

A2 Bean and Ebbsfleet Junction Improvements Environmental Statement Volume 2 – Appendix B Outline Environmental Management Plan February 2019

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1. Introduction and background to Scheme

1.1 Purpose of the Report

- 1.1.1 This document is the Outline Environmental Management Plan (OEMP) for the A2 Bean and Ebbsfleet Junction Improvements Scheme referred to as the 'Scheme' in this report. It is based on the preliminary design. The purpose of the OEMP is to manage the environmental effects of the Scheme as identified within the Environmental Statement (ES), and to demonstrate compliance with relevant environmental legislation. The responsibility for the preparation of the OEMP lies with the Design Consultant with approval by Highways England.
- 1.1.2 This OEMP has been prepared in accordance with the guidance in the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Manual of Contract documents for Highway Works (MCDHW); Environment Management Plan Structure, version 2 June 2017; and Interim Advice Notes (IAN) 183/14 Environment Management Plans and IAN 182/14 Major Scheme: Enabling Handover into Operation and Maintenance.
- 1.1.3 The overall objectives of the OEMP are as follows:
- To minimise the risk of any type of pollution incident or other form of unauthorised discharge.
 - To avoid or minimise impact to nearby receptors.
 - To be compliant with statutory legislation and contract specifications.
 - To provide a framework for the future implementation and review of the CEMP and other relevant documents.
- 1.1.4 A full Construction Environment Management Plan (referred to as the CEMP) will be prepared by the Principal Contractor (PC) (see Section 2.1) once in post, and the design and construction plans have been finalised. The CEMP will be adopted and integrated into the PC's Handover Management Plan (HEMP) and Construction Phase Health and Safety Plan. Both documents will be required to be approved by Highways England.
- 1.1.5 The CEMP will be a 'live' document and will be maintained by the PC throughout the life of the Scheme.
- 1.1.6 Glossary and abbreviations used within this document are located in Chapter 8.

1.2 Scheme Overview

- 1.2.1 The Scheme is located between Dartford and Gravesend in north Kent, and comprises adjacent grade-separated junctions at Bean and Ebbsfleet, approximately 1.2 miles (2km) apart on the A2 trunk road. In August 2017, Highways England, announced the 'Preferred Route' for the A2 Bean and Ebbsfleet Junction Improvements Scheme, to improve capacity and manage forecasted increases in traffic. The Scheme is needed to support significant predicted future economic growth in the area, including development already underway at Dartford and Ebbsfleet Garden City; it forms part of the Kent Thameside Strategic Transport Programme (STP).
- 1.2.2 Bean Junction is the first junction on the A2 to the east of the M25. The existing A2 highway through the study area is a 4-lane dual all-purpose road that reduces

to 3-lanes through Bean Junction. Appendix A1 contains a Location Plan for the Scheme. The A2 Bean Junction connects the A296 and B255 and provides access to the Bluewater shopping centre. The A2 Ebbsfleet Junction connects the A2260 and Southfleet Road. Ebbsfleet Junction was constructed in 2005 to serve the Ebbsfleet International Rail Station and the surrounding Ebbsfleet Valley and Eastern Quarry developments that form part of Ebbsfleet Garden City.

- 1.2.3 The Scheme is due to start construction in 2020. The outline construction programme included in Appendix B assumes a start in early 2020 with statutory undertaker diversions. Traffic Management will be in place throughout the construction period. Site mobilisation including construction compounds, site clearance, and the demolition of eleven cottages, at Ightham Cottages, will be completed in May 2020. Environmental works including the relocation of any ecology constraints identified prior the start of works will be implemented up to the end of September 2020. The work at Bean and Ebbsfleet Junctions will be undertaken as two overlapping phases. At Bean Junction, starting with the construction of the bridge structure over the A2 at Bean Junction starting in June 2020 and remodelling at Bean Junction and work to the A2 slips proposed to complete in March 2022. The remodelling at Ebbsfleet Junction is planned to be completed in August 2021.

Scheme Proposals

- 1.2.4 The Scheme Drawings (Figure 2.2) and Preliminary Environmental Design Drawings (Figure 2.3) are included in the Environmental Statement Volume 3.

Bean Junction Improvements

- 1.2.5 The proposed Bean Junction improvements broadly retain the existing layout but with an additional overbridge across the A2, adjacent to the existing Bean Lane Overbridge and a new slip road on to the A2 for eastbound traffic. The existing roundabouts will also be enlarged and converted to full traffic signal control.
- 1.2.6 The Bean North Roundabout will be widened to the east to accommodate a new southbound link adjacent to Hope Cottages, new eastbound on-slip and full traffic signal control. This will require the demolition of eleven properties (Ightham Cottages).
- 1.2.7 A new bridge over the A2 east of the existing Bean Lane Overbridge will be provided for southbound traffic from the roundabout (the existing Bean Lane overbridge will be used for northbound traffic) and there will be a new entry slip road on to the A2 for eastbound traffic. The entry slip will provide four running lanes eastbound between the entry slip and the A296 merge by replacing the hard shoulder with a hard strip.
- 1.2.8 The A2 westbound off-slip will be widened to three lanes on the approach to the roundabout with all three lanes available for right turn movement to Bean Lane (link road). The existing dedicated left turn lane from Bean Lane to the westbound on-slip will be removed.
- 1.2.9 The existing B255/A296 slip road will be kept open in its existing layout, including the dedicated left turn lane. A narrow traffic island or barrier will be introduced to the B255 southbound carriageway between the Bluewater Parkway merge and the A296 diverge, segregating the four-lane carriageway into a dual two-lane carriageway.

Ebbsfleet Junction Improvements

- 1.2.10 The proposed Ebbsfleet Junction improvements broadly follow the existing road layout but with the existing roundabouts enlarged and provision of full traffic signal control. Access will be provided from the junctions to the new and future residential development areas.
- 1.2.11 The link road between the roundabouts will be widened from the existing single carriageway to a dual two-lane carriageway with additional widening to three lanes on the approach to the roundabouts. The existing eastbound and westbound off-slips will be retained.
- 1.2.12 The Ebbsfleet East Roundabout will be extended to the north and an additional arm added to accommodate access to the Station Quarter South development. The eastbound exit arm from Ebbsfleet East Roundabout will be widened to three lanes, which divides into two carriageways with one lane heading to the local road network at Pepperhill Junction and the other two lanes heading to the A2.
- 1.2.13 The eastbound off-slip will be widened at the approach to the roundabout with a dedicated signal controlled left turn lane. The Ebbsfleet West Roundabout will be extended to the south and will be fully signalised. The west arm at the roundabout will provide access to the Ebbsfleet Green development, currently under construction. The circulatory carriageway will be widened to provide for three lanes. The entry to the roundabout from the north will also be widened from existing two lanes to three lanes on the approach to the junction.

A2 Mainline

- 1.2.14 The A2 mainline refers to the existing A2 from west of Bean to east of Ebbsfleet within the Scheme Boundary as shown on Scheme figures.
- 1.2.15 Narrow lanes will be provided along the A2 eastbound carriageway over a length of approximately 1.5km between Bean Junction and Ebbsfleet Junction. This is required to avoid the need to widen the A2 into the north verge, where significant constraints are present including ancient woodland, electricity pylons, a subway and a grade II listed arched footbridge. Along this section, the central reserve metal barrier will be replaced with a rigid concrete barrier to provide more width on the eastbound carriageway. The existing central reserve concrete barrier will be shifted slightly south under Swanscombe Footbridge, to provide more width on the eastbound carriageway.
- 1.2.16 There will be changes to the gantries along the A2 mainline including one demolished gantry, two new cantilever gantries and changes to the signs and signals on retained gantries.

1.3 Environment context

- 1.3.1 The A2 was built in the 1970s and links London to Dover. In 2008, the road east of Bean Junction was widened to 4 lanes. The A2 follows undulating topography, falling east from Bean to a low point at the B262 Pepperhill Junction. West of Bean Junction, the A2 Bean Hill cutting is enclosed by Darenth Wood, which is ancient woodland, and designated a Site of Special Scientific Interest (SSSI). Darenth Wood retains a medieval boundary that is a Scheduled Monument abutting the highway boundary of the A2.

- 1.3.2 At Bean Junction highway planting merges with existing mature vegetation, including The Thrift ancient woodland and two other areas of ancient woodland and the semi-mature planting around Bluewater shopping centre. This planting helps to buffer receptors from the A2 including: adjacent housing; and, the undulating arable farmland and Bean village that lies within Green Belt to the south of the A296 Watling Street (Roman Road) and A2.
- 1.3.3 To the north of A2 and A296 Watling Street (Roman Road), the quarried landscape, shaped by the former cement industry in this area, is defined by steep chalk cliffs and mature vegetation along the highway boundary. This area is being developed with new housing and mixed-use areas being developed as part of Ebbsfleet Garden City.
- 1.3.4 At Ebbsfleet Junction, the wide verges and structured planting form what is considered to be the vehicular ‘entrance gateway’ to the Ebbsfleet Valley. Expansive open views from the A2 and junction approaches look across the rural landscape to the Kent Downs. The numerous transmission lines and railway infrastructure are dominant features.
- 1.3.5 An area around the A2 is known to have dated back to the Romano-British period and includes Springhead Roman site Scheduled Monument that lies immediately adjacent to the A2 at Ebbsfleet Junction as well as prehistoric remains from the Palaeolithic and Neolithic periods.
- 1.3.6 Other sensitive areas and environmental constraints within 1 km of the Scheme include:
- Swanscombe Skull Site SSSI approx. 900 m north of the Scheme, and Baker’s Hole SSSI approx. 500 m north of the Scheme;
 - Five Grade II listed buildings including Stone Castle, Lower Bean Farmhouse and Barn, Swanscombe Cutting footbridge crossing A2 east of A296 Junction, and Blue House;
 - Country Parks include Swanscombe Heritage Park to the north, Beacon Wood to the south and Darenth Country Park to the west of the Scheme; and,
 - Four Local Wildlife Sites.
- 1.3.7 Of the Eleven AQMAs identified, four are designated by Dartford Borough Council and seven designated by Gravesham Borough Council. The Scheme is located within the Dartford AQMA No.4 and Gravesham A2 AQMA. Seven Defra NIAs are located within 1 km of the Scheme, on stretches of the A2 between Bean and Ebbsfleet, the B262, and the A296 Watling St (Roman Road).
- 1.3.8 There are seven source protection zones within the study area. There are also two groundwater abstraction points east of Ebbsfleet Junction within the Scheme limits. Flood Zones 2 and 3 are located to the north east of Ebbsfleet Junction along the River Ebbsfleet.
- 1.3.9 The geology and the number of disused landfill sites that accepted inert waste in the study area means that the area is sensitive to pollution incidents.
- 1.3.10 Environmental constraints are shown in Appendix A2.

1.4 Scheme Objectives

- 1.4.1 The Road Investment Strategy (RIS) states that the Scheme should ‘*enable major developments in the vicinity of Ebbsfleet*’ and ‘*support the development of a Garden City*’ to facilitate housing growth to accommodate the growing population. As stated on the Highways England website ‘*the aim of this scheme is to support growth in the Kent Thameside area*’.
- 1.4.2 The current challenges for the Scheme include:
- Traffic flows along this section of the A2 at or near route capacity;
 - Traffic congestion at Bean Junction during peak hours; and
 - Significant increase in traffic levels expected because of major development plans in the local and regional area.
- 1.4.3 The objectives for the Scheme were developed in conjunction with the Department for Transport (DfT) and local authorities. Improving the junctions will:
- Support economic and housing growth in north Kent, including Ebbsfleet Garden City;
 - Increase capacity of the junctions and minimise the impact on the A2;
 - Improve reliability and journey times;
 - Improve road safety;
 - Minimise impact on the environment; and
 - Provide value for money.
- 1.4.4 Alongside the objectives for the Scheme, Highways England aims to:
- Minimise environmental impact as measured in accordance with Design Manual for Roads and Bridges (DMRB); and
 - Where possible improve air quality with regard to vehicle emissions generally and specifically at the existing declared Air Quality Management Areas (AQMA).
- 1.4.5 In addition, Highways England sets out its own approach to meeting the key performance indicators identified within the Road Investment Strategy (RIS) of “no net loss of biodiversity by 2020”. The Highways England Delivery Plan 2015-2020 also sets targets to mitigate noise in at least 1,150 Noise Important Areas (NIAs) between 2015/2016 and 2019/2020. This document also demonstrates the ability of the Scheme project to meet the requirements within Highways England’s licence, specifically in relation to the environment.
- 1.4.6 Highways England published ‘The Road to Good Design’ in January 2018, which sets out design principles with a view to delivering the aspiration to ‘*deliver safer, better, beautiful roads which connect people and connect our country*’.
- [Following the receipt of the consent for the Scheme, specific references in this document made to the Requirements and Protective Provisions, relating to the various phases of construction, will be updated.]

2. Project Team Roles and responsibilities

2.1 Roles and Organisations involved in the delivery of the Environmental Management Plan

- 2.1.1 Highways England (HE) or the Project Management Consultant appointed by Highways England will be responsible for overseeing management of the project. Some of the site supervision roles such as the Engineering Clerk of Works and procurement specialist consultants to supervise, monitor or check the PC’s Method Statements including sensitive activities will be delegated where required by Highways England.
- 2.1.2 A Principal Contractor (PC) is the contractor with control over the construction phase of a project involving more than one contractor. They are appointed in writing by the client to plan, manage, monitor and coordinate health and safety during this phase. The PC 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 project documents and site files.
- 2.1.3 The key project roles envisaged at this stage for Highways England and the PC are listed in Table 2.1. These will be reviewed and agreed in subsequent stages. Individual names and contact details will be confirmed and inserted in the CEMP where applicable by Highways England and the PC prior to the commencement of construction.

Table 2-1: Contacts details for key project roles and organisations involved in the delivery of the Environmental Management Plan

Organisation	Contact and organisation	Email	Phone
Highways England Project Manager/Project Manager Consultant			
PC Environmental Manager			
PC Environmental Clerk of Works			
PC Environmental Specialist(s)			
Community Liaison Officer			

2.2 Environmental Management Responsibilities

- 2.2.1 The PC is responsible for producing the full CEMP once the design and construction plans have been finalised.
- 2.2.2 The PC will be responsible for preparing the HEMP and Construction Phase Health and Safety Plan on completion of construction, for handover to the managing agent.

