed facility and it is therefore necessary to concentrate upon the management and control of likely sources of odour from waste delivery and short-term storage in the bunker. Such measures will be included and specified in the Environmental Permit for the facility, which will include the provision for an Odour Management Plan, the terms of which will have to be complied with under the Permit. Furthermore, a number of measures have been incorporated in to the design to ensure odour effects during the operational phase will be no greater than negligible, including;

- All waste will be delivered in enclosed refuse collection vehicles;
- Vehicles will enter the waste reception area via fast-acting roller shutter doors;
- The waste processing areas of the building will be maintained under a slight negative pressure to prevent leakage of building air;
- Air from the waste reception and storage areas of the buildings will be routed to the furnace to be used as primary and secondary combustion air. This will ensure any odorous compounds are destroyed by the high temperatures in the combustion chamber; and
- When the furnace is shutdown, but waste is still stored in the bunker, building air will be routed through carbon beds and discharged via roof-mounted vents.

7.5.38 For clarity, an assessment of odour during abnormal operation, when the furnace is shut down, but waste remains within the bunker in conjunction with partial breakthrough of the carbon beds has, however, been included in the scope of the assessment.

Effects of climate change on air quality

7.5.39 Whilst the net effect of these changes on the baseline air quality is difficult to establish, it is unlikely to significantly alter the baseline air quality to an extent that it would affect the outcome of any assessment. Other factors such as changes in technology and the move away from combusting fossil fuels, driven by climate change mitigation, would potentially lead to decreases in emissions of the key pollutants considered in this assessment and a corresponding decrease in background concentrations of air pollutants into the future.

7.6 Assessment methodology

General approach

7.6.1 The assessment will use a combination of detailed, quantitative modelling and semi-quantitative risk-based approaches to identify potential effects on air quality using the methods described in

the preceding sub-section. Stakeholders to be consulted to reach agreement on the assessment approach are likely to include, amongst others:

- Fenland District Council, West Norfolk and Kings Lynn Environmental Health Officers;
- Environment Agency; and
- Natural England.

Determination of significance

7.6.2 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

7.6.3 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

7.6.4 Approaches to assess the significance of the different elements of the air quality assessment are presented in the sub-sections below.

Air quality effects on human receptors

7.6.5 The significance of long-term air quality effects of road traffic and chimney emissions on human receptors will follow the IAQM *Land-Use Planning & Development Control: Planning for Air Quality* guidance, using the impact descriptors defined in Table 6.3 of the guidance. In the IAQM guidance, the magnitude of impact due to an increase/decrease in annual mean concentrations of air pollutants is described as "negligible", "slight", "moderate" or "substantial", taking into account both the change in concentration at a receptor brought about by a new development as a percentage of the assessment level, and the actual concentration at that receptor.

7.6.6 It must be emphasised that these impact descriptors are not intended to be used robotically as a measure of the significance of a proposed development. As the IAQM guidance states:

> *"The overall significance is determined using professional judgement. For example, a 'moderate' adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered."*

7.6.7 As such, whilst the impact descriptors from Table 6.3 of the IAQM guidance will assist in the determination of significance, the overall conclusion of significance of effect will be made using professional judgement.

7.6.8 The IAQM guidance further establishes that:

> *"For most road transport related emissions, and diffuse emissions associated with development, long term average concentrations are the most useful for evaluating the severity of impacts."*

7.6.9 Consequently, it is not proposed to assess the significance of short-term concentrations attributable to road traffic emissions. However, the IAQM guidance establishes that this is a potential important factor for chimney emissions. Such effects will be described by the magnitude

and severity of short-term process contributions (PCs) of chimney emissions using the approach suggested by paragraph 6.39 of the IAQM guidance.

Dust effects

7.6.10 The significance of dust effects will be made using professional judgement after establishing the dust risk for the Proposed Development using the IAQM's *Guidance on the assessment of dust from demolition and construction*. The guidance provides a four-step process for evaluating the risk associated with dust emissions from construction and demolition sites on different types of receptor to dust soiling, health effects and ecological effects. This level of risk is determined separately for each of four defined activities (demolition; earthworks; construction; and trackout) and takes account of the scale and nature of the works, which determines the potential dust emission magnitude, and the sensitivity of the area.

7.6.11 Site-specific mitigation for each of the activities is then defined using the recommendations in the guidance before the overall significance of dust effects determined. In respect to the latter, the guidance states:

> *""For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.*
>
> *There may be cases where, for example, there is inadequate access to water for dust suppression to be effective, and even with other mitigation measures in place there may be a significant effect. Therefore, it is important to consider the specific characteristics of the site and the surrounding area to ensure that the conclusion of no significant effect is robust."*

7.6.12 Hence, the overall determination of significance will be made using professional judgement after taking in to account the dust risk, mitigation measures and any site-specific factors.

Odour effects

7.6.13 The significance of odour effects will be made using professional judgement in accordance with the IAQM's *Guidance on the assessment of odour for planning*. The guidance provides two tables for determining an effect descriptor for odour impacts predicted by dispersion modelling in terms of "Negligible", "Slight", "Moderate" and "Substantial" dependent upon whether the odour is deemed to be "Most Offensive" or "Moderately Offensive". Due to the nature of odours from management of municipal wastes, the descriptors for "Most Offensive" odours will be adopted.

7.6.14 Whilst the descriptors can assist in guiding a practitioner in the determination of significance, the IAQM guidance clarifies that, when concluding the significance of odour effects, the practitioner also needs to give the right amount of weight to the results provided and how well-suited that tool is to the study scenario in question. In the context of modelling, such factors generally involve appropriate consideration of model uncertainty.

7.6.15 Ultimately, the significance of odour effects will be determined using professional judgement.

Assumptions

7.6.16 This assessment will make use of atmospheric dispersion models to identify the potential air quality effects associated with the Energy from Waste CHP Facility. The use of dispersion models has been widely used in the UK for both regulatory compliance and planning purposes for several decades and is an accepted approach for this type of assessment. The models to be used have also undergone extensive validation by the model developers, CERC. However, the use of any dispersion

model is associated with an inherent element of uncertainty, the magnitude of which will vary on a case-by-case basis.

7.6.17 The approach to considering the potential effects of model uncertainty on the conclusions of an air quality assessment is to, firstly, acknowledge that such uncertainty exists and, secondly, to include a number of conservative ('worst-case') assumptions which will result in an overestimation of the model output compared to the 'true' impact of an emission source. As a result of these worst-case assumptions, the predicted results in this air quality assessment should be considered to represent the upper limit of model uncertainty for an equivalent scenario which aims to predict the actual impact of development emissions. Examples of conservative assumptions to be included in the assessment will include:

- As the Energy from Waste CHP Facility is not operational and, as a result, actual monitored emissions data from the chimney are not yet available, the assessment will assume emissions from the chimney occur continuously throughout the year at their respective emission limit values. Where the emission limit value is expressed as a range, the upper value will be assumed;
- With respect to the assessment of road traffic emissions, no account of anticipated improvements to the emissions performance of vehicles in the future baseline will be made, with vehicle emission factors in the future baseline and with development scenario based on those applicable to the current baseline year; and
- The assessment of odour emissions when the furnace is shutdown, but waste remains within the bunker, will assume partial breakthrough of the carbon beds.

7.6.18 The air quality assessment will use sensitivity analysis to explore how assumptions on various model input parameters, e.g. buildings, terrain, emissions etc may affect the conclusions of the assessment. These assessments will be contained within a technical report forming an appendix to the ES.

8. Landscape and Visual

8.1 Introduction

8.1.1 This chapter describes the scope of the assessment for landscape and visual. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with respect to relevant parts of other chapters, namely **Chapter 6: Noise and Vibration, Chapter 7: Air Quality, Chapter 9: Historic Environment** and **Chapter 14: Socio-economics**, where common receptors have been considered and where there is an overlap or relationship.

8.2 Relevant legislation, planning policy, technical guidance

Legislative context

8.2.1 The following legislation is relevant to the assessment of the effects on landscape and visual receptors:

- *The European Landscape Convention*[70].

Planning policy context

8.2.2 There are several policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 8.1**.

Table 8.1 Planning Policy Context

Policy reference	Implications
National Policy	
Overarching National Policy Statement (NPS) for Energy (EN-1)	The applicant should carry out a landscape and visual assessment and report it in the ES. Paragraphs 5.9.6 and 5.9.7 describe the overarching issues that should be included within the landscape and visual assessment as follows: • The effects during construction of the project and the effects of the completed development and its operation on landscape components and landscape character; and • The visibility and conspicuousness of the project and potential impacts on views and visual amenity including light pollution effects. This paragraph relates to landscape impact and notes that landscape effects will depend on the existing character of the local landscape, its current quality, how highly it is valued and its capacity to accommodate change. The assessment will need to take all of these factors into consideration in judging the impact of the Proposed Development on the landscape. EN-1 recognises that virtually all nationally significant energy infrastructure projects will have effects on the landscape. Paragraph 5.9.17 summarises the preceding text on landscape impact and states that "*The IPC should consider whether the project has been designed carefully, taking account of*

[70] Council of Europe (2000) *European Landscape Convention*

Policy reference	Implications
	environmental effects on the landscape and siting, operational and other relevant constraints, to minimise harm to the landscape, including by reasonable mitigation." Paragraphs 5.9.18 to 5.9.20 relates to mitigation and states that 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 the proposed project. Materials and designs of buildings should always be given careful consideration. Paragraph 5.9.22 relates to mitigation and states that 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 the proposed project. Materials and designs of buildings should always be given careful consideration.
NPS for Renewable Energy Infrastructure (EN-3)	Section 2.4, paragraph 2.4.2 states that proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity. Paragraph 2.5.48 that an applicant's assessment of a biomass or waste facility should include for an assessment of the landscape and visual effects of the proposed infrastructure in accordance with the policy set out in 5.9 of EN-1.
NPS for Electricity Networks Infrastructure (EN-5)	Paragraphs 2.8.4 to 2.8.6 relate to the applicant's assessment with regard to landscape and visual. It states that the Holford Rules should be followed by developers when designing their proposals and provides an overview of the Rules. Paragraphs 2.8.8 to 2.8.9 relate to concerns with undergrounding and states that where there are serious concerns about the potential adverse landscape and visual effects of a proposed overhead line, the IPC will have to balance these against other relevant factors, including the need for the proposed infrastructure, the availability and cost of alternative sites and routes and methods of installation (including undergrounding) and any extra economic, social and environmental impacts of undergrounding. Paragraphs 2.8.10 to 2.8.11 deals with mitigation. In addition to following the principles set out in the Holford Rules and considering undergrounding, the main opportunities for mitigating potential adverse landscape and visual impacts of electricity networks infrastructure relate to the consideration of network reinforcement options and selection of the most suitable type and design of support structure in order to minimise the overall visual impact on the landscape. The NPS recognises that more specific measures may be required including landscape schemes and localised planting in the vicinity of residential properties and principal viewpoints to provide screening.
National Planning Policy Framework (NPPF)	Paragraph 170 states that planning policies and decisions should contribute to and enhance the natural and local environment. This will be achieved by (amongst other criteria) "*protecting and enhancing valued landscapes…… (in a manner commensurate with their statutory status or identified quality in the development plan)* and "*recognising the intrinsic character and beauty of the countryside*". Whilst there are no national or local landscape designations within the study area, the LVIA will need to assess the effects of the development upon landscape character.
Local Policy	
Fenland Local Plan (Adopted)	Policy LP16: Proposals for all new development will only be permitted if it can be demonstrated that the proposal meets, amongst other criteria: • makes a positive contribution to the local distinctiveness and character of the area, enhances its local setting, responds to and improves the character of the local built environment, provides resilience to climate change, reinforces local identity and

Policy reference	Implications
	does not adversely impact, either in design or scale terms, on the street scene, settlement pattern or the landscape character of the surrounding area.; and • provides well designed hard and soft landscaping incorporating sustainable drainage systems as appropriate.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	
Policy CS08	Requires all new development in the borough to be of high-quality design. New development will be required to demonstrate its ability to (amongst other criteria) respond to the context and character of places in West Norfolk by ensuring that the scale, density, layout and access will enhance the quality of the environment.
Policy CS12	This requires that proposals for development be informed by, and seek opportunities to reinforce the distinctive character areas and potential habitat creation areas identified in the King's Lynn and West Norfolk Landscape Character Assessment, the West Norfolk Econet Map and other character assessments. Development proposals should demonstrate that their location, scale, design and materials will protect, conserve and, where possible, enhance the special qualities and local distinctiveness of the area, gaps between settlements, landscape setting, distinctive settlement character, landscape features and ecological networks.
King's Lynn and West Norfolk Site Allocations and Development Management Policies Plan	Policy DM15: Proposals will be assessed against a number of factors including (amongst other criteria) visual impact. The scale, height, massing, materials and layout of a development should respond sensitively and sympathetically to the local setting.
Cambridge and Peterborough Waste Adopted Core Strategy	Policy CS33 Protection of Landscape Character states that both minerals and waste developments will only be permitted where it can be demonstrated that they can be assimilated into the local landscape in accordance with the Cambridgeshire Landscape Guidelines, local Landscape Character Assessments and related SPDs.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	No explicit reference to landscape and visual matters. Policy 17 Design states that new development should provide landscape enhancement schemes which takes account of any relevant landscape character area assessments. Advice on the design of waste management facilities is found in Appendix 3.

Technical guidance

8.2.3 The LVIA will be undertaken in accordance with the third edition of the *Guidelines for Landscape and Visual Impact Assessment* (GLVIA3)[71] produced by the Landscape Institute and the Institute of Environmental Management and Assessment. GLVIA3 is widely regarded by landscape and planning professions as the 'industry standard' together with best practice and professional experience. The LVIA will take account of the following technical notes published by the Landscape Institute:

[71] The Landscape Institute and the Institute of Environmental Management and Assessment, (2013). *Guidelines for Landscape and Visual Impact Assessment. 3rd edition*. London. Routledge.

- Technical Guidance Note 06/19 '*Visual Representation of Development Proposals*[72]*; and*
- Technical Information Note 01/2017 (Revised). '*Tranquillity – an overview*'[73].

8.3 Data gathering methodology

Study area

8.3.1 The LVIA for the Energy from Waste CHP Facility Site will be based upon a study area of 5km from the centre of the site, as described at paragraph 8.3.2. The study area has been defined to ensure that the LVIA concentrates upon receptors that are most likely to be significantly affected by the Proposed Development. The selection of the study area has been undertaken in accordance with guidance set out in Sections 5.2 and 6.2 in GLVIA3. The study area is shown in **Figure 8.1**.

8.3.2 The study areas for the two proposed Grid Connection options as described in **Chapter 2: Description of the Proposed Development** have been defined on the following basis:

- The potential proposed 132kV Grid Connection study area has been defined as a 1km offset from the Grid Connection Corridor of the 132kV Grid Connection based upon a maximum 20m length for the Grid Connection's poles and experience in undertaking LVIAs for the type of Grid Connection; and
- The potential proposed 400kV direct Grid Connection study area has been defined as a 3km offset from the Grid Connection Corridor based upon a 49m height for the Grid Connection's pylons and observation of the visibility and landscape role of the existing 400kV overhead line routed to the east of Wisbech.
- Basing the study areas quoted above on the basis of an overhead connection ensures that the landscape and visual effects arising from the construction and operation of an underground connection would be covered also.

8.3.3 The Grid Connection Corridor study areas and how the individual study areas combine to form a composite, overall LVIA study area (the 'study area') is shown on **Figure 8.1**.

8.3.1 The temporal scope of the assessment of landscape and visual is consistent with the period over which the development would be carried out and therefore covers the construction and operational periods.

Summary of data sources

8.3.2 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- Ordnance Survey (OS) 1:25,000 scale mapping:
  - Explorer 235- Wisbech and Peterborough North; and

[72] The Landscape Institute. (2019). *Technical Guidance Note 06/19 Visual Representation of Development Proposals.* London. Landscape Institute.

[73] The Landscape Institute (2017). *Technical Information Note 01/2017 revised. Tranquillity – an overview.* London. Landscape Institute.

- Explorer 236 – King's Lynn, Downham Market and Swaffham.

- National Character Area profile: 46 – the Fens[74];
- Cambridgeshire Landscape Guidelines[75];
- King's Lynn and West Norfolk Borough Landscape Character Assessment[76];
- Multi-Agency Geographic Information for the Countryside (MAGIC)[77];
- Tranquillity mapping produced by Campaign to Protect Rural England (CPRE)[78];
- Light pollution and dark skies mapping for Fenland produced by LUC for CPRE[79];
- Aerial photography (Google Earth Pro); and
- Visit to Wisbech and study area undertaken on 23 August 2019.

8.4 Overall baseline

Current baseline

Zone of Theoretical Visibility (ZTV)

8.4.1 A series of preliminary ZTVs have been generated to inform the scoping study and the initial viewpoint selection. All the ZTVs have been based upon digital surface model (DSM) terrain data at 1m resolution which ensures that the ZTVs take account of the screening that would be provided by baseline vegetation and built elements as well as the topographical constraints. Separate ZTVs have been generated for the following components of the Proposed Development and therefore form an appropriate starting point for undertaking the LVIA.

- The Energy from Waste CHP Facility for which the ZTVs in **Figure 8.2** have been generated for.
  - The chimney at a height of 95m above finished floor level (FFL); and
  - The furthest extents of the roofline at a height of 50m AOD.

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[74] Natural England (2014). *National character Area profile: 46. The Fens*. Available online www.natyralengland.org.uk [checked 31/10/19]

[75] Cambridgeshire County Council (1991). *Cambridgeshire Landscape Guidelines – A Manual for Management and Change In The Rural Landscape*. Available online www.cambridgeshire.gov.uk/residents/libraries-leisure-&-culture/arts-green-spaces-&-activities/protecting-and-providing-green-space/ [checked 31/10/19].

[76] King's Lynn and West Norfolk Borough Council (2007*). King's Lynn and West Norfolk Borough Landscape Character Assessment*.

[77] Department for Environment, Food and Rural Affairs. (2019). *MAGIC*. Available online https://magic.defra.gov.uk/MagicMap.aspx [checked 05/11/19].

[78] Campaign to Protect Rural England, (2007). *Tranquillity Map*. Available online https://www.cpre.org.uk/resources/countryside/tranquil-places/item/1839 [Checked 05/11/19].

[79] Campaign to Protect Rural England, (2018). *England's Light Pollution and Dark Skies – Map*. Available online https://www.nightblight.cpre.org.uk/maps/ [checked 07/11/19].

- The potential 132kV Grid Connection for which a height of 20m for the support poles[80] has been assumed and a potential 400kV direct Grid Connection for which a height of 49m for the pylons (towers[81]) has been assumed. At the scoping stage the route these potential Grid Connections is not defined so the ZTV has been based upon the extents of the Grid Connection Corridor as shown on **Figure 8.1** and the worst case scenario for landscape and visual effects which would be the adoption of the taller 400kV Grid Connection option. This approach ensures that the ZTV in **Figure 8.3** shows a worst-case scenario for the potential Grid Connection's visibility.

8.4.2 A composite ZTV have been generated that show the combined potential visibility of the Proposed Development in **Figure 8.4**. If the selected Grid Connection is undergrounded, the ZTV in **Figure 8.2** would represent the worst-case scenario. As the proposed CHP Connection would be routed at ground level, its operation has not been included in the generation of any of the ZTVs.

Landscape baseline – landscape elements within the Energy from Waste CHP Facility Site

8.4.3 The Energy from Waste CHP Facility Site is currently used for aggregate storage and distribution and consequently soft landscape elements are restricted to thick boundary hedgerows approximately 3m high located along most of the southeast and southwest boundaries. The longer northwest boundary that is formed by a disused railway line (the former March and Wisbech Branch Line) is marked by a belt of more informal shrub that extends west across the dis-used railway line i.e. beyond the Energy from Waste CHP Facility Site. The northeastern boundary is formed by a drainage ditch alongside which vegetation is restricted to mown rough grass and reeds. Similar narrow strips of grass periodically interspersed with reeds are also present alongside the boundary hedgerows which on their inner side have low bunds covered with ruderal vegetation. This type of vegetated low bund can be observed at the short section of the southwestern boundary adjacent to New Bridge Lane.

8.4.4 Away from its boundaries, the Energy from Waste CHP Facility Site, including its southwestern spur, consists mostly of loose hard-surfaced areas upon which are sited piles of aggregates, some of which are stored in open topped hoppers. Plant and built development are concentrated in the northeastern corner of the Energy from Waste CHP Facility Site. The main built development is an olive green, metal clad, shed-like building with a shallow pitched roof that is approximately 8m high at its roofline and 6m high at its eaves. The operational area to the immediate southwest of the building is partly bounded by a 4m tall mesh fence. The northeastern corner of the Energy from Waste CHP Facility Site is marked by a 1.8m high metal palisade fence.

Landscape baseline - landscape context of the Main development Site Study area

8.4.5 The dominant landscape context for the Main Development Site on the southern side of Wisbech is provided by the area of post 1950s industrial and business development that is bounded by Cromwell Road, Weasenham Road, New Drove and New Bridge Lane. This development consists primarily of low industrial buildings, many of which are metal-clad surrounded by hard-standing and storage areas interspersed with lengths of remnant drainage ditches. Other than the drainage ditches, there are few remnants from the previous land-use when the area was known as Great Bolness Field and was given over to agriculture and some orchards.

[80] Assumed to utilise trident wooden poles, however if this is technically unfeasible and steel lattice pylons are required, the study area has been designed to accommodate any potential form of steel lattice pylon that might be selected.

[81] Assumed to utilise a lattice pylon design which are typically 45-49m in height.

8.4.6 Vegetation resources are limited and tend to be concentrated on marginal or derelict areas of land such as the dis-used railway line. Two drainage ditch bounded fields sited to the immediate south remain under pasture. Between these fields and the southwestern spur of the Energy from Waste CHP Facility Site there is a square block of plantation woodland and scrub (approximately 100m by 70m) although this is not shown on maps before the 1950s. South of New Bridge Lane to the closest section of the A47 there is an area of remnant pasture fields associated with a residential property (a bungalow in the style of the second half of twentieth century and surrounding agricultural buildings). Further to the east the triangle of land formed between New Bridge Lane and the A47 is largely given over to rough pasture (and contains a second relatively modern bungalow and surrounding gardens) accessed via New Drove. North of this bungalow and east of New Drove two fields are given over to fruit trees. These trees are not full grown. They are therefore not direct remnants of the orchards that were formerly a key landscape feature both to the south of Wisbech and in the wider study area.

8.4.7 Other than the aforementioned small plantation, and narrow tree belts alongside the closest section of the A47, tree cover is sparse in the part of the study area immediate surrounding the Energy from Waste CHP Facility Site. Across the study area tree cover is generally limited but trees do still fulfil the visual role of combining to limit the availability of some middle - and long-distance views aided by the flat topography. Tree cover is provided by orchards (concentrated to the southwest and east of Wisbech) but also by narrow shelterbelts and higher levels of tree cover in settlements and some larger gardens that surround more isolated properties.

8.4.8 The topography within the study area is typical of the wider Fens being flat and not exceeding 6m AOD in height. The topography and the resultant need for drainage has resulted in the dense network of drainage ditches that is a key landscape characteristic across the study area. These are interspersed with more infrequent, larger drains. The River Nene flows through the western part of the study area although it is contained by levees and other forms of flood defence. The range of water features are generally not readily visible in views although their courses are sometimes marked by the narrow tree belts.

8.4.9 Wisbech is the largest settlement within the study area and its historic centre is located approximately 1.5km to the northeast of the Energy from Waste CHP Facility Site. The town centre includes the collection of Georgian buildings located on North Brink alongside the River Nene and include Peckover House and Garden which is open to the public. Most of the older residential parts of Wisbech are located to the north of Weasenham Road i.e. at a minimum separation distance in excess of 700m from the Energy from Waste CHP Facility Site. An exception is some residential development alongside the northern section of New Drove, although these properties are also at least 700m to the northeast. In the past two decades Wisbech has developed extensively along the axis of Cromwell Road. This development has mostly consisted of large-scale retail developments interspersed with other commercial and light industrial development, however there has been some residential development between Cromwell Road and the River Nene/South Brink centred on Malt Drive. The flat topography and low elevation mean that views out of and within Wisbech are severely restricted. The most relevant recent development on the southern edge of Wisbech in relation to the Energy from Waste CHP Facility Site has been the Partner Logistics cold storage facility at the southwestern end of New Drove. This light coloured, uniformly clad building is approximately 36m high and has dimensions of 90m by 160m. At its closest it is 200m to the southeast of the Energy from Waste CHP Facility Site.

8.4.10 Outside of Wisbech the settlement pattern becomes more dispersed, especially to the eastern edge of the study area around Marshland Fen. The highest concentrations of settlements are to the southeast (Elm, Emneth, Friday Bridge, Outwell and Upwell) and to the northeast (Walton Highway, West Walton and Ingleborough). These settlements have a strong ribbon morphology and therefore frequently merge into one another. Other settlements such as Marshland St. James have a more loose, extended ribbon morphology with no obvious settlement centre. These

morphologies have the consequence that a higher proportion of these settlements' residents potentially have outward views that are not screened by other built development in the settlement.

Landscape baseline – landscape elements within the potential Grid Connection Corridor and study areas

8.4.11 Many of the baseline influences outlined in the landscape baseline for the Main Development Site also apply to the parts of the overall study area that are within the study areas for the potential Grid Connections. Outside the settlements and their immediate environs, the land-use is dominated by arable agriculture resulting in a large, open landscape. Although tree cover is limited, the flat topography ensures that even individual trees can be locally prominent landscape elements. A characteristic is the availability of wide, long distance views within which scattered clumps, belts and individual trees can coalesce to produce the visual impression of a greater amount of tree cover. Consequently, in middle-and long-distance views, settlements, including Wisbech, are rarely prominent landscape elements, although isolated individual or small groups of buildings can be prominent if they are unscreened. However, settlement edges are also noted in the Cambridgeshire Landscape Guidelines as possessing unsightly fringe development with low levels of perimeter planting to assimilate them into the surrounding arable agriculture landscapes.

8.4.12 The site visit and reviews of the Cambridgeshire Landscape Guidelines. and Appendix 5 in the Fenland District Council Wind Turbine Development Policy Guidance in which the Wisbech Settled Fen LCA was defined, show that there is some variation in relation to the above description on the eastern and western fringes of Wisbech. These areas retain a substantial number of orchards which combine with the ribbon settlements noted in paragraph 8.4.10 and associated higher levels of tree cover provided by windbreaks of poplar and hawthorn to provide a more complex, enclosed local landscape.

8.4.13 The potential Grid Connection Corridor study areas to the east of Wisbech already contains the 132kV double circuit overhead line between West March to Walpole which is routed close to the east and south of Wisbech (and at Elm to the Main Development Site) and further to the east the 400kV overhead line between Burwell Main and Walpole. Both lines are supported by lattice towers which, although they are visually permeable, can be locally prominent landscape elements in parts of the study area where open views are widely available.

Landscape baseline – landscape designations

8.4.14 There are no national or local landscape designations present in the overall study area.

Landscape baseline – landscape character

8.4.15 At the national scale of Natural England's 159 National Character Areas (NCAs), the Proposed Development and the overall study area are located within NCA 46: The Fens. This is an extensive NCA that extends around the Wash and inland as far as Peterborough and Cambridge. The NCA's first key characteristic is "*expansive, flat, open low-lying wetlands … offering extensive vistas to level horizons and huge skies …*". The variation provided by the orchards and their associated windbreaks around Wisbech is noted, although the NCA also notes that orchards and windbreaks have declined in recent years.

8.4.16 Another key characteristic is that "*large, built structures exhibit a strong vertical visual influence, such as … wind farms and other modern, large-scale industrial and agricultural buildings …*" The cluster of settlements around Wisbech is highlighted as an example of the characteristic of 'Settled Fen' or 'Townlands' in which smaller settlements developed in proximity to the largest settlements such as Wisbech in the medieval period. The NCA also notes that the influence of Wisbech "*intrudes*" upon the level of tranquillity in its surrounding areas though "*visual and audible intrusion*."

8.4.17 At a local scale, the landscape character of the study area has been defined in two landscape character assessments that have been undertaken for Cambridgeshire County Council and King's Lynn and West Norfolk Borough Council plus as an ancillary component of Fenland District Council Wind Turbine Development Policy Guidance. The distribution of the Landscape Character Areas (LCAs) defined in these landscape character assessments is shown in **Figure 8.7**. The Main Development Site and the western and southern parts of the Grid Connection Corridor study area are within the area covered by the Cambridgeshire and Fenland landscape character assessments.

8.4.18 Within Cambridgeshire, the study area is entirely located within the Fenlands LCA. This large LCA extends across all the northern part of the County and the key landscape characteristics accord closely with those summarised in paragraphs 8.4.10 – 12. The LCA description states that although the landscape might appear to be "*monotonous*" it is "*in fact characterised by continuous change as visual characteristics of one fan merge into the next.*" Several localised variations are identified including those that relate to the role of orchards, windbreak planting and the settlement pattern around Wisbech. These localised variations were acknowledged in the Fenland District Council Wind Turbine Development Policy Guidance in which the parts of the extensive Fenland LCA surrounding the west and south of Wisbech were separated into the Wisbech Settled Fen LCA.

8.4.19 The Wisbech Settled Fen LCA has several key characteristics that are relevant to the Proposed Development:

- Flat topography that is "*heavily settled*" compared with the surrounding fen;
- Nucleated villages with ribbon development along local roads;
- Nurseries and fruit orchards with the latter enclosed by poplars and alders that create a localised smaller scale landscape and partial sense of enclosure;
- Prominence of pylons and A47 and moderate tranquillity;
- Bungalows and glasshouses (associated with orchards) are distinctive features; and
- Condition of landscape features assessed as "*moderate*" with a good age structure to tree cover.

8.4.20 The eastern and some northern parts of the study area, including the majority of the potential Grid Connection Corridor study areas, are located in Norfolk. They consequently are located within the Fens – Settled Inland Marshes Landscape Character Type (LCT) and the Fens – Open Inland Marshes LCT as defined in the King's Lynn and West Norfolk Borough Council Landscape Character Assessment. The Settled Inland Marshes LCT is subdivided into five spatially discrete LCAs, four of which are present in the study area:

- LCA D2: Walpole, Terrington and Clench Warton;
- LCA D3: Terrington St. John;
- LCA D4: Emneth, West Walton and Walsoken; and
- LCA D5: Outwell.

8.4.21 LCA D2: Walpole, Terrington and Clench Warton has several key characteristics that are relevant to the potential Grid Connection options:

- Extensive panoramic views in all directions but often cluttered "*due to a variety of vertical objects of differing sizes, … pylons are conspicuous landmarks in all directions*";
- Tranquillity largely dependents on proximity to A17 and A47 which provide "*a constant sense of noise and movement*" but is overall moderate to strong; and

- Large-scale landscape with low-lying topography.

8.4.22 LCA D3: Terrington St. John has several key characteristics that are relevant to the potential Grid Connection options:

- Bridges crossing the wider drains are distinctive features contributing to the LCA's sense of place;
- Views are "*dominated by rows of poplars and communication masts*" which provide "*main focal points in this expansive, large-scale area*";
- Pylons contribute to a "*cluttered skyline in places*"; and
- Strong sense of tranquillity and isolation.

8.4.23 LCA D4: Emneth, West Walton and Walsoken has several key characteristics that are relevant to the Proposed Development:

- Land-use is a mixture of arable fields, fruit orchards, plantations and pasture;
- The landscape has a "*cluttered appearance with few points of focus*" due to the presence of orchards and woodlands together with "a *variety of vertical elements including large-scale farms, glasshouses, pylons, frequent rows of poplars and other tall vegetation*."
- Orchards are concentrated in the area immediately east of Wisbech and provide a sense of contrasting enclosure;
- Distinctive linear villages such as Tilney St. Lawrence, Emneth and Marshland St. James; and
- The sense of tranquillity varies depending on proximity to the busy transport corridor of the A47 (with its visual, noise and movement intrusion) and the edge of Wisbech. Elsewhere in the LCA tranquillity is high.

8.4.24 LCA D5: Outwell also has several key characteristics that are relevant to the Proposed Development.

- The domination of the almost merged settlements of Outwell and Upwell (located outside the study area) extends across the LCA due to its flat topography and low level of tree cover;
- Moderate to strong sense of tranquillity;
- Open views with horizons "*cluttered in places with a wide array of vertical elements such as buildings, mature trees, communication masts and overhead wires, rows of poplars and orchards*"; and
- A "*more organic feel*" than other LCAs in the Settled Inland Fens LCT.

8.4.25 The Fens – Open Inland Marshes LCT is subdivided into ten spatially discrete LCAs, of which one; the E.4 Marshland St. James LCA, is located in the southeast of the study area. This LCA has several key characteristics that are relevant to the Proposed Development:

- Large-scale, low-lying landscape dominated by intensively managed arable farmland;
- "*Wide open skies and strong sense of openness and remoteness within views*";
- Poplar rows ad communication masts intrude into views within LCA E4 and there is "*clutter on horizon*" associated with the more settled Settled Inland Marshes LCT to the west;
- Geometric patterns from raised roads and drains contribute to sense of a "*very regular manmade landscape*"; and
- Very strong sense of tranquillity throughout LCA.

Visual baseline – existing visibility

8.4.26 The Main Development Site has low existing visibility due to the flat topography, industrial built development adjacent to its southeastern, northeastern and northwestern boundaries and a plantation adjacent to its southwestern boundary. Many of the factors that influence the present visibility of the built development have been discussed in the landscape baseline. There will be minimal variation on the visibility of the Energy from Waste CHP Facility between summer and winter conditions i.e. regardless of the limited deciduous vegetation, including the adjacent plantation, being in leaf.

8.4.27 The visibility of the more extensive potential Grid Connection options is therefore more variable. In sections of potential route options that are sited close to the southern and eastern fringes of Wisbech and the A47 there are higher levels of screening for ground- and low-level elements from built development and vegetation. Nevertheless, the towers, especially their upper sections, that support the 132kV overhead line between West March to Walpole are often readily apparent in this part of the study area. The parts of the study area located further away from Wisbech are generally more open, especially away from the smaller settlements and provide receptors with open, often extensive views. The remote, largely unsettled area of Marshland Fen provides the few visual receptors located within it (there are no Public Rights of Way (PRoWs) and just a few isolated farmsteads) with particularly extensive, almost uninterrupted views across flat, open arable fields. The visual role of the towers that support the 400kV Burwell Main – Walpole overhead line vary from locally prominent in close-distance views to the readily apparent over much of the study area outside the core areas of the main settlements.

8.4.28 The ZTV for the Energy from Waste CHP Facility extends across the 5km radius study area. The fragmented excluded areas are concentrated in urban area of Wisbech and, to a lesser extent, in the larger settlements such as Emneth and Leverington. This fragmentation reflects the localised screening that would be provided by these settlements' dense built development and sometimes tree cover.

8.4.29 The ZTVs for the potential Grid Connections are extensive with fewer excluded areas. This is due to the reduction in the level of built development across their study areas allied, in some parts, to lower levels of effective vegetation cover.

Visual baseline – distribution of visual receptors for the Energy from Waste CHP Facility

8.4.30 As shown in **Figure 8.2** there would be a variation in the distribution of visual receptors with potential views of the upper section of the up to 95m high chimney and a smaller number with potential views of the main up to 50m high building of the Energy from Waste CHP Facility. The site visit undertaken in August 2019 was able to use the nearby 36m high refrigerated warehouse as a proxy for the availability of views of the main building.

8.4.31 Residential visual receptors for the chimney alone (and potentially periodically for the plume) are scattered in the central and eastern parts of Wisbech as well as central Leverington, Leverington Common and some eastern and southern fringes of Elm, Emneth and Frday Bridge

8.4.32 Residential visual receptors for the main building of the Energy from Waste CHP Facility are concentrated in a smaller area including parts of Begdale; western Elm and western Emneth in addition to the southern part of Wisbech focused upon Cromwell Road, Weasenham Lane and New Drove i.e. parts where residential development is limited.

8.4.33 Recreational visual receptors are also widely distributed across the study area including sections of the Nene Way and NCR 63. Short sections of the closest part of NCR 1 to the north of Wisbech are within fragments of the chimney ZTV. A review of OS Explorer map 235 indicates that the

distribution of PRoWs has a generally low density across the study area and within both ZTVs. PRoWs are mostly present as short routes linking parts of Elm, Begdale and Emneth.

Visual baseline – distribution of visual receptors for the potential Grid Connections

8.4.34 As shown in **Figures 8.3** and **8.4** the distribution of potential visual receptors for the potential grid options extends across extensive tracts of the rural area to the north and east of Wisbech as far north as the southern edge of Sutton Bridge and as far east as the Wiggenhall settlements. The largest group of potential visual receptors would be residential visual receptors. The highest concentration of residential receptors would be likely to be in the eastern parts of Wisbech such as Walsoken and close to Stow Lane and Chapnall Field. As noted in paragraphs 8.4.5 and 8.4.9, there are only a small number of residential properties and hence residential receptors in southern Wisbech.

8.4.35 The most numerous groups of residential visual receptors would be those residing in the range of settlements that are distributed across the study areas. Settlements are more densely concentrated to the southeast of Wisbech, around the Walpole settlements to the north of the study areas and close to the A47 such as Walton Highway. There are however few settlements in the southeastern part of the study areas that extend across Marshland Fen and Stoke Bardolph Fen. A smaller group of residential visual receptors would be residents in individual or small groups of properties, including farmsteads, that are located outside of settlements.

8.4.36 Sections of two NCRs are routed across these study areas:

- A section of NCR 1 is routed broadly east-west across the central part of both study areas and extends into Wisbech; and
- NCR 63 starts in central Wisbech and is routed south through Elm and Begdale in the southern part of the study areas.

8.4.37 A short section of the Nene Way traverses the western edge of the study areas, although the site visit indicated that views of either Grid Connection option would be unlikely to be available due to screening from built development in the southern part of Wisbech, including that alongside Cromwell Road. The routes of the NCRs and the Nene Way are shown in **Figure 8.6**.

8.4.38 The PRoW network within the study areas is generally limited in their central and southern parts, where PRoWs tend to concentrate upon providing short links between or within the characteristic ribbon settlements. The PRoW network is denser in the part of the study area to the north of A47, especially between Walton Highway and Walpole St. Peter; and west of Walpole St. Peter.

8.4.39 The 'A' road network is restricted to a section of the A47 that bypasses Wisbech and heads northeast towards King's Lynn and a section of A1101 that is routed southeast from Wisbech through Emneth and Outwell towards Downham Market. The B198 (Cromwell Road) links A47 and central Wisbech providing a gateway to the town and access to retail (Belgrave Retail Park) and business (Queens Business Centre) parks. Otherwise the road network consists of 'C' roads and lanes that link the settlements and droves that access farmsteads. These routes frequently follow straight and angular alignments dictated by the network of drainage channels.

Future baseline

Overview

8.4.40 Landscape change is an ongoing and inevitable process and would continue across the study area irrespective of whether the Proposed Development proceeds. Change can arise through natural

processes (e.g. the maturity of woodlands) and natural systems (e.g. river erosion) or, as is often the case, occurs due to human activity, land use, management or neglect.

Wider landscape change

8.4.41 The published profile report for NCA 46 The Fens. reports on a number of drivers of change which may alter the existing baseline landscape and visual within the study area as follows:

- New wind energy schemes which may create visual landmarks on this predominantly flat landscape and could reduce the sense of remoteness and isolation depending on their locations. Stags Holt Wind Farm has been operational since 2005 and is located just to the south of the study area. It consists of nine turbines that are 100m high to blade tip[82]; and
- Climate change and associated isostatic adjustment with a resultant rise in sea levels are likely to result in increased storm activities, sea level rise and increased threat of drought or floods. The challenges within the Fens include how the current system of drainage will be maintained and may alter land uses and habitats.

8.4.42 Strategic allocations and broad locations for growth around the eastern, southern and western edges of Wisbech are contained within the Fenland Local Plan. Although timescales for development within these broad areas is currently unknown, any proposals would alter the landscape around the settlement fringes and increase the number of visual receptors. East Wisbech is identified as an area to accommodate around 900 dwellings in the Fenland area and a further 550 dwellings within the King's Lynn and West Norfolk area. The area to the south of the Energy from Waste CHP Facility Site (located broadly to the north of the A47, southeast of New Drove, north and south of New Bridge Lane, and along Cromwell Road between New Bridge Lane and the A47/B198 roundabout) is also identified as a broad location for growth, predominantly for business purposes. If delivered, these would result in additional built form being introduced to the south of the Energy from Waste CHP Facility Site which may alter the visual composition of views from the southeast, south and southwest.

8.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

8.5.1 The identification of landscape and visual receptors that could be subject to likely significant landscape or visual effects has been guided by review of the ZTVs for the Proposed Development as shown in **Figures 8.2 - 8.6**, supported by observations made during the August 2019 site visit relating the existing 132kV and 400kV overhead lines and the Partner Logistics cold storage facility on New Drove. This review included the distribution of landscape and visual receptors for whom significant effects were assessed and a review of the rationale for the assessment of magnitudes of change for all receptors.

8.5.2 The ZTVs determine the selection of visual receptors for inclusion in the visual assessment as these visual receptors can only sustain effects as the result of a visual effects pathway i.e. visual receptors have to potentially be able to see one or more of the components of the Proposed Development to sustain visual impacts.

[82] E.On. (2019). *Stags Holt*. Available online https://www.eonenergy.com/About-eon/our-company/generation/our-current-portfolio/wind/onshore/stags-holt [checked 11/11/2019].

8.5.3 Effects upon landscape receptors are not entirely dependent on the presence of a visual effects pathway i.e. the landscape receptor being located within one of the ZTVs. Landscape effects can also be generated by changes to other perceptual characteristics impacting upon landscape qualities such as tranquillity. Hence the scope of the landscape assessment has been determined by reviewing the defined key characteristics of the LCAs in the study area and a consideration of the potential for these characteristics to be impacted by the Proposed Development.

Potential significant landscape effects requiring further assessment

8.5.4 The potential effects of the Proposed Development that are likely to be significant with regard to landscape character, and those which will be subject to further assessment are set out below.

Construction

8.5.5 No significant landscape effects are identified for the construction period for the reasons set out in paragraph 8.5.9.

Operation

8.5.6 Landscape effects – landscape character areas. The following Cambridgeshire LCA shown on **Figure 8.5** will require further assessment:

- Fenland LCA. This LCA covers northern Cambridgeshire and therefore the southern and eastern parts of the study area where it is extensively covered by the preliminary ZTVs for the Proposed Development thereby providing a visual effects pathway. The scale of the LCA and its key characteristics have the consequence that the operation of the Energy from Waste CHP Facility with a potential underground Grid Connection would be unlikely to have a significant landscape effect at the scale of the LCA, however the Energy from Waste CHP Facility in combination with a potential Grid Connection using either a 132kV or 400kV overhead line would have the potential to have a significant landscape effect.
- Wisbech Settled Fen LCA is host LCA and same reasons apply as set out above for the Fenland LCA, although as the host LCA it should be included were the Grid Connection to be undergrounded.

