

Southampton to London Pipeline Project

Deadline 2

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Southampton to London
Pipeline Project



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Esso Petroleum Company, Limited

Appendix 16.1: Code of Construction Practice

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November 2019



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Acronyms

Acronym	Definition
AMS	Archaeological Mitigation Strategy
BPM	Best Practicable Means
CCTV	Closed Circuit Television
CEMP	Construction Environmental Management Plan
CoCP	Code of Construction Practice
CoPA	Control of Pollution Act
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
ECOW	Environmental Clerk of Works
FRA	Flood Risk Assessment
GCN	Great Crested Newt
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HDD	Horizontal directional drilling
HGV	Heavy Goods Vehicle
HRA	Habitat Regulations Assessment
LoD	Limits of Deviation
PIG	Pipeline Inspection Gauge
PRoW	Public Right of Way
PWS	Private water supply
REAC	Register of Environmental Actions and Commitments
RoFSW	Risk of Flooding from Surface Water
SAC	Special Area for Conservation
SANG	Suitable Alternative Natural Greenspace
SEP	Suitably Experienced Person
SINC	Site of Importance for Nature Conservation
SNCI	Site of Nature Conservation Interest
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
TC	Trenchless crossing

1 Introduction

1.1 Overview

- 1.1.1 Esso Petroleum Company, Limited (Esso) is making an application for development consent to replace 90km (56 miles) of its existing 105km (65 miles) aviation fuel pipeline that runs from the Fawley Refinery near Southampton, to the Esso West London Terminal storage facility in Hounslow. The replacement is referred to as the project within this report.
- 1.1.2 Esso has already replaced 10km of pipeline between Hamble and Boorley Green in Hampshire and now wants to replace the 90km of pipeline between Boorley Green and the Esso West London Terminal storage facility in Hounslow. The areas of land to be permanently or temporarily used for the project are known as the Order Limits.
- 1.1.3 The replacement pipeline starts near Boorley Green at the end point of the previously replaced pipeline. The route runs generally in a northeast direction via Esso's Pumping Station in Alton. It terminates at the Esso West London Terminal storage facility.
- 1.1.4 The route and Order Limits are broken down into eight separate sections:
- Section A – Boorley Green to Bramdean;
 - Section B – Bramdean to South of Alton;
 - Section C – South of Alton to Crondall (via Alton pumping station);
 - Section D – Crondall to Farnborough (A327 crossing);
 - Section E – Farnborough to Bisley and Pirbright Ranges;
 - Section F – Bisley and Pirbright Ranges to M25;
 - Section G – M25 to M3; and
 - Section H – M3 to the West London Terminal storage facility.
- 1.1.5 The development authorised by the Development Consent Order (DCO) must be undertaken in accordance with this Code of Construction Practice (CoCP) pursuant to Requirement 5 of the DCO.

1.2 Structure of this CoCP

- 1.2.1 Section 1 in this CoCP presents an overview of the project, including outlining the purpose of this CoCP and a brief description of the project and the construction methodology.
- 1.2.2 Section 2 details the embedded design measures committed to by the project, but which are at a level of detail not shown on the DCO works plans. These are presented in Table 2.1.
- 1.2.3 Section 3 sets out the principal code of construction measures applicable to the construction of the project.
- 1.2.4 This CoCP contains three annexes:

- Annex A - Areas of Reduced Working Width contains a table of locations where the working width has been reduced, committed to by the project as embedded design.
- Annex B - contains a Schedule of Trenchless Crossings which have been embedded into the design.
- Annex C - contains, for information, measures contained in the Register of Environmental Actions and Commitments (REAC) in Chapter 16, that would be secured through other mechanisms under the DCO.

1.3 Purpose of the Code of Construction Practice

- 1.3.1 This CoCP describes a series of general measures and practices that would be implemented by Esso and its contractor(s) during the construction of the project. Its aim is to provide a consistent approach to the control of construction activities along the entire pipeline and mitigate potential impacts on people and the environment.
- 1.3.2 This CoCP applies to everyone working on the project and Esso and its contractor(s) are required to comply with the measures set out in the main sections of this CoCP and Annex A and Annex B.
- 1.3.3 Often, the further details required to put in place the measures included in this CoCP, will be contained in further subsidiary documents such as the Construction Environmental Management Plan (CEMP) or the Landscape and Ecological Management Plan (LEMP). These further documents would be subject to later approval by the relevant planning authorities or other regulatory authorities. This allows for greater detail to be determined at a local level after the DCO has been granted and when the contractor(s) for the project has developed its plans for implementing the project. For this reason, Annex C sets out those other measures and mitigation from the REAC, that would be implemented through other DCO mechanisms.
- 1.3.4 The project would be run in compliance with all relevant legislation, consents and permits. Any statutory requirements listed in this document and industry good practice guidance which has informed each part of the document are not to be seen as exhaustive. Esso and its supply chain of contractor(s) would adopt the objectives and control measures set out in this CoCP when undertaking the construction of the pipeline and ancillary works.

1.4 Project Description

- 1.4.1 The project comprises the following elements:
- 97km of new pipeline to be routed via the Alton Pumping Station to deliver greater connectivity and resilience to the UK fuel supply network;
 - a new “pigging” station at Boorley Green to allow the entry and exit points for PIGs during inspections;
 - 14 remotely operated in-line valves along the pipeline to allow isolation for maintenance or to limit the impact of a potential leak;
 - a pressure transducer to monitor the pressure within the pipeline;



- 6 new above ground cathodic protection (CP) transformer rectifier cabinets to supply power to the existing CP system;
- pipeline markers along the route at all road crossings and boundaries and new red and black colour coded flight marker posts; and
- modifications to the PIG station at the West London Terminal storage facility including installation of a new PIG receiver;
- replacement pumps at the Alton Pumping Station.

- 1.4.2 The replacement pipeline would tie in to the Alton Pumping Station, as this would deliver greater connectivity and resilience to the UK fuel supply network.
- 1.4.3 The replacement pipeline would be buried underground. The minimum depth from the top of the pipe to the ground surface would be 1.2m in open cut sections, and deeper for trenchless crossings. The pipeline would be installed using open cut trenching methods for most of the route. For major crossings of A-roads, motorways and some other heavily trafficked roads, railways and some watercourses, specialist trenchless techniques would be used. Crossings of watercourses including rivers, streams and ditches would typically be open cut. Annex B contains the schedule of trenchless crossings in more detail.
- 1.4.4 The Order Limits encompass the land required permanently and temporarily to build and operate the pipeline. This includes the working width to install the pipeline, construction compounds, logistics hubs, laydown areas, road access points, land required for above ground features (such as the new pigging station, valves and CP transformer rectifier cabinets), and an easement strip that extends 3m either side of the pipeline.
- 1.4.5 The Limits of Deviation (LoD) are located within the Order Limits. These show the widest area, within the Order Limits, within which the pipeline may be installed. The pipe would be installed to reduce impacts to sensitive features, and the working width restricted as far as is practicable. In places, the LoD has been reduced in width to allow for the protection of sensitive environmental features. This is expressed in the Works Plans forming part of the DCO.
- 1.4.6 In certain areas a commitment has been made to a narrower working width. This is because flexibility is required within the Order Limits to determine where the narrow working width would be located, to account for unexpected ground conditions and other factors that determine the final location of the pipeline. There are also several areas where narrow working 'techniques' would be used which allow for more flexibility to avoid underground sensitive features, for example utilities in street works and tree roots. As these narrow working commitments are not expressed in the Work Plans they are included as binding project commitments set out in Annex A to this CoCP.
- 1.4.7 The existing pipeline would continue to be operated to maintain fuel supply during the installation of the pipeline. This is because the existing pipeline cannot be taken out of operation for more than short periods, to ensure secure supplies to customers. Once the replacement pipeline is fully operational, the existing pipeline would be decommissioned.

1.5 Construction Methodology

Construction Schedule

- 1.5.1 The construction schedule has yet to be developed in detail, as this will be undertaken during the detailed design stage. The final schedule would be programmed where practicable to avoid times of particular environmental sensitivity, such as animal breeding and hibernation seasons in accordance with relevant species protection legislation. In addition, the project would consult with educational facilities within the Order Limits to co-ordinate where practicable the construction timetable to reduce impacts (G173).
- 1.5.2 Throughout the installation of the pipeline there would be a number of work fronts. A work front is a specific area or location where a crew generally comprising up to 10 construction workers are carrying out a particular aspect of the main pipeline construction activities, including topsoil stripping, trench excavation, pipe installation backfilling of trenches and reinstatement. There may be several work fronts operating simultaneously.
- 1.5.3 Trenchless techniques are proposed in a number of locations. The duration of such techniques would vary according to the length of the pipe being installed and the technique used. For example, for horizontal directional drilling (HDD), the construction of a 100m long crossing would take around four to five weeks, with a further two weeks required per 100m increase in the length of the crossing. This also assumes that the works to install trenchless crossings would not be unduly restricted with regards to working hours and weather conditions. Certain activities would require continual 24 hours a day working, for example the pipe pulling phase for a trenchless crossing. If working hours for trenchless crossings are restricted, then the installation would take longer.
- 1.5.4 Annex B contains a list of the trenchless crossings that the project has committed to providing along the route.

Construction Phase Activities

- 1.5.5 Prior to installation, several activities would be completed. Further information on these activities can be found in Chapter 3 of the ES. Activities would include but not be limited to:
- communication with all consultees and the publicising of contact methods;
 - early environmental mitigation works;
 - route survey, setting out and record of condition;
 - utility diversions;
 - working area preparation;
 - temporary fencing;
 - pre-construction drainage;
 - provide temporary access tracks for construction; and
 - establishment of logistics hubs.

1.5.6 In general terms, the following tasks would be undertaken during the installation phase:

- establish construction compounds;
- public highways and public rights of way closures and diversions;
- topsoil removal and storage;
- haul road construction;
- pipe storage and stringing;
- welding and joint coating;
- trench excavation and pipe installation; and
- installation of trenchless crossings.

Post Installation Phase Activities

1.5.7 On completion of the installation works, the contractor(s) would hydrotest the pipeline and land used temporarily would be reinstated to an appropriate condition relevant to its previous use (G94). Any post construction monitoring required would be carried out.

Construction of Above Ground Infrastructure

1.5.8 The construction of the new pigging station at Boorley Green and valves along the route of the replacement pipeline would generally follow a sequence of activities similar to that outlined below:

- Pre-construction activities (e.g. site access and the formation of compound and material stores).
- Erection of secure fencing for construction works.
- Construction of drainage measures (where required).
- Earthworks to establish foundation levels.
- Formation of plant foundation bases, chambers and above ground structures.
- Construction of pipework and equipment and associated infrastructure.
- Perimeter reinstatement landscape works and removal of temporary infrastructure.

1.6 General Site Operations

Working Hours

1.6.1 The project is required under the DCO to adhere to normal working hours of 07:00 to 19:00 Monday to Saturday. Sunday or Bank Holiday working is not anticipated as being typical.

1.6.2 Exceptions may be required for Bank Holiday and Sunday working (restricted to 08:00 to 18:00) or night-time working for activities such as: the continuous pulling phase for a major crossing using HDD; where daytime working would be excessively

disruptive to normal traffic operation; cleaning/testing of the pipeline; or overnight traffic management measures (G5).

- 1.6.3 During the 24 month construction period, the works would encounter environmental and other constraints such as unforeseen ground conditions, weather conditions etc. This may require Sunday and Bank Holiday working, so prolonged disruption in any one area could be limited.
- 1.6.4 To reduce congestion on the public highways, and to meet the requirements of the local authorities and the police, where practicable, abnormal loads would be transported outside normal working hours.

Construction Site Layout and Housekeeping

- 1.6.5 A number of project commitments have been made to maintaining good housekeeping practices and these are shown in Table 3.1.

Security

- 1.6.6 Working areas would be appropriately fenced. The choice of fencing would be decided following a risk assessment, relevant to the work location. Specific areas such as compounds may require additional security measures such as lighting, security guards or closed circuit television. (G85) All fencing along the route would be maintained and checked on a regular basis; entry points via gates would be closed and secured when not in use.
- 1.6.7 For some locations the fence used may also serve to provide acoustic and visual screening of the work sites and reduce the potential for disturbance of users in the surrounding areas.
- 1.6.8 Provision of additional fencing on a site by site basis may be used to reduce the potential for impacts on wildlife and trees. Fencing would be regularly inspected and maintained and removed as part of the demobilisation unless otherwise specified (G85).

Control of Nuisance

- 1.6.9 In common with other major construction projects, the project recognises the potential nuisance its activities may cause. Potential nuisances include light, noise and dust from installation activity. Such nuisance could arise from activities at its compounds and hubs as well as the pipeline installation along the order limits.
- 1.6.10 Appropriate site layout and housekeeping measures would be implemented by the contractor(s) at all construction sites. These may include:
- preventing pest and vermin and treating any infestation promptly. This would include arrangements for the proper storage and disposal of waste produced on site;
 - inspecting and collecting any waste or litter found on site;
 - locating or designing site offices and welfare facilities to limit the overlooking of residential properties;



- locating designated smoking/vaping areas to avoid significant nuisance to neighbours;
- managing staff/vehicles entering or leaving site, especially at the beginning and end of the working day;
- avoiding the use of loudspeaker systems or radios; and
- managing potential off-site contractor and visitor parking. (G7)

1.6.11 In the absence of a mains electricity supply, super silent pack generators would be used as an alternative power supply. (G24)

1.6.12 Any activity carried out or equipment located within a logistics hub or construction compound that may produce a noticeable nuisance from dust, noise, lighting etc would be located away from sensitive receptors such as residential properties or ecological sites where practicable (G25).