- 2.2.3 Highways England and/or its delegated Project Management Consultants, PC and subcontractors are all responsible for adhering to and complying with the Scheme objectives, Scheme environmental policy, relevant environmental legislation, bylaws and regulations. It is a requirement that all site personnel will be made aware of their duty of care to the environment, including local communities, and will be provided with adequate training, supervision or instruction in the form of tool box talks, site induction modules and specific method statements as necessary.
- 2.2.4 Responsibilities for site environmental management will be delegated to key personnel by the PC. 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 PC.
- 2.2.5 The key environmental management roles and responsibilities are shown in Table 2-2. Individual names and contact details will be confirmed and inserted where applicable by Highways England and the PC prior to commencement of construction phase.

Table 2-2: Environmental Management Responsibilities

Role	Responsibility	Contact details
Highways England Project Manager	Overseeing implementation of whole project and the individual's undertaking of specific roles and duties. To be reported to as per Contract requirements and internal organisation Environmental Management Systems (EMS).	
PC Environmental Manager	Overseeing the environmental components of the project. Coordinating with specialists and liaising with the Local Authority to agree working hours, discuss working methods and secure formal consent e.g. Section 61 agreement if required. Auditing the PCs' Site Environmental Management Plans and Programmes and ensuring compliance Monitoring compliance with the environmental requirements of the Works Information. Reviewing and maintaining awareness of the requirements of key relevant legislation, policies, and strategies prior to and during construction	
PC Environmental Clerk of Works	Providing site inductions on environmental practices, conducting tool box talks, specialist surveys and overseeing monitoring activities as required. Undertaking day to day monitoring and compliance checks. Monitoring environmental compliance on site. Maintaining and updating site specific method statements. Monitoring dust, noise and vibration. (detail to be decided with the Environmental Health Officer (EHO) and included in the formal Section 61 agreement if required) Monitoring hours of working to meet accepted noise and vibration limits in consultation with the relevant EHO. Developing Emergency Spill Response Plan with PC Health & Safety Officer for incidents on site.	

Role	Responsibility	Contact details
	Ensuring local Environment Agency (EA) requirements are implemented for consents and permits.	
PC Environmental Specialist(s)	Contamination & remediation specialist. Waste Management Specialist, may be a member of PC dedicated quality and safety team. Ecologist to supervise if protected species presence confirmed or risk identified during works. Landscape Manager to supervise planting and aftercare. Agricultural Specialist to advise on construction activities and minimising impacts in relation to agricultural operations. Other, as required.	
PC Community Liaison Officer	Key liaison with all of the above and Highways England's Public Liaison Officer: Producing, maintaining, developing and implementing the Community Relations Strategy. Liaising with farmers/landowners in advance of and during the construction process. Notifying local residents, occupiers of nearby properties, and businesses, a minimum of two weeks in advance, of the nature and anticipated duration of planned construction works that may affect them Supporting the production of project communications such as the project website and newsletters. Establishing a dedicated freephone telephone helpline together with a dedicated email address and postal address for enquiries and complaints during the construction phase. Ensuring as a minimum that the relevant contact numbers, email and postal addresses are displayed on signs around the construction site and published on the project website. Maintaining comment and enquiries, and complaint logs, and disseminating comments for response and implementation of actions.	

3. Record of environmental actions and commitments

- 3.1.1 The record of Environmental Actions and Commitments (REAC) identifies the environmental commitments made during the Preliminary Design to address the potential environmental effects of the Scheme.
- 3.1.2 The REAC will be updated as the project progresses and will be finalised at the end of construction on completion of the Scheme, when it will be developed as the HEMP. This is the main vehicle for passing essential environmental information to Highways England and crucially to the body responsible for the future maintenance and operation of the asset.

Table 3-1: Record of environmental actions and commitments

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
General (G)									
G1	CH 2	Hours of Working	Construction will take place between 7.00 and 17.00 extending to 19.30 in the summer months. Weekend and overnight working will be a requirement to undertake specific tasks: <ul style="list-style-type: none"> Any Works on the A2 (Central Reserve Barrier, resurfacing, bridge deck installation); Changes to traffic management layouts; and Surfacing to slip roads and junctions where traffic management is required to close or restrict lanes to one lane. 	Advice from ECI Contractor	Site Programming and Daily Site Audits	Contractual responsibilities between Highways England and Principal Contractor.	Principal Contractor	P and C	Initial: Date:
G2	CH 2	Location of construction Compounds	Shown on Scheme Drawings ES Figure 2.2	Advice from ECI Contractor	Site Programming and Daily Site Audits	Contractual responsibilities between Highways England and Principal Contractor.	Principal Contractor	P and C	Initial: Date:
G3	CH 2	Reduce light disturbance for sensitive receptors	Replacement of existing SON lamps within the Scheme with LEDs prior to construction of the Scheme.	Advice from ECI Contractor	Site Programming and Daily Site Audits	Contractual responsibilities between Highways England and Principal Contractor.	Principal Contractor	P and C	Initial: Date:
G4	CH 2	Delivery Routes and minimising disturbance along local roads	Routing of deliveries where possible along the A2 with the exception of aggregates, asphalt and concrete. If the docks are used at Ebbsfleet, then the A2260 will be a prime delivery route. The majority of construction traffic will use the A2 and A296 to move between the two junctions.	Advice from ECI Contractor	Site Programming and Daily Site Audits	Contractual responsibilities between Highways England and Principal Contractor.	Principal Contractor	P and C	Initial: Date:
G5	CH 6	Minimise the impact of construction traffic and road diversions	The Principal Contractor will provide a Traffic Management Plan in the CEMP to manage the routing of construction traffic and road diversions during the construction phase of the Scheme.	Advice from ECI Contractor	Site Programming and Daily Site Audits	Contractual responsibilities between Highways England and Principal Contractor.	Principal Contractor	P and C	Initial: Date:
G6	CH 2	Keeping NMU routes open	During the construction NMU routes will be maintained through the interchanges	Advice from ECI Contractor	Site Programming and Daily Site Audits	Contractual responsibilities between Highways England and	Principal Contractor	P and C	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
						Principal Contractor.			
G7	-	Designing maintenance access routes to minimise environmental impact	<p>The layout of maintenance access routes and wayleaves will be designed to minimise site clearance and disturbance to existing retained trees with the Scheme and on and adjacent to the boundary.</p> <p>Wayleaves and access routes for maintaining utilities at Ebbsfleet and Bean Junction will be provided as rights of way only, without excavation, surface treatment or fencing to define routes – unless there is a requirement to manage ground condition or protect the roots of trees as advised by the arboriculturist during detail design. Where there is the requirement to manage ground conditions along maintenance access routes or excavate existing services along wayleaves the Environmental Clerk of Works (ECoW) will advise on environmental constraints and measures to mitigate the impact of undertaking any work with reference to the ES and CEMP, and environmental specialists including archaeology and ecology.</p>	Access routes and wayleaves identified as part of the Scheme	Contractual responsibilities between Highways England and Principal Contractor	Principal Contractor	The Principal Contractor and ECoW will review with inputs from the design consultant and utilities companies	P and C	Initial: Date:
G8	CH 6	Maintain strong community relations	<p>Prior to construction, the contractor will register with the National Considerate Constructor's Scheme that is recognised by industry and the Government for encouraging firms to be sensitive to the environment and will establish a forum to disseminate construction information to the Statutory Authorities, advisory bodies, landowners, parish councils, resident associations, local interest groups and the general public, in line with the stakeholder communications plan. A Community Relations Officer will be appointed who will be responsible for these specific tasks.</p> <p>The Principal Contractor will keep local residents and other affected parties informed of the progress of the works, including when and where the noisiest activities will be taking place and how long they are expected to last. All noise complaints will be effectively recorded, investigated and addressed.</p>	Community sensitive receptors	National Considerate Constructor's Scheme and establish a forum to disseminate construction information to the consultees.	Contractual responsibilities between Highways England and Principal Contractor.	Principal Contractor	P and C	Initial: Date:
Air Quality (AQ)									
AQ1	Ch 5	To limit and control emissions to air during construction to avoid direct and indirect impacts on	Works will be carried out in accordance with the Best Practicable Means, as described in Section 79 (9) of the Environmental Protection Act (EPA) 1990, to reduce fumes or emissions which may impact upon air quality. Compliance monitoring may be required.	Community and ecological receptors sensitive to dust.	Daily Site Audits.	Contractual responsibilities between Highways England and	Principal Contractor	P and C	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
		community and ecological receptors.	<p>The Principal Contractor will undertake mitigation measures to address construction dust from the site, taking into account the direct and indirect impacts of site preparation and construction works on residential and business uses, and ecological receptors as highlighted by Natural England in their letter of 5/11/2018. These measures will include but will not be limited to:</p> <ul style="list-style-type: none"> • Regular water-spraying and sweeping of unpaved and paved roads to minimise dust and remove mud and debris; • Spraying water during cutting / grinding operations (i.e. cutting curb slabs); • Removing mud and other debris from wheels and chassis of vehicles leaving the site where appropriate to minimise the amount of mud and debris deposited on the roads using wheel washes, shaker bars or rotating bristles; • Ensuring that all vehicles with open loads of potential dusty materials are securely sheeted or enclosed; • Enforcing and maintaining a low speed limit on site i.e. unmade surfaces to minimise dust entrainment and dispersion; • Ensuring any temporary site roads are no wider than necessary to minimise their surface area; • Damping down of surfaces prior to their being worked particularly in dry conditions; • Storing dusty materials away from site boundaries and in appropriate containment (e.g. sheeting, sacks, barrels etc.); • Minimising the height of stockpiles and profiling to minimise wind-blown dust emissions and risk of pile collapse; • Locating stockpiles out of the wind (or cover, seed or fence) to minimise the potential for dust generation; • All vehicle engines and plant motors shall be switched off when not in use 			Principal Contractor.			
Noise and Vibration									
NV1	Ch 6	To limit and control noise and vibration during construction	<p>The Principal Contractor will consult with the Environmental Health Departments at Dartford BC and Gravesham BC to obtain guidance on their requirements for managing and controlling noise and vibration from construction works.</p> <p>The Principal Contractor will submit a Section 61 application Control of Pollution Act 1974 for some</p>	Community sensitive receptors	Contractual responsibilities between Highways England and Principal Contractor.	Contractual responsibilities between Highways England and Principal Contractor.	Good working practices as listed Traffic Management Plan (See G5 above) Dependant on Section 6.	P and C	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
			<p>construction works, especially if night-time working is proposed.</p> <p>The Principal Contractor will use the following good working practices that will minimise impacts on community and ecological receptors:</p> <ul style="list-style-type: none"> • Fitting all vehicles and plant with effective exhaust silencers that are maintained in good and efficient working order; • Using compressors and generators that are 'sound reduced' models and fitting with properly lined and sealed acoustic covers that are kept closed whenever the machines are in use; • Using ancillary pneumatic percussive tools that are fitted with mufflers or suppressors as recommended by the manufacturers that are kept in a good state of repair; • Shutting down machines in intermittent use when not in use or where this is impracticable, throttle down to a minimum; • Locating the site compound and static machines as far away as is practicable from noise sensitive buildings; • Where practicable, orientating plant with directional noise characteristics to minimise noise at nearby properties; • Ensuring that all plant is certified to meet the current EU legislation and are not louder than the noise levels provided in Annex C and D of BS 5228-1; • Where appropriate, installing temporary noise barriers or other noise containment measures to minimise construction noise levels on noise sensitive receptors; • Undertaking the loading or unloading of vehicles and the movement of equipment or materials in a manner that minimises noise generation; • Avoid cleaning concrete mixers by hammering the drums; • When handling materials avoid dropping materials from excessive heights; and • Maintaining good stakeholder relations. 						
NV 2	Ch 6	Further noise monitoring at Detailed Design	Noise monitoring for the ES was carried out at a limited number of properties over the summer of 2018. Additional noise monitoring may be required during the Detailed Design phase.	Potential for comments from Environmental Health Officers	During Detailed Design by the Noise Consultant	Contractual responsibilities between Highways England and Principal Contractor,	Reported during Detailed Design	P	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
						and their Noise Consultant.			
Biodiversity									
B1	Ch 7 Ch 5 (Air Quality), 6 (Noise), and 8 (Water and Drainage)	Protection of designated sites and ancient woodland. Protection of retained veteran trees and notable habitats (HPI). To limit adverse impacts of construction and compensate for habitat loss.	<ul style="list-style-type: none"> Location of access tracks, haul roads, site compounds and material storage areas to be sited outside of designated sites and ancient woodland, away from retained veteran trees (and outside of notable habitats as far as possible) and establish a buffer zone around these receptors where works are not limited by the existing carriageway; Use of construction exclusion fencing to protect designated sites, ancient woodland, retained veteran trees and other notable retained habitats as far as possible outside the working area from accidental incursion; Adherence to the Pollution Prevention Guidelines (PPGs) and the Construction Industry Research and Information Association (CIRIA) guidance on the control of water pollution from construction sites; Individual veteran trees to be lost will be translocated where practicable; Take account of current guidance in receptor site preparation and translocation (including 'Habitat translocation – a best practice guide' (CIRIA C600), 'Veteran Trees: A guide to good management' (Natural England IN13, 2000), and 'Principles of tree hazard assessment and management (Research for amenity trees)' (Lonsdale, D., 2013). Protection of retained trees following standard practice (i.e. BS 5837:2012 Trees in relation to design, demolition and construction. – Recommendations); Implement mitigation measures as set out in this REAC for Air Quality, Noise and Vibration, and Water and Drainage; Provision of an Ecological Clerk of Works (ECoW) to advise on the above measures during construction; Advanced planting of approx. 2.20 ha native woodland to the south-east of Bean Junction; Habitats lost will be replaced by the creation of at least approx. 5.64 ha woodland (including advanced planting), 2.80 ha species-rich 	Construction in close proximity to designated sites and ancient woodland, retained veteran trees and notable habitats. Loss of veteran trees and lowland mixed deciduous woodland HPI and temporary loss of other habitats as a result of the Scheme.	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant. Veteran tree translocation is dependent on further pre-construction assessment of individual specimens by an Arboriculturist In order of preference the options are: <ul style="list-style-type: none"> Detailed design will keep works around the locations of veteran trees under review. If detailed design allows the tree to be retained in situ with reduced crown rather than being lost, then this approach will be taken. If retention is not practicable then, if practicable, the tree will be translocated to the receptor site using a tree spade. Some crown reduction may be undertaken to 	Principal Contractor Design contractor (including Arboriculturist)	Compliance with the mitigation measures as outlined in the ES.	P	Initial: Date:

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			grassland, 0.61 ha scrub, 200 m native hedgerow, and an extra 0.2 ha of ponds; <ul style="list-style-type: none"> New trees of the same native species as the veteran trees to be lost (pedunculate oak) will be locally sourced and planted with space around them to develop into an open crown; Dead wood will be taken from felled trees on site and reused to establish invertebrate habitat in newly created woodland; and A Habitat Management Plan setting out management prescriptions and a monitoring programme (covering a five-year aftercare period) will be implemented for newly created habitats. 		increase chances of potential survival. If required, beneficial, additional support will be placed to maintain the translocated tree as standing living or dead wood. <ul style="list-style-type: none"> If none of the above options is practicable, the tree will be cut down to a stump and this will be translocated, allowing for either potential regrowth to occur or, at least, the decaying stump to provide deadwood habitat. In addition, dead wood habitat will be provided from retained tree sections to be selected from the trunks and major branches of the other trees to be felled onsite as a mixture of standing and fallen deadwood.				
B2	Ch 7	To limit adverse impacts of construction and compensate for loss of man orchid colonies.	Depending on the timing of the works, either turfs containing man orchid colonies will be translocated to new habitat creation areas assigned for species-rich grassland (e.g. south-east of Bean Junction), or top soil containing potential man orchid colonies will be carefully collected and stored separately before being reused in replanted or new habitat creation areas.	Loss of grassland containing man orchids as a result of the Scheme.	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES	P and C	Initial: Date:
B3	Ch 7	To protect bats/potential bat roosts.	<ul style="list-style-type: none"> Ightham Cottages will either be subject to a final precautionary bat emergence or re-entry survey 	Re-siting of bat boxes assumes	Contractual responsibilities	Principal Contractor	Compliance with the mitigation measures as	P	Initial:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
		To limit the adverse impacts of construction and compensate for the habitats lost that are used by bats.	<p>pre-construction between May and August if timing of the works allows, or demolition of the cottages will be undertaken under a PMW in the presence of a licensed bat ecologist who will remove by hand any potential bat roosting features prior to demolition to prevent risk of harm to bats during the works;</p> <ul style="list-style-type: none"> Trees identified as having potential to support roosting bats within the construction footprint that cannot be retained will be subject to climbed inspections or emergence and re-entry surveys between May and September, prior to removal to prevent risk of harm to bats during the works; Bat boxes within the construction footprint that require removal will be subject to a final precautionary check and then moved to trees outside the working area prior to construction to prevent risk of harm to bats during the works; If bats or evidence of a roost is found at any point then measures to protect individual bats and maintain roosting opportunities will be put in place including, if required, measures under a European Protected Species (EPS) mitigation licence; Night working will be avoided where possible and any lighting required for construction will be designed sensitively to avoid illuminating boundary features using by commuting/foraging bats such as woodland/scrub edge; New road lighting will be designed sensitively taking into consideration the presence of commuting and/or foraging bats and other wildlife, including measures to avoid and/or minimise light spill onto adjacent vegetation, particularly Darenth Wood SSSI and ancient woodland; and Temporarily cleared areas will be replanted with selected new areas of native woodland with understorey shrubs, species-rich grassland and scrub (specifically bramble, hawthorn and gorse), to offer replacement habitat for bats, along with the installation of bat boxes. 	<p>landowner permits access. Landowner permission will be sought for the installation of bat boxes if a roost is discovered during pre-construction surveys.</p>	between Highways England and Principal Contractor, and their Environmental Consultant.		outlined in the ES and the PMW.		Date:
B4	Ch 7	To protect hazel dormice. To limit the adverse impacts of construction and compensate for the habitats lost that are used by hazel dormice.	<ul style="list-style-type: none"> All clearance of hazel dormouse habitat will be carried out under an EPS mitigation licence for hazel dormice; Establishment of nest boxes in adjacent retained woodland/scrub (where practicable) prior to vegetation clearance to mitigate for temporary woodland habitat loss (and provide a long-term enhancement); Vegetation clearance will take place in the presence of a licensed ecologist. The methods 	Application to Natural England (NE) for the hazel dormouse EPSM licence is required up to three months in advance of construction (i.e. three months prior to vegetation clearance) and NE	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES, EPS mitigation licence (and method statement).	P	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
			<p>and timing of vegetation clearance will depend on the location of the area to be cleared, availability of surrounding habitat and distance to adjacent habitat. These details will be set out in the licence method statement;</p> <ul style="list-style-type: none"> Habitat creation comprised of approx. 5.64 ha woodland and scrub to compensate for habitat lost and provide a long-term enhancement by increasing the total area of woodland habitat available for hazel dormice. The woodland creation will include 2.2 ha of advanced planting; and Post-construction monitoring of the hazel dormouse population between one and five years after design year (i.e. completion and opening of the Scheme). 	<p>require 40 working days to determine the application.</p> <p>Establishment of nest boxes in adjacent retained woodland prior to construction assumes landowner permits access.</p> <p>Monitoring surveys assume landowner permits access for 5 years post-construction.</p>					
B5	Ch 7	To protect otter and water vole.	As a final precaution, the River Ebbsfleet will be subject to a pre-construction otter and water vole survey at an appropriate time of the year (e.g. spring/autumn). The results of the survey will be used to determine if mitigation measures are required to prevent risk of harm to otter and water vole during the works.	N/A	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES.	P and C	Initial: Date:
B6	Ch 7	To protect breeding birds. To limit the adverse impacts of construction and compensate for the habitats lost that are used by breeding birds.	<ul style="list-style-type: none"> Vegetation clearance will take place from September to February as far as possible to prevent risk of harm to breeding birds and their nests during the works. If vegetation clearance is required during the core breeding season (March-August inclusive), works will be carried out under a PMW whereby the area to be cleared will be inspected by an ecologist for the presence of nesting birds, up to 24 hours prior to it being cleared to minimise opportunities for nest building between the survey and the start of works. Any nest in use or being built during inspection will need to be left undamaged, with an appropriate buffer of surrounding vegetation for the entire nesting period and alternative approaches to the works will be proposed; Temporarily cleared areas will be replanted with selected new areas of native woodland with understorey shrubs, species-rich grassland and scrub (specifically bramble, hawthorn and gorse), to offer replacement nesting opportunities for birds, along with the installation of bird boxes; and 	Establishment of nest boxes assumes landowner permits access.	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES and the PMW (if vegetation clearance is to be carried out within the core breeding season).	P and O	Initial: Date:

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			<ul style="list-style-type: none"> Planting adjacent to the highway to avoid fruiting species e.g. hawthorn or rowan, which may attract large numbers of birds. 						
B7	Ch 7	To protect common reptiles. To limit the adverse impacts of construction and compensate for the habitats lost that are used by common reptiles.	<ul style="list-style-type: none"> Vegetation clearance will take place under a Precautionary Method of Working (PMW) with the presence of an ECoW using a two-stage cut to persuade reptiles away from the working area; and Temporarily cleared areas will be replanted with selected new areas of native woodland with understorey shrubs, species-rich grassland and scrub (specifically bramble, hawthorn and gorse), along with the installation of log piles from felled trees, to offer replacement habitat for common reptiles. 	N/A	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES and the PMW.	P and C	Initial: Date:
B8	Ch 7	To protect badgers. To limit the adverse impacts of construction and compensate for the habitats lost that are used by badgers.	<ul style="list-style-type: none"> As a final precaution, a pre-construction badger survey will be undertaken to determine the status of the badger setts and identify any newly excavated setts that have potential to be directly or indirectly affected by construction; Inactive badger setts requiring closure will be destroyed under a precautionary method (to be advised by the ECoW); Badger setts retained near the works area will be subject to protective fencing with the establishment of buffer zone up to 30 m around the sett entrance (to be advised on site by the ECoW) to prevent risk of harm to badgers during the works; All excavations will be covered or closed overnight to prevent any animals (i.e. badgers) becoming trapped. Alternatively, a 'ramp' or graded edge will be provided as a means of escape; Noise barriers will be maintained immediately adjacent to the Scheme during and post-construction to deter badgers from crossing the road at unsafe locations; and Temporarily cleared areas will be replanted with selected new areas of native woodland with understorey shrubs, species-rich grassland and scrub (specifically bramble, hawthorn and gorse), to offer replacement habitat for badgers. 	N/A	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES.	P and C	Initial: Date:
B9	Ch 7	To compensate for habitats lost that are used by terrestrial invertebrates.	Habitat creation will involve the establishment of woodland, species-rich grassland, open mosaic, flowering swards, scrub fringe and deadwood, to compensate for permanent loss of terrestrial invertebrate habitats (refer to Appendix G.2 Annex 8 for design details to be incorporated into habitat creation targeted at invertebrates).	N/A	Contractual responsibilities between Highways England and Principal Contractor, and their	Principal Contractor	Compliance with the mitigation measures as outlined in the ES.	C and O	Initial: Date:

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					Environmental Consultant.				
B10	Ch 7	To avoid the spread of invasive non-native plant species.	Japanese knotweed will be removed from the site under a method statement to avoid spread during construction.	The Principal Contractor will appoint a contractor who specialises in the removal of invasive non-native plant species.	Contractual responsibilities between Highways England and Principal Contractor, their Invasive Plant Species Specialist and Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES and the Invasive Plant Species Management Plan/Method Statement.	A	Initial: Date:
B11	Ch 7	To ensure proposals for the temporary and permanent works comply with the requirements identified in the Environmental Statement.	Undertake detailed design of the Scheme taking account of the mitigation requirements set out in Chapter 7 of the Environmental Statement.	N/A	Contractual responsibilities between Highways England and their Environmental Consultant.	Design Contractor and Environmental Consultant	Compliance with the mitigation measures as outlined in the ES.	P and C	Initial: Date:
B12	Ch 7	To comply with legislation on protected species.	Carry out pre-construction surveys to identify any changed protected/notable species activity before works commence on site. To include late stage design-change areas, all temporary and permanent works, newly culverted watercourses and those receiving a surface water discharge from the Scheme. Account for any new ecological receptors identified pre-construction.	N/A	Contractual responsibilities between Highways England and Principal Contractor, and their Environmental Consultant.	Principal Contractor	Compliance with the mitigation measures as outlined in the ES.	P and C	Initial: Date:
B13	Ch 7	To limit adverse impacts of construction	Development of detailed design to avoid loss of veteran trees and other notable habitats (HPI) as far as practicable	N/A	Contractual responsibilities between Highways England and their Environmental Consultant.	Design Contractor and Environmental Consultant	Compliance with the avoidance and mitigation measures as outlined in the ES	P	Initial: Date:
Road Drainage and Water Environment									
RDWE1	Ch 8	To comply with the Design Manual for Roads and Bridges (DMRB) guidance, ensure discharges from the road will not lead to a deterioration in the classification status of receiving waterbodies	The appropriate levels of assessment will be undertaken in line with the DMRB to assess the effects of routine runoff on surface waters, groundwaters and the likelihood and effects of spillage are assessed	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent and close proximity to River Ebbsfleet	Contractual responsibilities between Highways England and their Environmental Consultant	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures as included in the ES or equivalent.	P	Initial: Date:
RDWE2	Ch 8	To ensure proposals for the permanent works comply with the requirements identified in	Treatment of runoff will be applied as necessary to ensure that discharges during construction and under	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme	Consultation with the EA.	Contractual responsibilities between Highways	Mitigation measures to be included in the CEMP. during construction, relevant sustainable	P	Initial: Date:

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		the Environmental Statement for the protection of watercourses and for ensuring that discharges to receiving waters do not breach environmental legislation.	design conditions, do not prejudice the achievement of water quality standards for the receiving waters.	extent and close proximity to River Ebbsfleet		England and the Principal Contractor	drainage features for the design conditions.		
RDWE3	Ch 8	To review and update the WFD compliance assessment when any changes to the design are made to ensure that the Scheme is WFD compliant.	Environment Agency will be consulted to agree the change in scope and the updated WFS compliance assessment.	Not applicable	Contractual responsibilities between Highways England and their Environmental Consultant	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures included to ensure drainage design and the nature of receiving water bodies are compliant with WFD. Updated WFD compliance report if required.	P	Initial: Date:
RDWE4	Ch 8	To adopt good working practices and follow the relevant Environment Agency Pollution Guidelines as noted in the Environmental Statement to ensure no pollution of the watercourses occurs.	The Principal Contractor will adopt good working practices to avoid pollution of the watercourses. Mitigation measures for managing construction work in relation to surface water will include but not limited to: <ul style="list-style-type: none"> • Designing and maintaining temporary works sites, haul roads and other associated works to minimise impact; • Ensuring the design of temporary watercourse diversions or in-channel working where required include, specific mitigation to be in line with the WFD and that temporary impacts are minimised; • Establishing close communications with the Environment Agency on groundwater matters; • Considering the need for bunding and discharge of water to self-contained units with treatment facilities for areas which may generate contaminated water, such as oil storage areas so there is no discharge to groundwater; • Undertaking tests to ensure contaminated material is identified, isolated and reworked or removed to special landfill to avoid any leachate problems; and • Ensuring temporary land-take required for construction will include adequate areas of land set aside for robust control measures, for example sustainable drainage control. 	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent and close proximity to River Ebbsfleet	Contractual responsibilities between Highways England and the Principal Contractor. Liaison with Environment Agency.	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP. Sampling procedure and analysis of results if required by the Regulator.	P and C	Initial: Date:
RDWE5	Ch 8	To adopt good working practices to avoid the risk of impacting on groundwater	The Principal Contractor will adopt good working practices to avoid the risk of impacting on groundwater. Mitigation measures for managing construction work in relation to surface water will include but not limited to: <ul style="list-style-type: none"> • Where deep foundations extending below the groundwater table are intended to be part of the 	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent and close proximity to River Ebbsfleet	Contractual responsibilities between Highways England and the Principal Contractor. Liaison with	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP. Sampling procedure and analysis of results if required by the Regulator.	P and C	Initial:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
			<p>Scheme, these should be designed in accordance with industry standards - taking into account the site-specific water level and flow monitoring data obtained from intrusive ground investigation for the Scheme;</p> <ul style="list-style-type: none"> A piling risk assessment would be carried out to ensure the selected piling method does not introduce contamination pathways into the aquifer. Piling design should include mitigation in the form of substantial clear spacing between piles and appropriate piling installation methods. Where sheet piling is replacing existing retaining walls, the design should not exceed the extent and depth of any existing retaining walls; and Areas which may generate contaminated water, such as oil storage areas, would need to be bunded and have water discharged to self-contained units with treatment facilities. There would be no discharge to groundwater. 		Environment Agency.				
RDWE6	Ch 8	To ensure flood risk is minimised during construction and no works are planned which would increase the groundwater flood risk.	<p>For construction work which has drainage implications, the proposed drainage system will comply with the National Standards, such as Schedule 3 under the Flood and Water Management Act 2010. The Principal Contractor and design consultant will make provision for the adoption and maintenance of any SuDS, including any necessary access rights to property. Mitigation measures to reduce flood risk during construction will include but not limited to:</p> <ul style="list-style-type: none"> Minimising floodplain working as far as possible in consultation with the lead local flood authorities (LLFAs) to ensure sustainable drainage mitigation is incorporated into the design to not increase surface water flood risk); Adopting the Environment Agency flood warning system during construction, ensuring that a suitable plan would be put in place to ensure effective and safe evacuation of personnel (and plant if safe to do so) from the areas at risk on receipt of a flood warning; Locating site compounds, plant and materials as far from the eastern boundary which is close to Flood Zone 3, as possible; Obtaining an Environmental Permit where the works are within 8 m from the Main River Ebbsfleet; and Considering the need for localised dewatering where subsurface works are required, depending on the groundwater levels at the time of construction, localised dewatering. 	The number of catchments within the study areas and Flood zones 2 and 3 associated with the River Ebbsfleet	Contractual responsibilities between Highways England and the Principal Contractor. Liaison with the LLFAs and Environment Agency	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP.	P and C	Initial: Date:

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RDWE7	Ch 8	To avoid impacts on surface water and provide mitigation and betterment in the form of SUDs during operation	<p>The drainage design will be based on the following principles:</p> <ul style="list-style-type: none"> Existing catchments and outfalls (See Table 8.14 of the ES) will be used, and close to the proposed low points on the highway (according to the highway design); Where the low points of the highway do not correlate with known outfalls, a soakaway will be proposed. Pre and post mitigation tests have been performed to understand the mitigation requirements; The proposed soakaways and ditches will be lined given the sensitive nature of groundwater. Lined soakaways mean these will be accessible to maintain and allow response to any possible water quality incident by containing runoff; All existing soakaways will be replaced. Soakaways have the following advantages (Susdrain, 2018): <ul style="list-style-type: none"> They provide storm water attenuation, storm water treatment and groundwater recharge; and Good water quality treatment performance through the physical filtration to remove solids, and biochemical reactions involving micro-organisms growing on the fill or in the soil. A swale will be implemented in catchment 5. 	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent and close proximity to River Ebbsfleet	Contractual responsibilities between Highways England and the Principal Contractor. Liaison with Environment Agency.	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP. Sampling procedure and analysis of results if required by the Regulator.	P and C	Initial: Date:
RDWE8	Ch 8	To consider the effects of the erosion of earthworks and the consequent transmission of sediments during storms	A combination of measures should be developed to prevent or reduce erosion where possible, and to treat runoff from earthworks, to ensure that the limits of suspended solid concentrations set in temporary discharge consents are met and that sediments are not otherwise transmitted to watercourses. This will be recorded in an erosion prevention and sediment control plan as required by HD45/09 Design Manual for Roads and Bridges, Volume 11 Section 3 Part 10.	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent and close proximity to River Ebbsfleet	Contractual responsibilities between Highways England and the Principal Contractor	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP.	P and C	Initial: Date:
RDWE9	Ch 8	To comply with the DMRB for the management of spillage risk: <ul style="list-style-type: none"> the spillage risk from existing outfalls must not be increased; the calculated spillage risk return period must not be greater than 1 in 100 years the calculated spillage risk must not be greater 	Undertake the appropriate levels of assessment in line with the DMRB to assess the effects of routine runoff on surface waters, groundwaters and the likelihood and effects of spillage are assessed	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent and close proximity to River Ebbsfleet	Contractual responsibilities between Highways England and their Environmental Consultant	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures as included in the ES or equivalent.	P	Initial: Date:

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		than 1 in 200 years where spillage could affect: protected areas for conservation, important drinking water supplies or important commercial activities							
RDWE10	Ch 8	To ensure that proposals for the permanent works comply with the requirements of relevant legislation in respect of the protection of all groundwater resources.	For discharges to ground, treatment and protection measures shall be designed to provide adequate protection against the effects of both routine runoff and the risk of spillages	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent	Consultation with the EA.	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures as included in the ES or equivalent.	P and C	Initial: Date:
RDWE11	Ch 8	To ensure there are no controlled discharges to ground or groundwater during construction without Environment Agency consent and the permission of landowners.	Comply with the requirements of relevant legislation in respect of the protection of all groundwater resources.	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent	Consultation with the EA.	Contractual responsibilities between Highways England and the Principal Contractor	Permits acquired from the Environment Agency.	P and C	Initial: Date:
RDWE12	Ch 8	To determine if an abstraction licence for dewatering is required where any excavation is to be undertaken below the water table during the installation of structures	Consultation with the Environment Agency is necessary	Source Protection Zone (SPZ) and Principal Aquifer within the Scheme extent	Consultation with the EA.	Contractual responsibilities between Highways England and the Principal Contractor	Record of meeting with the Regulator, relevant licence acquired if needed.	P and C	Initial: Date:
RDWE13	Ch 8	To provide measures to deal with a pollution or flooding incident	Prepare an Incident Response Plan prior to construction	River Ebbsfleet within Scheme extent	Contractual responsibilities between Highways England and the Principal Contractor	Contractual responsibilities between Highways England and the Principal Contractor	Response plan produced and kit to deal with response in position on site.	P and C	Initial: Date:
RDWE14	Ch 8	To provide adequate temporary storage to contain surface run-off during the construction period, particularly when there are large areas of exposed earthworks or cutting as these may lead to substantial increases in surface flows during intense rainstorms and can carry silt through to receiving watercourses	No pollution of the watercourses occurs.	River Ebbsfleet within Scheme extent	Contractual responsibilities between Highways England and the Principal Contractor	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP.	P and C	Initial: Date:

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RDWE15	Ch 8	To provide on-site availability of oil spill clean-up equipment including absorbent material and inflatable booms for use in the event of an oil spill or leak and the use of drip trays under mobile plant	No pollution of the watercourses occurs.	River Ebbsfleet within Scheme extent	Contractual responsibilities between Highways England and the Principal Contractor	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP.	P and C	Initial: Date:
RDWE16	Ch 8	Prior to the commencement of any major soil stripping activities, the Contractor shall install water management systems to ensure during wet periods, storage of surface run-off would be undertaken to assist in dust suppression during dry periods	No pollution of the watercourses occurs.	River Ebbsfleet within Scheme extent	Contractual responsibilities between Highways England and the Principal Contractor	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP.	P and C	Initial: Date:
RDWE17	Ch 8	To provide temporary site drainage. This would be designed where practicable, to retain surface run-off within the site boundary. Where possible the permanent drainage arrangements would be utilised in the temporary management system. Prior to starting the main earthworks, the permanent cut-off ditches would be constructed at the tops of batters and toes of embankments. Where required, additional settling areas would be constructed to allow for settling of sediment before discharge of water to watercourses	No pollution of the watercourses occurs.	River Ebbsfleet within Scheme extent	Contractual responsibilities between Highways England and the Principal Contractor	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP.	P and C	Initial: Date:
RDWE18	Ch 8	Prevent adverse risks to identified on-site and off-site human health and environmental receptors associated with the presence of ground contamination in proposed soakaway locations.	A ground investigation and ground investigation report will be completed to characterise ground conditions and inform the Scheme final design and required mitigation measures. The potential risk associated with proposed soakaway locations will subsequently be fully assessed following completion of the ground investigation. The assessment of risk will consist of the following where appropriate and as required:	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual	All appropriate assessments will be completed and approved by the appropriate authority, and all required mitigation measures and recommendations will be implemented	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP. Reports will be prepared accordingly and submitted to the Environment Agency and Local Authority for approval and agreement prior to	P	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
			<ul style="list-style-type: none"> Generic Qualitative Risk Assessments Detailed Qualitative Risk Assessments Piling Risk Assessments <p>Where contamination risks are identified, and mitigation is required, the following reports will be produced where appropriate and as required:</p> <ul style="list-style-type: none"> Site Specific Remediation Strategy Monitoring Strategies Verification Plan 	Site Model (CSM) which require investigation and assessment to characterise risk.	<p>prior to the start of construction.</p> <p>Where any consent, approval or agreement is required to be given by the appropriate authorities it shall not be unreasonably withheld or delayed.</p> <p>Any approvals from the appropriate authorities will be deemed to have been given if it is neither given nor refused in writing and with a statement of the grounds for refusal within two months of the submission any documents for approval.</p>		commencement construction phase		
RDWE19	Ch 8	Prevent adverse risks to identified on-site and off-site human health and environmental receptors associated with the presence of ground contamination in proposed soakaway locations.	Where required and as informed by appropriate assessments specified in RDWE17, construction phase and operation phase monitoring (soil and/or groundwater) will be carried out.	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and assessment to characterise risk.	Monitoring requirements presented in monitoring strategies will be agreed with Environment Agency prior to comment of construction. All actions agreed will be carried out.	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP. Results of construction and operation monitoring will be reported as per requirements outlined in monitoring strategies developed as part of GS1 and agreed with the Environment Agency and Local Authority	C & O	Initial: Date:
RDWE20	Ch 8	Prevent adverse risks to identified on-site and off-site human health and environmental receptors associated with the presence of ground contamination in proposed soakaway locations.	<p>Completion and submission of verification report(s) as outlined within the verification plan (RDWE17) where appropriate and as required.</p> <p>The Scheme will be operated in accordance with the relevant regulations and best practice guidance in applying Best Available Techniques and pollution prevention.</p>	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require	<p>All verification reporting requirements outlined in the verification plan, will be implemented as necessary, refer to GS1.</p> <p>An Operational EMP will be prepared for the Scheme.</p>	Contractual responsibilities between Highways England and the Principal Contractor	Mitigation measures to be included in the CEMP. Verification report(s) will be submitted to the Environment Agency and Local Authority as per GS1 and outlined in the verification plan.	O	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
				investigation and assessment to characterise risk.					
Landscape									
L1	Ch 9	Limit damage to trees and significant vegetation to be retained within the permanent land take.	An Arboricultural Impact Assessment (AIA) and Arboricultural Method Statement (AMS) will be produced as part of the design development in detailed design that will detail the requirements for the protection of existing trees on site. This will define the root protection zones of retained trees and important screening vegetation including trees in temporary land take and outside of the Scheme boundary whose rootzone extends into the Scheme, shall be protected with fencing in accordance with BS 5837:2012.	Ensure the protection of and minimise impact on retained trees.	Site work to survey trees by an arboriculturist.	Principal Contractor	Mitigation measures to be included in the CEMP.	A	Initial: Date:
L2	Ch 9	Limit damage to trees and significant vegetation to be retained within the permanent land take.	All trees and shrubby vegetation to be retained will be identified. Protective fencing will be erected and maintained to retain vegetation for the duration of construction works.	Topographic survey includes existing vegetation.	Site clearance drawings. Contractor awareness of the importance of retaining vegetation for screening.	Highways England / Design Consultant	Mitigation measures to be included in the CEMP.	A	Initial: Date:
L3	Ch 9	Limit damage to trees and significant vegetation to be retained within the temporary land take.	The layout and construction of compounds, soils stores, haul routes and borrow pits will be designed to provide appropriate clearance to vegetation to be retained, and limit requirements for tree surgery.	Contractor respecting vegetation to be retained.	Review of Contractor drawings.	Principal Contractor	Mitigation measures to be included in the CEMP.	A	Initial: Date:
L4	Ch 9	Ensure mitigation planting is implemented to provide habitat replacement/enhancement, integrate the scheme design into the surrounding landscape and provide screening functions.	Planting plans will be prepared to implement mitigation proposed in the preliminary environmental design.	Planting plans drawn up during detail design. Ground preparation and soil handling is implemented correctly on site to ensure rapid establishment of planting. Soil testing to ensure soils are appropriate for ecology or planting design.	Site monitoring to ensure ground preparation, soil handling is correctly carried out and soils are not over compacted.	Highways England / Design Consultant	Mitigation measures to be included in the CEMP.	A	Initial: Date:
L5	CH 9	Ensure planting and seeding adequate established to ensure a	A five-year aftercare period for all the soft environmental features of the Scheme will be included as part of the construction contract	Five years is sufficient time for planting to	Site monitoring to ensure maintenance carried out.	Highways England	Mitigation measures to be included in the CEMP.	C and A	Initial:

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		sustained viability of soft estate features	requirements. Thereafter, the soft estate would be maintained by Highways England through its managing agents.	establish and require a lower level of maintenance to continue reaching maturity.					Date:
L6	CH 9	Ensure planting and seeding adequate established to ensure a sustained viability of soft estate features	A Landscape Environmental Management Plan (LEMP) will be produced for the Scheme and implemented to ensure the establishment and continued growth of new plant stock to ensure proposed planting meets the objectives required in the Environmental Statement.		Plan produced	Highways England / Design Consultant	Mitigation measures to be included in the CEMP.	A	Initial:
L7	CH 9	Return land used temporarily to a condition which can continue to be used.	Where land will be used temporarily, such as for compounds, haul roads, regrading areas, it will be returned to a condition suitable for the continuation of its original use or new proposed use. This will include the replanting of hedgerows and trees, where these have had to be removed.	Topsoil handling strategy produced by soil scientist for scheme and any land to be returned to agriculture.	Plan to manage topsoil storage and prevent contamination of soils and subsoils during temporary use.	Principal Contractor	Mitigation measures to be included in the CEMP.	C	Initial: Date:
Geology and Soils									
GS1	Ch 10	Prevent adverse risks to identified on-site and off-site human health and environmental receptors associated with the presence of ground or groundwater contamination (refer to ES).	<p>A ground investigation and ground investigation report will be completed to characterise ground conditions and inform the Scheme final design and required mitigation measures.</p> <p>Where a potential impact is identified monitoring will be undertaken to obtain a better understanding of the groundwater regime at the site and, as appropriate, ground gas/ vapour concentrations.</p> <p>The risk to receptors identified in the ES from contamination will subsequently be fully assessed following completion of the ground investigation. The assessment of risk will consist of the following where appropriate and as required:</p> <ul style="list-style-type: none"> • Generic Qualitative Risk Assessments • Detailed Qualitative Risk Assessments • Piling Risk Assessments <p>Where contamination risks are identified, and mitigation is required, the following reports will be produced where appropriate and as required:</p> <ul style="list-style-type: none"> • Site Specific Remediation Strategy • Monitoring Strategies • Verification Plan 	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and assessment to characterise risk.	All appropriate assessments will be completed and approved by the appropriate authority, and all required mitigation measures and recommendations will be implemented prior to the start of construction.	Client Principal Designer Principal Contractor	Mitigation measures as included in the CEMP. Reports will be prepared accordingly and submitted to the Environment Agency and Local Authority for approval and agreement prior to commencement construction phase	P	Initial: Date:

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					within two months of the submission any documents for approval.				
GS2	Ch10	Prevent adverse risks to identified on-site and off-site human health and environmental receptors associated with the presence of ground or groundwater contamination or ground gas / vapours (refer to ES).	Where required and as informed by appropriate assessments specified in GS1, construction phase and operation phase monitoring (soil, groundwater, gas and vapour) will be carried out.	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and assessment to characterise risk.	Monitoring requirements presented in monitoring strategies will be agreed with Environment Agency prior to comment of construction. All actions agreed will be carried out.	Client Principal Designer Principal Contractor	Mitigation measures as included in the CEMP and Operational Environmental Management Plan (Operational EMP). Results of construction and operation monitoring will be reported as per requirements outlined in monitoring strategies developed as part of GS1 and agreed with the Environment Agency and Local Authority.	C & O	Initial: Date:
GS3	Ch10	Prevent adverse risks to identified on-site and off-site human health and environmental receptors associated with the presence of ground or groundwater contamination or the migration of ground gases or vapours (refer to ES).	Completion and submission of verification report(s) as outlined within the verification plan (GS1) where appropriate and as required. The Scheme will be operated in accordance with the relevant regulations and best practice guidance in applying Best Available Techniques and pollution prevention.	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and assessment to characterise risk.	All verification reporting requirements outlined in the verification plan, will be implemented as necessary, refer to GS1. An Operational EMP will be prepared for the Scheme.	Principal Contractor	Mitigation measures as included in the Operational EMP. Verification report(s) will be submitted to the Environment Agency and Local Authority as per GS1 and outlined in the verification plan.	O	Initial: Date:
GS4	Ch 10	Prevent adverse risks to on-site human health receptors (construction workers) associated with the presence of ground or groundwater contamination or the migration of ground gases or vapours.	The works will be carried out in accordance with the Construction Design Management (CDM) Regulations 2015 and in accordance with appropriate guidelines and best practices. Health and safety Risk Assessment Method Statements (RAMS) and appropriate Personal Protective Equipment (PPE) for the protection of construction workers in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations. Monitoring will be undertaken to obtain a better understanding of the groundwater regime at the site and, as appropriate, ground gas/ vapour concentrations. Mitigation measure will be designed and implemented accordingly.	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and assessment to characterise risk.	Principal Contractor to plan and organise the job, and work together with others involved to make sure that the work is carried out without risks to health and safety.	Client Principal Designer Principal Contractor	Mitigation measures as included in the Construction Phase Plan and RAMS. Principal Contractor to prepare a Construction Phase Plan and RAMS.	C	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
GS5	Ch 10	Limit permanent removal of soils during earthworks and foundation construction and reuse of excess materials.	A Sustainable Resources Management Plan (SRMP) will be outlined to reduce the volume of materials permanently removed from the site. A Site Waste Management Plan (SWMP) and Soil Handling and Management Plan (SHMP) will also be outlined for handling and management of waste soil.	Earthworks and foundation construction are required for the Scheme.	Mitigation measures and environmental controls will be included within the CEMP, SRMP, SWMP and SHMP, and implemented through the construction phase.	Principal Contractor	Mitigation measures as included in the CEMP, CRMP and SWMP and the SHMP	P & C	Initial: Date:
GS6	Ch 10	Maintenance of quality of stockpiled soils, prevention of erosion and protection of soil structures during earthworks activities.	<p>All temporarily acquired land occupied or disturbed during the construction process shall be restored/reinstated to a condition equivalent to its original.</p> <p>The construction working corridor will be demarcated once defined in order to prevent disturbance to adjacent land.</p> <p>If spoil is to be placed on land intended for farming, addition of topsoil will be undertaken and the land will need an aftercare period (duration to be agreed) to rectify settlement and compaction.</p> <p>The area of earthworks at any one time will be limited to reduce temporary effects on topography, soil compaction and erosion.</p> <p>The duration of soil exposure will be limited and timely reinstatement of vegetation or hardstanding will be implemented to prevent soil erosion.</p> <p>The quality and quantity of soil on site will be maintained by implementing appropriate techniques for stripping, stockpiling and reinstatement, in accordance with Defra's 2009 Code of Practice for the Sustainable Use of Soils on Construction Sites.</p> <p>Over stockpiling will be avoided to reduce compaction of soil and loss of integrity.</p> <p>Disturbed soils should be reinstated to their original quality using a SHMP.</p> <p>Restored soils will be inspected and treated, if necessary, for the presence of noxious weeds.</p> <p>Damage to field drains will be rectified by diversion or replacement.</p> <p>Work will be undertaken in accordance with appropriate guidelines and best practices (e.g. Defra's 2009 Code of Practice for Sustainable Use of Soils on Construction Sites, BS 3882:2015 Specification for topsoil).</p> <p>If required, a CL:AIRE Materials Management Plan (MMP) will be included within the CEMP to reduce the amount of material permanently removed from the area of the Scheme.</p>	Earthworks are required for the Scheme.	Mitigation measures and environmental controls will be included within the SHMP, CEMP (including MMP where required) and outlined in the Detailed Design.	Principal Contractor	Mitigation measures as included in the SHMP, CEMP (including a MMP where required) and outlined in the Detailed Design	P & C	Initial: Date:

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GS7	Ch 10	Prevention of spread of possible contamination within site soils, surface waters or groundwater due to construction activities. Prevention of spills and leaks of hazardous substances.	<p>Work will be undertaken in accordance with appropriate guidelines and best practices.</p> <p>Hazardous substances, including contaminated soil, fuels, chemicals, waste and construction material will be stored, handled, transported and disposed of, according to relevant legislation and best practice guidance to mitigate spillages, leaks or accidental release of their contents. Storage of such substances will also be in designated locations outside of the SPZ1. Valves and trigger guns will be protected from vandalism and kept locked when not in use.</p> <p>Implementation of working method statements during construction to manage groundwater and surface water appropriately to ensure that there is no run-off from the works, any material/waste stockpiles and storage containers into adjacent/nearby surface watercourses.</p> <p>Implementation of appropriate pollution incident control e.g. plant drip trays and spill kits; and safe storage of fuel, oils and equipment during construction.</p> <p>Possible spreading of contamination within site soils, spillage and leakages of hazardous substances shall be prevented/reduced through proper storage, handling, transportation and disposal of hazardous substances including contaminated soil, fuel, chemicals, hazardous wastes, contaminated construction materials in accordance with relevant legislation and best practice guidelines.</p> <p>Procedure to manage and remediate any contaminated land encountered during the construction shall be in place. This will be approved by a suitably qualified person.</p> <p>If unexpected contamination is encountered during earthworks, further assessment will be required. The assessment will define the need any further mitigation measures, including remediation or removal of contamination as appropriate.</p>	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and assessment to characterise risk.	<p>Environmental controls will be included within the CEMP and implemented through the construction phase.</p> <p>Suitably qualified geo-environmental specialists will be used to supervise the ground works.</p>	Principal Designer Principal Contractor	Mitigation measures as included in the CEMP	P & C	Initial: Date:
GS8	Ch 10	Prevent pollution of aquifers. Prevent pollution of surface waters.	<p>Work will be undertaken in accordance with appropriate guidelines and best practices.</p> <p>Open trench construction will be adopted.</p> <p>Piling risk assessments will be undertaken in line with relevant Environment Agency guidance to assess the risk from piling and to determine appropriate piling methods as appropriate.</p> <p>Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of according to relevant legislation and best practice guidance to mitigate spillages and leaks.</p>	Potential on-site sources of contamination have been identified and Potential Contaminant Linkages (PCLs) identified in the site Conceptual Site Model (CSM) which require investigation and	<p>Environmental controls will be included within the CEMP and implemented through the construction phase.</p> <p>Suitably qualified geo-environmental specialists will be</p>	Principal Designer Principal Contractor	Mitigation measures as included in the CEMP and piling risk assessments. Piling risk assessments will be subject to agreement with the Environment Agency.	P & C	Initial: Date:

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			Drainage design will consider the risks from any residual contamination.	assessment to characterise risk.	used to supervise the ground works.				
GS9	Ch 10	Protection of identified on-site and off-site human health receptors from exposure to contaminated dust or fibres through ingestion/ inhalation/ dermal contact.	<p>Work will be undertaken in accordance with appropriate guidelines and best practices.</p> <p>Dust will be suppressed using best practice methods, good stockpile management and timely removal of stockpiled material to prevent spread of potentially contaminated windblown material. Dust suppression measures shall include water spraying, wheel washing for vehicles leaving the site and re-vegetation of earthworks.</p> <p>Health and Safety Risk Assessments and Environmental Risk Assessments within Method Statements will be formed.</p> <p>Appropriate Personal Protective Equipment for the protection of construction workers will be used.</p>	Potential on-site sources of contamination have been identified and PCLs identified in the site CSM which require investigation and assessment to characterise risk.	Environmental controls will be included within the CEMP and implemented through the construction phase.	Principal Contractor	Mitigation measures as included in the CEMP	P & C	Initial: Date:
GS10	Ch 10	Prevent adverse impacts to on-site or off-site property receptors associated with the presence of aggressive constituents in soil or groundwater or the migration of ground gases or vapours along preferential pathways.	<p>A ground investigation and ground investigation report will be completed to characterise ground conditions and determine aggressivity of the ground towards buried concrete and inform the Scheme final design.</p> <p>An assessment of the aggressivity of the ground and groundwater conditions will be undertaken in accordance with BRE Special Digest 1 (2005).</p> <p>Monitoring will be undertaken to obtain a better understanding of the groundwater regime at the site and, as appropriate, ground gas/ vapour concentrations.</p>	Potential on-site sources of contamination have been identified and PCLs identified in the site CSM which require investigation and assessment to characterise risk.	A ground investigation report will be prepared to inform the Scheme final design.	Principal Designer	<p>Scheme final design will incorporate recommendations in the ground investigation report.</p> <p>Completion of ground investigation and ground investigation report to determine Scheme design requirements and mitigation measures.</p>	P & C	Initial: Date:
GS11	Ch 10	Prevent injury/death to human receptors and/or damage to property receptors associated with the potential discovery and unplanned/uncontrolled detonation of UXOs.	<p>The assessment of UXO risks is being undertaken in a phased approach. To further assess the UXO hazard level within the Scheme, a detailed UXO desk study and a UXO survey will be completed prior to undertaking any ground investigation.</p> <p>Mitigation measures identified through the above assessments to reduce the risk, including the need for any additional assessments/surveys, will be implemented in the CEMP accordingly.</p> <p>Future work relating to UXO risks will follow CIRIA C681 guidelines, including the need to include and control UXO risks through the site Health and Safety File, Construction Phase Plan and site Emergency Response Plan.</p>	A Pre-Desk Study Assessment and Zetica UXO risk map have identified a high risk of encountering UXOs.	The UXO detailed desk study and UXO survey will be completed prior to undertaking any ground investigation. All required mitigation measures and recommendations will be implemented prior to the start of construction and managed through the construction phase accordingly. Residual risks will also be managed as appropriate through	Client Principal Designer Principal Contractor	<p>Mitigation measures as included in the CEMP and in the site Health & Safety file, Construction Phase Plan and site Emergency Response Plan as required.</p> <p>Completion of UXO detailed desk study and UXO survey to determine further actions and required mitigation measures.</p>	A	Initial: Date:

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					the operational phase.				
Cultural Heritage									
CH1	Ch 11	No part of the authorised development is to commence until provisions have been made for archaeological investigations and a Written Scheme of Investigation (WSI) has been produced and agreed with Kent County Council's Heritage Conservation Team (KCCHCT).	The agreed mitigation will be based on the results of the previous desk based and geophysical and trenched evaluation surveys. The overall archaeological strategy will be outlined in a Heritage Project Strategy Plan (HPSP). Required mitigation could comprise any or a combination of: open area excavation, strip map and sample, watching brief and geoarchaeological investigations.	HPSP will be written based on evidence base from the evaluative works.	HE chosen Heritage Specialist will develop the HPSP	HE chosen Heritage Specialist	Archaeological works likely to be a three-staged process; Investigation, post excavation assessment and finally reporting. Significant findings may be reportable in a monograph or similar format Consultation with KCCHCT Production of a WSI prior to the commencement of fieldwork. Appointment of an archaeological subcontractor to undertake the agreed works as per WSI.	P and C Reporting may continue into the operation phase.	Initial: Date:
CH2	Ch 11	Where the undertaker deems it necessary for the phasing of works, a WSI may include the provision for further detailed WSIs for specific sub- elements of the works	The requirement for staged works will be identified within the HPSP and relevant WSIs.	HPSP will be written based on evidence base from the evaluative works and any phasing of works required identified within this.	HE chosen Heritage Specialist will procure and manage the work of a CfA registered archaeological organisation	HE chosen Heritage Specialist	Archaeological works likely to be a three-staged process; Investigation, post excavation assessment and finally reporting. Significant findings may be reportable in a monograph or similar format Updating WSIs.	P and C	Initial: Date:
CH3	CH11	In the event that any archaeological remains not previously identified are revealed during construction such remains must be left in situ and reported to KCCHCT as soon as reasonable practicable and construction operations within 10 metres of such remains must cease	The protocol for the discovery of unexpected remains will be outlined in the HPSP and relevant WSIs.	HPSP will establish protocols by which previously unidentified remains will be reported and dealt with	HE chosen Heritage Specialist will act as point of contact between HE, works contractor and KCCHCT	HE chosen Heritage Specialist	Archaeological works likely to be a three-staged process; Investigation, post excavation assessment and finally reporting. Significant findings may be reportable in a monograph or similar format The appointed archaeological subcontractor must inform the Highways England chosen heritage specialist who will in turn contact KCCHCT	C	Initial: Date:

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Materials and Waste									
MW1	Ch 12	Achieve high recycling and recovery levels	Set targets for waste recovery and recycling	The Scheme will generate large volumes of recyclable waste	Contractual responsibilities between Highways England and their Principal Contractor	Designers and Principal Contractor	Completion of SWMP (live document)	P and C	Initial: Date:
MW2	Ch 12	Record waste volumes generated and duty of care information	Preparation and maintenance of a SWMP	Some waste generated will require management offsite	Contractual responsibilities between Highways England and their Principal Contractor	Maintainer	Completion of SWMP (live document)	O	Initial: Date:
MW3	Ch 12	Reduce waste during construction	Use precast and off-site assembled components	The Scheme will generate large volumes of waste	Principal Contractor to choose appropriate components	Principal Contractor	Not applicable	C	
MW4	Ch 12	Efficient use of materials	Organising deliveries so materials arrive on-site as they are needed to reduce the possibility of damage and wastage occurring	The Scheme will use large volumes of materials	Principal Contractor to carefully schedule deliveries	Principal Contractor	Records should be kept of components that have been damaged on site between delivery and installation	C	Initial: Date:
MW5	Ch 12	Source segregation of waste	Training staff to understand how they should sort waste	The Scheme will generate large volumes of waste	Principal Contractor to schedule inductions and toolbox talks	Principal Contractor	Record to be kept of site induction and toolbox talks which cover waste and those who have attended	C	Initial: Date:
MW6	Ch 12	Deter waste crime	Ensure waste contractor(s) used are registered with the Environment Agency as a waste carrier and any site that waste is transferred to has a license to manage the waste being transferred.	Organisations not properly registered may offer to remove waste then dump it	Principal Contractor to carry out thorough checks of carriers and waste management sites	Principal Contractor	Completion of SWMP (live document) and storage of completed waste transfer notes and/ or hazardous waste consignment for a minimum of two and three years respectively.	C	Initial: Date:
People and Communities									
PC1	Ch 13	To ensure access along and around the local and wider area is maintained, and disruption is minimised.	Construction works should be programmed so that affected Public Rights of Way (PRoW), footpaths or cycleways remain open for part, or duration, of the construction period, and so that other routes can act as a diversion route for those affected. Temporary diversions for pedestrians should be clearly signed, with arrangements for access to services maintained throughout the construction phase. Existing crossings and routes only to be diverted or closed once alternative routes are in place. Access for emergency vehicles should be maintained to all residential and commercial properties via an appropriate route. Maintain access to residential and commercial properties. Alternative access arrangements will be	Local traffic and NMUs will still require access around the area	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	Implementation of measures outlined in TMP.	P & C	Initial: Date:

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			made for Woodbine Cottage and Springhead Nursery, should the existing accesses be temporarily closed during the construction phase. Ensure public transport routes and stops are maintained and disruption is managed. Potential disruption should be discussed with local public bus companies well in advance.						
PC2	Ch 13	To mitigate the impacts of construction on communities and people.	Maintain communication with the general public pre-construction, during construction in line with the Community Relations Strategy. Communication of the improvements to accessibility, connectivity and journey times delivered to local communities Best Practicable Means approach taken to daytime and night-time construction works to minimise noise, vibration and dust disposal impacts at residential and community receptors. Less intensive piling processes to be used close to sensitive receptors as part of a BPM approach. Construction activities to be preferably undertaken outside of school hours at school locations to avoid any amenity impacts.	Local community likely to be affected by the construction activities	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	Implementation of measures outlined in Community Relations Strategy	P & C	Initial: Date:
PC3	Ch 13	To mitigate the impacts of construction on local businesses.	The construction phase may be a source of employment for local people. This should be supported through local job centres. The Traffic Management Plan should be used to mitigate a number of negative effects for road users during construction and to ensure the businesses that require customer, supply chain and delivery access are not impacted significantly.	Local business likely to be affected by the construction activities	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	Phasing of construction works to maintain access where practicable. Implementation of measures outlined in TMP.	P & C	Initial: Date:
PC4	Ch 13	To mitigate the impacts of construction upon NMUs.	Temporary or permanent route diversions or closures would be required to have suitable signage so as to limit the potential effects during construction phase. Existing crossings and routes should only be closed once alternate routes are in place. Clear signage and provision of access information for all users during construction, notably on the approaches to Ebbsfleet Junction, Bean Junctions and Bluewater shopping centre. Ensure pedestrian linkages and accessibility are maintained. Ensure public transport routes and stops are maintained and disruption is managed.	Local community likely to be affected by the construction activities	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	Phasing of construction works to maintain access where practicable. Implementation of measures outlined in TMP.	P & C	Initial: Date:

Ref.	ES ref	Objective	Action / commitments (including specific location and any monitoring required)	Assumptions (on which the action is based)	How the action is to be implemented	Responsible person(s)	Achievement criteria and reporting requirements	When P (pre-construction) C (construction) O (operation) A (all)	Completion record
PC5	Ch 13	To limit impacts of construction on driver stress and on vehicle users.	<p>The Traffic Management Plan would be primary in minimising effects upon vehicular travellers during construction through traffic management measures. All diversion routes and any temporary or permanent closures of roads would need suitable signage to minimise adverse effects on driver stress.</p> <p>Clear signage and provision of access information for all users during construction, notably on the approaches to Ebbsfleet Junction, Bean Junctions and Bluewater shopping centre.</p>	Local community likely to be affected by the construction activities	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	<p>Phasing of construction works to maintain access where practicable.</p> <p>Implementation of measures outlined in TMP.</p>	P & C	<p>Initial:</p> <p>Date:</p>
PC6	Ch 13	To promote ongoing amenity for People & Community receptors post-construction	<p>Replacing high quality amenity planting</p> <p>Use of noise barriers, low noise surfaces, surface water drainage.</p> <p>This should include monitoring for the need for additional noise barriers and effectiveness of designed in/existing noise barriers, 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.</p>	Amenity planting is removed, or amenity reduced as a result of the Scheme	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	Implementation of mitigation measures outlined as per Noise, Air Quality, Landscape and Water sections in REAC that affect amenity of People & Community receptors.	C & O	<p>Initial:</p> <p>Date:</p>
PC7	Ch 13	To promote health and wellbeing of People & Community receptors during construction and operation	<p>A range of construction mitigation measures have been described in key health relevant chapters: air quality, noise and vibration, road drainage and the water environment, landscape, geology and soils, materials and waste, and other sections of the people and communities chapter.</p> <p>All the mitigation measures proposed in these chapters and sections are likely to reduce the potential negative health effects of the Scheme and maximise the positive health effects during the construction and operation phases.</p>	The mitigation proposed by these chapters will be undertaken with health and wellbeing in consideration. Health and wellbeing may be affected by the construction and operation phases.	Contractual responsibilities between HE, detailed design consultant and Principal Contractor.	Principal Contractor	Implementation of mitigation measures outlined in all relevant topics that may also have implications on health and wellbeing	All	<p>Initial:</p> <p>Date:</p>

4. Consents and permissions

4.1.1 The PC will be required to obtain, implement and comply with all permits, consents and licences during the construction phase. The PC will manage submissions and approval of all the required consents, permits and licences prior to commencement of the relevant site works. Table 5.1 will list the anticipated consents and licences which will be reviewed and updated, as required, as the project progresses.

Table 4-1: Permits, Consents and Licences

Type of permit, consent, licence and reference	Issuing authority	Requirement	Summary of condition
Control of Pollution Act 1974 Noise Section 61 agreement	EHO Gravesham BC and Dartford BC	Yes	A discussion with the LPA will be required to determine the need. If required the consent must be obtained before construction works can commence.
Protected Species Licence Hazel Dormice	Natural England	Yes	Hazel dormouse European Protected Species Mitigation licence required to be put in place prior to construction. Allow at least 30 working days for the application determination period. Response received from Natural England (dated 17th July 2018 via email from Sean Hanna) confirming that the hazel dormouse survey data obtained to date can be used to inform a mitigation licence application and no further additional survey work is required pre-construction. Seasonal constraints likely to affect tree and scrub clearance under hazel dormouse mitigation licence.

5. Environment asset data and as built drawings

5.1 Highways England environmental information system

5.1.1 The Highways England Environmental Information System (EnvIS) consists of specific environmental data supplied by service providers, Highways England and other bodies which is collated and displayed in the Highways Agency Geographic Information System (HAGIS). This data is used to assist in managing the environment, within and surrounding the strategic road network, and in the review and reporting of the environmental performance of both service providers and Highways England.

5.1.2 The aim of EnvIS is to assist Highways England and service providers, in designing and managing the strategic road network in an accurate, consistent and environmentally sound manner. Specifically, it aims to achieve the following key strategic and operational objectives:

- Enable consistent and accurate recording and retrieving of specific environmental data about the strategic road network.
- Assist in the review and reporting of environmental performance of both Highways England and service providers.
- Improve understanding of the environmental issues and opportunities that must be considered at different stages of trunk road and motorway management.
- In line with ensuring a value for money approach, assist in the prioritisation of environmental management actions based on an understanding of the condition of the Element¹ and environmental objectives.
- Assist in the handover of environmental data from designers to network management agents (and vice versa) and the transfer of environmental data from an outgoing network management agent to its successor.
- Assist designers and network management agents in the collection of environmental data and use this information to develop specific environmental management programmes and strategies, including EMPs.

5.2 Collection and submission of EnvIS data

5.2.1 Highways England's Interim Advice Note (IAN) (84/10)² states that identifying and recording EnvIS data is an ongoing process. Service providers are required to submit EnvIS data, stored on their own system, in the form of environmental inventory and environmental management information records. For designers, the frequency of EnvIS data submission (to Highways England), should be in line with the end point of the following milestones:

- Development phase (Preliminary Design) – Environmental Assessment / Statement Publication - environmental data resulting from statutory or non-statutory assessment of the environmental implication of a proposed project.

¹ An environment element is defined as a man-made or natural Element, comprising the environment within and surrounding the strategic road network, for example, a listed building, noise barrier or hedgerow.

² Highways England (2010) Interim Advice Note 84/10 Part 1 Volume 10 Section 10 Highways Agency

Environmental Information System – EnvIS [online] available at:

<http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian84pt1.pdf> (last accessed June 2018)

Designers collect and submit EnvIS data for all Elements that have influenced or are influenced by the Preferred Route

- Development phase (Construction Preparation) – Detailed Design Drawings - environmental data detailing the final specification of the project. Designers collect and submit EnvIS data detailing all Elements associated with the planning and design of the project and planned environmental management actions that will be undertaken during the construction period and of the existing Elements likely to be affected.
- Construction phase (Construction) – As Built Drawings – environmental data detailing the completion of the project prior to handover. Designers collect and submit EnvIS data detailing all Elements associated with the construction of the project and planning environmental management actions that are required to be undertaken by the network managing agent as part of operating and maintaining the network area.
- At this stage of the project, EnvIS data will be submitted through the publication of the Environmental Statement as part of the DCO application. This will include the submission of all species surveys results undertaken to inform the Environmental Statement.

[Note: This section should be updated at the next milestone stage (Development phase (Construction Preparation)) to detail the submission arrangements for the future EnvIS data]

6. Environmental monitoring requirements and procedures to monitor compliance

6.1 Environmental monitoring requirements

- 6.1.1 This section 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 PC's Quality and Safety Management Systems (QMS) and the Environmental Management System (EMS), meeting ISO 14001 standards.
- 6.1.2 The EMS will include methods for monitoring, recording and implementing environmental management on site, and for responding to any noted areas of non-compliance.
- 6.1.3 A Record of Environmental Monitoring and Records of Management Actions undertaken, and the outcomes will be provided in Appendices when produced. A Project Completion Report will also be produced by the PC when appropriate.
- 6.1.4 [Note: PC to produce Appendices referenced in 6.1.3]

6.2 Environmental records inspections

- 6.2.1 Records of compliance with the requirements of the CEMP, derived from audits and other inspections, will be held at the PC's site office. These will be available for inspection by representatives of any audit team and the Environment Agency, in their statutory role. The PC's Quality Administrator will ensure there is a central filing system in place for any checklists, reports and monitoring consistent with the QMS and EMS.

6.3 Daily inspection checklist

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

6.4 Procedures to monitor compliance

- 6.4.1 A Project Record will be maintained for formal records associated with the implementation of the CEMP, which will be managed and controlled within Highways England's PCF project filing systems.

Administration

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

Environmental audit

- 6.4.3 As part of the Quality, Environmental and Safety management systems it will be necessary for an audit to record environmental compliance. 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 PC.

Environmental management systems

- 6.4.4 EMS requirements will be maintained throughout the phases of the Scheme. The PC is required to be accredited or seeking to be accredited under ISO 14001.
- 6.4.5 The level of environmental management will be monitored to assess compliance with the Contract and environmental standards through inspections and audits.

Control documents

- 6.4.6 All the PC Risk Assessments, Method Statements and COSHH forms must consider environmental impacts and sensitivities in addition to health and safety concerns.