8.5.7 Landscape effects – landscape character areas. The following West Norfolk and King's Lynn LCAs shown on **Figure 8.5** will require further assessment:

- LCA D2: Walpole, Terrington and Clench Warton. This LCA covers the northern part of the study area associated with the potential Grid Connection. There would be no direct landscape effects but the presence of additional pylons in southern views could compound some identified key adverse characteristics.
- LCA D3: Terrington St. John. This LCA covers the northern part of the study area associated with the potential Grid Connection. There could be highly limited direct landscape effects and the presence of additional pylons in views could compound some identified key adverse characteristics.
- LCA D4: Emneth, West Walton and Walsoken. This LCA covers the central and northern parts of the study area and would have potential to sustain significant landscape effects due to the presence of a section of 132kV overhead line extending approximately 10.5km to Walpole substation or a shorter section of direct 400kV overhead line routed more directly to the east. Both options would potentially generate significant landscape effects in relation to some of the key characteristics listed in paragraph 8.4.20 in the baseline context of the existing overhead

lines and the moderate spatial extent of the LCA in comparison to the extent of the ZTVs for the Grid Connection options.

- LCA D5: Outwell. This LCA covers part of the southeastern study area and would have potential to sustain significant landscape effects due to the presence of a section of 132kV overhead line or a section of direct 400kV overhead line. Both options would potentially generate significant landscape effects in relation to some of the key characteristics listed in the baseline context of the existing overhead lines and the relatively compact nature of the LCA in comparison to the extent of the ZTVs in this LCA for the Grid Connection options.
- LCA E4: Marshland St. James. This LCA covers part of the southeastern study area and would have potential to sustain significant landscape effects due to the presence of a section of 132kV overhead line or a section of direct 400kV overhead line. Both options would potentially generate significant landscape effects in relation to some of the key characteristics listed in the baseline context of the existing overhead lines particularly those relating to openness, tranquillity, outward visibility and cluttered horizons.

Potential landscape receptors and effects not requiring further assessment

8.5.8 Landscape elements – the range of landscape elements as described in paragraphs 8.4.3 and 8.4.4 that would be lost to facilitate the construction and operation of the Energy from Waste CHP Facility are of low landscape value.

8.5.9 Landscape character areas for the construction period.

- Fenland LCA is very large and surrounds several towns such as Ely, Chatteris, March and Whittlesey, as well as Wisbech, where periodic extensive construction activities take place on a scale analogous to that required for the Main Development Site. Construction activities would be temporary, concentrated at ground level and therefore screened, and as noted in paragraph 4.5.8 would not require the removal of extensive landscape elements that are key characteristics of Fenland LCA.
- Wisbech Settled Fen LCA – As above.
- West Norfolk and King's Lynn LCAs could only sustain temporary indirect effects that would potentially be generated by views of crane activities at the Energy from Waste CHP Facility Site in small proportions of the two LCAs. Effects arising from either potential overhead line Grid Connection option would be temporary and highly localised relating primarily to access routes, laydown areas and contractors' compounds (the landscape effects of the towers and conductors would be assessed in the operation period).
- Landscape effects generated by the implementation of an underground Grid Connection option would also be temporary and primarily generated by the presence of access routes, laydown areas and contractors' compounds. The construction corridor would be narrow and trenches open for only short periods. The route corridor would be designed to avoid the need to remove landscape elements such as shelterbelts and important individual mature trees. There are few hedgerows within which narrow sections might need to be removed and replanted or else cut to ground level to regenerate. The predominant land-use is intensive agriculture, mainly arable, so land-use patterns would be re-established within a season resulting in no long-term effects upon any landscape characteristics.

8.5.10 No other identified potential landscape effects have been scoped out at this stage.

Potential significant visual effects requiring further assessment

8.5.11 The potential effects of the Proposed Development that are likely to be significant with regards to views available to visual receptors, and those which will be subject to further assessment are summarised below. The selection of visual receptors has been guided by the preliminary ZTVs and observations on the availability of views and the role of existing comparable built developments made during the August 2019 site visit.

Construction

8.5.12 Residential and recreational visual receptors in communities substantially located within the ZTVs for the Energy from Waste CHP Facility chimney (as a worst-case scenario for crane activity during the construction period) and who are likely to have views of the Temporary Construction Compound:

- Residents in individual properties close to New Bridge Lane;
- Residents in properties in southeast Wisbech between New Drove and A1101;
- Residents in properties in western Wisbech close to South Brink and Malt Drive;
- Residents in properties in south central Wisbech;
- Residents in properties in southeast Wisbech between A1101 and Meadowgate Lane
- Residents in properties in and close to Elm;
- Residents in properties in and close to Emneth; and
- Residents in properties in and close to Begdale.

8.5.13 Recreational receptors using the closest section of the Nene Way (routed along North Brink).

8.5.14 Recreational receptors using the closest section of NCR 63 parallel to A1101 and through Elm and Begdale.

8.5.15 Recreational receptors using the network of PRoWs around Elm including Halfpenny Lane.

Operation

8.5.16 Residential and recreational visual receptors in communities substantially located within the ZTVs for one or more of the Energy from Waste CHP Facility main building; chimney; the potential 132kV Grid Connection; and the potential 400kV Grid Connection:

- The eight groups of residents in properties listed in paragraph 8.5.12;
- Residents in properties in and close to Walpole Marsh; Walpole St Andrew and Walpole St Peter;
- Residents in properties in and close to Ingleborough;
- Residents in properties in and close to West Walton and Walton Highway;
- Residents in properties in and close to Walpole Highway and St John's Highway;
- Residents in properties in and close to Marshland St James, Emneth Hungate and Chequers Corner;
- Residents in properties in and close to Outwell;
- Residents in properties in and close to Friday Bridge;

- Residents in properties in and close to Wisbech St Mary and Leverington Common;
- Residents in properties in and close to Leverington; and
- Residents in properties in northern Wisbech.

8.5.17 Recreational receptors using the closest sections of the Nene Way (routed along North Brink and as far north as Foul Anchor) as shown in **Figure 8.8**.

8.5.18 Recreational receptors using the section of NCR 63 within the study area as shown in **Figure 8.8**.

8.5.19 Recreational receptors using the section of NCR 1 within the study area as shown in **Figure 8.8**.

8.5.20 Recreational receptors using the following networks of PRoWs

- A network around Elm including Halfpenny Lane.
- A network between Marshland St James, Walsoken and Walton Highway;
- A network between Walton Highway, Ingleborough and Walpole St Peter; and
- A network between Walpole St Peter and A47.

8.5.21 Vehicular visual receptors (drivers and their passengers) using the local road network using routes that provide a gateway to Wisbech or the study area:

- A47 westbound;
- A47 eastbound;
- A1101 northbound; and
- B198 (Cromwell Road).

8.5.22 The visual assessment will be supported by baseline daytime photography from viewpoints presented in accordance with current Landscape Institute guidance. Consultee discussions are invited as to whether the LVIA needs to include visualisations from any of these viewpoints. Visualisation should accord with current Landscape Institute guidance.

8.5.23 The provisional viewpoint selection is based on a review of the preliminary ZTVs and the site visit undertaken in August 2019. The selection is set out in **Table 8.2** and illustrated in **Figure 8.9**. A viewpoint assessment will form part of the visual assessment.

Table 8.2 Proposed viewpoint selection for the visual assessment

Scoping Viewpoint Number	Viewpoint Location	Grid Reference	GLVIA3 Typology and Selection Justification
Viewpoint 1	Eastern end of New Bridge Lane	TF 45579, 07655	Illustrative Viewpoint – One of the closest and most open publicly accessible locations with views indicative of those potentially available to the residents in the small number of properties in this area. Potential views of Grid Connection
Viewpoint 2	Junction of Mile Tree Lane and North Brink	TF 44825, 08027	Representative Viewpoint – Represents views available from the west of the Energy from Waste CHP Facility Site,

Scoping Viewpoint Number	Viewpoint Location	Grid Reference	GLVIA3 Typology and Selection Justification
			those available along this section of Nene Valley Way and to residents in scattered properties in this area
Viewpoint 3	Lidl carpark west of Cromwell Road	TF 45344, 08465	Illustrative Viewpoint – One of the most open views potentially available to residents in closest properties to the northwest (centred upon Cox Close) in Wisbech as well as people visiting retail developments along Cromwell Road.
Viewpoint 4	A47 footway at Red Moor Field	TF 44640, 07380	Representative Viewpoint – Represents some of the most open and direct views available to vehicular receptors travelling east.
Viewpoint 5	Northern end of New Drove	TF 46355, 08142	Representative Viewpoint – Represents views available to one of the closest groups of residents in properties within Wisbech.
Viewpoint 6	Halfpenny Lane Byway north of A47	TF 46545, 07678	Specific Viewpoint – Currently one of most open views available from southern end of Wisbech but location scheduled for housing development Potential views of Grid Connection
Viewpoint 7	North Brink outside Elgoods' Brewery	TF 45583, 09215	Illustrative Viewpoint – One of the most open views from this section of Nene Way, tourist destination (Brewery and garden) and one of most open views from town centre/North Brink
Viewpoint 8	NCR 63 Begdale Road between Elm and Begdale	TF 46026, 06442	Representative Viewpoint – Represents views available to recreational receptors on National Cycle Route; local vehicular receptors and residents in scattered properties to south of A47. Potential views of Grid Connection
Viewpoint 9	Burrettgate Road close to Eldred House, Walsoken	TF 48120, 09862	Illustrative Viewpoint – Shows one of the most open publicly accessible locations on eastern edge of Wisbech where the Grid Connection may be visible. Also illustrative of low levels of visibility to Energy from Waste CHP Facility Site in this area.
Viewpoint 10	Lady's Drove south of Chequers Corner, Emneth	TF 49746, 08359	Representative Viewpoint – Represents open, middle distance views to the Energy from Waste CHP Facility Site from residents in scattered properties to east. Potential views of Grid Connection.
Viewpoint 11	NCR 1 at Southern end of West Drove, Walpole Highway	TF 51076, 12217	Representative Viewpoint –

Scoping Viewpoint Number	Viewpoint Location	Grid Reference	GLVIA3 Typology and Selection Justification
			Represents open, long distance view from northeast and A47 as well as this section of NCR 1. Potential views of Grid Connection.
Viewpoint 12	West Walton -PRoW between Dixon Drove and Mill Road	TF 47970, 14120	Representative Viewpoint – Represents open views available to wide range of receptors towards the northern end of the potential 132kV Grid Connection option. Also illustrative of minimal levels of visibility to the main development in this area.

Visual receptors and effects scoped out of the assessment

8.5.24 Visual effects cannot be sustained by visual receptors with no potential views of any component of the Proposed Development i.e. those visual receptors located outside the preliminary ZTVs. As noted in the previous sections, a precautionary approach has been applied to the selection of visual receptors for inclusion in the visual assessment. As a result, long distance trails and Sustrans cycle routes have been included where only a short section of their route is within the preliminary ZTV.

8.5.25 Communities and groups of individual residential properties entirely outside the preliminary ZTVs or more than 1km from the potential 132kV overhead line route and 3km from the potential 400kV overhead line route do not require any further assessment in the absence of a potential visual effects pathway for significant visual effects. Receptors may potentially have long-distance, open views within which a limited number of Grid Connection towers may be visible. However, their presence could not result in the medium or high magnitudes of visual change required to generate significant visual effects, especially in the baseline context where similar scale towers are already present in many of these receptors' views.

8.5.26 Recreational visual receptors associated with the single registered parks and garden that is open to the public which is located within the study area are excluded. This is due to the site visit indicating that the requisite long-distance southern views are not available recreational visual receptors visiting Peckover House and Garden.

8.5.27 All visitors to the Belgrave Retail Park as the availability of outward views is unlikely to be a key factor affecting their purpose in visiting the Retail Park. This conclusion is informed by GLVIA3 para 6.34 which provides examples of "*visual receptors likely to be less sensitive to change" and which includes people "whose attention may be focused on their work or activity, not on their surroundings, and where the setting is not important to the quality of working life …*".

8.5.28 All employees at businesses in southern Wisbech i.e. industrial and business development that is bounded by Cromwell Road, Weasenham Road, New Drove and New Bridge Lane as outward views are usually highly limited and GLVIA3 accords such employees low visual sensitivity.

8.5.29 Pupils and staff at the TBAP Unity Academy and Thomas Clarkson Academy on Weasenham Lane as although the requisite southern views are available, principally from the establishments' grounds, these views are in the context of existing extensive baseline light industrial and commercial development in southern Wisbech and do not impact upon the pursuit of academic or sporting

activities. GLVIA3 para 6.35 states that "*Each project needs to consider the nature of the groups of people affected and the extent to which their attention is likely to be focused upon views and visual amenity*". In this case, the August site visit included visits to the entrances to the educational establishments on Weasenham Lane and the Belgrave Retail Park. These visits have facilitated the application of professional judgement upon the likely importance of views and visual amenity to these receptor groups that is based upon observations upon the baseline visual amenity context of these locations.

8.5.30 No other identified potential visual effects have been scoped out at this stage.

8.6 Assessment methodology

General approach

8.6.1 The methodology outlined in this section is based on GLVIA3 which will be followed when completing the landscape and visual impact assessment presented in the ES. GLVIA3 states that the assessment of significance of landscape and visual effects is "*an evidence based process combined with professional judgement*." All assessments and judgements must be transparent and capable of being understood by others.

Determination of significance

8.6.2 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

8.6.3 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

Landscape assessment

8.6.4 The sensitivity of a landscape receptor e.g. an LCA, to a proposed development is determined by the susceptibility of that landscape receptor to the changes identified as the result of the construction and/or operation of the Proposed Development and the landscape receptor's value. The methodology describes landscape sensitivity as high, medium or low.

8.6.5 Landscape value is determined by taking into consideration a range of attributes including: the presence or absence of landscape designations; landscape and scenic qualities; rarity and representativeness; conservation interests; recreational value; perceptual qualities; and historic and cultural value. It is also concerned with landscape quality and the physical state of a landscape receptor. This could include consideration of the landscape receptor's intactness and the condition of individual landscape elements. The absence of landscape planning designations does not automatically mean that an area or landscape receptor is of low landscape value. These attributes are determined by review of extant landscape character assessments, management guidelines and other similar documentation supplemented by observations made during site visits.

8.6.6 Landscape susceptibility concerns the ability of a landscape receptor to accommodate the Proposed Development without undue consequences for the maintenance of the baseline situation.

The landscape assessment will include analysis for each landscape receptor of the factors that have been assessed in the determination of its landscape value and the assessment of its susceptibility to the Proposed Development. These will be set out in a proforma completed for each landscape receptor that will show how the assessment of the landscape value and landscape susceptibility have been combined to determine that landscape receptor's sensitivity.

8.6.7 The magnitude of landscape change resulting from the operation of the Proposed Development will be assessed as high, medium, low or very low. In accordance with GLVIA3 the magnitude of landscape change will consider:

- The size and/or scale of the change that would result from each identified landscape effect acting upon a landscape receptor;
- The geographical extent over each identified landscape effect would be experienced; and
- The duration and reversibility of each identified landscape effect.

8.6.8 **Table 8.3** details the basis for assessing magnitude of landscape change.

Table 8.3 Establishing the magnitude of landscape change

Magnitude	Criteria
High	A large-scale change that may include the loss of key landscape elements/characteristics or the addition of new uncharacteristic features or elements that would alter the perceptual characteristics of the landscape. The size or scale of landscape change could create new landscape characteristics and may change the overall distinctive landscape quality and character, typically, but not always affecting a larger geographical extent.
Medium	A medium-scale change that may include the loss of some key landscape characteristics or elements, or the addition of some new uncharacteristic features or elements that could alter the perceptual characteristics of the landscape. The size or scale of landscape change could create new landscape characteristics and may lead to a partial change in landscape character, typically, but not always affecting a more localised geographical extent.
Low	A small-scale change that may include the loss of some landscape characteristics or elements of limited characterising influence, or the addition of some new features or elements of limited characterising influence. They may be a small partial change in landscape character, typically, but not always affecting a localised geographical extent.
Very Low	A very small-scale change that may include the loss or addition of some landscape elements of limited characterising influence. The landscape characteristics and character would be unaffected.

Visual assessment

8.6.9 The sensitivity of visual receptors will consider the susceptibility of the visual receptor to the visual change identified and the value that is likely to be attributed by the visual receptor to their baseline view. These are described as high, medium or low. The main influencing factors are:

- The occupation or activity of the visual receptor at each location;
- The extent to which the visual receptors' attention or interest is focused upon the available views;
- The importance and/or popularity of the view;
- The typical numbers of visual receptors to whom that view is available;
- In a link with landscape considerations, the context of a viewpoint in terms of landscape value and quality within a view; and

- Any indication of a view being valued such as the presence of interpretation boards, parking and seating facilities, it being referenced in a guidebook or marked on a published map.

8.6.10 The nature of visual effects or their magnitude of change resulting from the construction and operation of the Proposed Development at will be assessed as high, medium, low or very low. The magnitude of visual change will be described by reference to the scale of visual change; the contrast with the baseline view; separation distance; the duration over which a view is available; the angle of view; levels of screening; and whether new visual elements are seen on a skyline or against a background.

8.6.11 **Table 8.4** details the basis for assessing visual receptor sensitivity.

Table 8.4 Establishing the sensitivity of visual receptors

Sensitivity	Receptor type
High	Visual receptors in this category would generally include residents, tourists/visitors, walkers, cyclists and horse riders, either stationary or travelling through the landscape, and/or undertaking outdoor recreational activities where the focus of the activity involves an appreciation of the landscape: • Residential properties or settlements and related community outdoor spaces; • Outdoor tourist and visitor attractions; • Recreational routes (national trails, long distance footpaths and PRoWs; Sustrans national cycle routes (NCR) and regional cycle routes (RCR); open access land/beaches and recognised scenic driving routes); and • People generally, undertaking recreational activity where the focus of the activity involves an appreciation of the landscape (especially within internationally or nationally designated landscapes).
Medium	Visual receptors in this category would generally include people travelling through the landscape on road, rail or other transport routes as rail passengers and road users and people undertaking recreational and sporting activities where it is likely that their surroundings have some influence upon their enjoyment (e.g. angling and golfing).
Low	Visual receptors in this category would generally include people for whom their surroundings are unlikely to be a primary concern or affect how they undertake their current activity. Receptors are likely to include people at their place of work, people travelling on main roads through built up areas, dual-carriageways or motorways or taking part in activities not involving an appreciation of the landscape (e.g. playing team sports).

8.6.12 **Table 8.5** details the basis for assessing magnitude of visual change.

Table 8.5 Establishing the magnitude of visual change

Magnitude	Criteria
High	A large and prominent change to the view, appearing in the fore to middle ground and involving the loss/addition of several features, which is likely to have a strong degree of contrast and benefits from little or no screening. The view is likely to be experienced at static or low speed and is more likely to be continuously/sequentially visible from a route.
Medium	A moderate and prominent/noticeable change to the view, appearing in the middle ground and involving the loss/addition of features and a degree of contrast with the existing view. There may be some partial screening. The view is likely to be experienced at static or low to medium speed and is more likely to be intermittently or partially visible from a route.
Low	A noticeable or small change, affecting a limited part of the view that may be obliquely viewed or partly screened and/or appearing in the background of the view. This category may include rapidly changing views experienced from fast-moving road vehicles or trains

Magnitude	Criteria
Very Low	A small or negligible change to the view that may be obliquely viewed and mostly screened and/or appearing in the distant background or viewed at high speed over short periods and capable of being missed by the casual observer.

Evaluating and explaining the significance of landscape and visual effects

8.6.13 The level of landscape and visual effects will be determined with reference to landscape or visual sensitivity and the magnitude of landscape or visual change likely to be experienced. For each receptor the evaluation process will be informed by use of a matrix.

8.6.14 Likely significant landscape and visual effects arising from the construction and operation of the Proposed Development would be effects that are assessed as being likely or certain to result in effects that would be 'major'. Effects assessed as being 'moderate' would have the potential to be significant and whether they are assessed as significant or not significant will be justified in the detailed assessment for the relevant landscape or visual receptor. In line with the emphasis placed in GLVIA upon application of professional judgement, the adoption of an overly mechanistic approach through reliance upon a matrix will be avoided. This will be achieved by the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor over and above the outline assessment provided by use of the matrix. Wherever possible cross references will be made to a visual assessment at the proposed 12 viewpoints and figures to support and explain the rationale.

Assumptions

8.6.15 The scope of the LVIA assessment is based upon the following assumptions:

- The proposed CHP would be routed at ground-level along the dis-used March-Wisbech railway line and all construction and operation activities and components would be screened by the existing built development that is shown in **Figure 2.2** ensuring no potential views would be available during construction or operation.
- The potential 132kV Grid Connection option would utilise wooden trident poles as opposed to the taller option of lattice towers as used for the March-Walpole 132kV overhead line. The use of a lattice tower would be likely to be taller and generate a more extensive ZTV although the study area has been designed to accommodate the potential form of steel lattice pylon that may be selected.
- The plume that will periodically be emitted from the chimney of the operational Energy from Waste CHP Facility does not require the generation of a separate ZTV as it will be intermittent and few if any visual receptors would see the plume but not the chimney. The plume's intermittent presence will be incorporated where relevant in undertaking the assessments for landscape and visual receptors.
- The visual assessment will assume winter conditions i.e. no leaf cover on deciduous trees and shrubs and therefore a worst case scenario.

9. Historic Environment

9.1 Introduction

9.1.1 This chapter describes the scope of the assessment for the historic environment. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2**, and **Chapter 8: Landscape and Visual.**

9.2 Relevant legislation, planning policy, technical guidance

Legislative context

9.2.1 The following legislation is relevant to the assessment of the effects on historic environment receptors:

- Ancient Monuments and Archaeological Areas Act 1979[83]; and
- The Planning (Listed Buildings and Conservation Areas) Act 1990[84].

Planning policy context

9.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 9.1**.

Table 9.1 Planning policy context

Policy reference	Implications
National Policy	
Overarching National Policy Statement (NPS) for Energy (EN-1)	Paragraph 5.8.8 refers to information requirements for applications for consent which affect heritage assets. It states that where assets will be affected, the applicant should provide a description of the significance of that asset and its setting. The level of detail will be proportionate to the assets' importance and will be determined by what is necessary to understand the potential impact of the proposal. Paragraphs 5.8.11 to 5.8.14 concerns decision making in relation to heritage assets. It states that in determining applications great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Any harm or loss should require clear and convincing justification; substantial harm to or loss of a Grade II listed building, park or garden should be exceptional; substantial harm to or loss of designated heritage assets of the highest significance, should be wholly exceptional. Paragraph 5.8.15 to paragraph 5.8.18 Describes the balance to be made in the planning process: Any harm should be weighed against the wider benefits of the application, although the stringency

[83] *Ancient Monuments and Archaeological Areas Act 1979*. Available online at: http://www.legislation.gov.uk/ukpga/1979/46 [Accessed 25 November 2019]

[84] *The Planning (Listed Buildings and Conservation Areas) Act 1990*. Available online at: http://www.legislation.gov.uk/ukpga/1990/9/contents [Accessed 25 November 2019]

Policy reference	Implications
	of the test is scaled in relation to the degree of harm to the heritage significance of the asset and whether or not the asset is designated. Paragraph 5.8.19 to 5.8.22 states that the IPC should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.
NPS for Electricity Networks Infrastructure (EN-5)	NPS EN-5 notes the general duty at Schedule 9 to the Electricity Act 1989 that proposals for new electricity infrastructure should "*have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest;…*". With regard to the undergrounding of electricity cables, EN-5 notes at paragraph 2.8.9 that damage to archaeological remains as a result of cable construction is a factor to be weighed in consideration of decision over whether an underground cable or overhead line is preferable.
NPS for Renewable Energy Infrastructure (EN-3)	In the section on biomass/waste combustion, paragraph 2.5.34 states that when considering the impact on the historic environment as set out in Section 5.8 of EN-1 and whether it is satisfied that the substantial public benefits would outweigh any loss or harm to the significance of a designated heritage asset, the examining authority should take into account the positive role that large-scale renewable projects play in the mitigation of climate change, the delivery of energy security and the urgency of meeting the national targets for renewable energy supply and emissions reductions.
National Planning Policy Framework (NPPF)	The NPPF provides a framework for the production of local development plans, against which planning applications are determined. Of relevance to the Historic Environment is Section 16: Conserving and Enhancing the Historic Environment. Guidance on the implementation of the NPPF is provided by the Planning Practice Guidance (PPG), published by the Department for Communities and Local Government (DCLG). Key aspects of the NPPF relevant to this appraisal are as follows: Paragraph 189: In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation. Paragraph 190: Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal. Paragraph 192: In determining applications, local planning authorities should take account of: a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and c) the desirability of new development making a positive contribution to local character and distinctiveness. Paragraph 193: When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Policy reference	Implications
	Paragraph 194: Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of: a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional; b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional. Paragraph 195: Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply: a) the nature of the heritage asset prevents all reasonable uses of the site; and b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and d) the harm or loss is outweighed by the benefit of bringing the site back into use. Paragraph 196: Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use. Paragraph 201: Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 195 or less than substantial harm under paragraph 196, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.
Cambridge and Peterborough Waste Adopted Core Strategy	Policy CS36 Archaeology and the Historic Environment does not permit development where it might give rise to an adverse effect on any designated heritage asset, historic landscape or other heritage asset or its setting unless there are substantial public benefits as well as any significant adverse impact on sites of local importance.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 21 The Historic Environment requires that all application with the potential to affect heritage assets are accompanied by a Heritage Statement. The scope of which is set out in the policy.
Fenland Local Plan (Adopted)	Policy LP18 The Historic Environment states that development proposals should describe and assess the significance of assets and their settings, identify the impact of the proposed works upon the special character of the asset and provide clear justification for the works.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	Policy CS08 Sustainable Development states that new development will be required to demonstrate that it will protect and enhance the historic environment. CS12 Environmental Assets recognises the importance fo the historic environment.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	There is no specific Authority-wide policy for the protection of the historic environment. Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to designated and un-designated heritage assets.

Technical guidance

9.2.3 Guidance documents that will be relevant to the historic environment assessment are listed in **Table 9.2**.

Table 9.2 Relevant Technical guidance

Guidance reference	Relevance
Historic England Guidance	
Good Practice in Planning Advice 2 (GPA 2) Managing Significance in Decision-Taking in the Historic Environment 2015[85]	Provides information on good practice in assessing the significance of heritage assets.
Good Practice in Planning Advice 3 (GPA 3) The Setting of Heritage Assets 2nd Edition 2017[86]	Sets out guidance on managing change within the settings of heritage assets.
Conservation Principles, Policies and Guidance 2008[87]	Sets out principles for the assessment of heritage significance and its management.
Advice Note 10 Listed Buildings and Curtilage 2018[88]	Provides worked examples to assist understanding of how to define the curtilage of a listed building.
Advice Note 2: Making Changes to Heritage Assets 2016[89]	Provides guidance on the application of NPPF policies to alterations to heritage assets.
Professional Guidance	
Chartered Institute for Archaeologists (CIfA) Standard and guidance for archaeological desk-based assessment 2017[90]	Sets out standards for the production of archaeological desk-based assessments.
Chartered Institute for Archaeologists (CIfA) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment 2014[91]	Sets out standards for the provision of consultancy advice in the historic environment.

9.3 Data gathering methodology

Study area

9.3.1 A study area of 1km from the boundary of the Energy from Waste CHP Facility has been used in order to consider the potential for effects arising from direct disturbance to archaeology, with a study area of 2km for considering effects resulting from a change in setting to designated assets.

[85] Historic England Good *Practice in Planning Advice 2 (GPA 2) Managing Significance in Decision-Taking in the Historic Environment* 2015.

[86] Historic England *Good Practice in Planning Advice 3 (GPA 3) The Setting of Heritage Assets 2nd Edition* 2017.

[87] English Heritage (Historic England) *Conservation Principles, Policies and Guidance* 2008.

[88] Historic England *Advice Note 10 Listed Buildings and Curtilage* 2018.

[89] Historic England *Advice Note 2: Making Changes to Heritage Assets* 2016.

[90] CIfA Chartered Institute for Archaeologists (CIfA) *Standard and guidance for archaeological desk-based assessment* 2017.

[91] CIfA *Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment* 2014

The Grid Connection Corridor itself has been used to consider effects arising from disturbance to archaeology and designated assets at this preliminary stage irrespective of whether part of the connection could be underground or overhead.

9.3.2 Potential effects arising from the construction and operation of the Grid Connection have been considered at a high level, owing to the uncertainty on the route and technology at this stage, and based on the route corridor identified (see **Figure 2.5**)

9.3.3 The temporal scope of the assessment for the historic environment is consistent with the period over which the Proposed Development would be carried out and therefore covers the construction and operational periods.

Summary of data sources

9.3.4 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- Cambridgeshire Historic Environment Record (CHER); and
- National Heritage List for England (NHLE).

9.4 Overall baseline

Current baseline

Main Development Site

9.4.1 The Energy from Waste CHP Facility Site is an existing waste recycling and transfer station with associated yard. The facility was built in the early 2000s, with the site having previously been occupied by pastoral land as part of Great Boleness Field. Previous archaeological investigation undertaken within the immediate vicinity has included an evaluation of land approximately 200m to the south of the Energy from Waste CHP Facility Site [92]. This consisted of seven trenches, recording post-medieval and modern activity only. There was also an evaluation undertaken approximately 360m to the north of the Energy from Waste CHP Facility Site [93], which identified no notable archaeological remains.

9.4.2 There is one designated asset within 1km of the Energy from Waste CHP Facility Site, which is the Grade II listed Albion Villa (1229758), located approximately 830m to the north of the boundary (see **Figure 9.1**). There are 255 listed buildings within 2km of the Energy from Waste CHP Facility Site, with the great majority of these within Wisbech town centre, which is also a Conservation Area (see **Figure 9.2**). Many of these are approximately 1.5km north of the Energy from Waste CHP Facility Site, though listed buildings along North Brink are within approximately 1.1km to the north. The Grade II registered park and garden of Peckover House is also within Wisbech town centre, approximately 1.6km north of the Energy from Waste CHP Facility Site. There are also listed buildings within the village of Elm, approximately 1.6km to the southeast of the Energy from Waste

[92] Doyle K, Woolhouse T & Weston P, 2005 *Former Potty Plants Site, A47/Newbridge Lane, Wisbech, Cambridgeshire: an archaeological evaluation/Report No 1891*. Archaeological Solutions Ltd

[93] Williams M, 2007 *An archaeological evaluation on Land adjacent to Iolanda Kennels, Wisbech, Cambridgeshire*. Archaeological Project Services

CHP Facility Site. Elm village is also a Conservation Area. There are no other designated heritage assets within 2km of the Energy from Waste CHP Facility Site.

Temporary Construction Compound

9.4.3 The Temporary Construction Compound would be located in an area of enclosed farmland to the southeast or south of the Energy from Waste CHP Facility Site between the A47 and New Bridge Lane. This area of land does not appear to have been developed historically.

CHP Connection

9.4.4 The proposed CHP Connection comprises a linear route running northeast of the Energy from Waste CHP Facility site to the facility at Somer Road/Coalwharf Road, following the route of the disused railway line. The former railway line is the sole previous development in this area of land.

Grid Connection

9.4.5 The Grid Connection Corridor route runs through two concentrations of listed buildings at its southern extent, associated with the village of Elm (partly contiguous with a Conservation Area) and Oxburgh Hall respectively (see **Figure 9.2**). Aside from built-up areas and transport infrastructure the route comprises enclosed fields intercut with agricultural water management features consistent with those visible in 19th century Ordnance Survey mapping.

Future baseline

9.4.6 No changes are anticipated in the baseline condition of the Main Development Site or Grid Connection Corridor as all land concerned is assumed, in the absence of construction works, to continue being used and managed in its present function. As part of the cumulative assessment however development proposals and allocations will be identified and should they give rise to potential changes in the future baseline, this will be recorded.

9.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

9.5.1 The Proposed Development has the potential to affect the historic environment through direct disturbance or loss of heritage assets as a result of construction activities or through changes to the settings of heritage assets. The nature and extent of any effect will be determined by the heritage significance of the asset in question and the nature of the change.

Potential significant effects requiring further assessment

9.5.2 The potential effects of the Proposed Development that are likely to be significant with regards to historic environment, and those which will be subject to further assessment are set out below.

Construction

9.5.3 Establishment of the Temporary Construction Compound and construction of the Grid Connection has the potential to result in direct disturbance to archaeological remains irrespective of whether the Grid Connection is overhead or underground.

Operation

9.5.4 The presence of the Grid Connection comprising an overhead line would have the potential affect the settings of heritage assets along or near to the route, and there are conservation areas, listed buildings and scheduled monuments along the possible routes. The degree and nature of any effect would depend on the form and route of the Grid Connection. An underground connection would not have the potential to affect the setting of heritage assets during the operational phase.

Receptors and effects scoped out of the assessment

9.5.5 The following have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant:

- Construction of the Energy from Waste CHP Facility will not result in significant effects as a result of direct disturbance because the Energy from Waste CHP Facility Site has been previously developed and used as an aggregate and waste management facility. Professional judgement suggests that the development and use of this existing facility is expected to have removed any archaeological remains within this area. Direct effects on the Temporary Construction Compound area will still be considered.
- The operation of the Energy from Waste CHP Facility will not result in significant effects as a result of changes to the settings of any heritage assets. A review of LVIA Figure 8.2 ZTV suggests there may be very limited visibility of the proposed Energy from Waste CHP Facility and chimney from parts of Wisbech Conservation, and from listed buildings within the conservation area. Any views would be across the intervening industrial area to the south of Wisbech Conservation Area and so this would not introduce a notably new element which would adversely affect the settings of these assets.

9.6 Assessment methodology

General approach

9.6.1 Effects as a result of direct disturbance will be assessed through the completion of a desk-based assessment to be carried out in accordance with the principles of Standard and guidance for historic environment desk-based assessments (CIfA 2017).

9.6.2 The desk study will be based on a study area of 1km from the Site boundary (including Grid Connection Corridor) and for the purpose of establishing the historic environment baseline, the following sources will be consulted:

- National and County-based registers of known archaeological and historical sites;
- Cartographic and historic documents;
- Aerial photographs;
- Published sources;
- Internet sources; and
- Previous archaeological assessments of the area.

9.6.3 Effects on the settings of heritage assets will be assessed in accordance with Historic England guidance[94].

Determination of significance

9.6.4 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

9.6.5 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

9.6.6 For the purposes of assessing the significance of effects in EIA terms, heritage significance has also been assigned to one of four classes, with reference to the heritage interests described in Conservation Principles 2008 and relying on professional judgement as informed by policy and guidance. The hierarchy given in **Table 9.3** reflects the NPS EN-1 distinction between designated and non-designated heritage assets. The NPS further distinguishes between designated assets of the highest heritage significance (i.e. scheduled monuments, protected wreck sites, Registered Battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites) and other designated heritage assets. **Table 9.3** details the basis for assessing receptor sensitivity.

Table 9.3 Establishing the heritage significance of assets

Heritage significance	Summary rationale	Examples
High	Asset has significance for an outstanding level of archaeological, architectural, historic and/or artistic interest	Designated heritage assets, including listed buildings, scheduled monuments, conservation areas, registered historic parks and gardens and World Heritage Sites
Medium	Asset has significance for a high level of archaeological, architectural, historic and/or artistic interest	Locally listed buildings and buildings of merit. Regionally significant non-designated heritage assets of archaeological interest.
Low	Asset has significance for elements of archaeological architectural, historic or artistic interest	Locally-significant heritage assets of archaeological interest and important hedgerows
Negligible	Due to its nature of form/condition/survival, cannot be considered as an asset in its own right	Non-extant Historic Environment Record (HER) references

[94] Historic England *Good Practice in Planning Advice 3 (GPA 3) The Setting of Heritage Assets 2nd Edition* 2017

9.6.7 **Table 9.4** details the basis for assessing magnitude of change.

Table 9.4 Establishing the magnitude of change

Magnitude	Criteria
High	Loss of significance of an order of magnitude that would result from total or substantial demolition/disturbance of a heritage asset or from the disassociated of an asset from its setting.
Medium	Loss of significance arising from partial disturbance or inappropriate alteration of asset which will adversely affect its importance. Change to the key characteristics of an asset's setting, which gives rise to harm to the significance of the asset but which still allows its archaeological, architectural or historic interest to be appreciated.
Low	Minor loss to or alteration of an asset which leaves its current significance largely intact. Minor and short-term changes to setting which do not affect the key characteristics and in which the historical context remains substantially intact.
Negligible	Minor alteration of an asset which does not affect its significance in any discernible way. Minor and short term or reversible change to setting which does not affect the significance of the asset.

9.7 Assumptions

9.7.1 The scope of the Historic Environment assessment is based upon the following assumptions:

- The proposed CHP would be routed at ground-level along the disused March-Wisbech railway line.
- The ZTV featured in Figure 8.2 remains an accurate representation of the Energy from Waste CHP facility's visibility from the Wisbech Conservation Area. Should the dimensions of the facility change requiring an amended ZTV then this will be reviewed to understand any potential changes in visibility from the Conservation Area.

10. Biodiversity

10.1 Introduction

10.1.1 This chapter describes the scope of the assessment for Biodiversity. The chapter should be read in conjunction with **Chapter 2: Description of the Development** and with respect to relevant parts of other chapters **Chapter 6: Noise and Vibration**, **Chapter 7: Air Quality** and **Chapter 11: Geology, Hydrogeology and Contaminated Land,** where common receptors have been considered and where there is an overlap or relationship.

10.2 Relevant legislation, planning policy, technical guidance

Legislative context

10.2.1 The following legislation has been considered in the assessment of the effects on ecological features[95]:

- *The Conservation of Habitats and Species Regulations 2017* (the Habitats Regulations);
- *The Conservation of Offshore Marine Habitats and Species Regulations 2017;;*
- *Natural Environment and Rural Communities Act 2006 (NERC Act);*
- *The Hedgerows Regulations 1997;*
- *Protection of Badgers Act 1992;*
- *The Countryside and Rights of Way Act 2000;*
- *Wildlife and Countryside Act 1981 (as amended) (WCA); and*
- *National Parks and Access to the Countryside Act 1949 (as amended).*

Planning policy context

10.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 10.1**.

Table 10.1 Planning policy context

Policy reference	Implications
National Policy	
Overarching National Policy Statement (NPS) for Energy (EN-1)	The following sections have relevance to Biodiversity within EN-1. Habitats and Species Regulations: Prior to granting a development consent order, under the Habitats and Species Regulations, (which implement the relevant parts of the Habitats Directive

[95] The Chartered Institute for Ecology and Environmental Management (CIEEM) refer to biodiversity receptors within technical guidance (see paragraph 10.6) as ecological features.

Policy reference	Implications
	and the Birds Directive in England and Wales) consideration needs to be given to whether the project may have a 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. Additionally, many SSSIs are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection. Sites of regional and local biodiversity, which include, Local Nature Reserves and Local Sites, should also be given consideration. Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost it cannot be recreated. Development consent should not be granted for any development that would result in its loss or deterioration unless the benefits (including need) of the development, in that location outweigh the loss of the woodland habitat. Aged or 'veteran' trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided. Where such trees would be affected by development proposals the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons why. Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales and thereby requiring conservation action. These species and habitats should be protected from the adverse effects of development by using requirements or planning obligations.
National Policy Statement for Renewable Energy Infrastructure (EN-3)	In the section on biomass/waste combustion and in the context of national designations paragraph 2.5.33 states that consent for renewable energy projects should only be granted where it can be demonstrated that the objectives of designation of the area will not be compromised by the development, and any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits.
National Policy Statement for Electricity Networks Infrastructure (EN-5)	Section of 2.7 of EN-5 is relevant to biodiversity: Consideration needs to be made of the potential for large birds to collide with the wires, causing injury/death. If there is a risk of this occurring, measures should be implemented to avoid or minimise this.
National Planning Policy Framework (NPPF)	Para 170 of the NPPF requires planning policies and decisions to contribute to and enhance the natural and local environment by: protecting and enhancing sites of biodiversity value in a manner commensurate with their statutory status or identified quality in the development plan; recognising the wider benefits from natural capital and ecosystem services; and minimising impacts on, and providing net gains for, biodiversity. Plans should protect and enhance local and wider biodiversity interest, including corridors and stepping stones, designated sites, as well as biodiversity potential identified by local and national partnerships. Policies should promote opportunities for conservation, restoration and enhancement including priority habitats and species, as well as securable net gain (paragraph 174). If significant harm to biodiversity will result, permission will be refused unless the benefits of development outweigh impacts, or exceptional reasons and compensation apply (paragraph175). Potential, possible, listed or proposed sites, and those that are an identified compensatory measure, are to be protected as the equivalent designation (para 176). Potential impacts on sites requiring appropriate assessment will be considered ahead of the presumption for sustainable development (paragraph 177).
Local Policy	

Policy reference	Implications
Fenland Local Plan (Fenland District Council, 2014)	Policy LP16: Proposals for all new development, will only be permitted if it can be demonstrated that the proposal meets all of the following relevant criteria: • protects and enhances biodiversity on and surrounding the proposal site, taking into account locally designated sites and the special protection given to internationally and nationally designated sites, in accordance with Policy LP19. • retains and incorporates natural and historic features of the site such as trees, hedgerows, field patterns, drains and water bodies. • provides well designed hard and soft landscaping incorporating sustainable drainage systems as appropriate. • complements and enhances the quality of riverside settings, including ecological value and renaturalisation where possible. • A Supplementary Planning Document to be adopted in 2014 will be used to further assess planning applications in relation to the criteria in this policy. Policy LP19: The Council, working in partnership with all relevant stakeholders, will conserve, enhance and promote the biodiversity interest of the natural environment throughout Fenland. • The Council will: o Protect and enhance sites which have been designated for their international, national or local importance to an extent that is commensurate with their status, in accordance with national policy in the National Planning Policy Framework. o Refuse permission for development that would cause demonstrable harm to a protected habitat or species, unless the need for and public benefits of the development clearly outweigh the harm and mitigation and/or compensation measures can be secured to offset the harm and achieve, where possible, a net gain for biodiversity. o Promote the preservation, restoration and re-creation of priority habitats, and the preservation and increase of priority species identified for Fenland in the Cambridgeshire and Peterborough Biodiversity Action Plans. Ensure opportunities are taken to incorporate beneficial features for biodiversity in new developments, including, where possible, the creation of new habitats that will contribute to a viable ecological network extending beyond the District into the rest of Cambridgeshire and Peterborough, and other adjoining areas.
Supplementary Planning Document (July 2014)[96]	Biodiversity (to supplement Local Plan Policy LP16 part (b): Biodiversity) - Detailed policy on Biodiversity issues are covered in the NPPF (paragraphs 109 to 125) and in Policy LP19 of the Fenland Local Plan. As such, there is no additional supplementary policy required in this SPD to support Local Plan Policy LP16 part (b).
Cambridge and Peterborough Waste Adopted Core Strategy	Policy CS35 Biodiversity and Geodiversity states that development will only be permitted where it can be demonstrated that there will be no likely significant adverse impact on sites of local nature conservation importance or geological interest and sets out the other types of site and features similarly protected by policy.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 20 Biodiversity and Geodiversity sets out the policy response to international, national and locally designated sites. It provides criteria against which applications will be consider for their potential effects upon biodiversity which include the avoidance of negative impacts and the delivery of net gain appropriate to the scale of development.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	CS12 Environmental Assets states that the Council will protect designated sites and that development should seek to avoid, mitigate or compensate for any adverse impacts.

