M25 junction 28 improvement scheme TR010029
7.2 Outline construction environmental management plan

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7.2 OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

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Glossary

Term	Definition
Archaeological Management Plan	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.
BAT	Best Available Techniques
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
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	Methodology statement relating to archaeological survey, evaluations 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 creation of an environmental bund (Work No. 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 2015-2020[2] sets out its own approach to meeting the key performance indicators identified within the RIS of 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

[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

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 205/08[3], Volume 11, Section 2, Part 6 HD 48/08[4], and Interim Advice Note (IAN) 183/14 Environment Management Plans[5].

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 his approval in writing, following consultation with the relevant planning authority and local highway authority. The

[3] http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section2/ha20508.pdf
[4] http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section2/hd4808.pdf
[5] http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian183.pdf

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 a Handover Environmental Management Plan (HEMP), in accordance with Table A.3 of the DMRB LA120 - Environmental management plans, to outline the monitoring and maintenance regime of the environmental features, in line with the REAC. In preparing the HEMP the Principal Contractor must consult with the relevant highway authority to the extent that it relates to matters relevant to its functions. 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.

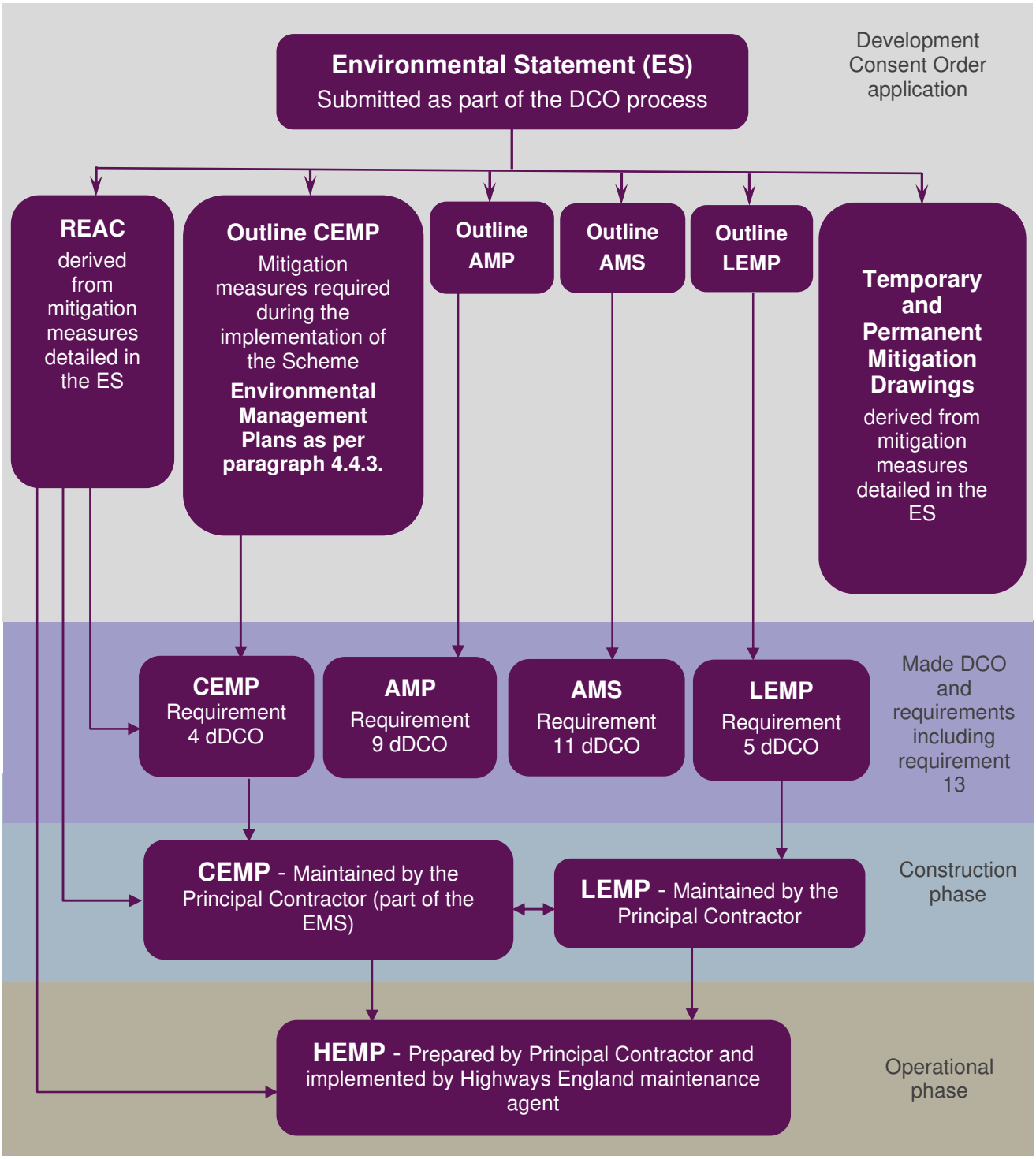
1.4.3 Upon the making of a DCO for the Scheme, specific references in this document are made to the requirements and protective provisions, relating to the various phases of pre-construction, construction, post construction will be updated.

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



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

Role	Responsibility
	Liaise with relevant stakeholders.
Principal Contractor Environmental Clerk of Works	Support the project team in delivering the environmental component of the works during the construction phase. Record the progress of the environmental works. Identify key environmental concerns on site as the Scheme develops. Monitor and update the Principal Contractor Environmental Manager on the progress of pre-construction surveys. Input into the Health and Safety team lead site induction on environmental practices, conduct toolbox talks, specialist surveys and oversee monitoring activities as required. Undertake day to day monitoring and supervision of construction activities in relation to environmental aspects. Monitor environmental compliance on site. Assist in monthly formal audits with the Principal Contractor Environmental Manager. Assess and check survey results and update databases, ECPs, etc with new information. Input and review site specific method statements. Monitor dust, noise and vibration. Monitor hours of working to meet accepted environmental noise and vibration limits in consultation with the relevant Environmental Health Officer. Develop and liaise with Principal Contractor Health and Safety Officer management plans, such as the Emergency Spill Response Plan for incidents on site. Immediate reporting of incidents to the Safety, Health and Environmental (SHE) department. Monitor all consents and permit requirements, including local Environment Agency consents and permits. Liaise with site supervisors, site management team and general construction workers. Provide daily updates to the Principal Contractor Environmental Manager on site progress, compliance, issues, problems, successes, etc. Accompany statutory authorities on site visits (with the Principal Contractor Environmental Manager if necessary). Identify cost saving and best practice activities.
Principal Contractor Environmental Specialist(s)	The Principal Contractor will be required to appoint suitably qualified environmental specialists, such as: Contamination and remediation specialist. The waste management specialist.

Role	Responsibility
	Ecologist to supervise works which are potentially impacting f on protected species or risk identified during works. 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: – 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 HEMP will cover the required elements as outlined in Annex C of IAN 183/14[5].

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	• 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	• 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	• 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 • Any such notification will set out the nature of the operations and the times at which they are to be carried out

Stakeholder	Outline communication process
	• 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	• 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 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 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 The following ECPs will be prepared for the Scheme as part of the final CEMP:

- Pollution Prevention Plan
- Dust, Noise and Nuisance Management Plan
- Surface Water Management Plan
- Contaminated Land Management Plan
- Soil Handling Management Plan
- Material Management Plan
- Site Waste Management Plan (SWMP)
- Material, Waste Storage and Refuelling Plan
- Energy and Resource Use Management Plan
- Emergency Response Plan (including Environmental Incident Control Plan)

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

- Arboricultural Method Statement (secured under Requirement 11 of the dDCO)
- 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)

4.4.5 A number of 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 Dust Noise and Nuisance Management Plan
- Outline Ecological Habitats and Species Plan
- Outline Invasive Species Management Plan
- Outline Community Engagement Plan

4.4.6 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 involve the following:

- BT Openreach
- Essex and Suffolk Water
- Telent Technology Services
- Thames Water
- Telia Company AB
- Telia Carrier UK Ltd
- GTT managed by Instalcom
- UKPN
- Zayo managed by JSM
- Cadent Gas
- EU Networks
- UK Oil Pipelines

- British Pipelines
- National Grid

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 Construction 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.

5.3.2 Where works with potential to generate significant adverse effects are proposed during day time hours, this will be agreed in advance with the local authority pursuant to Section 61 of the Control of Pollution Act 1974.

5.3.3 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. All night time works will be agreed in advance with the local authority pursuant to Section 61 of the Control of Pollution Act 1974.

5.3.4 Night time works 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

5.3.5 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 Special Types) (General) Order 2003	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
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). If a site-based environmental permit is required, this will cover all treatment, storage and re-use of materials it applies to.	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
Great Crested Newts and Bat Licence - Conservation of Habitats and Species Regulations 2017, in relation to the identified European	Natural England	Obtaining consent is mandatory prior to commencement of construction activities.	For loss of potential and identified bat roots and bat maternity roosts. Principal Contractor to action

Type of licence and reference	Issuing authority	Requirement	Comments/actions
protected species or other protected species			
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
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. It is anticipated that materials from the Scheme (excluding Grove	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

Type of licence and reference	Issuing authority	Requirement	Comments/actions
		Farm controlled wastes and Brook Street historic landfill) will be re-used under an MMP.	
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). It is anticipated that re-use of controlled wastes from Grove Farm (recently deposited materials) and Brook Street historic landfill will be undertaken under a Waste Recovery Permit.	Waste disposal, recycling, restoration, reuse sites to produce permit to prove that they are authorised to receive waste streams. Re-use of controlled wastes from Grove Farm area and Brook Street historic landfill as part of the Scheme permanent works will require an environmental permit, anticipated to be a Waste Recovery Permit. 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

Type of licence and reference	Issuing authority	Requirement	Comments/actions
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
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 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	• 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	• 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	• The Manor Local Nature Reserve (LNR) • Forty-two non-statutory designated sites (LoWSs in Essex and SINCs in Greater London) including Ingrebourne Valley SMI • Seventeen ancient woodlands including two ancient woodlands directly adjacent to the Scheme i.e. Lower Vicarage Wood and Vicarage Wood

Topic	Sensitive area
	• 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	• 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	Landscape: • Great Warley Wooded Farmland (LCA) • Weald Wooded Farmland (LCA) • Brentwood Wooded Hills (LCA) • Ingrebourne Valley (LCA) • Havering Wooded Hills (LCA) • LLCA - 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
	• 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 Jermains 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	• 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
	• 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	• 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	• N/A
People and communities	• Maylands Golf Club • Gardens of Peace burial ground (formerly known as Land at Oak Farm) • Henderson Sports and Social Club

Topic	Sensitive area
	• 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	• 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 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. Install a continuous noise monitor at Grove Farm to monitor noise levels throughout the construction programme. Undertake noise monitoring of construction activities in consultation with the local authorities or as agreed under a Section 61 application.
	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	Provision of Ecological Compensation Area reinstatement and enhancement, reinstatement of	Post monitoring and post construction care through establishment period required for a predetermined time frame.

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
	Importance for Nature Conservation (SMI) habitat	temporary working areas and long term management of areas of land within SMI.	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).
	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).
Road drainage and the water environment	Loss and alteration of riverine and riparian habitat during operation phase	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). Realignment of sections of existing straight channel to new sinuous courses on the lower Weald Brook (W2). Long term maintenance works to manage backwaters to the Ingrebourne River and Weald Brook and riparian trees along the Weald Brook (W6).	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).

