

M25 junction 28 improvement scheme

TR010029

9.40 Outline construction environmental management plan (Tracked)

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9.40 OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (TRACKED)

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Glossary

Term	Definition
<u>Archaeological Management Plan</u>	<u>A document outlining the requirements for managing the archaeological works, including guidance on the preparation of the Written Schemes of Investigation (WSI) for specific works.</u>
<u>BAT</u>	<u>Best Available Techniques</u>
BPM	Best Practicable Means
BS	British Standards
CDM 2015	The Construction (Design and Management) Regulations 2015
CEMP	Construction Environmental Management Plan
COSHH	Control of Substances Hazardous to Health Regulations 2002
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EAP	Environmental Action Plan
ECP	Environmental Control Plan
ECoW	Ecological Clerk of Works
EMP	Environmental Management Plan
EMS	Environmental Management System
EnvIS	Environmental Information System
EnvCoW	Environmental Clerk of Works
EPS	European Protected Species
ES	Environmental Statement
GI	Ground Investigation
GIR	Ground Investigation Report
HEMP	Handover Environmental Management Plan
IAN	Interim Advice Note
SMI	Site of Metropolitan Importance
ISO 14001:2015	An international standard for environmental management systems
KPI	Key Performance Indicators
LEMP	Landscape and Ecological Management and Monitoring Plan
MMP	Materials Management Plan

Term	Definition
NIA	Noise Important Area
NMU	Non-motorised user
Outline CEMP	Outline Construction Environmental Management Plan
Principal Contractor	Under CDM 2015, a Principal Contractor is appointed by the client to control the construction phase of any project involving more than one contractor
PC	Principal Contractor
PCF	Project Control Framework - Highways England's process for managing the development of major schemes
PMW	Precautionary Methods of Working
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidelines
PRA	Piling Risk Assessment
PRoW	Public Rights of Way
QMS	Quality Management System
RAMS	Risk Assessment and Method Statement - these are specific to a task/operation
REAC	Register of Environmental Actions and Commitments
RPS	Regulatory Position Statement
SHE	Safety, Health and Environmental
SHMP	Soil Handling Management Plan
SMS	Safety Management System
SoS	Secretary of State
SWMP	Site Waste Management Plan
SuDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
The Scheme	M25 junction 28 improvement scheme
Toolbox talk	A short presentation to the workforce on a single aspect of health, safety or environmental management
TPO	Tree Preservation Order
WFD	Water Framework Directive
Written Scheme of Investigation	<u>Methodology statement</u> relating to an archaeological survey, <u>evaluations</u> , and/or monitoring activity
UXO	Unexploded Ordnance

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1. Introduction and background

1.1 Scheme description

- 1.1.1 This Outline Construction Environmental Management Plan (CEMP) has been prepared to support the application by Highways England (the “Applicant”) for a Development Consent Order (DCO) to authorise the construction of the M25 junction 28 improvement scheme (the “Scheme”).
- 1.1.2 In December 2014, the Department for Transport (DfT) published its Road Investment Strategy (RIS) for the investment period 2015 and 2020, announcing £15 billion to invest in England’s strategic road network. The RIS sets out a list of schemes that are to be delivered by Highways England over this investment period and identified M25 junction 28 as a key junction requiring improvement to address congestion and safety issues. In their second RIS (RIS2) for 2020 to 2025, published in March 2020, the DfT reiterate their support for improvements to M25 junction 28. The Scheme is described in RIS2 as an “*upgrade of the junction between the M25 and A12 in Essex, providing a free-flowing link from the northbound M25 to the eastbound A12*”.
- 1.1.3 The Scheme is located between Brentwood and Romford. This junction is one of the major improvement projects planned for the southeast region and will provide better access towards Essex and London, as well as connecting Brentwood, Chelmsford, Colchester and Suffolk with London and other key destinations. The Scheme was announced by Highways England in July 2017 and construction is expected to commence in spring 2022. The Scheme is illustrated on the Scheme layout plans (application document TR010029/APP/2.7) and the location is shown in Appendix A.
- 1.1.4 The Scheme has been developed further based following on consultation with stakeholders and members of the public, and more detailed assessments of traffic, engineering, buildability and environmental factors. The Scheme has been developed to a level of detail sufficient to determine the size and location of the key works elements and the land interests required to construct, maintain and operate it. The boundary of the works has been drawn with reference to the DCO limits of deviation (as shown in the Works plans (application document TR010029/APP/2.3) and draft DCO (application document TR010029/APP/3.1)) and the ‘Rochdale Envelope’¹ to allow for any further design refinement and development during the detailed design of the Scheme.
- 1.1.5 Key environmental constraints of the Scheme are shown in Appendix B.
- 1.1.6 The Scheme comprises the following key works elements. These should be read in conjunction with Works plans (application document TR010029/APP/2.3) and Schedule 1 of the DCO (application document TR010029/APP/3.1). Further details are provided in Chapter 2 of the ES (application documents TR010029/APP/6.1):
- Highways works:

¹ The approach known as the ‘Rochdale Envelope’ was developed during onshore planning applications to provide flexibility in design options where details of the whole project are not available when the application is submitted, while ensuring the impacts of the final development are fully assessed during the Environmental Impact Assessment (EIA).

- The creation of a new two lane loop road with hard shoulder, for traffic travelling from the M25 northbound carriageway onto the A12 eastbound carriageway, including the provision of three new bridges (Alder Wood bridge, Duck Wood bridge and Grove bridge) and an underpass (Grove Farm underpass) to carry the new loop road over a proposed access track (Work No. 14).
- Realignment of the existing A12 eastbound exit (off-slip) road (Work No. 2) to accommodate the new loop road including the provision of a new bridge (Maylands bridge) and the extension of the existing Grove culvert.
- Improvements to the existing A12 eastbound and westbound carriageways and A12 eastbound entry (on-slip) road (Work Nos. 1, 3 and 4).
- Realignment of the existing M25 northbound on-slip (Work No. 8).
- Improvements to the existing junction 28 roundabout, the existing M25 northbound carriageway and the M25 northbound off-slip (Work Nos. 5, 7 and 12).
- New gantries over the M25 carriageway (Work Nos. 9, 10 and 11).
- Alterations of existing private access and egresses and the provision of new private means of access to accommodate the new loop road (Work Nos. 13, 14, 15 and 16).
- Earthworks and drainage works:
 - Earthworks including the deposit of surplus construction materials on two identified sites (Work Nos. 17 and 18).
 - Three new attenuation ponds and associated drainage and access roads (Works Nos. 19A, 19B, 20A, 20B, 21A and 21B) and a new drainage outfall pipe (Work No. 22).
- Realignment of watercourses:
 - Realignment of the Weald Brook and the Ingrebourne River (Work Nos. 23A, 23B, 23C and 23D).
- Environmental mitigation:
 - Two new flood compensation areas (Work Nos. 24A and 24B) and the provision of new ecological compensation and mitigation areas (Work Nos. 25 and 26) and two new environmental ponds (Work Nos. 27 and 28).
- Utilities:
 - Diversion of an already underground high pressure gas pipeline and diversion underground of an existing overhead electric line (Work Nos. 29 and 30).
- Accommodation works:
 - Accommodation works to provide replacement facilities for Maylands Golf Course (Work No. 32).

1.1.7 Extensive environmental works are proposed including:

- Compensation for the loss land within the Ingrebourne Valley Site of Metropolitan Importance (SMI), temporary and permanent loss of habitats and effects on protected species. This work is planned to enhance an area within the Ingrebourne Valley SMI affected by the Scheme.
- Maintaining and providing important visual screening.
- Mitigation measures to minimise the adverse effects to the Ingrebourne River and Weald Brook from the construction of the new loop road and realignment of the A12 slip road.
- Appropriate reinstatement of habitats in temporary working areas, on new earthworks, and around balancing ponds and flood compensation areas (grassland, scrub, woodland habitat).
- Implementing specific mitigation protection measures for species including creation of ponds and refuges for great crested newts, creation of basking areas for reptiles, bird and bat boxes, re-profiling for a kingfisher bank on Weald Brook, maintaining connectivity at watercourse crossing points with widespan bridges.
- Control of non-native invasive plant species, including goldenrod and Himalayan balsam.
- Maintaining and providing sufficient woodland screening vegetation along the new loop road to screen views from nearby residents at Maylands Cottages and properties along the eastern edge of Harold Hill.
- Enhancement of the River Ingrebourne and Weald Brook including realignment of sections of existing straight channel to new sinuous courses on both rivers, and selective coppicing of trees to reduce shade cover.
- Lowering of floodplain to improve the river and floodplain integration and create wetland habitat by creating backwaters and floodplain scrapes.
- Incorporation of a natural riverbed and installation of mammal passages within the culverts and creation of unlined drainage ditches to manage clean runoff and provide habitats.
- Appropriate long-term management of all habitats.

Strategy and programme context

- 1.1.8 The Scheme is included for delivery in the DfT and Highways England RIS for 2015 to 2020 and RIS2 for 2020 to 2025.
- 1.1.9 A proposed high level construction programme with details of the phasing of works has been prepared by the buildability contractor and details are provided in Chapter 5 of this Outline CEMP.

Construction

- 1.1.10 The arrangements for construction of the Scheme have been developed by the buildability contractor to a level of detail sufficient to provide certainty on the land take required to build the Scheme, including the development of a high level construction programme, and defining key construction methods and equipment to inform the environmental assessment. Potential locations of construction

compounds for the Principal Contractor have been identified and are included within the temporary land take and are shown on Figure 2.2 (application document TR010029/APP/6.2) for the Scheme.

- 1.1.11 The main site compound for the works would be located on the Glebelands Estate to the west of the proposed loop road and would operate for the duration of the works.
- 1.1.12 Construction of the Scheme is assumed to commence in spring 2022, with the Scheme planned to be open to traffic in autumn 2024.

Operation

- 1.1.13 Once the commissioning activities have taken place, the Scheme will be open to traffic. The Principal Contractor will be responsible for any construction defects that arise for a period of 12 months after opening. After this period the Scheme will be handed over to Highways England's maintenance agent, who operates the M25 corridor on behalf of the Applicant. The Applicant proposes that side roads and other rights of way would be handed over to the local authority after opening, who would be responsible for ongoing maintenance.

1.2 Scheme objectives

- 1.2.1 The objectives for the Scheme were developed with DfT and local authorities. The Scheme objectives are:

- To increase capacity and reduce congestion and delays by providing an improved link from M25 to A12.
- To cater for future traffic demands to enable development and economic growth.
- To reduce the incident rate and resulting disruption by increasing the capacity of the roundabout.
- To improve safety on the roundabout by reducing traffic levels and redesigning the existing layout.
- To minimise the impact on local air quality and noise by smoothing traffic flow.
- To protect access for non-motorised users (pedestrians and cyclists) and improve conditions wherever possible.

- 1.2.2 Alongside the objectives for the Scheme, Highways England aims to:
- Minimise environmental impact as measured in accordance with the Design Manual for Roads and Bridges (DMRB).
 - Improve air quality related to vehicle emissions, and specifically within declared Air Quality Management Areas (AQMA), where possible.

- 1.2.3 In addition, the Highways England Delivery Plan 2015-2020² sets out its own approach to meeting the key performance indicators identified within the RIS of

² Highways England Delivery Plan 2015-2020,
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/424467/DSP2036-184_Highways_England_Delivery_Plan_FINAL_low_res_280415.pdf

reducing net loss of biodiversity and a longer term ambition of no net loss in RIS2. The plan also sets targets to mitigate noise in at least 1,150 Noise Important Areas (NIAs) between 2015/2016 and 2019/2020. This plan also demonstrates the ability of the Scheme to meet the requirements within Highways England's licence, specifically in relation to the environment. Highways England published 'The Road to Good Design' in January 2018, which sets out design principles for delivering projects with the aspiration to 'deliver safer, better, beautiful roads which connect people and connect our country' which have been considered within the development of the Scheme design.

1.3 Purpose of the Outline CEMP

- 1.3.1 This document is the Outline CEMP for the Scheme. It is based on the current preliminary design (Highways England's Project Control Framework (PCF) Stage 3) of the Scheme and contains the appropriate level of detail for the preliminary design stage. The Outline CEMP accompanies the DCO application for the Scheme and sets out the framework for the CEMP.
- 1.3.2 The environmental effects of the Scheme described in the ES and the related actions and mitigation measures in the Register of environmental actions and commitments (REAC) (application document TR010029/APP/7.3) have formed the basis of this Outline CEMP.
- 1.3.3 The purpose of the Outline CEMP is to:
- Link the environmental issues between the design, construction and operational and maintenance stages of the Scheme.
 - Record environmental risks and identify how they will be managed during the construction of the Scheme.
 - Demonstrate compliance with relevant environmental legislation, policy and good practice.
 - Record objectives, commitments and mitigation measures to be implemented and set their achievement through the Scheme lifespan.
 - Identify key environmental staff and their responsibilities, including communication and training requirements.
 - Provide environmental handover information to the body responsible for operational management, including management and monitoring requirements and commitments.
 - Provide a review, monitoring and audit mechanism to determine the effectiveness of and compliance with the environmental control measures and how corrective action will take place.
- 1.3.4 This Outline CEMP has been prepared in accordance with the design guidelines of Highways England Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5 HA 205/08³, Volume 11, Section 2, Part 6 HD 48/08⁴, and Interim Advice Note (IAN) 183/14 Environment Management Plans⁵.

³ <http://www.standardsforhighways.co.uk/ha/standards/dmr/vol11/section2/ha20508.pdf>

⁴ <http://www.standardsforhighways.co.uk/ha/standards/dmr/vol11/section2/hd4808.pdf>

⁵ <http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian183.pdf>

- 1.3.5 The preparation of a CEMP will be secured by requirement 4 of the DCO and submitted to the Secretary of State (SoS) for their approval in writing, following consultation with the relevant local planning authority and local highway authority. The CEMP will be prepared by the Principal Contractor, substantially in accordance with this Outline CEMP as the detailed design and construction plans have been finalised.
- 1.3.6 The CEMP will be written in line with the requirements outlined in this document and it will form part of the Principal Contractor Environmental Management System (EMS), which is accredited to ISO 14001:2015. The CEMP is reviewed at regular intervals and will be maintained throughout the life of the Scheme.
- 1.3.7 On completion of the Scheme the Principal Contractor will prepare the Handover Environmental Management Plan (HEMP) to outline the monitoring and maintenance regime of the environmental features, in line with the REAC. The process for the preparation of the HEMP will be secured by requirement 4 of the DCO.
- 1.3.8 The interdependencies between the Outline CEMP, CEMP and HEMP are presented in Figure 2.1 below.

1.4 Objectives of the CEMP

- 1.4.1 The overall objectives of the CEMP are to:
- Minimise the risk of any type of pollution incident or other form of unauthorised discharge arising.
 - Avoid or minimise impacts upon nearby receptors.
 - Be compliant with statutory legislation and contract specifications.
 - Provide a framework for the implementation and review of the CEMP and other relevant documents.
 - Secure the mitigation measures considered in the ES.
- 1.4.2 This Outline CEMP takes due consideration of the documents submitted to the Planning Inspectorate and assessments undertaken on behalf of Highways England, as well as the draft DCO for the Scheme itself, and identifies mitigation measures and environmental issues associated with the following phases of construction:
- Pre-construction (e.g. advanced works, site preparation, vegetation clearance).
 - During construction (e.g. main construction works).
 - Post construction, or pre-occupation, including demobilisation plan.
- 1.4.3 Upon the making of a DCO for the Scheme, specific references in this document are made to the requirements and protective provisions, relating to the various phases of pre-construction, construction, post construction will be updated.

2. Approach to environmental management

2.1 General approach

2.1.1 The process of environmental management for the Scheme is outlined below.

Figure 2.1: Environmental management process

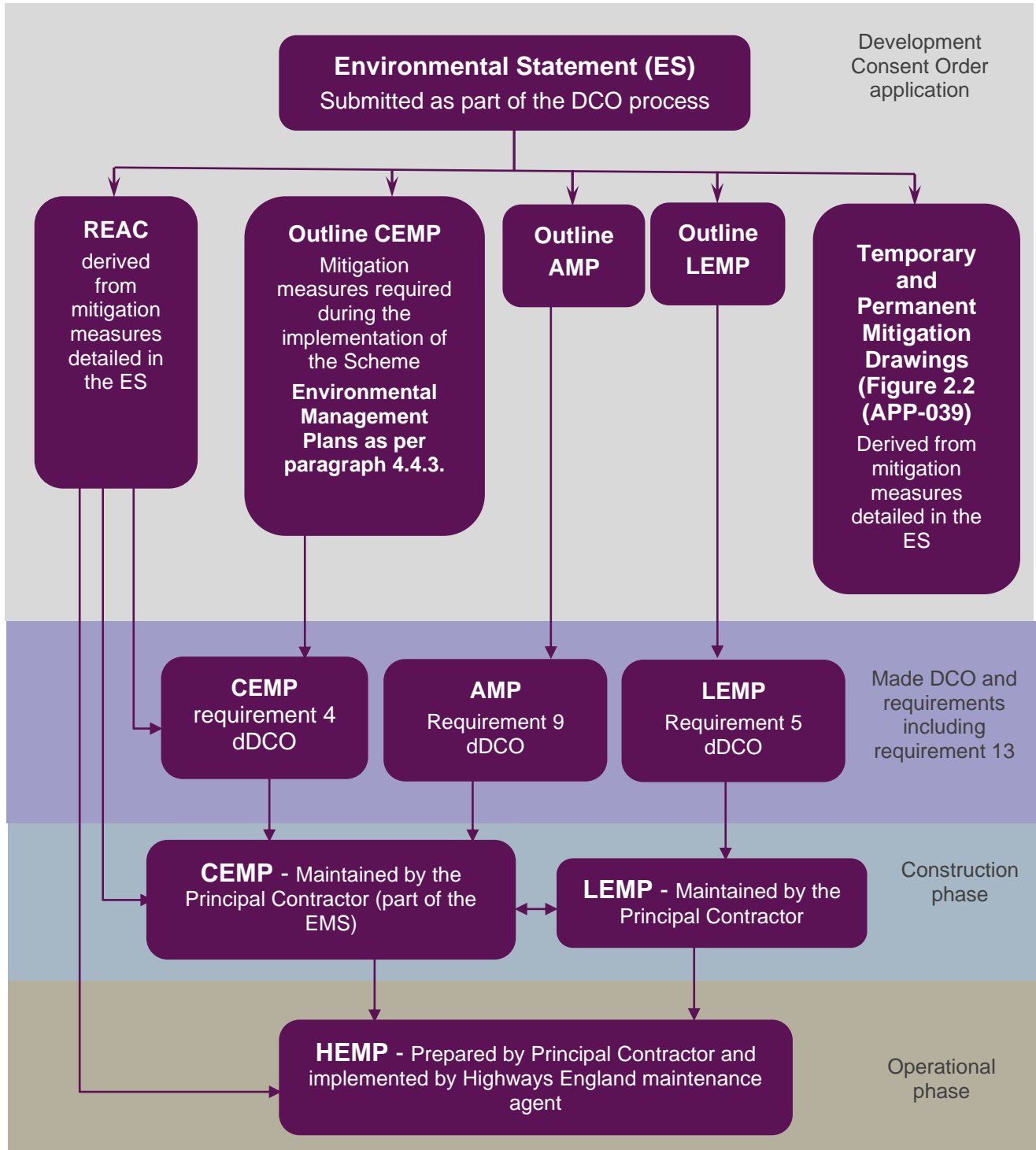
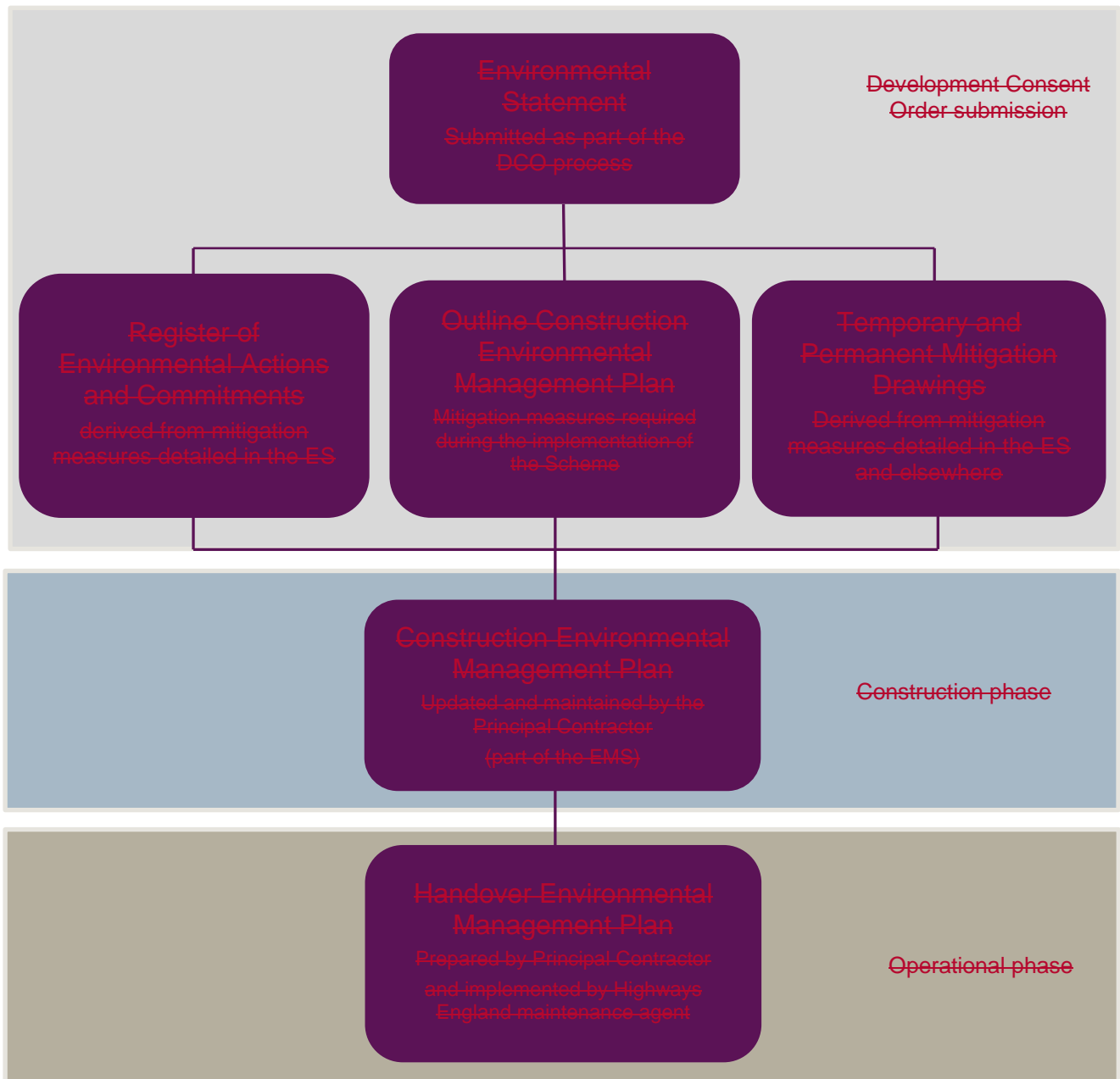


Figure 2.1: Environmental management process



2.1.2 A clear approach and structure for environmental management is necessary to fulfil the aims of the CEMP and meet environmental commitments. This includes outlining roles and responsibilities; required communication; appropriate hold points and all the mitigation, conditions, consents, licences and good working practices that need to be implemented. The CEMP will set out a clear process whereby these commitments are **properly** documented, agreed and implemented throughout the lifespan of the Scheme.

2.1.3 The REAC ensures environmental actions and mitigation commitments are communicated and addressed during the implementation of the Scheme, including the detailed design and construction stages. Where appropriate, these may also be added to design information, such as the Scheme Layout Plans

(application document TR010029/APP/2.7) or other drawings and specifications to highlight issues and protection areas where necessary.

2.1.4 The CEMP approved in accordance with Requirement 4 of the DCO will draw together all relevant environmental information relating to the Scheme, including, but not limited to:

- Actions and mitigation measures set out in the ES and REAC.
- Relevant Requirements set out in Schedule 2 of the DCO as granted.
- Any additional mitigation measures agreed post publication of the DCO.
- Any other commitments agreed between Highways England and specific landowners or occupiers.
- Any other requirements relating to licences, permits and consents not included as part of the DCO.
- Environmental best practice measures including those set out by statutory agencies.

3. Roles and responsibilities

3.1 Site roles and responsibilities

3.1.1 The site-based roles and responsibilities in relation to environmental management are summarised in Table 3.1 and Table 3.2. The Principal Contractor will be required to delegate responsibilities to experienced onsite personnel within the key areas of the site. The delegation of responsibilities will be clearly identified within relevant Scheme documents and site files.

3.2 Project management organisation

3.2.1 Highways England shall be responsible for overseeing management of the Scheme. Highways England will delegate some roles and responsibilities to specialist consultants to supervise, monitor or check the Principal Contractor’s method statements including sensitive activities where required (method statements will be contained in Appendix D). The key Scheme roles for Highways England and the Principal Contractor are listed in Table 3.1.

[Note: Individual names and contact details will need to be confirmed and inserted where applicable by Highways England and the Principal Contractor into Table 3.1 prior to commencement of the construction phase.]

[Note: Principal Contractor to produce and include method statements in Appendix D when appointed.]

Table 3.1: General site contacts and responsibilities

Role	PCF Stage	Contact and organisation	Phone	Email
Highways England Project Manager	All	TBC	TBC	TBC
Principal Contractor Site Manager	All	TBC	TBC	TBC
Principal Contractor DCO Manager	All	TBC	TBC	TBC
Principal Contractor Environmental Manager	5/6	TBC	TBC	TBC
Principal Contractor Environmental Clerk of Works	5/6	TBC	TBC	TBC
Principal Contractor Environmental Specialist(s)	All	TBC selected specialists	TBC	TBC
Principal Contractor Community Liaison Officer	5/6	TBC	TBC	TBC

3.3 Environmental management responsibilities

3.3.1 Highways England, the Principal Contractor and subcontractors are all responsible for adhering to and complying with the Scheme’s environmental policies, relevant environmental legislation, bylaws and regulations. It ~~is~~ will be a requirement that all site personnel will be made aware of their duty of care to the environment and will be provided with adequate training, supervision or instruction in the form of toolbox talks, site induction modules and specific method statements as necessary.

3.3.2 Responsibilities for site environmental management will be delegated to key personnel by the Principal Contractor. These personnel will be responsible for implementation, reporting and monitoring of environmental mitigation during the contract period. Where required, environmental specialists will be consulted to provide advice on specific issues or site activities, in consultation with the Principal Contractor. The key environmental management roles and responsibilities are shown in Table 3.2.

Table 3.2: Environmental management responsibilities

Role	Responsibility
Highways England Project Manager	Oversee implementation of whole Scheme and the individuals undertaking specific roles and duties. To be reported to as per Contract requirements.
Principal Contractor Site Manager	Responsible for management of the construction phase of the Scheme. Has overall responsibility for the environmental performance of the Scheme. Regular communication with Highways England and the relevant statutory environmental bodies on all environmental matters (as they arise).
Principal Contractor DCO Manager	Responsible for overseeing and maintaining the commitments register. Reporting and liaison to the local authorities. Produce and agree a process for implementing the requirements of the DCO with the local authorities. Assessing requirements of changes to the design approved by the DCO. Act as the focal contact for all DCO related queries and requests for information. Provide training and briefings to relevant staff on the implementation of the DCO. Monitor compliance with the DCO requirements. Assist in the review of design and construction methodology changes. Monitor compliances with the DCO. Liaise with the Principal Contractor Planner to enable the efficient running of the construction programme.

Role	Responsibility
	<p>Work with the Principal Contractor Community Liaison Manager to respond to complaints, community liaison, and stakeholder consultations as outlined in DCO.</p>
<p>Principal Contractor Environmental Manager</p>	<p>Principal Contractor Environmental Manager or the delegate shall be responsible for overseeing and maintaining the environmental components and documentation of the Scheme.</p> <p>Develop and review the Environmental Control Plans (ECPs) throughout the construction period.</p> <p>Act as the focal point of contact for all environmental issues on site and identify key environmental concerns on site as the Scheme develops.</p> <p>Coordination with environmental specialists and ensure the site environmental management compliance in line with the ECPs.</p> <p>Ensure compliance with environmental legislation, consents, objectives, targets and other environmental commitments, including those from the ES.</p> <p>Audit the Principal Contractor’s Site Environmental Management System and Programmes (e.g. Waste Management Plan and activities associated with onsite waste management).</p> <p>Audit the Principal Contractor’s Environmental Management System ISO 14001:2015.</p> <p>Monitor compliance with the environmental requirements of the Scheme.</p> <p>Assist in the review of method statements.</p> <p>Compile applications for unexpected authorisations with assistance of the Principal Contractor Environmental Clerk of Works (EnvCoW) if necessary.</p> <p>Accompany statutory authorities on site visits (with the Principal Contractor EnvCoW if necessary).</p> <p>Investigate environmental incidents.</p> <p>Assist with the delivery of environmental training of the workforce.</p> <p>Assess and check survey results and update databases, ECPs, etc with new information.</p> <p>Identify cost saving and best practice activities.</p> <p>Liaise with site supervisors, site management team and general construction workers.</p> <p>Liaise with relevant bodies for the application, and implementation of required consents and permits.</p> <p>Liaise with relevant stakeholders.</p>

Role	Responsibility
Principal Contractor Environmental Clerk of Works	<p>Support the project team in delivering the environmental component of the works during the construction phase.</p> <p>Record the progress of the environmental works.</p> <p>Identify key environmental concerns on site as the Scheme develops.</p> <p>Monitor and update the Principal Contractor Environmental Manager on the progress of pre-construction surveys.</p> <p>Input into the Health and Safety team lead site induction on environmental practices, conduct toolbox talks, specialist surveys and oversee monitoring activities as required.</p> <p>Undertake day to day monitoring and supervision of construction activities in relation to environmental aspects.</p> <p>Monitor environmental compliance on site.</p> <p>Assist in monthly formal audits with the Principal Contractor Environmental Manager.</p> <p>Assess and check survey results and update databases, ECPs, etc with new information.</p> <p>Input and review site specific method statements.</p> <p>Monitor dust, noise and vibration.</p> <p>Monitor hours of working to meet accepted environmental noise and vibration limits in consultation with the relevant Environmental Health Officer.</p> <p>Develop and liaise with Principal Contractor Health and Safety Officer management plans, such as the Emergency Spill Response Plan for incidents on site.</p> <p>Immediate reporting of incidents to the Safety, Health and Environmental (SHE) department.</p> <p>Monitor all consents and permit requirements, including local Environment Agency consents and permits.</p> <p>Liaise with site supervisors, site management team and general construction workers.</p> <p>Provide daily updates to the Principal Contractor Environmental Manager on site progress, compliance, issues, problems, successes, etc.</p> <p>Accompany statutory authorities on site visits (with the Principal Contractor Environmental Manager if necessary).</p> <p>Identify cost saving and best practice activities.</p>
Principal Contractor Environmental Specialist(s)	<p>The Principal Contractor will be required to appoint suitably qualified environmental specialists, such as:</p> <ul style="list-style-type: none"> Contamination and remediation specialist. The waste management specialist. Ecologist to supervise works which are potentially impacting f on protected species or risk identified during works.