[96] Fenland District Council (2014). Delivering and Protecting High Quality Environments in Fenland. Supplementary Planning Document.

Policy reference	Implications
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	The plan considers biodiversity in the context of green infrastructure and open space. Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to sites of international, national or local nature conservation value.

Technical guidance

10.2.3 Publications that provide guidance that is relevant to the assessment of potentially significant effects on biodiversity are as follows:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018)[97];
- Guidelines for Baseline Ecological Assessment (1995)[98];
- CIEEM (2013). Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management, Winchester[99] and
- BS 42020:2013. Biodiversity: Code of practice for planning and development (2013)[100].

10.2.4 Technical guidance that will be used during further surveys at the Site to inform the assessment includes:

- Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit (2010)[101];
- Great Crested Newt Mitigation Guidelines (2001)[102];
- The Dormouse Conservation Handbook (2006)[103];
- Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No.10 (2003)[104];

[97] Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* CIEEM, Winchester

[98] Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* CIEEM, Winchester

[99] CIEEM (2013). Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management, Winchester

[100] British Standards Institute (2013). BS 42020:2013. Biodiversity: Code of practice for planning and development.

[101] Joint Nature Conservation Committee (JNCC) (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit.* JNCC, Peterborough

[102] English Nature (2001). *Great Crested Newt Mitigation Guidelines.* English Nature, Peterborough

[103] Bright, P., Morris, P., and Mitchell-Jones, T. (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough

[104] Chanin, P. (2003). *Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No.10.* English Nature, Peterborough

- The Water Vole Conservation Handbook (2001)[105];
- Great Crested Newt Conservation Handbook (2001)[106];
- Froglife Advice Sheet 10 Reptile Survey (1999)[107]; and
- Bats and artificial lighting in the UK. Bats and the Built Environment series (2018).[108]

10.3 Data gathering methodology

Study area

10.3.1 The geographical extent of the study area for obtaining information on ecological features extends as follows:

- Statutory biodiversity sites of international importance within 15km of the Site;
- Statutory biodiversity sites of national importance within 5km of the Site;
- Habitats that are regarded as of Principal Importance in England and/or a priority in the Local Biodiversity Action Plan (hereafter referred to as 'priority habitats'), within 1km of the Site;
- Locations of water bodies within 500m of the Site[109]; and
- European Protected Species Mitigation Licences (EPSMLs) granted within the 2km of the Site.

10.3.2 The temporal scope of the assessment is consistent with the period over which the development would be carried out and therefore covers the construction and operational periods.

Summary of data sources

10.3.3 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data source used to inform this chapter for potential effects is the Multi-Agency Geographic Information for the Countryside (MAGIC) website.

[105] Strachan, R. Moorhouse, T & Gelling M (2011). *The Water Vole Conservation Handbook.* Third Edition, English Nature, Peterborough

[106] Froglife (2001). *Great Crested Newt Conservation Handbook.* Froglife, Suffolk

[107] Froglife (1999). *Froglife Advice Sheet 10 Reptile Survey.* Froglife, Suffolk

[108] Institution of Lighting Professionals and Bat Conservation Trust (2018). Bats and artificial lighting in the UK. Bats and the Built Environment series (Guidance Note 08/18)

[109] In the absence of significant barriers to movement, 500m is the maximum distance that great crested newts (GCNs) generally move from their breeding ponds to occupy surrounding areas of suitable terrestrial habitats. Natural England (NE) therefore recommends that, where a proposed development is located within 500m of a water body, consideration be given to the potential for the water body to support breeding GCN (English Nature, 2001).

10.4 Overall baseline

Current baseline

10.4.1 The desk study completed to date has identified the following priority habitats within 1km of the Site (**Figure 10.1**):

- Coastal and floodplain grazing marsh;
- Deciduous woodland;
- Traditional orchard;
- Ponds; and
- Rivers.

10.4.2 Additionally, the desk study identified the following designated biodiversity sites of international importance (internationally designated biodiversity sites) within 15km of the Site:

- Nene Washes Ramsar site, Special Area of Conservation (SAC) and SPA (6.3km southwest);
- Ouse Washes Ramsar, SAC and SPA (12.3km southeast).

10.4.3 The locations of the biodiversity sites are presented on **Figure 10.2.** No nationally designated biodiversity sites were identified with 5km of the Site.

10.4.4 There are a number of ditches on the Site, a large network of ditches and the River Nene within 500m of the Site. The water body, water course and ditch locations are presented on **Figure 10.3**. Further information on water bodies and the hydrological environment can be found in **Section 11.4** of **Chapter 11: Hydrology**.

Grid connection

10.4.5 The desk study completed to date has identified the following priority habitats within 1km of the Grid Connection Corridor (**Figure 10.1**):

- Coastal and floodplain grazing marsh;
- Deciduous woodland;
- Traditional orchard;
- Ponds; and
- Rivers.

10.4.6 Additionally, the desk study identified the following designated biodiversity sites of international importance (internationally designated biodiversity sites) within 15km of the Grid Connection Corridor:

- The Wash Ramsar site and Special Protection Area (SPA) (9.5km north);
- Nene Washes Ramsar site, Special Area of Conservation (SAC) and SPA (6.3km southwest);
- The Wash and North Norfolk Coast SAC (9.5km north); and
- Ouse Washes Ramsar, SAC and SPA (12.3km southeast).

10.4.7 The locations of the biodiversity sites are presented on **Figure 10.2.** No nationally designated biodiversity sites were identified with 5km of the Grid Connection Corridor.

10.4.8 There is a large network of ditches and numerous water bodies within the Grid Connection Corridor. The water body, water course and ditch locations are presented on **Figure 10.3**. Further information on water bodies and the hydrological environment can be found in **Section 11.4** of **Chapter 11: Hydrology**.

Future baseline

10.4.9 In the absence of the Proposed Development, it is likely that current management and use of the Energy from Waste CHP Facility Site will remain unchanged and therefore baseline conditions within the Energy from Waste CHP Facility Site are likely to remain similar in the future. However, the future baseline in respect of offsite receptors is likely to experience a gradual change in response to a range of factors such as, but not restricted to, loss of habitat as a result of any housing development within the local area, increased traffic and recreational usage in the wider area, climate change (e.g. changes in mean air or water temperatures affecting phenology and distribution and abundance of certain extant species or occurrence of new species), air quality (e.g. due to transport emissions) and invasive non-native species, such as the continuing spread of Ash Dieback disease within the UK.

10.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

10.5.1 The approach to identify receptors that could be affected by the Proposed Development follows that detailed in the *Guidelines for Preliminary Ecological Appraisal*[110].

10.5.2 **Box 10.1** and **Box 10.2** provide information on the ecological features considered to be of sufficient importance that effects upon them could be significant (or could lead to contravention of legislation) and which will therefore be considered further.

Box 1 Designated biodiversity sites and important habitats and species

Designated biodiversity sites and important habitats and species
Non-statutory biodiversity sites Non-statutory biodiversity sites in Cambridgeshire are designated as Local Wildlife Sites (LWS's). **<u>Other important habitats or species</u>** Species or habitats of "*principal importance for the conservation of biodiversity*" are those listed by Natural England (NE) pursuant to Section 41 of the *Natural Environment and Rural Communities Act 2006* (as amended)[i]. These include those UK BAP priority habitats and species that occur in England. They are commonly referred to as 'Section 41' or 'S.41' habitats or species. Other conservation-notable habitats and species would include: • Species listed as being of conservation concern in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern Red List[ii]; • Ancient woodland inventory sites (AWIS; areas that have been under continuous woodland cover since at least 1600);

[110] Chartered Institute of Ecology and Environmental Management (CIEEM 2018) "*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*".

Designated biodiversity sites and important habitats and species
• Nationally Rare and Nationally Scarce species in the UK, which are species recorded from, respectively, 1-15 and 16-100 hectares (10x10km squares of the UK national grid); • Populations of birds comprising at least 1% of the relevant British breeding/wintering population (where data are available); • Habitats and species listed within the Local Action Plans; • Other species or assemblages such as large populations of animals considered uncommon or threatened in a wider context; and • Important hedgerows as defined using the habitat criteria in *The Hedgerows Regulations 1997*.

Box 2 Legally protected and controlled species

Legally protected and controlled species
Legal protection Many species of animal and plant receive some degree of legal protection. For the purposes of this preliminary ecological appraisal, legal protection refers to: • Species included on Schedules 1, 5 and 8 of the *Wildlife and Countryside Act 1981* (as amended), excluding: o Species that are only protected in relation to their sale (see Section 9[5] and 13[2]), given that the proposed allocation does not include any proposals relating to the sale of species; and o Species that are listed on Schedule 1 but that are not likely to breed on or near the site, given that this schedule is only applicable whilst birds are breeding. • Species included on Schedules 2 and 5 of *The Conservation of habitats and Species Regulations 2017*; and • Badgers, which are protected under the *Protection of Badgers Act 1992*. **Legal control** Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) lists species of animal that it is an offence to release or allow to escape into the wild and species of plant that it is an offence to plant or otherwise cause to grow in the wild.

10.5.3 The high-level desk study undertaken identified the following ecological features that could be affected by the Proposed Development:

- Four statutory designated biodiversity sites of international importance; and
- Five priority habitat types.

Proposed work

Main Development Site

10.5.4 Further information regarding non-statutory biodiversity sites of local importance and legally protected and/ or priority species within 2km of the Main Development Site will be requested from the Cambridgeshire and Peterborough Environmental Records Centre.

10.5.5 A phase 1 habitat survey of the Main Development Site would take place in the first instance to obtain information regarding the ecological features which may be present within the Main Development Site and its surrounds and which could be affected by the works on the Main Development Site. This would be followed with targeted ecological surveys. The nature and extent of the surveys cannot be definitively confirmed until after the Phase 1 habitat survey has been undertaken and the results discussed with the relevant consultees to agree which surveys are

required. **Table 10.2** does however detail the potential surveys which may be required, and the proposed methods that would be followed.

10.5.6 It should be noted that the Phase 1 habitat survey and further desk study work proposed may identify additional ecological features which are not listed below and thus may require further survey.

Table 10.2 Proposed further works – Main Development Site

Further survey work/Potential ecological feature	Survey period	Best practice guidelines/ methodology
Phase 1 habitat survey	Anytime, but optimal survey period is mid-March to mid-October.	Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit 2010[111].
Hedgerows	June - September	The Hedgerows Regulations 1997
Badger	November – March	Standing Advice Species Sheet: Eurasian Badger (2013)[112]
Bats	Preliminary assessments – anytime Presence/absence surveys – May – September inclusive	Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition (2016)[113].
Dormouse	April – November	The Dormouse Conservation handbook (2006)
Otter	November – March	Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No.10 (2003)
Water vole	November – March	The Water Vole Conservation Handbook. Third Edition. (2011)
Reptiles	April - October	Froglife Advice Sheet 10 Reptile Survey (1999)
Breeding birds	March – June	Common Birds Census instructions (1983)[114] Bird monitoring methods: a manual of techniques for key UK species (1998)[115]
Winter birds	October - March	Bird Census Techniques (2000)[116]

[111] Joint Nature Conservation Committee (JNCC) (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. JNCC, Peterborough.

[112] Natural England (2013). *Standing Advice Species Sheet: Eurasian Badger*. Available online at: https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects#survey-methods [Accessed 25 November 2019]

[113] Collins (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* 3rd Edition.

[114] Marchant, J.H. (1983) *BTO Common Birds Census instructions.* BTO, Tring.

[115] Gilbert, G., Gibbons, D.W. & Evans, J. (1998). *Bird monitoring methods: a manual of techniques for key UK species*. RSPB, Sandy

[116] Bibby, C.J., Burgess, N.D., Hill, D.A., & Mustoe, S.H. (2000). *Bird Census Techniques*, 2nd Ed. Academic Press, London.

Further survey work/Potential ecological feature	Survey period	Best practice guidelines/ methodology
		Wetland Bird Survey; Survey Methods, analysis & Interpretation (2017)[117]

Grid connection

10.5.7 Further information regarding non-statutory biodiversity sites of local importance and legally protected and/ or priority species within 2km of the Grid Connection Corridor will be requested from the Cambridgeshire and Peterborough Environmental Records Centre and the Norfolk Biodiversity Information service.

10.5.8 A Phase 1 habitat survey of the Grid Connection Corridor would take place in the first instance to obtain information regarding the ecological features which may be present within the Grid Connection Corridor and its surrounds and which could be affected by the Grid Connection. This would be followed with targeted ecological surveys. The nature and extent of the surveys cannot be definitively confirmed until after the Phase 1 habitat survey has been undertaken and the results discussed with the relevant consultees to agree which surveys are required. **Table 10.3** does however detail the potential surveys which may be required, and the proposed methods that would be followed.

10.5.9 It should be noted that the Phase 1 habitat survey and further desk study work proposed may identify additional ecological features which are not listed below and thus may require further survey.

Table 10.3 Proposed further works – Grid Connection

Further survey work/Potential ecological feature	Survey period	Best practice guidelines/ methodology
Phase 1 habitat survey	Anytime, but optimal survey period is mid-March to mid-October.	Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audi 2010.
Hedgerows	June - September	*The Hedgerows Regulations 1997*
Badger	November – March	Standing Advice Species Sheet: Eurasian Badger (2013)[118]
Bats	Preliminary assessments – anytime Presence/absence surveys – May – September inclusive	Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition (2016)[119].

[117] BTO (2017) Wetland Bird Survey; Survey Methods, analysis & Interpretation.

[118] Natural England (2013). Standing Advice Species Sheet: Eurasian Badger. Available online at: https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects#survey-methods [Accessed 25 November 2019]

[119] Collins (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* 3rd Edition.

Further survey work/Potential ecological feature	Survey period	Best practice guidelines/ methodology
Dormouse	April – November	The Dormouse Conservation handbook (2006)
Otter	November – March	Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No.10 (2003)
Water vole	November – March	The Water Vole Conservation Handbook. Third Edition. (2011)
Great crested newt	March – June	Great Crested Newt Conservation handbook (2001)
Reptiles	April - October	Froglife Advice Sheet 10 Reptile Survey (1999)
Breeding birds	March – June	Common Birds Census instructions (1983)[120] Bird monitoring methods: a manual of techniques for key UK species (1998)[121]
Winter birds	October - March	Bird Census Techniques (2000)[122] Wetland Bird Survey; Survey Methods, analysis & Interpretation (2017)[123]

Potential significant effects requiring further assessment

10.5.10 The potential effects of the Proposed Development that will be subject to further assessment are set out below for the construction and operational phases.

Construction

- Potential effects on statutory designated biodiversity sites (The Wash Ramsar and SPA and The Wash and North Norfolk Coast SAC (Grid Connection only); Nene Washes Ramsar, SAC and SPA; The Wash and North Norfolk Coast SAC; and Ouse Washes Ramsar, SAC and SPA) due to pollution and/ or changes to the water quality entering the River Nene which has the potential to affect the notifiable features of the statutory designated sites (Annex I habitats (Sandbanks, Salicornia and other annuals colonizing mud and sand, atlantic salt meadows, Mediterranean and thermo-atlantic halophilous scrubs, reefs); Annex II species (Spined loach); wintering waterfowl, moulting waders breeding waders and terns);
- Potential effects on non-statutory designated biodiversity sites (if present) due to air pollution from construction traffic;
- Potential effects on priority or locally important habitats due to air pollution from construction traffic;
- Potential effects on important habitats due to loss or damage arising from construction activities;

[120] Marchant, J.H. (1983) *BTO Common Birds Census instructions.* BTO, Tring.
[121] Gilbert, G., Gibbons, D.W. & Evans, J. (1998). *Bird monitoring methods: a manual of techniques for key UK species*. RSPB, Sandy

[122] Bibby, C.J., Burgess, N.D., Hill, D.A., & Mustoe, S.H. (2000). *Bird Census Techniques*, 2nd Ed. Academic Press, London.
[123] BTO (2017) Wetland Bird Survey; Survey Methods, analysis & Interpretation.

- Potential effects on important species due to loss or damage of habitat, light, noise and air pollution;
- Potential effects on protected species due to loss or damage of habitat, light, noise and air pollution; and
- Potential effects on other ecological features (such as mature trees) due to loss or damage arising from construction activities.

Operation

- Potential effects on light sensitive nocturnal important and protected species due to lighting of the Proposed Development;
- Potential effects on aquatic important habitats and species due to changes in water quality and quantity due to the Proposed Development;
- Potential effects on statutory and non-statutory designated sites and priority habitats and species and protected species due to changes in air quality arising from the Proposed Development; and
- Potential effects on statutory and non-statutory designated sites and Priority Habitats due to air pollution from operational traffic.

Receptors and effects scoped out of the assessment

10.5.11 No potential effects have been scoped out at this stage.

10.6 Assessment methodology

General approach

10.6.1 The assessment of potentially significant effects on ecological features will be undertaken using the approach detailed below, which accords with the CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland*. Key consultees are likely to include Fenland District Council, West Norfolk and Kings Lynn Borough Council, the Environment Agency and Natural England.

Determination of significance

10.6.2 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

10.6.3 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

10.6.4 CIEEM (2018) defines a significant effect as one "*that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*".

10.6.5 When considering potentially significant effects on ecological features, whether these be adverse or beneficial, the following characteristics of environmental change are taken into account[124]:

- Extent – the spatial or geographical area over which the environmental change may occur;
- Magnitude – the size, amount, intensity or volume of the environmental change;
- Duration – the length of time over which the environmental change may occur;
- Frequency – the number of times the environmental change may occur;
- Timing – the periods of the day/year etc. during which an environmental change may occur; and
- Reversibility – whether the environmental change can be reversed through restoration actions.

10.6.6 Although the characteristics described above are all important in assessing effects by using information about the way in which habitats and species are likely to be affected, a scale for the magnitude of the environmental change, as a result of the Proposed Development, has been described in **Table 10.4** to provide an understanding of the relative change from the baseline position, be that adverse or beneficial changes.

Table 10.4 Establishing the magnitude of change

Scale of change	Criteria and resultant effect
High	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the receptor in the context of the project.
Medium	The change permanently (or over the long term) affects the conservation status of a habitat/species reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this receptor in the context of the project.
Low	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the receptor in terms of its importance.
Very Low	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of habitats/species receptors or the integrity of designated sites.

[124] The definitions of the characteristics of environmental change are based on the descriptions provided in CIEEM 2018. Other chapters in this ES may use some of the same terms albeit with a different definition.

Scale of change	Criteria and resultant effect
Negligible	A change, the level of which is so low, that it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a project and result in a neutral position.

10.6.7 Adverse effects are assessed as being significant if the favourable conservation status of an ecological feature would be lost as a result of the Proposed Development. Beneficial effects are assessed as those where a resulting change from baseline improves the quality of the environment (e.g. increases species diversity, increases the extent of a particular habitat etc., or halts or slows down an existing decline). For a beneficial effect to be considered significant, the conservation status would need to positively increase in line with a magnitude of change of "high" as described in Table 6.10.

10.6.8 Conservation status is defined as follows (as per CIEEM 2018):

- "*For habitats, conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and typical species within a given geographical area;*
- *For species, conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area*".

10.6.9 The decision as to whether the conservation status of an ecological feature would alter has been made using professional judgement, drawing upon the information produced through the desk study and assessment of how each feature is likely to be affected by the Proposed Development.

10.6.10 A similar procedure is used where designated sites may be affected by the Proposed Development, except that the focus is on the effects on the integrity of each site; defined as:

- "*The coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*".

10.6.11 The assessment of effects on integrity draws upon the assessment of effects on the conservation status of the features for which the site has been designated. Where these features are not clearly defined which is often the case for non-statutory biodiversity sites, it is necessary to use professional judgement to identify the interest features or obtain additional information about the interest features from the designating body, which is responsible for identifying these sites, so that sufficient information on which to base an assessment is available.

Assumptions

10.6.12 The above sections have been based on a high-level desk study of the Site and therefore at this stage no receptors have been scoped out of the assessment. It is expected that the survey scope will be refined following the results of the Phase 1 habitat survey and will be agreed with the relevant consultees.

11. Hydrology

11.1 Introduction

11.1.1 This chapter describes the scope of the assessment with respect to hydrology. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with respect to relevant parts of other chapters **Chapter 10: Biodiversity and Chapter 12: Geology Hydrogeology, Contaminated Land and Ground Stability**, where common receptors have been considered and where there is an overlap or relationship.

11.1.2 The scope of the assessment is based on a high-level review of baseline information and will be confirmed through review of additional data sources, a site visit and consultation with stakeholders including, but not limited to the following: Environment Agency (EA), Cambridge County Council as the Lead Local Flood Authority (LLFA), Fenland District Council as the relevant Local Authority and Hundred of Wisbech (Middle Level Commissioners) and King's Lynn Internal Drainage Board (IDB).

11.2 Relevant legislation, planning policy, technical guidance

Legislative context

11.2.1 The following legislation is relevant to the assessment of the effects on hydrological receptors:

- *The Water Framework Directive (2000/60/EC) (WFD) and The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;*
- *The EU Floods Directive (2007/60/EC), as enacted into domestic law by the Flood Risk Regulations 2009;*
- *Control of Pollution Act 1974*;
- *Environment Protection Act 1990*;
- *Land Drainage Act 1991;*
- *Water Resources Act 1991;*
- *Environment Act 1995;*
- *Water Quality (Water Supply) Regulations 2000 (as amended);*
- *Water Resources (Environmental Impact Assessment) Regulations (England and Wales) 2003 (as amended);*
- *Conservation of Habitats and Species Regulations 2017 and Priority Substances Directive (2008/105/EC), as enacted into domestic law by the 2017 Directions;*
- *Flood and Water Management Act 2010;*
- *River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010;*
- *Water Act 2014;*
- *Environmental Permitting (England and Wales) Regulations 2016 (as amended);*
- *Private Water Supplies (England) Regulations 2016 (as amended).*

Planning policy context

11.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 11.1**.

Table 11.1 National and local policies considered in preparing the Hydrology Chapter

Policy reference	Implications
National Policy	
Overarching National Policy Statement for Energy (EN-1)	Sections of EN-1 that are relevant to the assessment with respect to hydrology are: • Section 4.8 which discusses climate change adaptation; • Section 4.9 which discusses the environmental issues likely to arise from the Grid Connection of the Proposed Development; • Section 5.7 which discusses flood risk, setting out the minimum requirements of a flood risk assessment as well as information on the application of the Sequential and Exception tests; and • Section 5.15 which discusses adverse effects on the water quality and resources.
National Policy Statement for Renewable Energy Infrastructure (EN-3)	Sections of EN-3 that are relevant to the assessment with respect to hydrology are: • Section 2.5.23 which discusses the environmental issues likely to arise from Grid Connection of the Proposed Development. Further advice on Grid Connections is provided in EN-1 and EN-5; and • Section 2.5.85 which discusses adverse effects on water quality and resources and sets out requirements for appropriate measures to be put in place to avoid or minimise adverse impacts of abstraction and discharge of cooling water.
National Policy Statement for Electricity Networks Infrastructure (EN-5)	Sections of EN-5 that are relevant to the assessment with respect to hydrology are: • Section 2.4 which provides clarification on climate change adaptation. Paragraph 2.4.1 of EN-5 advises that as climate change is likely to increase risks to the resilience of electricity network infrastructure, applicants should set out to what extent the proposed development is expected to be vulnerable to extreme weather, including flooding, and, as appropriate, how it would be resilient, particularly for substations that are vital for the electricity transmission and distribution network.
National Planning Policy Framework, 2019 (NPPF) and National Planning Practice Guidance, 2014 (NPPG)	NPPF and the associated Planning Practice Guidance are referenced by EN-1 (paragraph 5.7.6) and as such are applicable to Nationally Significant Infrastructure Projects (NSIP) . These documents provide additional relevant guidance on a range of issues, including the definition of flood zones, development vulnerability classifications, compatibility of development types and flood zones and current climate change allowances guidance
Local Policy	
Fenland Local Plan May 2014, adopted by Fenland District Council on 8 May 2014 **Policy LP14 – Responding to Climate Change and Managing the Risk of Flooding in Fenland**	Part (A) Resource Use, Renewable Energy and Allowable Solutions: The Policy recommends that all developments incorporate on site renewable and/or decentralised renewable or low carbon energy sources, water saving measures and measures to help the development withstand the longer-term impacts of climate change. Part (B) Flood Risk and Drainage: The Policy requires that: • All development proposals should adopt a sequential approach to flood risk from all forms of flooding; • Sustainable Drainage Systems (SuDs) are used to ensure that runoff from the site (post development) is to greenfield runoff rates for all previously undeveloped sites and for developed sites (where feasible); • The discharge of surface water from developments should be designed to contribute to an improvement in water quality in the receiving water course or aquifer in accordance with the objectives of the Water Framework Directive; and • All proposals should have regard to the guidance and byelaws of the relevant Internal Drainage Board, including, where appropriate the Middle Level Strategic Study and should help achieve the flood management goals from the River Nene and Great Ouse Catchment Flood Management Plans.

Policy reference	Implications
Fenland Local Plan May 2014, adopted by Fenland District Council on 8 May 2014 **Policy LP16 - Delivering and Protecting High Quality Environments across the District**	The Policy sets out the following requirements with respect to hydrology: • Makes a positive contribution to the local distinctiveness and character of the area, enhances its local setting, responds to and improves the character of the local built environment, provides resilience to climate change, reinforces local identity and does not adversely impact, either in design or scale terms, on the street scene, settlement pattern or the landscape character of the surrounding area; • Provides well designed hard and soft landscaping incorporating sustainable drainage systems as appropriate; • Identifies, manages and mitigates against any existing or proposed risks from sources of noise, emissions, pollution, contamination, odour and dust, vibration, landfill gas and protects from water body deterioration; • The site is suitable for its proposed use with layout and drainage taking account of ground conditions, contamination and gas risks arising from previous uses and any proposals for land remediation, with no significant impacts on future users, groundwater or surface waters; and • Complements and enhances the quality of riverside settings, including ecological value, re-naturalisation where possible, and navigation.
Cambridgeshire County Council, Cambridgeshire Preliminary Flood Risk Assessment, PFRA (2011)[125]:	Provides a high-level overview of flood risk and historical flooding from a variety of flood sources which in Cambridgeshire are principally associated with surface runoff, groundwater and ordinary watercourses.
Fenland District Council Strategic Flood Risk Assessment Level 1, SFRA (2011)[126]	Provides an overview of the flood risk issues throughout Fenland in order to facilitate a sequential approach during the allocation of sites for future development.
Cambridgeshire Flood and Water Supplementary Planning Document (2016)[127]	Provides guidance for new developments to reduce flood risk, such as by providing sustainable drainage systems.
Cambridge and Peterborough Waste Adopted Core Strategy	CS39 Water Resources and Water Pollution Prevention only allows development for waste management if it can be demonstrated that there would be no significant adverse impact to the quantity or quality of surface water water abstraction and the flow of groundwater.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 22 Water Resources states that development will only be permitted where it can be demonstrated that it would not have a significant impact upon surface and groundwater, water abstraction, groundwater, increased flood risk. The document is supported by document which include for the consideration of strategic flood risk.
King's Lynn and West Norfolk Local Development Framework – Core Strategy 2011	CS14 supports the provision of sustainable drainage systems.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies 2016	Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to watercourse, in terms of pollution. Policy DM 21 states that applications for development in zones 2 and 3 will need to be accompanied by a flood risk assessment which includes for climate change allowance.

[125] Cambridgeshire County Council, *Cambridgeshire Preliminary Flood Risk Assessment*, PFRA (2011)

[126] Fenland District Council, *Fenland District Council Strategic Flood Risk Assessment Level 1* (2011)

[127] Cambridgeshire County Council, *Cambridgeshire Flood and Water Supplementary Planning Document* (2016)

Technical guidance

11.2.3 There are a number of technical guidance documents that will be relevant to the Proposed Development, as listed in **Table 11.2**.

Table 11.2 Relevant technical guidance

Guidance reference	Implications
BS6031: Code of Practice for Earthworks (2009)[128];	Provides recommendations and guidance for unreinforced earthworks forming part of general civil engineering construction, with the exception of dams. This standard also gives recommendations and guidance for temporary excavations such as trenches and pits.
Cambridgeshire Flood & Water Supplementary Planning Document, SPD (2016)	Provides guidance on the approach that should be taken to design new developments to manage and mitigate flood risk and include SuDS.
Construction Industry Research and Information Association (CIRIA) Report C532: Control of Water Pollution from Construction Sites (2001)[129]	Provides practical help on how to plan and manage construction projects to control water pollution.
CIRIA Report C624: Development and Flood Risk – Guidance for the Construction Industry (2004)[130]	Provides practical guidance in assessing flood risk as part of the development process. The guidance recommends a tiered approach to flood risk assessment and provides a simple-to-use toolkit to help practitioners complete the assessments.
CIRIA Report C692: Environmental Good Practice on Site (2010)[131]	Provides practical advice about managing construction on site to minimise environmental impacts.
Defra: Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009)[132]	Outlines current guidance and legislation concerning the use of soil in construction projects, before offering stage by stage guidance on the use, management and movement of soil on site.
Flood risk assessments: climate change allowances. Environment Agency (2017)[133]	Provides the appropriate allowances for the effects of climate change to be used in flood risk assessments.

[128] British Standards Institute *BS6031: Code of Practice for Earthworks* (2009)

[129] *CIRIA Report C532: Control of Water Pollution from Construction Sites* (2001)

[130] *CIRIA Report C624: Development and Flood Risk – Guidance for the Construction Industry* (2004)

[131] *CIRIA Report C692: Environmental Good Practice on Site* (2010)

[132] Defra *Construction Code of Practice for the Sustainable Use of Soils on Construction* Sites (2009)

[133] Environment Agency *Flood risk assessments: climate change allowances* 2017. Available online at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances [Accessed 25 November 2019]

Guidance reference	Implications
Guidance for Pollution Prevention (GPPs)[134]	Provide environmental good practice guidance. Whilst now withdrawn from being 'official' guidance, the documents are still available online and are referred to for Good Practice guidance.
Local and Regional Land Drainage Byelaws	Drainage byelaws prevent an increase in flood risk or manage land drainage.
Ministry for Agriculture, Fisheries and Food (MAFF): Good Practice Guide for Handling Soils (2000)	Provides advice of soil stripping, the forming and taking down of soil storage mounds, and soil replacement operations using excavators, earth scrappers and bulldozers.
Surface Water Drainage Guidance for Developers (2018)	Provides guidance to developers in the preparation of surface water documents to support planning applications. It sets out that the runoff volume from previously developed sites (such as the Site assessed in this Flood Risk Assessment (FRA)) to any surface water body or sewer in the 1% Annual Exceedance Probability (AEP), 6 hour rainfall event must be constrained to a value as close to the greenfield runoff volume for the same event but should never exceed the runoff volume from the existing site. Where it is not reasonably practicable to constrain the volume of runoff, the runoff volume must be discharged at a rate that does not adversely affect flood risk.

11.3 Data gathering methodology

Study area and temporal scope

11.3.1 The geographical extent of the study area extends 1.5km from the Proposed Development. This nominated study area is considered conservative and sufficient for the purposes of this baseline appraisal, based on hydrological knowledge of the area, professional experience and guidance. Nevertheless, data for a wider area beyond this have also been collected as appropriate, such as conservation sites.

11.3.2 The temporal scope of the assessment of Hydrology is consistent with the period over which the Proposed Development will be carried out and therefore covers the construction and operational periods. This will be achieved by considering the NPS EN-1 climate change emission scenarios appropriate for the Proposed Development's lifetime, and the potential of the Proposed Development to affect the current status and future WFD status objectives for the relevant WFD water body.

Summary of data sources

11.3.3 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- Local Ordnance Survey (OS) mapping: topography and location of springs and wells;

[134] Environment Agency *Pollution prevention advice and guidance* [withdrawn]. Available online at: https://webarchive.nationalarchives.gov.uk/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx [Accessed 25 November 2019]

- Multi-Agency Geographic Information for the Countryside website (Natural England, 2019): conservation sites, groundwater vulnerability map, aquifer designation map, Source Protection Zones (SPZs);
- EA Main River Map website[135]: Main River designations;
- EA Catchment Data Explorer website[136]: Water Framework Directive (WFD) water body classification; and
- EA Flood Map for Planning[137] and Long-Term Flood Risk Maps[138] websites: flood risk maps.

11.4 Overall baseline

Current baseline

Introduction

11.4.1 This section provides a high-level review of the current baseline environmental characteristics for the Proposed Development and surrounding areas, with particular reference to hydrology and flood risk. The baseline conditions will be confirmed through review of additional data sources, site visit and consultation with stakeholders during the next stages of the EIA. Key hydrological features within the study area are identified on **Figure 10.3**.

Land use and topography

11.4.2 The Energy from Waste CHP Facility Site covers an area of approximately 3.9ha of brownfield land surfaced with gravel and concrete hardstanding and is bound by a disused railway to the west and drainage ditches to the south, east and north with industrial units beyond (refer to **Chapter 2: Description of the Proposed Development** for further information). The Grid Connection Corridor extends to Walsoken and Walpole (approximately 4.5km and 10km to the northeast of the Energy from Waste CHP Facility Site) cross sparsely populated and predominantly rural areas. The Combined Heat and Power (CHP) route follows a disused railway line to the west of the Energy from Waste CHP Facility Site and is bordered by the Belgrave Retail Park to the west and Queen's Business centre to the east.

11.4.3 The topography of the area is flat and low lying. The nearest OS spot levels indicate a land elevation of 2m Above Ordnance Datum (AOD). Levels on the Energy from Waste CHP Facility Site will be covered by topographical survey.

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[135] Environment Agency *Main River Map*. Available online at: https://www.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386 [Accessed 25 November 2019]

[136] Environment Agency *Catchment Data Explorer*. Available online at: http://environment.data.gov.uk/catchment-planning/ [Accessed 25 November 2019]

[137] Environment Agency *Flood Map for Planning*. Available online at: https://flood-map-for-planning.service.gov.uk/ [Accessed 25 November 2019]

[138] Environment Agency *Long Term Flood Risk Maps.* Available online at: https://flood-warning-information.service.gov.uk/long-term-flood-risk [Accessed 25 November 2019]

Hydrology

11.4.4 The Proposed Development is located within the catchment of the River Nene, which flows in a north easterly direction, approximately 500m to the northwest of the Energy from Waste CHP Facility Site (**Figure 10.3**). The River Nene is designated as Main River by the EA (EA, 2019a).

11.4.5 The Proposed Development is situated within an area served by an extensive network of artificial drainage channels under the control and management of the IDBs. The IDB system provides a network of arterial watercourses that form a primary role in managing water levels and reducing flood risk within its district. The Energy from Waste CHP Facility Site and the CHP route are within the rateable area of Hundred of Wisbech IDB, a division of the Middle Level Commissioner IDB. Drainage ditches flow adjacent to the north, east and south boundaries and within the central area of the Energy from Waste CHP Facility Site, conveying water by gravity to the southwest. Drainage is passed to the River Nene at the Middle Level IDB's South Brink pumping station. The ditches are culverted in the northeast corner of the Energy from Waste CHP Facility Site adjacent to Algores Way. The Grid Connection Corridor crosses a number of drainage ditches within the rateable area of Hundred of Wisbech (Middle Level Commissioners) and King's Lynn IDB. Smeeth Lode Drain and Rands Drains flow on the southeast corner of the Grid Connection Corridor and join the River Great Ouse 9.3 km northeast of the Grid Connection.

11.4.6 The EA Catchment Data Explorer (EA, 2019b) indicates that the Proposed Development is not within a WFD groundwater management catchment or reportable surface water WFD area. The nearest WFD waterbody (North Level Main Drain) achieved an overall status of 'Moderate' in the 2016 WFD classification (Cycle 2).

Flood Risk

Fluvial/Tidal Flood Risk

11.4.7 The River Nene is tidal at this location and poses a potential risk of tidal flooding to the majority of the Proposed Development, most likely caused during storm surge conditions. The Fenland District is reliant on pumped drainage and flood defences to minimise flood risk. The flood defences along most of the tidal River Nene consist of raised earth embankments. The Whittlesey Washes South Barrier Bank flood defense scheme lies to the south of the Main Development Site and plays an important part in helping to reduce the risk of flooding during combined high tides and river flows in the River Nene. Flood water is stored on the Washes when high river levels cannot be released downstream due to high tides.

11.4.8 The EA Flood Map for Planning shows that part of the Energy from Waste CHP Facility Site and the CHP Connection lie entirely within Flood Zone 3 (land having 1% or greater annual probability of river flooding or 0.5% or greater annual probability of sea flooding) (**Figure 11.1a** and **Figure 11.1b**). Whilst flood defences are mapped along the River Nene, the Energy from Waste CHP Facility Site and adjacent area is not mapped as benefiting from flood defences. The area for the Temporary Construction Compound lie largely within Flood Zone 3, with a small area to the east in Flood Zone 2 (land having between a 1% and 0.1% annual probability of river flooding or between a 0.5% and 0.1% annual probability of sea flooding). The Grid Connection Corridor begins at the Energy from Waste CHP Facility Site in Flood Zone 3, running to the east initially through an area of Flood Zone 1 (land having less than 0.1% annual probability of river or sea flooding), and the Flood Zones 2 and 3 and then north within Flood Zones 2 and 3 (Area benefitting from flood defence) (**Figure 11.1b**).

Surface Water Flood Risk

11.4.9 Surface water flooding occurs when the intensity of rainfall is greater than the local drainage and infiltration capacity, causing water to flow overland. Where low-points or barriers to flow are

present, particularly deep areas of flooding may occur. These areas are not limited to river corridors or floodplains.

11.4.10 The majority of the Fenland district is artificially drained as a result of historical land reclamation and ongoing management for agricultural purposes as well as protection of settlements and infrastructure. Flooding from surface water (excess rainfall) in Fenland is therefore a key consideration, and whilst there is active management of surface water via the IDB drainage system, there is a finite capacity to the systems currently in operation which if exceeded, would result in increased flood risk within the drainage area.

11.4.11 The EA Surface Water Flood Risk Map shows that the majority of the Proposed Development is at a very low risk of surface water flooding (0.1% AEP) from this source. Small areas are shown to have low to medium flood risk (0.1% to 3.3% AEP) of surface water flooding likely to be associated with topographic lows and areas of high flood risk (>3.3%) confined to existing drainage ditch corridors (**Figure 11.2a** and **Figure 11.2b**).

Groundwater Flood Risk

11.4.12 Groundwater flooding occurs as a result of water issuing to the surface from the underlying aquifers. This tends to occur after long periods of sustained high rainfall, with areas most at risk being situated on permeable geology and low-lying compared to the local water table.

11.4.13 The geology underlying the Proposed Development area comprises the Tidal Flat Deposits (clay and silt) and Ampthill Clay Formation (mudstone) which are classified as Unproductive Aquifers. This suggests that the risk of groundwater flooding for the Proposed Development is very low, given the relatively low permeability (clay/silt/mudstone) nature of the underlying geology which is unlikely to permit significant groundwater flow.

Sewer Flood Risk

11.4.14 Sewer flooding occurs when the local capacity of the underground drainage network is exceeded resulting in the surcharging of water to the surface. The discharge of the drainage network into watercourses can also be affected by overall system capacity (i.e. where pumped), or high-water levels in the receiving waters obstructing the drainage of network outfalls.

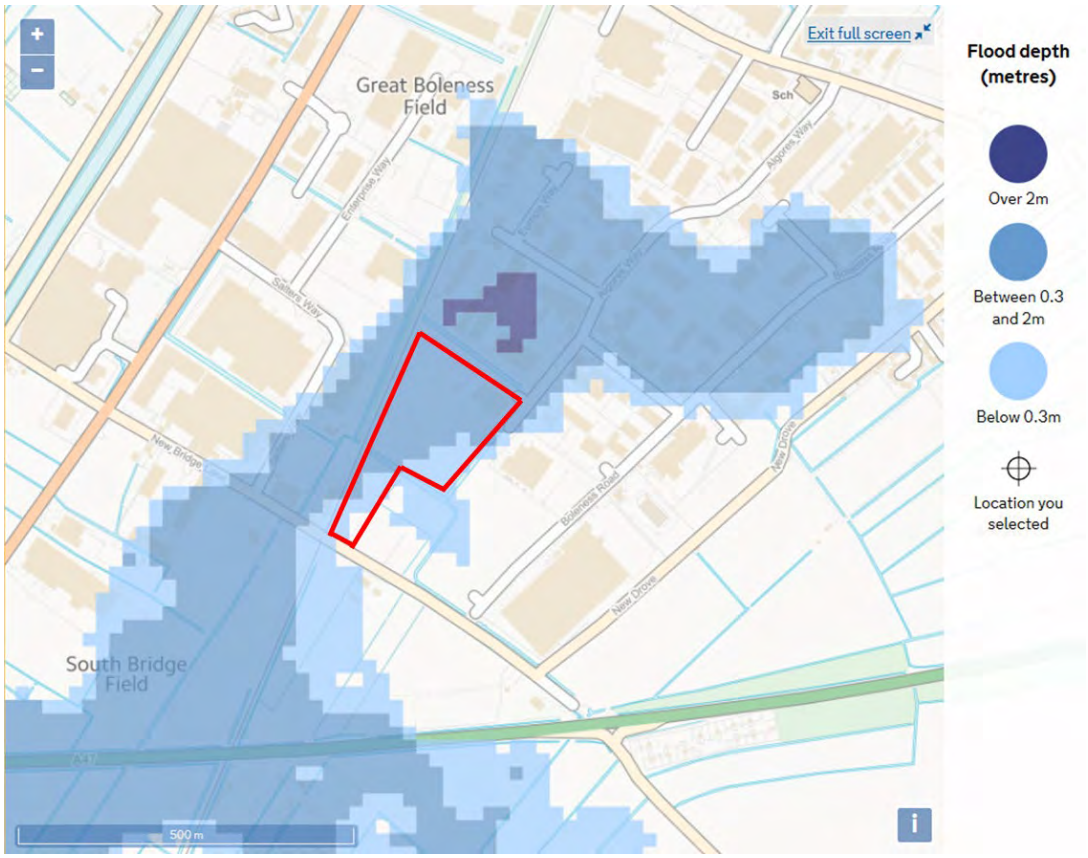
11.4.15 The Energy from Waste CHP Facility Site and Temporary Construction Compound Sites are located on the edge of Queen's Business Centre, and whilst sewer flooding could occur, any water that surcharged would drain to nearby more low-lying areas to the south and likely intercepted by the local drainage ditch network.