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
	Loss of flood storage capacity	Lowering of approx. 3,500 m^2 of floodplain, on the Ingrebourne between Grove Farm and the Weald Brook confluence (W03). Lowering of approx. 2,100m^2 of floodplain, a flood compensation area adjacent to the Weald Brook, just upstream of Duckwood Bridge (W04). Lowering of approx. 7,800 m^2 of floodplain in combination with a flood compensation area adjacent to Grove Bridge and Maylands Bridge (W05).	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. 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).
	Impact on surface water features during construction – sediment/pollutants.	Compliance with pollution prevention guidance (e.g PPG's) which detail best practice to prevent pollution to water.	Monitoring during construction to assess the effectiveness of mitigation measures to limit pollution risk and identify pollution incidents. 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).
Landscape and visual	Adverse impacts upon landscape character areas resulting from vegetation	Earthworks have been designed to allow for mitigation planting to be incorporated to reduce the impacts	The EnvCoW/Principal Contractor Environmental Manager will monitor construction activities to ensure the

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
	loss, changes to landform, introduction of construction compounds and the introduction of proposed road infrastructure components. 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	from changes to landform. Vegetation loss will be mitigated by the provision of replacement planting that will assist in reintegrating the Scheme into the surrounding landscape.	effectiveness of the protection of existing trees and the planting proposals such as: • The effectiveness and suitability of root protection fencing ensuring no impacts to trees that are to be retained. The areas of most concern are covered by TPO's and veteran trees. • 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.

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
Geology and soils	Impacts to sensitive receptors from disturbance of contaminated soils, groundwater and/or vapours/ground gases.	• If previously unencountered contaminated soils are discovered during construction, further assessment and recommendations will be incorporated, if necessary. • 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 asbestos 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	• 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. • If any additional asbestos containing materials / asbestos fibres are identified during the works, the asbestos risk assessment will be updated, to ensure that control measures are appropriate at all times during the works. • Ground gas monitoring may be required in locations where elevated ground gas concentrations have been identified (if Contractor RAMS deem necessary). • Monitoring of sensitive surface water features in close proximity to works to confirm no adverse impact during works. • Scheme boundary dust monitoring. • Monitoring of compliance with RAMS. • Good house-keeping of construction areas to be monitored and environmental incidents to be

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		amount of traffic within working areas, use of wheel washes and spraying of working areas and roadways. • 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.	reported (i.e. visual checks of material stockpiles) by contractors.
	Impacts to geomorphology and ground stability.	• Detailed UXO desk study to assess the UXO hazard level associated with construction of the detailed design and adoption of appropriate UXO mitigation measures during construction, if required. • Stability analyses, design calculations for new and modified earthworks.	• UXO monitoring requirements, as defined by detailed design UXO desk study. • Monitoring of known service structures during the construction works to measure vibrations, with agreed trigger levels and action plans, if required.

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		• Design of the temporary and permanent works to minimise movement (including appropriate analysis to predict magnitude of movements).	
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 Archaeological Management Plan.
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 as re-used and recycled materials and locally sourced materials.	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 MMP verification report will act as a record of waste management and material re-use on the Scheme.
	Depletion of primary materials	Use land temporarily reserved for material storage to significantly	Develop and implement a SWMP and MMP to consider and manage the re-use

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		increase the amounts of materials that can be re-used within the Scheme and therefore reduce consumption of primary materials. 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	of materials on-site, off-site secondary/recycled materials, locally sourced materials and other responsibly sourced materials. Develop and implement a Construction Traffic and Logistics Management Plan to manage materials deliveries efficiently and avoid/reduce wastage.
	Generation of waste	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. 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.	A SWMP will be developed and maintained as part of the EMS. Construction Traffic and Logistics Management Plan to consider materials and waste transport options based on their sustainability and manage deliveries efficiently to reduce wastage. 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.
	Re-use of materials / controlled wastes	Controlled wastes from Grove Farm (recently deposited materials) and Brook Street historic landfill, are proposed to be re-used within the Scheme under a Waste Recovery Permit (WRP). The remainder of the materials are	Controlled wastes and materials records will be collected and maintained throughout the construction of the Scheme, and reported as lines of evidence in the verification report upon the completion of the Scheme. These records are anticipated to include (but not limited to); plans showing excavation

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
		proposed to be re-used under a MMP. The controlled wastes and the material streams will require segregation and handling as separate streams, and placement in clearly assigned areas of the sites in line with the WRP and MMP requirements.	and deposition areas; stockpile management; waste and materials testing to demonstrate compliance with environmental requirements and no unacceptable risks to environmental receptors at deposition locations, etc.
People and communities	Effects on people and communities	Ensure monitoring identified within the ES is implemented. 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.	Monitoring suggested in other chapters may be relevant to receptors in the People and Communities chapter, particularly around human health and amenity.
	Land take	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. 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.	Ensure completion of the Scheme in line with DCO requirements.

ES Chapter	Impact/potential impact	Summary of mitigation	Monitoring requirements
Climate	Emission of greenhouse gases leading to global warming	Reduce greenhouse gas emissions from material production and transport, waste transport and disposal, onsite construction processes, and worker transport.	Monthly/quarterly reporting via the Carbon Calculator Toolkit, as agreed with Highways England.
	Damage to materials from elevated temperatures	Design to consider including materials that are sufficiently robust to endure a range of possible future climate extremes.	Asset management to take into consideration the effects of climate 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 Clause 9.3 of the ISO14001:2015, requires that the CEMP is reviewed on regular basis if there are any significant changes in equipment, risk, and scope of works, circumstances, people or other organisational change. In the event of updates being made to the CEMP, the Principal Contractor will be required to consult with the local planning and local highways and submit the updated version to Secretary of State for approval as secured by Requirement 4 of the draft DCO.

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

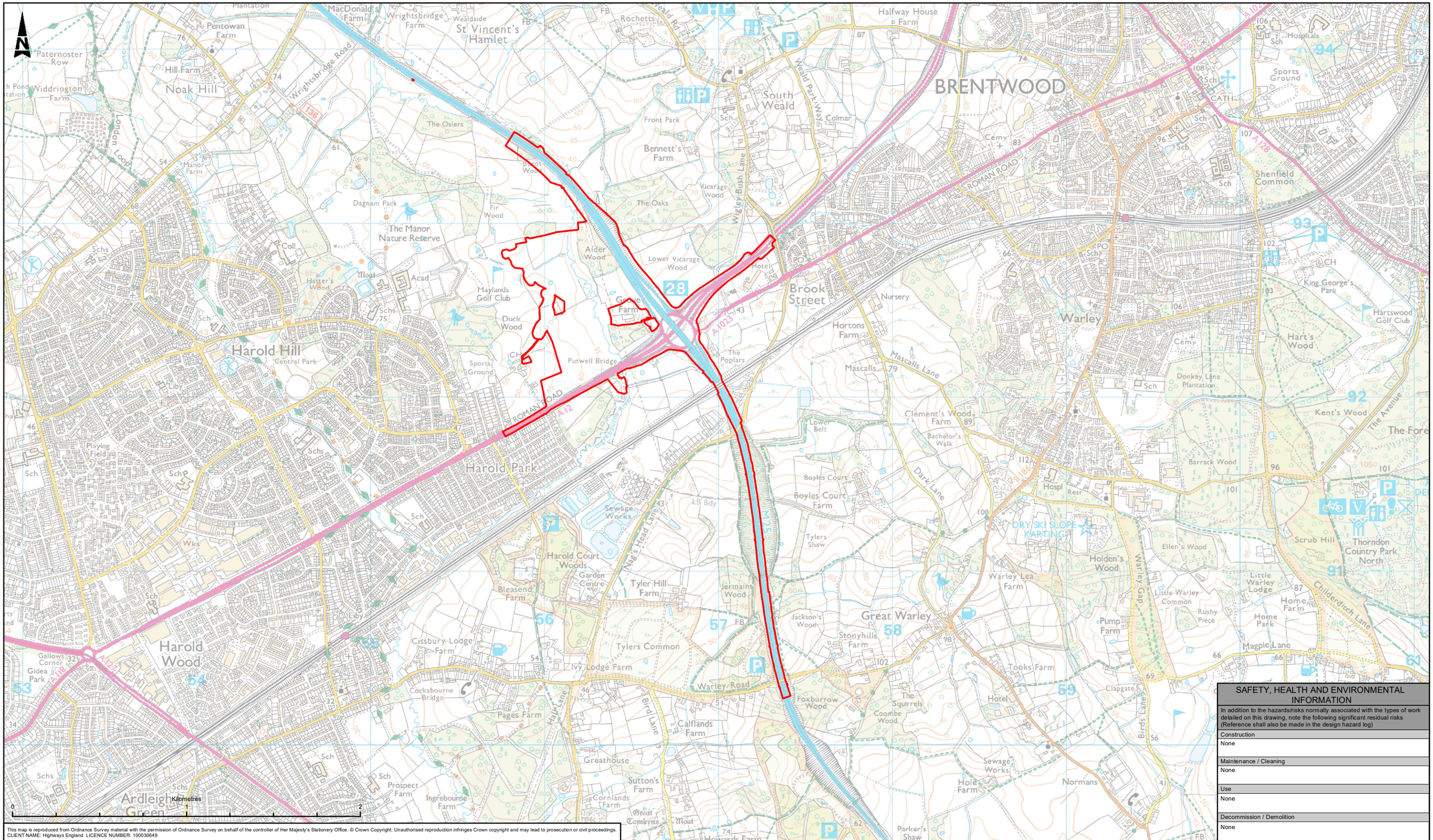
Oil spills

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



LEGEND

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 in the design hazard log)

Construction
None

Maintenance / Cleaning
None

Use
None

Decommission / Demolition
None

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1	C04	SD	AR	EM	PG	03/06/21
PUBLISHED	A1	C03	SD	AR	EM	PG	27/02/20

