

# Southampton to London Pipeline Project

## Volume 6

Environmental Statement (Volume B)  
Chapter 16: Environmental Management  
and Mitigation

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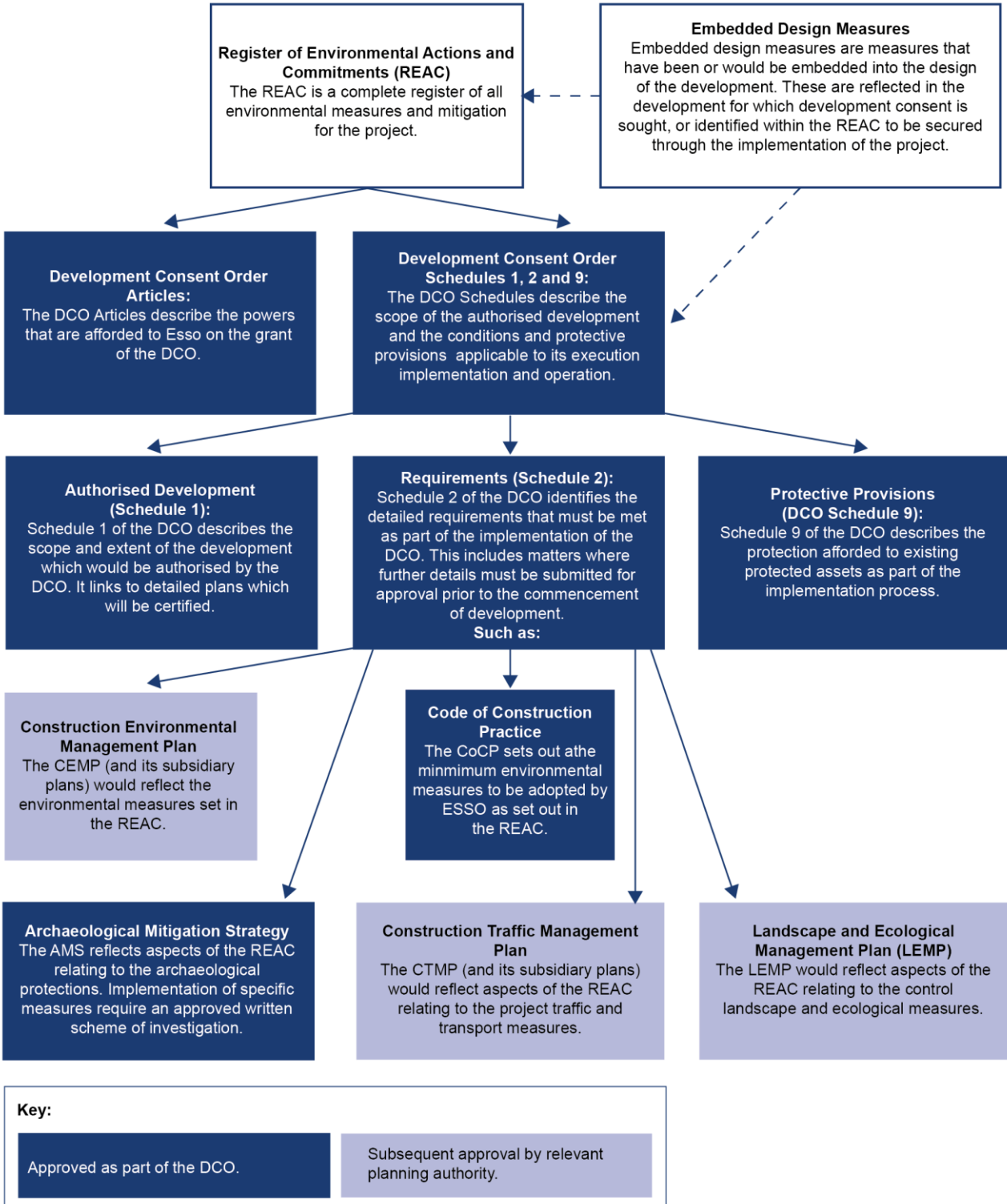
## **16 Environmental Management and Mitigation**

### **16.1 Securing Mechanisms for Environmental Measures within the DCO**

- 16.1.1 In developing the project through an iterative process of consultation and engagement with consultees and by undertaking an Environmental Impact Assessment, the project sought to identify and incorporate suitable measures and mitigation for any potentially significant adverse effects. These commitments are set out in the Register of Environmental Actions and Commitments (REAC) at section 16.3 of this chapter. The REAC also includes reference to how the commitments will be implemented (or secured) through the Development Consent Order (DCO) process.
- 16.1.2 Some of these commitments are 'embedded' in the design of the development for which development consent is sought by virtue of the scope of the authorised development as set out in Schedule 1 to the DCO and the accompanying Works Plans. These include, for example, adjustment of Order Limits to avoid sensitive features or the sizing and location of access routes and compounds. Other design measures will need to be incorporated in the later design of the project.
- 16.1.3 Other commitments in the REAC would be employed during the detailed design and construction of the project to avoid or reduce effects. Many of the good practice principles that will be adopted during installation of the replacement pipeline are captured within the project's Code of Construction Practice (CoCP). This CoCP is submitted as part of the application.
- 16.1.4 Other measures are secured through other DCO requirements such as the requirement to comply with the Archaeological Mitigation Strategy (AMS), the Construction Environmental Management Plan (CEMP) or the Landscape and Ecological Management Plan (LEMP). The AMS is also submitted as part of the application but plans such as the CEMP and LEMP will require further design input that is not available at the time of the application. These will therefore be subject to further subsequent discharge and approval by regulatory authorities in accordance with the DCO requirements. Quite often a commitment appears in the COCP but with further detail to be submitted under another DCO requirement.
- 16.1.5 DCO requirements are the main mechanism for ensuring the development of the project is suitably controlled and the measures and mitigation that the project has committed to are implemented. Where a requirement requires the submission of more detailed plans for approval prior to the commencement of development, these further plans will need to reflect the relevant measures set out in the REAC as stipulated by the relevant requirement.
- 16.1.6 Illustration 16.1 identifies the inter-relationship between the REAC, the DCO and its requirements



Illustration 16.1: Inter-relationship Between the REAC, the DCO and its Requirements.





## **16.2 DCO Documents and Environmental Measures**

- 16.2.1 This chapter presents all of the environmental measures and mitigation in place for the project. It acts as a single point of information. It includes embedded design measures as discussed within Chapter 3 Project Description and Chapter 4 Design Evolution, good practice and the environmental mitigation identified to reduce significant effects as outlined within the topic chapters of the Environmental Statement (ES) (Chapters 7 to 15). These measures are presented in Tables 16.1 to 16.3 which combine to form the Register of Environmental Actions and Commitments (REAC).

### **Register of Environmental Actions and Commitments**

- 16.2.2 Tables 16.1 to 16.3 within Section 16.3 form the REAC. Each table lists a description of the environmental measure or mitigation together with the location if applicable. Each measure has been allocated a unique reference number for ease of cross-reference within application documents. The mechanism by which the measure will be secured within the DCO process has been indicated within the tables.