1.6.13 Lighting would be of the lowest luminosity necessary for safe delivery of each task. It would be designed, positioned and directed to reduce the intrusion into adjacent properties and habitats (G45).

Welfare

1.6.14 Welfare units and toilets would be provided at all of the compounds during the works where necessary. These would be for the use of the contractor(s)' employees. Emptying of effluent, and the removal of any waste would be undertaken by a registered contractor on a regular basis.

1.6.15 Health and safety information and Control of Substances Hazardous to Health (COSHH) data sheets would be displayed within the welfare area.

Reinstatement

1.6.16 The contractor would clear all temporary working areas and accesses as the work proceeds, and when they are no longer required for the works. On completion of the construction works, all plant, materials and temporary works/structures would be removed. Land used temporarily would be reinstated to an appropriate condition relevant to its previous use (G94). Where possible, reinstatement of vegetation would generally be using the same or similar species to that removed (subject to restrictions for planting over and around pipeline easements) (G88). Hedgerows, fences and walls would be reinstated to a similar style and quality to those that were removed, with landowner agreement (G93).

1.7 General Principles

1.7.1 The general management of the project is important in maintaining health and safety and reducing potential environmental impacts from construction activities.

Health and Safety

1.7.2 Esso operates its activities in accordance with the Health and Safety at Work Act 1974, and other health and safety legislation. Site specific methodologies and risk assessments would be produced in accordance to the current legislation prior to any



activities taking place. These would identify any potential risks, assess their likelihood and significance, then identify mitigation measures to reduce the risk, likelihood and significance.

- 1.7.3 Esso would ensure that adequate arrangements are in place to discharge its duties under the Construction (Design and Management) Regulations, 2015 (CDM Regulations).
- 1.7.4 The contractor(s) would be responsible for the production and implementation of the Project Health and Safety Plan in accordance with CDM regulations. This would set out how health and safety matters are managed, risks are identified and reduced in accordance with the current best practices and legal requirements. The Health and Safety Plan would provide and focus on the health and safety of the contractor's staff and workforce and ensure the health and safety of any visitors to the site and its compounds and members of the general public in the vicinity of any activities.
- 1.7.5 The contractor would be regularly audited on its health and safety performance. All procedures and processes would be periodically reviewed internally by the contractor(s) and by Esso.

Community Liaison

- 1.7.6 Esso is committed to ensuring that the local community and associations are provided with information regarding relevant construction activities. Information relating to the pipeline is and would continue to be readily available on the project website at <https://www.slpproject.co.uk/>. This would include the project programme with estimated durations, email addresses with helpline numbers for the members of the public or businesses, who wish to request information or make an enquiry relating to the construction activities.
- 1.7.7 Should any construction related complaints or enquiries be received, they would be discussed and responded to in a timely manner. A central Environmental Log would be set up. The Log would be available to view by the local authority if requested. It would be a living document and be kept up to date and referred to on a regular basis. The Log would record all comments and complaints made to the site, together with resulting actions and outcomes. (G9).

Environmental Management

- 1.7.8 Esso requires that its main works contractor(s) can demonstrate an Environmental Management System certified to ISO 14001. Other contractor(s) would be expected to work to the principles of ISO 14001. The contractor would be responsible under legislation and the Contract for minimising and controlling the potential environmental impacts of all contract activities.
- 1.7.9 A Construction Environmental Management Plan (CEMP) would be produced in line with the Outline CEMP (Appendix 16.2 of the ES). Its function would be to outline the systems to be used during the construction phase; to control and monitor activities, to mitigate environmental impacts and if necessary to introduce any corrective actions. It would secure commitments in the REAC that are allocated to the CEMP.



- 1.7.10 In addition, the CEMP would also explain how the construction activities of sub-contractor(s) comply with its requirements and include subsidiary plans such as the management of waste and soils (G1).
- 1.7.11 No stage of the authorised development would commence until a CEMP relating to that stage has been submitted to and approved by the relevant planning authority
- 1.7.12 The CEMP would contain several 'daughter' documents, typically environmental plans such as the dust management plan.



2 Embedded Construction Design Measures

2.1.1 During the environmental assessment process, measures for the protection of the environment have been embedded into the design. Many of these have influenced the final location of the Order Limits avoiding environmental features where practicable. However, there are also embedded measures designed to avoid or protect environmental features which have been identified within the Order Limits, but which are not reflected in the Work Plans. Table 2.1 contains a list of the construction commitments that will be embedded into the project design by the contractor(s) and taken into account during installation as appropriate. The full list of all embedded measures, including those which have influenced the Order Limits can be found in the REAC.

Table 2.1: Embedded Design Measures

Ref	Location	National Grid Reference	Embedded Design Measure	Justification
Overarching Project Commitments				
O1	Project wide	Project wide	Commitment to only utilise a 10m width when crossing through boundaries between fields where these include hedgerows, trees or watercourses.	To reduce loss of habitats.
O7	Project wide	Project wide	Where required, water stops (or “stanks”) would be installed at intervals through the pipe bedding and side fill.	To reduce groundwater flow along the pipeline.
Section A				
D5	North of Cross Lane	SU5426519106	Locate haul road to the west away from trees in Priority Habitat.	To avoid woodland in Priority Habitat.
D6a	South of Stakes Lane	SU5609021785	The construction compound measuring up to 55 metres by 52 metres to be located at Stephens Castle Down (Works No. 4F and shown on Sheet 6 of the Works Plan at CO-4F) is no longer required and will be removed from the works description in Schedule 1. An area adjacent to the working width measuring 15 metres by 55 metres will still be required as part the construction of a trenchless crossing (TC002) beneath Stake's Lane.	To respond to comments raised by the SDNPA and Historic England.
D7	North of Sailors Lane	SU5849323046	Ensure pipe alignment is located to the west away from woodland block.	To avoid impact on Priority Habitat – large woodland block.
D9	Kilmeston Road	SU5941424044	Use existing gap in hedgerow.	To reduce impact on north hedge which is Priority Habitat.



Ref	Location	National Grid Reference	Embedded Design Measure	Justification
D13	East of Hinton Ampner	SU6124825552	Use existing gap to avoid Ancient Woodland belt.	To avoid classified Ancient Woodland.
D18	South of A272	SU6210327610	Use existing field access from Brockwood to avoid trees on Brockwood Lane.	To avoid Tree Preservation Order trees.
D19	Rabbit Copse, West of Warnford.	SU5847323090	Use widened Order Limits to reduce impact on Priority Habitat.	To provide flexibility to reduce impact on Rabbit Copse Priority Habitat.
Section B				
D21	South of Green Lane north A272	SU6393028657	Locate haul road to the west to use gap in hedge.	To reduce tree loss.
D22	Clinkley Road, north A272	SU6432929324	Locate haul road to the west to use gap in hedge.	To reduce tree loss.
D24	South of Kitwood Lane	SU6715332920	Locate haul road to use existing gaps in hedge in two locations.	To avoid removal of mature trees.
D25	Hawthorn Road	SU6761233601	Locate haul road to use existing hedge gaps.	To avoid woodland Priority Habitat.
D30a	Meon Valley Railway, north of Woodside Lane	SU 70106 35655	Reduce working width through woodland belt.	To reduce impacts to Priority Habitat and visual impacts for users of public rights of way (PRoW).
D33	Selborne Road, Chawton.	SU7214337620	Use widened Order Limits and the LoD to the west to reduce impacts to woodland Priority Habitat.	To enable construction within an alignment that reduces impacts to woodland Priority Habitat.
Section C				
D40	North of lane to Froyle	SU7570542510	Use widened Order Limits to take account of historic landfill.	To provide flexibility to avoid historic landfill if required.

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Ref	Location	National Grid Reference	Embedded Design Measure	Justification
D41	Upper Froyle	SU7595542874	Use further widened Order Limits and the LoD to the west.	To reduce impact on trees on the east side.
D44	South of Gid Lane	SU7606442980	Use widened Order Limits to allow flexibility to avoid tree roots.	To allow for routing to avoid the root protection areas of two mature trees.
D45	South of Gid Lane, Ryebridge Stream	SU7703044164	Use existing gaps in hedge.	To avoid mature trees.
D47	West of Hole Lane	SU7878646500	Locate haul road to use existing hedge gap.	To lessen impact on trees and scrub.
D48	North side of Dippenhall Lane, Crondall	SU7555242409	Locate haul road to the west to use existing access.	To reduce impacts to woodland block which is Priority Habitat.
D55	Between Dippenhall Road and Crondall	Location confidential	Use widened Order Limits to avoid protected species habitat.	To avoid impacts to habitat for a protected species.
D56	Land north of Heath Lane	SU 80556 49011	Use widened Order Limits to avoid mature oak trees.	To reduce impacts to mature trees in the woodland belt.
D58	South of A287	SU8061749680	Locate haul road to the west.	To avoid Ancient Woodland and Site of Importance for Nature Conservation (SINC).
D60	Bourley and Long Valley SSS/SPA	SU8315153174	Use the existing track north of Aldershot Road rather than habitat area as haul road.	To lessen impacts on Special Protection Area (SPA) Site of Special Scientific Interest (SSSI), Flood Zone and Priority Habitats.
D65	Naishes Lane, Ewshott,	SU8139750605	Use widened Order Limits and LoD to avoid Pond 77.	To avoid Pond 77.

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Ref	Location	National Grid Reference	Embedded Design Measure	Justification
Section D – no additional embedded design measures				
Section E				
D68	Frith Wood	SU8909958085	Locate haul road to east. Narrow working width.	To maintain the line of mature trees.
D69	Frith Wood	SU8955358202	Use space within Frith Hill forestry road to reduce impacts on mature trees and possible historic feature.	To reduce impacts on mature trees and the possible historic feature.
D71	Farnborough Hill School	SU 87092 56214)	Use widened Order Limits to avoid mature trees.	To avoid affecting mature trees which are currently near the proposed alignment.
Section F				
D80	Colony Bog and Bagshot SSSI/SPA Heathland	SU9092259795 to SU9164760904	Use the existing Ministry of Defence track plus narrow working area.	To reduce the impact on the heathland habitat and mature trees.
D82	Colony Bog and Bagshot SSSI/SPA Wetland	SU9209461119	Align the pipe on high ground to the north or lay in existing track.	To avoid the impact on wetland/bog SSSI.
D83	Colony Bog and Bagshot SSSI/SPA Wetland	SU9277461503	Align the pipe for a short section along Red Road to further avoid wetland/bog.	To avoid the impact on wetland/bog SSSI.
D90	Foxhills Golf Course	TQ 00116 65204 to TQ 01939 65252	Reduce the working width to 15m through golf course.	To reduce impacts to GCN habitat, landscape and golf course use.
D92	Steep Hill	SU9668063360	Use extended Order Limits to edge of field boundary just north of Steep Hill.	To provide adequate flexibility to route around planned sand school for horse riding activities.
Section G – no additional embedded design measures				
Section H – no additional embedded design measures				
D106	St James Senior Boys' School (Grid	Adjust pipeline alignment to the east.	To avoid the disturbance of school activities.	St James Senior Boys' School (Grid ref: TQ 06611 72028 to TQ 06705 72159)

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Ref	Location	National Grid Reference	Embedded Design Measure	Justification
	ref: TQ 06611 72028 to TQ 06705 72159)			



3 Planning Good Practice Measures

3.1.1 Where site-specific action is required, in addition, to the project-wide measures secured through the Code of Construction Practice (CoCP) for the restoration of the site post installation, site specific planning good practice measures are detailed in Table 3.1 below.

Table 3.1 Planning Good Practice Measures

Ref	Good Practice Measure
OP01	An alternative walking route through West Heath linear park will be signposted using Glebe Road to retain a circular walking route during construction.
OP02	The existing walking and cycling route to the north of the Order Limits from Cabrol Road through Queen Elizabeth Park will be signposted as an alternative to the route within Order Limits.
OP03	Principal pedestrian footpaths within Fordbridge Park crossing the working area would be managed with access only closed for short periods while construction activities occur. Additional signage for diversions on to alternative existing paths will be utilised as appropriate.
OP04	Principal pedestrian routes within SANGs crossing the working area would be managed with access only closed for short periods while construction activities occur. Additional signage for diversions on to alternative existing paths will be utilised as appropriate.
NW10	Working width reduced to 15m (NW10) to reduce impacts on the football pitches at Peter Driver Sports Ground over an approximate distance of 190m. (Grid ref: SU8199551755 to SU8218751789) This will be secured in the CoCP by requirement 5 of the DCO.
OP05	In recognition that the existing neighbourhood equipped area for play (NEAP) at Queen Elizabeth Park would be impacted by the pipeline construction, the project would reinstate the existing NEAP as soon as practicable after construction (G94). The project would seek to provide an alternative NEAP for use while the existing NEAP is out of commission. The alternative NEAP would either be provided by the project within the Order Limits in the vicinity of the existing NEAP on land belonging to Rushmoor Borough Council or would be provided in collaboration with Rushmoor Borough Council in accordance with the details agreed.
OP07	In recognition that the existing local equipped area for play (LEAP) at Woodthorpe Road would be impacted by the pipeline construction, the project would reinstate the existing LEAP as soon as practicable after construction. The project would seek to provide an alternative LEAP for use while the existing LEAP is out of commission. The alternative LEAP would either be provided by the project within the Order Limits in the vicinity of the existing LEAP on land belonging to Spelthorne Borough Council or would be provided in collaboration with Spelthorne Borough Council in accordance with the details agreed.
NW28	Working width reduced to 15m (NW28) to reduce impacts on the football pitches at Abbey Rangers Football Club over an approximate distance of 500m. (Grid ref: TQ0496265815 to TQ0526166064).