Drawing Suitability: **PUBLISHED**
Status: **A1**

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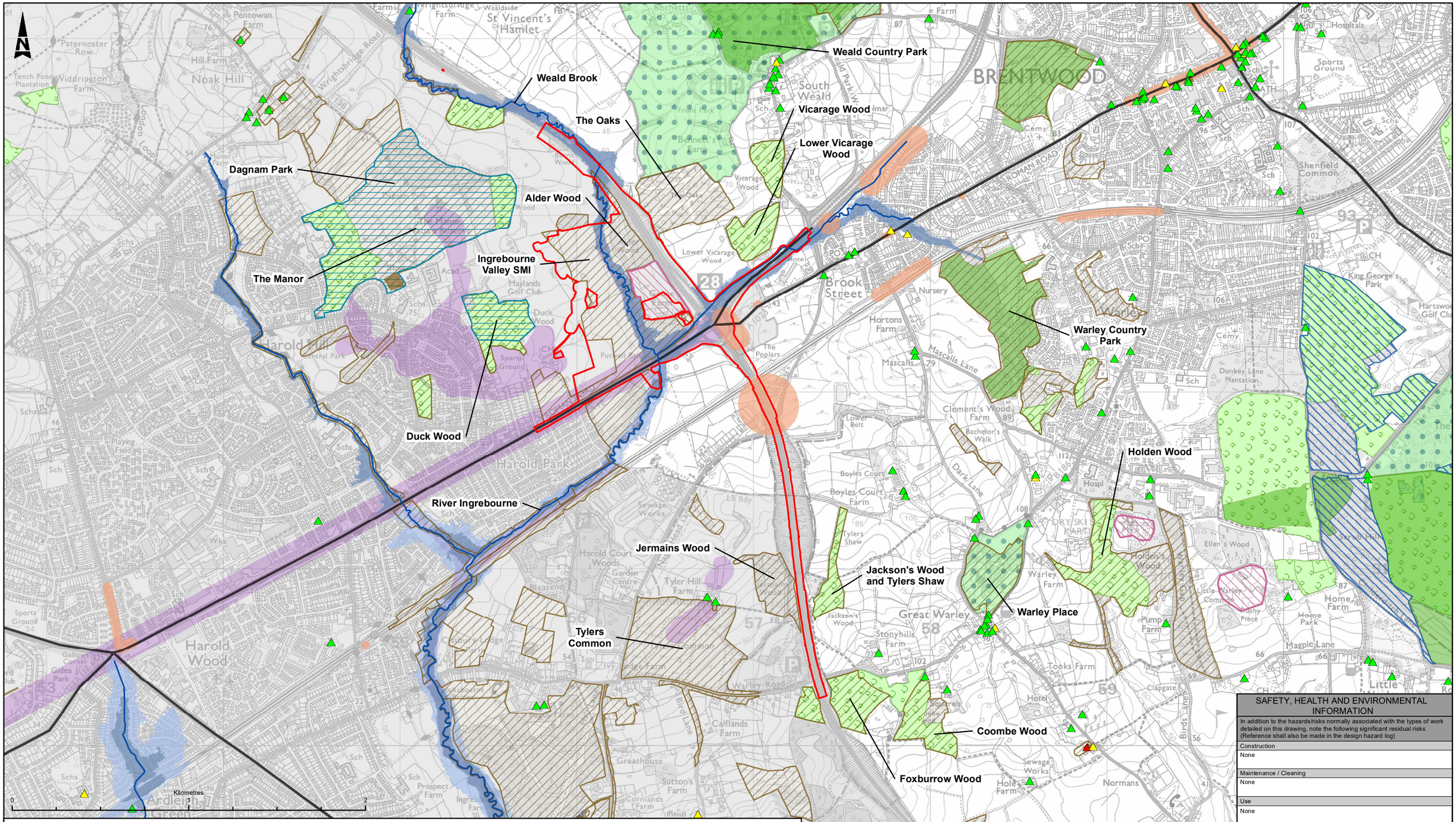
Project Title: M25 Junction 28

Drawing Title: PRELIMINARY ORDER LIMITS

Drawing Number: HE551519 - ATK - EAC - XX - GS - GI - 000001
(Project | Originator | Volume | Location | Type | Role | Number)

Original Size:	Scale	Project Ref. No:	Sheet:	Rev:
A3	1:20,000	---	1 of 1	C04

Appendix B. Environmental constraints plan



LEGEND

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

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Description							
Description							
Description PUBLISHED	A1	C04	SD	AR	EM	PG	03/06/21
Description PUBLISHED	A1	C03	SD	AR	EM	PG	27/02/20

Drawing Suitability: PUBLISHED
Status: A1

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

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Project Title: M25 Junction 28

Drawing Title: ENVIRONMENTAL CONSTRAINTS

Drawing Number: HE551519 - ATK - EGN XX - GS - GI - 000001
(Project | Originator | Volume; Location | Type | Role | Number)

Original Size:	Scale	Project Ref No:	Sheet:	Rev:
A3	1:20,000	---	1 of 1	C04

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 Ecological Habitats and Species Plan

F.4 Outline Invasive Species Management Plan

F.5 Outline Community Engagement Plan

[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)

Contents

Chapter Pages

Tables

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 for the purposes of the final version. It will 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 CoPA 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.
- The speed of vehicle movements will be required to be reduced.
- 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 will be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors.
- Vehicles will not be permitted to wait or queue on the public highway with engines running
- Local hoarding, screens or barriers will 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 will 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. Broadband reversing alarms will be used where possible.
- 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. A continuous noise monitor will be set up at Grove Farm to measure noise levels throughout the construction period.

2.6.2. Noise monitors may be set up at other locations in consultation with the relevant local authority.

Attended noise monitoring

2.6.3. To supplement the 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. Monitoring is likely to focus on those areas with potential for adverse effects, such as Maylands Cottages, Putwell Bridge and Colchester Road.

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.

2.7.3. Vibratory rolling will be avoided within 20m of sensitive receptors to avoid perceptible vibration, particularly adjacent to Grove Farm.

Vibration monitoring

2.7.4. 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 the Control of Pollution Act 1974 to their proposed methods of work and to the steps proposed in order to minimise noise and vibration nuisance. Formal consent will be sought for any out of hours working and for any daytime works which have potential to generate significant effects.

2.8.2. 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.

2.8.3. Section 61 applications 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

2.8.4. 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

[Principal Contractor to update this section during detail design and construction stages as part of the preparation of CEMP secured under Requirement in the dDCO.]

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 activities, and examples of the works and associated risks of emissions from site activities giving rise to poor air quality and the risk level in accordance with DMRB LA105 – Air Quality.

3.4.2. Table 3.2 sets out examples of the specific controls that will be applied. The measures that are set out in Table 3. 2 are considered appropriate for a high risk site as identified in the Dust Risk Assessment.

3.4.3. 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: Summary of key construction activities and sources of dust from each activity and risk level

Activity	Dust type and risk	Risk level*
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	High

Activity	Dust type and risk	Risk level*
Demolition	Potential for fugitive dust/ PM10 arising from demolition of the bridges	High
Excavation	Potential for fugitive dust/ PM10 arising from earthworks	High
Construction	Potential for fugitive dust/ PM10 arising from construction of the roads and bridges	High
*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: Control measures to be implemented during the construction activities and residual risks

Activity	Control	Residual risk
General Site Operations	**Control of Dust Emissions from General Site Operations** • 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 **Control of dust emissions from materials storage/ stockpiling and handling areas** • 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
	• 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. **Control of Dust Emissions from Haul Roads and Vehicle Movements on Site** • 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 **Control of Exhaust Emissions from Vehicles and Plant/ Equipment** • 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
	• 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	• 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	• Fully sheet all vehicles carrying loose or potentially dusty material to or from the working areas • Use effective water suppression during demolition operations • Screen buildings where dust producing activities are taking place with debris screens or sheeting, where appropriate	Low

Activity	Control	Residual risk
Excavation	• 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. This would include:

- Daily on site and off site inspections
- Record of complaints/exceptional dust events

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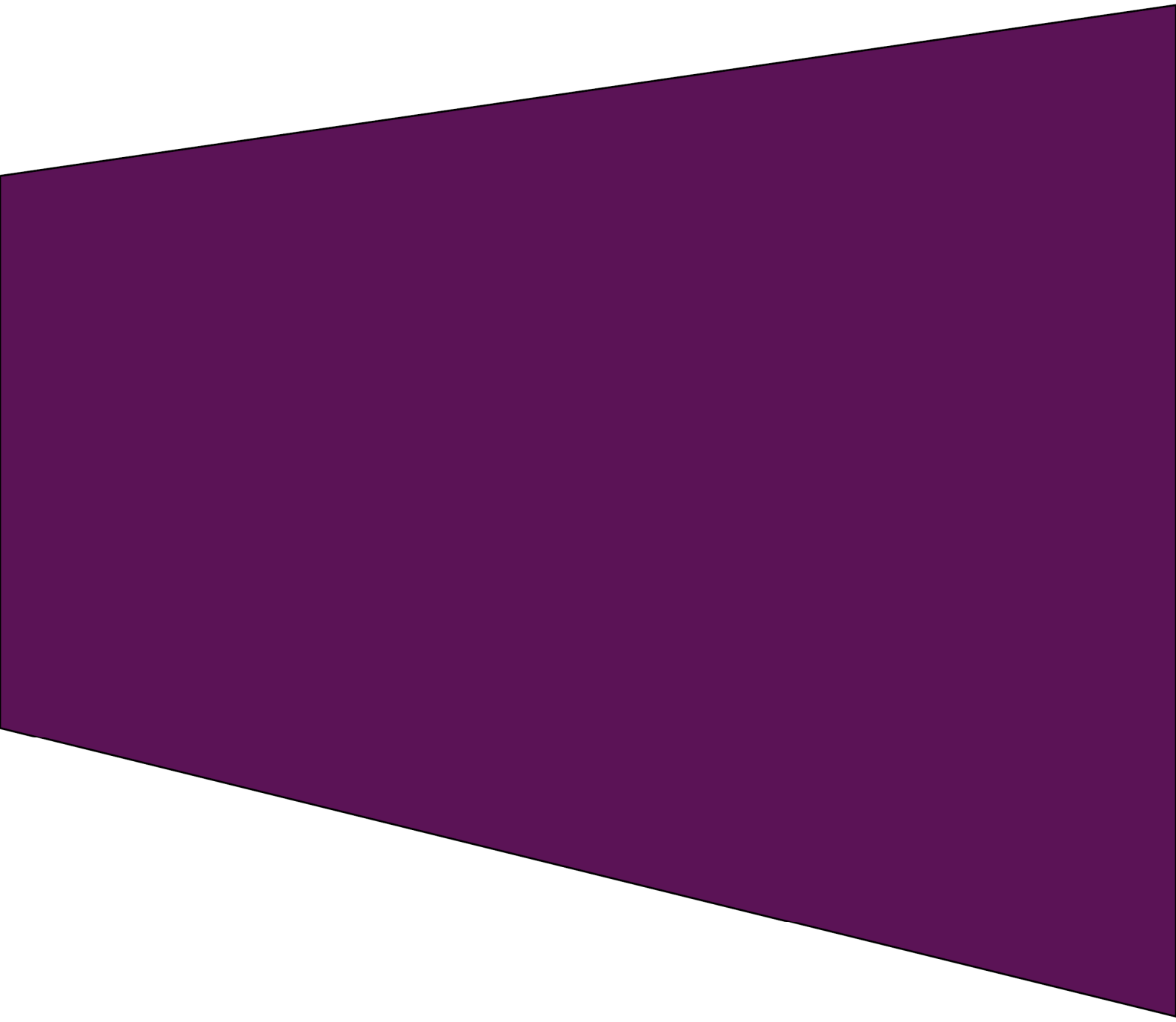

M25 junction 28 improvement scheme Outline Construction Environmental Management Plan

Appendix F: Surface Water Management Plan (SuWMP)

Table of contents

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 Development Consent Order (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 Assesment (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 componets 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(5)). 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(3)) 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 EA (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.

3.12 Long term maintenance and management of drainage network

3.12.1 To achieve an efficient and effective maintenance regime, a catchment-based approach will be developed by Highways England, targeting all sediment catchpits and all ditches along the whole road catchment rather than individual sediment catchpits/ditches.

3.12.2 Based on industry guidance (ref 6.) the following cyclic regime is proposed:

- Sediment catchpits – Clear/empty silt and debris from catchpits annually.
- Ditches – Clear ditches by removing material that could impair operation – every 5 years.
- Balancing / attenuation ponds – Clear silt and all material that could impair operation – every 10 years.