Role	Responsibility
	Landscape Manager to supervise planting and aftercare. Noise and vibration and air quality specialists. Archaeologists. Agricultural specialist. Arboriculture specialist. Others, as required.
Principal Contractor Community Liaison Officer	Key liaison with all of the above and Highways England's Public Liaison Officer: <ul style="list-style-type: none"> – Maintain and develop Community Relations Strategy. – Maintain comment and enquiries log, disseminate identified comments for response and implementation of action.

3.4 Detailed Principal Contractor responsibilities

Pre-construction

3.4.1 The Principal Contractor is responsible for approving the appointment of the Environmental Manager and any environmental specialists prior to any work starting on site.

3.4.2 The Principal Contractor is responsible for the following prior to construction commencing:

- Developing this Outline CEMP into the fully detailed final CEMP.
- Defining roles and responsibilities for their own and their key subcontractors' personnel relating to environmental issues.
- Developing an environmental training plan covering all personnel.
- Developing a programme of internal and subcontractor inspections/ monitoring.
- Developing Scheme-specific emergency procedures for environmental incidents.
- Finalising and implementing a programme for works to allow all preconstruction surveys to be arranged and completed within the required timeframe.
- Agreeing a non-compliance reporting procedure with Highways England to manage any environmental incidents or non-compliance events for the Scheme.
- Developing the required ECPs. These will be updated as required up to construction commencement to reflect any new, relevant information provided by Highways England or other statutory consultees (e.g. further consent conditions, landowner agreements) or through design development, construction planning, pre-construction surveys etc.

Construction

- 3.4.3 The Principal Contractor is responsible on site for delivering the commitments in the REAC, as described within the Scheme design and controlled by the CEMP.
- 3.4.4 The Principal Contractor will implement the procedures set out in the CEMP with technical advice from competent environmental specialists. They are responsible for all their subcontractors on site and for ensuring these subcontractors comply with the requirements of the CEMP.
- 3.4.5 The Principal Contractor is responsible for monitoring compliance with legislation and that good practice is followed throughout the duration of the construction.
- 3.4.6 The Principal Contractor must ensure that all onsite works are adequately monitored.
- 3.4.7 The Risk Assessments and Method Statements (RAMS) and ECPs will be used to ensure all environmental commitments are delivered on site. The success of implementing the requirements of the RAMS, ECPs and delivery of mitigation measures relating to the Scheme will be the responsibility of the Principal Contractor.
- 3.4.8 Any improvements or deviations relating to environmental matters required to the RAMS and/or ECPs shall be approved by the Principal Contractor Environmental Manager and will be subject to Highways England consent where required. The Principal Contractor will provide regular feedback and information to the Highways England Project Manager and Principal Contractor Environmental Manager on the progress and success in delivering all mitigation and commitments on site.
- 3.4.9 The REAC will be updated to demonstrate progress to date and for environmental auditing purposes, with updates periodically sent to the relevant Highways England management personnel.
- 3.4.10 All site personnel will have the responsibility and authority to halt works in any activity where environmental commitments are not being successfully delivered or to prevent legal requirements from being breached.
- 3.4.11 All site personnel will be encouraged to draw attention to any environmental risk or potential environmental risk arising on site (for example, refuelling being carried out too close to a watercourse or working outside the agreed limits of deviation for any aspect of the works). This approach will be promoted in all site inductions and training.
- 3.4.12 Any incidents or non-compliance with commitments will be recorded using the Principal Contractor management processes and will be required to contain the following information:
- How to classify incidents/hazards
 - How to manage minor incidents
 - How to manage major incidents
- 3.4.13 The Principal Contractor will also:
- Have sole responsibility for pollution prevention measures being successfully implemented.

- Take all reasonable precautions and undertake all reasonable measures within their control to ensure that all legal requirements are complied with and that no unnecessary damage, disturbance or pollution results from undertaking the works.
- Be available for environmental audits monthly.

3.4.14 Immediately prior to construction, Highways England's Employer's Agent (or equivalent) and the Principal Contractors nominated person will undertake a site condition survey of each section of the Scheme. This survey will usually include a photographic record. This will be used to ensure effective reinstatement following completion of the works and provide a 'baseline' to assess any compensation claims with landowners.

3.4.15 The Principal Contractor is responsible for delivering the Scheme environmental training programme, including toolbox talks, throughout the construction works, ensuring all staff are trained adequately and to the agreed level prior to starting work on site.

3.4.16 The environmental aspects of the works shall be inspected on a regular basis in accordance with the Principal Contractors processes which cover the following aspects:

- How to plan and undertake contract targeted risk monitoring
- Targeted risk monitoring planner
- Risk based monitoring check sheet

Post-construction

3.4.17 The Principal Contractor is responsible for correcting defects (as defined under the main construction contract) for 12 months following contract completion. This is known as the 'defects period'. The defects period applies to relevant works following completion of the main construction works and completion of a subsequent 5 year period where the Principal Contractor has responsibility for aftercare and management of environmental works. Following this, Highways England will continue to arrange the management and monitoring of the effectiveness of the establishment of the environmental works in line with the REAC (application document TR010029/7.3) and the Outline landscape and ecological management and monitoring plan (LEMP) (application document TR010029/APP/6.3, Appendix 7.16).

3.4.18 The Principal Contractor will produce a HEMP for the Scheme. The HEMP is developed from the CEMP and will contain environmental information needed for the future maintenance and operation of the Scheme.

3.4.19 ~~The contents of the HEMP will be agreed with Highways England and will conform with the requirements of Schedule 2 to the DCO (TR010029/APP/3.1).~~ The HEMP will cover the required elements as outlined in Annex C of IAN 183/14⁵.

3.5 Communications

3.5.1 The Principal Contractor will direct all queries regarding the CEMP and actions within it through Highways England prior to initial contact with statutory

consultees (e.g. the Environment Agency, Natural England). They will also typically then act as the primary contact with statutory consultees leading up to and during the construction phase.

3.5.2 The Principal Contractor will establish and maintain procedures for internal communications between the various levels and functions of the team during construction. Internal communications include:

- Advising of non-conformances to relevant managers
- Communicating environmental commitments to the construction team
- Communicating the environmental policy to the construction team
- Raising awareness of environmental issues to the construction team
- Reporting incidents to relevant managers

3.5.3 The Principal Contractor will document and respond to any relevant communications from external interested parties during construction. External communications may include, but will not necessarily be limited to:

- Dealing with complaints from members of the public
- Dealing with the media

3.5.4 The Principal Contractor will maintain an ongoing liaison with the statutory/regulatory bodies during the construction phase.

3.5.5 Table 3.3 outlines the proposed communication framework and should be used as an example when defining the communication processes within the ECPs.

Table 3.3: Communication framework

Stakeholder	Outline communication process
Highways England	<ul style="list-style-type: none"> • The Principal Contractor Site Manager will be responsible for involving Highways England in any safety and/or environmental meetings (as required) • The minutes of the meetings will be issued to Highways England where appropriate and a copy will be retained on site
Statutory and non-statutory bodies	<ul style="list-style-type: none"> • There will be regular consultation with the statutory and non-statutory bodies. This will ensure that all the relevant parties have an opportunity to input to the operation of the site in order to minimise adverse environmental impacts • Where necessary, method statements will be submitted to the relevant statutory/non-statutory bodies for comment to ensure that no pertinent environmental issues are overlooked
The public	<ul style="list-style-type: none"> • The public shall be kept informed of any operations and developments that may have an effect upon them, such as temporary loss of amenities, changes to pedestrian or vehicle access routes or vegetation clearance

Stakeholder	Outline communication process
	<ul style="list-style-type: none"> Any such notification will set out the nature of the operations and the times at which they are to be carried out Social media, letter drops, a regularly updated website and newsletters may be used to keep local residents informed of progress on construction and any new operations that are to be carried out The information provided will also include details of contacts within the project team (should any issues arise)
Construction staff	<ul style="list-style-type: none"> Construction staff shall be kept up to date on all operational matters that may have an impact on the safety and environmental factors on site The site induction will form the basis for all relevant information provided to construction staff and will be supported at regular intervals by toolbox talks, especially where new or particularly sensitive operations are about to commence Regular briefings to construction staff will also provide an opportunity to update them on any changes in working methods and procedures Audits and reviews of the effectiveness of the method statements will highlight any corrective measures and subsequent feedback to construction staff will serve as a means of regulating and ensuring best working practice

3.5.6 Weekly construction team meetings will be held, or more frequently as required, where environmental issues will be discussed. Internal communications will be carried out using toolbox talks with the site workers and at site meetings.

3.6 Monthly reporting

3.6.1 It is expected that the following reports will be provided to Highways England on the agreed basis as part of the monthly contract progress report:

- Key performance indicators (KPIs)/Balanced scorecard measures
- Monthly environmental reports of key issues
- Waste streams, volumes and recycling figures
- Carbon calculator submitted using the Highways England template
- Environmental incidents and near misses

3.6.2 These would form part of the agenda at formal monthly contract progress meetings between Highways England and the Principal Contractor.

4. Training and briefing procedures

4.1 General

- 4.1.1 On commencement of site mobilisation, the Principal Contractor will be responsible for the site including the organisation of training and site inductions of all personnel on the site whether visitors, full time staff or subcontractors.
- 4.1.2 All individuals working or visiting the site will be required to attend the Principal Contractor's site-specific induction. Site inductions for full time staff and subcontractors will be tailored to their working conditions and activities. Site inductions for visitors will be tailored to those areas of the site they are visiting and what activities they are undertaking on site. Further details will be given in RAMS briefings prior to undertaking an activity. Those participating in or near to specific activities that have an environmental impact may be required to attend additional training or toolbox talks led by the Principal Contractor or environmental topic specialists.
- 4.1.3 All personnel on site will be made aware of the Principal Contractor's Environmental Policy, the Register of Environmental Legislation, the REAC and the relevant ECPs included in the CEMP.
- 4.1.4 A list of identified environmental training and a log of all site inductions and training will be maintained as part of the Principal Contractor's management systems prior to and during the construction stage. Additional training would be identified from the regular site environmental awareness and compliance environmental check reports, or site feedback on any noted non-compliance. A log of the environmental training and site inductions undertaken will be included in Appendix E.

[Note: Principal Contractor to produce and include environmental training, site induction and toolbox talk log in Appendix E when appointed.]

4.2 Environmental competencies, training and site induction

- 4.2.1 The Principal Contractor will ensure all personnel conducting environmental tasks are suitably qualified or experienced for the roles and responsibilities that they are employed to undertake.
- 4.2.2 The Principal Contractor will monitor and record that all personnel have attended the relevant environmental induction or training, including additional, new, or updated training, prior to undertaking any activities on site.
- 4.2.3 All site personnel and visitors are to receive a SHE induction covering priority Safety, Health, and Environmental risks and mitigation from the Principal Contractor before commencing activities on site. The list in Table 4.1 below is not exhaustive and identifies topics which will be included in environmental training at induction.

Table 4.1: Environmental training at induction

Topic	
Principal Contractor's Environmental Policy	Environmental legislation requirements – high level
Site Induction	Site specific environmental requirements as defined in the Principal Contractor's CEMP
General environmental awareness and environmental site rules	Earthworks and excavation, Unexploded Ordnance (UXO)
Site environment	Define materials and storage areas
Site organisation	Fuel containment
Spill kit use and locations	Contamination risk management
Emergency Response Plans	Pollution protocol and measures
Site traffic protocols and routes	Energy management
Wheel wash	Cultural heritage/archaeology
Warning signs	Dust and emissions control
Waste management	Noise and vibration control
Ecology and European protected species	Working in or near watercourses

4.3 Toolbox talks

4.3.1 The Principal Contractor and their subcontractors will conduct toolbox talks such that every employee receives a health, safety and environmental briefing as appropriate. A target of a minimum of one toolbox talk on an environmental topic per month has been set. Requests for new/specific toolbox talks can be made to the Principal Contractor Environmental Manager.

4.3.2 Toolbox talks will be posted in common use areas such as welfare units and office reception areas. Key environmental issues linked to the construction programme will be targeted on the daily notice board to all staff on site e.g. bird nesting seasons. Records of toolbox talks carried out and who attended them will be kept. An indicative list of toolbox talks is provided below. More toolbox talks may be added to this list as the Scheme progresses and issues arise. Toolbox talks undertaken will be included in Appendix D:

[Note: Principal Contractor to produce and include toolbox talks in Appendix D when appointed.]

- Noise, dust and air quality
- Pollution prevention control
- Encountering asbestos and unexpected contamination
- UXO safety awareness

- Materials management/Storage and segregation/Storage of waste
- Waste management - Duty of care
- Spill control
- Cement and concrete washout and discharge
- Washing down plant and machinery
- Cultural heritage
- Invasive/injurious species – Goldenrod and himalayan balsam
- Ecology and protected species

4.4 Environmental control plans

4.4.1 ECPs are ~~documents which~~management plans to ensure that construction-related mitigation measures and actions set out in the REAC are successfully implemented on site. ECPs inform the works and the development of associated task-specific RAMS. ECPs will be developed for the final CEMP by the Principal Contractor during the detailed design and construction ~~planning~~ phases.

4.4.2 ECPs relevant to the Scheme will be included in Appendix F.

[Note: Principal Contractor to produce and include ECPs in Appendix F.]

4.4.3 ~~It is expected that some or all of the~~The following ECPs will be prepared, ~~as appropriate,~~ for the Scheme as part of the final CEMP:

- Pollution Prevention Plan
- Dust, Noise and Nuisance Management Plan
- ~~General~~Ecological Habitats and Species Plan
- Invasive Species Management Plan
- Surface Water Management Plan (SuWMP)
- ~~Archaeological Control Plan (associated with a Written Scheme of Investigation)~~
- ~~Landscape and Ecological Monitoring and Management Plan~~
- Contaminated Land Management Plan
- Soil Handling Management Plan
- Material Management Plan
- Site Waste Management Plan (SWMP)_i
- Material, Waste Storage and Refuelling Plan
- Energy and Resource Use Management Plan
- Emergency Response Plan (including Environmental Incident Control Plan)
- Arboricultural Method Statement
- Community Engagement Plan

4.4.4 In addition, the following ECPs will be prepared for the Scheme as standalone documents:

- Archaeological Management Plan (which will include a Written Scheme of Investigation secured under Requirement 9 of DCO)
- Landscape and Ecological Monitoring and Management Plan (secured under Requirement 5 of dDCO)

~~4.4.4 ECPs are live documents that are subject to updating and refinement as required in response to the changing needs of the works during construction.~~

4.4.5 A number of Outline ECPs, listed in para 4.4.3, are presented in an outline form, which the Principal Contractor will need to update and finalise, and include into the final CEMP. These outline plans are included in Appendix F of this Outline CEMP and these are:

- Outline Surface Water Management Plan
- Outline Arboricultural Method Statement
- Outline Dust Noise and Nuisance Management Plan

4.4.5.4.6 Those ECPs listed but not currently included in Appendix F will be developed by the Principal Contractor and added for the approved CEMP. All ECPs will be developed to their full detail for the approved CEMP during the detailed design and construction planning phase in accordance with Requirement 4 of the DCO.

5. Construction programme

5.1 Main features and phasing

5.1.1 A high level construction programme has been produced by the buildability contractor and will be updated by the Principal Contractor when appointed during detailed design and will be provided in Appendix C of the CEMP.

[Note: Principal Contractor to provide and update the construction programme which will be included in Appendix C when appointed.]

5.1.2 The main features and proposed phasing of the construction works are described below with further detail provided in the ES, Chapters 1 to 4 (application document TR010029/APP/6.1).

Early works

5.1.3 The first works to be undertaken for the construction of the Scheme include the following activities:

- Site clearance
- Site enabling works
- Environmental mitigation works
- Archaeology surveys, evaluations, and mitigation works

Site Mobilisation

5.1.4 The site mobilisation works include the following activities:

- Mobilise site compound areas, including the creation of alternate access and exit routes from the satellite yard in the middle of the loop road

Utilities diversions

5.1.5 The utilities diversions required for the Scheme include ~~the~~ evolve the following:

- BT Openreach
- Essex and Suffolk Water
- NRTS
- Virgin Media
- Telent
- KPN
- Thames Water
- Telia
- UKPN
- Zayo and JSM
- Cadent Gas

Ecological compensation area mitigation works

5.1.6 Ecological mitigation works will include the following activities:

- Access to site (early works):
 - Install temporary amphibian fencing and start programme to capture and remove newts from the working area
- Gas diversion and clay works:
 - Works can commence in newt area (gas main / site preparation)
 - Deposit clay within the ecological mitigation area
- Building the ecological mitigation area:
 - Commence creation of new habitats when earthworks are complete (including treatment of invasive plant and creation of new ponds)
- Treatment of non-native species:
 - Localised treatment of invasive plants close to existing pond

Phase 1 works

5.1.7 Phase 1 works include the following activities:

- Construct new A12 off-slip including new bridge (Maylands bridge) which includes the realignment of the Ingrebourne River, installation of the culvert under the junction 28 roundabout, ground stabilisation, construction of embankments, construction of the bridge (Maylands bridge) and landscaping.
- Construct part of the M25 on-slip which includes the lane closure on the M25 and road marking alterations, construction of the retaining wall, construction of bridge (Alder Wood bridge), earthworks, paving and landscaping.
- Complete M25 on slip/earthworks which includes earthworks on the eastern side of M25 on-slip and loop road and construction of road formation on the outside kerb on M25 slip road.

Phase 2 works

5.1.8 Phase 2 works include the following activities:

- Construct A12 eastbound off-slip tie ins which includes the construction of embankments, road formation levels, paving and road markings and switching traffic onto new A12 eastbound off-slip.
- M25 northbound on-slip tie ins which include the completion of the carriageway from temporary to existing, a new retaining wall, completion of tie ins and completion of the culvert extension.

Phase 3 works

5.1.9 Phase 3 works include the following activities:

- M25 junction 28 loop road tie in to the A12 which includes construction of the embankment, drainage, road works, signage, paving and road markings and landscaping.

- M25 junction 28 loop road off-slip which includes completion of new embankments, roadworks and (Duck Wood bridge), drainage, paving and road markings and landscaping.
- M25 junction 28 loop road bridge which includes construction of the new bridge (Grove bridge) and bridge approach embankments.
- M25 junction 28 loop road bridge which includes construction of the new bridge (Duck Wood bridge) and bridge approach embankments.
- Construction of the Grove Farm underpass.

Phase 4 works

5.1.10 Phase 4 works include the following activities:

- Loop road which includes construction of embankments, roadworks and drainage, install utilities, paving and road markings and landscaping along the loop road.

Phase 5 works

5.1.11 Phase 5 works include the following activities:

- Complete A12 eastbound nearside / construction loop road tie in which includes remarking the A2 eastbound on slip tie in, construction of the tie in to the A12 loop road and construction of the tie in of the M25 to the loop road.

5.2 Overall duration

5.2.1 ~~C~~The construction will is anticipated to commence in spring 2022 and the opening of the completed Scheme is expected in autumn 2024, with landscape aftercare provision (under the main construction contract) lasting a further 5 years and management and monitoring lasting up to a further 20 years (see Outline LEMP (application document TR010029/APP/6.3, Appendix 7.16)).

5.3 Working hours

5.3.1 Working hours are noted as being daytime 06:00 to 19:00 Monday to Friday. The majority of construction works will take place between 07:00 to 19:00 Monday to Friday. It is anticipated that between the hours of 06.00 to 07.00 on weekdays site activities will exclude noisy works. Where noisy works are proposed between these hours, this will be agreed in advance with the local authority pursuant to section 61 of the Control of Pollution Act 1974.

5.3.2 It is anticipated that night-time working Monday to Friday will also be required on the existing highway network when closures would take place. It is anticipated that these activities will be undertaken between 23.00 and 07.00. These activities are likely to include:

- Installing traffic management
- Various construction activities such as:
 - Working on the gantries

- Road surfacing
- White lining
- Constructing the tie ins to the existing network

5.3.3 Where working outside of these hours, for instance, at weekends to enable programme efficiency, these would take place between 06.00 to 17.00 on Saturdays and Sundays. Any proposals for weekend working would be agreed in advance with the local authority pursuant to Section 61 of the Control of Pollution Act 1974.

6. Register of environmental actions and commitments

- 6.1.1 The REAC (application document TR010029/APP/7.3) identifies the environmental commitments made during the preliminary design stage (Highways England's PCF Stage 3) to address the potential environmental effects of the Scheme.
- 6.1.2 The REAC is a document used to set out the mitigation committed to as part of the Scheme, it will monitor compliance with the implementation of the mitigation measures as the Scheme progresses and it will be closed out at the end of construction on completion of the Scheme. The operational related REAC requirements will be included in the HEMP, which includes the environmental related monitoring and maintenance requirements of the asset.
- 6.1.3 The REAC is made up of two parts. Part 1 sets out the schedule of mitigation commitments and summarises the mitigation measures that have been committed to within the ES, with a cross-reference to the relevant 'Requirements' that secure those commitments through the DCO. Part 2 is the Environmental Action Plan (EAP) which comprises the action plan before the start of construction, during construction, and post construction. The EAP sets out environmental objectives that are derived from environmental mitigation measures identified within Part 1 and the ES, together with the actions required to achieve those objectives and the targets (or achievement criteria) that would be used to determine whether the objectives have been met.
- 6.1.4 The CEMP prepared by the Principal Contractor during the implementation of the Scheme will reflect the mitigation contained within the REAC. Any remaining items from REAC which relate to the post construction and operational stage of the Scheme will be part of the HEMP. The REAC acts in part as a 'bridge' between the ES and the EMPs (in all its forms; Outline CEMP, CEMP and HEMP) through the lifecycle of the Scheme. Part 2, the EAP, can be added to at the detailed design phase and as each objective is achieved, the date of achievement, with the initials of the person signing it off is entered.

7. Consents, commitments and permissions

7.1 Consent and agreement position statement

- 7.1.1 The Consent and agreement position statement is provided as part of the DCO application (application document TR010029/APP/3.3) sets out Highway England's intended strategy for obtaining consents and associated agreements needed to implement the Scheme. It identifies at a high level the consents that are likely to be needed for the Scheme, and how those consents are proposed to be secured.
- 7.1.2 This chapter will be updated by the Principal Contractor, as part of the final CEMP to cover developments through the detailed design and construction planning phase, and throughout the operational phase, to capture all relevant items.
- 7.1.3 A number of consents and powers can be included in the DCO and these are identified in the Consents and agreement position statement. Following determination of the application and confirmation of the DCO further consents are likely to be required. These are listed in Table 7.1 below. These consents will be sought by the Principal Contractor. It should be considered that this list is not exhaustive and any changes to design or legislation will necessitate a review of this list.

Table 7.1: Permits, consents and licences

Type of licence and reference	Issuing authority	Requirement	Comments/actions
Notification under Construction (Design and Management) Regulations 2015	Health and Safety Executive	On commencement of construction.	Principal Contractor to action
Approvals under the Health & Safety at Work Act 1974	Health and Safety Executive	Site safety related matters.	Principal Contractor to action
Compliance with duties under the Regulatory Reform (Fire Safety) Order 2005 (as amended)	Health and Safety Executive/Local Authority/Fire and Rescue Authority/Fire Inspector	Compliance with fire safety duties.	Principal Contractor to action
Transport and highways consents/permissions not included within the DCO e.g. Road Traffic Regulation Act 1984, Traffic Management Act 2004, New Roads and Street Works Act 1981, Highways Act 1980, Road Traffic Act 1988, The Road Vehicles (Authorised Weight) Regulations 1998 (as amended), the Road Vehicles (Construction and Use) Regulations 1986 (as amended) and the Road Vehicles (Authorisation of	Highways England/Local Authority	Permits related to booking time for works on the highway; works involving crane oversailing or site hoarding; and permits for transportation of abnormal/indivisible loads or for the use of certain classes of vehicle.	Principal Contractor to action

Type of licence and reference	Issuing authority	Requirement	Comments/actions
Special Types) (General) Order 2003			
Section 61 for Control of Pollution Act 1974 (Noise)	Local authorities	Obtaining consent is required prior to commencement of construction activities.	Works to be undertaken as stated in the Section 61 application. Mitigation measures to be used to minimise emissions. Compliance with any conditions stated by the local authorities. Principal Contractor to action
Mobile plant permit (for crushing operations or site permits if not using a subcontractor with their own mobile permit) Environmental Permitting (England and Wales) Regulations 2016 (as amended)	Local authorities or Environment Agency (Waste Operation)	Also known as a part B (local authority) or waste operation (Environment Agency).	Ensure that the equipment has been registered with the local authorities for use as mobile plant; or either a standard rules waste operation mobile plant permit or bespoke waste operation permit is obtained (treatment of waste concrete etc). NB reuse of the material will require either a waste exemption, end-of-waste protocol, or permit. Principal Contractor to action
Badger Licence (Section 10 of the Protection of Badgers Act 1992)	Natural England	Obtaining consent is mandatory prior to commencement of construction activities.	For works affecting the badger setts identified within the DCO boundary and its relocation. Principal Contractor to action

Type of licence and reference	Issuing authority	Requirement	Comments/actions
Great Crested Newts and Bat Licence - Conservation of Habitats and Species Regulations 2017, in relation to the identified European protected species or other protected species	Natural England	Obtaining consent is mandatory prior to commencement of construction activities.	For loss of potential and identified bat roosts and bat maternity roosts. Principal Contractor to action
Notification to the Environment Agency of any Japanese Knotweed, Goldenrod, Himalayan Balsam or Giant Hogweed removal or burial under the Waste (England and Wales) Regulations 2011	Environment Agency	Consent required for disposal to a waste facility (if needed)	Options for disposal and waste facilities to be agreed. Invasive species management plan to be prepared. Principal Contractor to action
Use of pesticides Control of Pesticides Regulations 1986, as amended	Natural England (use in protected area)/ Environment Agency (use near water)	For use and storage of pesticides	Principal Contractor to action
Environment Permit: Discharge to surface water or groundwater	Environment Agency	A water discharge activity includes discharging trade effluent, or anything which is poisonous, noxious or polluting. Discharge of water from excavations is trade effluent, and therefore requires a permit, although exemptions apply for temporary dewatering in certain circumstances.	Sewage may be covered under binding rules or may require an environmental permit to discharge, though it is anticipated the contractor will utilise self-contained welfare facilities. Principal Contractor to action

Type of licence and reference	Issuing authority	Requirement	Comments/actions
Materials Management Plan (MMP)	Qualified Person	Produce and agree an MMP for the reuse of materials defined as non-waste or end-of-waste and greater than exemption limits.	For reuse of materials in line with the CL:AIRE code of practice and ensure that it meets end of waste criteria where relevant. Principal Contractor to action
Waste Exemption Environmental Permitting (England and Wales) Regulation 2016 (as amended)	Environment Agency	Authorisation for activities that do not require a full permit for Treatment, Use, Storage, and Disposal.	Assessment of waste material/end-of-waste status to be covered under the SWMP. Principal Contractor to action
Environmental Permit for waste operation Environmental Permitting (England and Wales) Regulation 2016 (as amended)	Environment Agency	Principal Contractor to ensure that the waste generated is recycled/reused/disposed of at authorised facilities (or obtain relevant waste operations permit/deployment of mobile plant permit if undertaking recovery/disposal activities on site).	Waste disposal, recycling, restoration, reuse sites to produce permit to prove that they are authorised to receive waste streams. Principal Contractor to action
Waste Carrier Licence	Environment Agency	Principal Contractor to ensure their selected waste disposal contractor holds a Waste Carrier Licence.	Waste Carriers to supply completed Waste Transfer Notes for any collections and removals of waste from site. Principal Contractor to action
Hazardous Waste	Environment Agency	Applicable in case of disposal of hazardous waste is required.	Completion of the Consignment Notes for the removal of hazardous waste. Principal Contractor to action

Type of licence and reference	Issuing authority	Requirement	Comments/actions
Revocation of hazardous substance consent on change of control of land	Environment Agency		To be confirmed if required following detailed ground investigations Principal Contractor to action
Determination of applications for continuation of hazardous substance consent	Environment Agency		To be confirmed if required following detailed ground investigations Principal Contractor to action

7.2 Recording

- 7.2.1 A register of environmental permits and a record of all consents, licences etc. relating to construction activities will be maintained and updated by the Principal Contractor and made available for audit to Highways England and the Principal Contractor Environmental Manager.
- 7.2.2 An Environmental Consents Checklist template is included within this Outline CEMP in Appendix H. This will be completed for the final CEMP with the appropriate consent requirements added.
- 7.2.3 Any conditions related to each consent, permission or agreement will be added to the REAC, method statements (see Appendix D) and ECPs (see Appendix F) where appropriate.