4 Environmental Good Practice Measures

4.1 Introduction

- 4.1.1 As part of the environmental impact assessment process, good practice measures have been identified that would reduce impacts from the project on the environment. These are generally measures that would normally be implemented on a well-run construction site, but also include a number of good practice measures that are specific to the project and its location. Many of these good practice measures are included in this CoCP, and their implementation is secured under Requirement 5 of the DCO: *'the authorised development must be undertaken in accordance with the CoCP, or with such changes to that document as agreed by the relevant planning authority'*. Please note that additional measures and mitigation may be required under other DCO mechanisms that complement these CoCP measures. These are set out for information in Annex C together with details of how they are secured.
- 4.1.2 Tables 4.1 to 4.8 show good practice measures to be implemented. These are minimum standards that are binding for the contractor(s) whilst working on the project. Implementation of these good practice measures has been assumed in the assessment of the project within the ES.
- 4.1.3 General good practice measures that are applicable to a number of topics and relevant across the project can be found in Table 4.1. Tables 4.2 to 4.8 list the good practice measures which are relevant to a specific topic, such as biodiversity or water. Each good practice measure has been assigned a reference number, for example (G7). This is for ease of cross-reference to other documents and chapters such as the REAC (see Chapter 16 Environmental Management and Mitigation within the ES). Further good practice measures that will be included in documents secured under individual requirements of the DCO, such as the CEMP and the LEMP, are included in Annex C.

4.2 General Good Practice Measures

- 4.2.1 Table 4.1 contains general good practice measures.

Table 4.1: General Good Practice Measures

Ref	Good Practice Measure
G2	The contractor(s) would provide a series of reviewed methodologies. The number of construction activities subjected to this process would be decided on a risk-based approach and could include site preparation, pipe-laying, trenchless crossings and reinstatement. Each methodology would include the measures that need to be undertaken to meet the requirements outlined in the CEMP. Methodologies would be reviewed and accepted by the Employer's Representative.



Ref	Good Practice Measure
G3	A suitably experienced Environmental Manager would be appointed for the duration of the construction phase. A qualified and experienced Environmental Clerk of Works (ECoW) would be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the CEMP. The ECoW would be supported as necessary by appropriate specialists.
G6	Welfare facilities and cabins would be located in the compound areas. Where the working area is an excessive distance from the nearest compound, mobile welfare units would be deployed to move with the crew as works progress. No living accommodation would be provided in the compounds or the working areas.
G11	Runoff across the site would be controlled by the use of a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding.
G12	There would be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of emergency).
G13	Protection of earthworks and soil would be managed by methods such as covering, seeding or using water suppression where appropriate.
G17	Materials and equipment would not be moved or handled unnecessarily.
G18	Bonfires and the burning of waste material would be prohibited.
G19	When loading and unloading materials from vehicles, including pipes and excavated materials, drop heights would be limited.
G20	Water assisted road cleaners would be deployed on public roads where necessary to prevent excessive dust or mud deposits.
G22	Plant and vehicles would conform to relevant applicable standards for the vehicle type, would be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner.
G23	All plant and vehicles would be required to switch off their engines when not in use and when it is safe to do so.
G24	In the absence of a mains electricity supply, super silent pack generators would be used as an alternative power supply.
G25	Any activity carried out or equipment located within a logistics hub or construction compound that may produce a noticeable nuisance from dust, noise, lighting etc would be located away from sensitive receptors such as residential properties or ecological sites where practicable.
G27	The name and contact details for the project would be displayed at the entrance to all compounds. This would include an emergency number.
G28	Construction workers would undergo training to increase their awareness of environmental issues. Topics would include but not be limited to: <ul style="list-style-type: none"> • dust management and control measures; • location and protection of sensitive environmental sites and features; • adherence to environmental buffer zones; • noise reduction measures; • working with potentially contaminated materials; • flood risk response actions; and • agreed traffic routes, access points etc.



Ref	Good Practice Measure
G29	Topsoil would be returned to its final location at the earliest suitable time of year.
G31	A proportionate Community Engagement Plan would be produced and implemented.
G44	The project would be run in compliance with all relevant legislation, consents and permits.
G77	A Site Waste Management Plan (SWMP) would be developed prior to construction. The contractor(s) would maintain and monitor the SWMP throughout the construction phase and oversee that any sub-contractor(s) adhere to the SWMP.
G179	An Emergency Action Plan would be developed for the construction phase which would outline procedures to be implemented in case of unplanned events such as site flooding, pollution incident, disease outbreak etc.

4.3 Biodiversity Good Practice Measures

- 4.3.1 Biodiversity surveys have been carried out along the project corridor. These have been used to inform the selection of the project corridor, avoiding sensitive features such as ancient woodland, and Great Crested Newt (GCN) ponds, where practicable. These surveys would be supplemented by pre-construction surveys if existing baseline survey data need to be updated or supplemented. Ghost applications for protected species licences have been submitted to Natural England with respect to GCN, sand lizards, badgers and dormice. A Protected and Controlled Species Compliance Report has been produced to demonstrate compliance with legislation for other species across the project.
- 4.3.2 A Habitat Regulations Assessment (HRA) (**application document 6.5**) has been produced which provides method statements for working within Thames Basin Heaths SPA and Thursley, Ash, Pirbright and Chobham Special Area of Conservation (SAC). This has been submitted to Natural England for comment. The Order Limits also cross 24 non-statutory designated sites. All hedgerows within the Order Limits have been assessed under the Hedgerows Regulations 1997 for their biodiversity, landscape and cultural heritage importance.
- 4.3.3 The design evolution of the project has avoided many features of biodiversity importance (see Chapter 4 Design Evolution in the Environmental Statement). In addition, good practice measures have been identified and committed to by the project. Table 4.2 contains the good practice measures particularly relevant to Biodiversity topics. Where restrictions to working are required due to ecological seasonality, e.g. for hibernation or breeding of protected species, standard timings have been indicated. However, due to alterations in weather patterns and temperatures from year to year, the restricted season may alter. It would be at the discretion of the ECoW in consultation with Natural England, where applicable, to decide the actual dates for restriction of works (G34).
- 4.3.4 Other good practice measures that are also relevant to Biodiversity are contained within different topic areas and measures within documents such as the CEMP and LEMP that fall under separate requirements of the DCO (these measures can be found in Annex



C). The areas of reduced working widths within Annex A and the trenchless crossings within Annex B also provide significant reductions in biodiversity impact.

Table 4.2: Biodiversity Good Practice Measures

Ref	Good Practice Measure
G34	Where restrictions to working are required due to ecological seasonality, e.g. for hibernation or breeding of protected species, standard timings have been indicated. However, due to alterations in weather patterns and temperatures from year to year, the restricted season may alter. It would be at the discretion of the ECoW in consultation with Natural England, where applicable, to decide the actual dates for restriction of works.
G35	Bird Breeding Season: The assumption would be that vegetation with the potential to support bird nests would not be removed during the breeding bird season (March to August inclusive). If any works become necessary during the breeding bird season, works would be supervised by an ECoW. Appropriate protection measures would be put in place should active nests be found. These would include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the ECoW.
G41	The ECoW would monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required mitigation measures. The ECoW would also be involved with any targeted additional mitigation strategies that may be required.
G45	Lighting would be of the lowest luminosity necessary for safe delivery of each task. It would be designed, positioned and directed to reduce the intrusion into adjacent properties and habitats.
G47	A programme of post-construction monitoring and objectives/targets for designated ecological sites, would be agreed and implemented in accordance with DCO requirements at the following sites: <ul style="list-style-type: none"> • Bourley and Long Valley SSSI; • Colony Bog and Bagshot Heath SSSI; • Chobham Common SSSI/NNR; and • Chertsey Meads LNR The programme and content of post construction monitoring would be agreed with Natural England and recorded within the Landscape and Ecological Management Plan.
G49	A fish rescue would be undertaken at any watercourse crossings that would require isolation and dewatering, to prevent fish being trapped, injured or killed during dewatering. Fish would be returned to suitable habitat on the same water body unaffected by the works. An experienced contractor would undertake the work and, if required, appropriate authorisation will be obtained from the Environment Agency for such a rescue.
G60	Where there would be a risk of animal entrapment, a means of escape would be installed into all excavations left open overnight.
G62	Vegetation arisings would be disposed of responsibly. Small quantities may be reused on site to create ecological habitat.



4.4 Water Good Practice Measures

- 4.4.1 Desk based assessments and site surveys were undertaken to enable assessment of groundwater, surface water and flood risk issues. This included information from borehole records and project ground investigations. A Flood Risk Assessment was carried out and submitted to the Environment Agency for comment. A Water Framework Directive assessment has been produced in relation to the risk posed to the river basin objectives and measures.
- 4.4.2 As part of the design evolution, large areas of floodplain were avoided by the project and trenchless crossings have been used on some watercourses. In addition, good practice measures have been identified and committed to by the project. Table 4.3 contains good practice measures specifically relevant to Water topics.
- 4.4.3 Other good practice measures that are also relevant to Water are contained within different topic areas, and measures within documents such as the CEMP that fall under separate requirements of the DCO (these measures can be found in Annex C).

Table 4.3: Water Good Practice Measures and Mitigation

Ref	Good Practice Measures and Mitigation
G116	An Erosion and Sediment Control Plan would be produced by the contractor(s) prior to the start of the construction phase.
G117	Wash down of vehicles and equipment would take place in designated areas within construction compounds. Wash water would be prevented from passing untreated into watercourses and groundwater. Appropriate measures would include use of sediment traps.
G119	Potentially hazardous materials used during construction would be safely and securely stored including use of secondary containment where appropriate.
G121	All refuelling, oiling and greasing of construction plant and equipment, would take place above drip trays and also away from drains as far as is reasonably practicable. Vehicles and plant would not be left unattended during refuelling. Appropriate spill kits would be made easily accessible for these activities.
G126	Where new or additional surfacing is required on any access tracks and compound areas, these would be permeable surfaces where ground conditions allow.
G127	The contractor(s) would subscribe to the Environment Agency's Floodline service which provides advance warning of potential local flooding events and subscribe to the Met Office's Weather Warnings email alerts system. The contractor(s) would implement a suitable flood risk action plan which would include appropriate evacuation procedures should a flood occur or be forecast.
G128	The contractor(s) would comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This would particularly be with regard to volumes and discharge rates and would include discharges to land, water bodies or third-party drains/sewers.
G131	River bank and in-channel vegetation would be retained where not directly affected by installation works.



Ref	Good Practice Measures and Mitigation
G134	Temporary stanks would be installed within the trench prior to undertaking dewatering/draining activities, to prevent migration of water within the trench.
G142	Fuels, oils and chemicals would be stored responsibly, away from sensitive water receptors. They would be stored >15m from watercourses, ponds and groundwater dependent terrestrial ecosystems.
G143	The quality of water generated by dewatering would be tested prior to discharge.
G144	As part of negotiations with landowners within the Order Limits which are affected by the project, active private water supplies would be identified with the landowner. Appropriate mitigation would be considered during construction.
G183	Natural substrate would be provided through temporary watercourse crossings box culverts.
G185	Temporary haul and access road construction material within Flood Zone 3 and areas of High and Medium Risk of Flooding from Surface Water (RoFSW) would be removed at the end of the construction phase and the ground surface would be re-instated to pre-project levels.
G198	The project would incorporate appropriate surface water drainage measures into its final design for the haul roads and access tracks so that they do not lead to a significant increase in flood risk.
W12	<p>For private water supplies (PWS) the following would be put in place:</p> <ul style="list-style-type: none"> • In the event of a landowner or tenant complaining that installation activities have affected their PWS, an initial response would be provided within 24 hours. • Where the installation works have affected a PWS, an alternative water supply would be provided, as appropriate. • In the event of a significant spill during construction: <ul style="list-style-type: none"> ➢ all landowners/tenants would be contacted within 24 hours, within 250m of the spill, to determine if there are any PWS that might be affected; ➢ an assessment of the likelihood of groundwater contamination supplying identified PWS would be undertaken; ➢ where requested by the relevant landowner, monitoring of well water would be undertaken for a determined period of time, taking into account pollution travel time in groundwater, to determine whether pollution has occurred; and • where a PWS is affected, an alternative water supply would be provided, as appropriate.
W14	<p>Temporary sheet piling or similar for control of groundwater would be put in place at the following locations unless a detailed assessment is undertaken which demonstrates that no building or infrastructure is at risk of differential settlement:</p> <ul style="list-style-type: none"> • Near the junction of Roakes Avenue and Canford Drive, Chertsey (TQ048657). • Southeast of Jubilee Church, Chertsey (TQ049658). • Junction of Chesterfield Road and Woodthorpe Road, Ashford (TQ059716). • To the southwest of the Esso West London Terminal storage facility, West Bedfont (TQ068733).
W15	Construction Compound 33 (DCO Works No CO5A) would be sized and located so that it does not sit within FZ3 or within 8m of the top of bank of the watercourse.



Ref	Good Practice Measures and Mitigation
W16	The project would raise temporary buildings to a maximum of 1m above ground level which is above the 1%AEP (1:100 year) event at the Mead Lane Construction Compound.
W17	The project would locate any temporary buildings outside of FZ3 at the Shepperton Road North Construction Compound.