3.12.3 The long-term management and maintenance regime of drainage assets including sediment catchpits, ditches, and attenuation ponds will be developed by Highways England and contained within the Handover Environmental Management Plan (HEMP) for the Scheme. The HEMP will comprise a cyclic maintenance of drainage assets to:

- Prolong asset life
- Deliver sustained performance
- Keep assets safe for customers

3.12.4 Highways England has a legal obligation under the Highways Act 1980 and the Infrastructure Act 2015 to maintain its assets appropriately.

4. Emergency measures

4.1.1 The works will follow an 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]
7	Design Manual for Roads and Bridges (DMRB), GM 701 Asset delivery asset maintenance requirements, March 2020 [online] Available at: < file:///C:/Users/RIEG3016/Downloads/GM%20701%20revision%201%20Asset%20delivery%20asset%20maintenance%20requirements-web.pdf>

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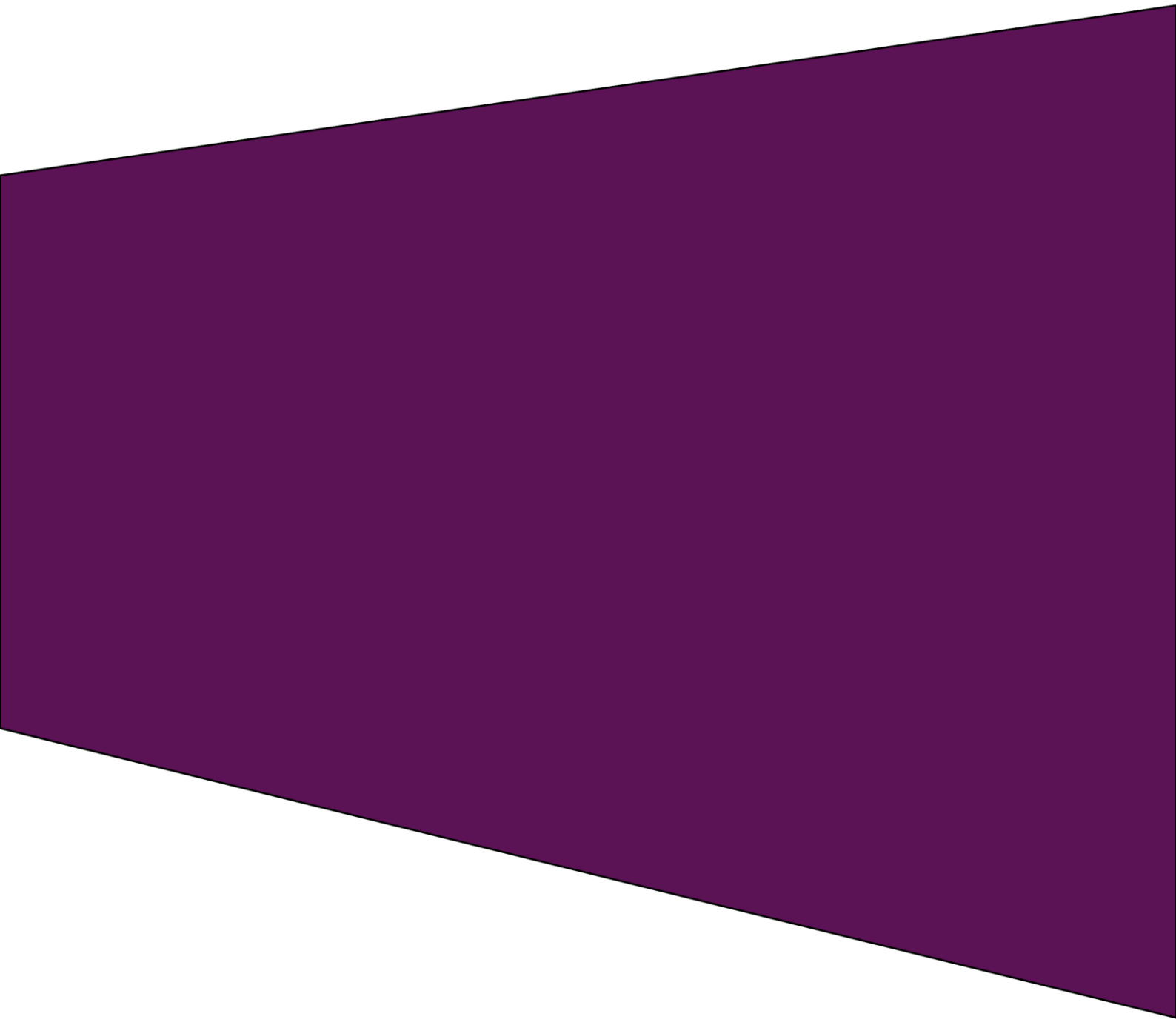

M25 junction 28 improvement scheme Outline Construction Environmental Management Plan

Appendix F: Outline Ecological Habitats and Species Plan (EHSP)

Table of contents

1. Introduction

1.1.1. This Outline Ecological Habitats and Species Plan (EHSP) sets out the framework to be used by the Principal Contractor when preparing the final EHSP prior to the commencement of construction.

1.1.2. The final EHSP shall be developed in full by the Principal Contractor prior to commencement of works in accordance with Requirement 4 in Schedule 2 of the draft Development Consent Order (DCO). The final EHSP shall be one of a number of management plans that must be appended to the Construction Environment Management Plan (CEMP) under that requirement.

1.1.3. The principal purpose of the final EHSP is to set out how construction works will be managed to protect habitats and species during the construction phase of the Scheme.

1.1.4. The CEMP and final EHSP shall be updated as necessary throughout construction in response to any new information (such as information gathered in pre-construction surveys).

1.2. Purpose

1.2.1. The purpose of the final EHSP is:

- To set out the measures to protect habitats and species during construction as set out in the Register of Environmental Actions and Commitments, Section 6 of the CEMP and DCO Requirement 7, ensuring appropriate mitigation measures are embedded into the construction methods of work.
- To comply with relevant legislation relating to the protection of habitats and species.
- To discharge relevant DCO requirements as listed in Requirement 4.

1.3. Relationship with other management plans

[Principal Contractor to update this section and add any other relevant documents if necessary.]

1.3.1. A number of other management plans / method statements are relevant to protecting habitats and species during construction, and shall be referred to as necessary. Where measures set out in other management plans and method statements are required, then a reference shall be made in the final EHSP to the relevant management plan. The measures outlined in other management plans and method statements are not to be repeated here. These management plans include, but are not limited to, the following:

- Arboricultural Method Statement (secured under Requirement 11 of the draft DCO) sets out measures to protect trees and woodland, including veteran trees, during construction. It includes Tree Protection Plans which identify which trees require removal to construct the Scheme, and which trees are to be retained and protected.
- Dust Noise and Nuisance Management Plan sets out measures to control dust and noise, including those which are relevant to habitats and species.

- Surface Water Management Plan sets out measures to minimise the risk of adverse effects on watercourses, waterbodies and surface water features, including their associated habitats and species during construction works.
- Pollution Prevention Plan sets out pollution prevention measures to be adhered to during construction.
- Invasive Species Management Plan sets out measures to prevent the spread of invasive non-native plant species during construction.
- Landscape and Ecology Management and Monitoring Plan (LEMP), secured under Requirement 5 of the draft DCO, sets out the aims and objectives for creation and long term management of landscape and ecology features within land permanently acquired for the Scheme.

1.4. Roles and responsibilities

1.4.1. The Principal Contractor shall establish appropriate roles and responsibility for site staff in accordance with Section 3 of the CEMP and Table 1.3 of the REAC. This includes appointing ecological specialists, including an Ecological Clerk of Works (ECoW). The ECoW will report to the Principal Contractor's Environmental Manager. The contact details of the ECoW/ecological specialists and the lines of escalation and responsibilities shall be set out within the final CEMP.

1.4.2. The ECoW or other relevant ecological specialists shall be involved in relevant pre-start meetings/discussions to ensure that the various provisions of the ecological method statements and protected species licences (as set out in Section 3 of this document) are met from the outset of construction, and followed throughout the period of construction. The ECoW shall continually monitor, advise and record on ecological mitigation works during the construction period.

1.4.3. During construction, the ECoW shall undertake checks within the working areas as required by any ecological method statements (see Section 3 below).

1.4.4. The ECoW or other relevant ecological specialist shall also help interpret and communicate the requirements of any ecological method statements and the LEMP.

2. Biodiversity resources

2.1. Important biodiversity resources

[Principal Contractor to update this section with information on the important biodiversity habitat and species present within the Scheme boundary.]

2.1.1. The final EHSP shall provide a summary of the important biodiversity resources at the development site, including designated sites, habitats and protected and priority species listed in the Environmental Statement and REAC (Table 1.1). This shall include reference and links to any relevant drawings which identify the location of these biodiversity resources.

3. Management Plan

3.1.1. The final EHSP shall set out the key mitigation and working measures to prevent impacts on protected species and habitats, supported by a 'signpost' reference to any documents that provide detailed methods or designs to be implemented during construction. This document shall be read and applied in conjunction with the documents listed at 3.1.2.

3.1.2. These key documents include:

- Protected species licences - these will include method statements and work schedules which will set out how and when activities will take place.
- Ecology method statements (these may be called Precautionary Methods of Working or other names to be defined in the final CEMP) - these will be used where works require particular methods that need to be followed to minimise harm to habitats and species but are not covered under protected species licences.
- Detailed design drawings and specifications - these include detailed design drawings and specifications that may not form part of the final CEMP, but shall be listed and referred to as necessary within the final EHSP where measures are required to be implemented and checked during construction.

3.1.3. A list of the key general measures, licences and method statements are set out below. There may be a requirement for further documents as detailed design progresses.

3.2. Pre-construction surveys / checks

[Principal Contractor will need to update this section to describe the site specific surveys/checks required prior and during construction works.]

3.2.1. Pre-construction surveys and monitoring of species during construction must be carried out as required by the REAC (Table 1.1, Table 1.2 and Table 1.3) to minimise risk of harm to species. These shall include:

- Checks for bat roosts prior to removal of trees or other suitable roost features
- Checks for bird nests prior to removal of vegetation or works to the watercourses (where there is suitability for nesting kingfisher)
- Checks for badger setts prior to and during site clearance and earthworks
- Checks for otter resting sites and holts prior to vegetation removal and any works to riparian habitats
- Checks for the presence of water voles (this species has not been recorded to date)
- Any other surveys as considered necessary by the Principal Contractor and their ECoW.