### **Code of Construction Practice**

- 16.2.3 The CoCP sets out a series of measures and standards of work that would be applied throughout the construction period. These measures have been committed to by the project, and their implementation is assumed for the purposes of the environmental impact assessment. The purpose of the CoCP is to provide effective planning, management and control during construction with the aim of controlling potential impacts on people, businesses and the natural and historic environment. The CoCP is attached as Appendix 16.1. The CoCP could evolve during the examination, but it would be fixed by the end of the process.
- 16.2.4 The CoCP also provides the implementing mechanism for the embedded design measures that are not already integrated into the DCO design taken into application, as noted below.

### **Embedded Design Measures**

- 16.2.5 Embedded design measures are measures that have been incorporated into the design as it has evolved, as explained in Chapter 4 Design Evolution. Most of these have been reflected in the positioning of the Order Limits. However, some are measures within the Order Limits, for example, where the project intends to avoid sensitive features by careful routing of haul roads. These measures have been brought through into the CoCP so that the project can capture them at the detailed design phase.
- 16.2.6 Table 16.1 presents the embedded environmental measures identified and included during the design development (Chapter 4 Design Evolution) to reduce impacts to the environment and communities. These include the overarching project commitments which were made at the outset of the project to act as guiding principles for the project design. Areas have also been identified during the environmental impact assessment where it would be beneficial to reduce the



working width within the Order Limits to reduce the impacts on sensitive environmental receptors. These areas and their descriptions are included at the end of Table 16.1. In addition, trenchless crossings have been incorporated into the design to limit impacts to areas of environmental sensitivity and are also presented within this table.



### 16.3 Register of Environmental Actions and Commitments

- 16.3.1 Tables 16.1 to 16.3 within this section form the REAC. Each table lists a description of the environmental measure or mitigation together with the location if applicable. Each measure has been allocated a unique reference number for ease of cross-reference from application documents. The mechanism by which the measure has been secured within the DCO process has been indicated.
- 16.3.2 Table 16.1 presents the embedded environmental measures identified and included during the design development (Appendix 4.1 Pipeline Route Corridor Options) to reduce impacts to the environment and communities. These include the overarching project commitments which were made at the outset of the project to act as guiding principles for the project design. Areas have also been identified during the environmental impact assessment where it would be beneficial to reduce the working width within the Order Limits to reduce the impacts on sensitive environmental receptors. These areas and their descriptions are included at the end of Table 16.1. In addition, trenchless crossings have been incorporated into the design to limit impacts to areas of environmental sensitivity and are also presented within this table.

**Table 16.1: Embedded Design Measures**

Ref	Area/Location	Measure Description	Justification	Securing Mechanism
Overarching Project Commitments				
O1	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.	DCO Requirement 5 (CoCP)
O2	Project wide	Design route alignment to avoid all areas of existing classified Ancient Woodland.	To avoid loss of designated Ancient Woodland.	DCO Requirement 5 (CoCP)
O3	Project wide	The standard working width, for open trench construction in rural areas, is a nominal 30m.	To reduce working area and loss of habitats, soil impacts, etc.	DCO Design
O4	Project wide	Trenchless techniques are to be used for all crossings of trunk roads, motorways and railways.	To avoid the need for closures resulting in major effects on commuters and communities.	DCO Design
O5	Project wide	Trenchless crossing technology to be used for crossings of waterways over 30m wide.	To avoid or reduce construction effects to the environment, navigation, etc.	DCO Design





Ref	Area/Location	Measure Description	Justification	Securing Mechanism
O6	Project wide	The pipeline as laid will not lie within existing Source Protection Zone 1 (SPZ 1) areas associated with licensed abstractions.	To reduce risk of potential effects on protected aquifers.	DCO Design
O7	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.	DCO Requirement 5 (CoCP)
O8	Project wide	The principles of inherent safe design have been incorporated into the design of the pipeline as per Esso design standards for fuel pipelines, relevant industry codes of practice and standards and the requirements of the Pipeline Safety Regulations 1996.	To avoid potential impacts to sensitive environmental receptors.	DCO Design
O9	Project wide	Inclusion of remotely operated valves to allow isolation of sections of the pipeline if required.	To avoid potential impacts to sensitive environmental receptors.	DCO Design
O10	Project wide	24-hour remote monitoring of pipeline operation to detect leaks and enable remote shut down of the pipeline if required.	To avoid potential impacts to sensitive environmental receptors.	Esso Standard Operating Procedure
<b>Embedded Design Measures</b>				
D1	N/A	Extend Order Limits at specific locations.	To allow for the provision of ecological mitigation.	DCO Design
D2	N/A	Extend Order Limits at specific locations.	To allow for tree planting to partly offset the envisaged loss of trees from the overall pipeline installation.	DCO Design
D3	Next to former Botley Park Golf Course SU5157714740	Trenchless under stream and woodland belt with no haul road.	To avoid direct impacts on Priority Habitat, the Site of Importance for Nature Conservation (SINC), a watercourse and the flood zone.	DCO Design
D4	Next to former Botley Park Golf Course SU5148714582	Move trenchless working area further south.	To have less impact on grazing marsh Priority Habitat, SINC and groundwater.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D5	North of Cross Lane SU5426519106	Locate haul road to the west away from trees in Priority Habitat.	To avoid woodland in Priority Habitat.	DCO Requirement 5 (CoCP)
D6	Stephens Castle Down SU5603021682	Move Order Limits west to avoid four Priority Habitats, SINC and racecourse.	To avoid four Priority Habitats, SINC and racecourse. Chalk grassland is difficult to restore and requested by South Downs National Park Authority.	DCO Design
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.	DCO Requirement 5 (CoCP)
D8	Wheely Down Road SU5940123969	Locate compound to the north of Wheely Down Road. To avoid views from South Downs Way.	To avoid views from South Downs Way. Field to north is screened from South Downs Way	DCO Design
D9	Kilmeston Road SU5941424044	Use existing gap in hedgerow.	To reduce impact on north hedge which is Priority Habitat.	DCO Requirement 5 (CoCP)
D10	Durley (location confidential)	Move Order Limits to the east after crossing Gregory Lane.	To avoid impacts to habitat for protected species, potential Ancient Woodland under 2ha and Priority Habitat.	DCO Design
D11	South of Hinton Ampner (location confidential)	Move the sub-option Order Limits to the north of the woodland belt.	To avoid impacts to habitat for a protected species.	DCO Design
D12	Hinton Ampner SU6107425365	Create options to avoid Ancient Woodland at Hinton Ampner but also four Priority Habitat and two SINC to the east.	To avoid Ancient Woodland, Priority Habitats and SINC.	DCO Design
D13	East of Hinton Ampner SU6124825552	Use existing gap to avoid Ancient Woodland belt.	To avoid classified Ancient Woodland.	DCO Requirement 5 (CoCP)