8. Key environmental legislation

8.1 Legislative and policy drivers

- 8.1.1 The construction stage of the Scheme will be required to meet specific environmental legislation and regulations. A register of environmental legislation, policies and strategies that will be followed are contained within Appendix I. This list is current at the date of this document and it is not exhaustive. The Principal Contractor Environment Manager is responsible for maintaining awareness of this list and undertaking a review for updates and changes prior to construction.
- 8.1.2 The Principal Contractor must comply with all relevant legislation that is current at the time of the contract which includes new or updates to legislation prior to or during the construction period.
- 8.1.3 Highways England and the Principal Contractor will be responsible for managing the site in accordance with the Requirements of the DCO and in line with the Protective Provisions contained within the DCO. The programme for delivery must include discharging Requirements and Protective Provisions prior to the relevant phase of the Scheme and fulfilling any associated mitigation actions.
- 8.1.4 All site staff will be kept informed of the legal requirements that are relevant to their individual roles and activities. This will be achieved through the training and briefing procedures outlined in Chapter 4 of this Outline CEMP.
- 8.1.5 At site, the Principal Contractor's environmental policies will be posted on the Health, Safety and Environment notice boards within the site compounds, office and communal areas. All visitors will comply with the Principal Contractor's site management, health, safety and environmental rules.
- 8.1.6 Legislative requirements will override requirements in the CEMP in the unlikely event of there being a conflict between the two.

[Note: Principal Contractor to confirm Requirements and Protective Provisions once DCO is approved.]

9. Protection of sensitive areas

9.1 Identification of sensitive areas

9.1.1 Sensitive areas shall be highlighted as appropriate within the Scheme design documentation and/or ECPs.

9.1.2 Sensitive areas identified to date that could potentially be affected by the Scheme’s construction are listed in Table 9.1: Sensitive areas below. Full details of the sensitive areas are provided within the ES topic chapters (Chapter 5-14).

Table 9.1: Sensitive areas

Topic	Sensitive area
Air quality	<ul style="list-style-type: none"> Putwell Bridge Farm Grove Farm The Caravan Park, Putwell Bridge Maylands Golf Club Residential properties adjacent to the Scheme and on construction vehicle routes As otherwise noted in Appendix 5.1 and on the air quality figures in the ES
Noise and vibration	<ul style="list-style-type: none"> Grove Farm Maylands Cottages The Poplars Nag's Head Lane Brook Street Harold Park Wigley Bush Lane South Weald Travellers site at Colchester Road between Harold Park and junction 28 Harold Park Baptist Church St Peters Church St Peter's C of E Primary School Holiday Inn, Brentwood As otherwise noted in Appendix 6.1 and on the noise and vibration figures in the ES
Biodiversity	<ul style="list-style-type: none"> The Manor Local Nature Reserve (LNR) Forty-two non-statutory designated sites (LoWSs in Essex and SINCs in Greater London) including Ingrebourne Valley SMI Nineteen ancient woodlands including two ancient woodlands directly adjacent to the Scheme i.e. Lower Vicarage Wood and Vicarage Wood

Topic	Sensitive area
	<ul style="list-style-type: none"> • Fifteen veteran trees • Habitats - Broadleaved woodland, semi-improved grassland, species-poor hedgerow, ponds • Badger setts, great crested newt ponds and bat roosts (trees and buildings) • Vegetation that has the potential to support breeding birds, reptiles and great crested newts • As otherwise noted on the biodiversity figures in the ES
Road drainage and the water environment	<ul style="list-style-type: none"> • River Ingrebourne (GB106037028130) • Weald Brook, Paine's Brook • Floodplains associated with River Ingrebourne and the Weald Brook • Secondary A bedrock aquifers • Secondary A and Secondary (undifferentiated) superficial aquifers • As otherwise noted on the water environment figure in the ES
Landscape and Visual	<ul style="list-style-type: none"> • Landscape: • Great Warley Wooded Farmland (LCA) • Weald Wooded Farmland (LCA) • Brentwood Wooded Hills (LCA) • Ingrebourne Valley (LCA) • Havering Wooded Hills (LCA) • LLCAs - Tyler's common, Alder Wood, Maylands Golf Club, A12 Corridor, Urban Fringe of Brentwood, Urban Fringe of Harold Park, South Weald • Green belt • Community forest • The Manor LNR • Ancient woodland and veteran trees • Registered park and garden • Listed buildings • Schedule monuments • Visual: • Residents of Boyles Court Farm, Dark Lane • Residents of Grove Farm • Residents of Maylands Cottages • Residents of Harold Park • Residents of Oak Farm

Topic	Sensitive area
	<ul style="list-style-type: none"> • Residents of May Cottage and Freeman’s Cottage, between the A12 and the A1023/ Brook Street • Residents of French’s Farm, off Wigley Bush Lane east • Residents of properties along Spital Lane, Wingrave Crescent, and Leonard Way, Brentwood • Residents of properties along Nags Head Lane • Users of the bridleway following Nag’s Head Lane and along the crest of the M25 cutting, south of junction 28 • Users of open access land, including Tyler’s Common to the south of Tyler’s Hall Farm and open access land near Harold Court • Patrons of Maylands Golf Course • Users of the bridleway adjacent to the northbound carriageway of the M25, north of Jermain’s Wood • Residents of St Vincent’s Hamlet • Users of Weald Country Park, Lincoln Lane • Users of the Byway open to all traffic connecting St Vincent’s hamlet to Weald Country Park • Users of Dagnam Park • Residents of Sheffield Drive and Mawbery Grove, Harold Hill • As otherwise noted on the landscape figures in the ES
Geology and soils	<ul style="list-style-type: none"> • Workers/visitors/users of commercial/industrial premises including those at Grove Farm (garden centre, RJ Waste Management Recycling, skip hire and rubbish clearance, agricultural land workers). • Residents of Grove Farm and traveller’s site. • Members of the public using public rights of way and public spaces (non-motorised users). • Off-site residents, members of public using public rights of way and public spaces and workers/visitors at industrial, agricultural and commercial premises and recreational facilities. • Groundwater bodies beneath the Scheme and within the study area, including localised deposits of Alluvium (Secondary A aquifer) and Head deposits (Secondary (undifferentiated) aquifer) and the Secondary A aquifers associated with the Bagshot Formation and Claygate Member bedrock in the study area • Surface water receptors within the Scheme and study area, including the Ingrebourne River and Weald Brook

Topic	Sensitive area
	<ul style="list-style-type: none"> • Proposed surface water features (attenuation pond and ecological compensation ponds) as part of the Scheme • Underground services including the Cadent high pressure gas main and BPA pipeline, existing structures, piles and foundations associated with residential, industrial, agricultural and commercial properties and future structures, services, piles and foundations. • Off-site existing structures, services, piles and foundations associated with residential, industrial, agricultural and commercial properties including listed buildings. • Areas of compressible ground (Alluvium). • Areas of shrinking or swelling clay (Claygate Member and London Clay Formation). • Areas of running sand (Bagshot Beds). • Areas of groundworks or man-made slopes. • Areas of high and moderate UXO risk. • As otherwise noted on the geology and soils figures in the ES
Cultural heritage	<ul style="list-style-type: none"> • The Grade II Weald Park (1000747) Registered Park and Garden • The Grade II* listed buildings (The Golden Fleece Inn [1197231] and Moat House [1279743]) • The Grade II listed buildings Tylers Hall Farm House (1079905), A timber-framed range of outbuildings (1183938), Stony Hills Farm (1297215), Nos 17, 19 and 21 Brook Street (1205707), The Bull Inn (12972259); and The Nag's Head Inn (1197190) • Duck Wood (MLO109095) Ancient Woodland • Archaeology priority zone (APZ) - DLO33196, DLO33198, (DLO33238) • The South Weald Conservation Area (DEX22821) • The Weald Park Conservation Area (DEX22829) • Below ground archaeology • As otherwise noted on the cultural heritage figures in the ES
Materials and waste	<ul style="list-style-type: none"> • N/A
People and communities	<ul style="list-style-type: none"> • Maylands Golf Club • Gardens of Peace burial ground (formerly known as Land at Oak Farm)

Topic	Sensitive area
	<ul style="list-style-type: none"> • Henderson Sports and Social Club • Spirit Health Club • PRowS • Development land • Glebelands Estate • Poplars dwellings and farm building • Boyles Court Farm • Grove Farm • Maylands Cottage • Dwellings at Harold Park • Nags Head Lane • South Weald Service Station • Brook Street area • Wigley Bush Lane and Weald Park Way • Putwell Bridge, Caravan Park • Warley Road • As otherwise noted on the people and community figure in the ES
Climate	<ul style="list-style-type: none"> • Atmospheric greenhouse gas concentration • Construction processes including workforce, plant and machinery

9.2 Protection measures

- 9.2.1 The above listed areas will generally be sensitive to or potentially affected by nuisance (i.e. dust, noise, vibration and visual effects) and pollution (e.g. sediment, spillages) during construction.
- 9.2.2 The appropriate protection measures will therefore include those set out in the ECPs listed above in section 4.4.
- 9.2.3 The list of sensitive areas and associated control measures shall be updated as necessary through detailed design and construction planning, and community liaison prior to and during construction. There may be a need to develop specific, localised control measures or ECPs for individual areas or receptors.

10. Environmental asset data and As Built drawings

- 10.1.1 Environmental asset data, including species surveys will be made available to Highways England Environmental Information System (EnvIS) in line with the requirements of IAN 84/10 and drainage infrastructure data will be made available to Highways Agency Drainage Data Management System (HADDMS). Detailed design drawings for construction preparation and as built drawings for operating and maintaining the network area will also be made available to EnvIS.
- 10.1.2 The asset data will consist of the following environmental topics, as necessary:
- Air quality
 - Noise and vibration
 - Biodiversity
 - Road drainage and the water environment
 - Landscape and visual
 - Geology and soils
 - Cultural heritage
 - Materials and waste
 - People and communities
- 10.1.3 Environmental management information relating to each asset will also be made available to EnvIS/HADDMS, containing:
- Details of environmental commitments
 - Management actions, including the process for remedial actions if the maintenance regime is not in line with the agreed implementation measures
 - Status of each management action
 - Planned/actual date for completion of each management action
 - Condition and/or performance rating of each asset
- 10.1.4 The HEMP will outline the maintenance and monitoring requirements as identified by the Principal Contractor, in the Operational and Maintenance Manual once the Scheme is completed, and the operational requirements outlined in the REAC.

11. Environmental aspect and impacts register

- 11.1.1 Adverse environmental effects of the Scheme have been avoided and minimised where possible through the Scheme design carried out to date. The REAC contains measures ~~which will require~~ to be implemented during the detailed design phase and the adoption of appropriate working practices during construction, operation and maintenance.
- 11.1.2 The REAC requirements will be taken into consideration when the Principal Contractor develops the Environmental Aspects and Impacts Register of the Scheme, in line with ISO 14001:2015 requirements. The initial Environmental Aspects and Impacts Register is completed before the construction works are commenced and it will be reviewed and updated regularly. These will be contained in Appendix K of the CEMP.
- 11.1.3 The Scheme Environmental Aspects and Impacts Register will be a live document and as such will be reviewed to confirm status and updated to manage environmental risks throughout the Scheme development.
- 11.1.4 The Principal Contractor will be responsible for maintaining the various registers and adding or closing out any environmental risks.

[Note: Principal Contractor to maintain and update the environmental aspects and impacts register.]

12. Environmental monitoring requirements and procedures to monitor compliance

12.1 Environmental monitoring requirements

- 12.1.1 This chapter lists systems of recording and inspections that will be required to maintain an audit trail of the environmental obligations of the Scheme. This will be managed through the Principal Contractor's Business Management Systems (BMS), which will include the EMS accredited to ISO 14001:2015 standards.
- 12.1.2 The EMS will include methods for monitoring, recording and implementing environmental management on site, and for responding to any noted areas of non-compliance.
- 12.1.3 A record of environmental monitoring and records of management actions undertaken, and the outcomes will be provided in Appendix K and Appendix L when produced. A Scheme Completion Report will also be produced by the Principal Contractor when appropriate.
- [Note: Principal Contractor to produce Appendix K and Appendix L]
- 12.1.4 Specific monitoring and reporting requirements are still to be developed, some in consultation with third party stakeholders. This will be done through the DCO process and detailed design and confirmed arrangements included in this chapter of the CEMP.
- 12.1.5 Table 12.1 below summarises the monitoring requirements for the Scheme that have been identified to date within the ES (application document TR010029/APP/6.1). Further detail is provided in the REAC and in Appendix 7.16 to the ES outline LEMP (application document TR010029/APP/6.3).

[Note: Principal Contractor to update Table 12.1 with further details of mitigation and monitoring requirements once the DCO is approved and determined during detailed design]

Table 12.1: Environmental monitoring requirements

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
Air quality	Dust and emissions to air from construction activities affecting sensitive locations	Location specific measures to be developed in a Dust, Noise, and Nuisance Management Plan in line with good construction practices.	To be determined by local authorities, Principal Contractor and Highways England as appropriate.
Noise and vibration	Construction noise and vibration affecting residential/ sensitive locations	Location specific measures to be developed in a Dust, Noise and Nuisance Management Plan in line with good construction practices.	Undertake baseline noise and vibration monitoring at residential and other locations to establish pre-Scheme levels and agree these with the local authorities under the Section 61 process.
	Construction traffic affecting residential/ sensitive locations	Construction traffic to be managed by Traffic Management Plan. Construction traffic routes to avoid residential areas where possible.	Principal Contractor to record complaints regarding construction traffic and report each month and propose measures to remedy issues.
	Road traffic noise and vibration in the operation phase affecting residential /sensitive locations	Section of lower noise road surfacing is incorporated into the design of the Scheme.	Routine maintenance of road surfaces to avoid noise and vibration from surface irregularities.
Biodiversity	Loss of Ingrebourne Valley Site of Metropolitan Importance for Nature Conservation (SMI) habitat	Provision of Ecological Compensation Area reinstatement and enhancement, reinstatement of temporary working areas and long term management of areas of land within SMI.	Post monitoring and post construction care through establishment period required for a predetermined time frame. Long-term management plan with monitoring included for areas of land within SMI. Details as set out in the Outline LEMP (Appendix 7.16 of the ES).

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
	Construction and operational impacts from habitat loss, disturbance and changes to dispersal opportunities	Replanting of temporary land take areas and ecology enhancements, e.g. bat/bird boxes.	Establishment of a post-construction ecological survey and monitoring programme to be agreed with Highways England specialist and third parties as appropriate and in accordance with the ES and any species licences (e.g. European Protected Species licence for great crested newts). Details as set out in the Outline LEMP (Appendix 7.16 of the ES).
WFD Compliance Assessment Road drainage and the water environment	Loss and alteration of riverine and riparian habitat during operation phase	<p>Realignment of approx. 200 m of existing straight channel to new sinuous course on the Ingrebourne between Grove Farm culvert and the Weald Brook confluence (W1).</p> <p>Realignment of sections of existing straight channel to new sinuous courses on the lower Weald Brook (W2).</p> <p>Long term maintenance works to manage backwaters to the Ingrebourne River and Weald Brook and riparian trees along the Weald Brook (W6).</p>	Establish a pre and post-construction monitoring plan to track both detailed (e.g. river corridor survey) and broad-scale (e.g. fixed-point photography) botanical and geomorphic change overtime. A monitoring protocol should be agreed with Highways England and third parties as appropriate to determine a suitable methodology and frequency of monitoring. Details as set out in the Outline LEMP (Appendix 7.16 of the ES).
	Loss of flood storage capacity	<p>Lowering of approx. 3,500 m² of floodplain, on the Ingrebourne between Grove Farm and the Weald Brook confluence (W03).</p> <p>Lowering of approx. 2,100m² of floodplain, a flood compensation</p>	Establish a pre and post-construction monitoring plan to track both detailed (e.g. botanical surveys) and broad-scale (e.g. fixed-point photography) changes to the vegetation communities within the lowered floodplain areas overtime.

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
	<p><u>Impact on surface water features during construction – sediment/pollutants.</u></p>	<p>area adjacent to the Weald Brook, just upstream of Duckwood Bridge (W04).</p> <p>Lowering of approx. 7,800 m² of floodplain in combination with a flood compensation area adjacent to Grove Bridge and Maylands Bridge (W05).</p> <p><u>Compliance with pollution prevention guidance (e.g PPG's) which detail best practice to prevent pollution to water.</u></p>	<p>Botanical surveys involve a comprehensive assessment of the response of vegetation to the proposed mitigation by measuring certain indicators at a fine resolution. A monitoring protocol should be agreed with Highways England and third parties as appropriate to determine a suitable methodology and frequency of monitoring. Details as set out in the Outline LEMP (Appendix 7.16 of the ES).</p> <p><u>Monitoring during construction to assess the effectiveness of mitigation measures to limit pollution risk and identify pollution incidents.</u></p> <p><u>Visual inspections of construction sites, bunded areas (storage), sediment management systems and outlets to receiving watercourses for signs of excess sediment and pollution (e.g. diesel and oil).</u></p>
Landscape and visual	Adverse impacts upon landscape character areas resulting from vegetation loss, changes to landform, introduction of construction compounds and the introduction of proposed	Earthworks have been designed to allow for mitigation planting to be incorporated to reduce the impacts from changes to landform. Vegetation loss will be mitigated by the provision of replacement planting that will assist in	<p>The EnvCoW/Principal Contractor Environmental Manager will monitor construction activities to ensure the effectiveness of the protection of existing trees and the planting proposals such as:</p> <ul style="list-style-type: none"> • The effectiveness and suitability of root protection fencing ensuring no

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
	<p>road infrastructure components.</p> <p>Adverse impacts upon sensitive visual receptors resulting from loss of screening vegetation and the introduction of proposed road infrastructure components that become more apparent in the receptors views</p>	<p>reintegrating the Scheme into the surrounding landscape.</p>	<p>impacts to trees that are to be retained. The areas of most concern are covered by TPO's and veteran trees.</p> <ul style="list-style-type: none"> • Implementation of the Outline LEMP (Appendix 7.16 of the ES) which sets out the required management and monitoring regimes, timings and reporting requirements. • Monitor construction activities which may have visual, noise or lighting impacts in particular adjacent to local and residential receptors • The angle and direction of night time lighting, to ensure that it is not directly focussed on or adjacent residential receptors. • Monitoring of the establishment of new tree and shrub/scrub planting to confirm long term success, determine management operations and remedial measures if required. This needs to be monitored by a suitably qualified person to confirm ecological measures are also successful.
<p>Geology and soils</p>	<p>Impacts to sensitive receptors from disturbance of contaminated soils, groundwater and/or vapours/ground gases.</p>	<ul style="list-style-type: none"> • Completion of remediation, if detailed design risk assessments deem necessary. • If previously unencountered contaminated soils are 	<ul style="list-style-type: none"> • Any monitoring of surface water / groundwater / ground gas / vapours required as part of remediation works.

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		<p>discovered during construction, further assessment and recommendations will be incorporated, if necessary.</p> <ul style="list-style-type: none"> Health and Safety Risk Assessment and Method Statements (RAMS) and appropriate Personal Protective Equipment (PPE) for the protection of construction workers. Implementation of appropriate dust suppression measures to prevent migration of contaminated dust and <u>asbestos</u> fibres as appropriate. Stockpile management (such as water spraying, avoiding over stockpiling, covering of stockpiled materials, use of battering of exposed soil slopes etc) and timely removal of stockpiled soil to prevent windblown dust and entrainment of soil in surface water run-off. Effective design of traffic control measures to reduce dust generation and minimise the amount of traffic within working 	<ul style="list-style-type: none"> Any monitoring of surface water / groundwater / ground gas / vapours required as part of validation of remediation works. Any monitoring of surface water / groundwater / ground gas / vapours required as set out in the Monitoring Strategy. Watching brief and discovery strategy for encountering unexpected contamination. Any monitoring of surface water / groundwater / ground gas / vapours required in relation to any unexpected contamination encountered during construction. Scheme boundary dust monitoring. Scheme boundary and construction worker asbestos fibre monitoring (in relation to works in the area of recently deposited material / Brook Street Landfill). <u>If any additional asbestos containing materials / asbestos fibres (particularly concentrations > 0.001%) are identified during the works, consideration should be given to the need for reassurance monitoring on construction personnel</u>

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		<p>areas, use of wheel washes and spraying of working areas and roadways.</p> <ul style="list-style-type: none"> Implementing appropriate pollution incident control measures e.g. plant drip trays and spill kits. Implementing appropriate and safe storage of fuel, oils and equipment. Working method statements during construction to manage groundwater and surface water appropriately and ensure that there is no run-off from the works, material/waste stockpiles or from storage containers into adjacent surface watercourses. 	<p><u>and / or at works area / sensitive site boundaries.</u></p> <ul style="list-style-type: none"> Construction worker gGround gas monitoring <u>may be required if there are locations identified with elevated ground gas concentrations (if Contractor RAMS deem necessary).</u> at Brook Street Landfill (if detailed design risk assessments deem necessary). <u>Monitoring of sensitive surface water features in close proximity to works to confirm no adverse impact during works.</u> <u>Scheme boundary dust monitoring.</u> Monitoring of compliance with RAMS. Good house-keeping of construction areas to be monitored and environmental incidents to be reported (i.e. visual checks of material stockpiles) by contractors. <p>Monitoring of surface water features in close proximity to works to confirm no adverse impact during works.</p>
	<p>Impacts to geomorphology and ground stability.</p>	<ul style="list-style-type: none"> Detailed UXO desk study to assess the UXO hazard level associated with construction of the detailed design and adoption of appropriate UXO 	<ul style="list-style-type: none"> UXO monitoring requirements, as defined by detailed design UXO desk study. <u>Monitoring of known service structures during the construction</u>

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		mitigation measures during construction, if required. <ul style="list-style-type: none"> Stability analyses, design calculations for new and modified earthworks. Design of the temporary and permanent works to minimise movement (including appropriate analysis to predict magnitude of movements). 	<u>works to measure vibrations, with agreed trigger levels and action plans, if required.</u> <ul style="list-style-type: none"> Monitoring during the construction works to measure movements of infrastructure and comparison with agreed trigger levels and action plans.
Cultural heritage	Archaeological remains may be encountered during construction	Identify archaeological remains and achieve preservation by record in advance of construction activities through trial trenching, mapping, archaeological sampling, targeted and/or area excavation, as determined in consultation with the local planning authority archaeologist.	Implement archaeological monitoring before and during construction, a watching brief or other means as appropriate, depending on the results of surveys conducted in accordance with the Written Scheme of Investigation <u>Archaeological Management Plan.</u>
Materials and waste	Climate change	Adopt a material efficient design and procure materials from sustainable sources for the construction of the Scheme as far as practicable.	Materials will be managed through the MMP. Documentation and evidence in relation to materials used and re-used at the site shall be provided in the verification report upon completion of the works.
		Consider methods to reduce the impact of energy use in construction, including consideration of using materials with lower embodied energy such	This will be managed through the CEMP, SWMP or MMP in accordance with CL:AIRE Definition of Waste: Development Industry Code of Practice or equivalent. The SWMP, MMP and

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		as re-used and recycled materials and locally sourced materials.	MMP verification report will act as a record of waste management and material re-use on the Scheme.
	Depletion of primary materials	<p>Use land temporarily reserved for material storage to significantly increase the amounts of materials that can be re-used within the Scheme and therefore reduce consumption of primary materials.</p> <p>Adopt an efficient delivery system to ensure that materials are brought to site proportional to their use to avoid/reduce potential damage and materials waste</p>	<p>Develop and implement a SWMP and MMP to consider and manage the re-use of materials on-site, off-site secondary/recycled materials, locally sourced materials and other responsibly sourced materials.</p> <p>Develop and implement a Construction Traffic and Logistics Management Plan to manage materials deliveries efficiently and avoid/reduce wastage.</p>
	Generation of waste	<p>Prevent waste by only ordering the required quantity of material and by re-using, recycling or recovering suitable materials either on-site or off-site. The above should be considered in preference to disposal, as outlined in the waste hierarchy.</p> <p>Where waste is transferred off-site the waste carrier's licence and the receiving waste management facility's permit will be sought to ensure that waste is transferred to permitted disposal facilities.</p>	<p>A SWMP will be developed and maintained as part of the EMS.</p> <p>Construction Traffic and Logistics Management Plan to consider materials and waste transport options based on their sustainability and manage deliveries efficiently to reduce wastage.</p> <p>As part of the Scheme's Duty of Care, waste transfer documents will be kept on record. These documents record the quantity of waste transferred off-site and the quantity of waste sent for recovery, disposal and/or treatment.</p>

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
People and communities	Effects on people and communities	<p>Ensure monitoring identified within the ES is implemented.</p> <p>The monitoring might include noise, numbers of road traffic incidents to ensure that road safety has been improved, traffic flows to ensure that congestion is reduced and use of PRoW, footpaths and cycleways to ensure that there is no reduction in usage. Monitoring to be set out within the CEMP.</p>	<p>Monitoring suggested in other chapters may be relevant to receptors in the People and Communities chapter, particularly around human health and amenity.</p>
	Land take	<p>Where land take is required for the Scheme, it is assumed land owners will be compensated financially for the loss in accordance with in accordance with the compensation code as applied by the DCO.</p> <p>Land acquired temporarily for construction compounds and working areas will be restored to a condition equivalent to its original before being returned to its owner.</p>	<p>Ensure completion of the Scheme in line with DCO requirements.</p>
Climate	Emission of greenhouse gases leading to global warming	<p>Reduce greenhouse gas emissions from material production and transport, waste transport and disposal, onsite construction processes, and worker transport.</p>	<p>Monthly/quarterly reporting via the Carbon Calculator Toolkit, as agreed with Highways England.</p>
	Damage to materials from elevated temperatures	<p>Design to consider including materials that are sufficiently robust</p>	<p>Asset management to take into consideration the effects of climate</p>

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		to endure a range of possible future climate extremes.	change and in particular its potential to alter rates of material deterioration.

Environmental records inspections

- 12.1.6 Records of compliance with the requirements of the CEMP, derived from audits and other inspections, will be held at the Principal Contractor's site office. These will be available for inspection by representatives of any audit team and relevant statutory body such as local authorities or the Environment Agency, in their statutory role. The Principal Contractor's Quality Administrator will ensure there is a central filing system in place for any checklists, reports and monitoring consistent with the BMS and EMS.

Daily inspection checklist

- 12.1.7 The Principal Contractor will make key staff aware of their responsibilities for undertaking routine checks of the site and equipment. The Principal Contractor will have processes and protocols in place for environmental aspects to be checked. On completion of relevant inspection and daily checks, details will be logged and corrective actions implemented by the responsible person, in discussion with the Principal Contractor. Highways England will review the log as part of their checking and audit role.

12.2 Procedures to monitor compliance

- 12.2.1 A Scheme Record will be maintained for formal records associated with the implementation of the CEMP, which will be managed and controlled within Highways England's records management systems.

Administration

- 12.2.2 The Principal Contractor is responsible for maintaining site based environmental records. The CEMP is a live document and the Appendices will be updated as required by the Principal Contractor. If there is any overlap with the Health, Safety, Environment and Quality files, these will be cross referenced within the updated CEMP, held by the Principal Contractor for any formal auditors to track and monitor compliance.

Environmental audit

- 12.2.3 As part of the EMS it will be necessary to undertake an audit to record compliance with legislation and the Scheme environmental requirements. The Highways England Project Manager will instigate regular audits which will include the review of the monitoring, recording and reporting procedures being maintained by the Principal Contractor.

Environmental Management System

- 12.2.4 EMS requirements will be maintained throughout the phases of the Scheme. Contractors are required to be accredited to, or seeking to be accredited under, ISO 14001:[2015](#).
- 12.2.5 The level of environmental management will be monitored to assess compliance with the Contract and environmental standards through inspections and audits.

Control documents

- 12.2.6 All the Principal Contractor's RAMS and COSHH forms must consider environmental impacts for storage, use, and disposal of materials and waste.