4.5 Historic Environment Good Practice Measures

- 4.5.1 Desk top studies were undertaken to identify historic assets within the Order Limits and those up to 1km away where the setting may be affected by the project. Walkover surveys were also undertaken to confirm the desktop findings. These studies and surveys included consideration of archaeological remains, historic buildings and historic landscapes including some designated sites such as Scheduled Monuments and Listed Buildings. A targeted geophysical survey was undertaken to identify hidden archaeological features. Historic England have been consulted during the assessment. An Archaeological Mitigation Strategy (AMS) has been produced and submitted to the local authority archaeologists for comment. It identifies where trial trenching would take place which would in turn identify where a programme of archaeological work (excavation, strip, map and sample, topographic survey, palaeoenvironmental and geoarchaeological sampling and analysis and targeted watching brief) would be required. The baseline and assessment of other topics, such as effects of changes in groundwater on heritage assets and the landscape and visual assessments, have also been taken into account within this assessment.
- 4.5.2 As part of the design evolution, known high value heritage assets have largely been avoided. For example, a trenchless crossing has been committed to under the Basingstoke Canal Conservation Area to reduce any effects on the canal and its setting. A number of good practice measures relevant to the Historic Environment would be included within documents secured by Requirement 11 (Archaeology) within the DCO and are therefore not repeated here but included in Annex C. Measures within other topic areas and covered by other DCO Requirements would also be relevant to the Historic Environment (these measures can be found in Annex C).

4.6 Landscape and Visual Good Practice Measures

- 4.6.1 Landscape information has been collated for designated sites and landscape character. Aerial photography and winter and summer site visits were carried out to identify existing vegetation scale, location and character and identify areas of potential screening vegetation. In addition, tree surveys were undertaken to identify notable trees and tree groupings across the project. Representative viewpoints were discussed with the local planning authorities and additional viewpoints chosen following requests from the South Downs National Park Authority. Ancient Woodland and Tree Preservation Orders (TPO) have been identified along with registered common land, open access land, Green Belt and other green spaces.



- 4.6.2 As part of the design evolution, areas of classified Ancient Woodland have been avoided. Some areas of potential Ancient Woodland (<2ha) lie within the Order Limits. Design alignments, reduced width working and trenchless crossings all reduce or avoid the impacts on trees and woodland within and near to the Order Limits. Table 4.4 contains good practice measures particularly relevant to Landscape and Visual topics.
- 4.6.3 Other good practice measures that are also relevant to Landscape and Visual are contained within different topic areas and measures within documents such as the CEMP and LEMP that fall under separate requirements of the DCO (these measures can be found in Annex C). The areas of Reduced Working Widths within Annex A and the Trenchless Crossings within Annex B also provide significant reductions in landscape and visual impact.

Table 4.4: Landscape and Visual Good Practice Measures

Ref	Good Practice Measure
G86	Works to notable, TPO and veteran trees, where at risk of damage, would be supervised by the ECoW and supported by an experienced arboriculturalist.
G91	The contractor(s) would retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings.
G92	A three-year aftercare period would be established for all mitigation planting and reinstatement.
G93	Hedgerows, fences and walls would be reinstated to a similar style and quality to those that were removed, with landowner agreement.
G94	Land used temporarily would be reinstated to an appropriate condition relevant to its previous use.
G97	Where woodland vegetation is lost and trees cannot be replaced due to the restrictions of pipeline easements, native shrub planting approved by Esso would be used as a replacement.

4.7 Soils and Geology Good Practice Measures

- 4.7.1 Desk based studies were undertaken from published sources such as historical mapping, aerial photography, geological mapping and reports on potentially contaminated sites. Mineral planning authorities and mineral extraction operators were contacted. Targeted site visits were carried out, and project and historic ground investigation data used.
- 4.7.2 As part of the design evolution, geological sites, potentially contaminated sites, landfills and minerals resources and operations were avoided where practicable. In addition, the pipeline itself has been designed to limit risks from unstable ground and withstand deterioration from soils and water contaminants. Table 4.5 contains good practice measures particularly relevant to Soils and Geology.



4.7.3 Other good practice measures that are also relevant to Soils and Geology are contained within different topic areas and measures within documents such as the CEMP and LEMP that fall under separate requirements of the DCO (these measures can be found in Annex C).

Table 4.5: Soils and Geology Good Practice Measures

Ref	Good Practice Measure
G71	<p>For all areas, the following strategic approach would be taken for the management of both known and unknown land contamination:</p> <ul style="list-style-type: none"> • a desk based qualitative risk assessment would be undertaken on the basis of available information to ascertain areas of known and unknown contamination; • working methodologies would be produced based on the assessment; • contingency plans would be developed for dealing with various forms of known or unknown contamination to allow work to progress with limited delay. <p>These procedures would clearly define methods for dealing with any areas of unexpected contamination to manage immediate risks and prevent any contamination, ground gas, airborne contaminants or odour spreading from the affected area, and for appropriate disposal. Measures would contain protocols for dealing with areas of potential asbestos-containing materials, should they be encountered.</p> <p>For areas where potential contamination is known or strongly suspected to be present as a result of past activities, the following would also be undertaken:</p> <ul style="list-style-type: none"> • ground investigation information would be shared and developed as appropriate; • risks to receptors would be assessed, and mitigation and working methods to control those risks would be developed. Risks would include: encountering contaminated dust, soils and groundwater; and where the presence of ground gas and/or vapours may lead to confined space risks, such as in excavations; • a Suitably Experienced Person (SEP) would ensure that risk areas are identified, working methods followed and mitigation carried out appropriately; • made ground and materials known or strongly suspected of being contaminated would be segregated from natural and inert materials; and • ground arisings deemed unsuitable for re-use within the project would be disposed of appropriately for example to a soil treatment centre or landfill.
G72	<p>A Land Contamination SEP would be appointed. They would have practical experience in brownfield earthworks and be able to use their professional judgment to take a proportionate approach to the assessment of potential for ground contamination based on the desk study information and field observations. Their work would be on a targeted basis.</p>
G74	<p>Excavation materials identified by the Watching Brief as being potentially contaminated and unsuitable for re-use within the project would be segregated from other material and transported off-site in suitable vehicles for off-site testing and subsequent disposal. Vehicles would contain and cover the materials to prevent loss of leachate, dust or other material during transport.</p>
G75	<p>Where the route passes through areas where there are active Environmental Permits (for example authorised landfill sites), the contractor(s) would work with the permit holder to comply with the permit requirements. This could include:</p> <ul style="list-style-type: none"> • seek agreement from permit holders and regulators to allow works to proceed; • reinstatement of surface restoration materials; • reinstatement of artificial geological barriers (where present); and



Ref	Good Practice Measure
	<ul style="list-style-type: none"> if applicable to the site, work in accordance with relevant quality assurance procedures.
G78	<p>The contractor(s) would be made aware of any known risk of encountering unexploded ordnance following an appropriate risk assessment.</p> <p>The contractor(s) would implement mitigation measures advised by the risk assessment.</p>

4.8 Land Use Good Practice Measures

- 4.8.1 A desk-based study was carried out including use of Ordnance Survey maps and aerial photography. In addition, information was gained from land agents including by questionnaire.
- 4.8.2 During the design evolution main settlements have been avoided where practicable. In addition, due to further route alignments, demolition of residential properties has been avoided and impacts to ancillary buildings limited. Table 4.6 contains good practice measures particularly relevant to Land Use.
- 4.8.3 Other good practice measures that are also relevant to Land Use are contained within different topic areas and measures within documents such as the CEMP and LEMP that fall under separate requirements of the DCO (these measures can be found in Annex C).

Table 4.6: Land Use Good Practice Measures

Ref	Good Practice Measure
G82	Drainage surveys would be undertaken prior to construction.
G83	Interference of sporting (comprising hunting, shooting and fishing) activities would be kept to a minimum having regards to the need to maintain a safe working environment for both contractors and users of the land and water. This would include, where necessary, temporary cessation of sporting activities.
G84	Existing water supplies for livestock would be identified pre-construction. Where supplies would be lost or access compromised by construction works, temporary alternative supplies would be provided. Water supplies would be re-instated following construction.



4.9 People and Communities Good Practice Measures and Mitigation

- 4.9.1 Desk-based studies were carried out to understand the environmental, social and economic conditions in the study area involving use of maps, aerial photographs and statistical data. Identification was made of potentially sensitive receptors. In addition, discussions were held with consultees including Hampshire and Surrey County Councils.
- 4.9.2 The People and Communities assessment draws on a number of technical notes. The Traffic and Transport Technical Note compiled using data from the Department for Transport, Hampshire and Surrey County Councils and additional traffic surveys which were commissioned for the project. This included bus service information, journey times, and collisions. A Traffic Assessment has also been produced. The Air Quality Technical Note collated air quality management area (AQMA) information and Defra background maps for background air quality concentrations. Locations of ecological receptors were obtained for statutory and non-statutory sites and Ancient Woodland which would potentially be sensitive to noise, air quality changes or dust deposition.
- 4.9.3 During the design evolution, community facilities have been avoided where practicable. In addition, due to further route alignments, demolition of residential properties has been avoided. Table 4.7 contains good practice measures and mitigation particularly relevant to People and Communities including traffic and transport, noise and vibration and air quality measures.
- 4.9.4 Other good practice measures that are also relevant to People and Communities are contained within different topic areas and measures within documents such as the CEMP that fall under separate requirements of the DCO (these measures can be found in Annex C).

Table 4.7: People and Communities Good Practice Measures and Mitigation

Ref	Good Practice Measure or Mitigation
G98	Noise and vibration from construction plant and machinery impacts would be mitigated by adopting measures in the following hierarchy: <ul style="list-style-type: none"> • control at source – for example the selection of quieter equipment; • the choice of location for equipment on site; • control of working hours; and • the provision of acoustic enclosures around equipment or barriers around work sites.
G114	All designated PRow would be identified, and any potential temporary closures applied for/detailed in the DCO. All designated PRow crossing the working area would be managed, including National Trails, with access only closed for short periods while construction activities occur.
G173	The project would consult with educational facilities within the Order Limits to co-ordinate where practicable the construction timetable to reduce impacts.



Ref	Good Practice Measure or Mitigation
PC1	The project would work with the Chertsey Agricultural Show to limit impacts to the Show at Chertsey Meads and along Mead Lane.
PC2	The project would work with the South Downs National Park Authority to limit impacts on major organised events taking place along the South Downs Way (SDW). Provided that the SDNPA has provided at least 4 weeks notice of the event and its duration, the project will keep the SDW PRoW open (without use of the approved diversion) and will provide a suitable temporary surface and appropriate barriers to allow the safe crossing of the working area. The parties recognise that limited use of the haul road may be necessary during the event however the project will ensure that such usage will not cause disruption to the event.

4.10 Major Accidents Good Practice Measures

- 4.10.1 The Major Accidents chapter draws upon the baselines created from other chapters within the ES and consequently good practice measures contained within them. A risk-based assessment was then carried out. The design evolution has removed many of the high-risk areas by avoiding where practicable sensitive receptors such as settlements, ecological sites, cultural heritage sites and sensitive water features. Table 4.8 contains the good practice measure particularly relevant to Major Accidents.

Table 4.8: Major Accidents Good Practice Measures

Ref	Good Practice Measure
G195	Stored flammable liquids such as diesel would be protected either by double walled tanks or stored in a bunded area with a capacity of 110% of the maximum stored volume. Spill kits would be located nearby.

4.11 Cumulative Effects Good Practice Measures

- 4.11.1 The Cumulative intra-project effects assessment used information from the ES topic chapters to identify where sensitive receptors or groups of receptors could be subject to multiple effects. For the inter-project effects assessment, data on other proposed projects within a 1km study area from the Order Limits were obtained through planning sites and online information.
- 4.11.2 Cumulative Effects does not have any topic specific good practice measures but draws upon the good practice measures from the other topics in Tables 4.2 to 4.8 and those within Annex C.



Annex A – Areas of Reduced Working Widths

- 1.1.1 Table A1 contains the schedule of reduced working widths that would be implemented by the project. This is where the working width is reduced within the Order Limits to enable the contractor(s) to reduce impacts to sensitive environmental features. The alignment could be anywhere within the LoD and the Order Limits except where specified otherwise.
- 1.1.2 Narrow working techniques involve the contractor(s) using less space than standard reduced working widths due to localised restraints, such as working in roads or ecologically sensitive areas.