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D14	Brookwood Copse SINC (Grid ref: SU 62302 26004)	Increase the Order Limits to accommodate a trenchless crossing under SINC and to provide access tracks.	To avoid SINC, potential Ancient Woodland under 2ha.	DCO Design
D15	Brockwood School SU6207926434	Move Order Limits west to avoid grounds of Brockwood Park School.	To avoid mature trees in school grounds and reduce disturbance impacts to school	DCO Design
D16	Godwin's Plantation SU6196726987	Move Order Limits west to avoid Godwin's Plantation.	To avoid SINC, Priority Habitat and trees that have bat potential.	DCO Design
D17	A272 SU6245627599	Extend length of trenchless crossing to the north.	To reduce impact on Priority Habitat, Flood Zone 2 and groundwater flooding.	DCO Design
D18	South of A272 SU6210327610	Use existing field access from Brockwood to avoid trees on Brockwood Lane.	To avoid Tree Preservation Order trees (TPO).	DCO Requirement 5 (CoCP)
D19	Rabbit Copse, West of Warnford. SU5847323090	Widen the Order Limits and Limits of Deviation (LoD) west of existing pipelines.	To provide flexibility to reduce impact on Rabbit Copse Priority Habitat.	DCO Requirement 5 (CoCP)
D20	North of A272 SU6258227533	Use existing field access from Tithelands Lane to avoid existing trees and Priority Habitat.	To avoid TPO and Priority Habitat trees.	DCO Design
D21	South of Green Lane north A272 SU6393028657	Locate haul road to the west to utilise gap in hedge.	To reduce tree loss.	DCO Requirement 5 (CoCP)
D22	Clinkley Road, north A272 SU6432929324	Locate haul road to the west to utilise gap in hedge.	To reduce tree loss.	DCO Requirement 5 (CoCP)
D23	Northwest of West Tisted SU6447229476	Minor repositioning – move Order Limits to the east.	To lessen tree loss in Priority Habitat woodland block	DCO Design
D24	South of Kitwood Lane SU6715332920	Locate haul road to use existing gaps in hedge in two locations.	To avoid removal of mature trees.	DCO Requirement 5 (CoCP)



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D25	Hawthorn Road SU6761233601	Locate haul road to use existing hedge gaps.	To avoid woodland Priority Habitat.	DCO Requirement 5 (CoCP)
D26	West of Woodside Lane SU6958935111	Move Order Limits south.	To avoid Ancient Woodland and SINC.	DCO Design
D27	South of A32 SU7032235877	Move Order Limits south.	To avoid previous infilled gravel pit and risk of contaminated ground	DCO Design
D28	A32 North of Lower Farringdon SU7048935933	Extend Trenchless under the A32.	To avoid mature trees and Flood Zone 2.	DCO Design
D29	East and west of A32 North of Lower Farringdon SU7041336056	Use existing farm access from A32 and side road.	To reduce tree loss and provide safer access	DCO Design
D30	Woodside Lane SU6997735256	Move Order Limits south.	To reduce impact to SINC and Priority Habitat hedge.	DCO Design
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 Right of Way (PRoW).	DCO Requirement 5 (CoCP)
D31	Chawton House SU7140836403	Widen Order Limits.	To provide working area at local constriction in the Order Limits in location of narrow limits of deviation.	DCO Design
D32	South of Chawton House (location confidential)	Widen LoD to the south.	To avoid impacts to habitat for a protected species.	DCO Design
D33	Selborne Road, Chawton. SU7214337620	Increase Order Limits and the limits of deviation to the west to reduce impacts to woodland Priority Habitat.	To enable construction within an alignment that reduces impacts to woodland Priority Habitat	DCO Requirement 5 (CoCP)
D34	Worldham Golf Course, Alton. SU7306837766	Move the alignment south.	To avoid great crested newt Pond 39.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D35	Water Lane (location confidential)	Move Order Limits to the south to use existing farm access.	To reduce impacts to habitat for a protected species.	DCO Design
D36	Caker's Lane (Grid ref: SU 73962 38392)	Widen Order Limits to allow trenchless crossing.	To reduce disruption to traffic.	DCO Design
D37	Monks Wood SINC (Grid ref: SU 73812 39333)	Adjust the LoD to ensure pipe alignment is within the existing farm access.	To reduce impact to potential Ancient Woodland under 2ha.	DCO Design
D38	West of Upper Froyle . (Grid ref: SU 75195 42039 to SU 75231 42090)	Reduce Order Limits and LoD.	To reduce impact to potential Ancient Woodland under 2ha.	DCO Design
D39	Lane to Froyle SU7555242409	Move Order Limits south to use existing access.	To avoid mature oaks and existing wall.	DCO Design
D40	North of lane to Froyle SU7570542510	Widen Order Limits to take account of historic landfill.	To provide flexibility to avoid historic landfill if required.	DCO Requirement 5 (CoCP)
D41	Upper Froyle SU7595542874	Further widen Order Limits and the limits of deviation to the west.	To reduce impact on trees on the east side.	DCO Requirement 5 (CoCP)
D42	Upper Froyle SU7593742902	Further widen the Order Limits and the limits of deviation to the west.	To reduce impact on trees on the east side.	DCO Design
D44	South of Gid Lane SU7606442980	Widen Order Limits to allow flexibility to avoid tree roots.	To allow for routing to avoid the root protection areas of two mature trees.	DCO Requirement 5 (CoCP)
D45	South of Gid Lane, Ryebridge Stream SU7703044164	Use existing gaps in hedge.	To avoid mature trees.	DCO Requirement 5 (CoCP)
D46	Coldrey Farm, North of Froyle Road SU7796145439	Move Order Limits west to avoid woodland block which is a Priority Habitat.	To avoid Priority Habitat.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D47	West of Hole Lane SU7878646500	Locate haul road to use existing hedge gap.	To lessen impact on trees and scrub.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP)
D49	River Wey SU7484541354 to SU7474541542	Extend trenchless to the south out of Flood Zone 2 and Priority Habitats	To avoid main river, Flood Zone 2 and Priority Habitats.	DCO Design
D50	River Wey SU7488541283	Locate trenchless compound small distance to the north.	To avoid impact on public right of way (PRoW).	DCO Design
D51	Between Selbourne Lane and Caker Lane near solar farm SU7368138007	Move Order Limits to south and east.	To reduce impact on various Priority Habitats and Flood Zone 2.	DCO Design
D52	Green Lane, west of West Tisted. SU6406228940	Move Order Limits east to cross a field boundary through an existing gap.	To reduce the impact on large established trees.	DCO Design
D53	Crondall SU7980549073	Limit impacts through Crondall with southern alignment.	To avoid social impact, Conservation Area, Priority Habitat and Flood Zone 2.	DCO Design
D54	South of Crondall (location confidential)	Move Order Limits further south.	To avoid impacts to habitat for a protected species.	DCO Design
D55	Between Dippenhall Road and Crondall (location confidential)	Widen the Order Limits.	To avoid impacts to habitat for a protected species.	DCO Requirement 5 (CoCP)
D55a	North of Oak Park Golf Course (SU 80481 48720)	Reduce Order Limits and LoD through existing field access.	To avoid impacts to potential Ancient Woodland under 2ha.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D56	Land north of Heath Lane (Grid ref: SU 80556 49011)	Widen the Order Limits and LoD.	To reduce impacts to mature trees in the woodland belt.	DCO Requirement 5 (CoCP)
D57	Oak Park Golf Course, Crondall SU8052148714	Revised potential route alignment several times.	To reduce the impact on playing areas, tees and avoid trees on golf course.	DCO Design
D58	South of A287 SU8061749680	Locate haul road to the west.	To avoid Ancient Woodland and SINC.	DCO Requirement 5 (CoCP)
D59	Peacocks Nursery A287 SU8075450052	Use trenchless under A287, Nursery and woodland strip.	To avoid impacts to nursery business and the TPO mature tree belt.	DCO Design
D60	Bourley and Long Valley SSSI/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.	DCO Requirement 5 (CoCP)
D61	Bourley and Long Valley SPA/SSSI (Grid ref: SU 82931 53012)	Horizontal directional drilling (HDD) under wet heathland and wet woodland	To avoid impacts to protected habitats.	DCO Design
D62	Eelmore Marsh SSSI SU8357153785	Locate Order Limits to the north – narrow the working width.	To ensure the route is out of SSSI and unlikely to impact wetland.	DCO Design
D63	Cody Technology Park SU8400054063	Move Order Limits to the south – narrow working width.	To reduce requirement for tree removal.	DCO Design
D64	East of Cody Technology Park SU8489854678	Locate alignment to use Southwood Golf Course.	To reduce the impact on road. This golf course is to be developed into a Suitable Alternative Natural Greenspace (SANG).	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D65	Naishes Lane, Ewshott, SU8139750605	Locally expand the Order Limits and LoD to the east of Pond 77.	To avoid Pond 77.	DCO Requirement 5 (CoCP)
D66	South of Cove Road SU8532955073	Move positioning to the west into Southwood golf course.	To reduce impact on SINC, Priority Habitats and Flood Zone 2.	DCO Design
D68	Frith Wood SU8909958085	Locate haul road to the east. Narrow working width.	To maintain the line of mature trees.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP)
D70	South of Cove Brook (Grid ref: SU 85373 54934)	Locate compound to the south, out of Flood Storage Area.	To reduce risk of flooding.	DCO Design
D71	Farnborough Hill School (Grid ref: SU 87092 56214)	Widen the Order Limits to the north at trenchless location.	To allow flexibility to avoid mature trees with trenchless works.	DCO Requirement 5 (CoCP)
D74	Blackwater Valley SU8757757196	Two new alignments added along Ship Lane, Ringwood Road, the Blackwater Valley and across the SC Johnson site including a trenchless crossing.	To avoid Henry Tyndale School and reduce impacts on Blackwater Valley.	DCO Design
D75	St Catherine's Road (Grid ref: SU 89052 57999 to SU 89073 57914)	Reduce Order Limits to width of the road.	To reduce impacts to mature trees.	DCO Design
D76	Balmoral Drive, west (location confidential)	Move the Order Limits north to exclude bank on southern verge.	To avoid impacts to habitat for a protected species.	DCO Design
D77	Balmoral Drive, east (Grid ref: SU 88678 57781 to SU 89065 57889)	Move Order Limits north into Balmoral Drive.	To reduce the impacts to residents in smaller adjacent roads.	DCO Design





Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D78	Pine Ridge Golf Course, Frimley SU9045058459	Modify the Order Limits and limits of deviation southwards to include the adjacent fairway.	To reduce the impact on trees and use of golf course.	DCO Design
D79	Colony Bog and Bagshot SSSI/SPA SU9103859039	Locate compound in grassland area next to Maultway.	To avoid important heathland and woodland habitat	DCO Design
D80	Colony Bog and Bagshot SSSI/SPA Heathland SU9092259795 to SU9164760904	Use the existing Ministry of Defence (MoD) track plus narrow working area.	To reduce the impact on the heathland habitat and mature trees.	DCO Requirement 5 (CoCP)
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 impact on the wetland/bog SSSI.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP)
D84	Colony Bog and Bagshot SSSI/SPA SU9380061676	Ensure trenchless working area for the A322 is outside of SSSI/SPA.	To reduce the impact on the SSSI/SPA.	DCO Requirement 5 (CoCP)
D85	Red Road (Grid ref: SU 92836 61533 to SU 93046 61483)	Extend the length of pipeline installed in Red Road.	To avoid installing in narrow path between residential areas.	DCO Design
D87	West of Chobham SU9568562605	Move Order Limits south.	To reduce impact on polo fields and plant nursery.	DCO Design
D88	Accommodation Road (Grid ref: SU 99988 65173)	Trenchless crossing under Accommodation Road and the adjacent trees.	To reduce landscape and visual impacts and impacts to trees with high bat potential.	DCO Design
D89	Foxhills Golf Course (Grid ref: TQ 00352 65325)	Adjust Order Limits locally to exclude pond.	To avoid direct impacts on a Great Crested Newt (GCN) breeding pond.	DCO Design
D89a	Foxhills Golf Course (Grid ref: TQ 00856 65459)	Adjust Order Limits to the north of woodland.	To avoid area of potential Ancient Woodland under 2ha.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D90	Foxhills Golf Course (Grid ref: 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.	DCO Requirement 5 (CoCP)
D90a	Longcross Road (Grid ref: TQ 01964 65316)	Use trenchless crossing of the road and adjacent woodland.	To avoid impacts to potential Ancient Woodland under 2ha	DCO Design
D91	Hardwick Lane (TQ 02166 65686 to TQ 02830 66044)	Move pipeline alignment to the north.	To reduce impacts to hedgerows, businesses and SNCC.	DCO Design
D92	Steep Hill SU9668063360	Extend 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.	DCO Requirement 5 (CoCP)
D93	River Thames crossing TQ0590666237	Add Option to the east through Chertsey Meads and then add trenchless crossing.	To avoid wetland Dumsey Meadows SSSI.	DCO Design
D94	M3 Crossing TQ0584867057	Adjustment to trenchless options from land north of B375 to north of M3 Motorway.	To reduce the extent of excavation works within areas of landfill.	DCO Design
D95	M3 crossing TQ0587067093	Alternative trenchless alignment.	To avoid traveller site.	DCO Design
D96	Old Littleton Road TQ0583166991	Move Order Limits further west by 35m over a length of 200m.	To further reduce impacts to the traveller site.	DCO Design
D97	Pannels Farm (Grid ref: TQ 03493 65868 to TQ 04202 65602)	Move pipeline alignment to the south.	To reduce impacts to reptile habitat, trees with high bat roost potential, barn owl habitat and SNCC.	DCO Design
D98	The River Bourne Crossing, Chertsey TQ0527566093	Use Trenchless crossing under the River Bourne.	To reduce ecological impact.	DCO Design
D100	Abbey Moor Golf Course, Chertsey TQ0448165673	Modify the Order Limits and limits of deviation north towards the stream.	To reduce the impact on playing areas.	DCO Design
D102	Brett Aggregates (Grid ref: TQ 05876 67355)	Widen the Order limits to allow greater flexibility of pipeline alignment.	To allow alignment to avoid flood alleviation structure.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
D103	Littleton Lane (Grid ref: TQ 05946 67399 to TQ 05756 68410)	Move pipeline alignment to the west into farm land.	To reduce impacts to traffic movements and disturbance along Littleton Lane.	DCO Design
D104	Ashford Road (Grid ref: TQ 05548 69675)	Remove the construction compound.	To reduce traffic impacts and disturbance to local residents.	DCO Design
D105	Laleham	Reduce the width of the Order Limits.	To avoid an area of Ancient Woodland.	DCO Design
D106	St James Senior Boys' School (Grid ref: TQ 06611 72028 to TQ 06705 72159)	Adjust pipeline alignment to the east.	To avoid the disturbance of school activities.	DCO Requirement 5 (CoCP)
D107	St James Senior Boy's School TQ0669772147	Adjustment to Order Limits around the school playing field.	To exclude tennis courts and lake banks from Order Limits.	DCO Design
D108	St. James Senior Boy's School & Thomas Knyvett School TQ0659172148	Adjust Order Limits to reduce impact on St James Senior School buildings and provide flexibility on linking sub options.	To reduce the impact on St. James Senior Boy's School and Thomas Knyvett School.	DCO Design
Areas of Reduced Working Width (references are as shown in the General Arrangement Plans ( <b>application document 2.6</b> ) and to be certified as part of the DCO)				
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: SU5224616257 to SU5231416384). Turf would be stripped, stored and reinstated above the trench for an approximate distance of 35m between approximate grid references SU 52306 16340 to SU 52329 16365.	To reduce impacts on an area of purple moor grass and rush pasture Priority Habitat. Also, to protect a line of trees which are of high value and probably ancient.	DCO Requirement 5 (CoCP)
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: SU7009235638 to SU7013235673)	To reduce impacts on Priority Habitat and visual impacts for users of PRow.	DCO Requirement 5 (CoCP)