13. Monitoring to ensure compliance with the CEMP

13.1 Regular inspections and monitoring

- 13.1.1 The Principal Contractor will carry out formal environmental inspections of all work areas on a regular basis. Inspections shall detail realistic timescales for actions and these will be monitored by the site team. Data from inspections shall be used for trend analysis purposes to allow identification of recurring issues.
- 13.1.2 As a minimum, the following inspections will be completed:
- Weekly environmental inspections by a nominated Principal Contractor employee.
 - Weekly environmental inspections carried out by each subcontractor.
 - Environmental audits undertaken by the Principal Contractor Environmental Team.
 - Monthly environmental reports issued to Highways England.
 - Targeted inspections of activities with high environmental risk.
- 13.1.3 The Principal Contractor will ensure that competent persons undertake all other statutory inspections at required intervals.
- 13.1.4 In addition to the above, the Principal Contractor shall monitor health, safety and environmental standards and performance as follows:
- Principal Contractor Supervisors will monitor their work areas environmental conditions and performance daily/routinely.
 - Spot checks of subcontractors' inspections and documentation (including registers) verifying compliance.
 - Sample checks of subcontractors/Principal Contractor briefing of own team on method statements through the use of stop shift audits.
 - Sample checks on the training of staff by subcontractors/Principal Contractor.
 - Periodic audits checks and inspections by the environmental team.
 - Regular reviews of risk assessments/method statements.
 - Sample checks of compliance with method statements and Permits to Work.
- 13.1.5 Each subcontractor must ensure that their line managers, Supervisors or Health, Safety and Environmental Advisors monitor the health, safety and environmental standards of their activities as a normal part of their duties. In addition, each subcontractor should ensure that a formal and recorded safety and environmental inspection is carried out every week. Inspection records should include confirmation that previous remedial actions have been carried out. These reports shall be copied to the Document Controller and will be reviewed at the monthly safety meeting.

13.2 Audits

- 13.2.1 The appointed Principal Contractor Environmental Advisor, accompanied where possible by the appointed Principal Contractor Environmental Manager, will

conduct an audit to examine Health, Safety and Environmental systems and performance standards at the earliest opportunity. The audits will typically be undertaken approximately 4 to 6 weeks after commencement of the contract works on site.

13.3 Additional inspection/monitoring

13.3.1 Any consent/licence/permit monitoring inspection requirements shall be added into this section and the appropriate ECPs within Appendix F.

13.4 Procedures in the event of failure to comply with the CEMP

13.4.1 The CEMP must be substantially in accordance with the Outline CEMP. The Outline CEMP notes that anyone who disregards the safety, health or environmental rules, in the first instance, would receive a written warning from the Principal Contractor, Site Manager or nominated person; subsequent misdemeanours will provoke the removal of the person from site. The Principal Contractor Site Manager reserves the right to remove from site instantly any person whose acts or omissions in his opinion constitute serious danger to people, environment or property.

13.4.2 The Principal Contractor may give reasonable directions to any subcontractor sharing the site for the purposes of construction (regardless of contractual arrangements) for him to comply with duties under the Construction (Design and Management) Regulations 2015 (CDM 2015).

13.4.3 The Principal Contractor is given the authority under Regulation 22(1)(e) of CDM 2015 to issue reasonable directions to contractors. Such directions must:

- Relate to compliance with the Principal Contractor's duties.
- Be reasonable given the specific circumstances applicable at the time.

13.5 Review and close out reports

CEMP Review

13.5.1 The CEMP can be reviewed as often as is necessary to include the significant changes in equipment, risk, and scope of works, circumstances, people or other organisational change.

13.5.2 The review shall be conducted using the Principal Contractor's EMS checklist and be recorded.

13.5.3 The suitability of and performance against the CEMP will be reviewed to ensure that it remains valid and reflects the arrangements for managing current activities on site.

Environmental performance reviews

13.5.4 Environmental performance will be reviewed throughout the contract and discussed as appropriate at the following meetings:

- Project Board meetings
- Project Senior Management Team meetings

- Environmental Co-ordination meetings
- Environmental Committee meetings

13.5.5 Performance reviews shall identify trends in incidents giving areas that will be targeted for improvement. This will include a review of the activities scored low during the monthly environmental scored inspections.

13.5.6 Environmental performance will be reviewed and recorded for the monthly progress reports.

Subcontractor performance reviews

13.5.7 The Principal Contractor team will complete subcontractor's performance reviews at least every 3 months. Relevant members of the construction team should be consulted during each review.

Contract review and close out

13.5.8 Close out reports will be prepared in accordance with EMS and contract requirements. The key points of this being:

- The Project Manager/Director will ensure that a formal contract review and report will be conducted within 8 weeks of practical completion to focus on environmental performance and systems. The Project Manager/Director will organise a contract close out meeting in accordance with ISO14001:[2015](#).
- Prior to that meeting, the Principal Contractor Site Manager shall ensure that a Contract Close Down Report is circulated to all those attending, at least 10 working days before the meeting date.

Archiving

13.5.9 All archiving will be carried out in accordance with legislative compliance and Highways England's archiving requirements.

14. Summary of emergency procedures

14.1 Emergency response plan principles

- 14.1.1 Highways England must approve any site incident management protocols to meet and be coordinated to the systems that exist for the day to day management of the highway network. In the event of an incident, provisions for maintaining effective access for emergency services and highways activities will be necessary for the highway network and for the works.
- 14.1.2 The Principal Contractor will develop and implement a set of standardised emergency response procedures and will ensure that site operatives are familiar with all emergency arrangements including training and test exercises. The procedures will include an Emergency Response Plan and a record of Environmental Incidents.
- 14.1.3 The emergency procedures will contain emergency phone numbers and a method for notifying local authorities and statutory consultees. The plans will also include detailed response plans for potential environmental incidents. A summary of general control measures for different potential environmental emergency situations is provided below in section 14.3.
- 14.1.4 Each subcontractor is responsible for ensuring that environmental incidents are reported to the Principal Contractor. All incidents will be investigated by the subcontractor or responsible person with full participation and co-operation of any other subcontractors involved. Where the incident is investigated by a subcontractor, the Principal Contractor will be provided a copy of the investigation report detailing any remedial action.
- 14.1.5 With regards to environmental incidents, a full report must be compiled with any witness statements and photographs to assist in the final conclusions and recommendations.
- 14.1.6 Records of Environmental Incidents should they occur will be contained within the site records folder system. A template of this document will be included in Appendix M.

[Note: Principal Contractor to produce record of Environmental Incidents template for Appendix M.]

14.2 Emergency contacts and response plans

- 14.2.1 Emergency contact numbers, which will be updated and maintained throughout the construction of the Scheme by the Principal Contractor, are included in Table 3.1. The information will be located at strategic places e.g. site offices and will be highlighted to the site team during inductions, toolbox talks and safety and awareness training.

14.3 Basic emergency principles

- 14.3.1 If an incident (e.g. large fuel spillage) occurred on site, the following principles should be followed:
- Identify the cause of the emergency or incident and act immediately to prevent it from getting worse.

- Make sure that the appropriate personal protective equipment (PPE) is available to use wherever necessary.
- Report any emergency or incidents to the environmental department immediately, detailing the nature, cause and location so that appropriate action can be taken.
- The Principal Contractor will inform the local authorities, Environment Agency and/or Natural England, as relevant, of the incident.

14.3.2 Do not:

- Ignore the incident, as this could lead to serious disciplinary consequences and/or legal action.

14.3.3 After an incident:

- Ensure that any lessons from the incident are communicated to all relevant staff and appropriate action taken elsewhere on site if necessary.
- Update all relevant method statements, chapters of the CEMP; toolbox talks etc. and ensure new information is communicated to all staff.

14.4 Dealing with protestors

14.4.1 In the event of protestors to the Scheme being present on site, the Principal Contractor will incorporate and develop the following instructions in their Emergency Response Plan for the site:

- Do not confront any protestors if encountered onsite
- Stop all operations if necessary
- Contact the site management team immediately
- Always respect landowners and residents and try to understand their concerns
- Do not try to deal with protestors by yourself; ask for help from the site management team

14.5 Accidental fires

14.5.1 The Principal Contractor will incorporate and develop the following instructions in the Emergency Response Plan for the site to reduce the damage caused to surrounding habitats from fire:

- If safe to do so use firebeaters immediately to prevent fire spreading
- Report emergency to the relevant site management team immediately
- Call the fire brigade if the fire cannot be easily contained
- Inform the landowner/occupier and Highways England

14.6 Emergency spills and pollution incidents

General

14.6.1 Spill of fuel/oil etc. can cause damage to surrounding habitats and watercourses. The Principal Contractor will incorporate and develop the following instructions in their Emergency Response Plan for the site:

- Make sure you have the appropriate PPE before acting
- Contain a pollution incident immediately using absorbent materials and booms, or by digging containment facilities or bunds
- Report the incident to the environmental department; they will contact the Environment Agency if necessary
- Contact designated spill clean-up company for appropriate assistance

Do not:

- Dig ditches to drain polluted matter to watercourses
- Remove booms and bales used to hold or contain polluting materials
- Ignore an incident because you are afraid of the consequences

After an incident

- All waste generated by clean-up activities should be disposed of in accordance with current legislative requirements and the SWMP and copies of all transfer notes retained.

Unexpected sediment problems

14.6.2 Sediment/silt problems occur in times of heavy rain and can cause damage to surrounding habitats and watercourses. The Principal Contractor will incorporate and develop the following instructions in their Emergency Response Plan for the site:

- Check (monitor where required) watercourses during periods of high rainfall or construction activities with potential for significant run-off.
- Take immediate action if you identify any high sediment which is causing pollution. If unsure if it is significant, consult with the environmental department.
- Implement mitigation actions immediately. Control pollution at source whenever possible. Consider whether the site activity should be halted. Consult the environmental representatives if in doubt.
- Place straw bales, silt fencing, etc. to help control sediment immediately and/or check measures already in place for efficacy.
- Monitor the effectiveness of protection measures daily and re-plan as necessary.
- Remove silted bales/screens, etc. regularly so they do not make problems worse.

- The Principal Contractor Environmental Manager and relevant site management representative should talk to the Environment Agency regularly and check plans for emergency procedures.
- Reconsider working practices which may be causing pollution in poor weather conditions and re-plan/programme.

Accidental release of cement to watercourses

14.6.3 The Principal Contractor will incorporate and develop the following instructions in their Emergency Response Plan to reduce the likelihood of damage to surrounding habitats and watercourses from cement releases:

- Stop the action which is causing pollution immediately
- Inform the environmental representative to identify whether more detailed actions are required
- Inform the Environment Agency and landowners/occupiers as relevant.
- Monitor effects of spill
- Learn from the experience and plan site works to avoid pollution happening again

Do not:

- Think that a concrete spill is not important
- Ignore a concrete spill
- Cover up the incident

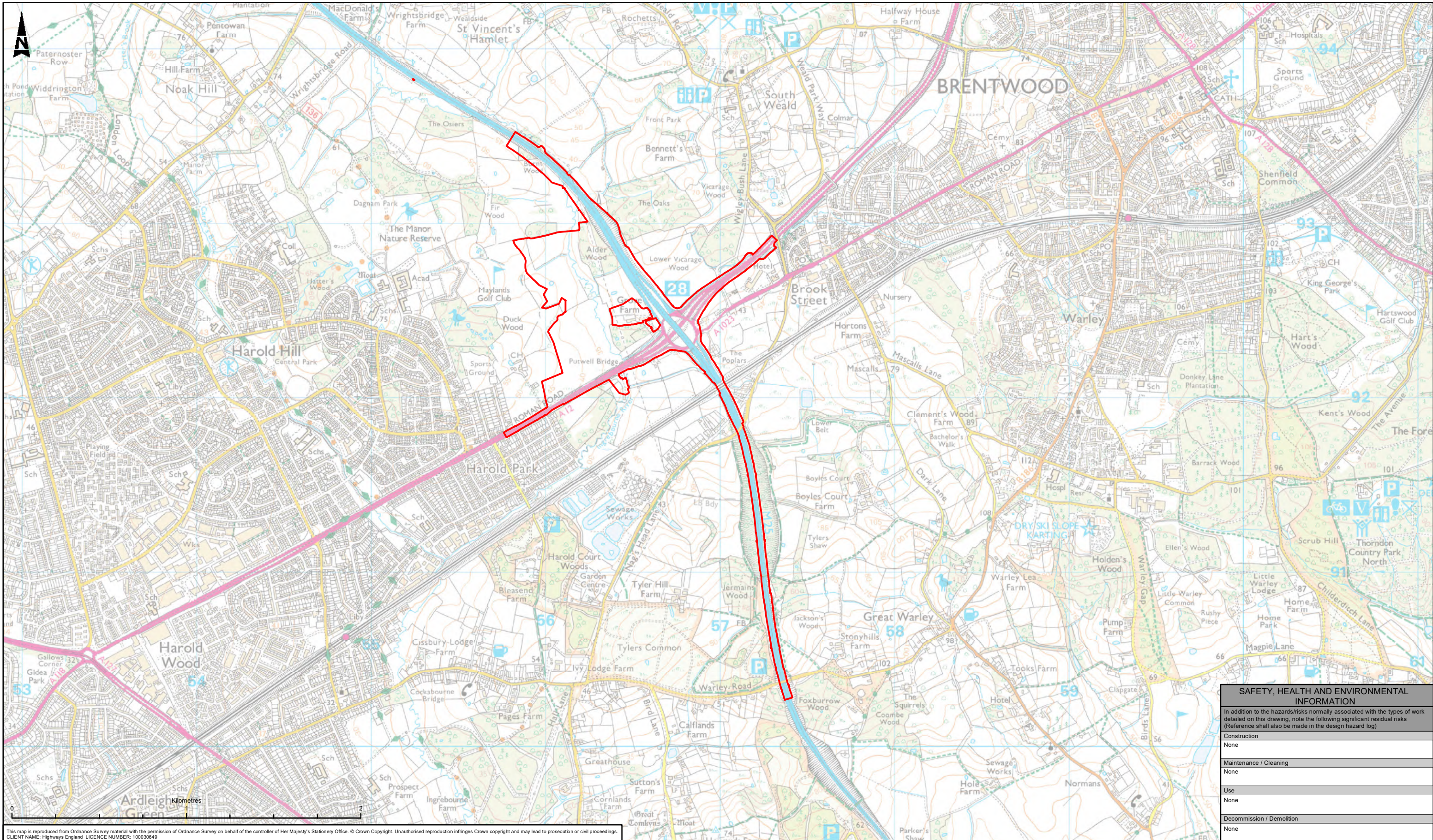
Oil spills

14.6.4 Oil causes damage to surrounding habitats and watercourses. The Principal Contractor will incorporate and develop the following instructions in their Emergency Response Plan for the site:

- Stop the action/event which is causing pollution immediately
- Take immediate remedial actions
- Inform the environmental representative to identify more detailed required actions
- Inform the Environment Agency and landowners/occupiers if the spill has not been contained and dealt with
- Monitor effects of the spill
- Remove oil spill response materials and dispose of in accordance with the appropriate method statement
- Deal with any contaminated soils in accordance with the MMP
- Do not think that a fuel spill is not important

Appendices

Appendix A. Location plan



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 CLIENT NAME: Highways England LICENCE NUMBER: 100030649

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)	
Construction	None
Maintenance / Cleaning	None
Use	None
Decommission / Demolition	None

LEGEND
 Scheme DCO Boundary

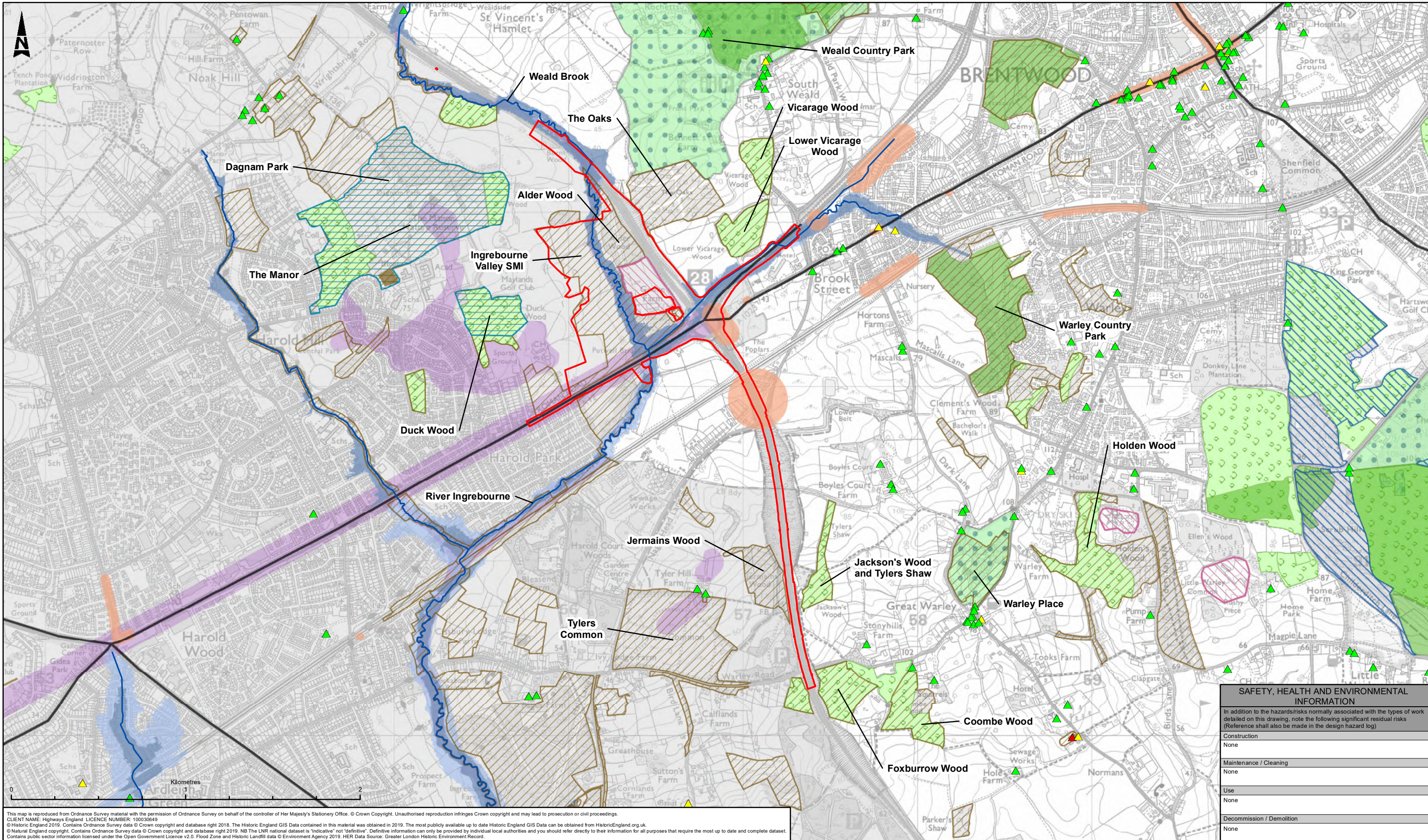
Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1						27/02/20

ATKINS
 Member of the SNC-Lavalin Group
 Epsom Gateway
 Ashley Avenue
 Epsom
 Surrey
 KT18 5AL
 Tel: +44 (0) 1372 726140
 Fax: +44 (0) 1372 740055
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highways england

Project Title	M25 Junction 28
Drawing Title	PRELIMINARY ORDER LIMITS
Drawing Number	HE551519 - ATK - EAC XX - GS - GI - 000001
Client	Project: HE551519 - ATK - EAC Originator: XX - GS - GI - 000001 Volume: 1 of 1
Original Size	A3
Scale	1:20,000
Project Ref. No.	---
Sheet	1 of 1
Rev.	C03

Appendix B. Environmental constraints plan



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 CLIENT NAME: Highways England LICENCE NUMBER: 100030649
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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)	
Construction	None
Maintenance / Cleaning	None
Use	None
Decommission / Demolition	None

LEGEND		
Scheme DCO Boundary	Country Parks	Listed Buildings Grade I
Sites of Special Scientific Interest (SSSI)	Noise Important Areas	Listed Buildings Grade II*
Scheduled Monuments	Air Quality Management Areas	Listed Buildings Grade II
Ancient Woodland	Archaeological Priority Areas	
Historic Landfill Sites	Flood Zone 3	
Registered Parks and Gardens	Flood Zone 2	
Local Nature Reserves (LNR)	River Network	
Biodiversity Designated Sites (LoWS and SINCs)	Pollution Climate Mapping (PCM) Links	

Description	Drawing Suitability	Status	Project Title
Status: Revision: Draw: Checked: Reviewed: Authorised: Issue Date:	PUBLISHED	A1	M25 Junction 28
Description:	ATKINS Member of the SNC-Lavalin Group		Drawing Title
Status: Revision: Draw: Checked: Reviewed: Authorised: Issue Date:	Epsom Gateway Ashley Avenue Epsom Surrey KT18 5AL Tel: +44 (0) 1372 726140 Fax: +44 (0) 1372 740055 Copyright © Atkins Limited (2019) www.atkinsglobal.com		ENVIRONMENTAL CONSTRAINTS
Description:			Drawing Number
Status: Revision: Draw: Checked: Reviewed: Authorised: Issue Date:	Client:		Project: HE551519 - ATK - EGN Originator: XX - GS - GI - 000001 Volume: ---
Description: PUBLISHED			Location: --- Type: --- Role: --- Number: ---
Status: Revision: Draw: Checked: Reviewed: Authorised: Issue Date:			Original Size: A3 Scale: 1:20,000 Project Ref. No.: --- Sheet: 1 of 1 Rev: C03

Appendix C. Construction programme

[Note: Principal Contractor to include construction programme]

Appendix D. Toolbox talks and method statement

[Note: Principal Contractor to produce and include toolbox talks and method statements]

Appendix E. Environmental training, site induction and toolbox talk log

[Note: Principal Contractor to produce and include environmental training, site induction and toolbox talk log]

Appendix F. Environmental control plans

F.1 Outline Dust Noise and Nuisance Management Plan

F.2 Outline Surface Water Management Plan

F.3 Outline Arboricultural Method Statement

[Note: Principal Contractor to produce and include environmental control plans]

**M25 junction 28 improvement scheme
Outline Construction Environmental
Management Plan
Appendix F: Outline Dust Noise and Nuisance
Management Plan (DNNMP)**

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1. Introduction

1.1. Objective

- 1.1.1. In order to minimise the potential for noise, vibration or dust nuisance, this Outline Dust, Noise and Nuisance Management Plan (DNNMP) details the measures that the Principal Contractor would be required to adopt to control and limit those emissions at residential properties and other sensitive receptors in the vicinity of the Scheme. This DNNMP applies to all construction activities occurring on the Scheme.
- 1.1.2. This Outline DNNMP will be updated by the Principal Contractor into a final DNNMP, as appropriate and necessary, prior to commencement of works in accordance with Requirement 4 in Schedule 2 of the draft Development Consent Order (DCO). The final DNNMP will be one of a number of management plans that must be included in the Construction Environment Management Plan (CEMP) under that requirement.

1.2. Abbreviations

- 1.2.1. Some of the abbreviations used in this document are provided in Table 1.1 below.

Table 1.1: List of abbreviations

Term	Definition
AQMA	Air Quality Management Area
BPM	Best Practicable Means
BS	British Standard
CoPA	Control of Pollution Act
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
DNNMP	Dust, Noise and Nuisance Management Plan
ES	Environmental Statement
HE	Highways England
LAQM	Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM10	Particulate Matter with an average aerodynamic diameter not exceeding 10 micrometers
REAC	Register of Environmental Actions and Commitments

2. Noise and vibration

2.1. Introduction

- 2.1.1. This section will be updated by the Principal Contractor and set out the purpose of the final DNNMP and set out the processes that will be adopted to minimise nuisance through the management, control and reporting of construction noise and vibration in accordance with relevant legislation, regulations and contractual requirements.
- 2.1.2. This outline DNNMP plan identifies the key items which will be included in the final DNNMP as follows:
- Roles and responsibilities at project and site-specific levels
 - The approach to construction noise and vibration management
 - Section 61 CoPA 1974 consent process
 - Noise and vibration control measures
 - Noise and vibration monitoring
 - Communication and complaints arrangements
 - Reporting requirements

2.2. Relevant legislation

[The Principal Contractor will need to update this section and provide an overview of the key legislation that the Scheme has to comply with.]

Control of Pollution Act 1974 (CoPA)

- 2.2.1. The Control of Pollution Act (CoPA) 1974 gives Local Authorities powers for controlling noise and vibration from construction sites and other similar works. These powers may be exercised either prior to, or during the works.
- 2.2.2. Best Practicable Means (BPM) will be applied during construction works to reduce noise and vibration impacts as far as is reasonably practicable.

Best Practicable Means

- 2.2.3. The Best Practicable Means (BPM) for noise control will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors arising from construction activities.
- 2.2.4. BPM are defined in section 72 of CoPA and section 79 of the Environmental Protection Act 1990.

2.3. Management of site activities

Main roles and responsibilities

- 2.3.1. In relation to the control and management of dust, noise and nuisance, the Principal Contractor shall establish the main roles and responsibilities of site personnel to ensure the proposed control measures are being implemented during the construction activities. These will be set out in Section 3.2 of the final CEMP or within the final DNNMP.

Working hours

Normal Working Hours (NWHs)

- 2.3.2. Normal Working Hours will be defined as per section 5.3 of the Outline CEMP. All works will be undertaken during NWH only, unless otherwise consented.

Start-up and close down periods

- 2.3.3. To maximise productivity within the NWH hours; a period of up to one hour before core working hours is allowed for the start-up of activities as per section 5.3 of the Outline CEMP.

Additional working hours

- 2.3.4. Any additional workings hours or out of hours working, will be identified within the Section 61 application which will require approval from the relevant Local Authority.

Consultation

- 2.3.5. Consultation will be carried out with the environmental health departments of the Local Authorities regarding the management of noise and vibration during construction of the Scheme.

2.4. Noise and vibration control

Noise control strategy

- 2.4.1. The general principles of noise management, considered as BPM, are given below:
- 2.4.2. Control at source:
- Equipment – newest, well maintained equipment with lower noise emissions.
 - Equipment – controlling plant and machinery noise e.g. by retrofitting controls.
 - Equipment - indirect methods of controlling noise e.g. acoustic screens.
 - Equipment - indirect methods of controlling noise e.g. using alternative construction methodologies; selection of quieter tools/machines; application of quieter processes.
- 2.4.3. Control across site by:
- Administrative and legislative control.
 - Control of working hours.

- Control of delivery areas and times.
- Careful choice of compound location.
- Physically screening site.
- Control of noise via contract specification of limits.
- Noise monitoring to check compliance with noise level limits, cessation of works until alternative method is found.
- Many of the activities which generate noise can be mitigated to some degree by careful operation of machinery, use of tools and the management of personal behaviours. This may best be addressed by tool box talks and site inductions.

2.4.4. Mitigation will be considered in the following order:

- BPM as identified above.
- Specific noise and vibration control measures as identified below.
- Where, despite the implementation of these measures, there are residents who would still be affected (e.g. shift workers, elderly, sick or disabled residents, etc.), the possibility of an offer of temporary relocation may be considered, if appropriate. These residents would be identified prior to works taking place.

2.4.5. The recommendations of BS 5228: 2009+A1:2014 'Code of practice for Noise and Vibration Control on Construction and Open Sites', will be implemented, together with the specific requirements of this management plan.

2.5. Specific noise and vibration control measures

2.5.1. To mitigate and understand the noise and vibration impact of the proposed works and to effectively implement controls, a noise and vibration specialist with relevant competences and resources, will be appointed. The noise and vibration specialist will be required to undertake or coordinate the preparation of noise and vibration risk assessments for all works that require a prior consent under Section 61 of CoPA.

2.5.2. In addition to specific requirements of the relevant Local Authority, the following more specific control measures will be adopted:

- The equipment and construction plant will comply with relevant EC Directives and corresponding UK legislation on noise emissions.
- The methodology / technique for noisy operations will be carefully considered to ensure that noise is kept to a practicable minimum.
- Without prejudice to the other requirements of this section, the Principal Contractor shall comply with the recommendations set out in BS 5228:2009 + A1:2014 Code of practice for noise and vibration control on construction and open sites, Part 1: Noise.
- Vehicles and mechanical plant, and their exhausts, will be maintained in a good and effective working order and operated in a manner to minimise noise emissions.
- Machines in intermittent use will be shut down or throttled down to a minimum during periods between working.

- Where demolition and other breaking out activities are necessary, percussive or impact breaking equipment / methods will only be used where other less noisy techniques are not reasonably practicable.
- Care would be taken when unloading vehicles to avoid unnecessary noise;
- Reduce the speed of vehicle movements.
- Ensure that operations are designed to be undertaken with any directional noise emissions pointing away from noise-sensitive receptors.
- All generators and compressors will be “sound reduced” models fitted with acoustic linings / sealed acoustic covers where appropriate.
- Drop heights will be minimised when loading vehicles with rubble.
- Vehicles should be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors.
- Vehicles shall not wait or queue on the public highway with engines running
- Local hoarding, screens or barriers should be erected to shield particularly noisy activities.
- Piling will be carried out with the method that minimises both noise and the transmission of vibration to sensitive receptors.
- Hours of operation should be strictly enforced.
- Wherever practicable, fabrication will be undertaken off site.
- As far as reasonably practicable noise from reversing alarms will be controlled and limited.
- Plant and equipment liable to create noise and/or vibration whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors.
- Where practicable, plant and materials will arrive on site during normal working hours.
- Where practicable plant will be left in position at the end of the day, thus minimising vehicle trips and minimising the required ‘start up’ and ‘close down’ durations.

2.6. Noise Monitoring

Unattended continuous noise monitoring

- 2.6.1. Semi-permanent noise monitors may be installed in consultation with the relevant Local Authority.

Attended noise monitoring

- 2.6.2. To supplement agreed unattended noise monitoring, attended noise measurements will be carried out on a risk-based approach. A programme of attended noise monitoring would be developed by the Principal Contractor in consultation with the relevant Local Authority, for example at the commencement of a new significant activity.

2.7. Vibration control strategy

- 2.7.1. BPM will be used to control ground borne vibration and any consequent ground borne noise. Vibration risk assessments will be undertaken where significant impact thresholds are expected to be exceeded, and the Principal Contractor would need to outline the control and mitigation measures within the construction method statements and with the final DNNMP.
- 2.7.2. Works expected to exceed the significant impact threshold within buildings will be notified to the relevant local authority in the relevant section 61 application along with monitoring proposals.