11.4.16 The Grid Connection Corridor is located away from adjacent developed areas, and any flows from surcharging from minor systems associated with existing nearby farm buildings would be expected to be minimal/intercepted by the local drainage ditch network.

Artificial Flood Risk

11.4.17 The EA Flood Risk from Reservoirs Mapping shows that the Energy from Waste CHP Facility Site, the proposed Temporary Construction Compound and the southern extent of the CHP Connection are within an area that would flood in the extreme event of a breach to the Whittlesey Washes South Barrier Bank flood defense, which lies to the south. Modelled flood depth ranges between less than 0.3m to 2.0m.

Figure 11.4 EA's Flood Risk from Reservoirs Mapping



Designated biodiversity sites

11.4.18 There are a number of designated biodiversity sites within 10km of the Proposed Development which are considered to be potentially water-dependent, but none are within the study area. These are described in detail in **Chapter 10: Biodiversity** and summarised below:

- The Wash Ramsar and Special Protection Area (SPA);
- Nene Washes Ramsar, Special Area of Conservation (SAC) and SPA; and
- The Wash and North Norfolk Coast SAC.

Future baseline

11.4.19 Hydrological baseline conditions may change even if the Proposed Development is not built out, for the following reasons:

- Climate change will result in increased rainfall seasonality, with generally wetter winters and drier summers, high-intensity rainfall events will become more common. This will lead to greater variation in river flows (low flows and high flows), and increases in flood risk;
- The location and rate of surface water abstractions in the area could vary over time and may result in changes to the WFD surface water body status and SPZ designations; and
- Improvements to WFD waterbody status associated with improvements to individual quality elements (i.e. phosphate reduction) would result in higher-quality, more sensitive waterbodies.

11.5 Scope of the assessment

11.5.1 The scope of the assessment is based on a high-level review of baseline information and will be confirmed through review of additional data sources, site survey visits and consultation with stakeholders, including but not limited to the LLFA and the Environment Agency.

Identification of receptors that could be subject to likely significant effects

11.5.2 The principal hydrology receptors identified during the high-level assessment which will potentially be affected by the Proposed Development comprise:

- River Nene;
- IDB drainage network;
- Nearest WFD surface waterbody (North Level Main Drain);
- Local surface water abstractions (if present);
- Local conservation sites potentially water-dependent (The Wash Ramsar and SPA; Nene Washes Ramsar, SAC and SPA; and The Wash and North Norfolk Coast SAC); and
- Flood risk receptors (site infrastructure, site staff, surrounding site users).

Potential significant effects requiring further assessment

11.5.3 The potential effects of the Proposed Development that could, without mitigation be hydrologically significant, and those which will be subject to further assessment are set out below.

Construction Receptors and Effects

- Main Development Site: release of pollutants due to construction works (e.g. refuelling and maintenance activities and chemical storage) directly (e.g. spillages into surface water) or indirectly (via surface water runoff) leading to deterioration in the surface water quality environment (IDB drainage network, River Nene, WFD status of North Level Main Drain and local surface water abstractions) and conditions supporting local conservation sites;
- Main Development Site and Grid Connection: increase sediment-loading of surface water runoff from construction areas leading to deterioration in the surface water quality environment (IDB drainage network, River Nene, WFD status of North Level Main Drain and local surface water abstractions) and conditions supporting local conservation sites;
- Main Development Site and Grid Connection: mobilisation of contaminants by works and transport of contaminants offsite by runoff leading to deterioration in the surface water quality environment (IDB drainage network, River Nene, WFD status of North Level Main Drain and local surface water abstractions) and conditions supporting local conservation sites;
- Main Development Site and Grid Connection: changes to watercourse flow conveyance as a consequence of the development of temporary infrastructure in and around the IDB drainage ditches and in floodplain areas and potential temporary watercourse crossings (to be confirmed within final designs); and
- Main Development Site and Grid connection: increase in impermeable areas associated with access routes and working areas and soil compaction resulting in increased runoff and flood risk to adjacent receptors.

Operation

- Main Development Site: water discharges (e.g. water containing chemical anti-fouling treatment of water for use in cooling systems) leading to deterioration in the surface water quality environment (IDB drainage network, River Nene, WFD status of North Level Main Drain and local surface water abstractions) and conditions supporting local conservation sites;
- Main Development Site: uncontrolled surface runoff from areas in the site that may be affected by contaminants (e.g. storage of combustion residues, fuel storage and vehicle and wheel washing) leading to deterioration in the surface water quality environment (IDB drainage network, River Nene, WFD status of North Level Main Drain and local surface water abstractions) and conditions supporting local conservation sites;
- Main Development Site: water supply if sources from surface water resources reduce the flow of watercourses;
- Main Development Site and Grid Connection: changes to watercourse flow conveyance as a consequence of the development of infrastructure in and around the IDB drainage ditches and in floodplain areas and potential permanent watercourse crossings (to be confirmed within final designs); and
- Main Development Site: increase in impermeable areas resulting in increased runoff increasing flood risk to adjacent receptors.

11.5.4 An FRA will be produced in accordance with NPS EN-1 section 5.7 which will demonstrate how flood risk to the Proposed Development and any potential to increase flood risk to third parties due to the Proposed Development, will be managed over its lifetime. As part of this, the effects of climate change will be given due consideration., The FRA will include an outline surface water drainage strategy, which will ensure that surface water runoff from the Proposed Development is managed and attenuated on Site, and sufficient areas are provided, so that the risk of flooding is not increased offsite. The most suitable surface water drainage strategy for the Proposed Development will be ascertained by undertaking a high-level SuDS Assessment considering the SuDS hierarchy.

Receptors and effects scoped out of the assessment

11.5.5 No identified potential effects have been scoped out of the assessment.

11.6 Assessment methodology

General approach

11.6.1 This section describes the approach for the assessment of the effects of the Proposed Development on the hydrological and flood risk receptors. The proposed approach will be confirmed with the EA, LLFA, relevant local authorities and Hundred of Wisbech (Middle Level Commissioners) and King's Lynn IDB.

11.6.2 The significance of an effect resulting from the Proposed Development is primarily determined by the value of a given water feature and the magnitude of the effect. In terms of the hydrology, the key determinants of magnitude relate to surface water quantity (level and flow), and water quality. However, depending on the effects of surface water flows, there may also be indirect effects on downstream morphology and sediment dynamics, river water quality and flood risk. The method and criteria used to determine value, magnitude, and significance of effect are described in paragraph 11.6.3 to paragraph 11.6.6.

Determination of significance

11.6.3 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

11.6.4 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

11.6.5 **Table 11.3** details the basis for assessing receptor sensitivity. The value of hydrological water features is normally related to the importance of the surface water feature that might be at risk from effects. The criteria used by Wood in the assessment of water feature value are semi-quantitative, meaning that professional judgement by the assessor has been required, along with reference to relevant guidance.

Table 11.3 Establishing the sensitivity of receptors

Sensitivity	Criteria	Receptor type*	Examples
High	Features with a high yield, quality or rarity with little potential for substitution.	Aquatic environment	Conditions supporting a site with an international conservation designation (SAC, SPA, Ramsar site), where the designation is and based specifically on aquatic features. WFD surface water body (or part thereof) with overall High status, also any associated upstream non-reportable WFD surface water body or non-WFD surface water body. WFD surface water body (or part thereof) with High status for morphology.
	Water use supporting human health and economic activity at a regional scale.	Water use	Regionally important public surface water supply (and associated catchment/ Groundwater Management Unit (GWMU)) or permitted discharge.
	Features with a high vulnerability to flooding.	Flood risk	Land use type defined as 'Essential Infrastructure' (i.e. critical national infrastructure, such as essential transport and utility infrastructure) and 'Highly Vulnerable' (e.g. police/ambulance stations that are required to operate during flooding, mobile homes intended for permanent residential use) in the NPPF flood risk vulnerability classification.
Medium	Features with a moderate yield, quality or rarity, with a limited potential for substitution.	Aquatic environment	Conditions supporting a site with a national conservation designation (e.g. Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR)), where the designation is based specifically on aquatic features. WFD surface water body (or part thereof) with overall 'Good' status/potential, also any

Sensitivity	Criteria	Receptor type*	Examples
			associated upstream non-reportable WFD surface water body or non-WFD surface water body.
	Medium quality watercourse morphology	Watercourse morphology	A watercourse in natural equilibrium and exhibiting a natural range of fluvial processes and morphological features, with little or no modification or anthropogenic influence.
	Water use supporting human health and economic activity at a local scale.	Water use	Local public surface water and groundwater supply (and associated catchment/GWMU) or permitted discharge. Licensed non-public surface water supply abstraction (and associated groundwater catchment) which is relatively large relative to available resource, or where raw water quality is a critical issue, e.g. industrial process water, or permitted discharge.
	Features with a moderate vulnerability to flooding.	Flood risk	Land use type defined as 'More Vulnerable' in the NPPF flood risk vulnerability classification (e.g. hospitals and health centres, educational institutions, most types of residential development).
Low	Features with a low yield, quality or rarity, with some potential for substitution.	Aquatic environment	Conditions supporting a site with a local conservation designation (e.g. Local Nature Reserve (LNR), County Wildlife Site (CWS)), where the designation is based specifically on aquatic features, or an undesignated but highly/moderately water-dependent ecosystem, including a Local Wildlife Site (LWS) and a GWDTE. WFD surface water body (or part thereof) with overall Moderate or lower status/potential, also any associated upstream non-reportable WFD surface water body or non-WFD surface water body.
	Low quality watercourse morphology	Watercourse morphology	A watercourse showing signs of modification and recovery to a natural equilibrium, and currently exhibiting a limited range of fluvial processes and morphological features affected by modification or anthropogenic influence.
	Water use supporting human health and economic activity at household/individual business scale.	Water use	Licensed non-public surface water and groundwater supply abstraction (and associated catchment/GWMU), which is relatively small relative to available resource, or where raw water quality is not critical, e.g. cooling water, spray irrigation, mineral washing or permitted discharge. Unlicensed potable surface water abstraction (and associated catchment) e.g. private domestic water supply, well, spring or permitted discharge.

Sensitivity	Criteria	Receptor type*	Examples
	Features with a low vulnerability to flooding.	Flood risk	Land use type defined as 'Less Vulnerable' in the NPPF flood risk vulnerability classification (e.g. most types of business premises).
Very Low	Commonplace features with very low yield or quality with good potential for substitution.	Aquatic environment	Conditions supporting an undesignated and low sensitivity water-dependent ecosystem, including a LWS, Groundwater Dependent Terrestrial Ecosystems (GWDTE) and pond. Non-reportable WFD surface water body (or part thereof), or non-WFD surface water body, not associated with any downstream WFD surface water body.
	Very low quality watercourse morphology	Watercourse morphology	A highly-modified watercourse changed by channel modification or other anthropogenic pressures, currently exhibiting no active flow processes or morphological diversity.
	Water use does not support human health, and of only limited economic benefit.	Water use	Unlicensed non-potable surface water abstraction (and associated catchment) e.g. livestock supply.
	Features that are resilient to flooding.	Flood risk	Land use type defined as 'Water-compatible development' in the NPPF flood risk vulnerability classification and undeveloped land (e.g. flood control infrastructure; water transmission infrastructure).

*Receptor types map onto receptor lists as follows:

- Aquatic environment –watercourses/WFD surface water bodies, conditions supporting GWDTEs and designated conservation sites
- Water use – springs, abstractions
- Flood risk – humans, properties and infrastructure.

The watercourse morphology receptor type is only relevant when 'in-channel' works are proposed.

11.6.6 **Table 11.4** details the basis for assessing magnitude of change. The magnitude of change on water receptors is independent of the value of the receptor, and its assessment is semi-quantitative, based professional judgement.

Table 11.4 Establishing the magnitude of change

Magnitude	Criteria	Receptor type*	Example**, ***
High	Results in major change to feature, of sufficient magnitude to affect its use/integrity.	Aquatic environment	Deterioration in river flow regime, morphology or water quality, leading to sustained, permanent or long-term breach of relevant conservation objectives (COs) or non-temporary downgrading (deterioration) of status of WFD surface water body (including downgrading of individual WFD elements) or dependent receptors, or resulting in the inability of the surface water body to attain Good status in line with the measures identified in the River Basin Management Plan (RBMP).

Magnitude	Criteria	Receptor type*	Example**, ***
		Watercourse morphology	Loss or extensive damage to geomorphological habitat and processes due to extensive modification and/or fine sediment input. Replacement of a large extent of the natural bed and/or banks with artificial material. Extensive change to channel planform.
		Water use	Complete or severely reduced water availability and/or quality, compromising the ability of water users to abstract.
		Flood risk	Change in flood risk resulting in potential loss of life or major damage to the property or infrastructure.
Medium	Results in noticeable change to feature, of sufficient magnitude to affect its use/integrity in some circumstances.	Aquatic environment	Deterioration in river flow regime, morphology or water quality, leading to periodic, short-term and reversible breaches of relevant COs, or potential temporary downgrading of status of surface water body status (including potential temporary downgrading of individual WFD elements) or dependent receptors, although not affecting the ability of the surface water body to achieve future WFD objectives.
		Watercourse morphology	Partial loss or damage to geomorphological habitat and processes due to modifications and/or fine sediment input. Replacement of the natural bed and/or banks with artificial material (total length is more than 3% of water body length).
		Water use	Moderate reduction in water availability and/or quality, which may compromise the ability of the water user to abstract on a temporary basis or for limited periods, with no longer-term impact on the purpose for which the water is used.
		Flood risk	Change in flood risk resulting in potential for moderate damage to the property or infrastructure.
Low	Results in minor change to feature, with insufficient magnitude to affect its use/integrity in most circumstances.	Aquatic environment	Slight change in river flow regime, morphology or water quality, but remaining generally within COs, and with no short-term or permanent change to status of WFD surface water body (of overall status or element status) or dependent receptors.
		Watercourse morphology	Slight change or deviation from baseline conditions, or partial loss or damage or improvement/ gain to in channel habitat and geomorphological processes due to modifications and/or fine sediment input.

Magnitude	Criteria	Receptor type*	Example**, ***
		Water use	Minor reduction in water availability and/or quality, but unlikely to affect the ability of a water user to abstract.
		Flood risk	Change in flood risk resulting in potential for minor damage to property or infrastructure.
Very Low	Results in little or no change to feature, with insufficient magnitude to affect its use/integrity	Aquatic environment	No or very slight change in river flow regime or surface water quality, and no consequences in terms of COs or status of WFD surface water body or dependent receptors.
		Watercourse morphology	Very slight change from surface water baseline conditions, approximating to a 'no change' situation.
		Water use	No, or very slight change in water availability or quality and no change in ability of the water user to exercise licenced rights or continue with small private abstraction.
		Flood risk	Increased frequency of flood flows, but which does not pose an increased risk to property or infrastructure.

*The watercourse morphology receptor type is only relevant when 'in-channel' works are proposed.
**For the purposes of this assessment of change, relevant WFD elements for surface water body classification include:

- all biological quality elements e.g. fish, macrophytes, invertebrates;
- all physico-chemical quality elements e.g. dissolved oxygen, phosphate;
- hydromorphological supporting elements;
- Priority Hazardous Substances;
- Priority Substances;
- Specific Pollutants; and, for Artificial and Heavily Modified Water Bodies,
- the mitigation measures assessment.

Assumptions

11.6.7 The proposed scope of the assessment is based on a high-level review of desk-based baseline information and outline development proposals and will be confirmed/developed further through review of additional data sources, site survey visits, consultation with stakeholders and confirmation of detailed design development proposals. The FRA will take into account the confirmed cabling option (underground or overhead). The underground cable option has greater potential to disrupt local land drainage and impede existing surface water flow paths. Additional soil stripping and earthworks with this option increase the risk that suspended solids and any pollution could be washed into watercourses. On the other hand, the establishment of pylon foundations under the overhead cable option can disrupt local land drainage systems leading to areas of waterlogging.

12. Geology, Hydrogeology and Contaminated Land

12.1 Introduction

12.1.1 This chapter describes the scope of the assessment with respect to geology, hydrogeology and contaminated land. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with respect to relevant parts of other chapters (**Chapter 10: Biodiversity** and **Chapter 11: Hydrology**), where common receptors have been considered and where there is an overlap or relationship.

12.1.2 The scope of the assessment is based on a high-level review of baseline information and will be confirmed through review of additional data sources and site investigations, where considered necessary.

12.2 Relevant legislation, planning policy, technical guidance

Legislative context

12.2.1 The following legislation is relevant to the assessment of the effects on geology, hydrogeology and contaminated land receptors:

- The *Water Framework Directive (2000/60/EC) (WFD)*;
- *The Industrial Emissions Directive (2010/75/EU);*
- *Control of Pollution Act 1974*
- *Control of Pollution (Oil Storage) (England) Regulations 2001*;
- *Environment Protection Act 1990*;
- *The Water Resources Act 1991 (amendment) (England & Wales) Regulations 2009*
- *Anti-Pollution Works Regulations 1999*;
- *Environment Act 1995*;
- *The Water Supply (Water Quality) Regulations 2016;*
- *Water Resources (Environmental Impact Assessment) Regulations (England and Wales) 2003 (as amended)*;
- *River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010*;
- *Water Act 2014*;
- *Groundwater Daughter Directive (2006/118/EEC)* which is primarily implemented in England and Wales in the *Environmental Permitting (England and Wales) Regulations 2019 (as amended);*
- *Private Water Supplies (England) Regulations 2016 (as amended);*
- *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*;

- *Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations);*
- *The Construction Design and Management Regulations 2015*;
- *The Building Regulations 2010*;
- *The Control of Asbestos Regulations 2012*; and
- *The Health and Safety at Work Act 1974.*

Planning policy context

12.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 12.1**.

Table 12.1 Summary of Planning Policy for geology, hydrogeology and contaminated land

Policy reference	Implications
National Policy	
Overarching National Policy Statement for Energy (EN-1)	Section 5.3 indicates that the applicant should ensure that any effects on geological designated areas are considered and set out in the ES. Section 5.10.8 states than an applicant should seek to minimise impacts on agricultural land and soil quality. For developments on previously developed land, such as this one, the applicant should ensure that they have considered the risk posed by land contamination. Section 5.15 states that an applicant should assess the potential impacts on water resources including groundwater, where a project is likely to have an effect on the water environment.
National Policy Statement EN-3	Paragraph 2.5.36 states that when considering an application for renewable development the examining authority should recognise that most renewable energy resources can only be developed where the resource exists and where economically feasible, and that it should not use a sequential approach in the consideration of renewable energy projects (for example, by giving priority to the re-use of previously developed land for renewable technology developments).
National Policy Statement EN-5	Section 2.7 Biodiversity and Geological Conservation does not make specific reference to geology.
National Planning Policy Framework, 2019 (NPPF)	The NPPF is of material consideration for the assessment of contaminated land. This states that a site needs to be suitable for its proposed use taking into account ground conditions and risks arising from land instability and contamination. As a minimum, following remediation, land should not be capable of meeting the definition of contaminated land under Part 2A of the Environmental Protection Act 1990.
Local Policy	
Fenland Local Plan May 2014, adopted by Fenland District Council on 8 May 2014	Objective 5.1 and 5.2 of the Local Plan relate to reducing emissions and risk of pollution from contaminated land.
Cambridge and Peterborough Waste Adopted Core Strategy	Reference is made to Geodiversity in the context of its protection along with biodiversity. Indirect reference is also made to the need to prevent pollution and protect surrounding uses.
Cambridge and Peterborough Waste Local	Policy 24 Sustainable Use of Soils seeks the protection of best most versatile agricultural land and peat. Policy 20 Biodiversity and Geodiversity sets out the policy response to international, national

Policy reference	Implications
Plan Proposed Submission Publication Draft Nov 2019	and locally designated sites which could include for sites designated for their geological importance.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	There is no specific policy coverage in respect of geology, hydrogeology and contaminated land.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to contaminated land and the protection of best most versatile agricultural land.

Technical guidance

12.2.3 There are a number of technical guidance documents that will be relevant to the Proposed Development, as listed in **Table 12.2**.

Table 12.2 Relevant Technical Guidance

Guidance reference	Implications
Environment Agency, Contaminated Land Report 11 (CLR11) Model Procedures for the Management of Land Contamination (2004)[139]	Provides the technical framework for applying a risk management process when dealing with land impacted by contamination/. The technical approach presented is designed to be applicable to a range of non-regulatory and regulatory contexts. Soon to be withdrawn but be replaced by "Land contamination: risk management" below.
Environment Agency. Land contamination: risk management (2019)[140]	Provides the technical framework for applying a risk management process when dealing with land impacted by contamination/. The technical approach presented is designed to be applicable to a range of non-regulatory and regulatory contexts.
BS10175: 2011 + A2: 2017 Investigation of Potentially Contaminated Sites – Code of Practice[141]	Provides guidance and recommendations for the investigation of potentially contaminated sites.
The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012)[142]	This sets out how local authorities should implement the Part 2A regime, including how they should go about deciding whether land is contaminated land in the legal sense of the term. It also elaborates on the remediation provisions of Part 2A, such as the goals of remediation, and how regulators should ensure that remediation requirements are reasonable.

[139] Environment Agency *Contaminated Land Report 11 (CLR11) Model Procedures for the Management of Land Contamination* (2004)

[140] Environment Agency *Land contamination: risk management* (2019). Available online at: https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks [Accessed 25 November 2019]

[141] British Standards Institute *BS10175: 2011 + A2: 2017 Investigation of Potentially Contaminated Sites – Code of Practice* (2011)

[142] DEFRA *The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance* (2012)

Guidance reference	Implications
Cambridge County Council – Contaminated Land in Cambridge Developers Guide (2009)[143]	Provides guidance on the approach that should be taken to design new developments on land which may be affect by contamination
Environment Agency Guidance for Pollution Prevention (GPPs)	Provide environmental good practice guidance. Whilst now withdrawn from being 'official' guidance, the documents are still available online and are referred to for Good Practice guidance.
Guiding Principles for Land Contamination (2010)[144]	Provides guidance for people who cause or are affected by land contamination
Guidance for the Safe Development of Housing on Land Affected by Contamination (2008)[145]	The guidance, whilst written to be relevant to housing development, is also generally applicable to other forms of development, to existing developments and to undeveloped land, where such sites are on land affected by contamination. It is designed to accord with the Model Procedures in Contaminated Land Report 11 and describes the processes and activities involved in hazard identification and assessment, risk estimation and evaluation and remediation (design, implementation and verification).
Framework for Assessing the Sustainability of Soil and Groundwater Remediation (2010)[146]	Provides a framework for assessing the sustainability of remediation and informing the decision-making process where remediation measures are required.
Environmental Permitting Regulations H5 Site Condition Report guidance (2013)[147]	This sets out the requirement for site condition reporting during the lifespan of a permit issued under EPR 2016.
Definition of Waste Code of Practice Version 2 (DoW CoP) (2011) [148]	The Code of Practice (CoP) sets out good practice for developers to use when: assessing on a site-specific basis whether excavated materials are classified as waste or not; and, determining on a site-specific basis when treated excavated waste can cease to be waste for a particular use.
CAR-SOIL: Control of Asbestos Regulations 2012, Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials (2016)[149]	Provides interpretation and guidance to all involved in the management of asbestos in both soils and construction and demolition arisings in accordance with CAR 2012.
Site Preparation and Resistance to Contaminants	This deals with the following requirement of the Building Regulations 2010; ' Reasonable precautions shall be taken to avoid danger to health and safety caused by contaminants on or

[143] Cambridge County Council *Contaminated Land in Cambridge Developers Guide* (2009)

[144] Environment Agency *Guiding Principles for Land Contamination* (2010)

[145] NHBC, Environment Agency, Chartered Institute of Environmental Health *Guidance for the Safe Development of Housing on Land Affected by Contamination* (2008)

[146] CL:AIRE *Framework for Assessing the Sustainability of Soil and Groundwater Remediation* (2010)

[147] Environment Agency *Environmental Permitting Regulations H5 Site Condition Report guidance* (2013)

[148] CL:AIRE *Definition of Waste Code of Practice* Version 2 (2011)

[149] CL:AIRE *CAR-SOIL: Control of Asbestos Regulations 2012, Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials* (2016)

Guidance reference	Implications
and Moisture Approved Document C (2004)[150] incorporating 2010, 2013 amendments	in the ground covered, or to be covered by the building and any land associated with the building.'
CIRIA Report C692: Environmental Good Practice on Site (2010)[151]	Provides practical advice about managing construction on site to minimise environmental impacts.
Defra: Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009)[152]	Outlines current guidance and legislation concerning the use of soil in construction projects, before offering stage by stage guidance on the use, management and movement of soil on site.
BS6031: 2009 Code of practice for earthworks[153]	Provides recommendations and guidance for unreinforced earthworks forming part of general civil engineering construction, with the exception of dams. This standard also gives recommendations and guidance for temporary excavations such as trenches and pits.

12.3 Data gathering methodology

Study area

12.3.1 On the basis of professional judgement and best practice a study area of 1km from the Proposed Development has been used in order to consider the potential for effects arising from land contamination and impacts to geology and hydrogeology.

12.3.2 Potential effects arising from the construction and operation of the Proposed Development have been considered at a high level at this stage.

12.3.3 The temporal scope of the assessment for contaminated land is consistent with the period over which the Proposed Development would be carried out and, therefore, covers the construction and operational periods.

Summary of data sources

12.3.4 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- Landmark Envirocheck report, including historical Ordnance Survey (OS) maps. Reference 220808700_1_1, dated 9 October 2019;
- British Geological Survey (BGS), Geology of Britain viewer;

[150] HM Government *Site Preparation and Resistance to Contaminants and Moisture: Approved Document C* (2004) incorporating 2010 and 2013 amendments

[151] CIRIA *Report C692: Environmental Good Practice on Site* (2010)

[152] DEFRA *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (2009)

[153] British Standards Institute *BS6031: 2009 Code of practice for earthworks* (2009)

- Department for Environment Food and Rural Affair's (Defra) MAGIC website; and
- Observations from a site walkover undertaken on 16 October 2019.

12.4 Overall baseline

Current baseline

12.4.1 This section provides a high-level review of the current baseline environmental characteristics for the Proposed Development and surrounding areas, with reference to geology, hydrogeology and contaminated land. The baseline conditions will be confirmed through review of additional data sources and site investigation, where relevant.

Current and historical land-use

Energy from Waste CHP Facility

12.4.2 The Energy from Waste CHP Facility Site is currently occupied by an aggregate and waste management facility which stockpiles and processes natural aggregates, road scalpings. concrete, brick and household waste. The facility was built in the early 2000s (between 2000 and 2006). The site surface is covered by gravel. The Energy from Waste CHP Facility Site is bound by a ~2m high highly vegetated earth bund on all sides, though the bunds do not continue the full length on the northwest and southeast Energy from Waste CHP Facility Site boundaries.

12.4.3 A staff car park, weighbridge and three prefabricated buildings are present adjacent to the northwest of the waste reception warehouse.

12.4.4 A below ground fuel tank is present beneath a storage container located between the weighbridge and welfare cabins. The tank provides fuel for onsite vehicles, the filling station is located within the storage container. Two double skinned unbunded above ground tanks are also present in the northern area of the Energy from Waste CHP Facility Site. These contain containing AdBlue and diesel.

12.4.5 No development was undertaken on the Energy from Waste CHP Facility Site until the early 2000s, although the infilling of historical drainage channels is evident in the historical mapping between the early 1950s and 1980s.

12.4.6 A branch railway line is present adjacent to the northwest boundary. The line is now disused and was active between 1887 and 2000. An industrial park was developed, progressing south towards the Energy from Waste CHP Facility Site from 1,000m north to 30m between the 1950's and 2000's.

12.4.7 The Temporary Construction Compound would be located in an area of enclosed farmland to the east and south of the Energy from Waste CHP Facility Site, between the A47 and New Bridge Lane. This area of land does not appear to have been developed historically.

CHP Connection

12.4.8 The CHP Connection follows a disused railway line to the west of the Energy from Waste CHP Facility Site and is bordered by the Belgrave Retail Park to the west and Queen's Business centre to the east.

Grid Connection

12.4.9 Both options extend over a mix of settlement and agricultural areas. The agricultural areas are intercut with a complex network of drainage ditches.

Topography

12.4.10 The topography of the area is flat and low lying. The nearest OS spot levels indicate a land elevation of 2m above Ordnance Datum (AOD). Topographical data indicates the Energy from Waste CHP Facility Site, excluding surface water ditches and temporary soil bunds, is between 1.6m and 2.7m AOD.

Geology

12.4.11 Made ground has been observed in the boundary bund comprising of topsoil with brick, concrete and asphalt. The BGS website indicates that superficial deposits comprising Tidal Flat Deposits (clay and silt) are present across the study area. Based on historical BGS borehole logs in the vicinity of the Energy from Waste CHP Facility Site these are believed to extend to depths in excess of 20m below ground level (bgl). This is underlain by the Ampthill Clay Formation (mudstone). There are no geological designations on within the study area of the Proposed Development.

Hydrogeology

12.4.12 The superficial and bedrock deposits beneath the site are classified as an unproductive aquifer. The site does not lie within a SPZ.

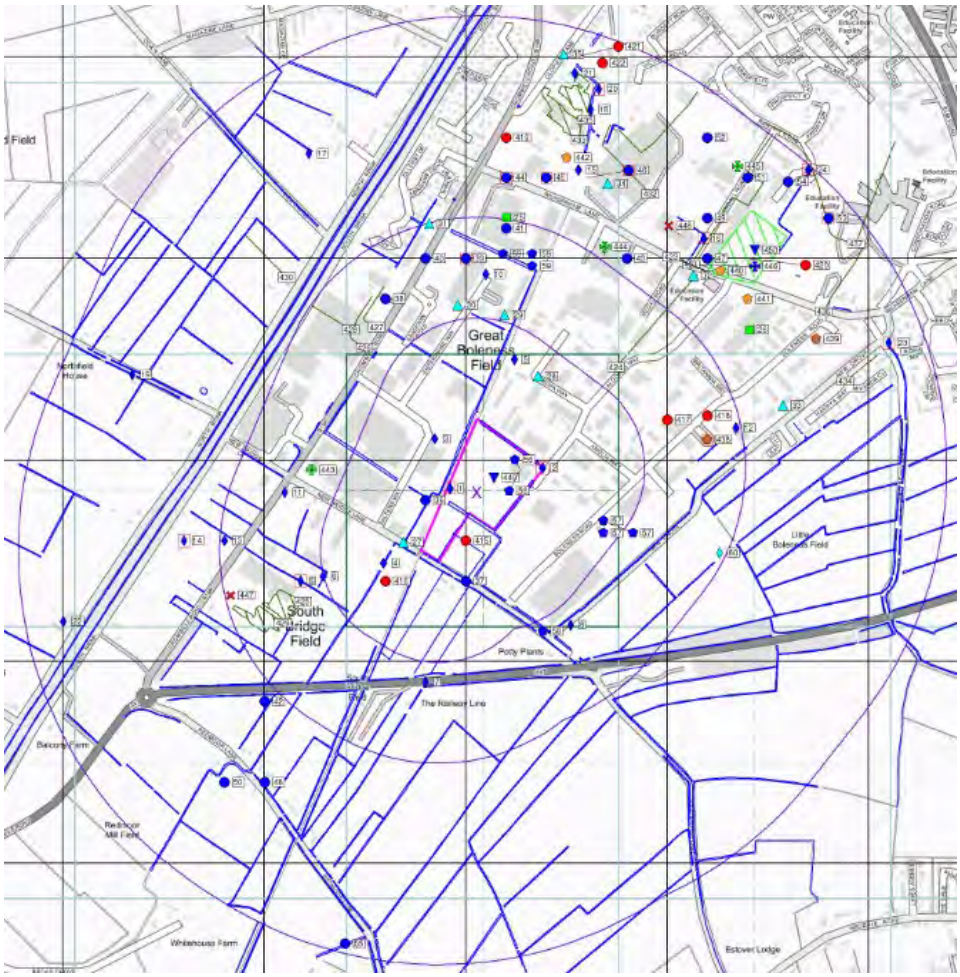
12.4.13 Based on evidence from BGS borehole logs in the area of the Energy from Waste CHP Facility Site, groundwater has the potential to be present at shallow depths (<1m below ground level) but is discontinuous and perched across the study area.

12.4.14 The Envirocheck report does not identify the site area as being susceptible to flooding by groundwater.

Hydrology

12.4.15 The Proposed Development is situated within an area served by an extensive network of artificial drainage channels under the control and management of the Internal Drainage Board (IDB) (**Figure 12.1**). Drainage ditches flow adjacent to the north, east and south boundaries and within the central area of the Energy from Waste CHP Facility Site, conveying water by gravity to the southwest. Drainage is passed to the River Nene at the Middle Level IDB's South Brink pumping station. The ditches are culverted in the northeast corner of the Energy from Waste CHP Facility Site adjacent to Algores Way. The Grid Connection Corridor crosses several drainage ditches within the rateable area of Hundred of Wisbech (Middle Level Commissioners) and King's Lynn IDB.

Figure 12.1 Drainage channels surrounding the Energy from Waste CHP Facility Site



Extract from Envirocheck report

12.4.16 The Energy from Waste CHP Facility Site's current occupant holds a discharge consent for releasing final treated effluent to surface water in the southwestern corner of the Energy from Waste CHP Facility Site.

Future baseline

12.4.17 No changes are anticipated in the baseline condition of the Main Development Site or Grid Connection Corridor as all land concerned is assumed, in the absence of construction works, to continue being used and managed in its present function.

12.5 Scope of the assessment

12.5.1 The scope of the assessment is based on a high-level review of baseline information and will be confirmed through review of additional data sources and site investigation, where required, and consultation with relevant stakeholders (e.g. local authority).

Identification of receptors that could be subject to likely significant effects

12.5.2 The principal receptors identified during the high-level assessment which will potentially be affected by the Proposed Development comprise:

Main Development Site

Geology

- No receptors identified as there are no geological designations within the site area.

Hydrogeology

- Shallow groundwater – unproductive strata which is perched and discontinuous.

Contaminated Land

- Human health (current and future site users, construction and maintenance workers and adjacent land users);
- Property (current and future buildings, crops and livestock in nearby farmland);
- Controlled waters (groundwater and surface waters);
- Soil resources (in terms of both soil quality and top soils); and
- Flora, fauna and ecological systems.

Grid Connection Corridor

12.5.3 Receptors with the potential to be significantly affected will be identified and agreed with relevant consultees once the nature and route of the connection is confirmed.

Potential significant effects requiring further assessment

12.5.4 The potential effects of the Proposed Development that are likely to be significant with regards to land contamination and hydrogeology, and those which will be subject to further assessment are set out below. As no receptors have been identified for geology, this has not been considered further in this chapter.

12.5.5 All potential effects identified are considered to have the potential to impact on one or more of the receptors identified in paragraph 12.5.2.

Construction

12.5.6 Any dewatering activities undertaken during the construction phase has the potential to effect groundwater levels across the Site and wider area.

12.5.7 The construction of underground structures has the potential to impact on groundwater levels across the Site, which may result in groundwater flooding.

12.5.8 There is the potential for existing contamination on and / or offsite to be mobilised, by construction activities. This may impact contaminated land receptors as follows:

- Human health – disturbance or mobilisation of contamination at the site surface and / or mobilisation of volatile contaminants beneath the surface may present an unacceptable risk to site users through dermal contact, ingestion, and inhalation (dust and vapours/ gases). Migration of dusts and volatile contaminant vapours from the Site may also present a risk to offsite users;
- Property (buildings and services)– the disturbance or mobilisation of existing contamination towards buildings or service pipelines onsite or offsite may result in damage or deterioration

and potential permeation of drinking water pipes by contaminants, due to aggressive conditions caused by the contaminants present;

- Property (crops and livestock) - The potential migration of any existing onsite contamination offsite through dust or shallow groundwater migration may present an unacceptable risk to adjacent farmland receptors (crops and livestock);
- Controlled waters – the mobilisation of existing contamination within the soils can result in leaching of contaminants to site groundwater which may migrate offsite via shallow groundwater or through surface water drainage. The mobilisation of offsite contamination, may result in the migration of contamination onto site, posing an unacceptable risk to onsite controlled water receptors (groundwater and surface water).
- Soil resources – disturbance of existing contamination on and offsite may result in the migration or cross contamination of natural soils which are currently uncontaminated, having an adverse impact on soil quality and quality of top soils; and
- Flora, fauna and ecological systems – the mobilisation of existing contaminants may have an adverse impact on the water quality of the surface water drains which may present an unacceptable risk to flora and fauna.

12.5.9 The potential for contamination of the soils to occur during construction works (e.g. from leaks / spills of fuels and oils from plant and storage tanks). This may impact contaminated land receptors as follows:

- Human health – the release of hydrocarbon contamination may present an unacceptable risk to site users through dermal contact, ingestion, and inhalation (dust and vapours). Migration of volatile contaminant vapours may also present a risk to offsite users;
- Property (buildings and services)– the release or migration of contaminants adjacent to drinking water pipelines may result in the deterioration and potential permeation of drinking water pipes by contaminants, presenting a risk to consumers of the drinking water;
- Property (crops and livestock) - The potential migration of any hydrocarbon contamination offsite through shallow groundwater migration may present an unacceptable risk to adjacent farmland receptors (crops and livestock);
- Controlled waters – the release of hydrocarbon contamination within the soils can result in leaching of contaminants to site groundwater which may migrate offsite via shallow groundwater or through surface water drainage;
- Soil resources – the release of contaminants to ground will have an adverse impact on soil quality and quality of top soils; and
- Flora, fauna and ecological systems – the potential migration of hydrocarbons to groundwater and adjacent surface water drains is likely to have an adverse impact on the water quality of the surface water drains which may present an unacceptable risk to flora and fauna.

Operation

12.5.10 Changes to the permeability of the Site surface has the potential to influence the rate of surface infiltration, which may impact on the underlying groundwater levels and potential for groundwater flooding.

12.5.11 The potential release to ground of substances stored, used and handled onsite and leaks and / or spills of fuels and oils from plant and equipment used. This may impact contaminated land receptors as follows:

- Human health – the release of hydrocarbon contamination may present an unacceptable risk to site users through dermal contact, ingestion, and inhalation (dust and vapours). Migration of volatile contaminant vapours may also present a risk to offsite users;
- Property (buildings and services)– the release or migration of contaminants adjacent to drinking water pipelines may result in the deterioration and potential permeation of drinking water pipes by contaminants, presenting a risk to consumers of the drinking water. The release of corrosive substances to ground may result in aggressive ground conditions for buildings (on and offsite, if migration via groundwater occurs) and service pipelines;
- Property (crops and livestock) - The potential migration of any contamination offsite through shallow groundwater migration may present an unacceptable risk to adjacent farmland receptors (crops and livestock);
- Controlled waters – the release of hydrocarbon contamination within the soils can result in leaching of contaminants to site groundwater which may migrate offsite via shallow groundwater or through surface water drainage;
- Soil resources – the release of contaminants to ground will have an adverse impact on soil quality and quality of top soils; and
- Flora, fauna and ecological systems – the potential migration of hydrocarbons to groundwater and adjacent surface water drains is likely to have an adverse impact on the water quality of the surface water drains which may present an unacceptable risk to flora and fauna.

Receptors and effects scoped out of the assessment

12.5.12 The following receptors have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant:

Hydrogeology

- Shallow groundwater – this has limited resource value, being designated as unproductive strata. The Site is not located within a SPZ. Based on BGS borehole evidence for the wider area shallow groundwater is perched and discontinuous, present within bands of permeable sands within the clays. Although groundwater has been identified at relatively shallow depths of around 0.7m below ground level, the Energy from Waste CHP Facility Site is not identified as being susceptible to groundwater flooding. The Energy from Waste CHP Facility Site already has underground structures and the addition of further significant underground structures is not anticipated as a result of this Proposed Development. Note that there is the potential for shallow groundwater to act as a pathway to surface waters which will be considered under **Hydrology**.

Contaminated Land

- Construction workers have been scoped out of this assessment as compliance with the law (e.g. *The Health and Safety at Work Act 1974* and *The Construction Design and Management Regulations 2015*) means that there will be no significant adverse effects on them because of the Proposed Development;
- Soil resources (in terms of both soil quality and top soils) – the Energy from Waste CHP Facility Site is currently covered in gravel and used for industrial purposes, which will be maintained in the future. The Energy from Waste CHP Facility Site is not used for agricultural purposes and there are no areas of soft landscaping, other than the boundary bunds. The boundary bunds have been observed to contain made ground, and hence do not have natural top soils at the

surface. Any impacts to soil resources associated with the Grid Connection if buried are likely to be short term, negligible and restored to their current condition and hence do not warrant further consideration; and

- Flora, fauna and ecological systems – the Energy from Waste CHP Facility Site is currently covered in gravel and used for industrial purposes, which will continue in the future. The Energy from Waste CHP Facility Site is not located within any ecological sensitive areas and there are no maintained areas of soft landscaping onsite. Impact to ecological systems as a result of any adverse impacts to surface waters will be considered under the assessment of controlled waters receptors. Any contamination impacts to flora and fauna associated with the Grid Connection, if buried, are likely to be short term and negligible and hence do not warrant further consideration.

12.5.13 No other identified potential effects have been scoped out at this stage.

12.6 Assessment methodology

General approach

12.6.1 This section describes the approach for the assessment of the effects of the Proposed Development on the contaminated land receptors.

12.6.2 The assessment and management of contaminated land is usually based on the risk presented by the contamination for a circumstance, i.e. the probability and consequence of an event occurring, However, environmental impact assessment seeks to identify the magnitude of a change in status from baseline (impact) caused by the Proposed Development and the consequences of those changes (effects)

12.6.3 In this assessment we will define the impact and its effect as a change in risk, and then assess the magnitude of the change in risk from baseline, through the construction phase to post development conditions. The methodology used for assessing the risk presented by contaminated land is set out below.

Risk assessment

12.6.4 The process of managing contaminated land, as set out in CLR11 / Land contamination: risk management, is based on risk assessment. The assessment of risks from contaminated land is based upon the identification and subsequent assessment of a contaminant linkage. A contaminant linkage requires the presence of a:

- Source of contamination;
- Receptor capable of being harmed; and
- Pathway capable of exposing a receptor to the contaminant.