Table A1: Reduced Working Width and Narrow Working Techniques (references are as shown in the General Arrangement Plans (application document 2.6) and to be certified as part of the DCO)

Ref	Location	Reduced Working Measure
NW1	Durley	Working width reduced to 15m and positioned towards the eastern half of the Order Limits to reduce impacts on purple moor grass and rush pasture Priority Habitat and to protect a line of trees which are of high value. Also use of ground protection. The approximate distance would be 150m. (Grid ref: SU52246 16257 to SU52314 16384). Turf would be stripped, stored and reinstated above the trench for a distance of 35m between approximate grid references SU 52306 16340 to SU 52329 16365.
NW3	Farringdon	Working width reduced to 10m to reduce impacts on Priority Habitat and visual impacts for users of public rights of way over an approximate distance of 53m. (Grid ref: SU70092 35638 to SU70132 35673)
NW4 and NW5	North of Froyle	Working width reduced to 15m to reduce impacts on woodland and landscape within two areas with a combined approximate distance of 100m. (Grid ref: SU78499 46112 to SU78530 46153 and SU7854 846176 to SU78578 46217)
NW6	Dippenhall Road	Working width reduced to 15m to reduce impacts on Priority Habitat woodland with bat roost potential over an approximate distance of 55m (Grid ref: SU78768 46475 to SU78798 46520)
NW7	Oak Park, Crondall	Working width reduced to 15m to reduce impacts on woodland blocks within Oak Park Golf Course, some with bat roost potential and connection to Ancient Woodland. The approximate distance would be 305m. (Grid ref: SU80385 48477 to SU80532 48738)
NW8	Naishes Lane	Working width reduced to 15m to reduce impacts on Ewshot Meadows SINC and Suitable Alternative Natural Greenspace (SANG) over an approximate distance of 356m. (Grid ref: SU81369 50606 to SU81529 50923)
NW9	South of Sandy Lane	Working width reduced to 15m to reduce impacts on TPOs within Wakefords Copse SINC over an approximate distance of 274m. (Grid ref: SU81779 51385 to SU82014 51476)
NW11 and NW13	Bourley and Long Valley SPA/SSSI	Working width reduced to 15m to limit impacts on trees and potential bat roosts within Bourley and Long Valley SSSI. Working specifications as detailed within Annex B of the HRA. This consists of two areas with an approximate combined a distance of 293m. (Grid refs: SU82401 52247 to SU82449 52310, and SU83073 53223 to SU83200 53396)
NW12	Bourley and Long Valley SPA/SSSI	Working width reduced to 15m and positioned towards the western half of the Order Limits to reduce impacts to a recorded spring over an approximate distance of 47m. (Grid ref: SU82685 52667 to SU82693 52711)

Southampton to London Pipeline Project
Environmental Statement
Appendix 16.1: Code of Construction Practice



Ref	Location	Reduced Working Measure
NW14	Basingstoke Canal	Working width reduced to 15m to reduce impacts on the Basingstoke Canal Conservation Area over an approximate distance of 135m. (Grid ref: SU83336 53611 to SU83429 53700)
NW15	Old Ively Road	Narrow working width reduced to 5m to reduce impacts to woodland along the Old Ively Road, and trees with high and moderate potential for bat roosts. The approximate distance would be 470m. (Grid ref: SU83847 53962 to SU84236 54174)
NW16	Cove Brook	Working width reduced to 15m incorporating an existing track to reduce impacts on woodland near to Cove Brook; an area of high amenity and landscape value in an urban area. The area is also within the Cove Valley, Southern Grassland SINC, with a number of trees with moderate bat roost potential. The approximate distance would be 317m. (Grid ref: SU85434 55535 to SU85664 55709)
NW17	Queen Elizabeth Park	Working width reduced to 15m to reduce impacts on Queen Elizabeth Park, an area of high amenity, visual screening and landscape value within an urban area. Two trees with bat roost potential are also present in this location. The approximate distance would be 472m. (Grid ref: SU86544 56032 to SU86949 56192)
NW18	Farnborough Hill School/ Ship Lane	Working width reduced to 15m to reduce the impact on adjacent trees and the Conservation Area at Farnborough Hill School over an approximate distance of 440m. (Grid ref: SU 87518 56460 to SU 87324 56789)
NW19	SC Johnson	Working width reduced to 15m to reduce the impacts to trees within the Surrey Heath TPO zone over an approximate distance of 545m. (Grid ref: SU87898 57319 to SU88317 57426)
NW20	Frith Hill	Narrow working width reduced to 15m at Frith Hill to reduce impacts on mature trees, potential bat roosts and an historic embankment. The approximate distance would be 2.2km (Grid ref: SU89055 58008 to SU90944 58779)
NW21	Adjacent to the Maultway	Reduced width working to reduce impacts on mature screening trees along Maultway and also reduce impacts to Colony Bog and Bagshot Heath SSSI and potential bat roosts. Working specifications as detailed within Annex B of the HRA (application document 6.5). The approximate distance would be 3.8km. (Grid ref: SU90976 58802 to SU92520 61386)
NW22	Turf Hill	Working width reduced to 15m to reduce impacts to woodland at Turf Hill over an approximate distance of 888m. (Grid ref: SU93051 61494 to SU93775 61660)
NW23 and 24	Chobham Common SPA/ SSSI/ NNR	Working width reduced to 20m along and adjacent to the existing track to reduce impacts on Chobham Common SSSI/NNR. This heathland is protected for several species of reptile including the rare sand lizard. Working specifications are detailed within Annex B of the HRA (application document 6.5). This would consist of two areas over a combined distance of 1.6km. (Grid ref: SU96916 63545 to SU97766 64071 and SU98260 64307 to SU98781 64515)
NW25	North-northeast of Chobham Common	Working width reduced to 15m to reduce impacts on large pine trees within Monk's Walk Site of Nature Conservation Interest (SNCI) which provide significant screening for the Longcross Estate. Potential bat roosts also present. The approximate distance would be 190m. (Grid ref: SU99035 64666 to SU99139 64823)
NW29	Chertsey Meads Local Nature Reserve	Working width reduced to 15m positioned towards the western half of the Order Limits and use of ground protection to reduce impacts to Chertsey Meads Local Nature Reserve. The approximate distance would be 720m. (Grid ref: TQ05626 66084 to TQ05972 66563). Turf would be stripped, stored and reinstated above the trench for an approximate distance of 125m between approximate grid references TQ 05958 66596 to TQ 05997 66480.



Ref	Location	Reduced Working Measure
NW30	Fordbridge Park	Narrow working width reduced to 10m where possible to avoid or wherever possible limit the impacts on memorial trees at Fordbridge Park. The approximate distance would be 409m. (Grid ref: TQ06206 70826 to TQ05889 71060)
NW33	Ewshot Hill	Narrow working techniques to reduce impacts to Ancient Woodland at Ewshot Hill. Haul road and pipe installation to utilise an existing 5m gap between two areas of ancient woodland above a culvert. The approximate distance would be 10m (Grid ref: SU 80611 49673).



Annex B – Schedule of Trenchless Crossings

1.1.1 Table B1 contains the schedule of trenchless crossings that would be implemented by the project.

Table B1: Schedule of Trenchless Crossings (references are as shown in the General Arrangement Plans (application document 2.6) and to be certified as part of the DCO)

Ref	Location	Trenchless Technique	Justification
TC001	Ford Lake Stream	Horizontal directional drilling (HDD) trenchless technique over approximately 253m.	A trenchless crossing would be used to minimise disruption to the stream and its habitats.
TC002	Stakes Lane	Auger bore trenchless technique over approximately 35m.	A trenchless crossing is proposed under this rural road to avoid traffic disruptions, based on feedback from the Hampshire Highway Authority.
TC003	Riversdown Road (sub-option A2b only)	Auger bore trenchless technique over approximately 52m.	A trenchless crossing under this rural road is proposed to avoid impacts on ancient woodland and Site of Importance for Nature Conservation (SINC) on either side of this road.
TC004	A272	HDD trenchless technique over approximately 121m.	A trenchless crossing would be used to avoid the need to close this main road between Bramdean and Petersfield.
TC005	Petersfield Road	Auger bore trenchless technique over approximately 35m.	A trenchless crossing would be used under this rural road to avoid traffic disruptions, based on feedback from the Hampshire Highway Authority.
TC006	A32	HDD trenchless technique over approximately 162m.	A trenchless crossing would be used as this is a main road into Chawton and Alton.
TC007	Caker Lane	Either open cut or auger bore trenchless technique over approximately 28m.	The crossing of Caker Lane may be trenchless or open cut. This is still to be determined.
TC008	River Wey and Alton to Waterloo railway line	HDD trenchless technique over approximately 209m.	Two trenchless crossings would be used to pass under the River Wey and Alton to Waterloo railway line, and then the A31 Alton Bypass. This would mean that people can still use the major road out of Alton and the railway during installation. The crossing under the River Wey would protect the river from the potential disturbance that could result from open cut trench installation.
TC009	A31 and minor access road	HDD trenchless technique over approximately 163m.	
TC010	A287 Ewshot Hill	HDD trenchless technique over approximately 185m.	A trenchless crossing would be used to avoid disruption to the A287, which is a major route into Farnham.



Ref	Location	Trenchless Technique	Justification
TC011	Bourley and Long Valley SSSI	HDD trenchless technique over approximately 309m.	Two consecutive trenchless crossings would be used to avoid wetland areas in this SSSI.
TC 012	Bourley and Long Valley SSSI	HDD trenchless technique over approximately 252m.	
TC013	Basingstoke Canal SSSI and A323	HDD trenchless technique over approximately 198m.	A trenchless crossing would be used to avoid disruption of the A323 between Fleet and Aldershot and takes account of the SSSI and Conservation Area designations.
TC014	A327 Ively Road	Auger bore trenchless technique over approximately 32m.	A trenchless crossing would be used to avoid the A327, which is a major route into Farnborough and to avoid disruption to local residents.
TC014a	Cove Brook Flood Storage Area	Auger bore trenchless technique over approximately 30m.	Following a request from the Environment Agency, a trenchless crossing would be used to address the EA's concerns regarding the dam at the Cove Brook Flood Storage Area
TC015	South Western Main railway line	Auger bore trenchless technique over approximately 43m.	A trenchless crossing of the South Western Main railway line would reduce impacts on rail travel.
TC016	Cove Brook	HDD trenchless technique over approximately 85m.	A trenchless crossing would be used along the northern side of the South Western Main railway line to avoid the Cove Brook watercourse.
TC017	North side of railway embankment	HDD trenchless technique over approximately 294m.	Two consecutive trenchless crossings are proposed on the north side of the South Western Main railway line, parallel to West Heath Road and adjacent to the railway embankment. The first crossing would reduce disruption to back gardens and the second crossing would reduce disruption on Stake Lane and avoid disruption on Prospect Road.
TC018	Parallel to West Heath adjacent Railway Embankment Northside	HDD trenchless technique over approximately 443m.	
TC019	A325 Farnborough Road	Auger bore trenchless technique over approximately 51m.	A trenchless crossing would be used to avoid the A325, which is a major route through Farnborough.
TC020	Blackwater Valley	Open cut and auger bore or HDD trenchless technique over approximately 433m.	A trenchless crossing would be used to go under the North Downs railway line, the A331, River Blackwater, and Ascot to Guildford railway line. This would reduce impacts on travel for local people and minimise disturbance to the wildlife in the River Blackwater.



Ref	Location	Trenchless Technique	Justification
			The crossing of the remaining elements of the Blackwater Valley may be trenchless or open cut. This is still to be determined.
TC021	A322 Lightwater Bypass	Auger bore trenchless technique over approximately 58m.	A trenchless crossing would be used to avoid the A322 Lightwater Bypass and reduce impacts on travel in the local area.
TC022	Hale Bourne	HDD trenchless technique over approximately 33m.	A trenchless crossing would be used to minimise impacts on the ecology of the watercourse.
TC023	Windlesham Road	Open cut and HDD or auger bore trenchless technique over approximately 67m.	Although this is a minor road, the currently available buried services information suggests that crossing the road using open cut techniques may lead to a lengthy road closure. Until trial trenches have been excavated across the road and detailed plotting of a pipe route is done, the option to cross the road using trenchless techniques has been allowed for in the design of the Order Limits.
TC024	Chobham Common	HDD trenchless technique over approximately 237m.	Three trenchless crossings are proposed in Chobham Common to cross areas of wetland.
TC025	Chobham Common	HDD trenchless technique over approximately 232m.	
TC026	Chobham Common	HDD trenchless technique over approximately 271m.	
TC027	Accommodation Road	HDD trenchless technique over approximately 168m.	A trenchless crossing would be used to minimise disruption on this busy road.
TC028	Holloway Hill woods	HDD trenchless technique over approximately 464m.	A trenchless crossing would be used when passing through Holloway Hill woods to reduce the need to cut down mature trees or damage roots. This trenchless crossing would also traverse under the strip of possible ancient woodland along the south verge of Longcross Road (B386) in Foxhills Golf Club.
TC029	Hardwick Lane	HDD trenchless technique over approximately 177m.	A trenchless crossing would be used to minimise disruption on this road as well as traversing under trees which are subject to tree preservation orders.
TC030	A320 Guildford Road, Salesian School grounds and M25	HDD trenchless technique over approximately 317m.	A trenchless crossing would be used to avoid impacts on the A320, which is a major road into Chertsey, and the school. A trenchless crossing of the M25 would be used to ensure that one of the UK's busiest motorways can remain open throughout installation.