Vibration monitoring

- 2.7.3. Vibration impacts generated by the works will be managed on a risk-based approach. Vibration monitoring may be undertaken during significant vibration generating construction activity.

2.8. Section 61 Applications and Compliance

Development of Section 61 Consent Applications

- 2.8.1. For noise and vibration, the Principal Contractor will discuss and endeavour to agree with the Local Authority whether to seek formal consent in accordance with Section 61 of Control of Pollution Act 1974 to their proposed methods of work and to the steps proposed in order to minimise noise and vibration nuisance. Notwithstanding this, the Principal Contractor will consult on minimising nuisance through the proposed noise and vibration control measures with the Local Authority through the development of the final CEMP.
- 2.8.2. The Section 61 application will contain the key construction working methods and the proposed mitigation measures, a plant list and information on the predicted noise and vibration levels generated by the works.

Section 61 Compliance

- 2.8.3. The Principal Contractor will be responsible for developing a monitoring programme to ensure compliance with any section 61 consents. Specific actions required to ensure compliance will be included within appropriate roles and responsibilities and will be contained within section 3.2 of the final CEMP.

2.9. Communications

Stakeholder communication

- 2.9.1. The Principal Contractor will maintain and develop a Community Engagement Plan in consultation with stakeholders.

Complaints

- 2.9.2. All complaints received will be recorded, investigated and corrective actions

implemented and feedback given to the complainant. The relevant Local Authority will be advised of any justified complaint, actions taken to investigate, and any actions found necessary to put in place.

Records

- 2.9.3. Documentation and records will be produced, filed and maintained to record the activities and processes used to manage noise and vibration.

3. Dust and emissions to air

3.1.1. This section of the DNNMP will detail the controls that the Principal Contractor will adopt to ensure that BPM and relevant statutory controls are implemented to control emissions to air from activities associated with the works.

3.2. Relevant legislation

3.2.1. This management plan has been developed with consideration of the following legislation:

- Control of Substances Hazardous to Health Regulations (SI 2002/2677)
- Clean Air Act 1993
- Environment Act 1995
- Environmental Protection Act 1990
- Health and Safety at Work Act 1974
- Non-Road Mobile Machinery Standards of EU Directive 97/68/EC

3.3. Management of site activities

3.3.1. The main roles and responsibilities of site personnel will be defined within section 3.2 of the final CEMP.

3.4. Control measures

3.4.1. Table 3.1 sets out examples of the works and associated risks of emissions from site activities giving rise to poor air quality. Table 3.1 will be updated by the Principal Contractor. Table 3.2 sets out the specific controls that will be applied.

3.4.2. The Principal Contractor shall observe the requirement to use BPM by providing for and adopting all necessary means to prevent a statutory nuisance occurring from the site.

Table 3.1: Examples of activities and sources of dust

Activity	Dust type and risk	Risk level*
i.e. General Site Operations Muck away/ trackout	Potential for fugitive dust/ PM10 arising from activities on site including stockpiles, and movement of vehicles on haul roads and off site	<i>To be determined by the Principal Contractor (Low or High)</i>
i.e. Demolition	Potential for fugitive dust/ PM10 arising from demolition of the bridges	<i>To be determined by the Principal Contractor (Low or High)</i>
i.e Excavation	Potential for fugitive dust/ PM10 arising from earthworks	<i>To be determined by the Principal Contractor (Low or High)</i>

Activity	Dust type and risk	Risk level*
Construction	Potential for fugitive dust/ PM10 arising from construction of the roads and bridges	<i>To be determined by the Principal Contractor (Low or High)</i>

*The risk level can be High or Low according to DMRB LA105 guidance (Table 2.58b) depending on the distance of the sensitive receptor to the construction activities. For projects with a large construction dust risk potential such as this one, the risk level is high where receptors are within 100 metres, and low where they are within 100 – 200 metres.

Table 3.2: Examples of activities, controls and residual risks

Activity	Control	Residual risk
General Site Operations	<p>Control of Dust Emissions from General Site Operations</p> <ul style="list-style-type: none"> • Implement a no burning policy on site • Equipment that is likely to generate excessive quantities of dust will be enclosed, shielded or where appropriate fitted with dust extractors, filters or scrubbers, which shall be maintained in accordance with manufacturer’s specifications • Keep the number of material handling operations to a minimum • Undertake cutting and grinding operations using equipment and techniques which suppress and reduce dust emissions • Where appropriate, erect and maintain windbreaks, netting screens or semi-permeable fences to effectively reduce dust emissions from working areas and/or to screen sensitive location • Where necessary employ water sprays to control dust generated during earthworks • Minimise drop heights of soils and excavated material into vehicles • Sheet vehicles taking soils and friable material from site at all times • Avoid site runoff of water or mud <p>Control of dust emissions from materials storage/ stockpiling and handling areas</p> <ul style="list-style-type: none"> • Store aggregates, sand and spoil with adequate protection from the wind and, where practicable, within buildings • Maintain slopes of stockpiles, tips and mounds at an angle not greater than the natural angle of repose and avoid creating sharp changes of shape • Aim to minimise any double handling of soils and other friable materials • Minimise the amount of excavated material stockpiled and dampen the surfaces of stockpiles of dry friable materials by controlled application of water sprays or alternatively, shroud or screen stockpiles 	Low

Activity	Control	Residual risk
	<ul style="list-style-type: none"> • Maintain handling areas to reduce the risk of dust emissions using static misting systems, bowsers and other watering methods as necessary to reduce or prevent dust emissions. <p>Control of Dust Emissions from Haul Roads and Vehicle Movements on Site</p> <ul style="list-style-type: none"> • Install site speed limit of 10 mph across all areas • Sheet or enclose vehicles carrying friable material to site • Ensure all vehicles switch off engines when stationary <p>Control of Exhaust Emissions from Vehicles and Plant/ Equipment</p> <ul style="list-style-type: none"> • Select a suitable supplier in accordance with the Procurement Policy • Select and procure plant and equipment with the least potential for dust and other pollutant emissions, allowing for economic constraints and practicability • Use plant and equipment powered by mains electricity or battery powered whenever practicable • Request the power output and EU staged emissions classification of the equipment. Where equipment is under 37kW output no action is required, but where it is above 37 kW output the supplier is informed of the need to fit Diesel Particulate Filter (DPF) device • Use low emission fuels such as ultra low sulphur fuels for all non-road mobile machinery (NRMM) • Use plant fitted with catalysts, DPF and similar devices as listed by the Energy Saving Trust for NRMM with a power output greater than 37kW. Ensure the process for managing this is detailed in the contractor’s relevant plans and procedures • Ensure NRMM with a net power of between 37kW and 560kW meets the requirements of EU Directive 97/68/EC for Greater London authorities. 	

Activity	Control	Residual risk
	<ul style="list-style-type: none"> • Ensure project suppliers' commercial vehicles comply with the necessary legislative requirements including Regulation (EC) No 715/2007 • Ensure that no vehicle or equipment emitting visible black smoke from its exhaust system other than during ignition is used on any construction site or public highway • Ensure that combustion engines are not left running unnecessarily • Ensure that all vehicles and equipment engines and exhaust systems are maintained so that exhaust emissions do not breach statutory limits set for vehicle/ equipment type and mode of operation. • Ensure all vehicles and equipment are maintained in accordance with manufacturer's specifications and statutory requirements. 	
Muck away/ trackout	<ul style="list-style-type: none"> • Locate haul roads and access points as far away as practicable from sensitive receptors • Undertake wet cleaning of any large-scale concrete hard standing. • Restrict dry sweeping to small areas only • Inspect haul road condition at least weekly and repair as soon as possible if damage is identified • Apply water to site roads (including haul roads) using bowsers at an appropriate rate to effectively suppress dust • Maintain unpaved roads and verges in a compacted condition • Provide easily cleaned hard standings for vehicles • Provide and ensure the use of wheel wash facilities near the site exit to dislodge accumulated dust and mud prior to vehicles exiting the work site 	Low
Demolition	<ul style="list-style-type: none"> • Fully sheet all vehicles carrying loose or potentially dusty material to or from the working areas • Use effective water suppression during demolition operations 	Low

Activity	Control	Residual risk
	<ul style="list-style-type: none"> • Screen buildings where dust producing activities are taking place with debris screens or sheeting, where appropriate 	
Excavation	<ul style="list-style-type: none"> • Ensure regular cleaning of hard standings using wet sweeping methods • Fully sheet all vehicles carrying loose or potentially dusty material to or from the working areas • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment • Avoid carrying out earthworks during dry weather if reasonably practicable having regard to programme, or provide and ensure appropriate use of water sprays to control dust • Re-vegetate earthworks and exposed areas/ soil stockpiles to stabilise surfaces as soon as practicable 	Low

3.5. Inspections and monitoring

Inspections

- 3.5.1. The Principal Contractor will define and implement the inspection and monitoring programme to ensure compliance with the legislation is achieved.
- 3.5.2. Inspection will also be undertaken in the event that a complaint is received. When investigating an incident the following information would be gathered:
- Wind direction and strength
 - Weather conditions
 - Operations at the site at the time of the exceedance
 - Any abnormal operations both inside the worksite and outside (by both the contractor and/or others)
 - Any air quality controls being applied
 - Identification of additional controls required

Monitoring

- 3.5.3. Any requirement for dust monitoring would be developed by the Principal Contractor in consultation with the relevant Local Authority.

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**M25 junction 28 improvement scheme
Outline Construction Environmental
Management Plan
Appendix F: Outline Surface Water Management
Plan (SuWMP)**

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1. Introduction

1.1 Purpose of document

- 1.1.1 This Outline Surface Water Management (SuWMP) plan sets out a framework to be used by the Principal Contractor when preparing the final SuWMP for the Scheme prior to the commencement of works.
- 1.1.2 The SuWMP is one of a number of management plans that must be included in the Construction Environmental Management Plan (CEMP) as required by Requirement 4 in Schedule 2 of the draft DCO.
- 1.1.3 The principal purpose of a SuWMP is to set out how construction works will be managed in a way that minimises the risk of adverse effects on receptors in the surface water environment. Receptors include watercourses, lakes and surface water features as well as associated habitats and species. The SuWMP will also cover management of flood risks to (and generated by) the Scheme.

1.2 Overarching guidance

- 1.2.1 All construction activities on the Scheme will be undertaken in accordance with the relevant best practice guidance. These include the 'Guidance for Pollution Prevention (GPPs) and CIRIA C532 'Control of Water Pollution from Construction Sites' (refs 1 and 2). In particular the Scheme will follow the good environmental practice guidance detailed in GPP5: 'Work and maintenance in or near water' (ref. 3).

2. Receptors

2.1 Introduction

2.1.1 This section of the SuWMP will set out the receptors in the surface water environment potentially exposed to the effects of construction activities. In accordance with the source, pathway receptor model, the relevant pathways and receptors will be assessed in order to develop suitable and effective control measures. This will allow specific hotspots for surface water pollution and contamination to be identified efficiently, including those area liable to flooding, thereby reducing risk of adverse effects on surface waters

2.2 Surface water features

2.2.1 This section of the SuWMP will map and list in summary form the surface water features that are receptors to the Scheme. The Ingrebourne River (the Main River) and the Weald Brook are the principal surface water receptors. There are also ditches, drains and ponds within the Scheme boundary.

2.3 Areas of fluvial and surface water flood risk

2.3.1 This section of the SuWMP will summarise flood risks associated with the Scheme. It will provide sufficient spatial context for people planning works in high risk areas to ensure minimal effects on the surface water environment, and to implement effective and safe responses to flood events. It will be informed by the Scheme Flood Risk Assessment (APP-090) and subsequent updates of that document.

3. Management plan

3.1 Introduction

3.1.1 This section of the SuWMP will set out the details of how construction activities will be managed to protect the surface water environment from adverse effects. Key components of this plan are briefly set out below.

3.2 Regulation of construction activities affecting the surface water environment

3.2.1 Authorisation to undertake temporary and permanent works in the Main River, bylaw distance of the Main River, ordinary watercourses and (where appropriate) floodplain will be sought under the appropriate protective provisions for the protection of the Environment Agency (EA) and drainage authorities (for this Scheme, Essex County Council). Drafts of these protective provisions are set out in Schedule 9 parts 3 and 4 of the draft Development Consent Order (TR010029/APP/3.1). These permissions will set out how any adverse effects of construction activities on the water environment will be managed.

3.3 Methods of work

3.3.1 Methods of works for construction activities with the potential to affect the surface water environment will be prepared. These will include instructions on how these activities will be undertaken in a way that effectively manages their potential adverse effect on surface waters. These methods of work will be informed by a) the guidance set out in the SuWMP, and b) the implementation of best practice by the Principal Contractor.

3.4 Fluvial and surface water flood risk

3.4.1 Authorisation for temporary or permanent works will be sought from the relevant regulatory body (as set out in section 3.2 above).

3.4.2 The information supporting applications for all works in Flood Zone 3 (shown in Appendix B of the Outline Construction Environmental Management Plan (TR010029/APP/7.2) or areas known to be vulnerable to surface water flooding will describe how the effects of flood risk to (and generated by) the Scheme will be managed effectively. Measures will include:

- Registering with EA Floodline Warnings Direct and implementing an appropriate response strategy;
- Having signs to clearly demarcate the flood zone extent;
- Ceasing works during flood flows;
- Not storing any hazardous materials or concrete washout facilities in areas prone to flooding;
- Removing all waste immediately and having spill kits nearby.

3.5 Abstraction from surface waters

- 3.5.1 If construction activities require abstraction of water from surface (or ground) sources, assessments will be completed and, where exemptions do not apply, licences sought from the Environment Agency (ref. 6).

3.6 Discharge to surface waters

- 3.6.1 If construction activities involve discharge of water to surface (or ground) authorisation will be sought from the Environment Agency in accordance with advice on (and exemptions from) environmental permits (ref. 5).
- 3.6.2 In particular, guidance from the regulatory position statement on excavations to surface water (ref.6) will be followed when undertaking dewatering activities.

3.7 Sewage effluent

- 3.7.1 The Principal Contractor will manage the disposal of foul and sewage effluents appropriately. It will be preferable to connect to a local foul sewer system, but if this is not possible then a local package treatment works will be deployed, and appropriate authorisation will be sought.

3.8 Managing surface water runoff

- 3.8.1 Rainfall onto construction sites will generate 'dirty' (most often sediment laden) surface water runoff. Wherever practical clean and dirty runoff will be kept separate to minimise the volume of dirty water. Appropriate water treatment measures (e.g. attenuation) will be implemented to ensure runoff returned to natural surface waters does not cause pollution or damage the water environment. Where appropriate, methods of works will set out how surface water will be managed. Dynamic risk assessments will be undertaken for temporary/unplanned works; appropriate methods of work will be developed and implemented.
- 3.8.2 Guidance provided in GPP 20 "Dewatering of Underground Ducts and Chambers" will be followed (ref. 4).

3.9 Pollution prevention measures

- 3.9.1 Best practice and guidance will be applied to prevent pollution. Where appropriate, pollution prevention guidelines will be adhered to (e.g. ref 1).
- Fuel will be handled and stored in accordance with the Control of Pollution Regulations.
 - The run-off of silt and contaminants will be controlled by minimising land disturbance and digging earthworks to retain, filter and cut off flows of surface water.
 - Maintenance of plant, vehicles and equipment will be carried out at least 20 m from any watercourse or drain where possible. Spill kits, drip trays and drain seals will be used where this is not possible.

3.10 Water use minimisation measures

3.10.1 The Scheme will apply the water use minimisation hierarchy. The highest reasonably practicable option will always be adopted. The hierarchy is as follows (from most to least preferred option):

- Eliminate
- Substitute
- Reduce
- Reuse
- Recycle
- Disposal

3.11 Monitoring

3.11.1 Monitoring will be developed by the Principal Contractor and would comprise regular visual inspection of construction sites and receiving watercourses to assess the effectiveness of mitigation measures to avoid and minimise pollution risk to the water receptors.

4. Emergency measures

- 4.1.1 The works will follow a Emergency Response Plan developed by the Principal Contractor before the start of construction and secured under Requirement 4 of the dDCO.

5. References

1	NetRegs, undated. Guidance for Pollution Prevention (GPPs) - Full list. [online] Available at: < https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/ > [Accessed 02 February 2021].
2	Ciria., 2001. Control of water pollution from construction sites - Guidance for consultants and contractors. [online] Ciria. Available at: < https://www.ciria.org/ProductExcerpts/C532.aspx > [Accessed 23 July 2005].
3	NetRegs, 2018. Works and maintenance in or near water: GPP 5. [online] Available at: < https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017 > [Accessed 02 February 2021]
4	NetRegs, undated. Dewatering underground ducts and chambers: GPP 20. [online] Available at: < https://www.netregs.org.uk/media/1477/gpp-20-publisher-pdf-version.pdf > [Accessed 03 February 2021]
5	Environment Agency, 2016. Guidance - discharges to surface water and groundwater: environmental permits. [online] Available at: < Discharges to surface water and groundwater: environmental permits - GOV.UK (www.gov.uk) > [Accessed 04 February 2021]
6	Environment Agency, 2014. Guidance - Water management: abstract or impound water. [online] Available at: < Water management: abstract or impound water - GOV.UK (www.gov.uk) > [Accessed 04 February 2021]

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M25 junction 28 improvement scheme
Outline Construction Environmental
Management Plan
Appendix F: Outline Arboricultural Method
Statement
(AMS)

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1. Introduction

1.1. Terms of reference

- 1.1.1. This document is an Outline Arboricultural Method Statement (AMS). Its purpose is to outline the tree protection measures likely to be required during the implementation of the Scheme. It has been prepared by Atkins Limited (Atkins), on behalf of Highways England, in line with guidance from the British Standard BS 5837:2012 '*Trees in Relation to Design, Demolition and Construction – Recommendations*'.
- 1.1.2. This Outline AMS supports the Arboricultural Impact Assessment (AIA) submitted as part of the Environmental Statement (ES), Appendix 7.7 (TR010029/APP/6.3) for the Scheme.
- 1.1.3. The Principal Contractor for the Scheme, as defined under the Construction (Design and Management) Regulations 2015 (CDM 2015) will develop the Outline AMS into a final version during the detailed design and construction stages of the Scheme as part of their CEMP documentation, secured through Requirement 4 of the dDCO (TR010029/APP/3.1)
- 1.1.4. This Outline AMS should be read in conjunction with the following documents:
 - Arboricultural Impact Assessment (TR010029/APP/6.3);
 - Updated Tree Protection Plans HE551519-ATK-ELS-XX-DR-LL-000201 to HE551519-ATK-ELS-XX-DR-LL-000211 – included in Appendix B to this document (updated from those submitted with the AIA);
 - The updated Outline CEMP (TR010029/APP/7.2); and
 - The updated Register of Environmental Actions and Commitments (REAC) (TR010029/APP/7.3)
- 1.1.5. The Outline AMS describes the tree protection measures likely to be required during the detailed design and construction stages It sets out the following information:
 - Requirements and information for pre-commencement briefings;
 - The roles and responsibilities associated with the delivery of the protection measures, control and communication;
 - Mitigation measures to be recorded and implemented; and
 - Review and monitoring mechanisms.
- 1.1.6. This document has been prepared by an experienced arboriculturist with a Level 6 qualification in arboriculture and who is a professional member of the Arboricultural Association.
- 1.1.7. The AIA (TR010029/APP/6.3) provides an overview of the impacts of the Scheme. This includes those trees identified for felling or recorded as being at risk of removal to facilitate the construction of the Scheme..
- 1.1.8. The Principal Contractor is to review the trees impacted by the Scheme as part of

the detailed design stage of the Scheme and will update the final AMS to support the CEMP, it being one of a number of plans that must be included in the CEMP under Requirement 4(2) of dDCO.

- 1.1.9. The production of the final AMS is to be undertaken by a suitably qualified arboricultural specialist, appointed by the Principal Contractor, to ensure appropriate mitigation measures are implemented during the construction works and confirm protection measures and trees for retention.

2. Pre-commencement operations and site briefings

2.1. General

- 2.1.1. In line with bullet point 3 of page 7 in the REAC (APP-097) the Principal Contractor is to appoint an Ecological Clerk of Works (ECoW) and a suitably qualified arboricultural specialist to support the detail design and construction stages of the Scheme. The arboriculturist is to produce the final AMS and consult with the relevant stakeholders during its production, notably the Local Authority Tree Officers.
- 2.1.2. The Principal Contractor is to review the trees impacted upon by the Scheme as part of the detailed design stages for the development of the final AMS to support the CEMP. The impact column in the survey schedules in Appendix B of the AIA (APP-063) and the red hatched areas and red crosses as illustrated on the tree protection plans within Appendix B of this Outline AMS are to be updated accordingly, where required.
- 2.1.3. Where trees previously identified for retention are required to be removed as part of detailed design stages, then this information shall form part of the consultation process with the relevant stakeholders. The Principal Contractor would need to ensure that such changes do not give rise to any materially new or materially different environmental effects in comparison with those reported in the ES and the Outline AMS.

2.2. Work package plans and task briefing sheets

- 2.2.1. The requirements for tree protection measures shall be included within Work Package Plans (WPPs) and Task Briefing Sheets (TBS) produced by the Principal Contractor as part of the planning of construction activities. All pre-commencement briefings shall make sure all members of staff working or visiting the area of site being worked upon are aware of the individual responsibilities regarding trees and the tree protection measures required to be in place to continue construction.
- 2.2.2. In the approval of WPPs and TBSs the reviewer shall make sure any protection of trees has been considered within the area and seek confirmation with either the supervising arboriculturist or ECoW if further clarification is required.
- 2.2.3. There are key areas that require pre-commencement site briefings with the supervising arboriculturist or ECoW. These currently include, but are not limited to the following areas, further areas may be added to where deemed appropriate:
- Land adjacent to TPO trees reference TPO 2-02 – A1 Land on south side of Colchester road;
 - Land adjacent to TPO trees reference TPO 18-06 – A1 Maylands Golf Course, Colchester road;
 - Land adjacent to TPO trees reference TPO 5/1948 – Map 16 Alder Wood;
 - Land adjacent to TPO trees reference TPO 5/1948 – Map 21 Grove Wood;

- Land surrounding all veteran trees;
- Trees surrounding Weald Brook; and
- The Grove and Alder wood.

2.2.4. These pre-commencement site briefings shall be attended by the construction manager or suitable delegate. They shall raise awareness with the relevant parties of the trees within the working extents and to confirm the requirements for tree related information to be included within induction material and daily briefings to members of staff working or visiting that area of the Scheme.

- 2.2.5. It shall also confirm the following:
- The location of tree protective barriers;
 - Tree works to facilitate that phase of the Scheme;
 - Site specific mitigation measures; and
 - Where/when arboricultural supervision will be required.

2.3. Contact details

2.3.1. Overseeing management of the Scheme will be directed by Highways England. Highways England may delegate some site supervision roles and procure specialist consultants to supervise, monitor or check the Principal Contractors procedures for sensitive activities where required.

2.3.2. The final AMS that will be produced by the Principal Contractor shall confirm key roles and site contacts. The contacts list should include an arboriculturist or suitably qualified ECoW to support the construction phase of the Scheme.

2.4. Site supervision

2.4.1. The supervisory role shall be performed by an arboriculturist or ECoW with suitable experience. The frequency of these visits should align with key milestones identified in Table 2.1 below and shall be undertaken as required during the progression of the Scheme to enable an auditable succession of monitoring events for a review of the protection measures implemented for the trees.

Table 2.1: Programme of site supervision

Programme	Arboriculturist or delegate	Supervision
Pre-commencement site meeting	Arboriculturist or suitably qualified delegate.	a) Confirm location and specification of tree protective barriers; b) Confirm tree works to be undertaken; c) Confirm requirements for tree protection information to be included in induction details for the site; d) Confirm requirements for reporting any tree related incidents; e) Confirm ongoing arboricultural monitoring and contact details.

Programme	Arboriculturist or delegate	Supervision
Setting out of protective barriers	Arboriculturist or suitably qualified delegate.	a) Review location and specification of tree protective barriers; b) Confirm any additional tree protection measure requirements; c) Submit site monitoring pro forma to Client / Project Manager.
During operation as minimum every 8 weeks.	Arboriculturist or suitably qualified delegate.	a) Review location and specification of tree protective barriers; b) Assess condition of retained trees, specifically for any construction related damage; c) Confirm any additional tree protection measure requirements; d) Submit site monitoring pro forma to Client / Project Manager.
Post-construction	Arboriculturist or suitably qualified delegate.	a) Inspect all retained trees to make sure they have not been damaged during the construction operations; b) To instruct any remedial works that may be required should a tree defect be identified as a result of the construction operations.

- 2.4.2. On completion of each site visit a report or site note, such as the pro forma in Appendix A of this report, should be completed by the arboricultural specialist.
- 2.4.3. Where an arboriculturist or ECoW is not able to attend the ongoing monitoring visits, these visits are to be undertaken by a suitably briefed and experienced delegate.
- 2.4.4. Where emergency matters arise regarding trees, e.g. unexpected access required within construction exclusion zones or damage to retained trees, then an arboriculturist or ECoW is to co-ordinate a visit to the site in person or delegate their powers to a suitably qualified person.
- 2.4.5. Any variations or incidents related to trees shall be reported in writing to the Client/Project manager. Details of the variations or incidents shall incorporate photographic evidence and site notes as appropriate. Suitable remedial measures, including potentially the provision of new planting where deemed appropriate.

3. Construction Exclusion Zone (CEZ) and protective barriers

3.1. CEZ definition

- 3.1.1. The CEZs can be defined as all the soft surfaces within the Root Protection Areas (RPAs) of retained trees outside of the works areas and the areas behind the tree protection fencing or site hoarding.
- 3.1.2. Site operations will not be permitted in the CEZs without consultation with an arboriculturist, including storage of plant, equipment or materials, vehicular or plant access, washing down of vehicles or machinery, handling, discharge or spillage of any substances, including cement washings, and actions likely to cause localised water-logging. No mechanical digging, scraping or excavation shall be permitted in the CEZ, nor earthworks or changes in the finished ground levels other than those agreed by an arboriculturist.

3.2. Tree protection plans (TPPs)

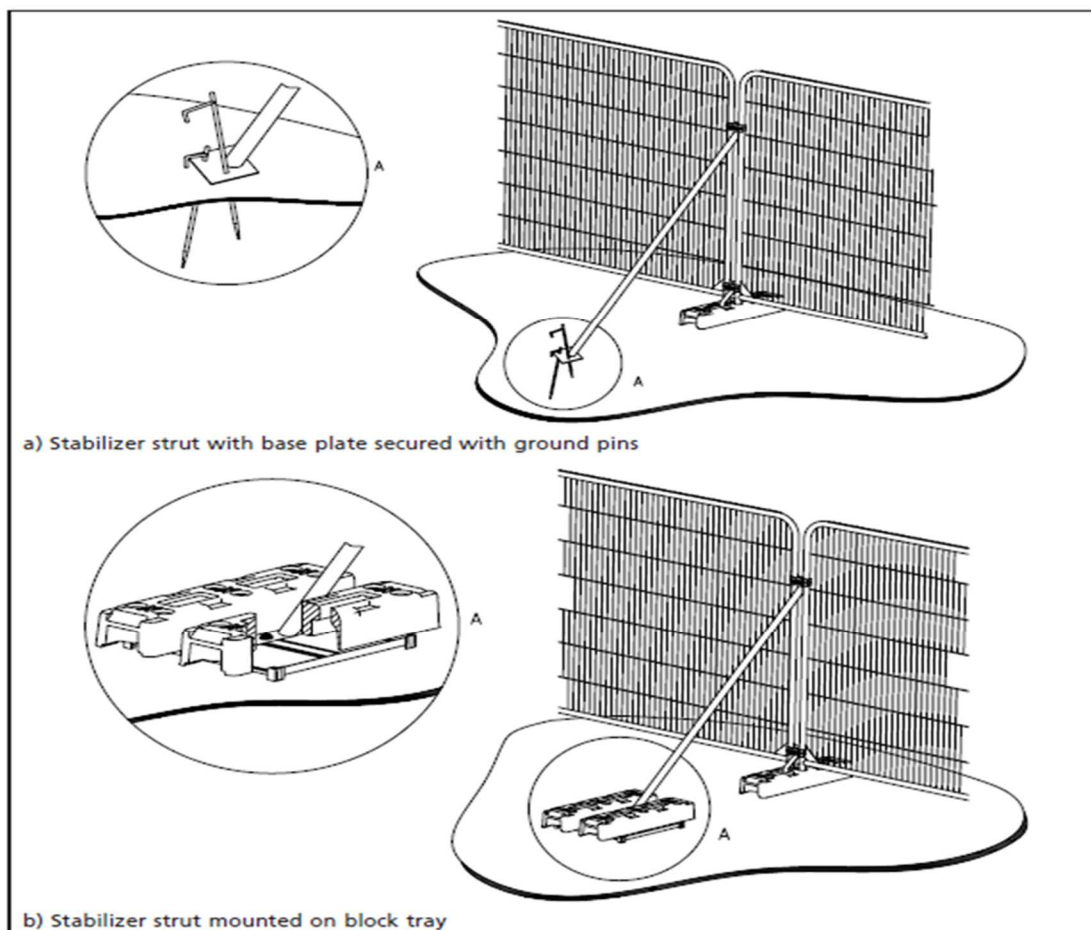
- 3.2.1. The tree protection plans (TPPs) that have been included with this Outline AMS are an update to those submitted as part of the ES (Appendix C of the AIA (APP-063)), and now include the locations of tree protection fencing likely to be required during the construction stage. These are not exhaustive at this stage and further fencing and confirmation on their positioning would need to be confirmed by the Principal Contractor as part of the final AMS.
- 3.2.2. The protected areas once installed shall not be moved or altered without approval by an arboriculturist and, where necessary following consultation with the local authority.