7. Induction, training and briefing procedures for staff

7.1 Introduction

- 7.1.1 Table 7.1 identifies an indicative programme of training on environmental issues relevant to the Scheme that have been identified for delivery prior to and during the construction stage. On commencement of site mobilisation, the Principal Contractor (PC) will be the site owner and responsible for site inductions and training of all personnel on the site, whether visitors, full time staff or subcontractors
- 7.1.2 All individuals working on or visiting the site will be required to attend the Principal Contractor’s site-specific induction. Those participating in or near to specific activities that have an environmental impact will be required to attend additional training or toolbox talks (TBTs), led by the PC or specialists, on ecology, pollution control, waste management and emergency procedures for minor and major incidents.
- 7.1.3 The list below is not exhaustive, and the PC or Environmental Manager onsite must highlight requirements for additional training, as the project progresses, to improve and add value to the overall site environmental awareness and compliance. Additional training or induction issues would be identified from the regular site environmental check reports, or site feedback on any noted noncompliance. It is a requirement for the site to maintain the standard of environmental management and minimise risks that could negatively impact on the environment
- 7.1.4 [Any additional induction and training requirements should be inserted within Table 7.1 below as they are identified throughout the lifetime of the Scheme, by the PC.]

Topic	Personnel	Delivery	Delivery format
Competent Resources (staff)	All	By lead staff resource or employer identified subcontractor prior to commencement of activities	Supply of specific certificates, for example Construction Skills Certification Scheme (CSCS) Project Cards, training confirmation.
Reporting of environmental observations and suggestions.	All	Site induction	Presentation and environmental reporting cards to be supplied. Posters with site reporting and environment contact numbers.
Communications to public	All	Site induction	Follow Considerate Constructors Scheme principles (CCS) or a

Topic	Personnel	Delivery	Delivery format
			Communication Plan, if required.
Spill kit use.	All	Site induction	Toolbox talks and Deployment Training Session
Refuelling / mechanical repairs and maintenance (off and on site)	All	Site induction	The Principal Contractor Site Induction Pack and PowerPoint Presentation (if applicable).
Tree root protection areas (RPAs)	All staff	Site induction	The Principal Contractor Site Induction Pack and PowerPoint Presentation (if applicable).
Waste from Welfare units and offices – Sewage	All staff	Site induction	The Principal Contractor Site Induction Pack and PowerPoint Presentation (if applicable).
Chemical handling and storage	Stores manager and any persons with access or contact	Site induction	The Principal Contractor Site Induction Pack and PowerPoint Presentation (if applicable).
Ecological sensitivities	All	Site induction. Prior to works close to sensitive areas.	Toolbox talks where relevant and daily site briefings.
Presenting nuisance (noise, vibration, dust and odours)	Any specialist installations (for example breaking out concrete, existing pavement) machine drivers and banks-men	Site induction. Prior to works close to sensitive areas.	Toolbox talks where relevant and daily site briefings.

7.2 Environmental competencies

- 7.2.1 The PC shall ensure all personnel conducting environmental tasks are suitably qualified or experienced for the roles and responsibilities that they are employed to undertake.
- 7.2.2 The PC will monitor and record that all staff have attended the relevant environmental induction or training as listed above (including updated or new training) prior to undertaking any activities on site.

7.3 Training and site induction

7.3.1 All site personnel and visitors are to receive Site Safety induction and Environmental Awareness training from the PC before commencing activities on site. The list below is not exclusive but environmental training at Induction will at least include the following:

- Company/Project Environmental Policy.
- Site environment;
- Fuel containment.
- Earthworks and Excavations (Risks of exposing contamination).
- Pollution protocol and measures for example use of spill kits.
- Defined Materials Storage area (excavated and imported).
- Defined waste areas - Domestic and construction materials.
- Wheel wash – road sweeping.
- Dust and emissions control.
- Noise control.
- Vibration control.
- Site traffic protocols and routes in the form of a Traffic Management Plan - haul routes, staff travel to site plan.
- Warning signs.
- Site Inspection and monitoring forms.
- Material procurement.
- Toolbox talks where relevant to specific works.
- Communication Systems on site – dealing with the public, incident and near miss reporting inclusive of environment.
- Site organisation, key personnel responsibilities and contact details;
- Emergency Response Plan(s) for addressing Safety and Environmental issues.
- Contamination risk management.
- Update and maintain site specific toolbox talks or advisory sheets relevant to the project.

7.4 Toolbox talks and induction supporting materials

7.4.1 Toolbox talks will be posted within common use areas such as welfare units and office reception areas. Key environmental issues linked to the programme will be targeted on the daily notice board as an aide memoir to all staff on site for example seasonal environmental constraints such as bird nesting seasons

8. Glossary and abbreviations

Acronym	Full term
°C	Degrees Celsius
AADT	Annual Average Daily Traffic – The number of vehicles travelling on a particular stretch of road on an average day.
Affected Road Network	The parts of the road network that would be affected by a change in traffic levels as the result of a transport scheme
AIA	Arboricultural Impact Assessment
AMS	Arboriculture Method Statement
AQMA	Air Quality Management Area – An area identified where the National Air Quality Objectives are not likely to be achieved. The Local Authority is required to produce a Local Air Quality Action Plan to plan how air quality in the area is to be improved.
AQS	Air Quality Strategy – The AQS sets out air quality objectives and policy options to further improve air quality in the UK from today into the long term.
Annual Average Daily Traffic	The number of vehicles travelling on a particular stretch of road on an average day.
At grade	On the same level, for example, an at grade junction is two or more roads meeting or crossing on the same level.
BAP	Biodiversity Action Plan - An internationally recognized program addressing threatened species and habitats and is designed to protect and restore biological systems. The original impetus for these plans derives from the 1992 Convention on Biological Diversity.
BS	British Standards
CD&E	Construction, Demolition & Excavation
CEMP	Construction Environmental Management Plan - A plan by the contractor describing how the environmental impacts of construction activities of a project will be minimised and mitigated.
CIFA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research Information Association
Conservation Area	An area of special environmental or historic interest or importance, of which the character or appearance is protected by law against undesirable changes (Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990).
COSHH	Control of Substances Hazardous to Health - Under the Control of Substances Hazardous to Health Regulations 2002, employers need to either prevent or reduce their workers' exposure to substances that are hazardous to their health.
CSM	Conceptual Site Model - Serves to conceptualize the relationship between contaminant sources and receptors through consideration of potential or actual migration and exposure pathways.
Defra	Department of the Environment, Food and Rural Affairs - Defra is the government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the United Kingdom of Great Britain and Northern Ireland. Defra is a ministerial department, supported by 33 agencies and public bodies.

Acronym	Full term
DfT	Department for Transport - Government department responsible for the transport network in England, and for aspects of the transport network in the devolved administrations.
DMRB	Design Manual for Roads and Bridges - A series of 15 volumes that provide standards, advice notes and other published documents relating to the design, assessment and operation of trunk roads, including motorways in the United Kingdom, and, with some amendments, the Republic of Ireland.
EA	Environment Agency - A non-departmental public body with responsibilities relating to the protection and enhancement of the environment in England.
ECoW	Ecology Clerk of Works
EHO	Environmental Health Officer
EMS	Environment Management System
EPA	Environmental Protection Act 1990
EPS	European Protected Species
EPSM	European Protected Species Mitigation
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
GI	Ground Investigation
HPI	Habitats of Principal Importance - Under Section 41 of the Natural Environment and Rural Communities (NERC) Act, the Secretary of State is required to publish a list of habitats which are of principal importance for the conservation of biodiversity in England. Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.
IAN	Interim Advice Note - Contains specific guidance, which shall only be used in connection with works on motorways and trunk roads in England, subject to any specific implementation instructions contained within an IAN.
Local Enterprise Partnership	A voluntary partnership set up between local authorities and businesses to drive local economic growth and job creation activities. There are 39 LEPs across England.
MCDHW	Manual of Contract Document for Highway Works
MAGIC	Multi-Agency Geographic Information for the Countryside - A web-based interactive map to bring together information on key environmental schemes and designations in one place. Multi-Agency Geographic Information for the Countryside (MAGIC) is a partnership project involving six government organisations who have responsibilities for rural policy-making and management.
Multi-Agency Geographic Information for the Countryside	A web-based interactive map to bring together information on key environmental schemes and designations in one place. Multi-Agency Geographic Information for the Countryside (MAGIC) is a partnership project involving six government organisations who have responsibilities for rural policy-making and management.

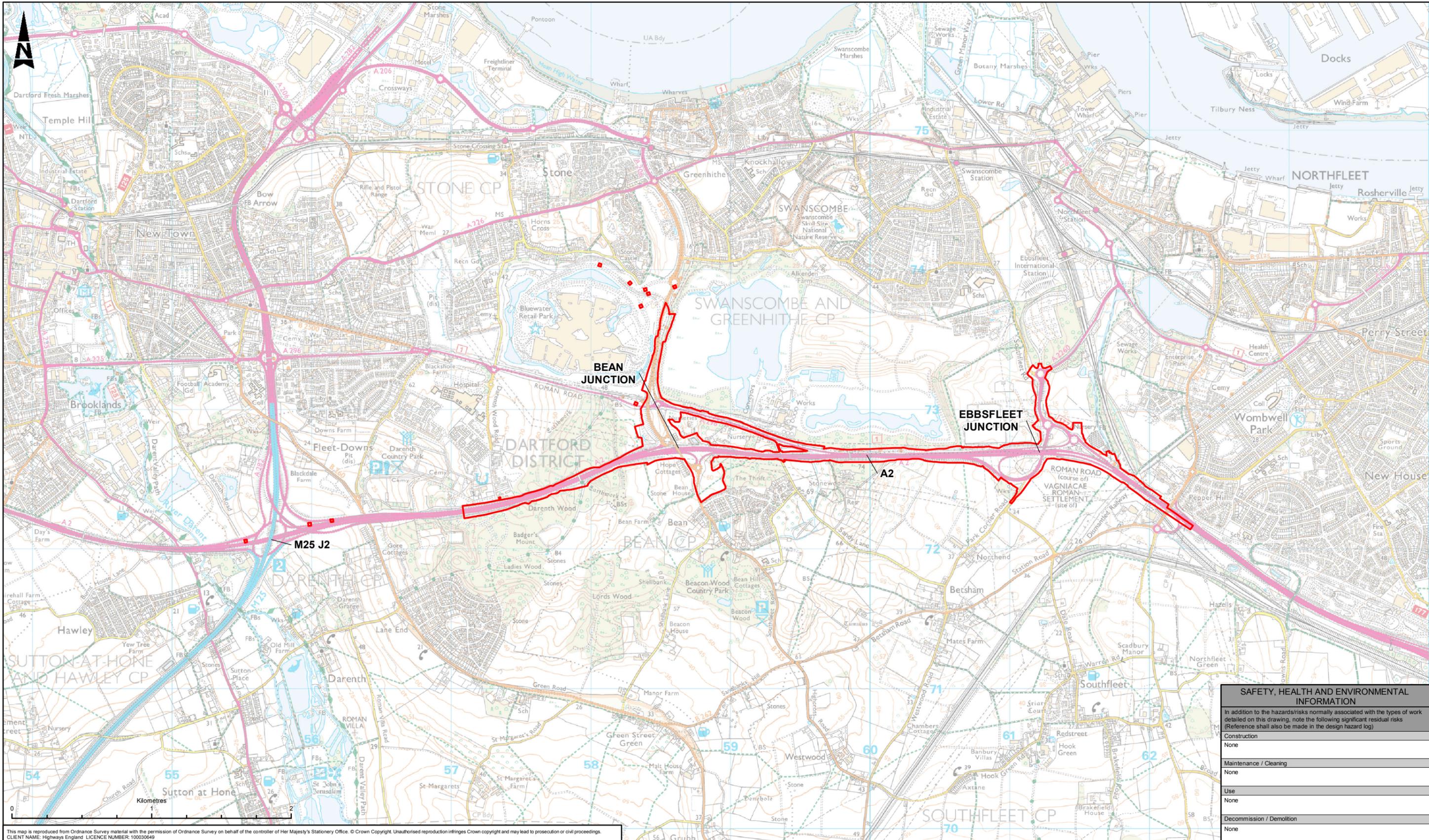
Acronym	Full term
OEMP	Outline Environment Management Plan
Operational EMP	Operational Environmental Management Plan
National Trust	Charity that cares for historic houses, gardens, ancient monuments, countryside and other sites across England, Wales and Northern Ireland, including the Stonehenge landscape.
NE	Natural England - Executive non-departmental public body responsible for the natural environment.
NIA	Noise Important Area - Areas where the 1% of the population that are affected by the highest noise levels from major roads are located according to the results of Defra's strategic noise maps.
NMU	Non-Motorised User - Cyclists, pedestrians (including wheelchair users), and equestrians using the public highway.
NOx	Nitrogen Oxide
NPPF	National Planning Policy Framework
PC	Principal Contractor
PCF	Project Control Framework - A joint Department for Transport and Highways England approach to managing major projects. The Framework comprises a standard project lifecycle; standard project deliverables; project control processes and governance arrangements.
PCL	Potential Contaminant Linkages
PPE	Personal Protective Equipment
PPGs	Pollution Prevention Guidelines
PMW	Precautionary Method of Working
Preliminary Design	This includes responsibility for the Environmental Impact Assessment (EIA) and the preparation of the Environmental Statement (ES). Completion of preliminary design of preferred option.
Project	Planned work that is completed over a period of time and intended to be completed over a period of time
RAMS	Health and Safety Risk Assessment Method Statement
REAC	Record of Environment Actions and Commitments
RIS	Road Investment Strategy - The long-term strategy to improve England's motorways and major A roads. The first RIS (known as RIS1) was published in 2014 and covers the period 2015-2020. A second RIS (RIS2) was published in 2015 and covers the post-2020 period.
SPZ	Source Protection Zone - Areas of land around over 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. The zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. There are three main zones (inner, outer and total catchment) and a fourth zone of special interest, which is occasionally applied to a groundwater source. The zones are used in conjunction with the Groundwater Protection Policy to set up pollution prevention measures in areas which are at a higher risk, and to monitor the activities of potential polluters nearby.
SRMP	Sustainable Resources Management Plan
SWMP	Site Waste Management Plan