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
NW4 and NW5	North of Froyle	Working width reduced to 15m to reduce the impacts on woodland and landscape within two areas with a combined approximate distance of 100m. (Grid ref: SU7849946112 to SU7853046153 and SU7854846176 to SU7857846217).	To reduce loss of habitat north of Froyle and reduce the landscape effects of tree loss.	DCO Requirement 5 (CoCP)
NW6	Dippenhall Road	Working width reduced to 15m to reduce the impacts on Priority Habitat woodland with bat roost potential over an approximate distance of 83m (Grid ref: SU7877146476 to SU7883346529).	To reduce impacts on a woodland belt which is a Priority Habitat and has a number of mature trees offering potential bat roost habitat.	DCO Requirement 5 (CoCP)
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: SU8038548477 to SU8053248738)	To reduce the impacts on two small woodland blocks with bat roost potential and which are connected to Ancient Woodland. One is also a Priority Habitat.	DCO Requirement 5 (CoCP)
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: SU8136950606 to SU8152950923)	To reduce impacts on Ewshot Meadows SINC and SANG in the north where there are a number of mature trees, woodland, ponds and protected species.	DCO Requirement 5 (CoCP)
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: SU8177951385 to SU8201451476).	To reduce impacts on an area south of Sandy Lane protected by a TPO within a SINC. The area contains some trees with moderate bat roost potential.	DCO Requirement 5 (CoCP)
NW11 and NW13	Bourley and Long Valley SPA/SSSI	Working width reduced to limit impacts on trees and potential bat roosts within Bourley and Long Valley SSSI. Working specifications as detailed within Annex B of the Habitats Regulations Assessment (HRA) ( <b>application document 6.5</b> ). This consists of two areas with an approximate combined a distance of 293m. (Grid refs: SU8240152247 to SU8244952310, and SU8307353223 to SU8320053396).	To reduce impacts on landscape and ecology within Bourley and Long Valley SSSI. There are a number of trees with moderate bat roost potential in this SPA/SSSI area. This would limit the number of trees removed.	DCO Requirement 5 (CoCP)



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
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: SU8268552667 to SU8269352711).	To reduce impacts on an existing spring.	DCO Requirement 5 (CoCP)
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: SU8333653611 to SU8342953700).	To avoid impacts on mature trees within the Basingstoke Canal Conservation Area.	DCO Requirement 5 (CoCP)
NW15	Old Ively Road	Narrow working techniques to reduce the 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: SU8384753962 to SU8423654174).	To reduce the impacts on woodland in the Old Ively Road area which is potential Ancient Woodland under 2ha. Several trees have high and moderate bat roost potential.	DCO Requirement 5 (CoCP)
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: SU8543455535 to SU8566455709).	To reduce impacts on woodland near to Cove Brook which has high amenity and landscape value in an urban area. A number of trees here have moderate bat roost potential and the area is a SINC and wet woodland Priority Habitat.	DCO Requirement 5 (CoCP)
NW17	Queen Elizabeth Park	Working width reduced to 15m to reduce the 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: SU8654456032 to SU8694956192)	To reduce impacts on Queen Elizabeth Park, an area of high amenity and landscape value within an urban area. To reduce impacts to trees with bat roost potential and to retain the park's screening function for properties to the south.	DCO Requirement 5 (CoCP)
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)	To reduce the impacts on trees within the Conservation Area at Farnborough Hill School.	DCO Requirement 5 (CoCP)



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
NW19	SC Johnson	Working width reduced to 15m to reduce impacts to trees within the Surrey Heath TPO zone over an approximate distance of 545m. (Grid ref: SU8789857319 to SU8831757426)	To reduce impacts to trees within the Surrey Heath TPO zone.	DCO Requirement 5 (CoCP)
NW20	Frith Hill	Narrow working techniques 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: SU8905558008 to SU9094458779)	To reduce impacts on a line of large mature trees at Frith Hill several of which have moderate bat roost potential.	DCO Requirement 5 (CoCP)
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. The approximate distance would be 3.8km. (Grid ref: SU9097658802 to SU9252061386).	To reduce impacts on rows of large pine trees. These currently provide some screening from the road for houses west of Maultway within the Colony Bog and Bagshot Heath SPA/SSSI. Trees here have been identified with moderate bat roost potential.	DCO Requirement 5 (CoCP)
NW22	Turf Hill	Working width reduced to 15m to reduce impacts to woodland at Turf Hill over an approximate distance of 888m. (Grid ref: SU9305161494 to SU9377561660)	To reduce impacts to woodland at Turf Hill.	DCO Requirement 5 (CoCP)
NW23 and 24	Chobham Common SPA/ SSSI/ National Nature Reserve (NNR)	Working width reduced 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 as detailed within Annex B of the HRA. This would consist of two areas over a combined distance of 1.6km. (Grid ref: SU9691663545 to SU9776664071 and SU9826064307 to SU9878164515)	To reduce the loss of habitat within Chobham Common SPA/ SSSI/ NNR. This heathland is protected for several species of reptile including the rare sand lizard. This would reduce the necessity and depth of top soil stripping.	DCO Requirement 5 (CoCP)
NW25	North-northeast of Chobham Common	Working width reduced to 15m to reduce impacts on large pine trees within Monk's Walk SNCI which provide significant screening for the Longcross Estate. Potential bat roosts also present. The approximate	Reduces impacts on large pine trees north-northeast of Chobham Common with a high degree of local amenity. Trees in this location provide significant screening for the Longcross Estate. Also protects trees with	DCO Requirement 5 (CoCP)