3.3. Tree protective barriers

- 3.3.1. The locations of temporary protective fencing are to be finalised and confirmed during pre-commencement site briefings. Where there is existing boundary fencing which is deemed adequate by an arboriculturist to protect the retained trees, no additional fencing shall be provided. Similarly, where retained trees are positioned in areas of no proposed construction activity then these shall not be identified for protective fencing. These areas shall be kept under review by the supervising engineers and if works are required, including any potential access route, then the arboriculturist or ECoW is to agree the location of protective fencing.
- 3.3.2. Where site hoarding fencing is proposed, this is permitted to form part of the tree protective barriers where deemed appropriate by the arboriculturist or ECoW.
- 3.3.3. Where existing vegetation scheduled for removal prevents the installation of the protective fencing for adjacent retained trees, then this is permitted for removal prior to the erection of the fencing. Any plant involved in the removal of vegetation shall be positioned outside of the RPAs of the retained trees.

- 3.3.4. The default specification for the protective barriers could comprise 2 m tall welded mesh panels on rubber or concrete feet or other similar protection measures. The panels would be joined together using a minimum of two anti-tamper couplers, installed so they can only be removed from inside the fence. The distance between the fence couplers is to be at least 1m and is to be uniform throughout the fence; the panels are to be supported by inner side stabiliser struts attached to a base plate secured on a block tray. See Figure 3.1 below.
- 3.3.5. For any veteran tree or areas deemed to be of high risk to adjacent trees for extensive construction activity, the use of rigid fencing shall be considered in accordance with default specification set out in BS5837:2012, with the stabiliser strut to be fixed to a post that is set in concrete. Any excavation for supporting post is to be undertaken by hand and surrounded by an impermeable geotextile as curing cement is toxic to tree roots.

Figure 3.1: Illustrative tree protection fencing



3.4. Ground protection matting

- 3.4.1. The locations for ground protection matting shall be illustrated on the TPPs or specified as required by the arboriculturist or ECoW and recorded within the monitoring pro-forma supplied in Appendix A of this report.
- 3.4.2. If ground protection matting is required to protect tree roots and to minimise ground compaction within RPAs, then an example of a proprietary matting product is

Ground-Guards (<http://www.ground-guards.co.uk/solutions/tree-root-protection/>). A double layer of Ground-Guards panels with a 150mm layer of wood chips sandwiched in-between will create a suitably cushioned base to facilitate access within RPAs where absolutely necessary

3.5. Compound areas

- 3.5.1. The locations of site accommodation, temporary buildings and areas used for storage of materials are to be located outside of the CEZ' of retained trees.

4. Specific mitigation measures

4.1. General

- 4.1.1. The areas for the specific mitigation measures detailed below are to be confirmed prior to construction and in consultation with an arboriculturist.

4.2. Hand excavations within RPAs

- 4.2.1. Hand excavations within the RPAs of trees shall be specified as a last resort and following a review of the works in the location to make certain there are no other design solutions to avoid the RPA of retained trees.
- 4.2.2. If hand excavations are specified, then they shall accord with the following:
- a. The area to receive excavations is to be clearly marked out on site and agreed with the arboriculturist.
 - b. Hand tools are to be used, with all spoil to be positioned outside of the RPA of the tree.
 - c. Vacuum excavation is permitted where deemed appropriate by the arboriculturist or ECoW. Small plant may also be permitted in consultation with the arboriculturist or ECoW.
 - d. The use of an air-spade rig to loosen the sub-base material can be instructed by supervising arboriculturist if required to loosen clay based material or similar.
 - e. Once excavated if tree roots are located, these are to be moved if sufficiently pliable or pruned on the advice of the arboriculturist.

4.3. No-dig construction

- 4.3.1. Where no-dig construction is specified this is due to works having to be undertaken within the RPAs of trees, and to limit their impact on the underlying tree roots. The exact locations for this approach are to be confirmed prior to construction.
- 4.3.2. A no-dig construction approach uses a product such as Cellweb TRP® as supplied by Geosynthetics Limited (<http://www.geosyn.co.uk/>). This cellular confinement system will laterally confine the sub-base material into three-dimensional interconnected honeycomb cells, reducing compaction and maintaining the soil bulk density at levels suitable for tree root growth. It also prevents direct tree root severance by building on top of existing ground levels. The product can be laid in multiple sections to account for level changes.
- 4.3.3. The installation method shall accord with the following:
- a. The area to receive the no-dig approach is to be clearly marked out on site and agreed with the arboriculturist.
 - b. The existing turf or vegetative layer within the works area is to be treated with a glyphosate-based herbicide as per the manufacturer's guidelines or removed

using a turf cutter or strimmer. This is to prevent any scraping of the turf layer and potential damage to underlying tree roots.

- c. The cellweb product is then to be laid as per the manufacture's guidelines and the cells are to be filled with clean angular stone of sufficient type to maintain porosity and the surface course is to be a permeable tarmac.

4.4. Root pruning

- 4.4.1. As a last resort, where tree roots have to be severed, the pruning points shall be agreed with the supervising arboriculturist, and pruning undertaken using a sharp pair of secateurs or a hand saw, or if pliable, moved out of the construction profile and re-covered within topsoil.
- 4.4.2. On completion of the pruning operations the remaining grassed or soft surfaces surrounding the tree shall have soil amendments applied that include phosphites to maximise the trees resilience to fungal colonisation.

4.5. Veteran trees

- 4.5.1. The location of veteran trees is presented on Figure 2.2 of the ES (APP-039) and also in the AIA (APP-063).
- 4.5.2. All the impacts on the veteran trees shall be reviewed in order to confirm the impact and mitigation measures during detailed design and the following processes shall be undertaken:
 - a. Design review with arboriculturist, ECoW and construction/design package manager.
 - b. Where works cannot be positioned outside of RPAs or buffer zones in accordance with Natural England guidance, then the extent of the infringement is to be reviewed and further investigation specified as deemed appropriate by the arboriculturist.
 - c. Further investigation option 1 – trial pits under arboricultural supervision using vacuum excavation or an air-spade rig to determine the presence of actual roots within the works area.
 - d. Further investigation option 2 – root zone mapped using Arboradix, then the findings overlaid onto detailed design drawings to establish actual root loss and inform the suitability of the works and retaining the tree.
 - e. Where design review determines there is no feasible solution for tree retention then this is to be confirmed in writing through an update to the final AMS document.
 - f. Where the design review and further investigation determines the tree can be retained, then mitigation measures shall be confirmed in writing by the arboriculturist through an update to the final AMS document.

4.6. TPO trees

- 4.6.1. The TPOs impacted upon by the Scheme are detailed within the AIA (APP-063), associated TPPs and in article 24 and Schedule 5 of the dDCO.
- 4.6.2. The trees or area of trees within the TPOs that were recorded as requiring removal are shown on the TPPs in Appendix B of this document. This will be reviewed during the detailed design stages of the Scheme.

5. Tree works

5.1. General

- 5.1.1. All tree works are to be undertaken in line with current recommendations in accordance with BS3998:2010 Tree Work – Recommendations and comply with the current Arboriculture and Forestry Advisory Group (AFAG) or applicable Forestry Industry Safety Accord (FISA) advice published by the Health and Safety Executive (HSE) or FISA.
- 5.1.2. Tree works are to be planned to ensure protection of people, property and wildlife. If the works are to be undertaken during the bird nesting season, then advice is to be sought from the ECoW prior to undertaking tree works.
- 5.1.3. The trees to be removed or worked upon for facilitation, such as pruning, shall be clearly marked by the supervising arboriculturist or ECoW prior to any tree works commencing on site. These works are to be agreed with the supervising arboriculturist or ECoW.
- 5.1.4. The tree works contractor shall provide access routes and loading bay locations for approval by the main contractor. These shall take into account the retention of trees and following existing woodland access tracks or hard surfaces to try and reduce tree removals. The tree works contractor will have to submit a risk assessment and method statement for review by the Principal Contractor or Supervisor prior to commencing works on site.

5.2. Tree works schedule

- 5.2.1. All current trees and areas of trees for removal are illustrated on the TPPs within Appendix B of this outline AMS. These are to be reviewed as part of the detailed design phase of the Scheme and updated to support the CEMP that will be produced by the Principal Contractor.
- 5.2.2. The method of removal shall be informed by the site constraints.
- 5.2.3. The requirements for facilitation pruning operations are to be confirmed prior to construction and covered within the pre-commencement site meetings for each phase of the works.
- 5.2.4. The ability to retain further trees shall be kept under review as part of construction planning.

Appendices

Appendix A. Tree monitoring pro-forma

A.1. Tree monitoring pro-forma

Job number:		
Document ref:		
Revision:		
Purpose description:		
Originated:		
Checked:		
Authorised:		
Date:		
Notice:		

Purpose of Monitoring Visit

□

Date of Visit

--

Observations

□

Recommended Actions

□

Relevant Photographs

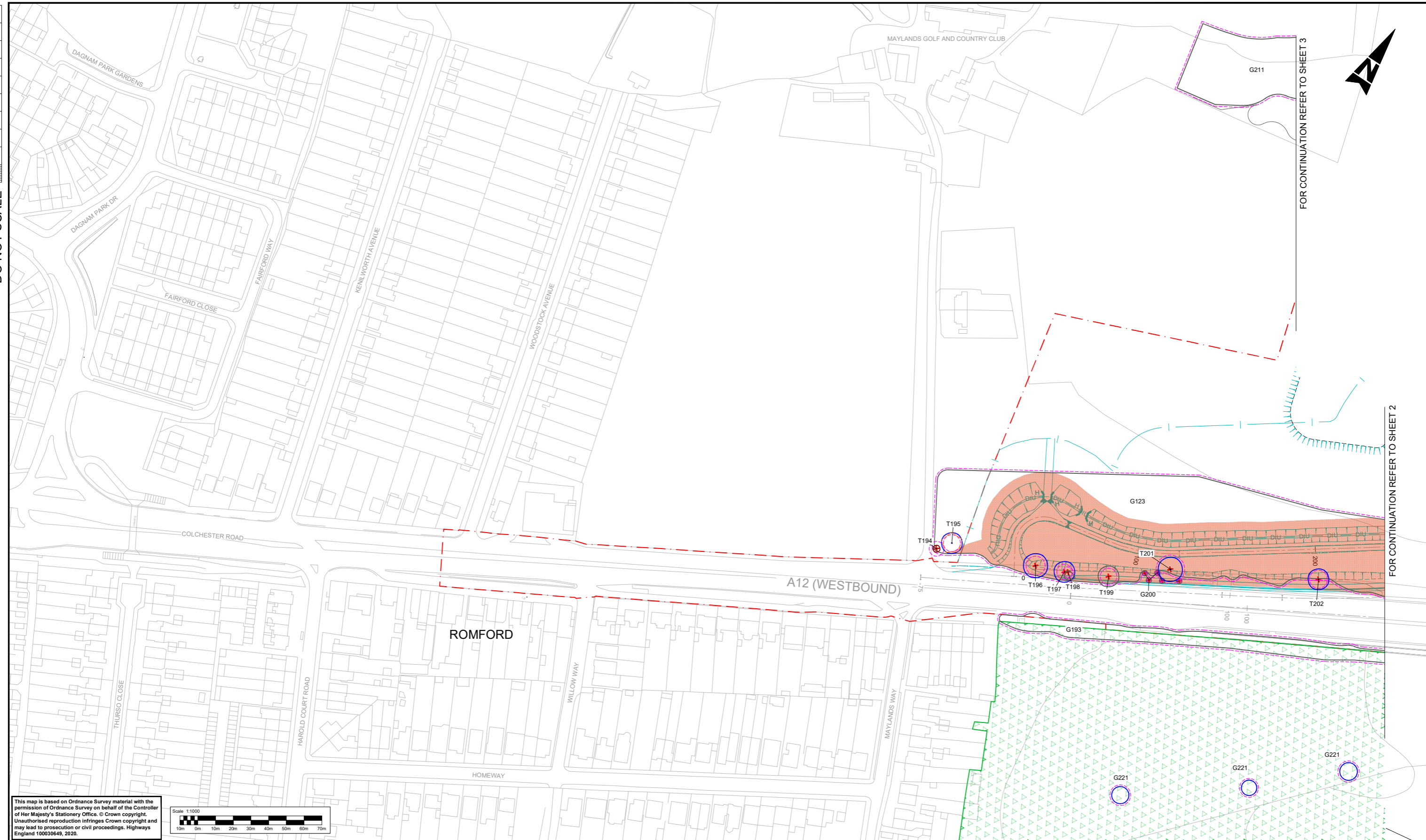
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Appendix B. Tree protection plans

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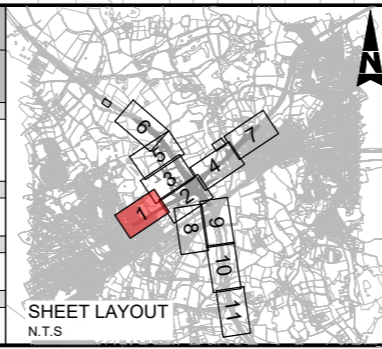


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	CATEGORY U TREE / GROUP / WOODLAND
	VETERAN TREE
	ROOT PROTECTION AREA
	REFERENCE NUMBER: INDIVIDUAL TREE / TREE GROUP / WOODLAND
	TREE PRESERVATION ORDER (TPO) AREA / INDIVIDUAL
	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
	DCO BOUNDARY
	TREE PROTECTION FENCING

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).	
Construction	
CI: WORKS IN CLOSE PROXIMITY OF BPA LINE	
CII: WORKS IN CLOSE PROXIMITY OF O/H CABLES	
CIV: WORKS IN CLOSE PROXIMITY OF LHP MAIN	
Maintenance / Cleaning	
CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	
NONE IDENTITIES IN THIS STAGE	
Decommissioning / Demolition	
NONE IDENTITIES IN THIS STAGE	



Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

Drawing Subtitle: DCO EXAMINATION

Status: A4

Project Title: M25 junction 28 improvement scheme

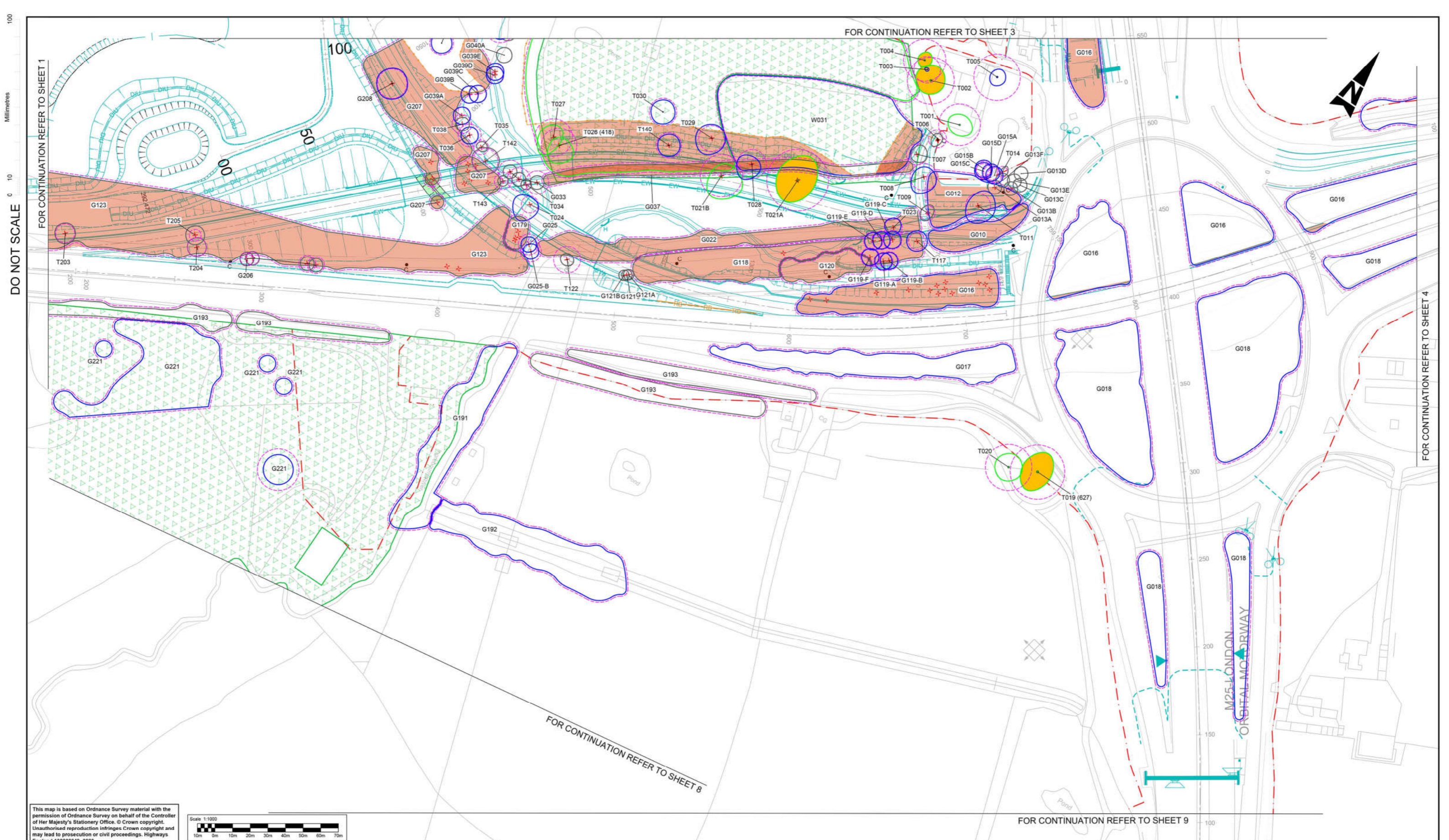
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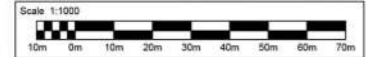
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Drawing Title	
Tree Protection Plan Sheet 1 of 11	
Drawing Number	HE551519
Project	XX
Originator	ATK
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Location	
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Sheet	1 of 11
Rev.	1

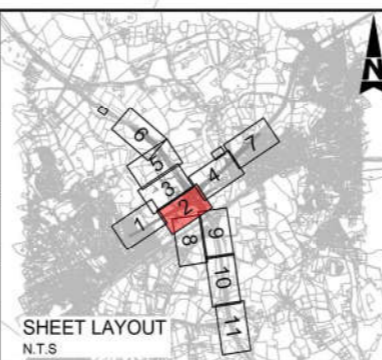


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T000 / G000 / W000	REFERENCE NUMBER: INDIVIDUAL TREE / TREE GROUP / WOODLAND
	TREE PRESERVATION ORDER (TPO) AREA / INDIVIDUAL
	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
	DCO BOUNDARY
	TREE PROTECTION FENCING

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CIV: WORKS IN CLOSE PROXIMITY OF LHP MAIN	
Maintenance / Cleaning	
CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	NONE IDENTITIES IN THIS STAGE
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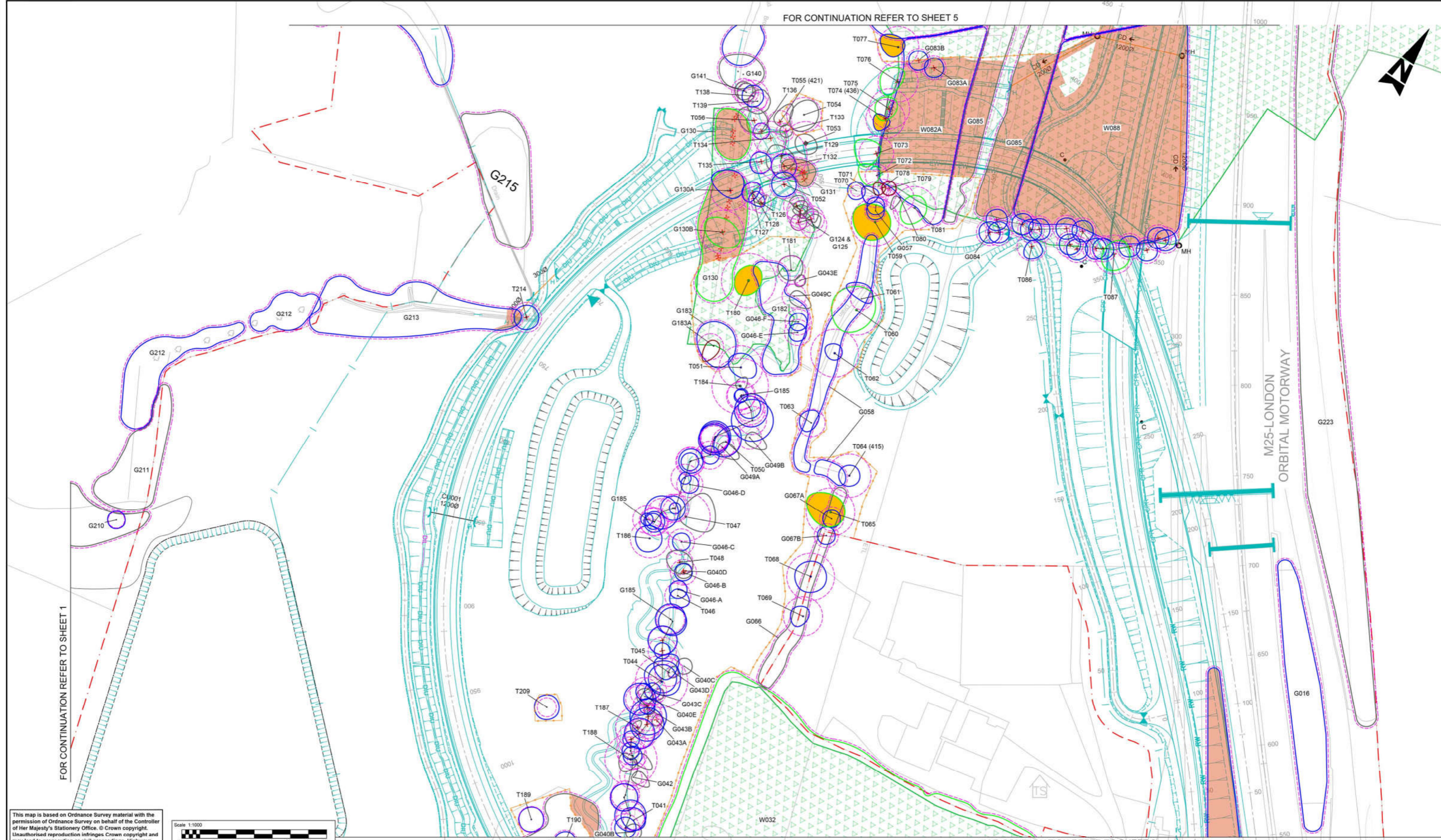
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Tree Protection Plan Sheet 2 of 11	
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Project	XX
Originator	ATK
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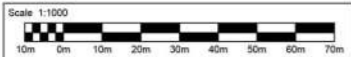
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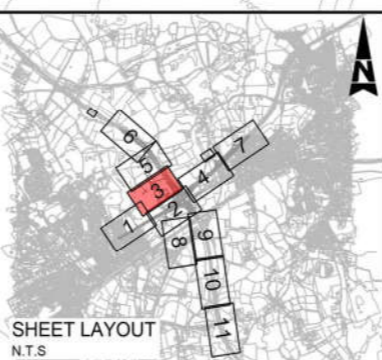
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	CATEGORY U TREE / GROUP / WOODLAND
	VETERAN TREE
	ROOT PROTECTION AREA
	TREE PRESERVATION ORDER (TPO) AREA / INDIVIDUAL
	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
	DCO BOUNDARY
	TREE PROTECTION FENCING
T000 / G000 / W000	REFERENCE NUMBER: INDIVIDUAL TREE / TREE GROUP / WOODLAND

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
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	CIV: WORKS IN CLOSE PROXIMITY OF LHP MAIN
Maintenance / Cleaning	CONVOLUTED WINTER MAINTENANCE ROUTE
Use	NONE IDENTITIES IN THIS STAGE
Decommissioning / Demolition	NONE IDENTITIES IN THIS STAGE



Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

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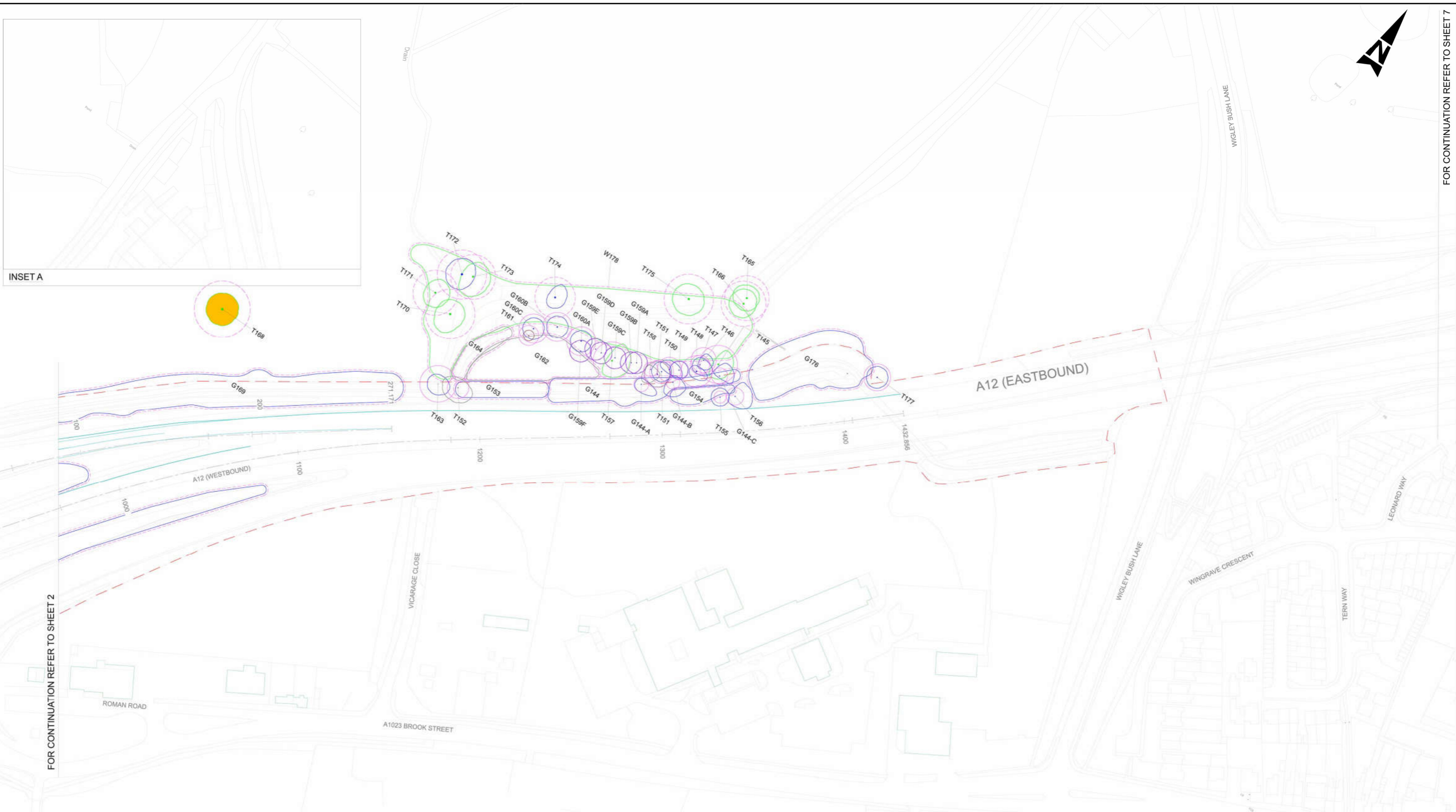
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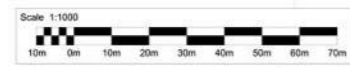
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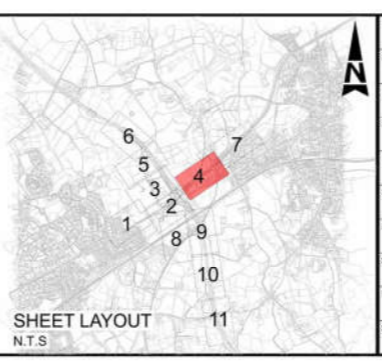


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	PROPOSED SCHEME
	DCO BOUNDARY
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Use	NONE IDENTITIES IN THIS STAGE
Decommissioning / Demolition	NONE IDENTITIES IN THIS STAGE