3.2.2. An appropriate schedule of surveys shall be included in the final EHSP.

3.3. General measures

3.3.1. The following general measures shall be applied throughout construction:

- The locations of habitats and species shall be set out on a suitable environmental or ecological constraints drawing/plan which shall identify the following:
  - Locations of designated sites, ancient woodland, veteran trees, watercourses and ponds.
  - Locations where protected species are known to be present or may potentially be present, and where mitigation measures are required to be implemented (e.g. bat roosts, badger setts, great crested newt habitat).
  - All retained habitats outside of the construction footprint.
- Trees, woodland and hedgerows shall be protected as per the Tree Protection Plans within the Arboricultural Method Statement (secured under Requirement 11 of the dDCO0. All other retained vegetation (including scrub, grassland, watercourses, ditches etc) shall be adequately protected with suitable fencing and appropriate signs to ensure there is no accidental damage to habitats and species.
- A system of approvals for any site clearance works shall be put in place and included in the final CEMP. No site clearance shall take place without prior agreement from the Environmental Manager/ECoW (or as set out in the final CEMP). No site clearance, storage of material or machinery or any other activities shall take place outside of pre-agreed areas without consulting the Environmental Manager/ECoW.
- Clearance of vegetation shall be minimised as much as practicable. Only vegetation required to be removed by temporary or permanent works will be removed. Requirements for clearance shall be reviewed regularly and, where smaller working areas can be agreed, vegetation shall be retained.
- All excavations shall be suitably fenced or covered overnight to prevent any badgers (and other animals) becoming trapped. Checks for trapped animals (including badger and deer) shall take place at the start of each shift.
- Any night lighting (relating to site compound security or for night time working) shall be focused and directed to avoid illumination of watercourses, woodlands and any other potential foraging areas used by bats, otter and other wildlife.
- In accordance with Section 13 of the CEMP, the ECoW or other appointed ecology specialist shall undertake regular site wide checks during construction to ensure that ecological method statements and management plans are being adhered to and to identify any additional or altered mitigation measures that are required across the site.

[The general measures listed above shall be amended and added to as necessary during detailed design, as relevant protocols are developed by the Principal Contractor. The CEMP shall be updated to include all relevant new information.]

3.4. Protected species licences

[The principal Contractor will need to update this section with the details of the licence obtained from Natural England.]

3.4.1. Construction of the Scheme affects habitat used by great crested newt. A European Protected Species licence application is required for works that affect habitat used by great crested newt. No construction works will commence in licensable areas until this licence has been approved and issued by Natural England.

3.4.2. The construction works will need to be undertaken in line with the method statement and work schedule described in the licence in order to minimise the effects on the great crested newt population. The method statement that forms part of the licence is legally binding and must be followed.

3.4.3. Should pre-construction surveys reveal the requirement for any additional protected species licences, these shall be approved and issued by Natural England before any licensable activity can take place. The CEMP shall be updated to include all relevant new information.

3.5. Method Statements / Precautionary Methods of Working

3.5.1. Due to the presence of protected species and habitats, method statements / Precautionary Methods of Working shall be in place for all construction works which are not deemed as licensable activities. These will be created prior to construction activities affecting the relevant species. Method statements / Precautionary Methods of Working for the following species are required:

- bats
- otter
- fish
- reptiles
- nesting birds (including kingfisher)
- badger

3.5.2. These method statements may be combined into one document as a list of working methods or separated as deemed relevant and appropriate. Method statements shall include the following:

- Locations where the method statement applies;
- Any locations to be retained (and protected) during construction or where species will be moved to during construction (e.g. this could be any habitats retained for reptiles such as along edges of hedgerow);
- Relevant legislation;
- Where relevant, rationale as to why works can be carried out without a licence (e.g. for European Protected Species);
- How to identify species;
- Working methods to minimise risk of harm to species. This will include:
  - Which stages/steps of work are required.

- Timing of works.
- Who should be present during works (e.g. is an ECoW required to carry out hand searches with assistance from site operatives).
- What to do if species are encountered (this will vary depending on species and
- Where appropriate, locations where any species found will be moved to.

3.6. Ecological mitigation design specifications and installation

3.6.1. The detailed design drawings and specifications will include planting proposals, river realignment works, floodplain lowering and a number of special ecological measures as required by the REAC.

3.6.2. The final EHSP shall identify when these features and any planting need to be installed/constructed as required by the REAC. The creation/installation of these features will be recorded during construction to provide as built information on completion of construction.

3.6.3. The detailed planting design and specification will be substantially in accordance with the Preliminary Environmental Design and the Outline LEMP, as set out in Requirement 5 of the DCO.

3.6.4. Special ecological measures will include:

- Use of wood from the two veteran trees required to be removed to provide dead wood resources (Arboricultural assessment during detailed design will determine the appropriate approach to compensation on an individual tree-by-tree basis, and this information will be set out in the Arboricultural Method Statement)
- Veteranisation of suitable retained trees (this information will be set out in the Arboricultural Method Statement.
- Creation of dead wood habitats using felled trees and limbs.
- Installation of safe mammal passage on culverts and any associated fencing.
- Creation of ponds (suitable for great crested newt and other wildlife)
- Creation of great crested newt/reptile hibernacula and refuges.
- Installation of bird nesting boxes.
- Installation of bat roost boxes.

3.6.5. Additional features may be required as necessary to respond to additional information gathered in pre-construction survey checks and during development of detailed design.

3.7. Monitoring

[Principal Contractor to update this section with the monitoring requirements during construction and once the scheme is operational.]

Construction phase

3.7.1. Ecological monitoring required during construction and the aftercare / establishment period will be set out in the final CEMP.

Operational stage

3.7.2. If any further monitoring of special ecological features or species is required post establishment/aftercare period, this will be described in the Handover Environmental Management Plan (HEMP) which will be created on completion of the Scheme.

3.7.3. The LEMP, secured under Requirement 5 of the draft DCO, will set out the aims and objectives for creation and long-term management of landscape and ecology features within land permanently acquired for the Scheme. This long-term management is an important part of the mitigation and compensation measures required for biodiversity resources. The management and monitoring set out in the LEMP will be implemented by Highways England.

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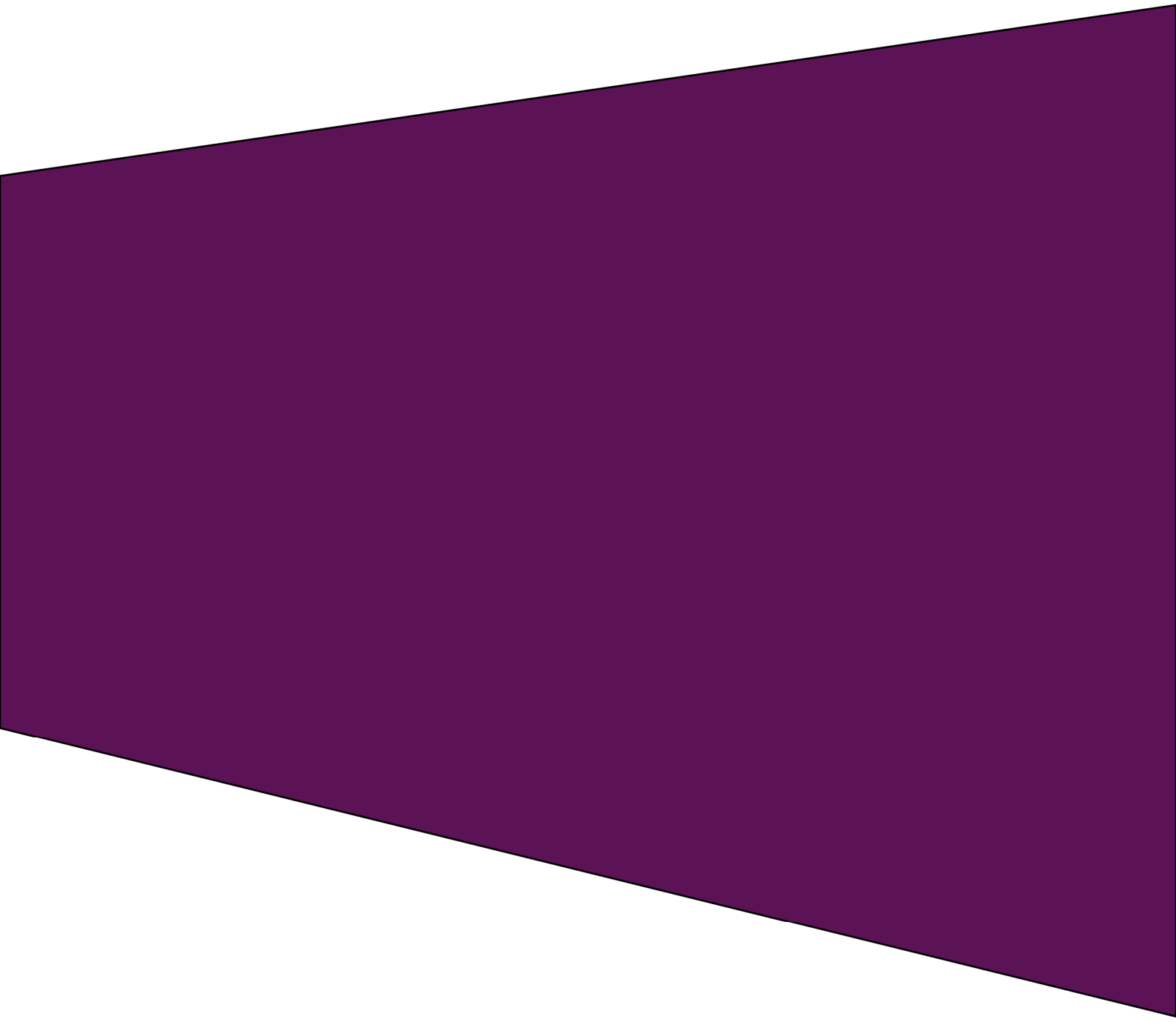

M25 junction 28 improvement scheme Outline Construction Environmental Management Plan

Appendix F: Outline Invasive Species Management Plan (ISMP)

Table of contents

1. Introduction

1.1.1 This Outline Invasive Species Management Plan (ISMP) sets out the framework to be used by the Principal Contractor when preparing the final ISMP for the Scheme prior to the commencement of construction.

1.1.2 This Outline ISMP shall be developed in full by the Principal Contractor prior to commencement of works in accordance with Requirement 4 in Schedule 2 of the draft Development Consent Order (DCO). The final ISMP shall be one of a number of management plans that will form part of Appendix F of the Construction Environment Management Plan (CEMP), secured under Requirement 4 of the draft DCO.

1.1.3 The principal purpose of the ISMP is to set out how construction works shall be managed to prevent the spread of non-native invasive species during construction of the Scheme.

1.2 Purpose

1.2.1 The purpose of the final ISMP is:

- To set out measures to be implemented during construction to prevent the spread of invasive non-native species (INNS) to avoid the spread of INNS into further areas of Ingrebourne Valley Site of Nature Conservation Importance (SMI), and to protect reinstated and created habitats from colonisation by INNS.
- To comply with Requirement 4 in the DCOTo comply with legislation relating to INNS including the Wildlife and Countryside Act 1981 (as amended) and the Invasive Alien Species (Enforcement and Permitting) Order 2019.
- Establish the environmental considerations that must be taken into account during construction to manage appropriately the areas with INNS.

1.3 Relationship with other management plans

[Principal Contractor to update this section with the relevant documents which address the ecology matters.]

1.3.1 Where measures set out in other management plans and method statements are required to be followed during construction activities (which includes management of INNS), then a reference shall be made in the final ISMP to the relevant plan. The measures outlined in other management plans and method statements are not repeated here. These management plans would include, but are not limited to, the following:

- Ecological Habitats and Species Management Plan: this sets out the measures to minimise the risk of harm to important biodiversity resources during construction
- Arboricultural Method Statement: this sets out how trees will be protected during construction
- Soil Handling Management Plan: this sets out how soil will be managed, stored and used on site throughout construction. This will take into account any requirements of the ISMP

- Surface Water Management Plan: this sets out measures to minimise the risk of adverse effects on watercourses, waterbodies and surface water features, including their associated habitats and species during construction work
- Pollution Prevention Plan: this sets out pollution prevention measures to be adhered to during construction.