Acronym	Full term
SSSI	Site of Special Scientific Interest - A conservation designation denoting to a protected area in the United Kingdom. The Sites are protected by law to conserve their wildlife or geology.
SWMP	Site Waste Management Plan - A Site Waste Management Plan should describe how materials will be managed efficiently and disposed of legally during the construction of the works, explaining how the re-use and recycling of materials will be maximised. This involves estimating how much of each type of waste is likely to be produced and the proportion of this that will be re-used or recycled on site, or removed from the construction site for re-use, recycling, recovery or disposal. It is the joint responsibility of the client and the principal contractor to ensure that a Site Waste Management Plan is in place before construction begins and to ensure that it is enforced.
The Scheme	The A2 Bean to Ebbsfleet Scheme.
UK	United Kingdom
UXO	Unexploded Ordnance - An explosive weapon (bombs, shells, grenades, land mines, naval mines, cluster munition, etc.) that did not explode when they were employed and still pose a risk of detonation, sometimes many decades after they were used or discarded.
WEEE	Waste electrical and electronic equipment
WFD	Water Framework Directive - The Water Framework Directive (2000/60/EC) is a EU directive which aims to achieve good status of all water bodies (surface waters, groundwaters and the sites that depend on them, estuaries and near-shore coastal waters) and the prevent any deterioration. It has introduced a comprehensive river basin management planning system to protect and improve the ecological quality of the water environment. It is underpinned by the use of environmental standards.
WSI	Written Scheme of Investigation

Appendices

Appendix A. Location and Constraints Plans

A.1 Location plan



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Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Published	PUBLISHED						

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Published	PUBLISHED						

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)

Construction	None
Maintenance / Cleaning	None
Use	None
Decommission / Demolition	None

LEGEND
Scheme Boundary

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Published	PUBLISHED						

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Published	PUBLISHED						

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
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Drawing Suitability: **PUBLISHED**

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Client: **highways england**

Project Title: **ROAD IMPROVEMENT PROGRAMME A2 Bean to Ebbsfleet**

Drawing Title: **FIGURE 1.1 SITE LOCATION PLAN**

Project	Originator	Volume
HE543917 - ATK - EAC	XX - GS - GI - 000001	

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Original Size	Scale	Project Ref. No.	Sheet	Number	Rev
A3	1:25,000	---	1 of 1	C03	

Original Size	Scale	Project Ref. No.	Sheet	Number	Rev
A3	1:25,000	---	1 of 1	C03	

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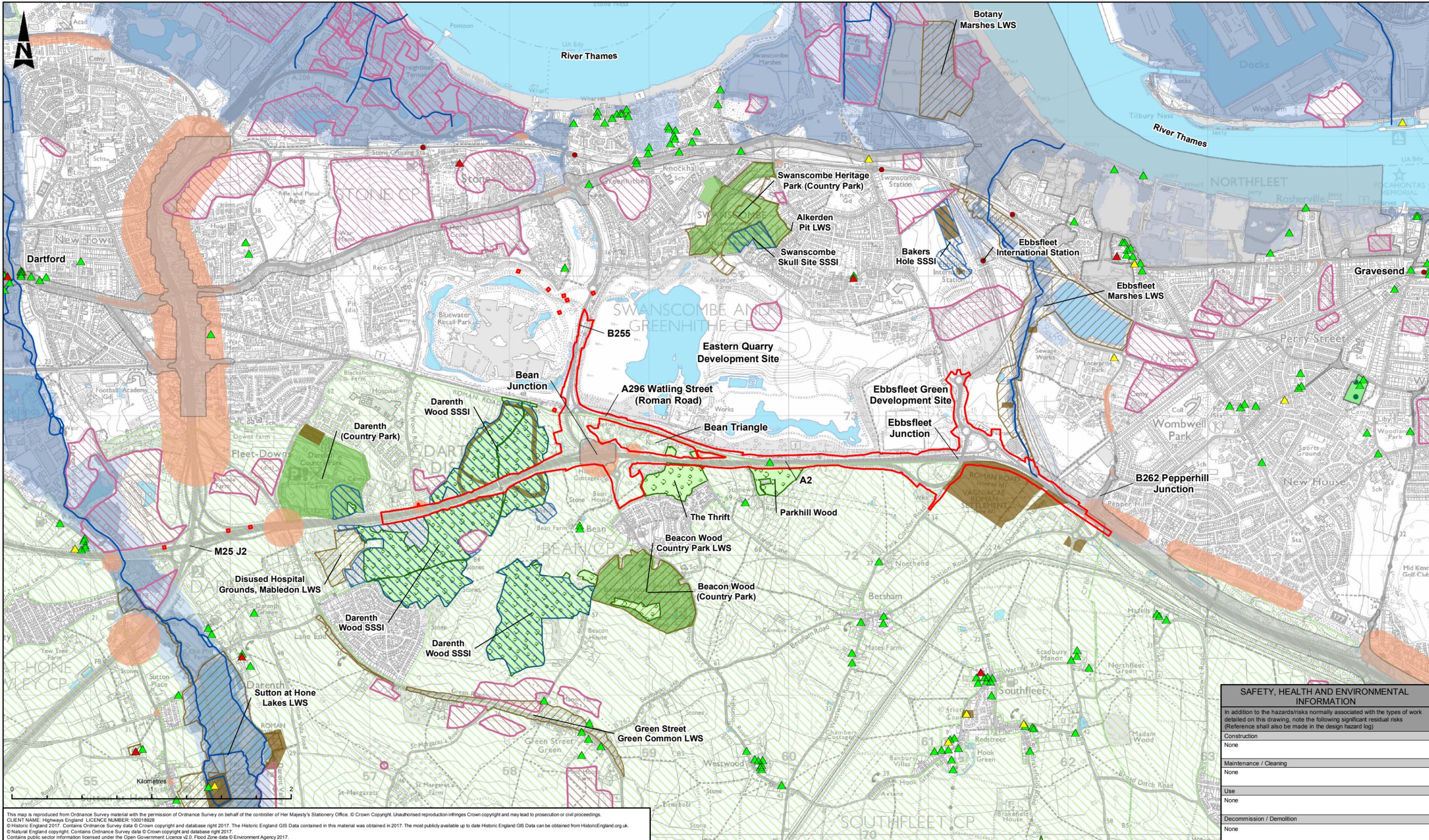
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Original Size	Scale	Project Ref. No.	Sheet	Number	Rev
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Original Size	Scale	Project Ref. No.	Sheet	Number	Rev
A3	1:25,000	---	1 of 1	C03	

Original Size	Scale	Project Ref. No.	Sheet	Number	Rev
A3	1:25,000	---	1 of 1	C03	

A.2 Constraints Plan



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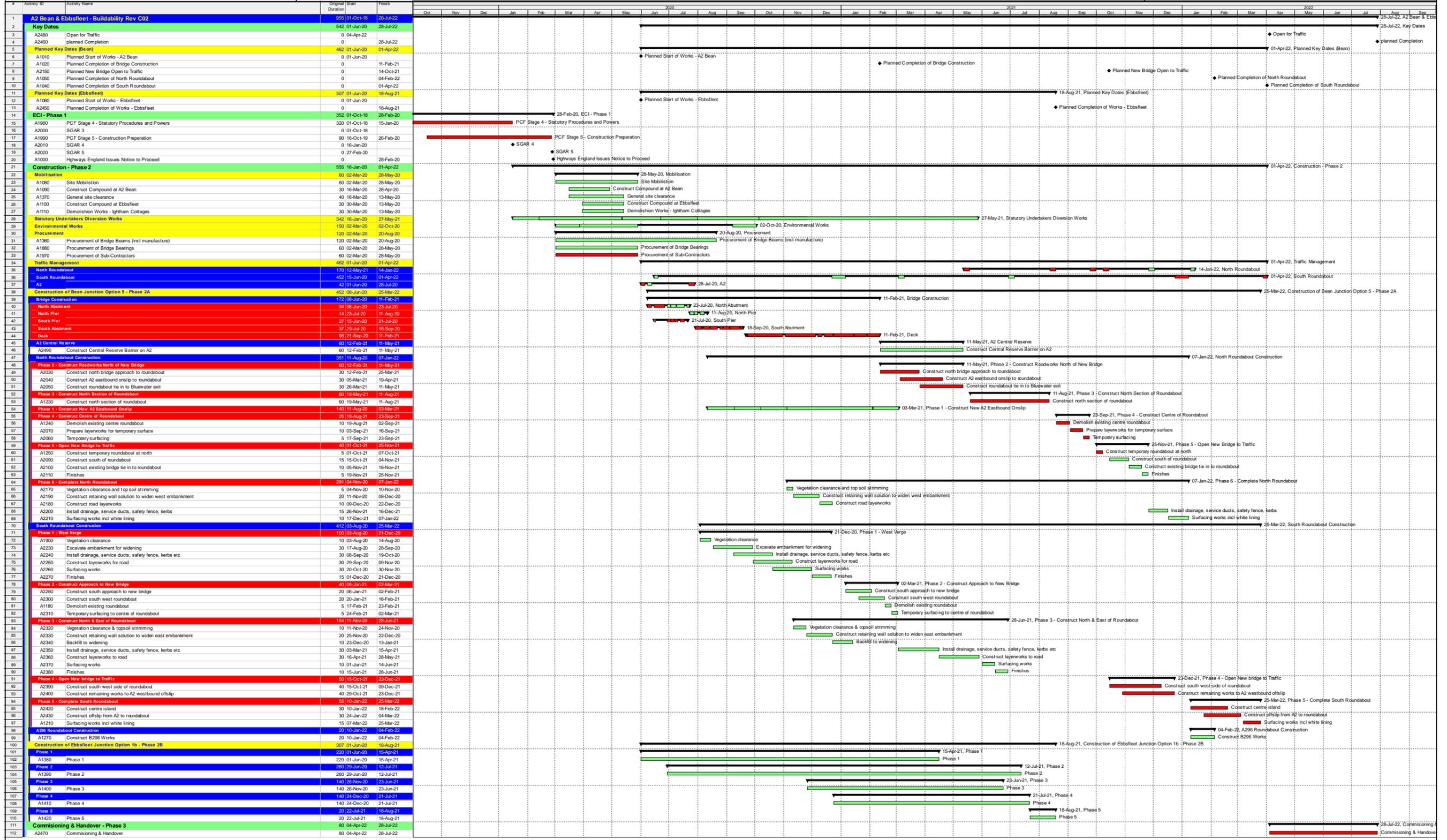
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)	
Construction	None
Maintenance / Cleaning	None
Use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

LEGEND	
	Scheme Boundary
	Sites of Special Scientific Interest (SSSI)
	Scheduled Monuments
	Ancient Woodland
	Green Belt
	Historic Landfill Sites
	Registered Park and Garden
	Local Wildlife Sites (LWS)
	Country Parks
	Noise Important Areas
	Air Quality Management Areas
	Waterbodies
	Flood Zone 3
	Flood Zone 2
	River Network
	Listed Buildings Grade I
	Listed Buildings Grade II*
	Listed Buildings Grade II
	Rail Station

Description							
Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date	
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Appendix B. Construction programme

A2 Bean & Ebbfleet Buildability Construction Programme - Rev C02



█ Actual Work ◆ Milestone
█ Remaining Work ⇨ Summary
█ Critical Remaining Work █ Remaining Level of Effort

Date	Revision	Checked	Approved
31-Jul-18	Buildability Construction Programme Rev C02		

Appendix C. Tool box talks and method statements (to be produced by the PC)

Appendix D. Key legislation, policies and strategies

D.1.1 Environmental Legislation, Policies and Strategies, and best practice documents of relevance, are highlighted below.

- Air Quality (England) Regulations SI 2000/ 928 and the Air Quality (England) (Amendment) Regulations SI 2002/ 3043
- Air Quality Standards Regulations SI 2010/ 204
- Ancient Monuments and Archaeological Areas Act 1979
- British Standard 4428:1989 'Code of Practice for General Landscape Operations'
- British Standard BS5228 'Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise' 2009 amended 2014
- British Standard BS5228 'Code of Practice for noise and vibration control on construction and open sites – Part 2: Vibration' 2009 amended 2014
- British Standard BS5837:2012. Trees in relation to design, demolition and construction –. Recommendations.
- CIRIA (2010) Environmental Good Practice on Site. 3rd Edition
- Climate Change Act 2008
- Conservation of Habitats and Species Regulations SI 2010/490
- Construction (Design and Management) Regulations 2015.
- Contaminated Land (England) Regulations SI 2006/1380
- Control of Noise at Work Regulations 2005
- Control of Pollution Act 1974 Sections 60 & 61
- Control of Substances Hazardous to Health Regulations SI 2002/2677
- Controlled Waste (England and Wales) Regulations SI 2012/ 811
- Energy Performance of Buildings Directive (EPBD) 2003 (and amendments)
- Environment Act 1995 Chapter 25
- Environmental Noise (England) Regulations SI 2006/ 2238 and amendments
- Environmental Permitting (England and Wales) Regulations SI 2010/ 675
- Environmental Protection Act Part III (1990) Sections 79, 80 & 82
- Environmental Protection Act (1990) Sections 59 & 59ZA (supplemented by the Contaminated Land (England) (amendment) Regulations 2012).
- Flood and Water Management Act 2010
- Hazardous Waste (England and Wales) Regulations 2005 (as amended)
- Health and Social Care Act 2012

- Health Protection (Notification) Regulations 2010 (SI 2010/659)
- Health Protection (Local Authority Powers) Regulations 2010 (SI 2010/657)
- Health Protection (Part 2A Orders) Regulations 2010 (SI 2010/658)
- National Planning Policy Framework (NPPF) 2018 (England only)
- Natural Environment and Rural Communities Act 2006
- Planning Act 2008
- Planning (Listed Buildings and Conservation Areas) Act 1990 (and amendments)
- Pollution Prevention and Control Act 1999 (as amended)
- Public Health (Control of Disease) Act 1984
- Control of Asbestos Regulations 2012
- Control of Pollution Act 1974
- Planning and Compulsory Purchase Act, 2004
- Trade Effluent (Prescribed Processes and Substances) Regulations SI 1989/1156 (as amended)
- Waste Electrical and Electronic Equipment (WEEE) Regulations 2007
- Water Act 2014
- Water Industry Act 1991
- Waste (England and Wales) Regulations SI 2011/ 988
- Water Resources Act 1991
- Wildlife and Countryside Act 1981

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