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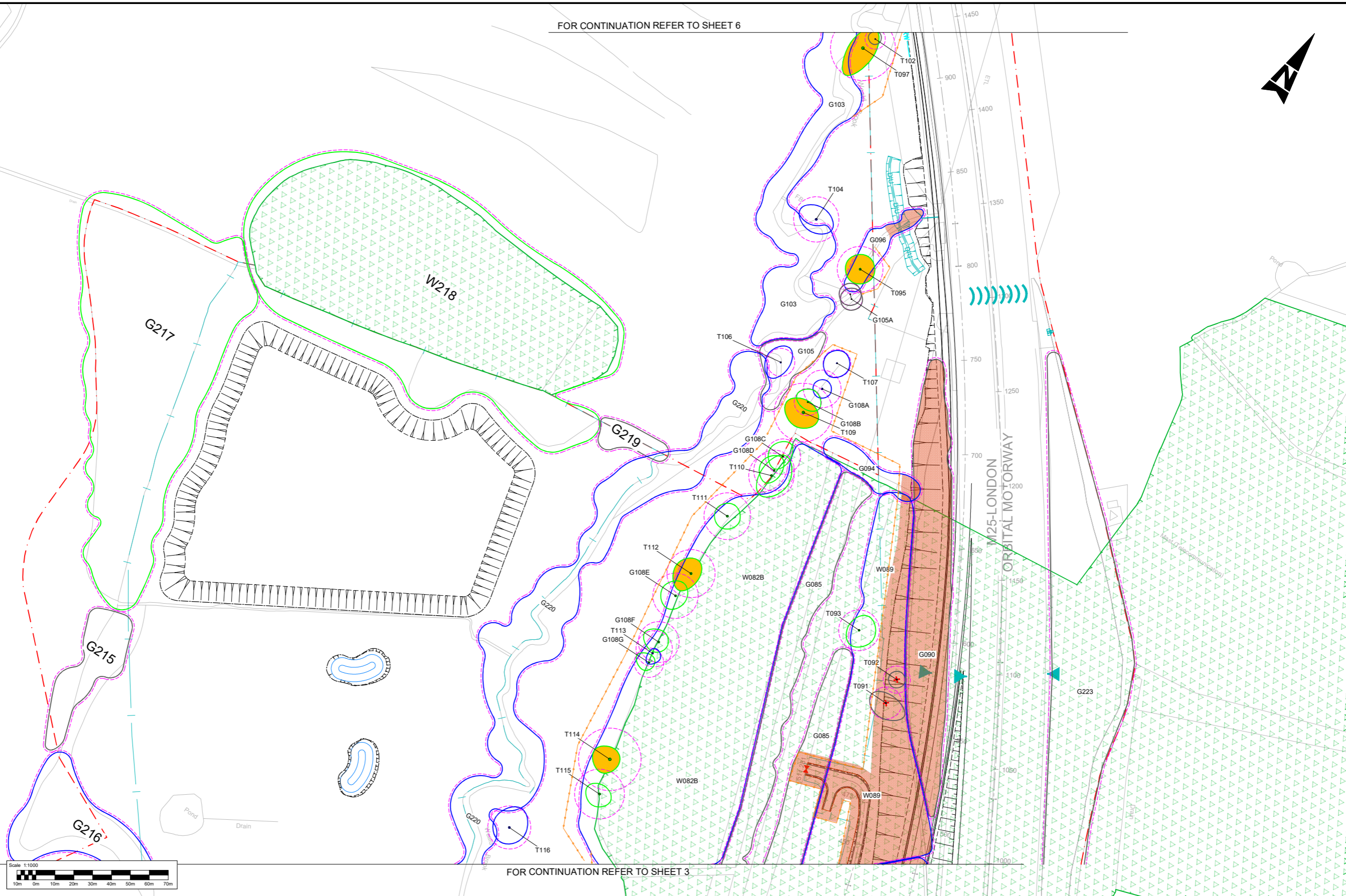
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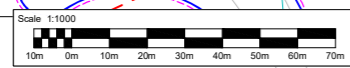
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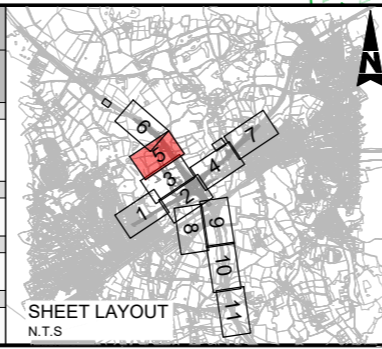


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	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
	DCO BOUNDARY
	TREE PROTECTION FENCING

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C2:	WORKS IN CLOSE PROXIMITY OF O/H CABLES
C3:	WORKS IN CLOSE PROXIMITY OF NHP MAIN
C4:	WORKS IN CLOSE PROXIMITY OF LHP MAIN
Maintenance / Cleaning	
CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	
NONE IDENTITIES IN THIS STAGE	
Decommissioning / Demolition	
NONE IDENTITIES IN THIS STAGE	



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Project Title: M25 junction 28 improvement scheme

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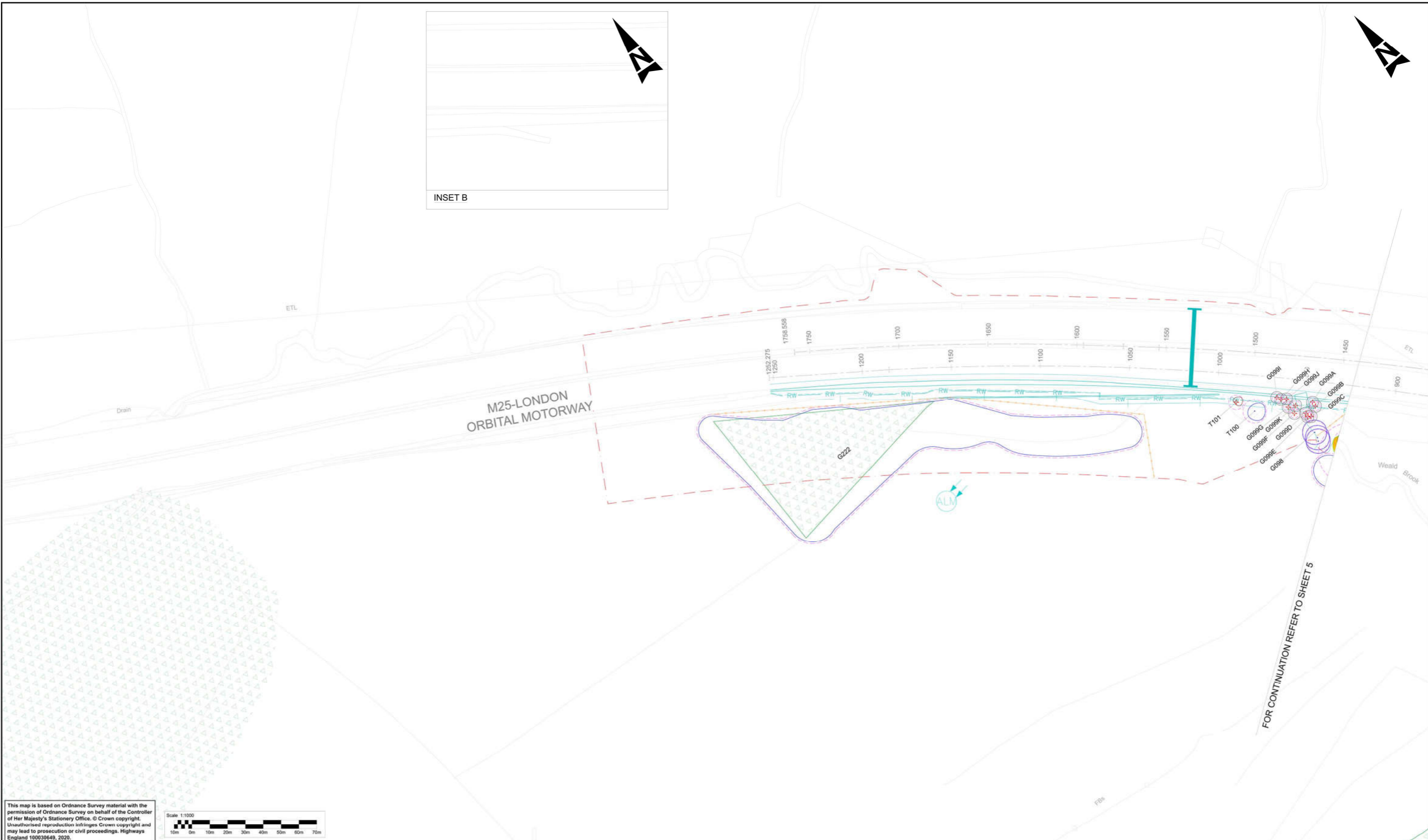
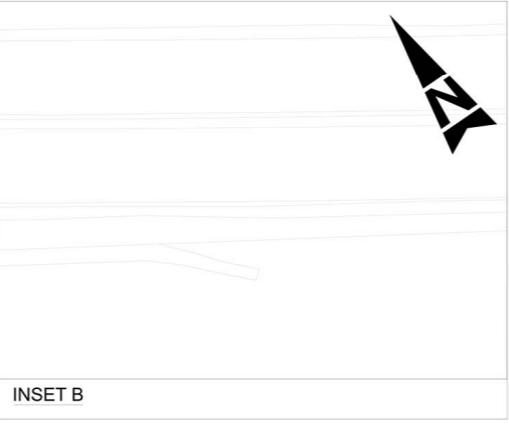
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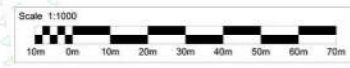
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	PROPOSED SCHEME
	DCO BOUNDARY
	TREE PROTECTION FENCING
	REFERENCE NUMBER: INDIVIDUAL TREE / TREE GROUP / WOODLAND

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Civ:	WORKS IN CLOSE PROXIMITY OF LHP MAIN
Maintenance / Cleaning	
CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	
NONE IDENTITIES IN THIS STAGE	
Decommissioning / Demolition	
NONE IDENTITIES IN THIS STAGE	

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

Drawing Suitability	DCO EXAMINATION	Status	A4	Project Title	M25 junction 28 improvement scheme
		Amlin House Atkins 4th Floor 90-96 Victoria Road Chelmsford Essex CM1 1QU Tel: +44 (0)1245 245245 Fax: +44 (0)1245 345010 www.atkinglobal.com		Drawing Title TREE PROTECTION PLAN SHEET 6 OF 11	
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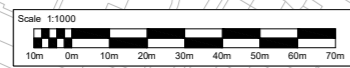
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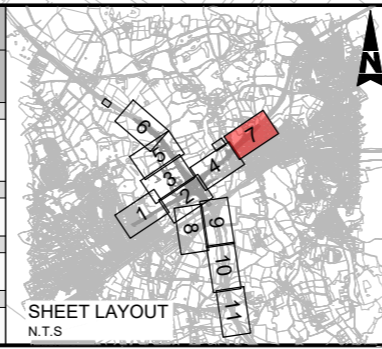


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	ROOT PROTECTION AREA
	REFERENCE NUMBER: INDIVIDUAL TREE / TREE GROUP / WOODLAND
	TREE PRESERVATION ORDER (TPO) AREA / INDIVIDUAL
	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
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CIV: WORKS IN CLOSE PROXIMITY OF LHP MAIN	
Maintenance / Cleaning	
CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	
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Decommissioning / Demolition	
NONE IDENTITIES IN THIS STAGE	



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Drawing Title	TREE PROTECTION PLAN SHEET 7 OF 11		
Drawing Number	HE551519	Originator	ATK
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Original Size	A1	Scale	1:1000
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Rev.	1	Rev.	1

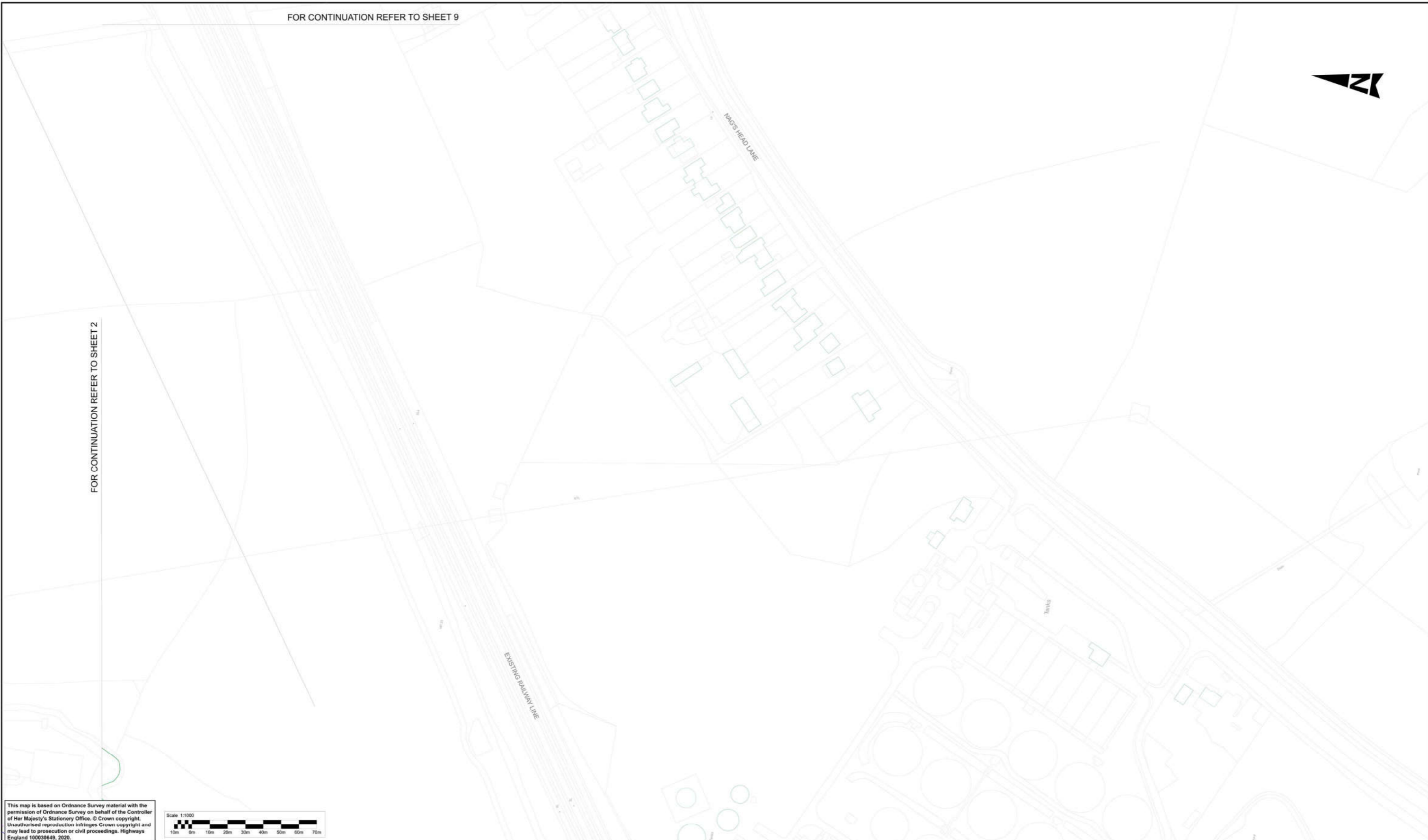
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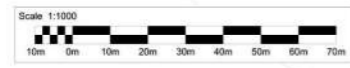
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FOR CONTINUATION REFER TO SHEET 2

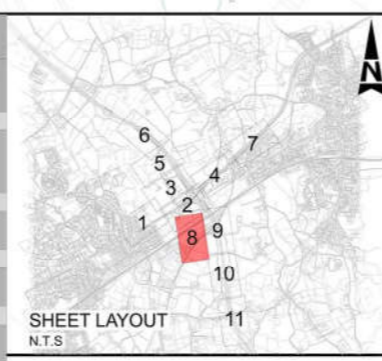


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	TREE PRESERVATION ORDER (TPO) AREA / INDIVIDUAL
	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
	DCO BOUNDARY

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).	
Construction	
Ci:	WORKS IN CLOSE PROXIMITY OF BPA LINE
Cii:	WORKS IN CLOSE PROXIMITY OF O/H CABLES
Ciii:	WORKS IN CLOSE PROXIMITY OF NHP MAIN
Civ:	WORKS IN CLOSE PROXIMITY OF LHP MAIN
Maintenance / Cleaning	
CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	
NONE IDENTITIES IN THIS STAGE	
Decommissioning / Demolition	
NONE IDENTITIES IN THIS STAGE	



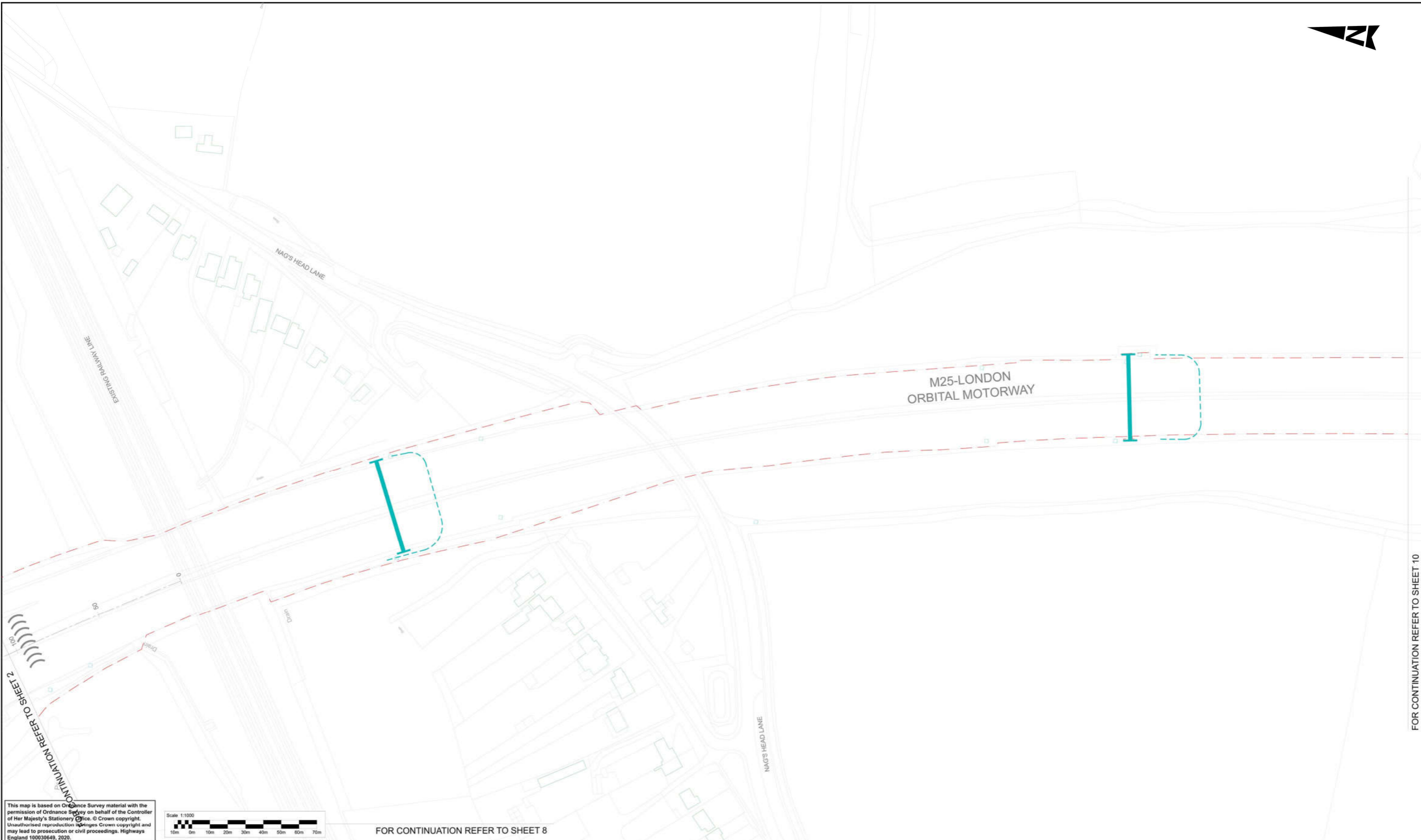
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Drawing Suitability	DCO EXAMINATION	Status	A4	Project Title	M25 junction 28 improvement scheme
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Client 		Working on behalf of highways england		Drawing Number Project HE551519 - ATK - ELS - XX - DR - LL - 000208	
Original Size	A1	Scale	1:1000	Project Ref. No.	5158157
Sheet	8 of 11	Rev.	1	Volume	ELS - DR - LL - 000208

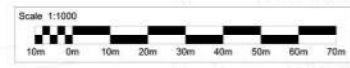
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Millimetres

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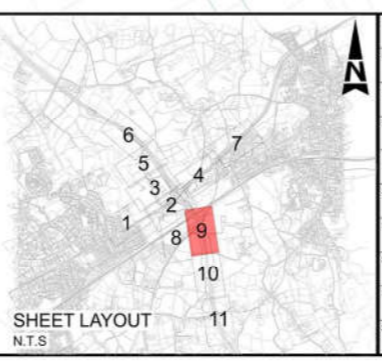


FOR CONTINUATION REFER TO SHEET 8

FOR CONTINUATION REFER TO SHEET 10

KEY :	
	CATEGORY A TREE / GROUP / WOODLAND
	CATEGORY B TREE / GROUP / WOODLAND
	CATEGORY C TREE / GROUP / WOODLAND
	CATEGORY U TREE / GROUP / WOODLAND
	VETERAN TREE
	ROOT PROTECTION AREA
	REFERENCE NUMBER: INDIVIDUAL TREE / TREE GROUP / WOODLAND
	TREE PRESERVATION ORDER (TPO) AREA / INDIVIDUAL
	TREE TO BE REMOVED AS PART OF WORKS
	EXTENT OF TREE GROUP TO BE REMOVED AS PART OF WORKS
	PROPOSED SCHEME
	DCO BOUNDARY

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).	
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Use	NONE IDENTITIES IN THIS STAGE
Decommissioning / Demolition	NONE IDENTITIES IN THIS STAGE



Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

Drawing Suitability	DCO EXAMINATION	Status	A4	Project Title	M25 junction 28 improvement scheme
		Amlin House Atkins 4th Floor 90-96 Victoria Road Chelmsford Essex CM1 1QU Tel: +44 (0)1245 245245 Fax: +44 (0)1245 345010 www.atkinglobal.com		Drawing Title TREE PROTECTION PLAN SHEET 9 OF 11	
		Working on behalf of		Drawing Number Project HE551519 - ATK - ELS - XX - DR - LL - 000209	
Client	highways england	Location	A1	Scale	1:1000
Project Ref. No.	5158157	Sheet	9 of 11	Rev.	1

DO NOT SCALE

Millimetres

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M25-LONDON ORBITAL MOTORWAY



FOR CONTINUATION REFER TO SHEET 9

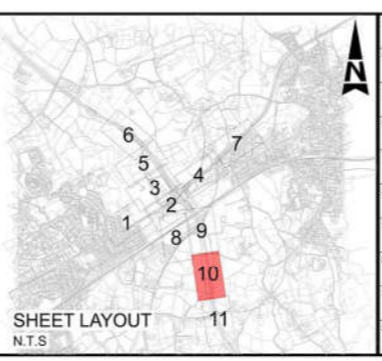
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	T000 / G000 / W000
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CONVOLUTED WINTER MAINTENANCE ROUTE	
Use	NONE IDENTITIES IN THIS STAGE
Decommissioning / Demolition	NONE IDENTITIES IN THIS STAGE



Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

Drawing Suitability: DCO EXAMINATION

Status: A4

Project Title: M25 junction 28 improvement scheme

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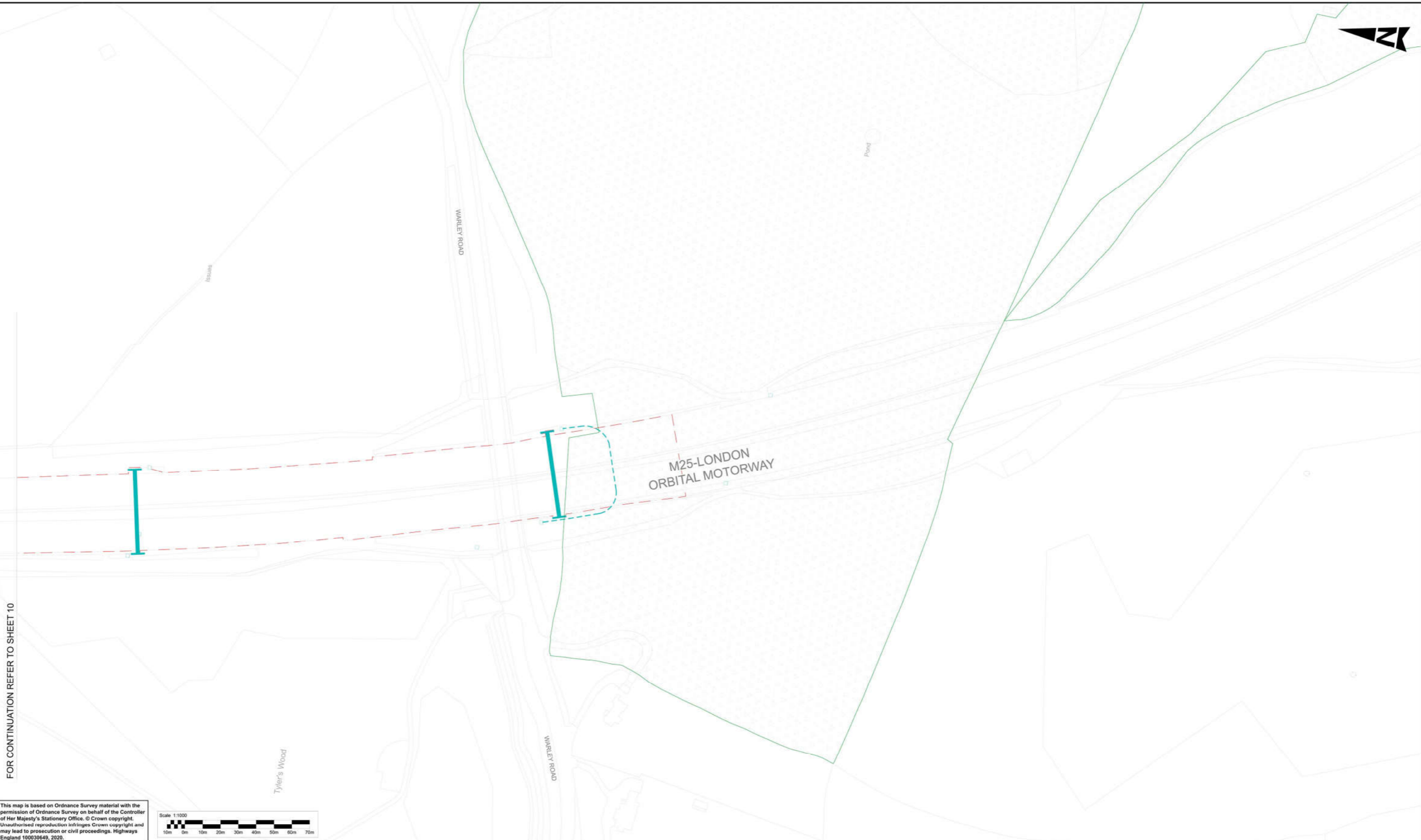
Amlyn House
Atkins 4th Floor
90-96 Victoria Road
Chelmsford
Essex CM1 1QU
Tel: +44 (0)1245 245245
Fax: +44 (0)1245 345010
www.atkinsglobal.com

Client: Working on behalf of **highways england**

Drawing Number	Project	Originator	Volume	
HE551519	XX	ATK	ELS	
Type	Role	Number		
- DR - LL - 000210				
Original Size	Scale	Project Ref. No.	Sheet	Rev.
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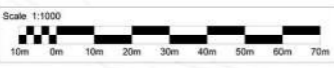
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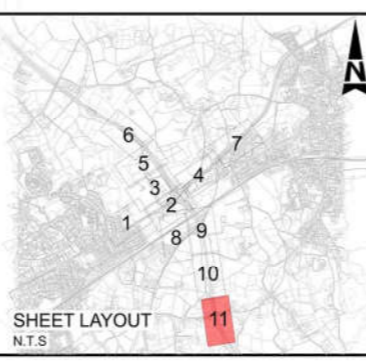
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Drawing Suitability	DCO EXAMINATION	Status	A4	Project Title	M25 junction 28 improvement scheme
		Amlin House Atkins 4th Floor 90-96 Victoria Road Chelmsford Essex CM1 1QU Tel: +44 (0)1245 245245 Fax: +44 (0)1245 345010 www.atkinglobal.com		Drawing Title TREE PROTECTION PLAN SHEET 11 OF 11	
Client 		Drawing Number	HE551519	Originator	ATK
Project XX		Type	- DR -	Volume	LL - 000211
Original Size	A1	Scale	1:1000	Project Ref. No.	5158157
		Sheet	11 of 11	Rev.	1

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Highways England Company Limited registered in England and Wales number 09346363

Appendix G. Section 61

[Note: Principal Contractor to include Section 61 consents]

Appendix H. Environmental consents checklist

[Note: Principal Contractor to update environmental consents checklist or similar document]

Table H.1: Environmental consents checklist

Notice/Order/Consent/Licence	Legislation	Authority
F10 Notification	Construction (Design and Management) Regulations 2015	Health and Safety Executive
Planning Consent for building, mining, or other engineering operations in, on or over land	The Town and Country Planning Act 1990 [England and Wales]	Local authority
Environmental Impact Assessment Screening Request/Environmental Statement	Infrastructure Planning (Environmental Impact Assessment) Regulations 2009	Secretary of State
Development Consent Order	Planning Act 2008	Secretary of State
Habitats Regulation Assessment Screening	Conservations of Habitats and Species Regulations 2010	Natural England
Badger licence for any work within 30m of an occupied sett	Protection of Badgers Act 1992	Natural England
Great Crested Newts and Bat Mitigation Licence	Regulation 55 of the Conservation of Habitats and Species Regulations 2017	Natural England
Water Discharge Permit	Environmental Permitting (England and Wales) Regulations 2016 (as amended)	Environment Agency
Waste exemptions and permits for storage, use, treatment and disposal	Environmental Permitting (England and Wales) Regulations 2016 Environmental Protection Act 1990 (as amended)	Environment Agency or Local Planning Authority

Notice/Order/Consent/Licence	Legislation	Authority
	Waste (England and Wales) Regulations 2011 Hazardous Waste (England and Wales) Regulations 2005	
Waste operation permit	Environmental Permitting (England and Wales) Regulations 2016	Environment Agency
Section 61	Control of Pollution Act 1974	Local authority
Removal of invasive species	Waste (England and Wales) Regulations 2011	Environment Agency
Pesticide Use	Control of Pesticides Regulations 1986	Natural England/ Environment Agency
Materials Management Plan	CL:AIRE Code of Practice	Qualified persons
Waste Carrier Licence	Control of Pollution (Amendment) Act 1989	Environment Agency
Hazardous Waste	Hazardous Waste (England and Wales) Regulations 2005	Environment Agency

Appendix I. Register of environmental legislation

Table I.1: Legislation, policies and strategies

Legislation, policy or strategy	Requirement	Comments/actions
General		
The Construction (Design and Management) Regulations 2015	Places legal duties on virtually everyone involved in construction work. Known as 'duty holders' and include clients, principle designer, designers, principal contractors, contractors and workers.	All works during design and construction to comply with duties held under the Regulations. All personnel to be competent within the role they are appointed to.
Planning Act 2008	Sets out the framework for the DCO process for Nationally Significant Infrastructure Projects.	The Client must ensure that the process is conducted. The Principal Contractor is to ensure that all operations are conducted within the extent of the DCO granted.
Countryside Rights of Way Act 2000	Relates to public access and the adoption of core paths. Access to Rights of Way should be maintained and public notice should be given for any access diversions.	The REAC and the Schedule of Mitigation, lists the requirements in relation to access.
Environmental Protection Act 1990	To prevent pollution from emissions to air, land or water. Part III sets out statutory nuisance provisions that local authorities have in relation to smoke, dust, gas, fumes, steam, smell, accumulation, deposit, noise or vibration that is prejudicial to health or a nuisance.	Ensure that the work complies with the mitigation works detailed in the ES and in the REAC, the Schedule of Mitigation. Include necessary measures within the Health and Safety file. The Principal Contractor is to prepare method statements relating to emission to air, land and water.