12.6.5 The risk assessment aims to assess the significance of each potential contaminant linkage. The key to the classification is that the designation of risk is based upon the consideration of both:

- The magnitude of the potential consequence (i.e. severity). It takes into account both the potential severity of the hazard and the sensitivity of the receptor; and
- The magnitude of probability (i.e. likelihood). It takes into account both the presence of the hazard and receptor and the integrity of the pathway.

12.6.6 The definitions for the qualitative risk assessment have been taken from "Guidance for the Safe Development of Housing on Land Affected by Contamination" Annex 4 R&D Publication 66: 2008 Volume 2.

12.6.7 The likelihood classifications for the contaminant linkages being realised is presented in **Table 3**.

Table 12.3 Likelihood classifications of contaminant linkage being realised

Classification	Definition	Examples
High Likelihood	There is contaminant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution	a) Elevated concentrations of toxic contaminants are present in soils in the top 0.5m in a residential garden. b) Ground/groundwater contamination could be present from chemical works, containing several underground storage tanks, having been in operation on the same site for over 50 years.
Likely	There is contaminant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.	a) Elevated concentrations of toxic contaminants are present in soils at depths of 0.5-1.0m in a residential garden, or the top 0.5m in public open space. b) Ground/ groundwater contamination could be present from an industrial site containing a UST present between 1970 and 1990. The tank is known to be single skin. There is no evidence of leakage although there are no records of integrity tests.
Low Likelihood	There is contaminant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place and is less likely in the shorter term.	a) Elevated concentrations of toxic contaminants are present in soils at depths >1m in a residential garden, or 0.5-1.0m in public open space. b) Ground/groundwater contamination could be present on a light industrial unit constructed in the 1990s containing a UST in operation over the last 10 years – the tank is double skinned but there is no integrity testing or evidence of leakage.
Unlikely	There is contaminant linkage, but circumstances are such that it is improbable that an event would occur even in the very long-term.	a) Elevated concentrations of toxic contaminants are present below hardstanding. b) Light industrial unit <10 yrs old containing a double skinned UST with annual integrity testing results available.

12.6.8 The magnitude of the potential consequence of a contaminant linkage gives an indication of the sensitivity of a given receptor to a particular source or contaminant of concern under consideration. It is based on full exposure via the linkage being examined. The classification of consequence is presented in **Table 12.4**.

Table 12.4 Classification of consequence

Classification	Human Health	Controlled Water	Ecology	Property / Structures/ Crops and animals	Examples
Severe	Highly elevated concentrations likely to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs.	Equivalent to Environment Agency (EA) Category 1 pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce.	Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population.	Catastrophic damage to crops, buildings or property.	Significant harm to humans is defined in the Contaminated Land Statutory Guidance as death, life threatening diseases (e.g. cancers), other diseases likely to have serious impacts on health, serious injury, birth defects, and impairment of reproductive functions. Major fish kill in surface water from large spillage of contaminants from site. Highly elevated concentrations of Hazardous or priority substances present in groundwater close to small potable abstraction (high sensitivity). Explosion, causing building collapse (can also equate to immediate human health risk if buildings are occupied).
Medium	Elevated concentrations which could result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs.	Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce.	Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population.	Significant damage to crops, buildings or property.	Significant harm to humans is defined in the Contaminated Land Statutory Guidance as death, life threatening diseases (e.g. cancers), other diseases likely to have serious impacts on health, serious injury, birth defects, and impairment of reproductive functions. Damage to building rendering it unsafe to occupy e.g. foundation damage resulting in instability. Ingress of contaminants through plastic potable water pipes.

Classification	Human Health	Controlled Water	Ecology	Property / Structures/ Crops and animals	Examples
Mild	Exposure to human health unlikely to lead to "significant harm".	Equivalent to EA Category 3 pollution incident including minimal or short-lived effect on water quality; marginal effect on amenity value, agriculture or commerce.	Minor or short-lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population.	Minor damage to crops, buildings or property.	Exposure could lead to slight short-term effects (e.g. mild skin rash). Surface spalling of concrete.
Minor	No measurable effects on humans	Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.	Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.	Repairable effects of damage to buildings, structures and services.	The loss of plants in a landscaping scheme. Discoloration of concrete.

12.6.9 The risk matrix to link the likelihood and consequence is shown in **Table 12.5**.

Table 12.5 Risk Matrix

Likelihood:	**Unlikely**	**Low Likelihood**	**Likely**	**High Likelihood**
Potential Consequence:				
Severe	Moderate/low risk	**Moderate Risk**	**High Risk**	**Very High Risk**
Medium	Low	Moderate/low risk	**Moderate Risk**	**High Risk**
Mild	Very low risk	Low Risk	Moderate/low risk	**Moderate Risk**
Minor	Very low risk	Very low risk	Low Risk	Low Risk

12.6.10 The overall risk definitions are summarised in **Table 12.6**.

Table 12.6 Risk Definitions

Risk	**Definition**
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the Site without remediation action OR there is evidence that severe harm to a designated receptor is already occurring. Realisation of that risk is likely to present a substantial liability to be site owner/or occupier. Investigation is required as a matter of urgency and remediation works likely to follow in the short-term.
High	Harm is likely to arise to a designated receptor from an identified hazard at the Site without remediation action. Realisation of the risk is likely to present a substantial liability to the Site owner/or occupier. Investigation is required as a matter of urgency to clarify the risk. Remediation works may be necessary in the short-term and are likely over the longer term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Further investigative work is normally required to clarify the risk and to determine the potential liability to site owner/occupier. Some remediation works may be required in the longer term.
Low	It is possible that harm could arise to a designated receptor from identified hazard, but it is likely at worst, that this harm if realised would normally be mild. It is unlikely that the Site owner/or occupier would face substantial liabilities from such a risk. Further investigative work (which is likely to be limited) to clarify the risk may be required. Any subsequent remediation works are likely to be relatively limited.
Very Low	It is a low possibility that harm could arise to a designated receptor, but it is likely at worst, that this harm if realised would normally be mild or minor.

12.6.11 Where a risk classification of moderate or greater has been determined it is considered on the basis of professional judgement that the source–pathway–target contaminant linkage requires some form of risk management or intervention.

12.6.12 As the first step, such risk management or intervention would normally take the form of either further investigation, with the additional knowledge gained allowing the risk to be more accurately assessed and potentially the classification may be lowered. However, if the risk classification remains at moderate or above then remediation, in the form of mitigation, may be required to reduce or remove the source of contamination or disrupt the pathway to the target or receptor.

Determination of significance

12.6.13 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of enough concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

12.6.14 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. To use the contaminated land risk assessment as the basis for the evaluation of the significance of effects, it is necessary to evaluate the change in risk from baseline conditions to those during the construction phase and following the Proposed Development.

Assumptions

12.6.15 The scope of the assessment is based on a high-level review of desk-based baseline information and will be confirmed through review of additional data sources, site investigation (where required) and consultation with the relevant stakeholders.

13. Climate Change

13.1 Introduction

13.1.1 This chapter describes the scope of the assessment for Climate Change.

13.1.2 The impact of the Proposed Development on global climate change is to be assessed in the Environmental Statement (ES) by comparing Greenhouse Gas (GHG) emissions from the Proposed Development case to those from a future baseline case in which the waste is landfilled.

13.1.3 The vulnerability of assets and receptors to climate change is not considered further in this Chapter. The measures to ensure climate change resilience of the Proposed Development including the Main Development Site and potential Grid Connection will be reported in the Design and Access Statement and will be summarised within the Climate chapter of the Environmental Statement under the sub-heading 'Climate Change Resilience'. The design of the Proposed Development will consider UK Climate Projections 2018 (UKCP18).

13.1.4 The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Description of the Development**, and **Chapter 7: Air Quality**.

13.2 Relevant legislation, planning policy, technical guidance

Legislative context

13.2.1 The following legislation is relevant to the assessment of the effects on climate change receptors:

- *The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement (2016);*
- *Environmental Impact Assessment (EIA) Directive 85/337/EEC as amended 2014;*
- *Infrastructure Planning (Environmental Impact Assessment) Regulations 2017;*
- *Climate Change Act 2008;* and
- *Climate Change Act 2008 (2050 Target Amendment) Order 2019.*

Planning policy context

13.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 13.1**.

Table 13.1 Planning policy relevant to GHG emissions

Policy reference	Implications
National Policy	
Overarching National Policy Statement (NPS) for Energy (EN-1)	EN-1 sets out the Government's policy for delivery of major energy infrastructure. It has effect, in combination with the relevant technology-specific NPS on the decisions by the

Policy reference	Implications
	Infrastructure Planning Commission (IPC) on applications for energy developments that fall within the scope of the NPSs. The NPS supports Energy from Waste (EfW) developments in accordance with the Waste Hierarchy as a future large scale renewable energy generation option. Section 4.6 sets out guidance for the use of Combined Heat and Power (CHP) developments. The NPS aims to "*speed up the transition to a low carbon economy and thus help to realise the UK climate change commitments sooner than continuation under current planning system*".
National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3)	Section 2.3 Climate Change Adaptation at paragraph 2.3.3 that EfW generating stations may require significant water resources and that applicants should consider, in particular, how plant will be resilient to increased risk of flooding; and increased risk of drought affecting river flows.
NPS for Electricity Networks Infrastructure (EN-5)	Section 2.4 considers climate change adaptation and states that the applicant should set out in particular set the extent the proposed development is expected to be vulnerable, and, as appropriate, how it would be resilient to: • flooding, particularly for substations that are vital for the electricity • transmission and distribution network; • effects of wind and storms on overhead lines; • higher average temperatures leading to increased transmission losses; and earth movement or subsidence caused by flooding or drought (for underground cables).
National Planning Policy Framework (NPPF)	The NPPF acts as guidance for local planning authorities and decision-makers, both in drawing up plans and making decisions about planning applications. The 2018 revision of the NPPF, paragraph 1.12 states: *"The planning system should support the transition to a low carbon future in a changing climate… shape places in ways that contribute to radical reductions in greenhouse gas emissions… and support renewable and low carbon energy and associated infrastructure".* It also requires in paragraph 1.14 that new development should be planned for in ways that *"can help to reduce greenhouse gas emissions through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards".* Furthermore, it is stated in paragraph 1.53, that local planning authorities should expect new development to: *"a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and* *b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption."*
Local Policy	

Policy reference	Implications
Cambridgeshire and Peterborough Minerals and Waste Development Plan (2011)	Minerals and waste management proposals, including operational practices and restoration proposals, must take account of climate change for the lifetime of the development. This will be through measures to minimise greenhouse gas emissions, and by measures to ensure adaptation to future climate changes. Proposals should set out how this will be achieved, and include: • quantifying the reduction in carbon dioxide and other relevant greenhouse gases e.g. methane, that will be achieved as part of the proposal, and how this will be monitored and addressed in future • demonstrating how the location, design, and transportation related to the development will limit greenhouse gas emissions • setting out how the proposal will make use of renewable energy including opportunities for generating energy from waste for use beyond the boundaries of the site itself (waste proposals only), and use of decentralised and renewable or low carbon energy Proposals should adopt emissions reduction measures based on the principles of the energy hierarchy. Where onsite options have been fully considered but are not considered viable, offset measures or allowable solutions may be put in place. Proposals should also set out how they will be resilient to the changing climate, and may therefore include: • incorporation of sustainable drainage schemes to minimise flood impacts • measures to enhance water efficiency • measures to adapt to the potential impacts of excess heat and drought
Fenland Local Plan Adopted May (2014)	The local plan sets out the key objectives including *"increase use of renewable energy sources whilst minimising waste and the use of other energy sources"*. Policy LP14 states that *"All developments (dwellings and non-dwellings) are encouraged to incorporate on site renewable and/or decentralised renewable or low carbon energy sources, water saving measures and measures to help the development withstand the longer-term impacts of climate change."*
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov (2019)	Policy 1 Sustainable Development and Climate Change states that development proposals will be assessed as to whether they move toward sustainable solutions; that they should take a proactive approach to mitigating and adapting to climate change and sets out criteria against how this could be achieved.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	The document identifies climate changes as a key sustainability issue and that greenhouse gas emissions from the Borough are higher than the national average. CS08 Sustainable development considers climate change in the context of flood risk.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM 21 states that applications for development in zones 2 and 3 will need to be accompanied by a flood risk assessment which includes for climate change allowance.

Technical guidance

13.2.3 Guidance related to the GHG emissions assessment is provided in **Table 13.2**.

Table 13.2 Relevant technical guidance

Guidance reference	Implications
TM46: Energy Benchmarks (2008)[154]	Provides an outline of building energy benchmarks.
GVF2012 Guide F: Energy Efficiency in Buildings (2012)[155]	Provides guidance on the energy efficiency in buildings.
Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017)[156]	Provides guidance on assessment and mitigation of GHG emissions within an EIA context. Includes a focus on proportionate and robust assessment.
PAS 2080:2016 Carbon Management in Infrastructure (2016)[157]	Provides an approach to management of reduction of GHG emissions from infrastructure projects, working with stakeholders throughout the project lifecycle.
The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol) (2014)[158]	Provides standards and guidance for preparing a GHG emissions inventory.
European Commission EIA Guidance (2017)[159]	The European Commission published guidance on the Preparation of the Environmental Impact Assessment Report in 2017. This incorporates high-level guidance on climate change aspects of the updated EIA regulations.
Energy recovery for residual waste: A carbon-based modelling approach (2014)[160]	Sets out the critical factors that affect the environmental case for energy from waste (EfW) in comparison to landfill from a carbon perspective and the sensitivity of that case to those factors.

13.3 Data gathering methodology

Study area

13.3.1 The temporal scope of the baseline information provided is consistent with the period over which the Proposed Development including the Main Development Site and the Grid Connection would be in construction and operation (considered to be 40 years). Given the only receptor for GHG emissions is the global climate, the study area for Climate Change is effectively the Earth system.

[154] CIBSE TM46: Energy Benchmarks (2008)

[155] CIBSE GVF2012 Guide F: Energy Efficiency in Buildings (2012)

[156] IEMA Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017)

[157] British Standards Institute PAS 2080:2016 Carbon Management in Infrastructure (2016)

[158] World Business Council for Sustainable Development and the World Resources Institute The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (2014)

[159] European Commission EIA Guidance (2014). Available online at: https://ec.europa.eu/environment/eia/eia-support.htm [Accessed on 25 November 2019]

[160] DEFRA Energy recovery for residual waste: A carbon-based modelling approach (2014)

Summary of data sources

13.3.2 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**. The principal data source used to inform the baseline is the GHG emissions data for 1990-2035, sourced from the Department for Business, Energy and Industrial Strategy via the Office for National Statistics.

13.3.3 There are no other data sources required at this stage. The methodology set out in **Section 13.6** includes the data required to carry out the full assessment.

13.4 Overall baseline

13.4.1 There are two sets of baseline and future baseline conditions relevant to the GHG assessment:

- The GHG emissions associated with the Site; and
- The projected GHG emissions from the UK waste sector.

Current baseline

13.4.2 The Energy from Waste CHP Facility Site is currently operated as a materials recovery and recycling facility primarily for residual waste and aggregates. The GHG emission associated with the operation of the facility currently on the Energy from Waste CHP Facility Site are not quantified. This is due to the assessment being based on the contextualisation of GHG emissions within the energy and waste GHG emissions budgets and policy objectives at national and local scales. Therefore, an assessment of the change in GHG emissions on the Energy from Waste CHP Facility Site from baseline to the Proposed Development is not required.

13.4.3 In 2017, emissions from the waste sector were 20.3 $MtCO_2e$ as stated in the 2017 UK greenhouse gas emissions: final figures[161]. This report also states that:

> *"between 1990 and 2017, greenhouse gas emissions from the waste management sector decreased by 69 per cent. This was due to a combination of factors, including improvements in the standards of landfilling, changes to the types of waste going to landfill (such as reducing the amount of biodegradable waste), and an increase in the amount of landfill gas being used for energy."*

Future baseline

13.4.4 The future GHG emission associated with the operation of the facility currently on the Energy from Waste CHP Facility Site are not quantified. This is due to the assessment being based on the contextualisation of GHG emissions within the energy and waste GHG emissions budgets and policy objectives at national and local scales. Therefore, an assessment of the change in GHG emissions on the Site from baseline to the Proposed Development is not required.

13.4.5 The future policy baseline is informed by the BEIS Emissions Projections which states that in Section 2 Box 1 Point 2 that:

[161] BEIS 2017 UK greenhouse gas emissions: final figures. Available online at: https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2017 [Accessed 25 November 2019]

"projections of emissions from 'Energy from Waste' power plans are now accounted for as 'non-traded'…This resulted in a shift of 11 $MtCO_2e$ of power sector emissions from the traded to non-traded sector for the fourth carbon budget period."

13.4.6 The report also states that 'Energy from Waste' sites are *"projected to account for 3.7 $MtCO_2e$ (1.3% of total non-traded emissions) in 2035."* Waste sector emissions as a whole are expected to reduce as a result of diversion of waste from landfill – it is the effect of the Proposed Development on this that will be assessed.

13.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

13.5.1 In-line with IEMA guidance, all GHG emissions from the Proposed Development including the Main Development Site and the Grid Connection are considered potentially significant and therefore the total GHG emissions associated with constructing and operating the Proposed Development compared to the future baseline will be assessed.

13.5.2 The global climate is the only receptor for the Climate Change assessment.

Potential significant effects requiring further assessment

13.5.3 The effect of the Proposed Development as a whole (including all sources of emissions and avoided emissions from landfilling) in comparison to a future baseline with no Proposed Development is considered potentially significant and therefore requires further assessment.

Receptors and effects scoped out of the assessment

13.5.4 There are no other receptors or effects to consider, so there are none scoped out of the assessment.

13.6 Assessment methodology

General approach

13.6.1 The approach taken is to identify the critical factors that affect GHG emissions for the Proposed Development including the Grid Connection (the Proposed Development scenario) in comparison to landfill (the future baseline scenario), and the sensitivity of those factors. The total emissions from the Proposed Development scenario will be compared to the future baseline scenario in order to understand the net beneficial or detrimental effect of the Proposed Development.

13.6.2 The approach taken is based on the relevant guidance stated in **Table 13.2**.

13.6.3 A model will be developed that considers the carbon footprint of the Proposed Development as well as the future baseline scenario.

13.6.4 The temporal scope of the assessment is the combined duration of the construction and operational phases of the Proposed Development.

13.6.5 The assessment model considers 5 emissions sources for the 'Proposed Development scenario'

Table 13.3 Approach

	1: Construction	2: Transfer Stations	3: Transport	4: Process	5: Avoided Fossil Fuels
Proposed Development scenario	Embodied carbon (the carbon dioxide emitted during the manufacture, transport and construction of building materials), surface access (i.e. road use) for construction staff and equipment, component transportation and onsite energy use	Energy consumption at waste transfer stations	Transport of waste to the Proposed Development, transport of Incinerator Bottom Ash (IBA) and any other recyclable material to recycling facility	GHG emissions to produce energy from waste, based on the processes described in **Chapter 2: Description of the Proposed Development**.	GHG benefits from avoided fossil fuel power generation
Future baseline scenario	Not required	Not required (to be confirmed)	Transport of waste to landfill	GHG emissions from landfill	GHG disbenefits from non-avoided fossil fuel power generation

13.6.6 The above GHG emission sources will be used to determine the change in the UK's contribution to global GHG emissions associated with the Proposed Development compared to the future baseline scenario. This will be calculated as the net cumulative tCO_2e over the design life of the Proposed Development.

13.6.7 Emissions associated with land use change are usually calculated on a national level. It is therefore expected that the changes in land use type associated with the Proposed Development will be minimal, and so will not be calculated as part of the assessment.

13.6.8 The reprocessing of IBA and any other waste products into recycled materials and is not carried out at the Energy from Waste CHP Facility Site and GHG emission benefits are therefore not considered attributable to the Proposed Development. A discussion of recyclable products from the Proposed Development will be provided in the ES.

Approach for each emissions source

Proposed Development scenario

13.6.9 Construction emissions will primarily relate to the embodied carbon of the Proposed Development itself. Construction emissions transport emissions will be estimated based on trip length and using BEIS emissions factors. Onsite energy use will be estimated based on available guidance.

13.6.10 Transfer station emissions will be based on electricity, natural gas and gas oil consumption at the relevant transfer stations

13.6.11 Transport emissions will be calculated based on the transport type and distance of waste travel from the transfer station to the Proposed Development.

13.6.12 Process emissions are heavily dependent on the waste stream provided to the Proposed Development. The assessment will calculate the total process GHG emissions based on the mass of waste, its carbon percentage and fossil carbon percentage.

13.6.13 Avoided fossil fuel emissions will be calculated using projected emissions from energy generation across the UK over the operation phase of the Proposed Development and the total amount of energy produced by the Proposed Development.

Future baseline scenario

13.6.14 Transport emissions will be calculated based on the transport type and distance of waste travel from the transfer station to landfill.

13.6.15 Process emissions will be calculated based on emissions from landfill.

13.6.16 Non-avoided fossil fuel emissions will be calculated using projected emissions from energy generation across the UK over the operation phase of the Proposed Development and the total amount of energy produced by the Proposed Development.

Data requirements for ES assessment

13.6.17 The following information will be used to complete each stage of the assessment:

- The embodied carbon associated with constructing the Proposed Development, based on the Inventory of Carbon & Energy (ICE) database, produced by the University of Bath – Construction;
- Details of any carbon reduction initiatives contained within the Proposed Development construction and design – Construction, Process;
- Details of the potential vendors to supply the component parts of the Proposed Development and their location – Construction;
- Estimates of onsite energy use – Construction;
- Emissions factors for surface traffic and transport emissions, to be sourced from the BEIS greenhouse gas reporting conversion factors 2019 – Construction, Transport, Decommissioning;
- The National Atmospheric Emissions Inventory emissions factors – Transport, Process; Avoided Fossil Fuels.
- Waste transfer station energy usage data and/or estimates – Transfer stations;
- Trip origins for transport of waste and transport type - Transport;
- Energy and fuel usage data estimates based on CIBSE characterisation and/or data from similar facilities in the UK - Process;
- Waste composition estimates – Process;
- Carbon balances of waste streams – Process; and
- Estimates of energy and fuel usage data based on relevant technical guidance and measured data from existing similar facilities – Process.

13.6.18 Estimates and expert judgement will be used where quantitative data is not available.

Determination of significance

13.6.19 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

13.6.20 The only receptor for the Carbon and other GHGs assessment is the global climate. As such, the global climate is subject to likely significant effects from the cumulative GHG emissions associated with the Proposed Development.

13.6.21 Expert judgement, based on the calculated GHG emissions from the Proposed Development and the relevant IEMA guidance, will be used to determine the significance of the effect on the global climate in the ES. The determination of significance will consider that:

- All GHG emissions can be considered to be significant based on their combined environmental effect on the global climate; and
- The scale of GHG emissions from the Proposed Development should be contextualised against the overall UK carbon budget.

13.6.22 The scale of GHG emissions from the Proposed Development should be contextualised against energy and waste GHG emissions budgets and policy objectives at national and local scales.

14. Socio-Economics

14.1 Introduction

14.1.1 This chapter describes the scope of the assessment for Socio-economics. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with respect to relevant parts of other chapters (**Chapter 8: Landscape and Visual and Chapter 9: Historic Environment**), where common receptors have been considered and where there is an overlap or relationship.

14.2 Relevant legislation, planning policy, technical guidance

Planning policy context

14.2.1 National/regional and district/local planning policies as well as policies in respect of economic development, tourism, health, and wider social and community effects may have a bearing on the scope of the assessment of socio-economic, tourism and recreation effects.

14.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 14.1**.

Table 14.1 Planning Policy Context

Policy reference	Implications
National Policy	
Overarching National Policy Statement for Energy (EN-1)	Overarching National Policy Statement for Energy (EN-1) sets out general assessment principles for applications relating to energy infrastructure. This includes that the Infrastructure Planning Commission (IPC) should take into account the potential benefits of a project including meeting needs for energy infrastructure and job creation and long term / wider benefits. EN-1 notes that energy production has the potential to impact on the health and well-being of the population and that access to energy is clearly beneficial to society and to our health as a whole. However, the production, distribution, and use of energy may have negative impacts on some people's health. Where a proposed project has an effect on human beings, the (ES) should assess these effects for each element of the project, identifying any adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate. Direct impacts on health may include increased traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation, and increases in pests. For socio-economics EN-1 states that the assessment should consider all relevant socio-economic impacts, which may include: • The creation of jobs, and training opportunities; • The provision of additional local services and improvements to local infrastructure, including the provision of educational facilities; • Effects on tourism; • The impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could

Policy reference	Implications
	change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and • Cumulative effects – if development consent were to be granted for a number of projects within a region and these were developed in a similar timeframe, there could be short term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region. Socio-economic impacts may be linked to other impacts, for example the visual impact of a development is considered but may also have an impact on tourism and local businesses.
Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3)	EN-3 sets out requirements in respect of good design for renewable energy infrastructure and relates back to section 4.5 of EN-1 which sets out the principles of good design that should be applied to all energy infrastructure. EN-3 states that proposals for renewable energy infrastructure should *'demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise'*.
NPS for Electricity Networks Infrastructure EN-5	Advice is provided to the decision maker as to the weight to be given to the potential economic effects should a connection be underground at paragraph 2.8.9.
National Planning Policy Framework (NPPF)	The NPPF sets out requirements for achieving sustainable development. Section 2 states that achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives) (8): *a) an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;* *b) a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and* c) *an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*
	The NPPF seeks to build a strong and competitive economy. Planning policies should (Paragraph 81); *a) Set out a clear economic vision and strategy which positively and proactively encourages sustainable economic growth, having regard to Local Industrial Strategies and other local policies for economic development and regeneration;* *b) Set criteria, or identify strategic sites, for local and inward investment to match the strategy and to meet anticipated needs over the plan period;* *c) Seek to address potential barriers to investment, such as inadequate infrastructure, services or housing or a poor environment; and*

Policy reference	Implications
	d) Be flexible enough to accommodate needs not anticipated in the plan, allow for new and flexible working practices (such as live-work accommodation), and to enable a rapid response to changes in economic circumstances. Paragraph 82 notes that Planning policies should recognise and address the specific locational requirements of different sectors. This includes making provision for clusters or networks of knowledge and data-driven, creative or high technology industries; and for storage and distribution operations at a variety of scales and in suitably accessible locations. Planning policies should support a prosperous rural economy and should enable (83): *a) The sustainable growth of all types of business in rural areas, both through conversion of existing buildings and well-designed new buildings;* *b) The development and diversification of agricultural and other land-based rural business;* *c) Sustainable rural tourism and leisure developments which respect the character of the countryside; and* *The retention and development of accessible local services and community facilities.*
Local Policy	
Fenland Local Plan May 2014, adopted by Fenland District Council on 8 May 2014	
Policy LP1 – A Presumption in Favour of Sustainable Development	At the heart of the Strategy for Fenland is a desire to deliver sustainable economic growth; growth that is not for its own sake, but growth that brings benefits for all sectors of the community – for existing residents as much as for new ones. *When considering development proposals, Fenland District Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF. It will always work with applications jointly to find solutions which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in Fenland.* *Planning applications that accord with the policies in this Local Plan will be approved without delay, unless material considerations indicate otherwise.*
Policy LP2 – Facilitating the Health and Wellbeing of Fenland Residents	Development proposals should contribute to the Council's goal of Fenland's residents achieving the highest attainable standard of health, irrespective of their race, religion, political belief, economic or social condition, sex or age. Development proposals should contribute to creating a healthy, safe and equitable living environment by: • Creating an environment (built and social) in which communities can flourish (see all policies in this plan); • Creating opportunities for employment in accessible locations; • Promoting and facilitating healthy lifestyles; and • Avoiding adverse impacts.
Policy LP6 – Employment, Tourism, Community Facilities and Retail	Opportunities for new job growth in the district will be maximised with the aim of achieving 7,200 net additional jobs over the period 2011-2031. Existing cultural, tourism and visitor facilities will be protected and where possible enhanced.
Policy LP8 - Wisbech	Wisbech, alongside March, is the main focus for housing, employment and retail growth. All development should contribute to the promotion of Wisbech into a strong, safe and

Policy reference	Implications
	community focused market town, preserving and enhancing its unique character and making appropriate use of its heritage assets to benefit its regeneration, tourism potential and sense of place.
Policy LP14 – Responding to Climate Change and Managing the Risk of Flooding	Renewable energy proposals will be supported and considered in the context of sustainable development and climate change. Proposals for renewable energy technology, associated infrastructure and integration of renewable technology on existing or proposed structures will be assessed both individually and cumulatively on their merits taking account of the following factors: • Surrounding landscape, townscape and heritage assets; • Residential and visual amenity; • Noise impact; • Specific highway safety; and • High quality agricultural land.
Policy LP16 – Delivering and Protecting High Quality Environments across the District	The Local Plan seeks to deliver and protect high quality environments throughout the district. The Proposed Development should: • Making a positive contribution to the local character and distinctiveness of the area; • Not adversely impact on the amenity of neighbouring users such as noise, light pollution, loss of privacy and loss of light; • Provide a safe environment and incorporates security measures to deter crime in accordance with Policy LP17; • Identify, manage and mitigate against any existing or proposed risks form sources of noise, emissions, pollution, contamination, odour and dust, vibration, landfill gas and protects from water body deterioration; and • Not result in any unreasonable constraint(s) or threaten the operation and viability of existing or nearby or adjoining businesses or employment sites.
Cambridge and Peterborough Waste Adopted Core Strategy	Policy CS34 Protecting Surrounding Uses states that development should not significantly harm neighbouring land uses, loss of residential or other amenities. Policy CS37 concerns protection of public rights of way and states that proposals should make provision for their enhancement.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 18 Amenity Considerations states that development must not give rise to unacceptable adverse impacts upon the amenity of existing occupiers of land or property. Policy 23 Traffic Highways Rights of Way includes for the protection and enhancement of existing rights of way.
King's Lynn and West Norfolk Local Development Framework – Core Strategy	The Core Strategy recognises that tourism plays a significant role in the local economy.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to tourism and other economic activity.

Technical guidance

14.2.4 There is little Government regulation or guidance setting out the preferred method for, or content of an assessment of potential social and economic effects as part of an EIA. Otherwise, where relevant, the following guidance has been taken into account:

- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment (IEMA 2004).

14.3 Data gathering methodology

Study area

14.3.1 The socio-economic Study Area includes the entirety of the Proposed Development, including the Main Development Site and the Grid Connection. It comprises:

- Local level – Medworth, Wisbech, Elm, Elmneth, Walsoken, West Walton and Walpole;
- District level – Fenland District and Kings Lynn and West Norfolk Borough; and
- County Level – Cambridgeshire and Norfolk.

14.3.2 For the Grid Connection Corridor currently being assessed and for the CHP line, on the basis of professional judgement it is considered that there would be no significant effects beyond 2km from the route and so the study areas identified above are confined to within 2km of the routes.

14.3.3 The temporal scope of the assessment of socio-economics is consistent with the period over which the Proposed Development will be carried out and therefore covers the construction and operational life of the development.

Summary of data sources

14.3.4 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by several data sources. The principal data sources used to inform this chapter for potential socio-economic effects comprises the following:

- Office for National Statistics (ONS) (demographic statistics);
- NOMIS (labour market statistics);
- Fenland Public Health Profile[162];
- Fenland District Council (demographic statistics);
- Fenland for Business (economic information and statistics);
- Kings Lynn and West Norfolk Public Health Profile[163];
- Norfolk Insight (population statistics);
- Norfolk County Council (economic and employment information);
- Visit West Norfolk; and

[162] Public Heath England Fenland - Local Authority Health profile (2019)

[163] Public Heath England l Kings Lynn and West Norfolk - Local Authority Health profile (2019)

- Kings Lynn and West Norfolk Borough Council (economic and employment information).

14.3.5 The socio-economic analysis and assessment would draw upon the most up to date sources of data and information available.

14.4 Overall baseline

Current baseline

Main Development Site

Population

14.4.1 Based on ONS, at the time of the 2011 census, Wisbech had a population of 31,573. The population had risen to 33,933 in 2016. In 2018 the population of Fenland was 101,491. 71% of the population of Fenland live within the four market towns including Wisbech. At the County level, the population for Cambridgeshire was 651,482 in 2018[164] and there is an almost equal number of males and females.

Health

14.4.2 In 2019 the health of people in Fenland is varied compared with the England average. 18.2% (3,255) of children live in low income families. Life expectancy for both men and women is lower than the England average. Life expectancy is 7.3[165] years lower for men in the most deprived areas of Fenland than in the least deprived areas.

Child health

14.4.3 In 2019 and in Year 6, 20.9% (205) of children are classified as obese. The rate for alcohol-specific hospital admissions among those under 18 is 29. This represents 6 admissions per year. Levels of GCSE attainment (average attainment 8 score) and breastfeeding are worse than the England average.

Adult health

14.4.4 In 2019 the rate for alcohol-related harm hospital admissions is 726, worse than the average for England. This represents 738 admissions per year. The rate for self-harm hospital admissions is 264, worse than the average for England. This represents 250 admissions per year. Estimated levels of excess weight in adults (aged 18+) and physically active adults (aged 19+) are worse than the England average[166].

[164] Figures from Office for National Statistics: Available at https://www.ons.gov.uk/ (Accessed November 2019)

[165] Figures from Fenland Public Health Profile Available at: https://fingertips.phe.org.uk/static-reports/health-profiles/2019/e07000010.html?area-name=fenland (Accessed November 2019)

[166] All statistics from https://fingertips.phe.org.uk/static-reports/health-profiles/2019/e07000010.html?area-name=fenland (Accessed November 2019)

Economy and Employment

14.4.5 The economy of Fenland features a diverse mix of sectors and is made up of 3,405 businesses which combine to produce a GVA of around £2.2bn a year, operating at a productivity level of £69,500[167] per worker. Fenland's economic growth has outstripped other regions of the UK for the last three years thanks to a thriving entrepreneurial spirit amongst our small but industrious population. Over 70% of businesses that were set up within the last 5 years in Fenland remain actively trading.

14.4.6 82.7% of the population is economically active (higher than the East of England and nationally). Consequently, economic inactivity rates are lower than the equivalents regionally and nationally.

Tourism and Recreation

14.4.7 There are a range of tourism and recreation facilities and attractions in the District of Fenland and more widely for Cambridgeshire including accommodation, food and drink, heritage and other attractions and outdoor pursuits. The Main Development Site does not include any tourism attractions or recreational facilities.

14.4.8 In the centre of Wisbech, the conservation area on the Nene (North Brink) includes most of the buildings that constitute the town's tourist attractions including the Elgood Brewery and Peckover House and Garden, (which is owned by the National Trust) both of which are located to the North of the Energy from Waste CHP Facility Site.

14.4.9 The Nene Way is a waymarked long-distance footpath in England running through the English counties of Northamptonshire, Cambridgeshire and Lincolnshire. It generally follows the course of the River Nene and passes within 1km of the Proposed Development to the south. National Cycle Route 63 (or NCR 63) is a route of the National Cycle Network, running from Burton on Trent to Wisbech. This route passes within 1km of the Proposed Development to the south.

14.4.10 There are other more general recreational facilities in Wisbech, including gym's and outdoor sports and leisure facilities including Fenland Gym, Lakers Gym, Hudson Leisure Centre, and Wisbech Town Cricket & Hockey Club.

Grid Connection

14.4.11 The Grid Connection Corridor predominantly falls within Kings Lynn and West Norfolk Borough Council and Norfolk County Council and so information on population, health, economy and employment and tourism and recreation is set out below.

Population

14.4.12 In 2018, the population of Kings Lynn and West Norfolk was estimated to be 6,933 with males (3,3987) making up 48.9% of the population and females (3,546) making up 51.2%[168]. At the County Level the mid 2018 estimate of the population was 903,680.

[167] Figures from https://www.fenlandforbusiness.co.uk/invest-in-fenland/the-fenland-economy (Accessed November 2019)

[168] Figures from Norfolk Insight Available at: https://www.norfolkinsight.org.uk/population/report/view/fe5ed326c9094b518436b3f6767e7648/E02005555/ (Accessed November 2019)

Health[169]

14.4.13 The health of people in Norfolk is varied compared with the England average. 15.1% (21,670) of children live in low income families. Life expectancy for both men and women is higher than the England average.

Health inequalities

14.4.14 Life expectancy is 7.0 years lower for men and 4.5 years lower for women in the most deprived areas of Norfolk than in the least deprived areas.

Child health

14.4.15 In Year 6, 18.2% (1,521) of children are classified as obese, better than the average for England. The rate for alcohol-specific hospital admissions among those under 18 is 30*. This represents 50 admissions per year. Levels of GCSE attainment (average attainment 8 score) and smoking in pregnancy are worse than the England average.

Adult health

14.4.16 The rate for alcohol-related harm hospital admissions is 660, worse than the average for England. This represents 6,146 admissions per year. The rate for self-harm hospital admissions is 170, better than the average for England. This represents 1,441 admissions per year. The rates of new sexually transmitted infections and new cases of tuberculosis are better than the England average. The rate of killed and seriously injured on roads is worse than the England average. The rates of violent crime (hospital admissions for violence), under 75 mortality rate from cardiovascular diseases and under 75 mortality rate from cancer are better than the England average. The rate of statutory homelessness is worse than the England average.

Economy and Employment

14.4.17 At the County level, Norfolk's economy is large, ranking 15th for jobs and 10th for business numbers out of 206 upper tier authorities. It has more 37,000 business and 348,000 jobs. Norfolk has grown faster than the non-London UK average since the recession and is now worth £18.5bn[170] to the UK economy.

14.4.18 At the Borough level, 78.6% of the population is economically active. This is lower than the East of England (80.9%[171]) and marginally lower than the East of England as a whole. Kings Lynn and West Norfolk has average earning across all industries of £21,662. From 2003 to 2016, there was a 12 per cent jobs growth, with 6,500 net new jobs. Projected to 20122, a further 4 per cent jobs growth is expected, representing 2,500 net new jobs; together with replacement there are expected 16,000[172]

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[169] All health statistics from Norfolk Public Health Profile Available At: https://fingertips.phe.org.uk/static-reports/health-profiles/2019/e10000020.html?area-name=norfolk (Accessed November 2019)

[170] Figures from Norfolk County Council Available at: https://www.norfolk.gov.uk/jobs-training-and-volunteering/living-and-working-in-norfolk/our-economy (Accessed November 2019)

[171] Figures from NOMIS labour market statistics available at: https://www.nomisweb.co.uk/reports/lmp/la/contents.aspx (Accessed November 2019)

[172] Figures from Kings Lynn and West Norfolk Business Premises Needs Assessment April 2018. Available at: https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjxq_KXyormAhWiunEKHXWsD6kQFjAAegQIAxAH&url=https%3A%2F%2Fwww.west-

job openings over that time. Jobs are weighted towards labour-intensive roles, with fewer high-skilled roles than much of the region.

Tourism and Recreation

14.4.19 Norfolk as a whole has a range of tourist attractions and recreational pursuits on offer. Popular attractions include the Norfolk Broads, Norwich's ancient market and castle, Oxburgh Hall, Blickling Hall, the North Norfolk Railway, Blakeney point and Thetford Forest. Recreational pursuits available include walking, cycling, running, boating and sailing and golf.

14.4.20 At the Borough level for Kings Lynn and Norfolk level one of the main tourist attractions is Sandringham House, the royal family's country retreat. Not far away is splendid Houghton Hall built in the 1720s by Sir Robert Walpole, Britain's first Prime Minister. The hall is one of the finest Palladian houses in the country, set in 450 acres of Deer Park. It has a 5-acre award-winning walled garden and amazing model soldier collection. The stunning village of Castle Acre is truly rich in history with the 12th century Castle Acre Priory, ruins of its Norman castle and Bailey Gate at the heart of the village. Just along the coast the stately Holkham Hall and its parkland is well worth a visit, whilst Oxburgh Hall near Downham Market is a beautiful Tudor house with a magnificent gatehouse and moat

14.4.21 At the Borough level there are also a number of recreational pursuits available including birdwatching, fishing, cycling, golf and horse-riding[173].

14.4.22 In addition to the above, and in the area surrounding the Grid Connection Corridor there is an equine sports massage business located between Walpole St Peter and Walpole St Andrew at the northern end of the Grid Connection Corridor, Chestnut Farm equestrian centre is located to the southern end of the Grid Connection Corridor and south east of Walton Highway. There are also several informal recreational facilities in the area surrounding the Grid Connection Corridor, for example West Walton playground and Walpole Highway play area.

Future baseline

14.4.23 From the information acquired for this assessment, there is no indication that the baseline is in the process of any significant transitions other than that future development will be guided by the emerging Fenland Local Plan. The Issues and Options document was issued for consultation in October 2019 and it suggest for example, that a potential new housing figure of 11,550 dwellings will be required in the district by 2040. The contents of the plan will be monitored as it progresses through the various stages to adoption.

14.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

14.5.1 The Proposed Development is expected to generate a range of socio-economic effects, some of which will be temporary, whilst others will be permanent. Due consideration will be given to the effects of the Proposed Development in terms of the following:

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norfolk.gov.uk%2Fdownload%2Fdownloads%2Fid%2F5162%2Fbusiness_premises_needs_assessment.pdf&usg=AOvVaw3s-017K88uDNamd2UfdgsS (Accessed November 2019)

[173] Tourism information from Visit West Norfolk, Available at: https://www.visitwestnorfolk.com/things-to-do/attractions/attractions-around-west-norfolk/ (Accessed November 2019)

- Direct and induced employment;
- Gross Value Added during the construction phase;
- Health – both during the construction and operation of the Proposed Development;
- Impacts on any nearby recreation facilities and businesses during both the construction and operational phases including consideration of environmental impacts from visual, noise, traffic and air quality assessments on users;
- Impacts on tourism;
- Creation of long-term employment opportunities once the Proposed Development is operational including consideration of any existing employment uses on Site; and
- The change of land use within the Site and any direct effects that could occur due to this.

14.5.2 In addition, the Proposed Development will make a contribution to the alleviation of the adverse consequences of global warming. This will be by providing an alternative and renewable source of energy that does not involve the emission of greenhouse gases during operation, compared with the greenhouse gas emissions associated with electricity produced using fossil fuels. The consideration of emissions will be presented within the climate change chapter of the ES.

14.5.3 There will also be benefits from a reduction in the amount of waste sent to landfill. The Proposed Development is expected to have capacity for 523,500 tonnes of waste per annum: suitable for commercial, industrial and residual local authority waste. These benefits could be significant and would be assessed in further detail in the subsequent ES.

Potential significant effects requiring further assessment

14.5.4 The potential effects of the Proposed Development that are likely to be significant with regards to Socio-economics, and those which would be subject to further assessment are set out below for construction and operation.