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
		distance would be 190m. (Grid ref: SU9903564666 to SU9913964823)	high and medium bat roost potential in this area. This area is also designated as a SINC.	
NW29	Chertsey Meads Local Nature Reserve (LNR)	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: TQ0562666084 to TQ0597266563). 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.	To reduce the impacts on the Chertsey Meads LNR, designated for its sensitive flora and habitats.	DCO Requirement 5 (CoCP)
NW30	Fordbridge Park	Narrow working techniques where possible to avoid or wherever possible limit the impacts on memorial trees at Fordbridge Park. The approximate distance would be 409m. (Grid ref: TQ0620670826 to TQ0588971060)	To avoid the loss of community value at Fordbridge Park.	DCO Requirement 5 (CoCP)
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).	To reduce impacts to Ancient Woodland at Ewshot Hill (<2ha).	DCO Requirement 5 (CoCP)
Schedule of Trenchless Crossings (references are as shown in the General Arrangement Plans ( <b>application document 2.6</b> ) and to be certified as part of the DCO)				
TC001	Ford Lake Stream	HDD trenchless technique over approximately 253m.	A trenchless crossing would be used to minimise disruption to the stream and its habitats.	DCO Design
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 Highways Authority.	DCO Design
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	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
			woodland and 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.	DCO Design
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 Highways Authority.	DCO Design
TC006	A32	HDD trenchless technique over approximately 162m.	A trenchless crossing would be used as this is a main road into Chawton and Alton.	DCO Design
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.	DCO Design
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.	DCO Design
TC009	A31 and minor access road	HDD trenchless technique over approximately 163m.		DCO Design
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.	DCO Design
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.	DCO Design
TC 012		HDD trenchless technique over approximately 252m.		DCO Design
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	DCO Design





Ref	Area/Location	Measure Description	Justification	Securing Mechanism
			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.	DCO Design
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.	DCO Design
TC016	Cove Brook	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.	DCO Design
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.	DCO Design
TC018	Parallel to West Heath adjacent Railway Embankment Northside	HDD trenchless technique over approximately 443m.		DCO Design
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.	DCO Design
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. The crossing of the remaining elements of the Blackwater Valley	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
			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.	DCO Design
TC022	Hale Bourne	HDD trenchless technique over approximately 33m.	A trenchless crossing would be used to minimise impacts on the ecology of the watercourse.	DCO Design
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.	DCO Design
TC024	Chobham Common	HDD trenchless technique over approximately 237m.	Three trenchless crossings are proposed in Chobham Common to cross areas of wetland.	DCO Design
TC025	Chobham Common	HDD trenchless technique over approximately 232m.		DCO Design
TC026	Chobham Common	HDD trenchless technique over approximately 271m.		DCO Design
TC027	Accommodation Road	HDD trenchless technique over approximately 168m.	A trenchless crossing would be used to minimise disruption on this busy road.	DCO Design
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.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
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.	DCO Design
TC030	A320 Guildford Road, Salesian School grounds and M25 Motorway	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.	DCO Design
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.	DCO Design
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.	DCO Design
TC033	Chertsey Bourne	HDD trenchless technique over approximately 62m.	A trenchless crossing would be used to minimise impacts on the ecology of the watercourse.	DCO Design
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.	DCO Design
TC035	M3 Motorway	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.	DCO Design



Ref	Area/Location	Measure Description	Justification	Securing Mechanism
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.	DCO Design
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.	DCO Design
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.	DCO Design
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.	DCO Design
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.	DCO Design
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.	DCO Design
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.	DCO Design



16.3.3 Table 16.2 presents good practice measures which have been committed to by the project. This is so that the measures could be assumed for the basis of the Environmental Impact Assessment. The majority of these measures are presented and secured within the CoCP and some are implemented through other DCO requirements as detailed below.

**Table 16.2: Good Practice Measures**

Ref	Measure Description	Securing Mechanism
General		
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 method statements. 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 method statement would include the measures that need to be undertaken to meet the requirements outlined in the CEMP. All method statements would be reviewed and accepted by the Employer's Representative.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
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.	DCO Requirement 5 (CoCP)
G4	The DCO would seek sufficient powers to allow continued access to environmental mitigation works for the purposes of monitoring as necessary.	Article 29 (Temporary use of land for carrying out the authorised development) 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
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.	DCO Requirement 5 (CoCP)
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"> <li>• 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;</li> <li>• inspecting and collecting any waste or litter found on site;</li> <li>• locating or designing site offices and welfare facilities to limit the overlooking of residential properties;</li> <li>• locating designated smoking/vaping areas to avoid significant nuisance to neighbours;</li> <li>• managing staff/vehicles entering or leaving site, especially at the beginning and end of the working day;</li> <li>• avoiding the use of loudspeaker systems or radios; and</li> <li>• managing potential off-site contractor and visitor parking.</li> </ul>	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	<p>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 kept up to date and referred to on a regular basis. This would have three main purposes:</p> <ul style="list-style-type: none"> <li>• to record all comments and complaints made to the site together with resulting actions and outcomes;</li> <li>• to record where and when environmental monitoring takes place and what if any action is required and when it has been completed; and</li> <li>• to record the results of site inspections and note the measures taken where required.</li> </ul>	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.	DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage)



Ref	Measure Description	Securing Mechanism
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).	DCO Requirement 5 (CoCP) DCO Requirement 9 (Surface and foul water drainage)
G13	Protection of earthworks and soil would be managed by methods such as covering, seeding or using water suppression where appropriate.	DCO Requirement 5 (CoCP)
G14	An appropriate speed limit would be imposed on vehicles travelling on site.	DCO Requirement 7 (Construction traffic)
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)
G17	Materials and equipment would not be moved or handled unnecessarily.	DCO Requirement 5 (CoCP)
G18	Bonfires and the burning of waste material would be prohibited.	DCO Requirement 5 (CoCP)
G19	When loading and unloading materials from vehicles, including pipes and excavated materials, drop heights would be limited.	DCO Requirement 5 (CoCP)
G20	Water assisted road cleaners would be deployed on public roads where necessary to prevent excessive dust or mud deposits.	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.	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.	DCO Requirement 5 (CoCP) DCO Requirement 7 (Construction traffic)
G24	In the absence of a mains electricity supply, super silent pack generators would be used as an alternative power supply.	DCO Requirement 5 (CoCP)



Ref	Measure Description	Securing Mechanism
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.	DCO Requirement 5 (CoCP)
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)
G27	The name and contact details for the project would be displayed at the entrance to all compounds. This would include an emergency number.	DCO Requirement 5 (CoCP)
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"> <li>dust management and control measures;</li> <li>location and protection of sensitive environmental sites and features;</li> <li>adherence to environmental buffer zones;</li> <li>noise reduction measures;</li> <li>working with potentially contaminated materials;</li> <li>flood risk response actions; and</li> <li>agreed traffic routes, access points etc.</li> </ul>	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G29	Topsoil would be returned to its final location at the earliest suitable time of year.	DCO Requirement 5 (CoCP)
G31	A proportionate Community Engagement Plan would be produced and implemented.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G44	The project would be run in compliance with all relevant legislation, consents and permits.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
<b>Biodiversity</b>		
G33	Pre-construction surveys would be completed if existing baseline survey data need to be updated or supplemented.	DCO Requirement 6 (CEMP)





Ref	Measure Description	Securing Mechanism
		DCO Requirement 12 (Landscape and Ecological Management Plan)
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.	DCO Requirement 5 (CoCP)
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 Ecological Clerk of Works (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.	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.	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 appropriate fencing and signage. A suitable method statement 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.	DCO Requirement 6 (CEMP) DCO Requirement 12 (Landscape and Ecological Management Plan)