Ref	Location	Trenchless Technique	Justification
TC031	Chertsey Branch railway line	Auger bore trenchless technique over approximately 71m.	A trenchless crossing would be used to avoid the Chertsey Branch railway line, reducing impacts on travel in the area.
TC032	A317 Chertsey Road	Auger bore or HDD trenchless technique over approximately 89m.	A trenchless crossing would be used to reduce impacts on traffic in the built-up area of Chertsey.
TC033	Chertsey Bourne	HDD trenchless technique over approximately 62m.	A trenchless crossing would be used to minimise impacts on the ecology of the watercourse.
TC034	River Thames and B375 Chertsey Bridge Road	HDD trenchless technique over approximately 350m.	A trenchless crossing under the River Thames would mitigate impacts on river habitats and people travelling by boat. The B375 is a busy road between Chertsey and Walton-on-Thames, and the use of a trenchless technique would avoid disruption to travel in the area.
TC035	M3	HDD trenchless technique over approximately 122m.	A trenchless crossing would be used to pass under the M3. This technique would mean that this major UK motorway can remain open throughout installation.
TC036	B376 Shepperton Road	Auger bore trenchless technique over approximately 54m.	A trenchless crossing would be used to go under the B376 Shepperton Road, avoiding disruption to this road.
TC037	Queen Mary Reservoir Intake Canal	Auger bore trenchless technique over approximately 44m.	A trenchless crossing would be used to minimise obstruction to the canal and the habitats within it.
TC038	Staines Reservoir Aqueduct and B377 Ashford Road	HDD trenchless technique over approximately 137m.	A trenchless crossing would be used to pass under the aqueduct avoiding disruption to a strategic watercourse and the B377.
TC039	Staines Bypass A308, River Ash and Woodthorpe Road	HDD trenchless technique over approximately 204m.	A trenchless crossing would be used to go under the Staines Bypass, the River Ash and Woodthorpe Road from Fordbridge Park, avoiding disruption to these busy roads.
TC040	B378 Church Road	Auger bore trenchless technique over approximately 41m.	A trenchless crossing would be used to go under the B378, avoiding disruption to the travelling public around Ashford Station.
TC041	Waterloo to Reading Railway Line	Auger bore trenchless technique over approximately 75m.	A trenchless crossing would be used to avoid disruption to the rail services in the area.
TC042	Staines Road A30	HDD or auger bore trenchless technique over approximately 66m.	A trenchless crossing would be used under Staines Road to avoid travel disruption in the area.



Annex C – Other REAC commitments

1.1.1 In addition to the commitments and measures set out in this CoCP, the REAC contains measures which are implemented through other DCO mechanisms. Some of these measures expand upon or provide further detail to the good practice measures set out earlier in this CoCP and some may be subject to further approval as part of the discharge of DCO requirements prior to the commencement of development. Table C1 contains the measures committed to by the project which are in addition to or further to the measures set out in this CoCP, together with mitigation that has been identified during the environmental impact assessment as being necessary to reduce significant impacts on the environment.

Table C1: Other REAC Commitments

Ref	Measure Description	Securing Mechanism
General Measures		
O10	24-hour remote monitoring of pipeline operation to detect leaks and enable remote shut down of the pipeline if required.	Esso Standard Operating Procedure
G1	A Construction Environmental Management Plan (CEMP) would be produced in line with the Outline CEMP. It would explain how the activities of sub-contractor(s) comply with its requirements and include subsidiary plans such as the management of waste and soils.	DCO Requirement 6 (CEMP)
G2	The contractor(s) would provide a series of reviewed methodologies. The number of construction activities subjected to this process would be decided on a risk-based approach and could include site preparation, pipe-laying, trenchless crossings and reinstatement. Each methodology would include the measures that need to be undertaken to meet the requirements outlined in the CEMP. All methodologies would be reviewed and accepted by the Employer's Representative.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G4	The DCO would seek sufficient powers to allow continued access to environmental mitigation works for the purposes of monitoring as necessary.	Article 30 (temporary use of land for maintaining the authorised development)
G5	Construction would take place during the normal working hours of 07:00 to 19:00 Monday to Saturday. Sunday or Bank Holiday working is not anticipated as being typical. Exceptions may be required for Bank Holiday and Sunday working (restricted to 08:00 to 18:00) or night-time working for activities such as: the continuous pulling phase for a major crossing using HDD; where daytime working would be excessively disruptive to normal traffic operation; cleaning/testing of the pipeline; or overnight traffic management measures.	DCO Requirement 6 (CEMP) DCO Requirement 14 (Working hours)



Ref	Measure Description	Securing Mechanism
G7	<p>Appropriate site layout and housekeeping measures would be implemented by the contractor(s) at all construction sites. These may include:</p> <ul style="list-style-type: none"> • preventing pest and vermin control and treating any infestation promptly. This would include arrangements for the proper storage and disposal of waste produced on site; • inspecting and collecting any waste or litter found on site; • locating or designing site offices and welfare facilities to limit the overlooking of residential properties; • locating designated smoking/vaping areas to avoid significant nuisance to neighbours; • managing staff/vehicles entering or leaving site, especially at the beginning and end of the working day; • avoiding the use of loudspeaker systems or radios; and • managing potential off-site contractor and visitor parking. 	DCO Requirement 6 (CEMP)
G8	The CEMP would include pro-active actions and measures to control pollution risks. This could be either directly from the construction works or due to external factors such as extreme weather. Measures would include appropriate storage and handling of fuels and other substances hazardous to the environment.	DCO Requirement 6 (CEMP)
G9	A central Environmental Log would be set up. The Log would be available to view by the local authority if requested. It would be a living document and be kept up-to-date and referred to on a regular basis. The Log would record all comments and complaints made to the site, together with resulting actions and outcomes.	DCO Requirement 6 (CEMP)
G10	Regular site inspections would be carried out across the site. These would be to check for environmental good practice across the site. Where nuisance is predicted or already occurring, appropriate remediation measures would be put in place to mitigate in accordance with measures outlined within the CoCP and CEMP. The frequency of inspections would be increased when activities with a high potential to cause nuisance are being carried out, or conditions increase the risk of nuisance e.g. windy conditions increase dust risk.	DCO Requirement 6 (CEMP)
G11	Runoff across the site would be controlled by the use of a variety of methods including header drains, buffer zones around watercourses, on site ditches, silt traps and bunding.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage)
G12	There would be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of emergency).	In addition to DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage)
G14	An appropriate speed limit would be imposed on vehicles travelling on site.	DCO Requirement 7 (Construction traffic)



Ref	Measure Description	Securing Mechanism
G15	Wheel washing would be provided at all logistics hubs and large compound access points on to the highway. An adequate supply of water would be made available at these locations at all times.	DCO Requirement 7 (Construction traffic)
G16	Compound access points to the public highway would be constructed with temporary hard surfacing.	DCO Requirement 7 (Construction traffic)
G20	Water assisted road cleaners would be deployed on public roads where necessary to prevent excessive dust or mud deposits.	In addition to DCO Requirement 5 (CoCP): DCO Requirement 7 (Construction traffic)
G21	Vehicle loads would be sheeted during the transportation of loose, potentially dusty or contaminated excavation material.	DCO Requirement 7 (Construction traffic)
G22	Plant and vehicles would conform to relevant applicable standards for the vehicle type, would be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 7 (Construction traffic)
G23	All plant and vehicles would be required to switch off their engines when not in use and when it is safe to do so.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 7 (Construction traffic)
G26	Construction traffic movements would be kept to the minimum reasonable for the effective and safe construction of the project.	DCO Requirement 7 (Construction traffic)
G28	Construction workers would undergo training to increase their awareness of environmental issues. Topics would include but not be limited to: <ul style="list-style-type: none"> dust management and control measures; location and protection of sensitive environmental sites and features; adherence to environmental buffer zones; noise reduction measures; working with potentially contaminated materials; flood risk response actions; and agreed traffic routes, access points etc. 	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G31	A proportionate Community Engagement Plan would be produced and implemented.	In addition to DCO Requirement 5 (CoCP)



Ref	Measure Description	Securing Mechanism
		DCO Requirement 6 (CEMP)
G179	An Emergency Action Plan would be developed for the construction phase which would outline procedures to be implemented in case of unplanned events such as site flooding, pollution incident, disease outbreak etc.	In addition to DCO Requirement 5 (CoCP): DCO Requirement 6 (CEMP)
Biodiversity		
G33	Pre-construction surveys would be completed if existing baseline survey data need to be updated or supplemented, for example: <ul style="list-style-type: none"> • where access is now available to land that was previously targeted for survey work but in respect of which access was previously denied; • where professional judgement identifies a change to the baseline of an area to that reported in the ES and which requires further assessment; or • to update or confirm information on the location of protected species. 	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G35	Bird Breeding Season: The assumption would be that vegetation with the potential to support bird nests would not be removed during the breeding bird season (March to August inclusive). If any works become necessary during the breeding bird season, works would be supervised by an ECoW. Appropriate protection measures would be put in place should active nests be found. These would include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the ECoW.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G36	Mammal Breeding Seasons: An ECoW would supervise clearance of habitats that have high potential to support juvenile or pregnant brown hare (in February), hedgehog (in September) and harvest mouse (in September and October).	DCO Requirement 12 (Landscape and Ecological Management Plan)
G37	Hibernation Seasons: Habitat with the potential to support hibernating reptiles, amphibians, dormice and hedgehogs not to be removed between November and March without supervision by the ECoW, or unless previous mitigation has been implemented to exclude, remove, or encourage these animals from the works area (e.g. trapping and translocation of GCN; habitat manipulation for dormice and reptiles).	DCO Requirement 12 (Landscape and Ecological Management Plan)
G38	Thames Basin Heaths SPA: Potentially disturbing construction works within the Thames Basin Heaths SPA would be undertaken between 1 October and 31 January unless otherwise agreed with Natural England. This would apply to the areas identified in Figures 9.9, 9.10 and 9.11 within the HRA [APP-130 and APP-131].	DCO Requirement 12 (Landscape and Ecological Management Plan)
G39	Appropriate buffer zones would be established within Order Limits adjacent to identified watercourses.	DCO Requirement 12 (Landscape and Ecological Management Plan)
G40	Where sensitive features are to be retained within or immediately adjacent to the Order Limits, an appropriate buffer zone would be created where this extends within the Order Limits. The buffers would be established using	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)



Ref	Measure Description	Securing Mechanism
	appropriate fencing and signage. Suitable methodologies would be produced to ensure that construction works are undertaken in a manner that reduces the risk of damage or disturbance to the sensitive feature.	
G41	The ECoW would monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required mitigation measures. The ECoW would also be involved with any targeted additional mitigation strategies that may be required.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G42	A suitable methodology would be produced to set out how identifiable areas with the potential presence of Schedule 9 plant species or other invasive species would be demarcated, and how any affected soils would be appropriately managed throughout the works.	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G43	The contractor(s) would comply with relevant protected species legislation including with regards to badgers, bats, dormice, otters, water voles, sand lizards, GCN and Schedule 1 birds. Appropriate licences would be obtained where necessary from Natural England for all works affecting protected species as identified by the Environmental Statement and through pre-construction surveys. All applicable works would be undertaken in accordance with the relevant mitigation requirements and conditions set out in those licences.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G46	Relevant guidance on mitigating the impact of artificial lighting on bats would be applied where practicable. This includes good practice measures that would: <ul style="list-style-type: none"> • limit illumination of confirmed bat roosts, or trees with moderate or high potential to support bat roosts. • limit times that the lights are on and consider factors such as height of lighting columns and use of light sources with minimal ultra violet. 	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G47	A programme of post-construction monitoring and objectives/targets for designated ecological sites, would be agreed and implemented in accordance with DCO requirements at the following sites: <ul style="list-style-type: none"> • Bourley and Long Valley SSSI; • Colony Bog and Bagshot Heath SSSI; • Chobham Common SSSI/NNR; and • Chertsey Meads LNR The programme and content of post construction monitoring would be agreed with Natural England and recorded within the Landscape and Ecological Management Plan.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G48	Working within ecologically designated sites would be controlled using a variety of methods. These would take account of the reasons for designation to identify the appropriate techniques to reduce impacts. This could include to limit the number of compounds, reduce corridor widths and use lighter vehicles within the sites.	DCO Requirement 5 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)



Ref	Measure Description	Securing Mechanism
G51	Where works in wet heath would be unavoidable, effects on soils and surface vegetation would be reduced through the use of ground protection matting and use of appropriate machinery where practicable.	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G52	Adder and sand lizard hibernacula would be retained and protected during construction where practicable. If unavoidable, the removal of vegetation and groundworks at hibernacula would be timed to avoid the hibernation season.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G53	Replacement hibernacula and refugia would be provided within the Order Limits to mitigate habitat loss to reptiles and amphibians.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G55	Individual plants of creeping willow (<i>Salix repens</i>) and common wintergreen (<i>Pyrola minor</i>) at Bourley and Long Valley SSSI and Chobham Common SSSI, where likely to be affected by construction, would be translocated into suitable receptor locations within the Order Limits where practicable. The location of the receptor site would be determined by the ECoW and protected by an appropriate buffer during the pipeline construction period.	DCO Requirement 12 (Landscape and Ecological Management Plan)
G56	Alternative roost structures (bat boxes) would be provided (with landowner consent) on retained trees within the Order Limits. Three boxes would be provided for all trees with moderate bat roost potential to be felled. Five boxes would be provided for all trees with high bat roost potential to be felled.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G57	Earth banks within SSSIs which are likely to be of importance for common reptiles and invertebrates would be avoided and protected, where practicable. If their removal is unavoidable during construction, the banks should be reinstated.	DCO Requirement 12 (Landscape and Ecological Management Plan)
G58	Barn owl boxes would be provided for barn owls as necessary. Two boxes per roost would be positioned a minimum of 40m away from the likely construction zone of disturbance.	DCO Requirement 12 (Landscape and Ecological Management Plan)
G59	Potential disturbance to ponds would preferably be timed to avoid the amphibian breeding season or would be supervised by an ECoW. Any amphibians captured during supervision would be translocated to the nearest undisturbed pond.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G61	Construction within Bourley and Long Valley SSSI, Colony Bog and Bagshot Heath SSSI and Chobham Common SSSI would be in accordance with Annex B of the Habitat Regulations Assessment (application document 6.5). Where necessary, detailed methodologies would be agreed with Natural England prior to commencement. All construction works would be in accordance with the detailed methodologies.	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)