Construction

14.5.5 During the construction phase of both the Main Development Site and the Grid Connection the following socio-economic effects are considered to be potentially significant:

- Direct economic impacts: jobs and capital spend that are wholly or largely related to construction, of the Proposed Development (there would be up to 700 temporary construction personnel during the construction phase, excluding Grid Connection); Indirect economic impacts (positive and negative): jobs and capital spend generated in the economy of the Study Area in the chain of suppliers of goods and services to the direct activities;
- Induced economic impacts: jobs and capital spend created by direct and indirect employees' spending in the Study Area or in the wider economy; and
- Wider economic (catalytic) impacts (positive and negative): employment and income generated in the economy related to the construction of the Proposed Development. This includes the effects on inward investment, elsewhere within the construction sector (e.g. as a result of worker supply) and on other sectors of the economy;
- Impacts on local services;
- Impacts on nearby recreational facilities and businesses;
- Health (including effects on health facilities); and

- Indirect effects on tourism and recreation.

Operation

14.5.6 During the operational phase the following socio-economic effects are considered to be potentially significant:

- Direct economic impacts: jobs and capital spend that are wholly or largely related to operation of the Proposed Development (there would be 40 full time jobs created which whilst that may not be significant at a district or county level, could be significant at a local level,);
- Indirect economic impacts (positive and negative): jobs and capital spend generated in the economy of the Study Area in the chain of suppliers of goods and services to the direct activities (there would be other goods and services needed such as cleaning, catering and maintenance staff which would generate further local employment beyond the 40 full time jobs);
- Induced economic impacts: jobs and capital spend created by direct and indirect employees' spending in the Study Area or in the wider economy;
- Indirect effects on tourism and recreation; and
- Health (there would be health benefits associated with the production of energy from a renewable resource and from a reduction in the amount of waste sent to landfill. There could also be health effects in relation to the emissions from the Proposed Development).

Receptors and effects scoped out of the assessment

14.5.7 The following receptors have been scoped out from being subject to further assessment because the potential effects in relation to both the Main Development Site and the Grid Connection are not considered likely to be significant:

- Direct effects on tourism and recreation during construction and operation;
- Demand for local services;
- Impacts on nearby recreational facilities and businesses; and
- In addition, effects on the amenity of local residents and the local community due to traffic (**Chapter 5**), noise (**Chapter 6**), air quality (**Chapter 7**), visual impact (**Chapter 8**), and traffic, are not included in this chapter as these would be considered in the relevant EIA Report chapter as noted.

14.5.8 The rationale for scoping out these effects is provided below.

Direct Effects on Tourism and Recreation

14.5.9 The Main Development Site is located within an industrial estate. There are no tourism or recreational facilities located within it or in close proximity to it. Hence direct effects on construction and operation are therefore proposed to be scoped out.

Demand for Local Services and Impacts on Nearby Educational and Community Facilities and Businesses

14.5.10 Whilst the construction workforce will be large it will be temporary and is unlikely to give rise to an increase in population such that there will be a significant increase in demand on local services (such as schools). Operational employment levels will be significantly lower and the indirect demand for services and facilities should not be significant.

14.5.11 Similarly, effects on local community facilities (beyond potential effects on noise and traffic), such as sport and recreation, housing demand/supply, and cultural or religious facilities will not be significant given the levels of operational employment created. MVV will also encourage the take up of jobs by people already resident in the area. There would be no change in the provision of these services arising from the Proposed Development and effects of the Proposed Development on local community facilities will therefore not be considered further.

14.6 Assessment methodology

General approach

14.6.1 The assessment will focus on the impacts of construction and operation on the local population, employment and economy, health and (indirectly) on tourism and recreation. The conclusions in other technical chapters, particularly **Chapter 8: Landscape and Visual** and the **Chapter 9: Historic Environment**, will be used to assess the indirect impacts on tourism and recreation. Health impacts would also cross reference to other technical chapters including **Chapter 6: Noise and Vibration,** and **Chapter 7: Air Quality**.

14.6.2 Agreement on this approach would be sought with the Planning Inspectorate and Fenland District Council.

Determination of significance

14.6.3 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*".

14.6.4 The EIA Regulations do not define significance and it will be necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

14.6.5 Where possible, guidance will be used to establish the potential effects of the Proposed Development. Where there is no prescribed guidance, professional judgement based on previous experience of other similar projects will be used.

14.6.6 Set out below is the proposed approach for determining the sensitivity and magnitude of change on employment and the economy, health and tourism and recreation.

Employment Effects

14.6.7 The employment impacts within the Study Area would focus on the following impact categories:

- Direct economic impacts: jobs and capital spend that are wholly or largely related to construction, and operation of the Proposed Development;
- Indirect economic impacts (positive and negative): jobs and capital spend generated in the economy of the Study Area in the chain of suppliers of goods and services to the direct activities;

- Induced economic impacts: jobs and capital spend created by direct and indirect employees' spending in the Study Area or in the wider economy; and
- Wider economic (catalytic) impacts (positive and negative): employment and income generated in the economy related to the construction and operation of the Proposed Development. This includes the effects on inward investment, elsewhere within the construction sector (e.g. as a result of worker supply) and on other sectors of the economy.

14.6.8 For employment effects, the availability of labour and skills is critical in accommodating the demands, needs and requirements of the Proposed Development. Adequate labour and skills capacity results in a low sensitivity, while limited labour and skills capacity results in a high sensitivity. Informed by professional judgement sensitivity criteria in terms of employment are shown in **Table 14.2** below.

Table 14.2 Employment, Economy, and Land Use Sensitivity

Sensitivity	Definition
Very High	Employment – Where there is the requirement for very technical specialist input, which is difficult to source, at a national level and/or there is very low labour or skills at a local level Economy – Where the economy is very sensitive to financial change. Land Use – Where the Site has many (more than 10) different land use types (i.e. agriculture, fishing, recreation, residential, employment).
High	Employment -– Where there is some requirement for technical specialist input, which is difficult to source at a national level and /, or where there is limited labour or skills available at the local level (Medworth ward). Economy – Where the economy is sensitive to financial change. Land Use – Where the Site has multiple (7-10) different land use types.
Medium	Employment – Where there is limited requirement for very technical specialist input, which is difficult to source at a national level, and or where there is some constraints to the availability of labour or skills at the local level. Economy – Where the economy is resilient to change. Land Use – Where the Site has several (5-7) different land use types.
Low	Employment -– Where there no requirement for technical specialist input, and / or where there is a readily available labour force and skills. Economy – Where the economy is very resilient to financial change Land Use – Where the Site has few (less than 5) different land uses.

14.6.9 The magnitude of potential changes on employment and the economy would be assessed as defined in **Table 14.3** below. This would be based on participants within the labour force; and the level of occupational skills available in the Study Area as set out in **Table 14.2** above.

Table 14.3 Employment, Economy and Land Use Magnitude of Change

Magnitude of Change	Definition
Very High	Changes as a result of the Proposed Development are of national scale.
High	Changes as a result of the Proposed Development that are of greater than local scale or which exceeds recognised standards.
Medium	Noticeable changes as a result of the Proposed Development.
Low	Slight changes as a result of the Proposed Development that may not be perceptible or are within the normal seasonal/annual variation range.

Health

14.6.10 During the construction of the Proposed Development there will be a sizeable influx of construction workers into Wisbech (up to 700 construction personnel are anticipated over the estimated 3 year construction period for the Proposed Development). This could put pressure on health services and facilities in the local area. There could also be other health impacts from the Proposed Development during operation from the emissions. The main factors considered relevant when defining the sensitivity of receptors relating to health are outlined in **Table 14.4** below.

Table 14.4 Health Sensitivity

Sensitivity	Definition
Very High	Where health facilities are at capacity.
High	Where there is a low / limited availability of health facilities.
Medium	Where there is a constrained availability of health facilities.
Low	Where there are readily available health facilities.

14.6.11 The magnitude of change is gauged by estimating the level of change on the receptor as a result of Proposed Development. The magnitude of change is evaluated in line with the criteria in **Table 14.5** whereby the definitions have been derived based upon professional judgement.

Table 14.5 Health Magnitude of Change

Magnitude of Change	Definition
Very High	Changes as a result of the Proposed Development are of national scale.
High	Changes as a result of the Proposed Development that are of greater than local scale or which exceeds recognised standards.
Medium	Noticeable changes at a local scale as a result of the Proposed Development.
Low	Slight changes as a result of the Proposed Development that may not be perceptible or are within the normal seasonal/annual variation range

Tourism and Recreation

14.6.12 Indirect effects upon tourism and recreation will be scoped in. Tourism and recreational behaviour would only be detrimentally affected where the Proposed Development either changes the visitor/user pattern in terms of numbers, and /or their patterns of expenditure for the worse. As such, opportunities for tourist and visitor expenditure, any potential variation in expenditure or visitor numbers, and consequent effects on turnover or employment are of key importance.

14.6.13 Recreational behaviour would be affected where a development potentially leads to a change in recreational habits or activities. Factors which might lead to change in recreational behaviour include loss, closure, or diversion of access routes; obstructing access routes; enhancing access; reduction in amenity or intrusion; enhancement in amenity; and changes in setting and context of the recreational resource.

14.6.14 The potential effect on recreational users is likely to be a factor of the proximity of the Main Development Site, the resource in terms of usage and the type of resource, the visibility of the Proposed Development and potential Grid Connection, and any diversion due to their presence.

14.6.15 The main factors considered relevant when defining the sensitivity of receptors relating to recreation and tourism are outlined in **Table 14.6**.

Table 14.6 Sensitivity of Recreational and Tourism Receptor

Sensitivity	Definitions
Very High	Where the receptor or resource is defined as being of National Status or has high visitor numbers (in excess of 50,000 visitors or more per annum).
High	Where the receptor or resource is defined as being National status or has high visitor numbers (in excess of 25,000 visitors or more per annum).
Medium	Where the receptor or resource is defined as being of regional status or has medium visitors' numbers (10,000-24,999 visitors per annum).
Low	Where the receptor or resource is defined as being of local status or low visitor numbers (less than 10,000 visitors per annum).

14.6.16 The magnitude of change is gauged by estimating the level of change on the receptor as a result of Proposed Development. The magnitude of change is evaluated in line with the criteria in **Table 14.7**.

Table 14.7 Recreation and Tourism Magnitude of Change

Magnitude of Change	Definition
Very High	Where the extent of changes on receptors (activities, resources, or businesses) is very large scale and a very large number of people or activities would be affected.
High	Where the extent of changes on receptors (activities, resources, or businesses) is large scale and a large number of people or activities would be affected; or where other technical chapters conclude that there may be significant effects that this assessment considers may affect visitors to the recreation/tourist receptor (for example close views of turbines).
Medium	Where the extent of changes on receptors is small in scale, but a large number of people or activities would be affected; or alternatively where the extent of changes on activities, resources and/or businesses is large in scale but only a small number of people or activities would be affected.
Low	Where the extent of changes on receptors is small in scale and would only affect a small number of people or activities; or where the Site would be unlikely to be visible (as it would be obscured by topography or woodland, etc) or would be at a considerable distance from receptors.

14.6.17 In line with standard EIA practice, and taking into account professional judgement, the sensitivity of receptors will be considered against the magnitude of change to determine the significance of resultant effects. In the case of the injection of money into the economy resulting from the capital investment, however, the assessment of significance is effectively based on the magnitude of change in monetary terms, with a large magnitude of change being considered to result in a significant effect.

14.6.18 Based on the approach summarised in **Table 14.2**, effects that will result in a change identified as major or moderate are considered to be significant in terms of this assessment.

14.7 Assumptions

14.7.1 In scoping this section the following assumptions have been made:

- That the Grid Connection will form part of the Proposed Development. Should it become the subject of a separate consent it will remain to be considered as cumulative development;
- The CHP element of the Proposed Development will sustain economic activity in the surrounding area;
- The construction workforce will be a combination of local suppliers and workers from further afield. Those requiring accommodation will be accommodated within the existing visitor/private rented accommodation sector.

15. Major Accidents and Disasters

15.1 Introduction

15.1.1 This chapter describes the scope of the assessment for major accidents and disasters. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Description of the Development** and with respect to relevant parts of other chapters, **Chapter 9: Historic Environment, Chapter 10: Biodiversity, Chapter 11: Hydrology, Chapter 12: Geology, Hydrogeology and Contaminated Land and Chapter 13: Climate Change**, where common receptors have been considered and where there is an overlap or relationship.

15.1.2 As a result of the amendment of the *Infrastructure Planning (Environmental Impact Assessment) Regulations* in 2017 (the EIA Regulations) (European Commission, 2017), it is now a requirement that the significant effects relating to major accidents and disasters as a result of the Proposed Development are considered in the Environmental Impact Assessment (EIA) process.

15.1.3 Previously, there was no driving factor for major accidents and disasters to be considered in EIA. However, the European Union revised the EIA Directive (2014/52/EU) to ensure that the effects of major accidents and disasters are a material consideration in decisions to grant consent for developments requiring EIA.

15.1.4 A major accident has been defined for the purposes of this report as an occurrence resulting from an uncontrolled event caused by a man-made activity or asset leading to serious damage on receptors. The term 'disaster' is used to describe a natural occurrence leading to serious damage on receptors. In both cases, the effects could be either immediate or delayed.

15.2 Relevant legislation, planning policy, technical guidance

Legislative context

15.2.1 The following legislation is relevant to the assessment of the effects on receptors arising from major accidents and disasters:

- *Planning (Hazardous Substances) Act 1990*;
- *Health and Safety at Work etc. Act 1974* (HSWA) and associated regulations which include:
  - *Construction (Design and Management) Regulations 2015*
  - *Dangerous Substances and Explosive Atmospheres Regulations 2002*
- *The Civil Contingencies Act 2004* and associated regulations including:
  - The Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005
  - The Civil Contingencies Act 2004 (Amendment of List of Responders) Order 2008
  - The Civil Contingencies Act 2004 (Contingency Planning) (Amendment) Regulations 2012
- *Environmental Protection Act 1990 and associated legislation and regulation including:*
  - The Environment Act 1995
  - The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (as amended)

- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

- *Electricity at Work Regulations 1989*
- *Provision and Use of Work Equipment Regulations (PUWER) 1998;* and
- *The Regulatory Reform (Fire Safety) Order 2005*.

Planning policy context

15.2.2 There are a number of policies at the national and local level that will be relevant to the Proposed Development, as listed in **Table 15.1.**

Table 15.1 Planning Policy relevant to Major Accidents and Disasters

Policy reference	Implications
National Policy	
Overarching NPS for Energy (EN-1)	Section 4.11 and 4.12 denote that the Health and Safety Executive (HSE) is the regulator for occupational Health and Safety regulations including those which cover major accidents. Although it is noted that the Site will not require Hazardous Substance Consent nor will it be a Control of Major Accident Hazards (COMAH) establishment.
Renewable Energy NPS (EN-3)	Paragraph 2.5.30 acknowledges that at the time of application, the design of the process is unlikely to be fixed but the EIA should be undertaken on the basis of a maximum extent.
NPS for Electricity Networks Infrastructure EN-5	No technology specific reference to major accidents or hazards within NPS EN-5.
Local Policy	
Fenland Local Plan **Policy LP16 (l)**	The Fenland Local Plan requires good design to mitigate the risk of accidental releases (pollution) to the environment, including at a scale which represents a major accident.
Cambridge and Peterborough Waste Adopted Core Strategy	Reference is focused upon the location of hazardous waste management facilities whilst nuclear waste treatment, storage or disposal will not be permitted. It is not intended to receive hazardous waste at the proposed facility.
Cambridge and Peterborough Waste Local Plan Proposed Submission Publication Draft Nov 2019	Policy 17 design includes criteria against which development will be considered. It requires that new development be designed to minimise crime, fire risk, create a safe environment and provide satisfactory access for emergency vehicles. Policy 18 Amenity Considerations includes a criterion for the prevention of harm to human health or safety.

Policy reference	Implications
King's Lynn and West Norfolk Local Development Framework – Core Strategy	The document focuses upon highway safety and does not contain policy in respect of Major Accidents and Disasters.
King's Lynn and West Norfolk Local Development Framework Site Allocations and development Management Policies	Policy DM 20 Renewable Energy which includes for its associated infrastructure states that applications will be assessed to determine whether the benefits are outweighed by the impacts with reference to public safety including footpaths, bridleways and other rights of way in addition to vehicle highways.

Technical guidance

15.2.3 The following technical guidance documents have informed the approach to the assessment and scope of major accidents and disasters within this EIA Scoping Report:

- *Reducing Risks Protecting People (R2P2)* (Health and Safety Executive, 2001)[174]: R2P2 describes the HSE's decision making process and presents the protocols and procedures followed in decision making in relation to the protection of human life in the UK. The tolerability criteria for risk to people, including the aversion for large numbers of casualties resulting from single incidents, has been referenced in setting the criteria for assessing the significance of effects on people;
- *Environmental Impact Assessment of Projects, Guidance on Scoping* (European Commission, 2017)[175]: Guidance on how to undertake a scoping assessment under the requirements of the new EIA Directive to ensure that sufficient information is included. The guidance provided by the European Commission highlights that a risk-based approach may be adopted in lieu of the typical sensitivity/extent criteria, where appropriate;
- *Environmental Impact Assessment of Projects, Guidance on the Preparation of the Environmental Impact Assessment Report* (European Commission, 2017)[176]: Guidance on how to develop good quality environmental impact assessment reports to ensure appropriate information is available for decision making purposes. The guidance provided by the European Commission highlights that the context for inclusion of major accidents and disasters is to ensure that adequate focus is given to the provisions for events leading to significant risk, with an objective of building resilience in a development against such effects;

[174] Health and Safety Executive Reducing Risks Protecting People (R2P2) (2001)

[175] European Commission Environmental Impact Assessment of Projects, Guidance on Scoping (2017)

[176] European Commission Environmental Impact Assessment of Projects, Guidance on the Preparation of the Environmental Impact Assessment Report (2017)

- *Guidance on the Interpretation of Major Accidents to the environment for the purposes of COMAH Regulations* (DETR, 1999)[177]: Guidance on what would constitute a major accident to the environment (from the perspective of COMAH regulations); and
- *Guideline – Environmental risk tolerability for COMAH establishments* (CDOIF, 2016)[178]: Guidelines on the assessment and tolerability of Major Accidents to The Environment (established in relation to COMAH sites) produced by a joint industry and regulator forum in the UK.

15.3 Data gathering methodology

Study area

15.3.1 The potential major accidents and disasters that have been identified at scoping are typically associated with direct physical impact e.g. collapse of a structure, exposure to high voltage (HV) electricity and accidents involving fire. Direct harm from such events occurs in close proximity to the accident. Other harmful effects could arise from a release of hazardous substances that may have potential to be more widespread, as they can travel from the source as a result of the momentum from the initial release and being carried by air or watercourses. These govern the selection of study area for receptors.

15.3.2 Professional judgement suggests that a 1 km buffer from the Energy from Waste CHP Facility Site is considered conservative for harm to receptors arising from these incidents which include a major fire, structural collapse, accidents involving HV electricity or release of stored waste materials.

15.3.3 Professional judgement also suggests that a 500m buffer around the potential route of the Grid Connection is considered appropriate for harm to receptors arising from incidents during construction or operation.

15.3.4 The temporal scope of the assessment of major accidents and disasters is consistent with the period over which the Proposed Development would be carried out and therefore covers the construction, operational and decommissioning periods.

Summary of data sources

15.3.5 The EIA scoping exercise has been undertaken with reference to **Chapter 2: Description of the Proposed Development**, supported by a number of data sources. The principal data sources used to inform this chapter for potential effects comprise of the following:

- The MAGIC map website managed by Defra for locations of vulnerable receptors close to the Site (Magic, 2017);
- Natural England's Access to Evidence database for details on Designated Land and Water Sites and for Scarce Habitats and Species (Natural England, 2015);
- Historic England's database for details on Listed Buildings and Scheduled Monuments (Historic England, 2019);

[177] DETR Guidance on the Interpretation of Major Accidents to the environment for the purposes of COMAH Regulations (1999)

[178] CDOIF Guideline – Environmental risk tolerability for COMAH establishments (2016)

- The Environment Agency's Catchment Planning database for river bodies (Environmental Agency, 2019);
- Google Earth and Google Maps for the location of buildings close to the site, including schools and hospitals (Google, 2019) (Google, 2019);
- The COMAH Information Portal[179] to identify the locations of any COMAH sites and their inventories (HSE, 2015); and
- HSE Planning Advice Web App[180] to identify the locations of Major Hazard sites and/or pipelines within consultation distance from the site (HSE, 2015).

15.4 Overall baseline

Current baseline

Sources of Major Accident

15.4.1 The Energy from Waste CHP Facility Site is not within the consultation distances of any major accident hazard site, licensed explosive sites or pipelines.

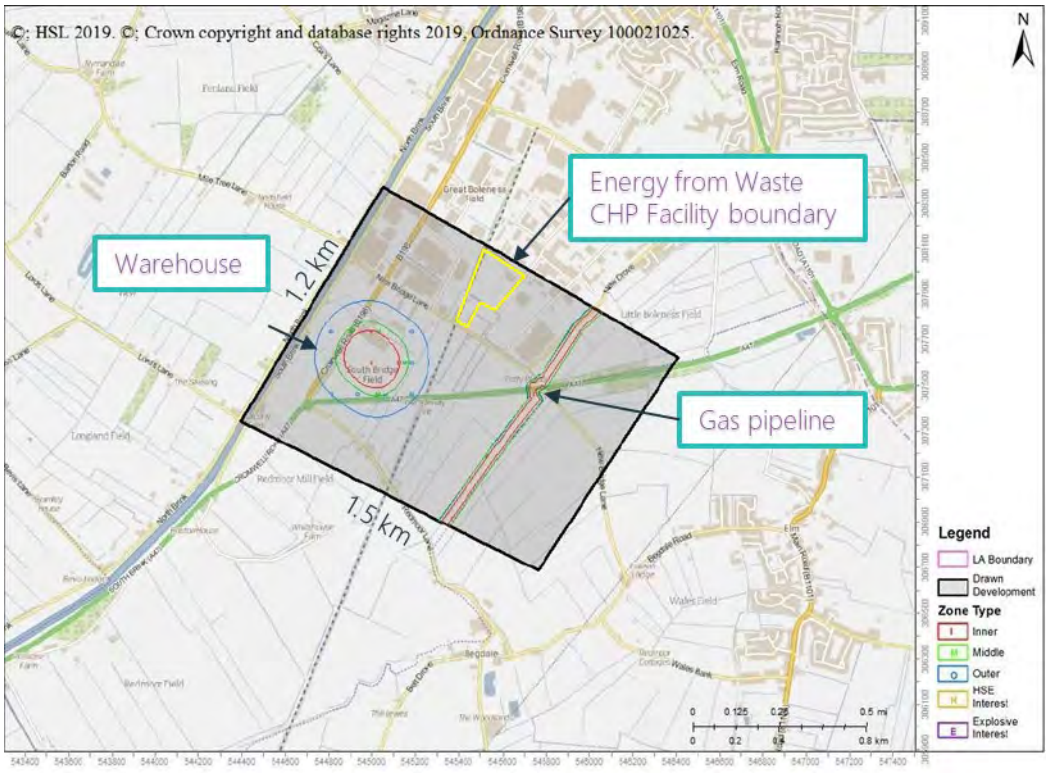
15.4.2 There is one COMAH establishment located within the 1 km study area, approximately 300 metres southwest of the Energy from Waste CHP Facility Site, however the development lays outside the consultation distance assigned to this facility. The site is a warehouse owned by H.L. Hutchinson Limited, which stores and distributes agricultural products some of which are dangerous for the environment or hazardous to human health.

15.4.3 Also within the study area is a section of high pressure gas pipeline operated by Cadent Gas Ltd. It is found approximately 400m to the east at the closest point, the Energy from Waste CHP Facility Site is over 300m from the consultation distances associated with this pipeline. The locations of the warehouse and the gas pipeline relative to the general location of the Energy from Waste CHP are provided in **Figure 15.1**.

[179] Health and Safety Executive COMAH 2015 Public Information. Available online at: https://notifications.hse.gov.uk/COMAH2015/Search.aspx [Accessed 25 November 2019]

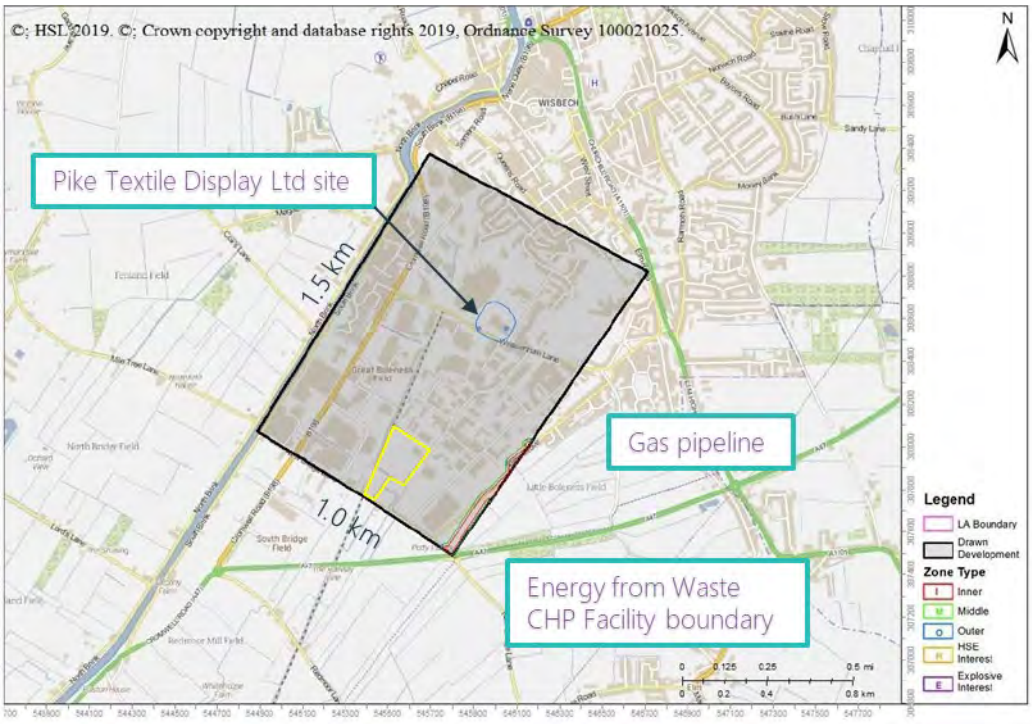
[180] Health and Safety Executive HSE Planning Advice Web App. Available online at: http://www.hse.gov.uk/landuseplanning/planning-advice-web-app.htm [Accessed 25 November 2019]

Figure 15.1 Locations of Major Hazard sites and/or pipelines - site south



15.4.4 Approximately 650m to the north of the Energy from Waste CHP Facility Site, there is another site with HSE assigned consultation distances. This site currently houses a fabric manufacturing facility owned by Pike Textile Display Ltd; this facility is shown in **Figure 15.2,** but as can be seen the Energy from Waste CHP Facility Site is well outside the consultation distances for this site.

Figure 15.2 Locations of Major Hazard sites and/or pipelines - site north



15.4.5 In addition to the sites shown within the study area above, there are pipelines located in the vicinity of the Grid Connection Corridor and the CHP pipeline. These include biomethane, Cadent and National Grid pipelines. The Grid Connection Corridor passes primarily through fields and therefore any crossings are expected to be away from populated areas.

Sources of Disasters

15.4.6 Extreme weather such as heavy precipitation, extreme temperatures (high and low) and high winds are possible at the Proposed Development. These will be predicted where possible by the Met Office including the use of weather warning for hazardous weather.

15.4.7 Flooding is a potential disaster which is relatively prevalent in the low-lying fens area. This will be assessed elsewhere in a FRA detailed in **Chapter 11: Hydrology**.

15.4.8 Lightning is a sudden electrostatic discharge that originates from electrically charged regions of a cloud and can strike the ground. Lightning strikes can cause damage to structures, often leading to fires or can kill or seriously injure people if struck. BS EN 62305-2:2012 suggests that the likely strike rate for the site is approx. 1 in 30 years.

15.4.9 Seismic activity in the UK is generally low with no significant earthquakes occurring frequently. According to data provided by the British Geological Survey (BGS) database (British Geological Survey (BGS), 2019)[181], there have been a total of four earthquakes in the UK mainland surpassing 4.0 magnitude local within the last 10 years (data from 2008 to 2019). Furthermore, none of these earthquake events was characterised as strong (>6.0 magnitude local). Therefore, a natural disaster due to seismic activity is considered a highly unlikely scenario.

15.4.10 Volcanic activity is not known in the UK, with no active volcanoes located in the UK (British Geological Survery (BGS), 2007).

15.4.11 The BGS state that the Proposed Development is within an area of 'Low to Nil' risk of landslide, so this has not been considered further (BGS, 2019).

15.4.12 Tsunamis while extremely rare could hit the UK albeit with a maximum wave height of 1-2m. Storm surges of this magnitude are far more common (Defra, 2006) and capable of being handled by sea defences; the Proposed Development is also >10 km away from the nearest coastline.

Receptors

15.4.13 Potential receptors that could be impacted from potential major accidents and disasters onsite were identified within 1 km from the Energy from Waste CHP Facility Site. A full list of the potential receptors identified is given in **Appendix C** by receptor type, a summary of the key baseline information is given in the sections below.

Human receptors

15.4.14 To the northeast of the Energy from Waste CHP Facility Site, the area is built-up extending more than 1km. The immediate area close to the Energy from Waste CHP Facility Site is mainly industrial, however there are houses and schools located within 1km from the Energy from Waste CHP Facility Site. There are two schools and an education centre located to the northeast in the vicinity of the Energy from Waste CHP Facility Site, TBAP Unity Academy (approximately 500m from the Energy from Waste CHP Facility Site) and the Thomas Clarkson Academy (approximately 750m) together

[181] British Geological Survey British Geological Survey database 2019. Available online at: https://www.bgs.ac.uk/data/home.html [Accessed on 25 November 2019]

with the Cambian Education Foundation Learning Centre, approximately 200m distant. To the south and west, the area consists predominantly of agricultural fields and small woodland areas, with a limited number of houses found in this direction.

15.4.15 There are no hospitals located within 1 km of the Energy from Waste CHP Facility Site, one care home is located 850m to the northwest.

Historic Environment

15.4.16 There is one designated asset within 1km of the Energy from Waste CHP Facility Site, which is the Grade II listed Albion Villa (1229758), located approximately 830m to the north of the boundary.

Designated biodiversity sites

15.4.17 There are no designated biodiversity sites within the study area such as Sites of Special Scientific Interest (SSSI), National Natural Reserves, Special Protection Areas, Special Areas of Conservation and Ramsar sites.

15.4.18 There are a few areas of Priority Habitat found within 1 km of the Energy from Waste CHP Facility Site, including some areas of coastal and floodplain grazing marsh, deciduous woodland and traditional orchard. Most of these scarce habitats are located to the southwest of the Energy from Waste CHP Facility Site, with the largest individual inventory having an approximate area of 10 hectares.

Water receptors

15.4.19 The River Nene lies 500 m to the west of the Energy from Waste CHP Facility Site.

15.4.20 There is no groundwater beneath the Energy from Waste CHP Facility Site, both the superficial deposits and bedrock are considered to be unproductive strata.

Baseline for Grid connection

15.4.21 The area between the Energy from Waste CHP Facility Site and the potential connection points to the grid is predominantly rural in nature east of the A47.

15.4.22 In addition to some of the receptors reference above, there are a number of listed buildings within the Elm conservation area.

Future baseline

Climate Change

15.4.23 Climate change is predicted to lead to an increase in peak rainfall intensities and potential flood flows over time. The latest guidance on climate change allowances to be applied in England was last updated in February 2019[182] and provides guidance on the potential enhanced rainfall intensity, with wetter winters and drier summers. Climate change is expected to alter the prevalence

[182] Environmental Agency, 2019. *Flood Risk Assessment - Climate Change Allowances.* [Online] Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances [Accessed 7 November 2019

of extreme weather conditions which could, if unmitigated, lead to a disaster. Any impact of Climate Change will be dealt with through **Chapter 13: Climate Change**.

Technological Development

15.4.24 It is anticipated that there may be technological improvement over the lifetime of the Proposed Development; this could include electric or alternately fuelled vehicles, autonomous driving vehicles and improvements in instrumented safety systems for machinery. These are likely to reduce the risk posed to the environment (human and non-human receptors); however, they may also introduce new hazards that would need to be managed at the appropriate time. Changes in the operations of the Site and its surroundings (e.g. switching to fully electric vehicles) will change the nature of the vehicular accidents which could occur.

Land Use Change

15.4.25 Changing land use may mean that the surrounding environment could become more agricultural, industrial, residential or recreational in use. Changing ecological baselines resulting from the land use and climate change factors may also impact the local ecology and associated environmental designations of the land. As the surrounding environment changes, so do the receptors which could be affected. If land adjacent to the Proposed Development were to receive a higher level of ecological designation or larger or more sensitive human population, then the sensitivity of receptors could increase. It is not expected that this will drastically change due to the application of local planning policy and the use of agricultural land.

15.5 Scope of the assessment

Identification of receptors that could be subject to likely significant effects

15.5.1 An identification of all of the receptors and external sources of accident/disaster within the major accidents and disasters study area was undertaken and the potential sources/receptors within this area are described within the baseline (**Section 15.4**). Where it was identified that an accident scenario arising from the Proposed Development could potentially affect a receptor, or an offsite major accident or disaster could affect the Proposed Development, a more detailed review was carried out to determine whether they required further assessment or were adequately controlled to ensure no significant effects.

15.5.2 Receptors are split into categories which were determined by their relative sensitivity and significance given in typical major accidents risk assessment methodology used in the UK. The categories are in **Appendix 15A**.

Potential significant effects requiring further assessment

15.5.3 The effects of the Proposed Development with regards to major accidents and disasters are not expected to be significant and therefore do not require further assessment. Notwithstanding this, the ES would confirm and justify this position.

15.5.4 The following section justifies why potential major accidents and disasters are unlikely to be significant.

Receptors and effects scoped out of the assessment

15.5.5 The sources of major accidents leading to significant effects upon receptors in **Table 15.2** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant.

Table 15.2 Receptors and effects scoped out of the assessment

Effect	Receptors	Potential Harm
Occupational Health and Safety	Onsite workforce (construction and operation)	Serious injuries or loss of life to small numbers of workers
Major accidents involving electricity	Onsite workforce (operation only) Public	Serious injuries or loss of life to small numbers of people
Major accidents involving the EFW process	Onsite workforce (operation only)	Serious injuries or loss of life to site workers
Major accidents involving fire	Onsite workforce (operation only) Neighbouring industrial sites	Serious injuries or loss of life Potential exposure to smoke and health effects
Major accidents or disasters leading to structural hazards	Onsite workforce (operation only)	Serious injuries or loss of life to site workers
Major accidents or disasters involving the spill of chemicals or waste materials	Onsite workforce (operation only) Water environment and surrounding land	Serious injuries or loss of life to site workers Pollution of water environment
Major accidents or natural disasters during the construction process	Onsite workforce (construction only)	Serious injuries or loss of life to site workers
External accidents affecting the Site population	Onsite workforce (construction and operation)	None identified
Natural disasters affecting the Site population	Onsite workforce (operation only)	Serious injuries or loss of life to site workers
Acts of terrorism affecting the site population	Onsite workforce (construction and operation)	Serious injuries or loss of life to site workers

Occupational health and safety

15.5.6 In this assessment, occupational accidents are defined as work-related accidents that could affect only one or two workers carrying out the task, and the effects of which do not extend to receptors within the wider environment. Under UK Health and Safety legislation, employers are required to manage the risk to their employees and others who could be affected by their activities and ensure that the risk is reduced As Low As Reasonably Practicable (ALARP). The ALARP principle requires compliance with good practice as a minimum.

15.5.7 The facility will be designed with consideration of the potential accidents that could arise. These will be mitigated through application of the hierarchy of controls: i.e. hazards will be designed out or minimised where practicable, and appropriate measures to prevent and mitigate residual risks implemented.

15.5.8 During the operational phase of the Proposed Development, systems to ensure compliance with all relevant UK Health and Safety legislation will need to be implemented. It is assumed that this will

occur through the facility Integrated Management System (IMS), which will require risk assessment and preventative measures be put in place. The IMS will be based on the approach used at MVV's existing facilities, tailored to suit the Proposed Development. This IMS will achieve certification to ISO 9001, ISO 14001 and ISO 45001 during the first year of operation such has been achieved at MVVs Devonport and Dundee sites.

15.5.9 Although there is no formal visitor centre as part of the Energy from Waste CHP Facility, MVV do intend to have space within the administration area for visitors providing that their access onto site is pre-booked. It is intended that, when the facility is operational, there will be tours of the facilities for visitors, including school children. The hazard and risk assessment processes described above take account of the presence of these visitors and planned visit routes. Technical and administrative measures will be in place to ensure the risk to visitors is ALARP. Such visitors will be accompanied at all times, and MVV will ensure that they comply with onsite health and safety requirements. The emergency arrangements will incorporate specific provision for the visitors including evacuation and muster tailored to the size and nature of the visitor groups. A Personal Emergency Evacuation Plan is prepared for those with disabilities. Other measures to ensure that there is no significant risk to visitors from major accidents or disasters include the prevention of visitors working onsite and that group sizes are appropriate to age and experience of the visitors.

15.5.10 During the construction phase, occupational health and safety will be managed to comply with the requirements of the *Construction (Design and Management) Regulations 2015*. Major accidents which could occur during construction are considered above in paragraph 15.5.37.

15.5.11 These occupational accidents include:

- Machinery safety;
- Falls from height;
- Operation of vehicles; and
- Electrical safety.

15.5.12 Some specific examples of how these will be appropriately managed are given below.

15.5.13 Electrical hazards will be managed in line with the *Electricity at Work Regulations 1989*. These regulations require that hazards are designed out where practicable and suitable controls are put in place to manage the risk where not. They require adequate space, insulation, isolation and capacity is designed into the system and that any person undertaking work on the system is competent to do so. The IMS will provide strict controls and safe systems of work for operation and maintenance of the high voltage assets on the Main Development Site which implement the requirements of the regulations.

15.5.14 Machinery hazards typically only affect the workers using them but can lead to serious or occasionally, fatal injuries to those workers. These hazards do not impact the surrounding receptors and are not generally considered major accident consequences. They will be managed through safe systems of work implemented through the IMS, as well as a thorough review and risk assessment of the machinery in line with the requirements of the *Provision and Use of Work Equipment Regulations (PUWER) 1998*. In particular PUWER requires that machinery is suitable for its intended use, is properly maintained and that as far as reasonably practicable contact with parts of the machinery that could cause injury is prevented by effective measures, such as guards and interlocks.

Major accidents involving high voltage electricity during operation

15.5.15 The Main Development Site will provide either a 400kV or 132kV supply to the power grid via either underground electrical cables or overhead lines. This will provide a tie-in to either the National Grid overhead line or the UK Power Networks substation. The final design, route and design standard will be approved by the statutory undertaker. It is anticipated that the connection to the grid will be adopted by UK Power Networks (UKPN) or National Grid and will be operated and maintained by them.

15.5.16 HV electricity has the potential to cause fire, explosion or serious/fatal injuries to people in the event of an accident. The effects of accidents are typically localised, only affecting one or two of people who are typically working on the system. HV supplies are widespread across the country and necessary to maintain the electrical grid.

15.5.17 Once the connection to the grid has been completed, the risk of major accident is extremely low. Therefore, electrical accidents will not be considered further in this EIA.

Major accidents involving the EFW process during operation

15.5.18 The EfW process involves mechanical separation, preparation and combustion of solid waste in order to generate heat and power. In this process, there are treatment processes including drying, conveyancing, and shredding; while associated with the combustion process, there are back-up fuels and pilot fuels, in addition to the main combustion process.

15.5.19 The company has undertaken a risk assessment on a similar facility and identified the following process major hazards:

- Fire in reception hall;
- Explosion associated with combustion equipment; and
- Overpressure in the combustion system are potential process hazards associated with the system.

15.5.20 Process hazards such as fire or explosion arising from the EfW systems could lead to serious or fatal injuries to several workers on the facility. As with any fire, there would potential for people offsite to be exposed to low levels of pollutants from smoke and could suffer short term ill health effects. This would be managed by the emergency response, advising people to remain indoors as a precaution.

15.5.21 As part of the design process, MVV will systematically identify potential major hazards associated with the specific process and keep them under review as the design progresses. This will include a number of studies including a Hazard and Operability Study (HAZOP) study (compliant with IEC 61882) and will also review the adequacy of mitigation measures such as escape routes, secondary containment and fire suppression.

15.5.22 Process hazards will be designed out where possible in accordance with good practice applying the hierarchy of controls which prioritises inherently safe design over control and mitigated measures. However, some of these hazards are an intrinsic part of a combustion process and therefore, as part of the design process, major safety and environmental hazards will be identified and assessed during the design process, to ensure that adequate technical and administrative measures are in place to reduce the risk to ALARP Specific design mitigation measures will be applied as appropriate including nitrogen blanketing, fire and gas detectors or overfill alarms.

15.5.23 In order to comply with the requirements of the *Dangerous Substances and Explosive Atmospheres Regulations 2002* (DSEAR), MVV will carry out an assessment of locations where flammable materials could be present, either by design or in event of a deviation from normal operation and

ensure that sufficient mitigation is in place. Mitigation could include substitution for less flammable alternatives, minimising quantities, containment, inert gas blanketing, and controls over ignition sources including use of ATEX rated equipment.

15.5.24 Fires outside of the EfW process including those in the storage bunkers are considered in the section below. Further information about the processes in place to manage and respond to fire are given in that section, these generic measures also apply to process fires.

15.5.25 Considering the measures and processes already in place to identify and manage the process hazards, it is not considered necessary to take process major accidents on for further assessment.

Major accidents involving fire during operation

15.5.26 Fire is a recognised hazard within the waste industry. Fires in the EfW process are covered above, fires in the buildings and in the storage bunkers are covered in this section. The company has undertaken a risk assessment on similar facilities and identified locations where fires could occur and the likely extent of the consequences. A similar assessment will be undertaken during the design process described above (paragraph 15.5.20). It is expected that fires will be contained on the Energy from Waste CHP Facility Site, but smoke could affect the surrounding workplaces. Due to the segregation built into the design and layout, it is not expected that a fire could spread to a neighbouring site.

15.5.27 The development will be designed and built to meet industry best practice for fire safety and provided with extensive fire protection and detection systems. This will account for the best practice measures given in ACE Technical Risks Engineering Information Bulletin Guidance Document (ACE Group, 2015) and designed in accordance with NFPA 850 (NFPA, 2015).