Ref	Measure Description	Securing Mechanism
G41	The ECoW would monitor that the works proceed in accordance with relevant environmental Development Consent Order requirements and adhere to the required mitigation measures. The ECoW would also be involved with any targeted additional mitigation strategies that may be required.	DCO Requirement 5 (CoCP) DCO Requirement 12 (Landscape and Ecological Management Plan)
G42	The contractor(s) would provide a suitable method statement 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, great crested newts 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)
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.	DCO Requirement 5 (CoCP)
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"> <li>• limit illumination of confirmed bat roosts, or trees with moderate or high potential to support bat roosts.</li> <li>• 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.</li> </ul>	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.	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)



Ref	Measure Description	Securing Mechanism
		DCO Requirement 13 (Protected Species)
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.	DCO Requirement 5 (CoCP)
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)



Ref	Measure Description	Securing Mechanism
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 retained pond.	DCO Requirement 12 (Landscape and Ecological Management Plan) DCO Requirement 13 (Protected Species)
G60	Where there would be a risk of animal entrapment, a means of escape would be installed into all excavations left open overnight.	DCO Requirement 5 (CoCP)
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 HRA ( <b>application document 6.5</b> ). 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)
G62	Vegetation arisings would be disposed of responsibly. Small quantities may be reused on site to create ecological habitat.	DCO Requirement 5 (CoCP)
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 Ryebidge 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	DCO Requirement 12 (Landscape and Ecological Management Plan)



Ref	Measure Description	Securing Mechanism
	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.	
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"> <li>• all burrows in the working area would be identified and marked;</li> <li>• 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;</li> <li>• all arisings from the strimmed area would be raked off and removed;</li> <li>• the burrow entrances would be checked to ensure they have not become blocked;</li> <li>• 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;</li> <li>• 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</li> <li>• the area would be maintained as unsuitable for water voles as the works are carried out.</li> </ul> <p>It may be necessary to de-water the working area, if practicable and environmentally acceptable, prior to the destructive search.</p>	<p>DCO Requirement 12 (Landscape and Ecological Management Plan)</p> <p>DCO Requirement 13 (Protected Species)</p>
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. (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)
<b>Water</b>		
G116	An Erosion and Sediment Control Plan would be produced by the contractor(s) prior to the start of the construction phase.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
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.	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) Detailed design
G119	Potentially hazardous materials used during construction would be safely and securely stored including use of secondary containment where appropriate.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
G122	<p>For open cut watercourse crossings and installation of vehicle crossing points, mitigation measures would include to:</p> <ul style="list-style-type: none"> <li>• only use a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working;</li> <li>• install a pollution boom downstream of the works;</li> <li>• use and maintain temporary lagoons, tanks, bunds, silt fences or silt screens as required;</li> <li>• have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident;</li> <li>• place all static plant such as pumps in appropriately sized spill trays;</li> <li>• prevent re-fuelling of any plant or vehicle within 15m of a watercourse;</li> <li>• inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and</li> <li>• 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.</li> </ul>	DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
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)



Ref	Measure Description	Securing Mechanism
		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.	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. The contractor(s) would implement a suitable flood risk action plan which would include appropriate evacuation procedures should a flood occur or be forecast.	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.	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"> <li>• details of when dewatering would be likely;</li> <li>• measures to segregate construction site runoff from natural catchment runoff;</li> <li>• details of measures to attenuate runoff rates before discharging at controlled rates to receiving watercourses;</li> <li>• design of any holding or settlement lagoons or other treatment system required prior to discharge to the environment;</li> <li>• details of mitigation measures for all work or compound areas located within flood risk areas;</li> <li>• where construction activities would be located, preferably outside of the floodplain; and</li> <li>• details of any water abstraction and discharge points relating to the works.</li> </ul>	DCO Requirement 6 (CEMP)
G131	River bank and in-channel vegetation would be retained where not directly affected by installation works.	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)
G134	Temporary stanks would be installed within the trench prior to undertaking dewatering/drainage activities, to prevent migration of water within the trench.	DCO Requirement 5 (CoCP) Detailed design



Ref	Measure Description	Securing Mechanism
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).	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP) Article 17 (Discharge of water)
G143	The quality of water generated by dewatering would be tested prior to discharge.	DCO Requirement 5 (CoCP) Article 17 (Discharge of water)
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.	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) Detailed design
G183	Natural substrate would be provided through temporary watercourse crossings box culverts.	DCO Requirement 5 (CoCP)
G184	Stockpiles would not be located within 10m of any main rivers or ordinary watercourse crossings	DCO Requirement 6 (CEMP) Detailed design
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.	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) Detailed design
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.	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)





Ref	Measure Description	Securing Mechanism
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	<p>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.</p> <p>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.</p>	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 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 trees, where at risk of damage, would be supervised by the ECoW.	DCO Requirement 5 (CoCP) 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)



Ref	Measure Description	Securing Mechanism
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 transplanted 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.	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.	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.	DCO Requirement 5 (CoCP) DCO Requirement 8 (Hedgerows and trees)
G94	Land used temporarily would be reinstated to an appropriate condition relevant to its previous use.	DCO Requirement 5 (CoCP)
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	DCO Requirement 6 (CEMP) DCO Requirement 8 (Hedgerows and trees)



Ref	Measure Description	Securing Mechanism
	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 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.	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)
<b>Soils and Geology</b>		
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"> <li>• a desk based qualitative risk assessment would be undertaken on the basis of available information to ascertain areas of known and unknown contamination;</li> <li>• working method statements would be produced based on the assessment;</li> <li>• 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.</li> </ul> <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"> <li>• ground investigation information would be shared and developed as appropriate;</li> <li>• 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;</li> <li>• a Suitably Experienced Person (SEP) would ensure that risk areas are identified, working methods followed and mitigation carried out appropriately;</li> </ul>	DCO Requirement 5 (CoCP) DCO Requirement 10 (Contaminated land and groundwater)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> <li>made ground and materials known or strongly suspected of being contaminated would be segregated from natural and inert materials; and</li> <li>ground arisings deemed unsuitable for re-use within the project would be disposed of appropriately for example to a soil treatment centre or landfill.</li> </ul>	
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.	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.	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"> <li>seek agreement from permit holders and regulators to allow works to proceed;</li> <li>reinstatement of surface restoration materials;</li> <li>reinstatement of artificial geological barriers (where present); and</li> </ul> if applicable to site, work in accordance with relevant quality assurance procedures.	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 (UXO) following an appropriate risk assessment. The contractor(s) would implement mitigation measures advised by the risk assessment.	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 Handling Soils' (Ministry of Agriculture, Fisheries and Food, 2000). The Soil Management Plan would include, but not be limited to: <ul style="list-style-type: none"> <li>specification of maximum storage periods, angles and heights of soil stockpiles;</li> <li>reference to published soil types;</li> </ul>	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> <li>• specification for where a soils watching brief may be required;</li> <li>• controls on use of construction machinery in areas where soils have not been stripped; and,</li> <li>• specification of the role of the Suitably Experienced Person. (SEP)</li> </ul>	
G151	<p>A method statement 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"> <li>• identification of appropriate plant to strip, reinstate and otherwise handle soils;</li> <li>• methods for compaction and grading of stockpiles;</li> <li>• methods for working in naturally wet soils; and</li> <li>• specification of appropriate decompaction measures to be used during reinstatement.</li> </ul>	DCO Requirement 6 (CEMP)
G154	<p>Where topsoil stripping is required, the normal working practice (where not otherwise specified within a method statement) would be to strip full depth of topsoil (where present) from:</p> <ul style="list-style-type: none"> <li>• construction compounds and logistics hubs;</li> <li>• access roads;</li> <li>• across the working width; and</li> <li>• any other areas to be trafficked.</li> </ul> <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 method statement 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)
<b>Land Use</b>		
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 require signed diversions. The means of access would be communicated to affected parties at least two weeks in advance.	DCO Requirement 6 (CEMP) DCO Requirement 7 (Construction traffic)