1.4 Roles and responsibilities

[Principal Contractor to update this section with the roles and responsibilities which address the ecology matters.]

1.4.1 The Principal Contractor shall establish appropriate roles and responsibility for site staff in accordance with Section 3 of the CEMP. This includes appointing an Environmental Manager and appropriate environmental specialists. Specialist contractors will be appointed, as appropriate, to provide advice and site works in relation to INNS. Relevant contact details the lines of escalation and responsibilities shall be set out within the final CEMP.

1.4.2 Records of all actions completed as part of the ISMP shall be kept, including area/location of any treatment works, what treatment works were carried out, dates, photographs and any other relevant information.

2. Invasive non-native species

2.1 Invasive non-native plants species

[Principal Contractor to update this section with the relevant documents which address the ecology matters. This section will identify the known invasive non-native species which are present within or directly adjacent to the DCO boundary that shall be subject to management and describe the control measures as part of this plan.]

Himalayan balsam

2.1.1 This plant is listed on Schedule 9, Part 2 of the Wildlife and Countryside Act 1981 and has been recorded on the Ingrebourne River either side of the M25 box culvert at junction 28.

Early goldenrod

2.1.2 Whilst not listed on Schedule 9 of the Wildlife and Countryside Act, early goldenrod is identified as invasive under the Non-Native Species Secretariat, and it has formed extensive stands in particular down the western side of the Weald Brook and is likely to be spreading, affecting the grassland flora. Occasional patches of early goldenrod are found east of Weald Brook, within grassland and woodland (Alder Wood and The Grove).

2.1.3 This plant poses a threat to habitats within the Ingrebourne Valley SMI and to the establishment of planting.

2.1.4 Appendix A of this document will include a plan showing the locations of the invasive species recorded within the Scheme boundary during pre-construction surveys. [This plan to be added by the Principal Contractor following pre-construction surveys.]

2.2 Invasive non-native animals

2.2.1 The final ISMP shall also identify the potential locations of non-native invasive animal species which are not known to be present, but may potentially be encountered during construction. This may include:

- Signal crayfish - this animal is listed on Schedule 9, Part 1 of the Wildlife and Countryside Act 1981.
- Any other invasive non-native species considered to potentially be present during pre-construction surveys.

3. Management of invasive species

[Principal Contractor to describe the control and prevention measures required to be implemented during the construction stage.]

3.1 Pre-construction surveys / checks

3.1.1 Pre-construction surveys for INNS (particularly plants) must be carried out as required by the REAC (Table 1.2). These surveys shall map the presence of INNS and be used to inform the development of the final ISMP.

3.1.2 The findings of the pre-construction surveys confirm presence of:

- Himalayan balsam
- Early goldenrod
- Other [Principal Contractor to include here further information if necessary.]

3.2 Protection of species and retained habitats during treatment works

3.2.1 Protected species and retained habitats are present throughout the site. All proposed treatment/control methods and timing of works must be agreed with the Ecological Clerk of Works (ECoW) and Environmental Manager in order to minimise harm to protected species and habitats.

3.2.2 Any chemical treatment used must be with herbicides approved for use in the UK and appropriate for use in sensitive habitats, particularly near to waterbodies and watercourses (including ditches and drains).

3.2.3 Prior to any use of herbicides in or near water, an application for permission for use shall be submitted to the Environment Agency. No use of herbicides in or near water will take place until approval is granted.

3.2.4 Mitigation works for protected species are required across the site. No treatment works shall proceed without approval from the ECoW or Environmental Manager.

3.3 Specific treatment measures for invasive non-native plants

[This section will be updated by the Principal Contractor and the specific measures for the invasive non-native plants will be described in this section. The Principal Contractor may be required to adapt this section for the relevant invasive non-native plants (such as early goldenrod, Himalayan balsam or any other species recorded in pre-construction surveys).]

3.3.1 A section shall be provided in the final ISMP that includes specific measures for the management and control of invasive non-native plants such as early goldenrod, Himalayan balsam and any other non-native plant found to be present during pre-construction surveys.

3.3.2 The final ISMP will include, as appropriate, the following:

- How invasive non-native plant species shall be identified and marked on site, including appropriate fencing, signs or other means.

- What management and control methods shall be applied for each species, such as:
  - Mechanical treatment (e.g. cutting of plants to prevent spread of seed, excavations of plants and spoil, hand or machine pulling of plants)
  - Chemical treatment
  - Disposal on or off site
- Approvals required prior to works (e.g. approval from Environment Agency to use herbicides in or near water or to bury material on site)
- The timing of works (taking into account any necessary ecological mitigation for habitats and species)
- Name of the specialist carrying out the works and any necessary certificates or competency required to use machinery or chemicals
- Site supervision requirements during works (this shall specify where specialist contractors or ECoW is required)
- Soil management measures for the areas affected by the presence of invasive non-native plants. Where there is a risk that invasive non-native plants may be present with soil, this must be clearly identified and stored/disposed of appropriately (this may include burying affected topsoil in bunds or other locations).
- How machinery, tools, clothing shall be checked and cleaned
- A monitoring plan that shall be put in place throughout construction and the planting establishment period
- Methods of on-going control required during the establishment period

3.3.3 Non-native early goldenrod poses a particular threat to the establishment of new planting. Use of affected topsoil on planting areas is likely to create on-going management and maintenance problems with regards to control of this species. Therefore, it is critical to ensure that affected soil is identified and managed appropriately.

3.4 Specific measures for invasive non-native animals

[This section will be updated by the Principal Contractor and the specific measures for the INNS will be described in this section.]

3.4.1 The final ISMP will include information about what to do in the event of any non-native invasive animal species be encountered during construction. This section would include:

- What species may be present and how to recognise them
- What do to/who to contact should an invasive non-native animals be encountered
- Any necessary checks for invasive non-native animal required during construction (e.g. checking for signal crayfish in gaps and crevices within any machinery which has been used within watercourses)
- A protocol for the humane disposal of invasive non-native animals (such as signal crayfish) if encountered.

3.5 Monitoring

Construction phase

3.5.1 Regular monitoring for INNS will be carried out throughout the construction and establishment period. This ISMP updated if necessary if any new or altered information is found during monitoring. A schedule of monitoring will be included in the final ISMP by the Principal Contractor.

Operational phase

3.5.2 Any monitoring of INNS required during routine maintenance of the operational scheme shall be set out in the Handover Environmental Management Plan (HEMP) which will be created on completion of the Scheme in accordance with Requirement 4 of the DCO and the CEMP.

3.5.3 Any long-term monitoring and on-going management of INNS required in ecological mitigation areas following the planting establishment period will be set out in the Landscape and Ecology Management and Monitoring Plan (LEMP), which is secured under Requirement 5 of the DCO. The management and monitoring set out in the LEMP will be implemented by Highways England.

Appendices

Appendix A. Plan showing locations of the invasive species recorded within the Scheme boundary during pre-construction surveys

[Principal Contractor to provide a plan.]

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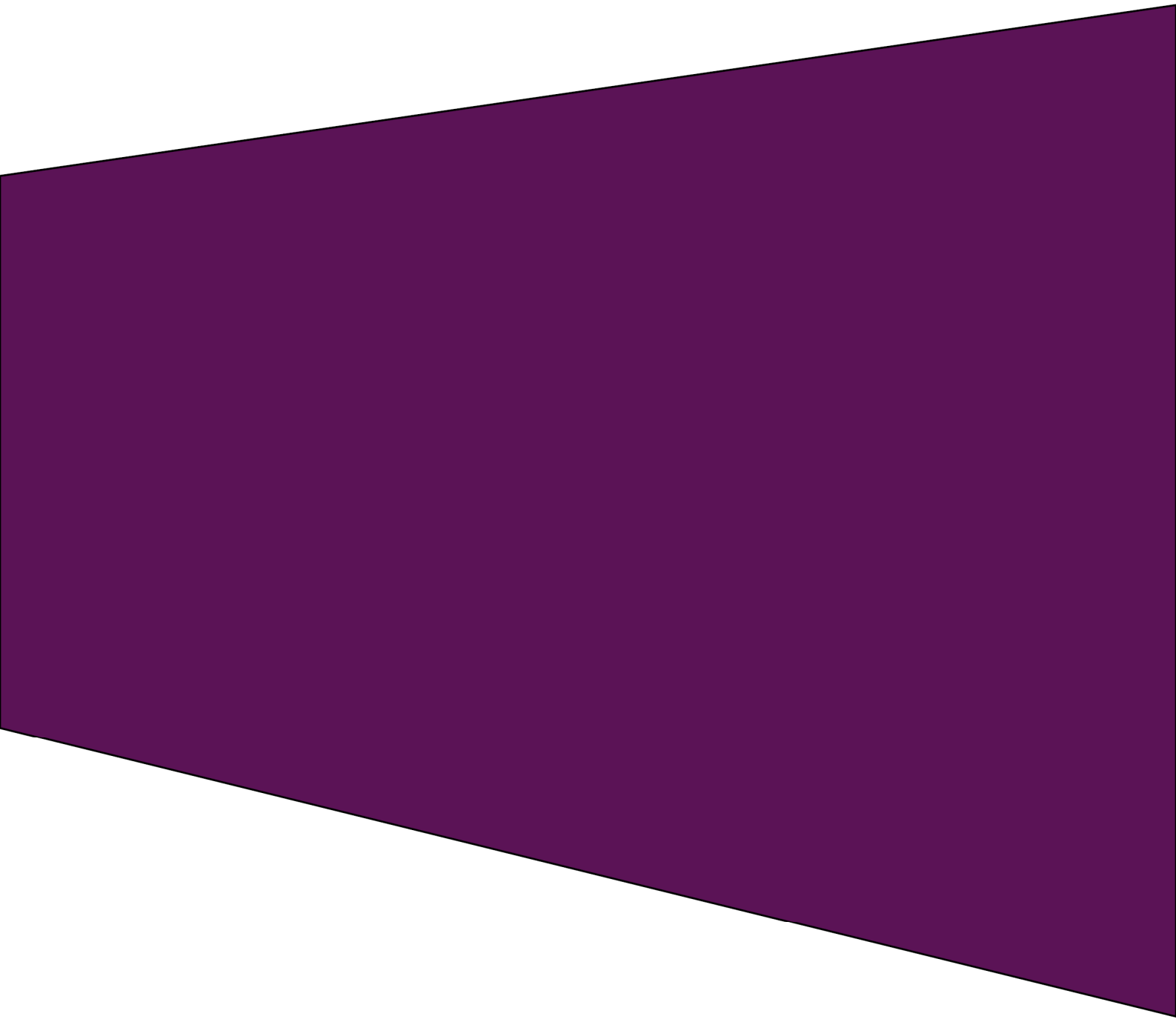

M25 junction 28 improvement scheme Outline Construction Environmental Management Plan

Appendix F: Outline Community Engagement Plan (CEP)

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1. Introduction

1.1.1 The M25 junction 28 scheme is located between Brentwood and Romford in Essex. It falls within the administrative areas of the London Borough of Havering and Brentwood Borough Council along with the Greater London Authority and Essex County Council.

1.1.2 The improvement of junction 28 by Highways England (the "Scheme") 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, if a development consent order (DCO) to authorise the Scheme is made by the Secretary of State.