15.5.28 The design of the facility will include measures such as infra-red fire detection systems in the waste bunker, with associated deluge, inert gas suppression systems in the electrical rooms and fire detection and suppression systems in all necessary locations e.g. the tipping hall and the turbine hall. The provision of these systems will consider the level of protection and risk required through the process risk assessment (described in paragraph 15.5.20).

15.5.29 The fire ring main will be provided with a large firewater storage tank, ring main serving the Energy from Waste CHP Facility Site with electric firewater pumps (and diesel back up pumps) to ensure that firewater can be delivered when needed. There will be suitable containment available onsite (in line with CIRIA C736) to allow contaminated firewater to be retained and either discharged to sewer or disposed via tanker removal as appropriate.

15.5.30 The monitoring and maintenance of measures to prevent and mitigate fire hazards in operation will be through the IMS, which will be compliant with the requirements of the Regulatory Reform (Fire Safety) Order 2005 ensuring that MVV maintain an up-to date fire risk assessment. The IMS will cover both safe systems of work but also detailed emergency response procedures to minimise the risk of fire to ALARP. The layout design will allow for access by the emergency services.

15.5.31 Therefore, major accidents involving fire will not be considered further in this EIA.

Major accidents relating structural hazards during operation

15.5.32 The Energy from Waste CHP Facility Site includes a main building for the EfW process and a chimney of up to 95m in height. In event of a structural collapse, nearby people and buildings could be struck. There are no particularly sensitive receptors immediately adjacent to the Energy from Waste CHP Facility Site so it is predominantly the population onsite or the immediately adjacent industrial facilities that would be affected in the unlikely event of a major structural failure. The design of the facility will be undertaken by suitably qualified and experienced personnel

including civil and structural engineers Design will account for the expected ground conditions and design loads e.g. due to wind, accounting for the effects of climate change and will be ensured through compliance with good practice in structural design including compliance with the Eurocodes and any relevant BSI PDs. The IMS will ensure that appropriate systems of inspection and maintenance are in place to ensure continued structural integrity. As part of the application, compliance with the *Building Regulations 2010* will also be provided, in particular, Part A which relates to structure.

15.5.33 This will ensure appropriate design of the facility and a reduction of the risk of structural hazards during operation such as building collapse to low levels, which are considered to be ALARP. Therefore, structural hazards will not be considered further in this EIA.

Major accidents involving the spill of chemicals or waste materials during operation

15.5.34 The development will be designed in accordance with industry good practice to ensure that there is adequate secondary and tertiary containment to minimise the risk of any potential spillage of hazardous materials. Where substances may also pose a hazard to the health of workers, suitable equipment for handling substances and personal protective equipment will be provided. Any flammable substances will have preventative and protective measures applied in accordance with the requirements of the facility Safety Management System and in line with paragraphs 15.5.26 and 15.5.28.

15.5.35 As a requirement of being a permitted Site under the *Environmental Permitting (England and Wales) Regulations 2016*, an accident management plan will be maintained, which requires risk assessment of all potential releases. This risk assessment will cover all spillages including those which have the potential to cause a major accident, whether to people or the environment and suitable prevention and mitigation measures will be put in place.

15.5.36 The drainage system on the Energy from Waste CHP Facility Site will be designed suitable to ensure that any potential spills can be captured onsite and retained for treatment or disposal, this includes designing for firewater in accordance with industry standards such as CIRIA 736. All deliberate discharges will be covered in **Chapter 11: Hydrology.** Therefore, the potential for major accidents relating to spills will not be considered further in this EIA.

Major accidents or natural disasters during the construction process

15.5.37 Any effects arising from disasters during the construction process will be identified and dealt with through appropriate risk assessment and mitigation (applying the hierarchy of controls) as required to comply with UK health and safety legislation and environmental legislation. The CEMP will require risk assessment of construction activities (including any necessary earthworks or demolition activities) and this assessment should cover and mitigate where necessary the potential impact of all major accidents or disasters including those affecting non-human receptors. This assessment will implement a Catastrophic Risk Analysis as recommended by HSE for construction projects in their research report undertaken by CIRIA[183].

15.5.38 The route of the Grid Connection will be agreed with either National Grid or UKPN and the HSE and appropriate local authorities will be consulted in order to ensure that any pipelines or other hazardous sites along the route, such as those identified in paragraph 15.4.5 are avoided entirely or crossed safely in accordance with industry standards.

[183] HSE, 2011. *RR834: Preventing catastrophic events in construction*

15.5.39 The potential major accidents arising construction activity on the environment and human populations include a spill from temporary fuel storage tanks, collapse of excavations, fire during construction or the collapse of a crane/piling rig. While most of these accidents would affect at most, one or two workers, a structural collapse or fire during construction could affect more workers (up to 10) but are unlikely to affect members of the public as the construction activities will be segregated. Materials such as fuel oil are not expected to be held onsite in volumes that could lead to a major accident. All of the construction works will be managed in accordance with a Construction Environment Management Plan and relevant regulations such as the *Construction (Design and Management) Regulations 2015 (CDM)*.

15.5.40 Under the CDM Regulations, all structures must be designed so that they can be built and maintained safely, the designer must also 'design out' hazards where possible by applying the hierarchy of controls and produce a designers risk assessment to inform the construction contractors. The construction process must be managed to take account of the risks to people affected by the work, including the public. These include measures to manage fire risk, electrical hazards and structural integrity (including excavations) throughout the construction process. This must be documented in a CDM Construction Phase Plan. This ensures that the risk of such effects occurring is extremely low and will be reduced to ALARP. This process will be managed by the contractor under the supervision.

15.5.41 Therefore, major accidents during construction will not be considered further in this EIA.

External major accidents affecting the site population

15.5.42 In the baseline, two sites with consent for hazardous substances and one pipeline transporting a hazardous substance were identified within 1 km of the Energy from Waste CHP Facility Site. The Energy from Waste CHP Facility Site is outside the consultation distances for any of these sites (as shown in **Section 15.4**), which means that it is extremely unlikely that an accident on one of these sites could lead to a major accident at the Energy from Waste CHP Facility, either by directly impacting people or by initiating a domino accident, and the HSE would not place a restriction on land use at the Energy from Waste CHP Facility on the basis of safety.

15.5.43 The hazard of construction activities initiating a loss of containment from a major hazard pipeline is considered in paragraph 16.5.37. It is possible that an incident unrelated to construction could impact construction workers but the likelihood is extremely low, particularly when the measures described are considered.

15.5.44 Therefore, external major accidents will not be considered further in this EIA.

Natural disasters affecting the site population during operation

15.5.45 Flooding is assessed within the FRA in **Chapter 11: Hydrology** and therefore is not considered further in this chapter.

15.5.46 In the baseline, the only potential disaster identified was a lightning strike leading to fire or structural collapse on the Energy from Waste CHP Facility Site. The potential consequences of a lightning strike are likely to be restricted to the site and may affect one or two workers. The Proposed Development will be provided with lightning protection compliant with BS EN 62305 (BSI, 2011) to ensure the risk from lightning is reduced further and is considered to be reduced ALARP. Therefore, natural disaster affecting the site during operation will not be considered further in the EIA.

Acts of terrorism affecting the site population during construction and operation

15.5.47 Terrorism is the act of inflicting violence as a means of inflicting terror for political reasons. At the time of writing (Dec 2018), MI5 rates the current UK-wide threat level as substantial which means an attack in the UK is considered "likely"[184]. The National Risk Register lists several types of terrorism or malicious acts which include attacks on crowded places, attacks on transport networks, cyber attacks, Chemical, Biological, Radiological or Nuclear (CBRN) attack or attacks on critical national infrastructure[185]. The development is clearly not a transport network, nor is it considered to be a crowded place as there is unlikely to be members of the public regularly present or large gatherings of people. The development will constitute a theoretical target for Cyber or CBRN attack but in comparison to previous terrorist activity, the development is considered to represent a "low-value" and low priority target as there will be secured access and a lower population than other targets such as pedestrian areas, concert venues or transport hubs. Finally, the Centre for the Protection of National Infrastructure (CPNI) sets the definition of Critical National Infrastructure (CNI)[186] which can be summarised as those critical elements of infrastructure… the loss or compromise of which… could result in significant loss of life or casualties … and/or Significant impact on national security, national defence, or the functioning of the state. The development is not considered to be CNI. The potential effects on the development of terrorism is not considered significant and is therefore scoped out of further assessment in this EIA.

Emergency Response

15.5.48 MVV will apply good practice in design and operation and provide of appropriate mitigation to reduce the risk of a major accident or disaster occurring at the site to extremely low. Nevertheless, MVV will liaise with the emergency services to ensure that appropriate emergency response arrangements are in place to limit effects in the unlikely event of a major accident or disaster.

15.6 Assessment methodology

General approach

15.6.1 Potential combinations of source and receptors were examined to identify potential major accidents or disasters. Where these were considered, if the magnitude of damage did not meet the threshold for major accident or disaster, when assessed without taking into account mitigation, then they were not considered to be potential major accidents or disasters.

15.6.2 The levels of harm which constitute a major accident or disaster is determined by a combination of the extent of harm and recovery duration (for environmental receptors) or number of people affected (for human receptors). While qualitatively stated, the definition and classifications used are designed to be compliant with HSE's R2P2 for societal risk, and CDOIF for environmental tolerability, if considered on a per effect basis rather than in terms of aggregated risk (i.e. the risk from all contributors to a receptor). These criteria are given in **Appendix D**.

15.6.3 Where there were potential major accidents or disasters identified above, they were considered in conjunction with the mitigation and design processes which are already or will be in place to

[184] MI5 Threat Levels. Available online at: https://www.mi5.gov.uk/threat-levels [Accessed 3 December 2019].

[185] Cabinet Office National Risk Register of Civil Emergencies (2017).

[186] Centre for the Protection of National Infrastructure Critical National Infrastructure. Available online at: https://www.cpni.gov.uk/critical-national-infrastructure-0 [Accessed 3 December 2019]

manage the risk of major accidents and disasters. Professional judgment was then applied to determine whether the risk was adequately controlled to prevent an increase in risk to an intolerable ('significant') level. The outcome of this process is described in **Section 15.5**.

Determination of significance

15.6.4 The EIA Regulations recognise that developments will affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are "*likely to be significantly affected by the development*". Guidance provided by the EC (European Commission, 2017) highlights that the context for inclusion of major accidents and disasters in EIA is to ensure that adequate focus is given to the provisions for events leading to significant risk with an objective of building resilience into a development against such effects.

15.6.5 Risk in this assessment was defined as a combination of magnitude of change and likelihood. The assessment applied professional judgement to evaluate the likelihood of each potential major accident and disaster occurring, once the mitigation was considered. This provided an allocation of likelihood against magnitude to determine risk significance, that is consistent with major accident tolerability perceptions commonly applied elsewhere in the UK. The assumptions and considerations for the potential major accidents are documented in **Section 15.5**.

Assumptions

15.6.6 It has been assumed that MVV Environment will comply with all applicable safety and environmental applicable legislation and regulation. This includes the requirement of the *Health and Safety at Work etc. Act 1974* and subordinate regulations which require suitable and sufficient risk assessment to ensure that risks have been reduced 'so far as is reasonably practicable'.

15.6.7 It has been assumed that MVV Environment will meet and comply with or exceed the requirements of industry good practice for the management and control of major accidents. Where specific examples have been identified, they have been given as examples in **Section 15.5**.

15.6.8 The potential major accidents and disasters at the proposed facility will be similar to those at similar MVV facilities in the UK.

15.6.9 It is assumed that the general public will not have access to the site unless their visits are pre-booked. There will therefore be no unaccompanied access to the Energy from Waste CHP Facility Site or CHP Connection; it will be a secured access site controlled to authorised persons only.

15.6.10 It is assumed that emergency response procedures will be developed, which will be implemented through the IMS, MVV will liaise as necessary with the offsite authorities such as ambulance and fire brigade to manage the residual risk of a major accident.

16. Next Steps

16.1.1 This report has been prepared to provide an overview of the potential likely significant effects of the Proposed Development that need to be considered in depth as part of the EIA and the proposed scope of the assessment in relation to these effects. It has been prepared in order to assist the Secretary of State in preparing a Scoping Opinion under the EIA Regulations by setting out the scope of the information that should be contained in the ES.

16.1.2 The aim is to ensure the Applicant has due regard for the environment, mitigates adverse environmental effects where possible, and takes advantage of opportunities for environmental enhancement.

16.1.3 The next steps in the EIA process are as follows:

- Formal consultation on the Preliminary Environmental Information (Summer 2020); and
- Submission of the Environmental Statement with the Development Consent Order Application.

16.1.4 Engagement with relevant stakeholders will continue throughout the pre-application stage of the project, as per the approach described in **Section 4.6** of the Report.

Appendix A Glossary of Abbreviations

Abbreviation	Term
AIL	Abnormal indivisible load
ACC	Air cooled condenser
ALARP	As Low As Reasonably Practicable
AOD	Above Ordnance Datum
APC	Air Pollution Control
APIS	Air Pollution Information System
ASR	Air Quality Annual Status Report
AQM	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Standards
BAT	Best Available Techniques
BEIS	Department for Business, Energy and Industrial Strategy
CDM	Construction (Design and Management)
CEMP	Construction Environmental Management Plan
CEMS	Continuous Emissions Monitoring System
CHP	Combined Heat and Power
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association

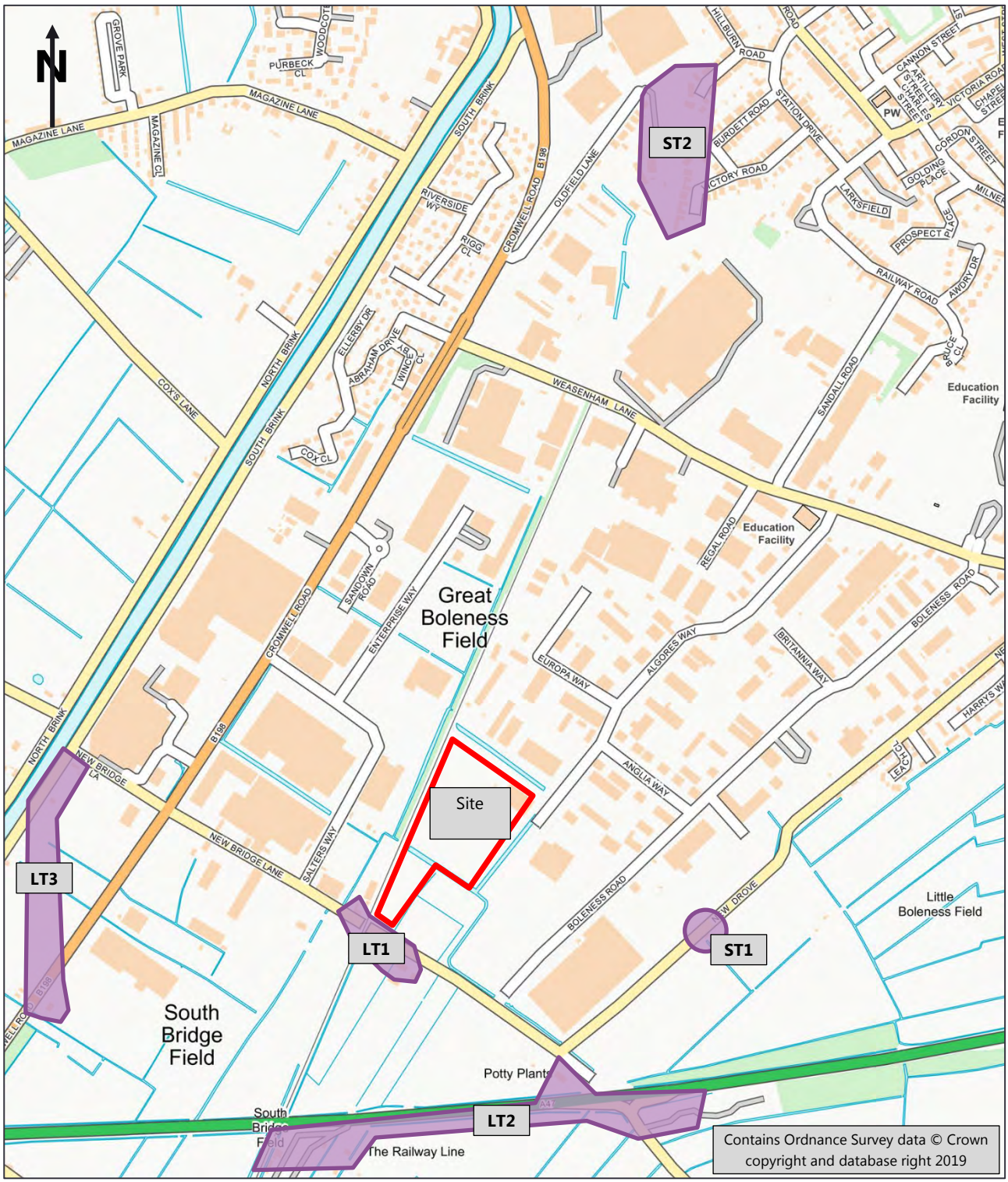
Abbreviation	Term
COMAH	Control of Major Accident Hazards
COPA	Control of Pollution Act
CRTN	Calculation of Road Traffic Noise
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EAL	Environmental Assessment Levels
EFT	Emissions Factor Toolkit
EfW	Energy from Waste
EIA	Environmental Impact Assessment
ELV	Emission limit values
EPA	Environmental Protection Act
EPR	Environmental Permitting Regulations
EPUK	Environmental Protection UK
ES	Environmental Statement
FRA	Flood Risk Assessment
GEART	Guidelines for the Environmental Assessment of Road Traffic
GHG	Greenhouse gas emissions

Abbreviation	Term
GLVIA	Guidelines for Landscape and Visual Impact Assessment
HDD	Horizontal directional drilling
HGV	Heavy good vehicle
HIMP	Her Majesty's Inspectorate of Pollution
HHRAP	Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities
HSE	Health and Safety Executive
HV	High Voltage electricity cable/conductor
IAQM	Institute of Air Quality Management
IBA	Incinerator bottom ash
IDB	Internal Drainage Board
IEMA	Institute of Environmental Management and Assessment's
IMS	Integrated Management System
kV	Kilovolt
LAQM	Local Air Quality Management Technical Guidance
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LLFA	Lead Local Flood Authority
LOAEL	Lowest Observed Adverse Effect Level
LVIA	Landscape and Visual Impact Assessment
MJ/kg	Megajoule / Kilogram

Abbreviation	Term
MWe	Megawatt Electrical
MRF	Materials Reception Facility
NCA	National Character Assessment
NCN	National Cycle Network
NCR	National Cycle Route
NO2	Nitrogen Dioxide
NOX	Oxides of Nitrogen
NOEL	No Observed Effect Level
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NTEM	National Trip End Model
NWP	Numerical Weather Prediction
OHL	Overhead line
ONS	Office for National Statistics
PAHs	Polycyclic aromatic hydrocarbons
PINS	Planning Inspectorate
PM	Particulate Matter
PRoW	Public Rights of Way
NSIP	Nationally Significant Infrastructure Project
SAC	Special Area of Conservation

Abbreviation	Term
SAR	Southern Access Road
SO2	Sulphur Dioxide
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
STGO	Special Types General Order
SUDS	Sustainable Urban Drainage System
TEMPro	Trip End Model Presentation Programme
UKPN	UK Power Networks
WFD	Water Framework Directive
WHO	World Health Organisation
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

Appendix B Proposed baseline monitoring locations



Appendix C Major accidents and disasters receptors

The list of receptors within the study area is displayed in **Table 15A.1**, this includes indication of whether the receptor lies within the Proposed Development red line boundary or outside of the RLB but within the study area.

Table 15A.1 Full list of receptors within the Major Accidents and Disasters Study Area

Receptor Type	Receptor	Receptor Detail	RLB	1 km buffer
Population and Human Health	On site	There will be an initial construction workforce on the Site during the construction phase which will then transition to a permanent operational workforce during the operational phase. This site population will be supplemented by contractors and delivery drivers.	Yes	No
	Surrounding Area	On the northeast of the Energy from Waste CHP Facility Site, the area is built-up extending more than 1km from the boundary. The immediate area close to the Main Development Site is mainly industrial, however there are some houses and schools located within 1km of the Energy from Waste CHP Facility Site. There are no hospitals within 1km of the Energy from Waste CHP Facility Site. To the south and west the area mainly consists of fields with no designated sites identified. The closest hospital is North Cambridgeshire Hospital located approximately 2 kilometres to the north of the Energy from Waste CHP Facility Site and 1 km to the west of the Grid Connection Corridor.	No	Yes
	The Conifers Care home	Care home located on North Brink, PE13 1LL – northwest of Energy from Waste CHP Facility Site		
	TBAP Unity Academy	School located on Algores Way, PE13 2TQ - northeast from Energy from Waste CHP Facility Site	No	Yes
	Cambian Education Foundation Learning Centre,	School unit on Anglia Way – approximately 200m northeast from Energy from Waste CHP Facility Site		
Designated Land / Water Sites	None identified within the study area			

Receptor Type	Receptor	Receptor Detail	RLB	1 km buffer
(internationally important)				
Designated Land / Water Sites (nationally important)	None identified within the study area			
Other designated land/water	National Historic Landscape Characterisation (NHLC)	There are some areas of NHLC within the 1 km study area including orchards, planned fields or horticulture	No	Yes
Scarce Habitat	Priority habitats	There are a few Priority Habitats found within 1 kilometre of the Energy from Waste CHP Facility Site, including Coastal and floodplain grazing marsh, deciduous woodland and traditional orchards. Most of the scarce habitat inventories are located southwest of the Energy from Waste CHP Facility Site, with the largest individual inventory having an approximate area of 10 hectares. See **Chapter 8: Biodiversity** for more detail.	No	Yes
Widespread Habitat - Non-Designated Water	None identified within the study area			
Particular species	No particular populations of endangered or scarce species have been identified within the study area. Further information is available in **Chapter 10: Biodiversity**			
Fresh and estuarine water habitats	River Nene	Nene Lower Reference: Environment Agency Catchment Planning database https://environment.data.gov.uk/catchment-planning/	No	Yes
Marine	None identified within the study area			
Groundwater - Source of Drinking Water	None identified within the study area			
Groundwater – Non-Drinking Water Source	None identified within the study area			

Receptor Type	Receptor	Receptor Detail	RLB	1 km buffer
Soil and sediment	Surrounding ground	The Energy from Waste CHP Facility Site will be hardstanding but is underlain by soil, there is no designated land in the area		
Historic environment	None identified within the study area			

Appendix D Major accidents and disasters harm criteria

Major accidents and disasters examines effects resulting from unplanned but reasonably foreseeable events of high magnitude. They are unlikely to occur during the life of a development however should they occur; the consequences are so serious that their scrutiny during the planning process is warranted to ensure that a development is not unduly vulnerable to them.

Criteria for the severity of harm, duration of harm and number of people affected are outlined in **Table D1**, **Table D2** and **Table DB3** respectively.

Receptor Sensitivity

Receptor sensitivity, which relates to the intrinsic value and/or sensitivity of receptors, is embedded within the 'severity of harm', 'duration of harm' and number of people affected criteria to establish their threshold levels and scaling factors. For this reason, receptor sensitivity is not explicitly considered in the major accidents and disasters assessment.

Non-human Receptors

The environmental (non-human) criteria have been directly extracted from the CDOIF guidance which sets a maximum or minimum severity ranking for some receptors. Where severity of harm categories do not apply to certain receptors, these are noted as not applicable (N/A) in the table.

Where two threshold parameters are given within a single category the lesser of the two is taken to be the threshold for a given receptor.

Population and Human Health

These criteria are aligned to and largely extracted from definitions used in commonly applied major hazard guidance for the environment and risk tolerability criteria for people applied by the Health and Safety Executive (HSE, 2001). The descriptions for population and human health severity criteria in Table D1 have been further developed to include wider health, social and economic effects drawn from the Civil Contingencies guidance (Cabinet Office, 2012).

Differences between CDOIF and EIA

In Table D1, the term 'not significant' is used to refer to a level of harm that might lead to noticeable pollution or a minor impact on people, but one which is not considered to reach the thresholds of a major accident. In the CDOIF guidance, this column is referred to as 'significant' (rather than 'not significant') but note that the assessment methodology treats levels of harm in this bracket in the same manner as the CDOIF guidance. It has been renamed to 'not significant' here to avoid confusion since significant has a different meaning within the Environmental Impact Assessment (EIA) context.

In line with the CDOIF (CDOIF, 2016) and DETR guidance (DETR, 1999), destruction of Grade II listed buildings, or Grade II registered park and gardens, are not considered to be a Major Accident. However, if the incident which led to their destruction could endanger human life, or a relevant population of particular species, then it would be considered as a major accident under the

appropriate receptor. Damage to Grade II assets is not considered to be 'wholly exceptional' under the National Policy Framework (Ministry of Housing, Communities and Local Government, 2019).

Table D1 Major accidents and disasters severity of harm criteria

Receptor Type	Severity of harm			
	Not significant	**Severe**	**Large**	**Very Large**
Human populations (public)	Small number of minor injuries	Substantial number of people requiring medical attention. Events of this magnitude may also involve some damage to housing, with low numbers of people being displaced. Potential for localised interruption to utilities and damage to infrastructure.	Multiple life changing injuries and / or potential loss of life in low numbers Events of this magnitude are also likely to involve significant community impact such as: • Many people requiring medical treatment. • Many people suffering long term mental health issues related to the event • Housing and business premises rendered uninhabitable with many people displaced for significant periods • Significant adverse medium-term economic effects locally • Significant clean-up and recovery costs • Potential for disruption to regional infrastructure, utilities and services • Incident requiring emergency response at County / Regional scale.	Potential loss of life in high numbers and / or substantial number of life changing injuries. Events of this magnitude are also likely to involve significant community impact such as: • Very many people requiring medical treatment • Widespread mental health issues related to the event • Large areas of housing and business premises rendered uninhabitable with large numbers of people displaced for extended periods • Extensive adverse long-term economic effects regionally and nationally • Extensive clean-up and recovery costs • Potential for disruption to regional infrastructure, utilities and services • Incident requiring emergency response at National / International scale.
Human populations (workers)	Substantial number of people requiring medical attention	Multiple life changing injuries	Multiple life changing injuries, potential loss of life in low numbers.	Potential loss of life in high numbers and substantial number of life changing injuries

Receptor Type	Severity of harm			
	Not significant	**Severe**	**Large**	**Very Large**
			Events of this magnitude are also likely to involve: • Many people suffering long term mental health issues related to the event • Incident requiring emergency response at County / Regional scale. • Significant adverse medium-term effects to local economy • Significant clean-up and recovery costs to the local community • Potential for disruption to regional infrastructure, utilities and services • Incident requiring emergency response at County / Regional scale.	Events of this magnitude are also likely to involve: • Widespread mental health issues related to the event • Extensive adverse long-term economic effects regionally and nationally • Extensive clean-up and recovery costs to society • Potential for disruption to regional infrastructure, utilities and services • Incident requiring emergency response at National / International scale.
Designated land/water sites (internationally important)[187]	<0.5 ha or <5% (<5% linear feature or population)	>0.5 ha or 5-25% of site area or 5-25% of associated linear feature or population	25-50% of site area, associated linear feature or population	>50% of site area, associated linear feature or population
Designated land/water sites (nationally important) [187]	<0.5 ha or <10%	>0.5 ha or 10-50% of site area, associated linear feature or population	>50% of site area, associated linear feature population	N/A
Other designated land[187]	<10 ha or <10%	10-100 ha or 10-50% of land	>100 ha or >50% of land	N/A
Scarce habitat[187]	<2 ha or <10%	2-20 ha or 10-50% of habitat	>20 ha or >50% of habitat	N/A

[187] Criteria extracted directly from CDOIF Guidance Criteria (CDOIF, 2016)

Receptor Type	Severity of harm			
	Not significant	**Severe**	**Large**	**Very Large**
Widespread habitat – non-designated land[187]	<10ha	Contamination of 10-100 ha of land, preventing growing of crops, grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances. Alternatively, contamination of 10ha or more of vacant land.	100 – 1000 ha (applied as per text under 'Severe')	>1000 ha (applied as per text under 'Severe')
Widespread habitat – non-designated water[187]	N/A	Contamination of aquatic habitat which prevents fishing or aquaculture or renders it inaccessible to the public.	N/A	N/A
Particular species (these criteria apply nationally) [187]	Loss of <1% of animal or <5% of plant ground cover in a habitat.	Loss of 1-10% of animal or 5-50% of plant ground cover.	Loss of 10-90% of animal or 50-90% of plant ground cover.	Total loss (>90%) of animal or plant ground cover.
Fresh and estuarine water habitats[187]	Impact below that indicated to be severe	WFD chemical or ecological status lowered by one class for 2-10km of watercourse or 2-20ha or 10-50% area of estuaries or ponds. Interruption of drinking water supplies, as per Groundwater Source of Drinking Water.	WFD chemical ecological status lowered by one class for 10-200km of watercourse or 20-200ha or 50-90% area of estuaries and ponds. Interruption of drinking water supplies, as per Groundwater Source of Drinking Water.	WFD Chemical or ecological status lowered by one class for >200km of watercourse or >200ha or >90% area of estuaries and ponds. Interruption of drinking water supplies, as per Groundwater Source of Drinking Water.
Marine[187]	<2ha littoral or sub-littoral zone, <100ha of open sea benthic community, <100 dead sea birds (<500 gulls), <5 dead/significantly impaired sea mammals.	2-20ha littoral or sub-littoral zone, 100-1000ha of open sea benthic community, 100-1000 dead sea birds (500-5000 gulls), 5-50 dead/significantly impaired sea mammals.	20-200ha littoral or sub-littoral zone, 100-10,000ha of open sea benthic community, 1000-10,000 dead sea birds (5,000-50,000 gulls), 50-500 dead/significantly impaired sea mammals.	>200ha littoral and sub-littoral zone, >1000ha of open sea benthic community, >10000 dead sea birds (>50000 gulls), >500 dead/significantly impaired sea mammals.
Groundwater source of drinking water[187]	Interruption of drinking water supply <1000 person-hours or for England and Wales only <1ha SPZ	Interruption of drinking water supplied from a ground or surface source (where persons affected x duration in hours [at least 2] >1,000) or for England and Wales only 1-	>1 x 10^7 person-hours interruption of drinking water (a town of ~100,000 people losing supply for month) or for England and Wales only 10-100ha SPZ drinking water standards breached	>1 x 10^9 person-hours interruption of drinking (~1 million people losing supply for 1 month) or for England and Wales only >100ha SPZ drinking water standards breached

Receptor Type	Severity of harm			
	Not significant	**Severe**	**Large**	**Very Large**
		10ha of SPZ where drinking water standards are breached		
Groundwater - non drinking water source[187]	<1ha	1-100ha of aquifer where water quality standards are breached (or hazardous substance is discernible)	100-10,000ha	>10,000ha
Groundwater in unproductive strata[187]	Only considered as a pathway to another receptor.			
Soil or sediment (i.e. as receptor rather than purely a pathway) [187]	Contamination not leading to environmental damage (as per ELD), or not significantly, affecting overlying water quality.	Contamination of 10-100ha of land etc. as per widespread habitat; contamination sufficient to be deemed environmental damage (Environmental Liability Directive)	Contamination of 100-1000ha of land, as per widespread habitat; contamination rendering the soil immediately hazardous to humans (e.g. skin contact) or the living environment, but remediation available.	Contamination of >1000ha of land, as per widespread habitat; contamination rendering the soil immediately hazardous to humans (e.g. skin contact) or the living environment and remediation difficult or impossible.
Historic environment[187],	Damage below a level at which designation of importance would be withdrawn.	Damage sufficient for designation of importance to be withdrawn.	Feature of historic environment subject to designation of importance entirely destroyed.	N/A

Duration of harm

The duration of harm, which might also be considered as the recovery period, is also a factor in establishing criteria for the magnitude of change relating to major accidents and disasters on non-human receptors. This is given in **Table D2**. The criteria are taken directly from the CDOIF guidance.

Four categories of duration are considered: short term, medium term, long term and very long term.

Table D2 Major accidents and disasters duration of harm criteria (non-human receptors)

Description	Short term	Medium term	Long term	Very long term
Groundwater or surface water drinking water source (public or private)	N/A	N/A	Harm affecting drinking water source or SPZ <6 years	Harm affecting drinking water source or SPZ >6 years
Groundwater (except drinking water sources):	WFD hazardous substances <3 months	WFD hazardous subs >3 months	WFD hazardous subs >6 years	WFD hazardous subs >20 years
	WFD non-hazardous substances <1year	WFD non-hazardous substances >1 year	WFD non-hazardous substances >10 years	WFD non-hazardous substances >20 years
Surface water (except drinking water sources - see above)	<1 year	>1 year	>10 years	>20 years
Land	<3 years	>3 years or >2 growing seasons for agricultural land	>20 years	>50 years
Historic environment	Can be repaired in <3 years, such that its designation can be reinstated.	Can be repaired in >3 years, such that its designation can be reinstated.	Feature destroyed, cannot be rebuilt, all features except world heritage site.	Feature destroyed, cannot be rebuilt, world heritage site

Number of people affected

For human receptors the magnitude of change is categorised based on the number of people affected (**Table DB3**) to provide appropriate positioning against HSE risk tolerability concepts (Health and Safety Executive, 2001).

Table DB3 Number of people affected

	Number of people affected		
	Low	**Medium – High**	**Very High**
Human Populations	Less than 5	10's of people	100's of people

The combination of harm severity and harm duration for non-human receptors to determine magnitude of change is given in **Figure 15D.1**.

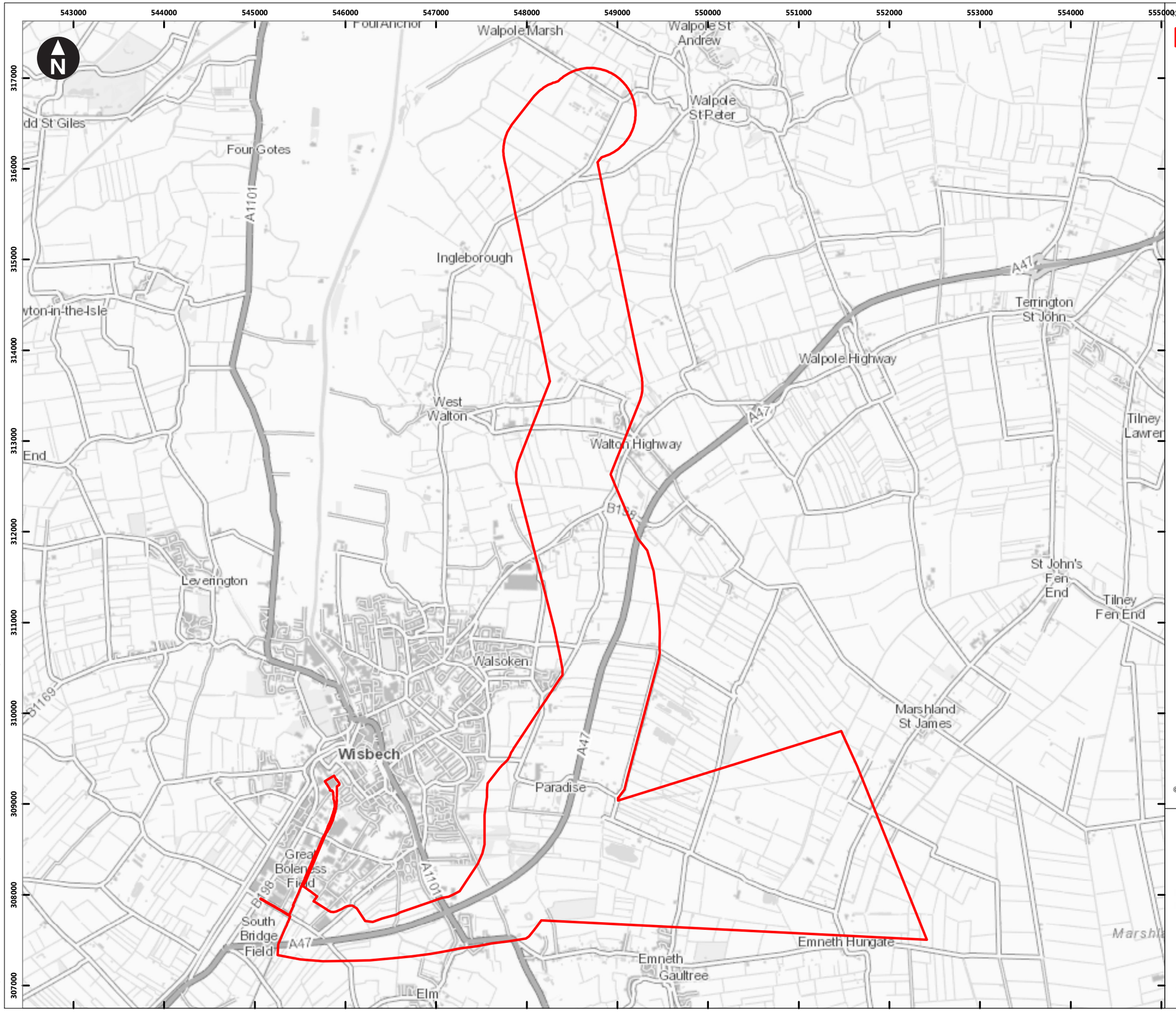
Figure 15D.1 Magnitude of Change Matrix – Non-human receptors

Severity of Harm	Very Large		High	Very High	Very High
	Large		Medium	High	Very High
	Severe		Low	Medium	High
	Not Significant	Not MA&D			
		Short	Medium	Long	Very Long
		Duration of harm			

For human receptors, the number of people affected is accounted for in assigning the magnitude of change, this ensures appropriate alignment to HSE R2P2 concepts. The combination of harm severity and people affected for human receptors to determine magnitude of change is given in **Figure 15D2**.

Figure 15D2 Magnitude of Change Matrix – Human receptors

Severity of Harm	Very Large	Very High	Very high	Number of people affected
		High		
	Large	Medium	Low to high	
	Severe	Low		
	Not Significant	Not MA&D		



MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 1.1
Red line boundary

November 2019

wood.

41310-Shr36

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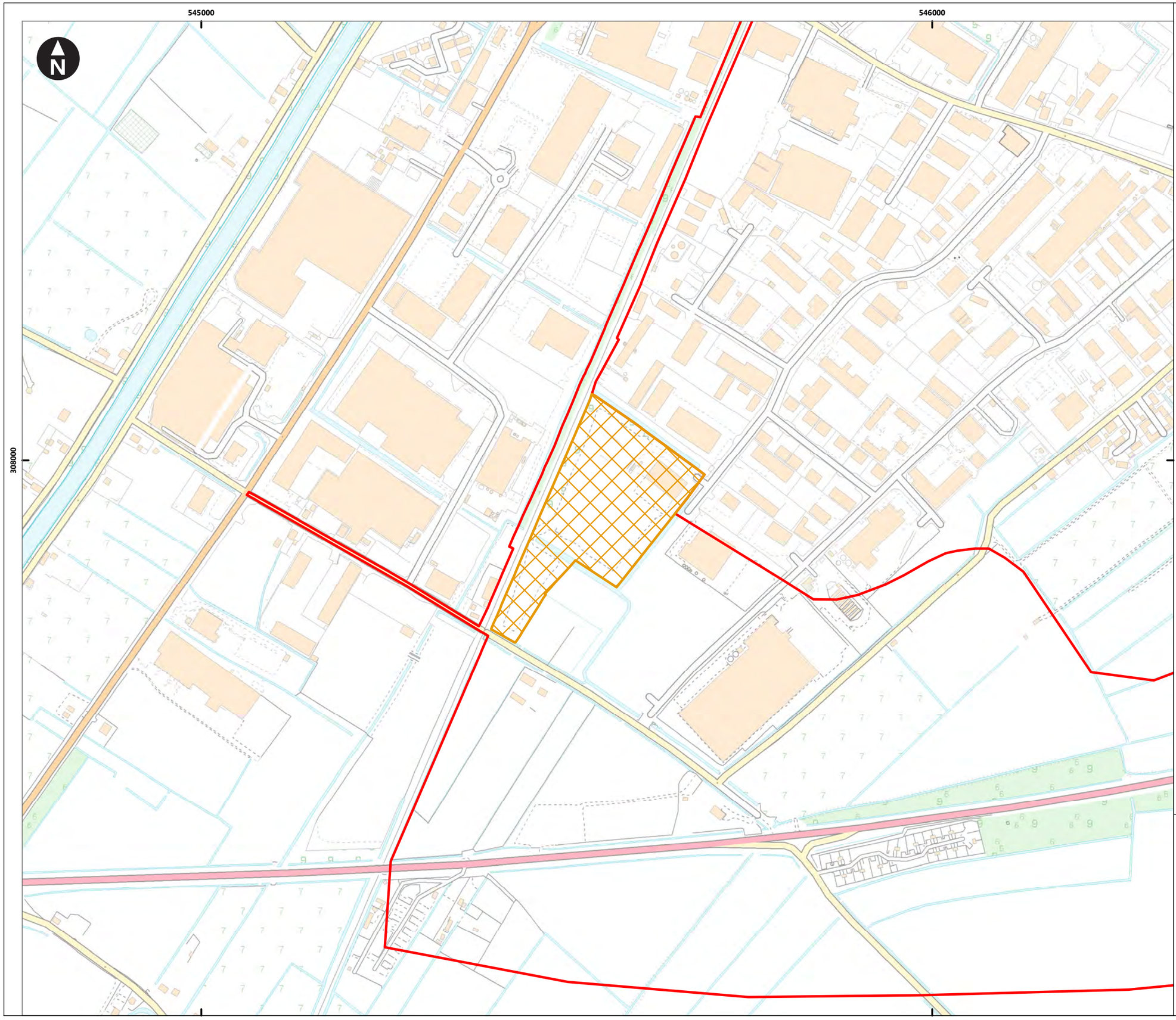

Key

Red line boundary

Energy from Waste CHP Facility

0 50 100 150 200 250 300 m

Scale at A3: 1:5,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 2.1
Energy from Waste CHP Facility

November 2019

wood.

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr37_v2.mxd Originator: Simon.Green2

41310-Shr37_v2

544000 545000 546000 547000

309000

308000

307000

N

Key

Red line boundary

Energy from Waste CHP Facility

0 100 200 300 400 500 600 m

Scale at A3: 1:10,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 2.2
Surroundings to the Energy from Waste CHP Facility

November 2019

wood.

41310-Shr38_v2

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr38_v2.mxd Originator: Simon.Green2

545000

546000

308000

N

Key

- Red line boundary
- Potential construction compound
- Potential construction compound and potential substation location

0 50 100 150 200 250 300 m

Scale at A3: 1:5,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 2.3
Construction compound options and potential substation location

November 2019

wood.

41310-Shr39_v2

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545000

546000

309000

308000

N

Key

Red line boundary

Combined heat and power connection corridor

Access improvements

0 50 100 150 200 250 300 350 400 450 m

Scale at A3: 1:8,000

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Medworth Energy from Waste CHP Facility

Figure 2.4
Location of the combined heat and power connection corridor and access improvements

November 2019

wood.