Ref	Measure Description	Securing Mechanism
G171	Open cut crossings on five watercourses would be subject to constraints. The tributary of Cove Brook (WCX047) would be subject to constraints between March and May. The tributary of the River Hamble (WCX007), ditch leading to the tributary of the River Hamble (WCX006), Caker Stream (WCX012) and Ryebribe Stream (WCX021) would be subject to constraints between October to December and March to May. At all five locations, works undertaken in the channel or close to bank tops would be reduced/restricted during these sensitive periods.	DCO Requirement 12 (Landscape and Ecological Management Plan)
G172	Ecological considerations would be included in the induction talks for all relevant site personnel. Species-specific or location-specific toolbox talks would also be provided, as required.	DCO Requirement 6 (CEMP)
G174	Buildings, structures and trees within the Order Limits, confirmed to have high or moderate potential to support bats, that do not require removal, would be retained and protected with an appropriate buffer zone. Those that require removal and have high or moderate potential for bat roosts would be surveyed prior to their removal and either removed or removed under licence from Natural England if roosts are confirmed to be present.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G196	All habitats suitable for common reptiles would be subject to two-stage habitat manipulation between mid-March and mid-October. Firstly, vegetation would be cut to approximately 150mm (with the arisings removed) under the supervision of an ECoW and the site left for a minimum of two days to allow reptiles to move away from the area. Secondly, vegetation would be cleared down to ground level under the supervision of an ECoW. Vegetation clearance would be achieved using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of killing or injuring reptiles. Construction works could commence immediately after completion of the second stage.	DCO Requirement 12 (Landscape and Ecological Management Plan)
G197	<p>Where there is evidence of water voles from pre-construction surveys, a class licence would be applied for where necessary, and the following methods would typically be implemented:</p> <ul style="list-style-type: none"> • all burrows in the working area would be identified and marked; • vegetation from within the working width (up to 5m either side of the trench) would be removed using a strimmer until only bare earth remains. The strimmed area would extend to the top of the bank and a further 2m beyond; • all arisings from the strimmed area would be raked off and removed; • the burrow entrances would be checked to ensure they have not become blocked; • the strimmed area would be monitored on a daily basis during the works for field signs for water voles. Where field signs are recorded the need to repeat or extend the strimming would be reviewed; • a destructive search would be carried out five days following strimming and if no evidence of water vole is recorded following a re-survey; and • the area would be maintained as unsuitable for water voles as the works are carried out. <p>It may be necessary to de-water the working area, if practicable and environmentally acceptable, prior to the destructive search.</p>	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)



Ref	Measure Description	Securing Mechanism
HRA 1	Heathland within statutory or non-statutory designated wildlife sites would be reinstated using natural regeneration, unless otherwise agreed with Natural England.	DCO Requirement 12 (Landscape and Ecological Management Plan)
HRA 2	At heathland SSSIs, targeted scrub and secondary woodland within the Order Limits would be removed. Subject to landowner consent, these areas would be reinstated as heathland or acid grassland through natural regeneration.	DCO Requirement 12 (Landscape and Ecological Management Plan)
HRA 4	Topsoil stripping would be reduced to a minimum extent within European sites and SSSIs except where identified within the HRA (application document 6.5). (Some unavoidable stripping would take place as part of the trenching for the pipeline and in construction compounds where matting is not a workable alternative).	DCO Requirement 12 (Landscape and Ecological Management Plan)
Water		
G116	An Erosion and Sediment Control Plan would be produced by the contractor(s) prior to the start of the construction phase.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G117	Wash down of vehicles and equipment would take place in designated areas within construction compounds. Wash water would be prevented from passing untreated into watercourses and groundwater. Appropriate measures would include use of sediment traps.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage) Article 17 (Discharge of water)
G118	The detailed design for HDD would include depth and profile and consider methods to reduce the risk of groundwater breakout during HDD.	DCO Requirement 6 (CEMP)
G121	All refueling, oiling and greasing of construction plant and equipment, would take place above drip trays and also away from drains as far as is reasonably practicable. Vehicles and plant would not be left unattended during refuelling. Appropriate spill kits would be made easily accessible for these activities.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
G122	For open cut watercourse crossings and installation of vehicle crossing points, mitigation measures would include to: <ul style="list-style-type: none"> only use a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working; install a pollution boom downstream of the works; use and maintain temporary lagoons, tanks, bunds, silt fences or silt screens as required; 	DCO Requirement 6 (CEMP) Article 17 (Discharge of water)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident; place all static plant such as pumps in appropriately sized spill trays; prevent re-fuelling of any plant or vehicle within 15m of a watercourse; inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and re-instate the riparian vegetation and natural bed of the watercourse using the material removed when appropriate on completion of the works and compact as necessary. If additional material is required, appropriately sized material of similar composition would be used. 	
G123	All works within or adjacent to watercourses would be carried out in accordance with the requirements of permits and licences agreed with either the Environment Agency or relevant Local Lead Flood Authority or in accordance with the provisions of the DCO.	DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
G124	All construction activities within Flood Zone 3 would be undertaken in a manner that reduces any significant increase in flood risk. This may include providing suitable breaks within spoil piles.	DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
G125	With the exception of the Thames flood plain, all construction compounds would be located outside of flood zone 3.	DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
G126	Where new or additional surfacing is required on any access tracks and compound areas, these would be permeable surfaces where ground conditions allow.	In addition to DCO Requirement 5 (CoCP) Article 17 (Discharge of water)
G127	The contractor(s) would subscribe to the EA's Floodline service which provides advance warning of potential local flooding events and subscribe to the Met Office's Weather Warnings email alerts system. The contractor(s) would implement a suitable flood risk action plan which would include appropriate evacuation procedures should a flood occur or be forecast.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G128	The contractor(s) would comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This would particularly be with regard to volumes and discharge rates and would include discharges to land, waterbodies or third-party drains/sewers.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage) Article 17 (Discharge of water)
G130	<p>The CEMP would follow the principles set out in the Outline CEMP and would set out the water mitigation and management measures and where they would need to be used. These measures would include, but not be restricted to, the following:</p> <ul style="list-style-type: none"> details of when dewatering would be likely; 	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> • measures to segregate construction site runoff from natural catchment runoff; • details of measures to attenuate runoff rates before discharging at controlled rates to receiving watercourses; • design of any holding or settlement lagoons or other treatment system required prior to discharge to the environment; • details of mitigation measures for all work or compound areas located within flood risk areas; • where construction activities would be located, preferably outside of the floodplain; and • details of any water abstraction and discharge points relating to the works. 	
G131	River bank and in-channel vegetation would be retained where not directly affected by installation works.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G132	The contractor(s) would ensure that the time the trench is open in the vicinity of certain features would only be as long as necessary for the installation of the pipeline. The required dewatering of the trench would be undertaken only as and when necessary to enable safe working and preparation for pipe installation.	DCO Requirement 6 (CEMP)
G135	Where localised water abstraction is required, assessments would be carried out to investigate impact. Appropriate working and suitable mitigation would be implemented.	DCO Requirement 6 (CEMP)
G138	Water levels would be monitored immediately prior to and as dewatering takes place. This would be in the potentially affected abstraction or watercourse as appropriate.	DCO Requirement 6 (CEMP)
G142	Fuels, oils and chemicals would be stored responsibly, away from sensitive water receptors. They would be stored >15m from watercourses, ponds and groundwater dependent terrestrial ecosystems (GWDTE).	In addition to DCO Requirement 5 (CoCP) Article 17 (Discharge of water) DCO Requirement 6 (CEMP)
G143	The quality of water generated by dewatering would be tested prior to discharge.	In addition to DCO Requirement 5 (CoCP) Article 17 (Discharge of water)



Ref	Measure Description	Securing Mechanism
G144	As part of negotiations with landowners within the Order Limits which are affected by the project, active private water supplies (PWS) would be identified with the landowner. Appropriate mitigation would be considered during construction.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G182	Headwalls to temporary circular culverts would be constructed to the appropriate standard.	DCO Requirement 6 (CEMP)
G184	Stockpiles would not be located within 10m of any main rivers or ordinary watercourse crossings	DCO Requirement 6 (CEMP)
G185	Temporary haul and access road construction material within Flood Zone 3 and areas of High and Medium Risk of Flooding from Surface Water (RoFSW) would be removed at the end of the construction phase and the ground surface would be re-instated to pre-project levels.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G186	Where appropriate, cross-fall would be installed on access and haul roads to direct runoff away from the pipeline trench.	DCO Requirement 6 (CEMP)
G198	The project would incorporate appropriate surface water drainage measures into its final design for the haul roads and access tracks so that they do not lead to a significant increase in flood risk.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage)
G199	Specific areas in the vicinity of GWDTEs would be identified where increased frequency of stanks would be required to safeguard sensitive habitats which depend on groundwater.	DCO Requirement 6 (CEMP)
W1	The extent of Flood Zone 3 and areas of RoFSW would be identified and marked where appropriate.	DCO Requirement 6 (CEMP)
W2	Screening and fencing within logistics hubs and construction compounds would be designed to reduce the impedance of flood water. This would be subject to any commitments regarding GCN.	DCO Requirement 6 (CEMP)
W3	Temporary buildings within Flood Zone 3 and areas of High and Medium RoFSW would be elevated above the 1 in 10 (10%) annual exceedance probability event peak water level, or a minimum of 300mm if this is not practicable.	DCO Requirement 6 (CEMP)
W4	Afflux at temporary main rivers and ordinary watercourse crossings would be maintained at less than 100mm.	DCO Requirement 6 (CEMP)
W5	Topsoil and subsoil would be stockpiled for as short a duration as practicable within Flood Zone 3 and areas of High and Medium RoFSW.	DCO Requirement 6 (CEMP)
W6	Stockpiles in Flood Zone 3 or areas of High or Medium RoFSW would not exceed 25m between breaks. Breaks in between stockpiles would be at least 5m. Breaks would be located opposite each other on either side of the excavation where practicable.	DCO Requirement 6 (CEMP)
W7	Stockpiles would not be stored within Ively Brook Flood Zone 3, east of A327.	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
W8	Works in the Cove Brook flood storage area would be scheduled taking advantage of long-term forecasts making use of dry weather conditions.	DCO Requirement 6 (CEMP)
W9	The Cove Brook flood storage area embankment dam would be reinstated to its former condition as soon as is practicable.	DCO Requirement 6 (CEMP)
W11	Dewatering would be limited in areas in the vicinity of GWDTEs where abstraction/drainage of shallow groundwater may lead to a fall in groundwater levels or adversely affect surface water quality.	DCO Requirement 6 (CEMP)
W13	Temporary sheet piling or similar for control of groundwater would be put in place at the following trenchless crossings: TC014, TC015, TC020, TC023, TC031, TC032, TC036, TC037, TC040 and TC042, unless a detailed assessment is undertaken which demonstrates that no building or infrastructure is at risk of differential settlement.	DCO Requirement 6 (CEMP)
Cultural Heritage		
G67	Measures presented within the Archaeological Mitigation Strategy (AMS) would be taken to protect or preserve in situ or by record, any significant archaeological remains that may be found.	DCO Requirement 11 (Archaeology)
G68	An archaeological contractor would carry out archaeological trial trenching, prior to the start of construction in areas set out in the AMS. This would examine a representative sample of the areas of potential or known archaeological remains within the Order Limits. The trenching would be scoped as necessary to quantify, characterise and date any archaeological remains found and allow for appropriate mitigation. The information gained by the archaeological trial trenching would be used to refine the programme of archaeological mitigation and determine the appropriate mitigation for any archaeological remains found. The level of mitigation would be agreed with the local authority archaeologists as advisors to the relevant planning authorities in accordance with the principles set out in the AMS and NPS-EN1. The archaeological mitigation would comprise either a full or sample excavation, stripping, mapping and sampling prior to construction, or an archaeological watching brief during construction.	DCO Requirement 11 (Archaeology)
G70	Where there is known archaeology that is not being removed and recorded, appropriate protection measures would be implemented. This could include signage and fencing, and reduction of topsoil stripping where practicable.	DCO Requirement 11 (Archaeology)
Landscape and Visual		
G65	Working widths would be reduced in specific locations where trees or hedges are present. Where notable, TPO, Ancient Woodland and veteran trees would be retained within or immediately adjacent to the Order Limits, the trees and their root protection areas would be protected where they extend within the Order Limits and are at risk. This would be by means of fencing or other measures.	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G86	Works to notable, TPO and veteran trees, where at risk of damage, would be supervised by the ECoW and supported by an experienced arboriculturalist.	In addition to DCO Requirement 5 (CoCP)



Ref	Measure Description	Securing Mechanism
		DCO Requirement 8 (Hedgerows and trees)
G87	Vegetation clearance, retention, protection and replanting/reinstatement drawings would be produced prior to the construction phase. The contractor(s) would implement these plans including agreed mitigation where practicable.	DCO Requirement 8 (Hedgerows and trees) DCO Requirement 12 (Landscape and Ecological Management Plan)
G88	Where possible, reinstatement of vegetation would generally be using the same or similar species to that removed (subject to restrictions for planting over and around pipeline easements).	DCO Requirement 6 (CEMP) DCO Requirement 8 (Hedgerows and trees) DCO Requirement 12 (Landscape and Ecological Management Plan)
G89	Appropriate techniques would be used for the removal, storage and transplantation of any vegetation which is to be reused, relocated or transplanted.	DCO Requirement 6 (CEMP) DCO Requirement 8 (Hedgerows and trees) DCO Requirement 12 (Landscape and Ecological Management Plan)
G91	The contractor(s) would retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G92	A three-year aftercare period would be established for all mitigation planting and reinstatement.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 8 (Hedgerows and trees) DCO Requirement 12 (Landscape and Ecological Management Plan)
G93	Hedgerows, fences and walls would be reinstated to a similar style and quality to those that were removed, with landowner agreement.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 8 (Hedgerows and trees)