Ref	Measure Description	Securing Mechanism
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)
G82	Drainage surveys would be undertaken prior to construction.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP)
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.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
G85	<p>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.</p> <p>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.</p> <p>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.</p>	DCO Requirement 6 (CEMP)
<b>People and Communities</b>		
G30	<p>A dust management plan would be produced, including the following measures to be implemented where relevant:</p> <ul style="list-style-type: none"> <li>• control runoff of water or mud to reduce the spread of particulates that could subsequently be disturbed and become airborne;</li> <li>• return subsoil and topsoil at the earliest suitable time of year after construction has been completed;</li> <li>• manage earthworks and exposed areas or soil stockpiles to prevent wind borne dust. Use methods such as covering, seeding or using water suppression;</li> <li>• limit de-compaction of the sub-soil in windy conditions during reinstatement;</li> <li>• construct compound access points to the public highway with temporary hard surfacing;</li> <li>• enforce an appropriate speed limit for vehicles travelling on site to limit dust generation;</li> <li>• make an adequate water supply available for effective dust/particulate matter suppression/mitigation;</li> <li>• protect sand and other aggregates from drying out.</li> <li>• limit drop heights when loading and unloading materials from vehicles including pipes and excavated materials;</li> </ul>	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> <li>• control the number of handling operations to ensure that dusty material is not moved or handled unnecessarily;</li> <li>• where there is a risk of dust nuisance when using cutting, grinding or sawing equipment, use in conjunction with suitable dust suppression techniques;</li> <li>• keep equipment readily available to clean any dry spillages;</li> <li>• clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;</li> <li>• limit dry sweeping of large areas;</li> <li>• no bonfires or the burning of waste materials;</li> <li>• provide adequate wheel washing facilities at access points on to the public highway;</li> <li>• deploy water assisted road cleaners on public roads when necessary to prevent excessive dust or mud deposits;</li> <li>• sheet vehicle loads during the transportation of loose or potentially dusty material or spoil; and,</li> <li>• 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.</li> </ul>	
G98	<p>Noise and vibration from construction plant and machinery impacts would be mitigated by adopting measures in the following hierarchy:</p> <ul style="list-style-type: none"> <li>• control at source – for example the selection of quieter equipment;</li> <li>• the choice of location for equipment on site;</li> <li>• control of working hours; and</li> <li>• the provision of acoustic enclosures around equipment or barriers around work sites.</li> </ul>	DCO Requirement 5 (CoCP)
G99	<p>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 that would be used to reduce noise and vibration during installation</p>	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"> <li>• description of works pursuant to DCO;</li> <li>• scheme of work;</li> <li>• programme;</li> <li>• working hours;</li> <li>• plant noise and vibration data;</li> <li>• receptors at risk of &gt;1.0mm/s peak particle velocity and a protocol for providing prior warning and explanation;</li> </ul>	DCO Requirement 6 (CEMP)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> <li>• best practicable means (BPM) measures where applicable (as defined in Section 72 of CoPA 1974 for the control of noise and vibration);</li> <li>• predicted noise and vibration levels; and</li> <li>• BPM justification for short term higher noise/vibration levels or out of hours working and community communication details.</li> </ul>	
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	If necessary, temporary acoustic barriers or enclosures would be installed to reduce noise levels at sensitive receptors, especially in locations where noisy plant would be used for a prolonged period of time.	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	<p>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:</p> <ul style="list-style-type: none"> <li>• show the location of construction compound(s), access routes, site boundaries, entry/exit points;</li> <li>• develop measures to promote safe access to and from site;</li> <li>• detail each road crossing including the technique for installing the pipeline, access points and traffic management requirements;</li> <li>• 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;</li> <li>• make drivers aware of designated access routes;</li> <li>• provide appropriate temporary signage directing HGV drivers to relevant compounds;</li> </ul>	DCO Requirement 7 (Construction traffic)





Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> <li>• show the location of temporary road closures including temporary diversion routes agreed with the relevant highway authority;</li> <li>• manage Abnormal Indivisible Loads;</li> <li>• provide proof of concept for the proposed measures, for example large vehicle swept path analysis at pinch points on the public highway;</li> <li>• provide a Travel Plan for transport of the construction workforce; and</li> <li>• provide measures for the monitoring of the CTMP and details of appropriate actions in the event of a non-compliance.</li> </ul>	
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.	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.	DCO Requirement 5 (CoCP) DCO Requirement 6 (CEMP)
<b>Major Accidents</b>		
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.	DCO Requirement 5 (CoCP) Article 17 (Discharge of water)

16.3.4 Table 16.3 presents the mitigation that has been identified during the Environmental Impact Assessment as being necessary to off-set significant impacts on the environment.



**Table 16.3: ES Mitigation**

Ref	Measure Description	Securing Mechanism
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 great crested newts.	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)
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)
W12	For private water supplies (PWS) the following would be put in place: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Where the installation works have affected a PWS, an alternative water supply would be provided, as appropriate.</li> <li>• In the event of a significant spill during construction: <ul style="list-style-type: none"> <li>• 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;</li> </ul> </li> </ul>	DCO Requirement 5 (CoCP)



Ref	Measure Description	Securing Mechanism
	<ul style="list-style-type: none"> <li>• an assessment of the likelihood of groundwater contamination supplying identified PWS would be undertaken;</li> <li>• 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</li> <li>• where a PWS is affected, an alternative water supply would be provided, as appropriate.</li> </ul>	
W13	Temporary sheet piling or similar for control of groundwater would be put in place at the following trenchless crossings: TC 014, TC 015, TC 020, TC 023, TC 031, TC 032, TC 036, TC 037, TC 040 and TC 042, unless a detailed assessment is undertaken which demonstrates that no building or infrastructure is at risk of differential settlement.	DCO Requirement 6 (CEMP)
PC1	The project would work with the Chertsey Agricultural Show to limit impacts to the Show at Chertsey Meads and along Mead Lane.	DCO Requirement 5 (CoCP)
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)



## **16.4 References**

Department for Environment, Food and Rural Affairs (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. London: Department for Environment Food and Rural Affairs.

Ministry of Agriculture, Fisheries and Food (2000). Good Practice Guide for Handling Soils. (version 04/00). Cambridge: Farming and Rural Conservation Agency.

National Joint Utilities Group (2007). Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. Issue 2. Accessed March 2019. <http://streetworks.org.uk/wp-content/uploads/2016/09/V4-Trees-Issue-2-16-11-2007.pdf>.