41310-Shr41

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr41.mxd Originator: Simon.Green2

543000 544000 545000 546000 547000 548000 549000 550000 551000 552000 553000 554000 555000

317000 316000 315000 314000 313000 312000 311000 310000 309000 308000 307000

N

Four Anchor
Walpole Marsh
Walpole St Andrew
Walpole St Peter
d St Giles
Four Gotes
A1101
Ingleborough
on-in-the-Isle
West Walton
Walton Highway
Walpole Highway
A47
Terrington St John
Tilney S
Lawrenc
nd
B198
Leverington
Walsoken
1169
Wisbech
Paradise
Great Boleness Field
South Bridge Field
Marshland St James
St John's Fen End
Tilney Fen End
Emneth Hungate
Emneth
Gaultree
Elm
Marshlan

Key

Red line boundary

Grid connection corridor

0 500 1,000 1,500 2,000 m

Scale at A3: 1:40,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 2.5
Grid connection corridor

November 2019

wood.

41310-Shr40

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544000 545000 546000 547000 548000

310000 309000 308000 307000

N

R75 R52 R51 R53 R50 R54 R66 R55 R49 R74 R65 R60 R64 R48 R12 R63 R80 R47 R62 R81 R61 R56 R45 R13 R46 R10 R11 R59 R44 R58 R82 R72 R57 R43 R9 R29 R40 R42 R71 R8 R85 R22 R26 R41 R73 R84 R79 R21 R39 R24 R38 R86 R20 R23 R37 R27 R19 R14 R1 R18 R17 R36 R28 R35 R16 R34 R33 R15 R78 R30 R32 R83 R2 R31 R6 R3 R4 R76 R69 R5 R7 R77 R67 R68

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- Proposed human receptor

0 200 400 600 800 1,000 m

Scale at A3: 1:16,419

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 7.1
Location of proposed human receptors

November 2019

wood.

41310-Shr42_v2

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538000 540000 542000 544000 546000 548000 550000 552000 554000 556000 558000

320000 318000 316000 314000 312000 310000 308000 306000 304000 302000

Key

- Energy from Waste CHP Facility
- Grid connection corridor
- Energy from Waste CHP Facility 5km study area
- Grid connection corridor 3km study area

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 m

Scale at A3: 1:70,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.1
Composition of LVIA study area

November 2019

wood.

41310-Shr26_v2

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr26_v2.mxd Originator: Simon.Green2

542000 544000 546000 548000 550000 552000

312000 310000 308000 306000 304000

Key

Energy from Waste CHP Facility

Energy from Waste CHP Facility 5km study area

Zone of Theoretical Visibility

Proposed stack only may be visible

Proposed Energy from Waste CHP Facility only may be visible

Both proposed Energy from Waste CHP Facility and stack may be visible

Note:
Zone of Theoretical Visibility (ZTV) created using the Environment Agency 1m DSM LiDAR data. ZTV based on spot height of 95m AGL for the stack and 50m for the main building of the Energy from Waste CHP Facility.

0 500 1,000 1,500 2,000 m
Scale at A3: 1:40,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.2
ZTV for the Energy from Waste CHP Facility

November 2019

wood.

41310-Shr27_v2

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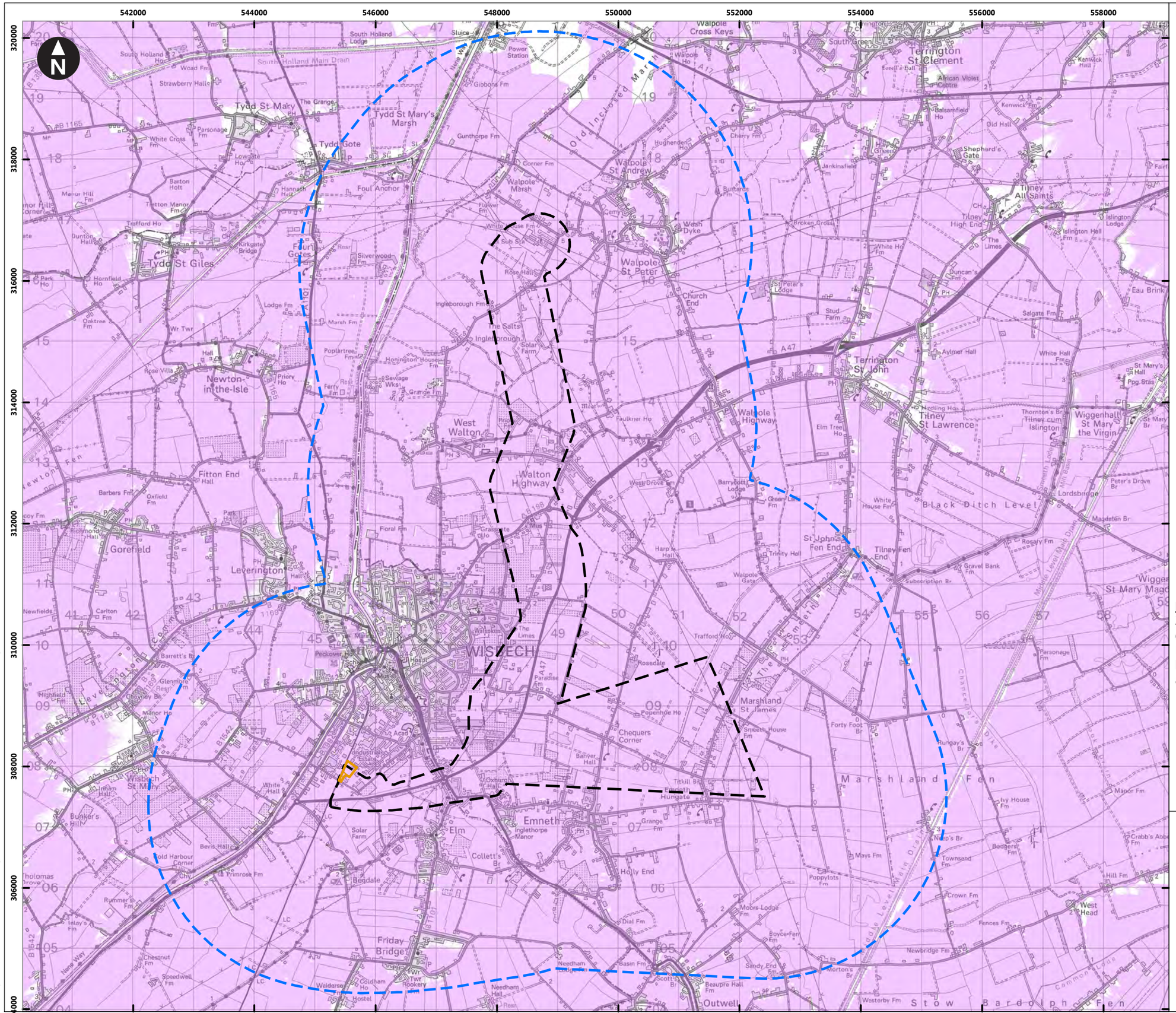

Key

- Energy from Waste CHP Facility
- Grid connection corridor
- Grid connection corridor 3km study area
- Zone of Theoretical Visibility (ZTV) for the potential 132kV and 400kV Grid Connection options

Note:
Zone of Theoretical Visibility (ZTV) created using the Environment Agency 1m DSM LiDAR data. ZTV based on spot heights at 49m AGL at 500m intervals around the Grid Connection boundary.

0 500 1,000 1,500 2,000 2,500 3,000 3,500 m

Scale at A3: 1:60,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.3
ZTV for the potential 132kV and 400kV grid connection options

November 2019

wood.

41310-Shr28_v2

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Key

- Energy from Waste CHP Facility
- Grid connection corridor
- Energy from Waste CHP Facility 5km study area
- Grid connection corridor 3km study area

Zone of Theoretical Visibility

- Proposed Energy from Waste CHP Facility only may be visible
- Proposed 132kV and 400kV grid connection options only may be visible
- Both the porposed Energy from Waste CHP Facility and combined 132kV and 400kV grid connection options may be visible

Note:
Zone of Theoretical Visibility (ZTV) created using the Environment Agency 1m DSM LiDAR data. Combined ZTV for the main development based on spot heights of 50m AGL for the Energy from Waste CHP Facility and 95m AGL for the stack. ZTV for the combined 132kV and 400kV based on spot heights of 49m AGL at 500m intervals around the Grid Connection boundary.

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 m

Scale at A3: 1:70,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.4
Composite ZTV for the Energy from Waste CHP Facility and the combined potential grid connection options

November 2019

wood.

41310-Shr29_v2

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr29_v2.mxd Originator: Simon.Green2

538000 540000 542000 544000 546000 548000 550000 552000 554000 556000 558000

320000 318000 316000 314000 312000 310000 308000 306000 304000 302000

Key

Energy from Waste CHP Facility

Grid connection corridor

Energy from Waste CHP Facility 5km study area

Grid connection corridor 3km study area

Landscape Character Areas

Fenland District Council

The Fens

Wisbech Settled Fen

King's Lynn - West Norfolk Borough Council

The Fens - Settled Inland Marshes

Emneth, West Walton and Walsoken

Outwell

Terrington St. John

Walpole, Terrington and Clench Warton

The Fens - Open Inland Marshes

Downham West

Marshland St. James

Tilney All Saints

Wiggenhall St. Mary

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 m

Scale at A3: 1:70,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.5
Landscape receptors within the overall LVIA study area

November 2019

wood.

41310-Shr30_v2

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Key

- Energy from Waste CHP Facility
- Grid connection corridor
- Energy from Waste CHP Facility 5km study area
- Grid connection corridor 3km study area
- Registered parks and gardens
- Nene Way Long Distance Trail

Sustrans Cycle Routes

- Route 1
- Route 63

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 m

Scale at A3: 1:70,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.6
Visual receptor groups within the overall LVIA study area

November 2019

wood.

41310-Shr31_v2

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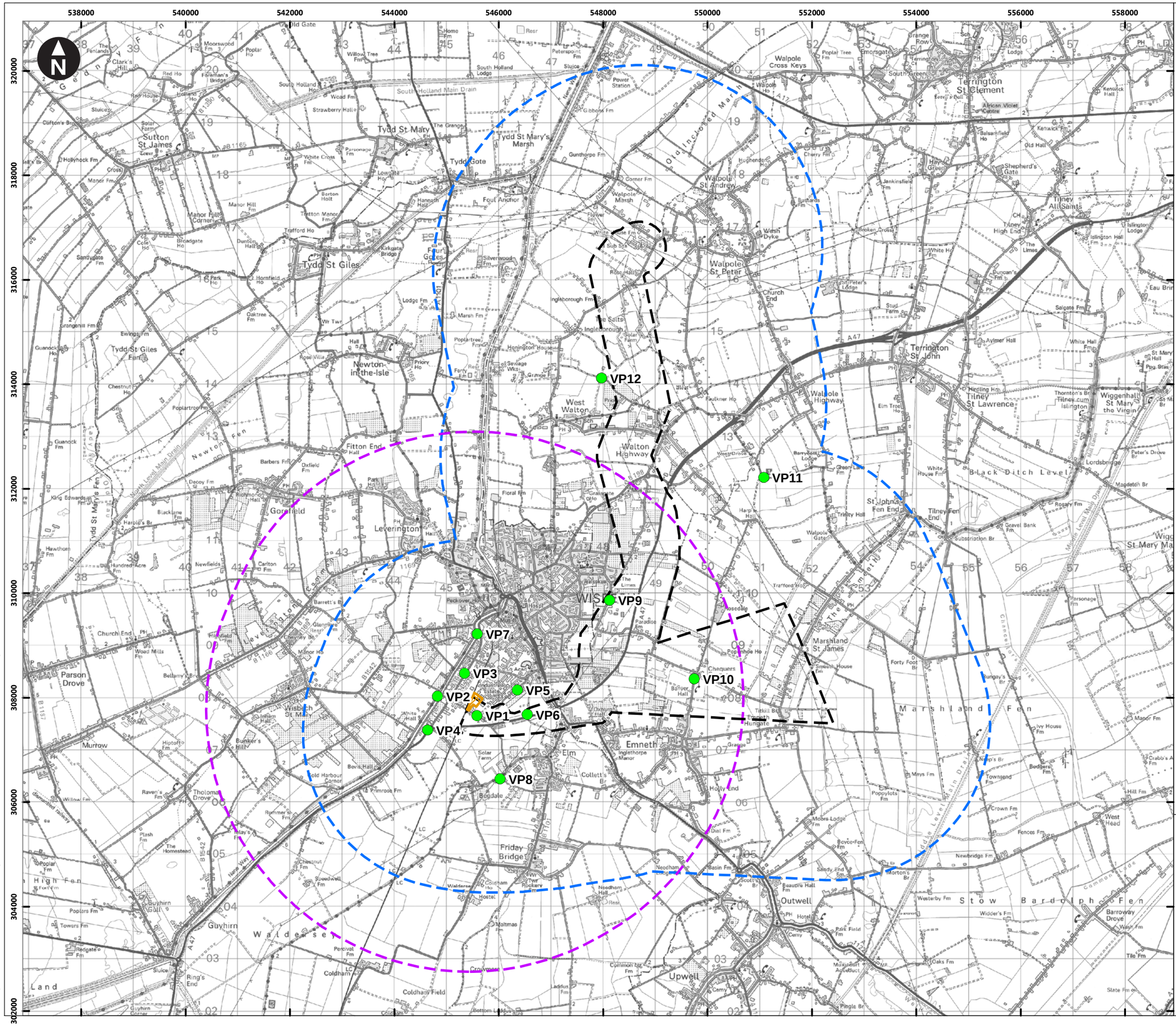

Key

- Energy from Waste CHP Facility
- Grid connection corridor
- Energy from Waste CHP Facility 5km study area
- Grid connection corridor 3km study area
- Potential viewpoints

VP1 - Eastern end of New Bridge Lane.

VP2 - Junction of Mile Tree Lane and North Brink.

VP3 - Lidl carpark west of Cromwell Road.

VP4 - A47 footway at Red Moor Field.

VP5 - Northern end of New Drove.

VP6 - Halfpenny Lane Byway north of A47.

VP7 - North Brink outside Elgoods' Brewery.

VP8 - NCR 63 Begdale Road between Elm and Begdale.

VP9 - Burrettgate Road close to Eldred House, Walsoken.

VP10 - Lady's Drove south of Chequers Corner, Emneth.

VP11 - NCR 1 at Southern end of West Drove, Walpole Highway.

VP12 - West Walton - PRoW between Dixon Drove and Mill Road.

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 m

Scale at A3: 1:70,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 8.7
Potential viewpoint locations

November 2019

wood.

41310-Shr32_v2

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545000 546000 547000

309000 308000 307000

N

MCB19356 MCB25017 MCB27469 MCB27471 1229758 MCB27470 ECB4000 MCB27472 ECB2916 MCB27473 ECB2796 MCB4740 MCB25696 ECB3282 MCB27474 ECB2633 MCB20859 MCB19612 MCB27475 MCB13906 ECB574 MCB27476 ECB4603 ECB2062 MCB16839 MCB24082 MCB20852 MCB15161 MCB5434 MCB11045 MCB5433 MCB5411 MCB9826

BARTON ROAD · MAGAZINE LANE · GROVE PARK · WOODCOTE PARK · THE STILL · MANOR GARDENS · ASH DALE PARK · THE WATER GARDENS · NORTH BRINK · SOUTH BRINK · B198 · BRIDGE STREET · THE CRESCENT · ALEXANDRA ROAD · LOVE LANE · SOMERS ROAD · KINGSLEY AVENUE · KINGS ROAD · QUEENS ROAD · HILLBURN ROAD · BURDETT ROAD · STATION DRIVE · CANNON STREET · VICTORIA ROAD · VICTORY ROAD · CORDON STREET · WEST STREET · MILNER ROAD · LARKSFIELD · PROSPECT PLACE · RAILWAY ROAD · AVORY DRIVE · ELM ROAD · A1101 · CHURCH TERRACE · ORANGE GROVE · NORFOLK STREET · CHURCHILL ROAD · ONYX COURT · ALBERT ROAD · JADE COURT · KING STREET · WILLIAM ROAD · NORWICH ROAD · PRINCE STREET · DUKE STREET · WEDGWOOD DRIVE · THIRD AVENUE · SECOND AVENUE · MOUNT DRIVE · FIFTH AVENUE · HAZEL GARDENS · ELIZABETH TERRACE · RAMNOTH ROAD · SIXTH AVENUE · MONEY BANK · PECKOVER DRIVE · PENROSE GARDENS · COPPERFIELDS · ARLES AVENUE · WILLOW WAY · MANSELL ROAD · QUEEN ELIZABETH DRIVE · FALKLANDS DRIVE · CORPORATION ROAD · GUNPOWDER ROAD · SANDALL ROAD · WESTMEAD AVENUE · WEASENHAM LANE · REGAL ROAD · ALGORES WAY · BRITANNIA WAY · BOLENESS ROAD · HARRYS WAY · HALFPENNY LANE · HERON ROAD · EUROPA WAY · ANGLIA WAY · ENTERPRISE WAY · SALTERS WAY · NEW DROVE · NEWBRIDGE LANE · ELM HIGH ROAD · ELM LOW ROAD · A1101 · A47 · LOW ROAD · HIGH ROAD · MAIN ROAD · ROSE LANE · B1101 · MILE TREE LANE · COXS LANE · COX CLOSE · ELLERBY DRIVE · ABRAHAM DRIVE · MALT DRIVE · ODDFIELD LANE · CROMWELL ROAD · LORDS LANE · REDMOOR LANE · KIRK'S LANE · NEW BRIDGE LANE

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- Grade II Listed Building
- HER Monument polygon
- HER Monument linear
- HER Monument point
- HER Event

0 200 400 600 m

Scale at A3: 1:10,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 9.1
Historic Environment Record entries within 1km of the main development site

November 2019

wood.

41310-Shr45_v2

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547000 548000 549000 550000 551000

317000 316000 315000 314000

N

Walpole Marsh
Marsh Rd
Bank House
East Cron Field
Walpole St Andrew
Candlestick Cottage
Wisbech Rd
Kirk Field
Church Rd
Lynn Dam Field
Oak Tree Farm
Pigeon La
Walpole St Peter
School La
Shire Drove
Walpole Bank
Folgate Lane
Primrose Cottage
Folgate Farm
Ingleborough Farm
Rose And Crown Farm
Salts La
Thornleigh Cottage
Cranny Hill Field
Thorn Moor Field
Whiteling
West Drove (North)
Cranny Field Chase
Long Swine Holme Field
Hill Rd
Old Grange Farm
Dixon's Drove
March La
Hog Holme Field

Key

- Grid connection corridor
- 1km search area
- Listed Building - Grade I
- Listed Building - Grade II
- Listed Building - Grade II*

0 300 600 900 m

Scale at A3: 1:15,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 9.2
Designated Heritage Assets within 1 km of the Proposed Development

November 2019

wood.

41310-Shr46_v2

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547000 548000 549000 550000 551000

313000 312000 311000 310000

Key

- Grid connection corridor
- 1km search area
- Listed Building - Grade I
- Listed Building - Grade II
- Scheduled monument
- Conservation area

0 300 600 900 m

Scale at A3: 1:15,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 9.2
Designated Heritage Assets within 1 km of the Proposed Development

November 2019

wood.

41310-Shr46_v2

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr46_v2.mxd Originator: Simon.Green2

545000 546000 547000 548000 549000

310000 309000 308000 307000

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 1km search area
- Listed Building - Grade I
- Listed Building - Grade II
- Listed Building - Grade II*
- Conservation area
- Registered parks and gardens

0 300 600 900 m

Scale at A3: 1:15,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 9.2
Designated Heritage Assets within 1 km of the Proposed Development

November 2019

wood.

H:\Projects\41310 Wisbech\Drawings\ArcGIS\Workspaces\41310-Shr46_v2.mxd Originator: Simon.Green2

549000 550000 551000 552000 553000

310000 309000 308000 307000

N

Cow Lake Drove
Meredyke House
Stratton
Bonnetts La
Watton Rd
Marshland St James
Hope La
The Bungalow
Rosedale Farm
Paradise Farm
Hollycroft
Sibley Field
Station Rd
Primrose Farm
Endycott
Rands Drove
Avalon
The Hollies
Station Farm
Rands Drain
Ash Cottage
Willowdene
Oak Lodge
Smeeth House Farm
Willans Rd
Salamar House
Brookfield
New Field
Coleworth
Leman's Knapemoor Field
Charlot Cottage
Primrose Farm
Rands Farm
Walsoken Rd
Midfarrow Farm
Rustons Rd
Homeville
Fendike Crofts
Smeeth Rd
Meadow View
Cow Croft Field Farm
North Field
Cow Croft Field
Willow Farm
Pedar Meadow House
Emneth Hungate
End Cottages
Hungate Rd
Racecourse
Grange Farm
Gaultree
Rennox House
Poppytree Farm
New Field
The Edge
Redmoor Bank
Rustons Rd

Key

- Grid connection corridor
- 1km search area
- Listed Building - Grade I
- Listed Building - Grade II

0 300 600 900 m

Scale at A3: 1:15,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 9.2
Designated Heritage Assets within 1 km of the Proposed Development

November 2019

wood.

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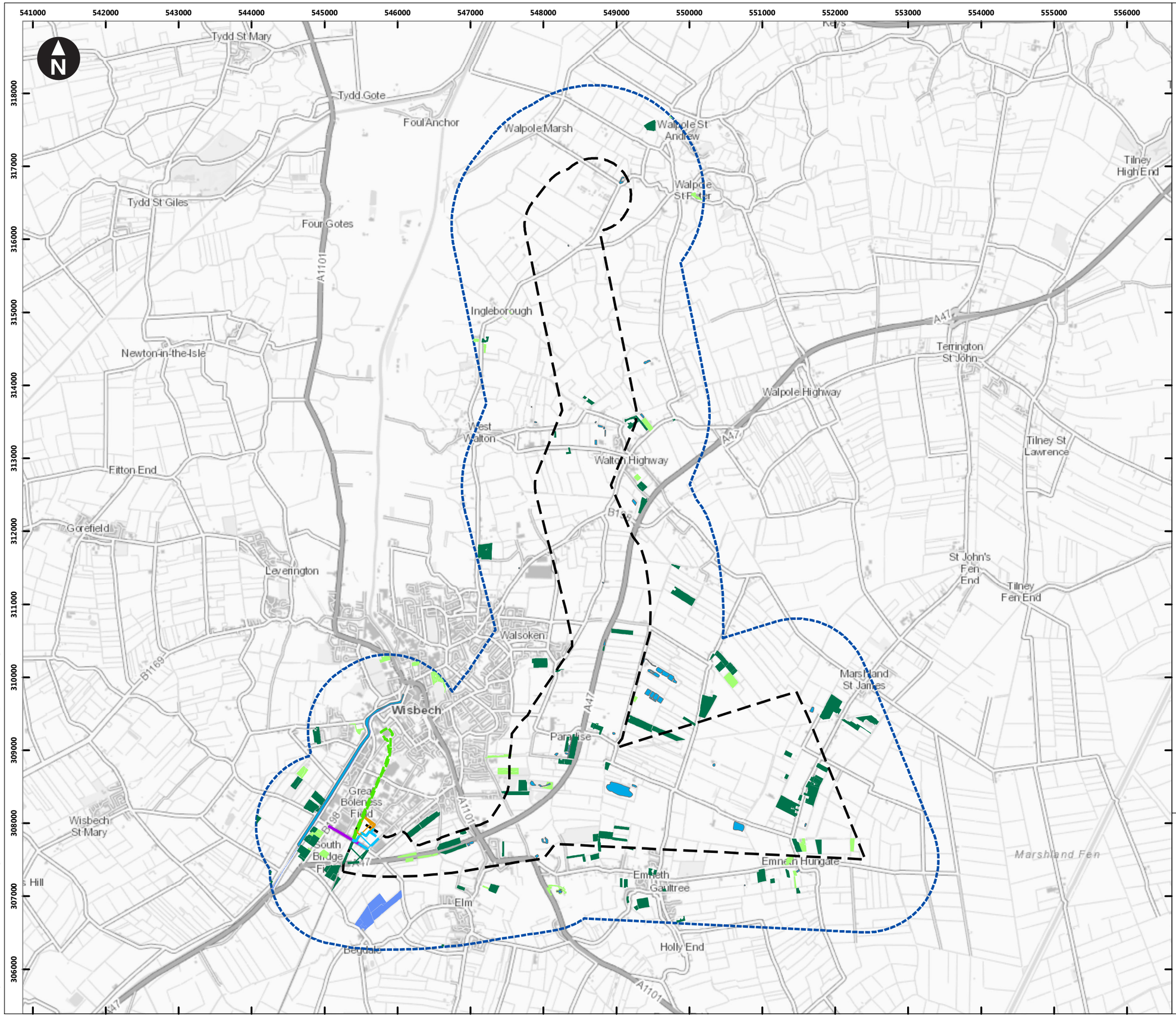

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 1km search area
- Water bodies

Priority Habitats

- Coastal and floodplain grazing marsh
- Deciduous woodland
- Traditional orchard

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 10.1
Priority habitats within 1km of the Proposed Development

November 2019

wood.

41310-Shr18_v3

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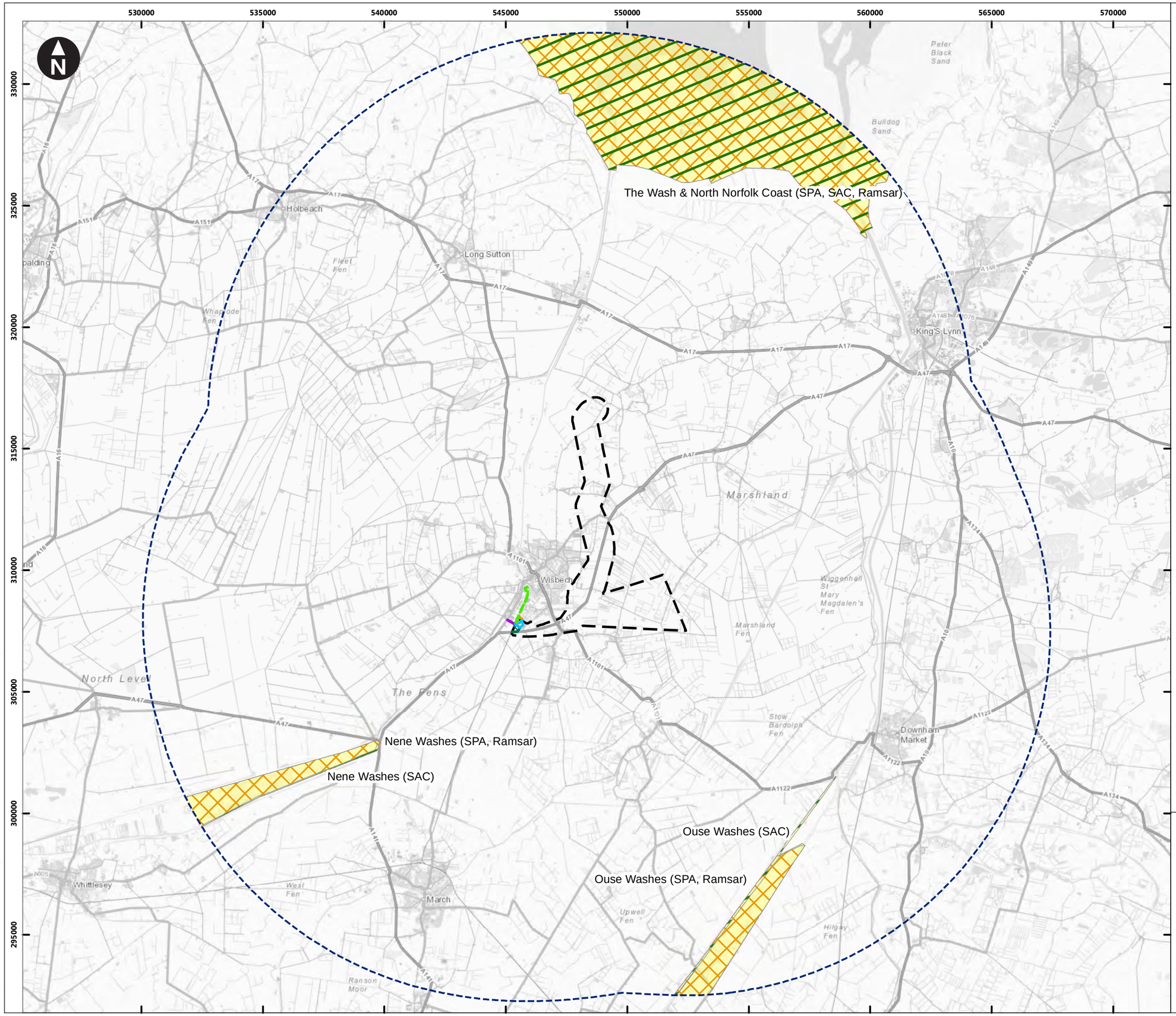

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 15km search area
- Ramsar Site
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 m

Scale at A3: 1:150,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 10.2
Designated biodiversity sites of international importance within 15km of the Proposed Development

November 2019

wood.

41310-Shr19_v3

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546000

548000

310000

308000

N

River Nene

Wisbech

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 500m search area
- Water bodies
- Ditch

0 100 200 300 400 500 600 700 800 900 m

Scale at A3: 1:15,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 10.3
Water bodies within 500m of the Proposed Development

November 2019

wood.

41310-Shr20_v3

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545000

546000

309000

308000

N

River Nene

BARTON ROAD
GROVE PARK
WOODCOTE PARK
MAGAZINE LANE
MAGAZINE CLOSE
NORTH BRINK
SOUTH BRINK
RIVERSIDE WAY
MALT DRIVE
B198
OLDFIELD LANE
KINGSLEY AVENUE
HILLBURN ROAD
PRINCE'S ROAD
KING'S ROAD
QUEENS ROAD
BURDETT ROAD
STATION DRIVE
VICTORY ROAD
ST PETER'S ROAD
ST PAUL'S CLOSE
CANNON STREET
ONYX COURT
MARBLE COURT
CHURCHILL ROAD
A1081
HAZEL GARDENS
ELIZABETH TERRACE
RAMNOTH ROAD
MONEY BANK
WEST STREET
VICTORIA ROAD
GORDON STREET
ELM ROAD
ROSE CLOSE
MILNER ROAD
LARKSFIELD
PROSPECT PLACE
RAILWAY ROAD
AWDRY DRIVE
COPPERFIELDS
WILLOW WAY
MANSELL ROAD
CORPORATION ROAD
SANDALL ROAD
WEASENHAM LANE
WEASENHAM LANE
ELM HIGH ROAD
REGAL ROAD
HALFPENNY LANE
HERON ROAD
MKANDA CLOSE
HARRYS WAY
ELM MARSH ROAD
ELM LOW ROAD
COX'S LANE
COX CLOSE
ELLERBY DRIVE
ABRAHAM DRIVE
CROMWELL ROAD
SANDOWN ROAD
ENTERPRISE WAY
EUROPA WAY
ALGORES WAY
BRITANNIA WAY
BOLENESS ROAD
ANGLIA WAY
SALTERS WAY
MILE TREE LANE
NEW BRIDGE LANE
NEW DROVE
A47
REDMOOR LANE

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 1.5km study area
- Flood zone 3
- Flood zone 2
- Flood zone 1

0 100 200 300 400 m

Scale at A3: 1:8,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 11.1a
Environment Agency Flood Map for Planning (area surrounding the main development site)

November 2019

wood.

41310-Shr22_v2

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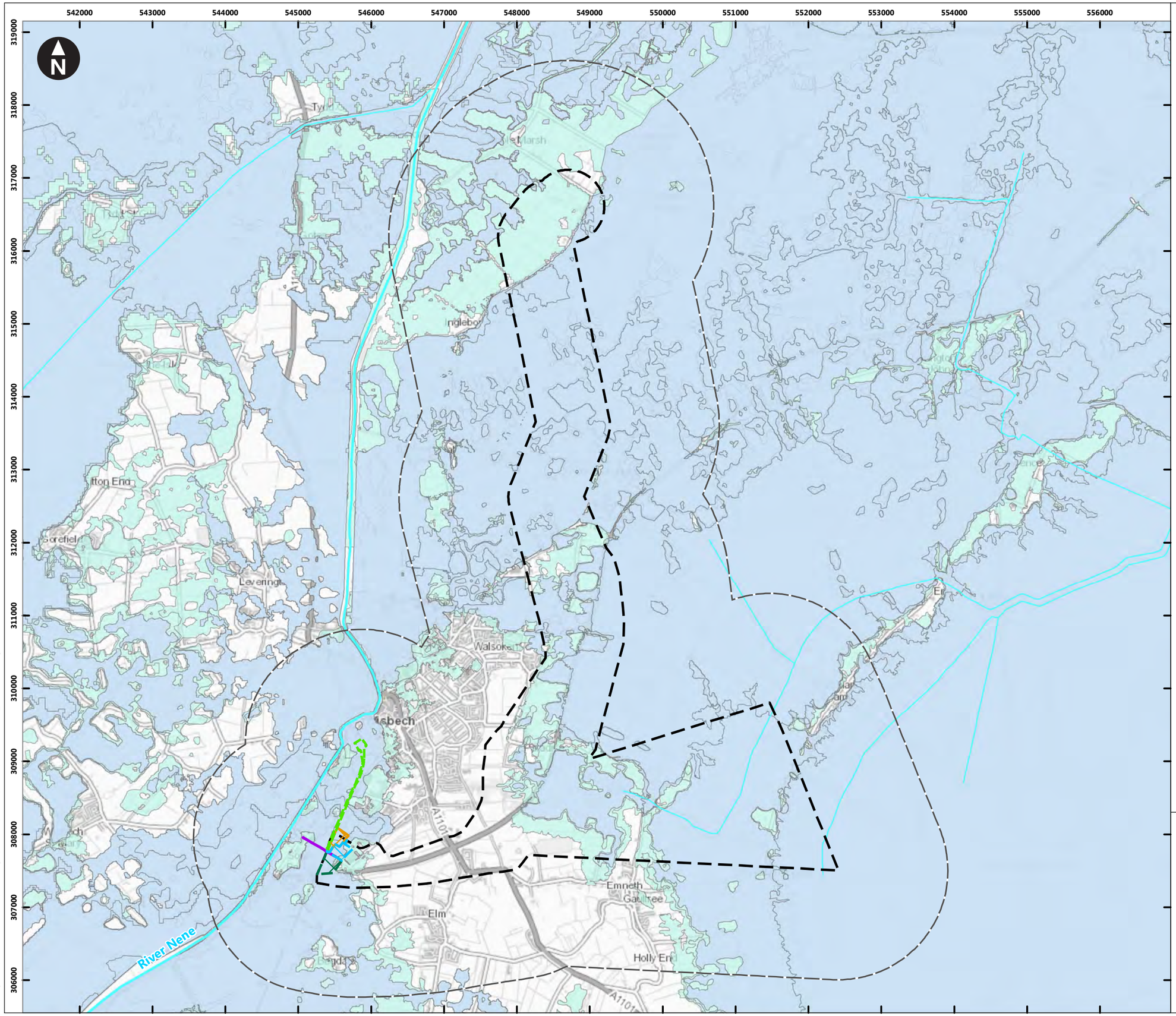

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 1.5km study area
- River
- Flood zone 3
- Flood zone 2
- Flood zone 1

0 500 1,000 1,500 2,000 2,500 3,000 m

Scale at A3: 1:50,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 11.1b
Environment Agency Flood Map for Planning (Grid connection corridor)

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545000

546000

547000

309000

308000

N

River Nene

BARTON ROAD
PARK
WISBECH PARK
MAGAZINE LANE
MAGAZINE CLOSE
SOUTH BRINK
RIVERSIDE WAY
MALT DRIVE
NORTH BRINK
FLUERBY DRIVE
ABRAHAM DRIVE
COX'S LANE
COX CLOSE
CROMWELL ROAD
SANDOWN ROAD
ENTERPRISE WAY
B198
SALTERS WAY
NEW BRIDGE MAXE
NEW BRIDGE LANE
A47
CROMWELL ROAD
GLOFIELD LANE
PRINCE'S ROAD
KING'S ROAD
QUEENS ROAD
HILLBURN ROAD
BURDETT ROAD
STATION DRIVE
VICTORIA ROAD
VICTORY ROAD
LARKSFIELD
PROSPECT PLACE
RAILWAY ROAD
AVERY DRIVE
SKIDDALL ROAD
REGAL ROAD
NEW DROVE
EUROPA WAY
ALGORES WAY
BRITANNIA WAY
BOLENESS ROAD
ANGLIA WAY
HALFPENNY LANE
HARRYS WAY
MIKANDA CLOSE
WEASENHAM LANE
WEASENHAM LANE
CANNON STREET
PAUL'S CLOSE
ONTY COURT
OTTERHILL ROAD
SONIA AVENUE
VICTORY
ELIZABETH TERRACE
HAZEL GARDENS
RAMPTON ROAD
SMITH AVENUE
MONEY BANK
PECKOVER DRIVE
QUAKER LANE
WEXFIELD COURT
RENROSE GARDENS
COPPERFIELDS
MEADOWGATE LANE
ARLES AVENUE
MANSELL ROAD
WILLOW WAY
QUEEN ELIZABETH DRIVE
FALKLANDS DRIVE
CORPORATION ROAD
BOROUGH CLOSE
ELM HIGH ROAD
WESTMEAD AVENUE
HUNTERS ROWE
A1101
ELM LOW ROAD
LOW ROAD
B1101
WEST STREET
ELM ROAD
PAR CLOSE
ROSE
A1(M)
A47
A47
A47
A1101
A1101
ELM HIGH ROAD
ELM LOW ROAD
LOW ROAD
A47
A47
A47
A1101
A1101
ELM HIGH ROAD
B1101
MALFERNY LANE

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 1.5km study area
- > 3.3% AEP - High risk of surface water flooding
- 1 - 3.3% AEP - Medium risk of surface water flooding
- 0.1 - 1% AEP - Low risk of surface water flooding
- <0.1% AEP -Very low risk of surface water flooding

0 100 200 300 400 m

Scale at A3: 1:7,500

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Figure 11.2a
Environment Agency Surface Water Flood Map (area surrounding the main development site)

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41310-Shr24_v2

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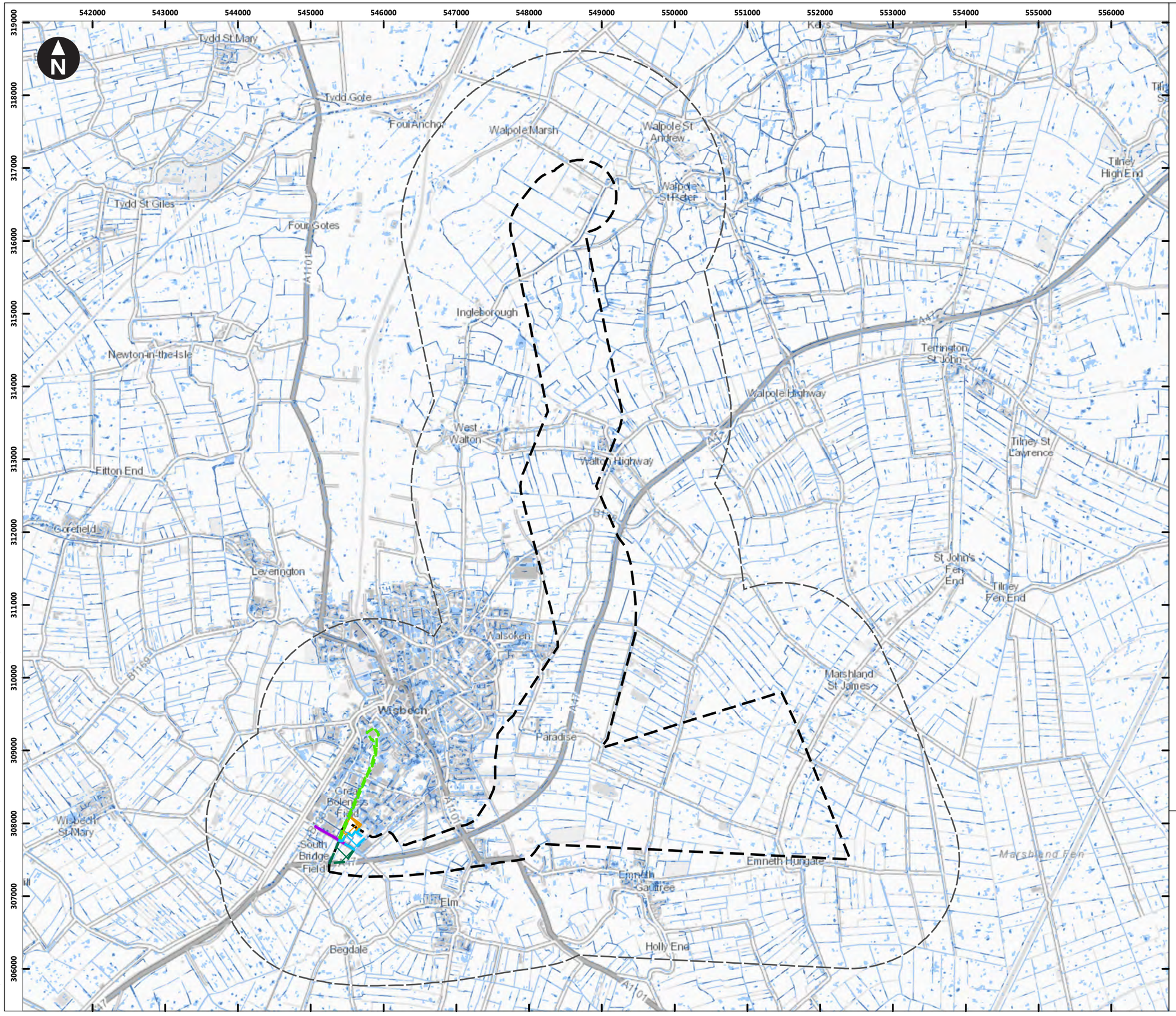

Key

- Energy from Waste CHP Facility
- Potential construction compound
- Potential construction compound and potential substation location
- Combined heat and power connection corridor
- Grid connection corridor
- Access improvements
- 1.5km study area
- > 3.3% AEP - High risk of surface water flooding
- 1 - 3.3% AEP - Medium risk of surface water flooding
- 0.1 - 1% AEP - Low risk of surface water flooding
- <0.1% AEP - Very low risk of surface water flooding

0 500 1,000 1,500 2,000 2,500 3,000 m

Scale at A3: 1:50,000

MVV Environment Ltd
Medworth Energy from Waste CHP Facility

Figure 11.2b
Environment Agency Surface Water Flood Map (Grid connection corridor)

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wood.

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