Ref	Measure Description	Securing Mechanism
G95	The contractor(s) would consider and apply, where practicable, the relevant protective principles set out in the National Joint Utilities Group Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees ('NJUG Volume 4' (2007)). This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction.	DCO Requirement 6 (CEMP) DCO Requirement 8 (Hedgerows and trees) DCO Requirement 12 (Landscape and Ecological Management Plan)
G97	Where woodland vegetation is lost and trees cannot be replaced due to the restrictions of pipeline easements, native shrub planting approved by Esso would be used as a replacement.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G175	For trenchless crossings TC001 to TC015, TC019, TC021 to TC028, TC030 to TC040, vegetation would be retained except where emergency access is required to trenchless equipment or ecological works have been proposed. At TC029 vegetation would be retained to the east of Hardwick Lane but not to the west side due to the requirement for access. At TC016, TC017 and TC018, there would be limited removal of vegetation along the alignment of the existing pathway to allow for pipe stringing.	DCO Requirement 12 (Landscape and Ecological Management Plan)
LV1	Native trees and hedgerows would be planted within areas identified as tree planting and hedge infilling on Figure 7.5 of the ES.	DCO Requirement 12 (Landscape and Ecological Management Plan)
Soils and Geology		
G71	<p>For all areas, the following strategic approach would be taken for the management of both known and unknown land contamination:</p> <ul style="list-style-type: none"> • a desk based qualitative risk assessment would be undertaken on the basis of available information to ascertain areas of known and unknown contamination; • working methodologies would be produced based on the assessment; • contingency plans would be developed for dealing with various forms of known or unknown contamination to allow work to progress with limited delay. These procedures would clearly define methods for dealing with any areas of unexpected contamination to manage immediate risks and prevent any contamination, ground gas, airborne contaminants or odour spreading from the affected area, and for appropriate disposal. Measures would contain protocols for dealing with areas of potential asbestos-containing materials, should they be encountered. <p>For areas where potential contamination is known or strongly suspected to be present as a result of past activities, the following would also be undertaken:</p> <ul style="list-style-type: none"> • ground investigation information would be shared and developed as appropriate; 	<p>In addition to DCO Requirement 5 (CoCP)</p> <p>DCO Requirement 10 (Contaminated land and groundwater)</p>



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> • risks to receptors would be assessed, and mitigation and working methods to control those risks would be developed. Risks would include: encountering contaminated dust, soils and groundwater; and where the presence of ground gas and/or vapours may lead to confined space risks, such as in excavations; • a SEP would ensure that risk areas are identified, working methods followed and mitigation carried out appropriately; • made ground and materials known or strongly suspected of being contaminated would be segregated from natural and inert materials; and • ground arisings deemed unsuitable for re-use within the project would be disposed of appropriately for example to a soil treatment centre or landfill. 	
G72	A Land Contamination SEP would be appointed. They would have practical experience in brownfield earthworks and be able to use their professional judgment to take a proportionate approach to the assessment of potential for ground contamination based on the desk study information and field observations. Their work would be on a targeted basis.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 10 (Contaminated land and groundwater)
G74	Excavation materials identified by the Watching Brief as being potentially contaminated and unsuitable for re-use within the project would be segregated from other material and transported off-site in suitable vehicles for off-site testing and subsequent disposal. Vehicles would contain and cover the materials to prevent loss of leachate, dust or other material during transport.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 10 (Contaminated land and groundwater)
G75	Where the route passes through areas where there are active Environmental Permits (for example authorised landfill sites), the contractor(s) would work with the permit holder to comply with the permit requirements. This could include: <ul style="list-style-type: none"> • seek agreement from permit holders and regulators to allow works to proceed; • reinstatement of surface restoration materials; • reinstatement of artificial geological barriers (where present); and • if applicable to site, work in accordance with relevant quality assurance procedures. 	In addition to DCO Requirement 5 (CoCP) DCO Requirement 10 (Contaminated land and groundwater)
G78	The contractor(s) would be made aware of any known risk of encountering unexploded ordnance following an appropriate risk assessment. The contractor(s) would implement mitigation measures advised by the risk assessment.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 10 (Contaminated land and groundwater)
G148	Where identified in the Soil Management Plan, a SEP would be employed to oversee the management of soil during soil stripping, handling, storage and reinstatement.	DCO Requirement 6 (CEMP)
G150	The contractor(s) would produce a Soil Management Plan. In developing the plan, the contractor would take note of the principles within the guidance 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (Department for Environment, Food and Rural Affairs, 2009) and 'Good Practice Guide for	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	<p>Handling Soils' (Ministry of Agriculture, Fisheries and Food, 2000). The Soil Management Plan would include, but not be limited to:</p> <ul style="list-style-type: none"> • specification of maximum storage periods, angles and heights of soil stockpiles; • reference to published soil types; • specification for where a soils watching brief may be required; • controls on use of construction machinery in areas where soils have not been stripped; and • specification of the role of the SEP. 	
G151	<p>A methodology would be produced for stripping, handling, storage and replacement of all soils to reduce risks associated with soil degradation. This would include:</p> <ul style="list-style-type: none"> • identification of appropriate plant to strip, reinstate and otherwise handle soils; • methods for compaction and grading of stockpiles; • methods for working in naturally wet soils; and • specification of appropriate decompaction measures to be used during reinstatement. 	DCO Requirement 6 (CEMP)
G154	<p>Where topsoil stripping is required, the normal working practice (where not otherwise specified within a methodology document) would be to strip full depth of topsoil (where present) from:</p> <ul style="list-style-type: none"> • construction compounds and logistics hubs; • access roads; • across the working width; and • any other areas to be trafficked. <p>The topsoil would be reinstated above the subsoil.</p>	DCO Requirement 6 (CEMP)
G155	Topsoils and subsoils intended for reinstatement would be temporarily stockpiled as close to where they were stripped from as practicable.	DCO Requirement 6 (CEMP)
G157	Appropriate techniques would be used when necessary to provide protection for subsoils from compaction and smearing in areas subject to heavy trafficking. The specific protection measures and their required locations would be set out in the appointed contractor's methodology document and agreed between the contractor(s) and overseeing SEP prior to construction commencing.	DCO Requirement 6 (CEMP)
G158	Stripping and reinstatement of topsoils would only be carried out when topsoils are in a reasonably dry state.	DCO Requirement 6 (CEMP)
G159	Different soil types and made ground would be stripped and stored separately where applicable.	DCO Requirement 6 (CEMP)
Land Use		
G79	Pedestrian access to and from residential, commercial, community and agricultural land uses would be maintained throughout the construction period. Vehicle access would be maintained where practicable. This may	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	require signed diversions. The means of access would be communicated to affected parties at least two weeks in advance.	DCO Requirement 7 (Construction traffic)
G80	Where field to field access points would require alteration as a result of construction, alternative field access would be provided in consultation with the land owner/occupier. Recessed field access from local roads would be reinstated where agreed with the landowner.	DCO Requirement 6 (CEMP) DCO Requirement 7 (Construction traffic)
G84	Existing water supplies for livestock would be identified pre-construction. Where supplies would be lost, or access compromised by construction works, temporary alternative supplies would be provided. Water supplies would be re-instated following construction.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G85	Working areas would be appropriately fenced. The choice of fencing would be decided following a risk assessment, relevant to the work location. Specific areas such as compounds may require additional security measures such as lighting, security guards or CCTV. For some locations the fence used may also serve to provide acoustic and visual screening of the work sites and reduce the potential for disturbance of users in the surrounding areas. Provision of additional fencing on a site by site basis may be used to reduce the potential for impacts on wildlife and trees. Fencing would be regularly inspected and maintained and removed as part of the demobilisation unless otherwise specified.	DCO Requirement 6 (CEMP)
People and Communities		
G30	A dust management plan would be produced, including the following measures to be implemented where relevant: <ul style="list-style-type: none"> • control runoff of water or mud to reduce the spread of particulates that could subsequently be disturbed and become airborne; • return subsoil and topsoil at the earliest suitable time of year after construction has been completed; • manage earthworks and exposed areas or soil stockpiles to prevent wind borne dust. Use methods such as covering, seeding or using water suppression; • limit de-compaction of the sub-soil in windy conditions during reinstatement; • construct compound access points to the public highway with temporary hard surfacing; • enforce an appropriate speed limit for vehicles travelling on site to limit dust generation; • make an adequate water supply available for effective dust/particulate matter suppression/mitigation; • protect sand and other aggregates from drying out. 	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> • limit drop heights when loading and unloading materials from vehicles including pipes and excavated materials; • control the number of handling operations to ensure that dusty material is not moved or handled unnecessarily; • where there is a risk of dust nuisance when using cutting, grinding or sawing equipment, use in conjunction with suitable dust suppression techniques; • keep equipment readily available to clean any dry spillages; • clean up spillages as soon as reasonably practicable after the event using wet cleaning methods; • limit dry sweeping of large areas; • no bonfires or the burning of waste materials; • provide adequate wheel washing facilities at access points on to the public highway; • deploy water assisted road cleaners on public roads when necessary to prevent excessive dust or mud deposits; • sheet vehicle loads during the transportation of loose or potentially dusty material or spoil; and • undertake inspections to monitor dust and record results in the inspection log. The frequency of inspections to be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. 	
G99	The contractor would be required to produce a Noise and Vibration Management Plan for the approval of the relevant planning authority. The Noise and Vibration Management Plan would, having regard to the approved operational hours, set out, where applicable, the best practicable means (BPM) that would be used to reduce noise and vibration during installation	DCO Requirement 6 (CEMP)
G100	<p>The Noise and Vibration Management Plan would include the following details in relation to the project within the relevant local authority area:</p> <ul style="list-style-type: none"> • description of works pursuant to DCO; • programme; • plant noise and vibration data; • receptors at risk of >1.0mm/s peak particle velocity and a protocol for providing prior warning and explanation; • BPM measures (as defined in Section 72 of CoPA 1974 for the control of noise and vibration); • predicted noise and vibration levels; and • BPM justification for short term higher noise/vibration levels or out of hours working and community communication details. 	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
G102	Noise and vibration would be managed by processes and measures laid out in the CEMP. This would include to adopt BPM for the control of noise and vibration across the project.	DCO Requirement 6 (CEMP)
G104	Before works commence, the site workforce would be fully briefed on the need to keep all noise generated to a low level. Shouting and raised voices would not be permitted other than in cases where warnings of danger must be given. Radios would not be played at a volume that is likely to cause disturbance to local residents.	DCO Requirement 6 (CEMP)
G107	Temporary noise screening would be put in place to screen receptors at the following locations from installation activity, unless a detailed assessment is undertaken which demonstrates that no significant noise impacts would occur without screening. The screening would comprise acoustic barrier material (such as Echo Barrier™ or similar) fitted to site fencing. <ul style="list-style-type: none"> Nash Close and Cove Road, Farnborough, Hampshire. Burdock Close and Blackthorn Drive, Lightwater, Surrey. Canford Drive, Roakes Avenue, Chertsey Road and Addlestone Moor, Addlestone, Surrey. Station Road and Station Approach, Ashford, Surrey. 	DCO Requirement 6 (CEMP)
G108	Audible vehicle reversing sirens, would be set to as low a setting as is compatible with safety requirements where possible.	DCO Requirement 6 (CEMP) DCO Requirement 7 (Construction traffic)
G109	Noise implications would be considered when planning activities such as deliveries of pipe and bulk materials.	DCO Requirement 6 (CEMP) DCO Requirement 7 (Construction traffic)
G110	A Construction Traffic Management Plan (CTMP) would be produced. The contractor(s) would then implement measures within the CTMP.	DCO Requirement 7 (Construction traffic)
G111	The CTMP would consider the traffic generated by construction vehicles and how the contractor(s) would manage the diversions and closures within the highway network (provided for under the development consent). The CTMP could also include, but would not be limited to, the following: <ul style="list-style-type: none"> show the location of construction compound(s), access routes, site boundaries, entry/exit points; develop measures to promote safe access to and from site; detail each road crossing including the technique for installing the pipeline, access points and traffic management requirements; define routes that would be taken by Heavy Goods Vehicles (HGVs), light vehicles (including Light Goods vehicles with a gross weight less than 3.5 tonnes) and other site traffic; make drivers aware of designated access routes; provide appropriate temporary signage directing HGV drivers to relevant compounds; 	DCO Requirement 7 (Construction traffic)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> • show the location of temporary road closures including temporary diversion routes agreed with the relevant highway authority; • manage Abnormal Indivisible Loads; • provide proof of concept for the proposed measures, for example, large vehicle swept path analysis at pinch points on the public highway; • provide a Travel Plan for transport of the construction workforce; and • provide measures for the monitoring of the CTMP and details of appropriate actions in the event of a non-compliance. 	
G114	All designated PRow would be identified, and any potential temporary closures applied for/detailed in the DCO. All designated PRow crossing the working area would be managed, including National Trails, with access only closed for short periods while construction activities occur.	In addition to DCO Requirement 5 (CoCP) DCO Design
G173	The project would consult with educational facilities within the Order Limits to co-ordinate where practicable the construction timetable to reduce impacts.	In addition to DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
Major Accidents		
G195	Stored flammable liquids such as diesel would be protected either by double walled tanks or stored in a bunded area with a capacity of 110% of the maximum stored volume. Spill kits would be located nearby.	In addition to DCO Requirement 5 (CoCP) Article 17 (Discharge of water)