1.1.3 There has been considerable communication and consultation, both statutory and non-statutory in respect of the Scheme. Background on the consultation can be found in the M25 junction 28 Consultation Report which is held on the Planning Inspectorate website, as submitted with the DCO application.

1.1.4 Over five years, the Scheme has been developed following consultation with a range of stakeholders, and more detailed assessments of traffic, engineering, buildability and environmental factors.

1.1.5 The Outline Community Engagement Plan (CEP) will set out the steps to be undertaken by Highways England to make sure that those living in the vicinity of the scheme are informed of activities and developments relating to its construction.

1.1.6 This Outline CEP sets out:

- The approach for delivering joined up communications and engagement.
- Communications and engagement with identified stakeholders and customer groups.
- How we will work with all parties involved with the scheme collaboratively to deliver customer focused communications and engagement.

1.1.7 The objectives of the Outline CEP are:

- To ensure our customers feel informed and know where to go for information.
- To continuously improve the customer experience by providing clear and timely information to allow customers to plan their journeys.
- To ensure stakeholders can engage and work with us to promote the benefits of the scheme and work through any challenges.
- To ensure everyone working on the scheme understands the importance of their contribution to customer service and that we put the customer at the heart of everything we do.

- We drive a lasting legacy and leave the community better placed for the future through engagement with local schools, charities and community groups.

1.1.8 This Outline CEP will form the basis of the CEP to be prepared by Highways England as part of its Highways England into Construction Environmental Management Plan (CEMP) to be prepared under Requirement 4 of the DCO and approved thereunder by the Secretary of State.

2. Engagement and communication team

2.1.1 Prior to, and during construction, Highways England's Principal Contractor will have a Stakeholder and Communications Officer in place to focus on the customer experience, stakeholder's engagement, communications, correspondence and opportunities to support the local community.

2.1.2 The Stakeholder and Communications Officer will assist in developing the final CEP, and maintain a comment and enquiries log, disseminate identified comments for response and implementation of action.

2.1.3 Through all our communications and engagement activities, the Stakeholder and Communications Officer will aim to tell the wider story of the Scheme, to demonstrate the environmental, safety, economic and social benefits that it will bring to the area and the lasting legacy it will leave.

3. Our customers

3.1.1 The geographic and economic location of the Scheme means it impacts a wide range and number of customers.

3.1.2 The statutory and non-statutory activity to support the DCO application requires communication and engagement with key bodies including the relevant local authorities.

3.1.3 The Scheme falls within the area of the following local authorities:

- London Borough of Havering
- Essex County Council
- Brentwood Borough Council
- Greater London Authority.

3.1.4 Our customers and stakeholders have been categorised by Highways England as follows:

- Road users
- Non road users (pedestrians, cyclists, and horse riders)
- Local government
- Transport
- Political representatives
- Media
- Emergency services
- Statutory
- Operational
- Vulnerable road users (elderly, disabled, inexperienced, moped and motorcycle drivers and animals)
- Local businesses
- Landowners and occupiers
- Local residents
- Local community users.

3.1.5 We want to ensure that our customers receive information in an accessible way and to help them plan safe and reliable journeys.

3.1.6 Within this scope, there is an over-arching awareness of the need to ensure that communication methods are utilised fully and adapted to the needs of the following protected characteristics:

- Age

- Disability
- Gender reassignment
- Race
- Religion or belief
- Sex
- Sexual orientation
- Marriage and civil partnership
- Pregnancy and maternity.

4. Our approach to customer engagement and communication

4.1.1 The CEP aims to ensure that the benefits of the Scheme are well known and understood by local, regional and national stakeholders.

4.1.2 We aim to ensure that our customers, stakeholders, local businesses, road users, landowners and communities are given the facts, opportunities, and reassurance they need to plan their journeys.

4.1.3 The Scheme webpage and social media channels will be used to inform customers of road closures in advance, diversion routes and to promote the benefits of the Scheme. Social media will be monitored daily (Monday to Friday) and comments from the public will be responded to promptly.

4.1.4 All customers and stakeholders will have the ability to get in contact if they have any questions or concerns through the Highways England Customer Contact Centre by calling 0300 123 5000 or by using the designated email address, which is M25j28@highwaysengland.co.uk.

4.1.5 Correspondence will be logged and managed by the Highways England project support staff, who will forward on any correspondence that requires a response to those who are best placed to provide a response, copying in the project team's Stakeholder and Communications Officer.

4.1.6 Customer responses are marked each month by Highways England Regional Customer Lead for the South East using the Road Investment Programme south correspondence scorecard which looks at ensuring all responses following such matters as tone of voice, style guide, and customer service.

4.1.7 The Highways England's Engagement Van will be located at a number of locations prior to the start of works to highlight how customers can access the website and how they can contact us if they have any questions.

4.1.8 A number of channels and platforms have been identified as methods of engaging pre/during/post construction. The list will be reviewed and developed as further opportunities arise.

4.1.9 Table 4.1 sets out the proposed channels for informing customers and stakeholders of construction plans, progress or related information.

Table 4.1: Proposed engagement channels

Product	Product summary	Target Audience
M25 junction 28 web page	Highways England scheme webpage will be used to communicate information about the Scheme, such as why the works are happening, when they will be taking place and the diversion routes. When required, webpage bulletins will be issued to highlight significant changes to the website content. Where possible, stakeholder websites will also be used to communicate information about the scheme.	All
Bi-monthly newsletters	Bi-monthly scheme wide newsletters providing an overall update on the scheme will be shared by email (or post where requested) Customers will need to sign up to alerts to receive a copy.	All
Local and community briefings	Quarterly briefings arranged (either online or at existing meetings) to provide updates on the Scheme and developments.	Local authorities Parish councils community/ resident groups, including the residents of Putwell Bridge Caravan Park
Engagement van	The Highways England engagement van will be located, prior to the start of works, in key locations around the Scheme to raise awareness of the Scheme.	Local residents Communities Road Users
Social media	Social media will be used, working with local government and community groups, to maximise the reach of communication, specifically to reach pre-existing communities that may not be aware of the Scheme.	Local residents Communities Road Users
Information boards and signs	Where work is taking place in areas of public use, a notice will be placed in a safely accessible location, such as on existing information boards or fencing or use signage.	Local residents Communities Road Users

Product	Product summary	Target Audience
Direct mail	Leaflets or letters will be sent at least one week before works start in any local area. These will include explanation of works, timings and duration as well as contact details.	Properties 50m from the works and directly affected properties
Community deposit points	Using the same venues as we displayed consultation materials and the DCO application, ask for those venues (mainly libriaries and community centres) to display Scheme updates (either letters, signs or newsletters)	Local residents Communities
Media	Regular media releases to local and national newspapers and other media outlets	All

5. Stakeholder engagement

5.1.1 Stakeholder mapping is pivotal to delivering an effective strategy. The mapping of stakeholders using purely the influence / interest model assumes the level of engagement our stakeholders want/needs/expects.

5.1.2 Stakeholder engagement will be tailored to each stakeholders' requirements and to ensure the engagement encourages two-way dialogue, meeting agendas will be proposed in advance of meetings. Meeting minutes and actions will be shared following the meetings for comments and updates.

5.1.3 To ensure we deliver on all stakeholder commitments, a stakeholder commitments log will be maintained and regularly reviewed.

5.1.4 The Scheme and its construction will have an impact on affected landowners, necessitating land acquisition both permanent and temporary. Landowners, lessees, tenants, occupiers and those with an interest in the land affected are therefore a significant group of stakeholders.

5.1.5 Those who are not directly affected by the Scheme but may still have an interest in it will be engaged through the monthly newsletters, webpage and social media.

5.1.6 Stakeholder engagement will take place through the following forums:

Stakeholder group	Forums
Key local businesse / attractions	Working groups and ad hoc meetings will be set up to inform distributive work and any changes to traffic management as and when required.
Local authorities	Monthly meetings and a communications working group,
Local parish councils	Attendance at parish council meetings when required and ad hoc site visits
Local residents	Ongoing engagement will continue throughout the duration of the scheme through residents working groups and communication channels
Other development schemes in the Scheme area	Monthly working groups
Local businesses	Briefing and traffic management clinics will be set up when required
MP's	Letters and site visits
Non-motorised users (NMU)	Liaison groups and ad hoc meetings will be set up to inform distributive work and any changes to traffic management as and when required.

6. Evaluation

6.1.1 The success of our CEP will be regularly reviewed by the Principal Contractor to ensure we are achieving our objectives and improving our communications approach.

6.1.2 We will gather qualitative feedback via evaluation forms to help us measure and improve our communications.

6.1.3 We will request feedback from stakeholders to help us measure and improve our engagement.

6.1.4 This information helps us analyse impact, review lessons from completed activities and inform future planning as well as share insight with other communications teams within Highways England.

Appendices

Appendix A. Community Engagement Plan stakeholders

[Contact details will be included in the Stakeholder Tracker]

Host local authorities
Brentwood Borough Council
Essex County Council
Greater London Authority
London Borough of Havering
Transport for London
District, town and parish councils
Basildon District Council
Blackmore, Hook End and Wyatts Green Parish Council
Cambridgeshire County Council
Chelmsford City Council
Colchester Borough Council
Doddinghurst Parish Council
Epping Forest District Council
Herongate and Ingrave Parish Council
Hertfordshire County Council
Ingastone and Fryerning Parish Council
Kelvedon Hatch Parish Council
Medway Council
Mountnessing Parish Council
Navestock Parish Council
Southend-on-Sea Borough Council
Stondon Massey Parish Council
Suffolk County Council
Thurrock Borough Council
Waltham Forest Council
West Horndon Parish Council
Businesses

Brentwood Chamber of Commerce
Essex Chamber of Commerce
Great Essex Business Board
Havering Chamber of Industry and Commerce
London Enterprise LEP
London Riverside Business Improvement District
Romford Business Improvement District
South East LEP
The Havering Business Network
Communities
Essex Local Resilience Forum
Havering Borough Resilience Forum
Havering Compact
Havering Association for people with Disabilities
Emergency services
East of England Ambulance Service
Essex Fire and Rescue
Essex Police
London Ambulance Service NHS Trust
London Fire Brigade
Mayor's Office for Policing and Crime
Metropolitan Police
Ministry of Defence
National Blood and Transplant Authority
Police, Fire and Rescue Commissioner for Essex
Environmental bodies
English Heritage
Environment Agency
Essex Wildlife Trust
Forestry Commission
Historic England - East of England
Natural England
Health
Barking Havering and Redbridge University Hospitals NHS Trust

Basildon and Brentwood Clinical Commissioning Group
Havering Clinical Commissioning Group
Mid Essex Clinical Commissioning Group
National Health Service Commissioning Board
NHS Basildon and Brentwood, Clinical Commissioning Group
NHS Business Services Authority
NHS Digital (previously Health and Social Care Information Centre)
NHS Improvement (previously National Patient Safety Agency)
NHS Litigation Authority
NHS Trust Development Authority
Public Health England
The NHS Commissioning Board Authority (NHS England)
Non motorised users (NMUs)
Cycling UK
Ramblers UK
British Horse Society
Cyclists Tourist Club
Fortyplus Cycling Club
Havering and East London Ramblers
Havering Cyclists
Havering's Cycling Liaison Group
Hornchurch Cycle Club
Romford Cycling Club
Residents/landowner
Trustees of the Gardens of Peace Muslim Cemetery
Glebeland Estates Limited
Grove Farm
Luddington Golf Limited
Maylands cottages
Putwell Bridge Caravan Site
Woodstock Avenue residents
Road users
Dynamic Parcel Distribution
Driver and Vehicle Standards Agency