Legislation, policy or strategy	Requirement	Comments/actions
Highways Act 1980	<p>Relate to duties and liabilities in relation to road construction and management.</p> <p>Carry out consultation with stakeholders and ensure information on footpath/road closures will be provided at an early stage.</p>	<p>If consent to close footpaths and roads is required this will be applied for and timing constraints built into the programme.</p>
Noise and vibration		
Environmental Protection Act 1990 (as amended)	<p>Part III of the Act sets out statutory nuisance provisions that local authorities have in relation to any smoke, dust, gas, fumes, steam, smell, accumulation, deposit, noise or vibration that is prejudicial to health or a nuisance.</p> <p>Applies to noise and vibration from construction activities, which will be designed to minimise potential affects wherever possible, closely monitored and accompanied by risk assessments.</p>	<p>Principal Contractor to ensure that works comply with the REAC the Schedule of Mitigation, and to include necessary measures within the Health and Safety file.</p> <p>Principal Contractor is to prepare method statements to address noise and vibration, including restricting working hours to minimise disruption to residents caused by noise.</p>
Control of Pollution Act 1974 (as amended)	<p>Consult with the local authorities over the need to apply for Section 61 Consent if the works are likely to have a significant impact on the local community due to the generation of noise and vibration on site.</p>	<p>Principal Contractor to apply for a Section 61 Consent, if the local authorities require one.</p>
Environmental Noise (England) Regulations 2006	<p>The regulations implement the European Environmental Noise Directive in England and require Important Areas to be identified.</p>	<p>Important Areas identified from strategic noise mapping are considered in the Environmental Statement to ensure impacts at these locations are minimised.</p>
Noise Policy Statement for England (NPSE) 2010	<p>Within the context of Government policy on sustainable development, the NPSE requires</p>	<p>The Scheme incorporates mitigation measures in its design to avoid significant adverse effects</p>

Legislation, policy or strategy	Requirement	Comments/actions
	that significant adverse effects as a result of the Scheme are avoided, adverse impacts are mitigated and minimised, and that the Scheme contributes to the enhancement of the acoustic environment.	and to minimise adverse impacts during the operation phase, which are shown in the ES to improve existing noise levels. Mitigation measures are also proposed for the construction phase to minimise impacts.
Land Compensation Act 1973	This Act is relevant to the operational phase of the Scheme. Part I Compensation for depreciation caused by use of public works	This will be reviewed on a case-by-case basis subject to any claims made.
Noise Insulation Regulations 1975 (as amended)	The Noise Insulation Regulations impose a duty on authorities to undertake or make a grant in respect of the cost of undertaking noise insulation work in or to eligible buildings, subject to meeting certain criteria given in the Regulation.	No buildings were identified that meet the requirements for noise insulation during the construction phase or the operational phase due to the Scheme. This will be reviewed on a case-by-case basis subject to any claims made.
Infrastructure Act 2015	Section 5(2) of the Infrastructure Act and the Highways England Licence seek to minimise the environmental impacts of projects, protect and enhance the quality of the surrounding environment and conform to the principles of sustainable development.	The Scheme incorporates mitigation measures to avoid significant adverse effects and to minimise adverse impacts during the construction and operation phases.
National Policy Statement for National Networks 2014	<ul style="list-style-type: none"> • The NPS NN states the following factors as determinants of the likely noise impact: • construction noise and the inherent operational noise from the proposed development and its characteristics. • the proximity of the proposed development to noise sensitive premises and noise sensitive areas. 	The ES includes assessments of impacts arising in the construction and operation phases of the Scheme, and incorporates mitigation measures to minimise impacts. Potential impacts to ecologically sensitive sites due to noise are also considered.

Legislation, policy or strategy	Requirement	Comments/actions
	<ul style="list-style-type: none"> the proximity of the proposed development to quiet places and other areas that are particularly valued for their tranquillity, acoustic environment or landscape quality. the proximity of the proposed development to designated sites where noise may have an adverse impact on the special features of interest, protected species or other wildlife. 	
National Planning Policy Framework 2019	<ul style="list-style-type: none"> Paragraph 180 states that 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: <ul style="list-style-type: none"> mitigate and reduce to a minimum the 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. 	The Scheme incorporates mitigation measures to avoid significant adverse effects and to minimise adverse impacts during the construction and operation phases.

Legislation, policy or strategy	Requirement	Comments/actions
	<ul style="list-style-type: none"> limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation. 	
<p>The Highways Noise Payments and Movable Homes (England) Regulations 2000</p>	<p>These regulations are relevant to the operational phases of the Scheme. They provide highway authorities with a discretionary power to provide a noise payment where new roads are to be constructed or existing ones altered. The relevant Regulations set out the criteria which should be applied in assessing eligibility for making such payments.</p>	<p>Any discretionary power to provide a noise payment will be assessed using the relevant Regulations criteria.</p>
<p>Biodiversity</p>		
<p>Wildlife and Countryside Act 1981 (as amended)</p>	<p>Provides legal protection for species of flora and fauna and designated sites in UK Britain and allows for a three-stage approach to managing invasive non-native species.</p> <p>No vegetation clearance shall be undertaken between the months of March to June, inclusive. Where protected habitats and/or species are to be either directly or indirectly affected all impacts shall be mitigated (e.g. bats, birds, fish, otters etc.).</p> <p>Under no circumstances shall there be intentional killing or taking of fauna.</p> <p>Provision shall be made for wildlife to continue to utilise corridors.</p>	<p>If tree felling needs to take place, trees will be inspected for bats/birds by a qualified ecologist prior to removal.</p>

Legislation, policy or strategy	Requirement	Comments/actions
<p>Natural Environment and Rural Communities Act 2006</p>	<p>Directly applicable activities:</p> <ul style="list-style-type: none"> • Demolition and site clearance; • Earthworks; • Site set up; • Landscaping; and • Site reinstatement. <p>When works are likely to impact on areas of interest to Natural England this body must be consulted regarding working practices and plans.</p> <p>Part III of the Act makes additional provision for protection of birds, and spread of invasive species.</p>	<p>Where licences and/or permits are required these must be obtained ahead of works.</p>
<p>Conservation of Habitats and Species Regulations 2010</p>	<p>Allows for the designation of Special Areas of Conservation (SACs), and SPAs and protection of certain species. All protected species listed on the schedules of the Regulations are also listed within the Wildlife and Countryside Act 1981 (as amended).</p> <p>Any activities that may affect protected habitat/species, as listed under these Regulations, should be discussed with a suitably qualified ecologist.</p>	<p>The REAC the Schedule of Mitigation, lists all the requirements for protected species.</p>
<p>Protection of Badgers Act 1992 (as amended)</p>	<p>A badger licence is required for an activity that intentionally or recklessly damages, destroys or obstructs access to a badger sett or disturb a badger in its sett.</p>	<p>Badger setts are present close to the construction area which will be protected. If this badger sett or any new badger setts will be</p>

Legislation, policy or strategy	Requirement	Comments/actions
		damaged, destroyed or obstructed, a badger licence will be required from Natural England.
Regulatory Position Statement 178	Assess the Regulatory Position Statement (RPS) for suitability on site specific detail and submit the required information to the Environment Agency.	To bring some control of invasive species within the RPS system when dealing with volumes below specified criteria as outlined with the RPS.
Road drainage and the water environment		
Environmental Protection Act 1990	Aims to prevent pollution from emissions to air, land or water. To comply with the mitigation works detailed in the ES and in the REAC and the Schedule of Mitigation.	Principal Contractor to ensure that the work complies with the REAC the Schedule of Mitigation, for the Scheme, and to include necessary measures within the Health and Safety file.
The Water Act 2003 and Water Act 2014. Pollution Prevention and Control Act 1999.	Aim to prevent the pollution of waters (groundwater, rivers, streams, inland waters, territorial waters and some coastal waters) by making it an offence to cause or knowingly permit any poisonous, noxious, or polluting material, or any solid waste to enter them. Storage of hazardous materials within the construction site must be secured to avoid ground/groundwater contamination. Offences include allowing spillages, leakages of chemicals/oils, or fire-fighting waters to enter surface water drains. Works in and around any contaminated land must ensure that the risk of migration of contamination into watercourses is avoided.	Principal Contractor to prepare method statements to address groundwater and surface water and spillage of fuel and oil. Principal Contractor to apply for all necessary consents, permits and licences as required. Principal Contractor to prepare drainage method statement, emergency pollution plan and emergency procedures. Principal Contractor to prepare a Health and Safety file.

Legislation, policy or strategy	Requirement		Comments/actions
	Consent/approval required for any discharge of water to watercourse.		
Water Industry Act 1991 (Amendment) (England and Wales) Regulations 2009	Site welfare facilities may be required to seek a trade effluent consent, which would be covered by this legislation.		Contractor to obtain necessary consents from the relevant water company.
Water Resources Act 1991	To prevent pollution of controlled waters.	All works (temporary or permanent) within 10 m of a watercourse (or 8 m depending on some by-laws) requires Consent. Either the Environment Agency (in the case of main rivers), the Internal Drainage Board or local authorities for ordinary watercourses issues the consent.	Sections 23, 30 and 32 of the Land Drainage Act 1991 (for which London Borough of Havering and Essex County Council will be the relevant consenting body as the Lead Local Flood Authorities) includes diversion and culverting of an ordinary watercourse. London Borough of Havering has agreed to the disapplication of Section 23, 30 or 32 in the DCO. Consultation is still ongoing with Essex County Council and details of this engagement will be provided within the related Statement of Common Ground.
Land Drainage Act 1991	To mitigate flood risk from development.		
The Water Resources (Abstraction and Impounding) Regulations 2006	Requirement to obtain an extraction licence if extracting more than 20m ³ /day from any watercourse.		Principal Contractor to obtain licence if required.
Flood and Water Management Act 2010 and Commencement Orders	Schedule 3 for drainage system requirements.		
Control of Pesticides Regulations 1986	If there is a need to spray a pesticide near a watercourse then a consent from the Environment Agency is to be obtained.		Principal Contractor to monitor need for pesticide use and if it is required to obtain the consent from the Environment Agency.

Legislation, policy or strategy	Requirement	Comments/actions
Pollution Prevention Guidelines ⁶	Detail good practice advice for undertaking works which may have the potential to cause water pollution.	
Environmental Permitting (England and Wales) Regulations 2016	Process by which to gain a Flood Risk Permit to construct an outfall on a main river, amongst many other permits.	Highways England is seeking to include a Flood Risk Activity Permit, to construct an outfall on a main River, as a Section 150 consent within the DCO for the Scheme. The Environment Agency, has agreed to the disapplication of the legislation, associated with the Environmental Standard Rules Permit (Flood Risk Activity) to construct an outfall on a Main River, based upon the protective provisions included in the DCO.
Landscape and Visual		
National Policy Statement for National Networks 2014	Measures to protect the landscape and assess effects to inform Scheme development.	Considered in development of the Scheme and in preparation of landscape design proposals.
National Planning Policy Framework 2018	Protection of Green Belt and the conservation and enhancement of the environment.	
Countryside and Rights of Way Act 2000	Regulation of rights of way and preservation of access.	
Geology and soils		

⁶ Pollution Prevention Guidelines (PPGs) with particular reference to PPG1 (general guide to the prevention of water pollution), PPG3 (use and design of oil separators in surface water drainage systems), PPG5 (works near or liable to affect watercourses) and PPG6 (working at construction and demolition sites). The PPGs contain a mix of regulatory requirements and good practice advice. They have been withdrawn by the Environment Agency but are still considered good practice advice to avoid pollution of watercourses. All of the PPGs are available from <http://webarchive.nationalarchives.gov.uk/20140328084622/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx>

Legislation, policy or strategy	Requirement	Comments/actions
Environmental Protection Act (EPA) (1990) ⁷	Part 2A of the EPA includes a statutory regime for the identification and remediation of Contaminated Land.	Considered required during pre-construction set up and during construction.
Guiding Principles for Land Contamination (GPLC1) ⁸	This document provides a technical framework for the identification and remediation of contamination through the application of a risk management process.	
Contaminated Land Statutory Guidance 2012 ⁹	The principal objectives of this guidance include the identification and removal of unacceptable risks to human health and the environment.	
Water Resources Act 1991 ¹⁰ (as amended)	The Water Resources Act sets controls of pollution of water sources. It contains information about water quality objectives, powers to prevent and control pollution and pollution offenses.	
Water Framework Directive (WFD) (2000) ¹¹	The purpose of the WFD is to establish a framework for the protection of water bodies. It includes directions that: <ul style="list-style-type: none"> Environmental objectives should be set to ensure that good groundwater status is achieved and that its deterioration is avoided. Upward sustaining trends in the 	

⁷ United Kingdom Parliament (1990) Environmental Protection Act, Accessed on 08/02/2019 from <https://www.legislation.gov.uk/ukpga/1990/43/contents>

⁸ Environment Agency (2010) Guiding Principles for Land Contamination, Accessed on 08/02/2019 from https://www.clare.co.uk/home/news/index.php?option=com_content&view=article&id=192&catid=41&Itemid=256

⁹ Department for Environment, Food and Rural Affairs (2012) Environmental Protection Act: Part 2A Contaminated Land Statutory Guidance, Accessed on 09/02/2019 from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/223705/pb13735cont-land-guidance.pdf

¹⁰ UK Government (1991) The Water Resources Act, Accessed on 08/02/2019 from <http://www.legislation.gov.uk/ukpga/1991/57/contents>

¹¹ European Parliament (2000) Water Framework Directive (Directive 2000/60/EC), Accessed on 08/02/2019 from https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF

Legislation, policy or strategy	Requirement	Comments/actions
	<p>concentration of a pollutant must be identified and reversed;</p> <ul style="list-style-type: none"> • A good status of groundwater requires early action and stable long-term planning of protective measures, owing to the natural time lag in its formation and renewal; and • Monitoring programmes should cover monitoring of the chemical and quantitative status of groundwater. 	<p>Directive (Directive 2000/60/EC of the European Parliament) have been met.</p>
<p>Environment Agency's approach to groundwater protection (2017)¹²</p>	<p>The Environment Agency's approach to groundwater protection states that:</p> <ul style="list-style-type: none"> • The Environment Agency will use a risk based tiered approach to regulate activities that may impact groundwater resources; and • The Environment Agency expects developers and operators to account for current and future groundwater uses and their dependent ecosystems. 	
<p>The Control of Substances Hazardous to Health Regulations (2002)¹³</p>	<p>This legislation covers the requirement or Health and Safety Risk Assessments, Method Statements and use of appropriate Personal Protective Equipment with relation to the handling of substances that are hazardous to health.</p>	

¹² Environment Agency (2017a) The Environment Agency's approach to groundwater protection, Accessed on 08/02/2019 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/620438/LIT_7660.pdf

¹³Health and Safety Executive (2002) COSHH, Accessed on 08/02/2019 from <http://www.hse.gov.uk/nanotechnology/coshh.htm>

Legislation, policy or strategy	Requirement	Comments/actions
Construction Design and Management Regulations (2015) ¹⁴	These regulations provide a set of requirements to manage the Health and Safety aspects of construction projects in the UK. This legislation places legal requirements on the different parties involved with the design, management and undertaking of construction work from inception to completion ensuring that Health and Safety consideration is placed at the forefront of each project.	
The Landfill (England and Wales) Regulations (2002) ¹⁵	These regulations set out a regime for the operation of landfills within England and Wales and should be abided by in the removal of any unwanted material generated during construction.	
The Hazardous Waste (England and Wales) Regulations 2005 (SI 2005/894) (as amended in 2016) ¹⁶	The Regulations apply to all wastes listed as hazardous in the List of Waste (2000/532/EC) and the CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008) and should be abided by in the removal of any unwanted material generated during construction.	
The Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154) (as amended 2018) (SI 2018/110) ¹⁷	The Environmental Permitting Regulations put in place requirements to ensure that sites that produce certain materials and undertake certain activities (such as the storage, use or treatment of waste) have a permit or exemption from the regulator (i.e. the Environment Agency).	

¹⁴ UK Government (2015) Construction Design and Management Regulations, Accessed on 11/11/2019 from <http://www.legislation.gov.uk/ukxi/2015/51/contents/made>

¹⁵ UK Government (2002) The Landfill (England and Wales) Regulations, Accessed on 11/11/2019 from <https://www.legislation.gov.uk/ukdsi/2002/0110395905/contents>

¹⁶ UK Government (2005) The Hazardous Waste Regulations, Accessed on 11/11/2019 from <http://www.legislation.gov.uk/ukxi/2005/894/contents/made>

¹⁷ UK Government (2016) The Environmental Permitting (England and Wales) Regulations (SI 2016/1154) (as amended 2018) (SI 2018/110), Accessed on 11/11/2019 from <http://www.legislation.gov.uk/ukxi/2016/1154/made>

Legislation, policy or strategy	Requirement	Comments/actions
Pollution Prevention Guidance	Includes information and guidance on management of pollution activities and implementation of pollution incident control e.g. plant drip trays and spill kits.	
Cultural heritage		
Ancient Monuments and Archaeological Areas Act 1979	<p>The specific consent of the SoST has to be given for:</p> <ul style="list-style-type: none"> a) "any works resulting in the demolition or destruction of or any damage to a Scheduled Monument; b) any works for the purpose of removing or repairing a Scheduled Monument or any part of it or of making any alteration or additions thereto; and c) any flooding or tipping operation on land in, on or under which there is a Scheduled Monument". <p>It is illegal to carry out any of the above works to a Scheduled Ancient Monument without consent. If such works will also require planning permission it is advisable that Historic England/Department of Culture, Media and Sport are contacted to advise on Scheduled Monument Consent prior to application for planning permission. It should be noted that certain activities do not require Scheduled Monument Consent and the class consents are detailed in Ancient Monuments (Class</p>	No consents required

Legislation, policy or strategy	Requirement	Comments/actions
	Consents) Order 1994. Advice is offered by the Department of Culture, Media and Sport.	
Planning (Listed Buildings and Conservation Area) Act 1990	<p>Developers of listed buildings must obtain a listed building consent to demolish or to alter a listed building's character. Planning authorities must preserve and enhance conservation areas and they must be taken into account in determining the planning application of developments within them.</p> <p>Ensure that the clients/developers have agreed with the planning consents and those procedures are in place for dealing with Historic England or otherwise.</p> <p>Time constraints for approval of method statements and strict control of the method of works are required, otherwise the National Heritage Act 1983 could be enforced.</p>	No consents required
Materials and waste		
Waste (England and Wales) Regulations 2011	The Regulations 2011 (SI 2011/988), as amended in 2012 (SI 2012/1889) and in 2014 (SI 2014/656), transpose the Revised EU Waste Framework Directive (2008/98/EC) into English law and require organisations to manage waste in alignment with the waste hierarchy in order to prevent waste going to landfill.	<p>The Principal Contractor or waste holder must take all reasonably practical steps to ensure that:</p> <ul style="list-style-type: none"> • Prior to disposing of material ensure that options other than disposal have been considered; • Ensure that all waste movements have the correct permits, licences and transfer information; and

Legislation, policy or strategy	Requirement	Comments/actions
		<ul style="list-style-type: none"> Provide evidence that the waste hierarchy has been applied. This evidence can be in the form of waste transfer notes and hazardous waste consignment notes, which themselves must be kept for two and three years, respectively.
<p>The Hazardous Waste (England and Wales) Regulations 2005 (SI 2005/894) (as amended in 2016)</p>	<p>The Regulations, as amended in 2009 (SI 2009/507), 2015 (SI 2015/1360) and 2016 (SI 2016/336) applies to all wastes listed as hazardous in the List of Waste (2000/532/EC) and the CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008).</p>	<p>Hazardous waste may be produced throughout the Scheme. The Principal Contractor or waste holder will manage hazardous waste in accordance with the Regulations, including:</p> <ul style="list-style-type: none"> Notification of premises managing hazardous waste to the Environment Agency, where applicable. Preventing the mixing of hazardous waste. Producing a hazardous waste consignment note with written description and waste code for each movement. Ensuring waste carriers and waste management facilities hold an appropriate licence or permit.
<p>Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 (SI 2013/3113)</p>	<p>The Regulations revoke the previous WEEE Regulations (2006 (SI 2006/3289), 2007 (SI 2007/3454), 2009 (SI 2009/2957) and 2010 (SI 2010/1155)) and have a key objective to reduce the amount of WEEE that goes to landfill. This is to be achieved by making producers responsible for the collection, treatment and recovery of WEEE, including the associated costs.</p>	<p>The Principal Contractor or Waste Holder must ensure that WEEE produced in the construction, demolition and excavation (CD&E) phase of the Scheme is segregated and managed separately from other wastes.</p>

Legislation, policy or strategy	Requirement	Comments/actions
The Waste Batteries and Accumulators Regulations 2009 (SI 2009/890)	The Regulations, as amended in 2015 (SI 2015/1935), require that producers of batteries and accumulators must either take back waste batteries and accumulators or fund the collection and recycling of them. The 2015 amendment removed several additional requirements, inclusive of the provision of operational plans and independent audit reports.	The Principal Contractor or Waste Holder must ensure that batteries produced in the CD&E phase are segregated and managed separately from other wastes.
The Environmental Protection Act 1990 (c.43) as amended in 1996 and 1999	<p>The Environmental Protection Act 1990 (c. 43) as amended in 1996 and 1999 implements integrated pollution control for the disposal of waste to air, land and water, including solid waste disposal.</p> <p>As part of this, under Section 34, the Act imposes Duty of Care on anyone who produces, imports, keeps, stores, transports, treats or disposes of waste.</p>	<p>The Principal Contractor or waste holder must take all reasonably practical steps to ensure that:</p> <ul style="list-style-type: none"> • Waste is consigned only to a licensed waste carrier, authorised person, local authority waste collector or is managed as an exempt waste activity; • Waste that is disposed of is accompanied by a detailed written description of the waste to ensure its safe handling, treatment and disposal (waste transfer notes are to be kept for a minimum of two years and hazardous waste consignment notes are to be kept for a minimum of three years); • Waste is securely contained to prevent it escaping to the environment; • Appropriate measures are taken to ensure that others involved in the handling and disposal of waste do so in accordance with the all applicable Regulations;

Legislation, policy or strategy	Requirement	Comments/actions
		<ul style="list-style-type: none"> • Copies of registration certificates should be obtained for all waste contractors and waste carriers used as part of the Scheme and it should be ensured that they are on the Environment Agency's 'Public Register of Waste Carriers, Brokers and Dealers'; and • Checks should be made on the final destination of each waste, ensuring that the waste management facilities are authorised to accept and manage the waste. Duty of Care audits of carriers and waste management facilities are advisable.
<p>The Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154) (as amended 2018) (SI 2018/110)</p>	<p>The Environmental Permitting Regulations 2016 (SI 2016/1154) replace the 2010 Regulations (SI 2010/675) (as amended in 2011 (SI 2011/2043), 2012 (SI 2012/630) and 2014 (SI 2014/255)). The Regulations put in place requirements to ensure that sites that produce certain materials and undertake certain activities (such as the storage, use or treatment of waste) have a permit or exemption from the regulator (i.e. the Environment Agency). Permit or exemption details of all sites that manage waste from the Scheme will be checked to ensure waste is being managed legally.</p>	<p>The Principal Contractor or waste holder must take all reasonably practical steps to ensure that:</p> <ul style="list-style-type: none"> • Appropriate environmental permit or exemption is in place, prior to works starting, for waste storage, treatment, use or disposal; and • Waste management facilities used by the Scheme hold an appropriate permit to receive and undertake the required waste activity.
<p>The CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008)</p>	<p>The CLP Regulation (within the UK and EU) was introduced in a staggered manner between 1999 and 2015. To summarise, the Regulation</p>	<p>The Principal Contractor or Waste Holder will ensure that the classification, labelling and packaging of waste and materials is</p>

Legislation, policy or strategy	Requirement	Comments/actions
	provides guidance on the application of the CLP criteria for hazards (physical, health and environmental).	undertaken in accordance with the Regulation. This includes classifying waste using a six-digit code, which must be recorded on all waste transfer notes and hazardous waste consignment notes for the movement of waste.
Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) Regulations 2000 (SI 2000/1043)	The Regulations, as amended in 2000 (SI 2000/3359), require the safe disposal or decontamination of all equipment that contains polychlorinated biphenyls (PCBs). Equipment containing 5 litres or more of PCB substance or mixture is also covered by the Regulations.	PCBs may be present in old electrical equipment which may be removed as part of the Scheme. The Principal Contractor or Waste Holder will ensure PCBs and other dangerous substances are disposed of in accordance with the Regulations.
Environmental Damage (Prevention and Remediation) Regulations 2015 (SI 2015/810)	The Regulations further developed obligations (introduced by the original regulation in 2009) to ensure the polluter pays for any environmental damage caused. The Regulations are applicable to all economic activities and therefore cover businesses. The Regulations require caution to be taken when managing sites to prevent damage to water, land and biodiversity.	The Principal Contractor or Waste Holder will manage waste to prevent pollution or damage to the environment.
The Control of Asbestos Regulations 2012 (SI 2012/632)	The Regulations require notification to the appropriate authority of all notifiable asbestos works (as specified in the Regulations), the medical surveillance (from April 2015) and health records for employers dealing with asbestos, the provision of the correct equipment and training for working with asbestos; and the documentation of the method, storage and disposal of asbestos waste. Any waste	The Regulations will be adhered to during the construction of the Scheme to minimise harm to human health due to asbestos exposure.

Legislation, policy or strategy	Requirement	Comments/actions
	<p>containing asbestos (e.g. insulation or lagging) must be stored and disposed of, in suitable packaging to prevent fibre release, in line with the Regulations. All asbestos must be removed by a licensed contractor who has undergone the appropriate training for the removal of asbestos and must wear the appropriate PPE. Written records must be kept of the workers and the likely level of exposure. The asbestos must only be disposed of at an appropriately permitted disposal site.</p>	
Climate		
<p>Climate Change Act 2008, as amended</p>	<p>Support UK Government in achieving target of 80% carbon reduction by 2050, and the intervening Carbon Budgets. In 2019, an amendment was passed which increased the target to at least a 100% reduction against the 1990 baseline by 2050.</p>	<p>Principal Contractor to mitigate carbon emissions as far as possible.</p>
<p>Construction 2025 (July 2013) HM Government</p>	<p>Support UK construction industry in achieving 50% reduction in construction emissions by 2025.</p>	<p>Principal Contractor to mitigate carbon emissions as far as possible.</p>
<p>Net Zero – The UK’s contribution to stopping global warming (2019) Committee on Climate Change</p>	<p>The Net Zero report sets out recommendations by the Committee on Climate Change (CCC) for setting a national net zero carbon by 2050 target, aligned to the UK’s commitment to the 2015 Paris Agreement.</p> <p>The transport sector is highlighted as one of the major challenges and opportunities to reach a</p>	

Legislation, policy or strategy	Requirement	Comments/actions
	net zero target, as emissions from transport have increased by 6% since 2013 and are now 4% higher than in 1990.	

Appendix J. Environmental aspects and impacts register

[Note: Principal Contractor to maintain and update the environmental aspects and impacts register.]

Appendix K. Records of environmental monitoring undertaken during construction

[Note: Principal Contractor to produce Appendix K and Appendix L or equivalent form of recording environmental monitoring during construction.]

Appendix L. Records of management actions undertaken during construction and implementation of the outcomes

[Note: Principal Contractor to produce Appendix K and Appendix L or equivalent form of recording management actions undertaken during construction and implementing the outcomes.]

Appendix M. Records of environmental incidents

[Note: Principal Contractor to produce record of Environmental Incidents document]

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