RAC
Royal Mail
Transport
Brentwood Bus and Rail Users Association
Brentwood Community Transport
Caravan and Motorhome Club
Campaign for Better Transport
Disabled Motoring UK
Disabled Persons Transport Advisory Committee
Freight Transport Association
Megabus
National Express
Network Rail
Passenger Transport Executives
Road Haulage Association
Transport for London Buses
Transport Focus
Utilities
British Pipeline Agency Limited
BT Openreach
Cadent Gas
Independent Power Networks Limited
National Grid
UK Power Networks

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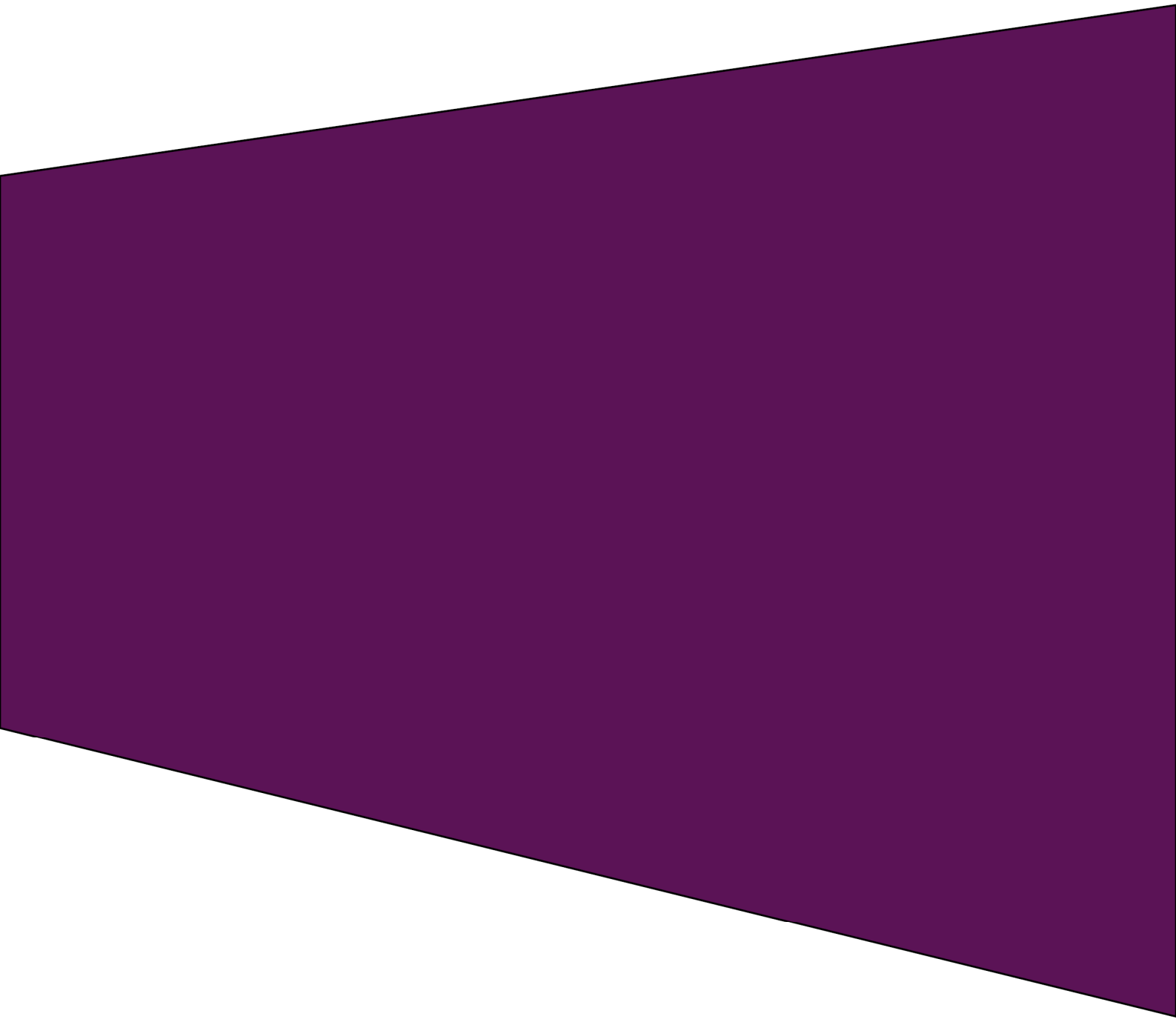

Appendix H. Environmental consents checklist

[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 recovery 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	Relate to duties and liabilities in relation to road construction and management. Carry out consultation with stakeholders and ensure information on footpath/road closures will be provided at an early stage.	If consent to close footpaths and roads is required this will be applied for and timing constraints built into the programme.
Noise and vibration		
Environmental Protection Act 1990 (as amended)	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. 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.	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. Principal Contractor is to prepare method statements to address noise and vibration, including restricting working hours to minimise disruption to residents caused by noise.
Control of Pollution Act 1974 (as amended)	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.	Principal Contractor to apply for a Section 61 Consent, if the local authorities require one.
Environmental Noise (England) Regulations 2006	The regulations implement the European Environmental Noise Directive in England and require Important Areas to be identified.	Important Areas identified from strategic noise mapping are considered in the Environmental Statement to ensure impacts at these locations are minimised.
Noise Policy Statement for England (NPSE) 2010	Within the context of Government policy on sustainable development, the NPSE requires that significant adverse effects as a result of the	The Scheme incorporates mitigation measures in its design to avoid significant adverse effects and to minimise adverse impacts during the

Legislation, policy or strategy	Requirement	Comments/actions
	Scheme are avoided, adverse impacts are mitigated and minimised, and that the Scheme contributes to the enhancement of the acoustic environment.	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	• 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
	• 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	• 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: • 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
	• limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.	
The Highways Noise Payments and Movable Homes (England) Regulations 2000	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.	Any discretionary power to provide a noise payment will be assessed using the relevant Regulations criteria.
Biodiversity		
Wildlife and Countryside Act 1981 (as amended)	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. 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.). Under no circumstances shall there be intentional killing or taking of fauna. Provision shall be made for wildlife to continue to utilise corridors.	If tree felling needs to take place, trees will be inspected for bats/birds by a qualified ecologist prior to removal.

Legislation, policy or strategy	Requirement	Comments/actions
Natural Environment and Rural Communities Act 2006	Directly applicable activities: • Demolition and site clearance; • Earthworks; • Site set up; • Landscaping; and • Site reinstatement. When works are likely to impact on areas of interest to Natural England this body must be consulted regarding working practices and plans. Part III of the Act makes additional provision for protection of birds, and spread of invasive species.	Where licences and/or permits are required these must be obtained ahead of works.
Conservation of Habitats and Species Regulations 2010	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). Any activities that may affect protected habitat/species, as listed under these Regulations, should be discussed with a suitably qualified ecologist.	The REAC the Schedule of Mitigation, lists all the requirements for protected species.
Protection of Badgers Act 1992 (as amended)	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.	Badger setts are present close to the construction area which will be protected. If this badger sett or any new badger setts will be damaged, destroyed or obstructed, a badger licence will be required from Natural England.

Legislation, policy or strategy	Requirement	Comments/actions
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. Consent/approval required for any discharge of water to watercourse.	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
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: • Environmental objectives should be set to ensure that good groundwater status is achieved and that its deterioration is avoided. Upward sustaining trends in the concentration of a pollutant must be identified and reversed;	A Water Framework Directive Assessment Report has been submitted as part of the DCO application (application document reference: TR010029/APP/6.7), detailing how the requirements of the Water Framework Directive (Directive 2000/60/EC of the European Parliament) have been met.

[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.claire.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
	• 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.	
Environment Agency's approach to groundwater protection (2017)[12]	The Environment Agency's approach to groundwater protection states that: • 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.	
The Control of Substances Hazardous to Health Regulations (2002)[13]	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.	
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	

[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
[13]Health and Safety Executive (2002) COSHH, Accessed on 08/02/2019 from http://www.hse.gov.uk/nanotechnology/coshh.htm
[14] UK Government (2015) Construction Design and Management Regulations, Accessed on 11/112019 from http://www.legislation.gov.uk/uksi/2015/51/contents/made

Legislation, policy or strategy	Requirement	Comments/actions
	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).	
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		

[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/uksi/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/uksi/2016/1154/made

Legislation, policy or strategy	Requirement	Comments/actions
Ancient Monuments and Archaeological Areas Act 1979	The specific consent of the SoST has to be given for: 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". 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 Consents) Order 1994. Advice is offered by the Department of Culture, Media and Sport.	No consents required
Planning (Listed Buildings and Conservation Area) Act 1990	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	No consents required

Legislation, policy or strategy	Requirement	Comments/actions
	determining the planning application of developments within them. Ensure that the clients/developers have agreed with the planning consents and those procedures are in place for dealing with Historic England or otherwise. 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.	
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.	The Principal Contractor or waste holder must take all reasonably practical steps to ensure that: • 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 • 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.
The Hazardous Waste (England and Wales) Regulations 2005 (SI	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 waste may be produced throughout the Scheme. The Principal Contractor or waste

Legislation, policy or strategy	Requirement	Comments/actions
2005/894) (as amended in 2016)	hazardous in the List of Waste (2000/532/EC) and the CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008).	holder will manage hazardous waste in accordance with the Regulations, including: • 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.
Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 (SI 2013/3113)	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.	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.
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.

Legislation, policy or strategy	Requirement	Comments/actions
The Environmental Protection Act 1990 (c.43) as amended in 1996 and 1999	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. 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.	The Principal Contractor or waste holder must take all reasonably practical steps to ensure that: • 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; • 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

Legislation, policy or strategy	Requirement	Comments/actions
		waste management facilities are authorised to accept and manage the waste. Duty of Care audits of carriers and waste management facilities are advisable.
The Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154) (as amended 2018) (SI 2018/110)	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.	The Principal Contractor or waste holder must take all reasonably practical steps to ensure that: • 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.
The CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008)	The CLP Regulation (within the UK and EU) was introduced in a staggered manner between 1999 and 2015. To summarise, the Regulation provides guidance on the application of the CLP criteria for hazards (physical, health and environmental).	The Principal Contractor or Waste Holder will ensure that the classification, labelling and packaging of waste and materials is 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)	The Regulations, as amended in 2000 (SI 2000/3359), require the safe disposal or decontamination of all equipment that contains polychlorinated biphenyls (PCBs). Equipment	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

Legislation, policy or strategy	Requirement	Comments/actions
Regulations 2000 (SI 2000/1043)	containing 5 litres or more of PCB substance or mixture is also covered by the Regulations.	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 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.	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
Climate		
Climate Change Act 2008, as amended	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.	Principal Contractor to mitigate carbon emissions as far as possible.
Construction 2025 (July 2013) HM Government	Support UK construction industry in achieving 50% reduction in construction emissions by 2025.	Principal Contractor to mitigate carbon emissions as far as possible.
Net Zero – The UK's contribution to stopping global warming (2019) Committee on Climate Change	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. The transport sector is highlighted as one of the major challenges and opportunities to reach a 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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