

THE PLANNING ACT 2008

**M4 (JUNCTIONS 3 TO 12) (SMART MOTORWAY) DEVELOPMENT CONSENT
ORDER APPLICATION**

TR010019

Response to Second Written Questions

**Additional Documents - Updated Table of Mitigation
Measures**

Deadline V - 8 January 2016

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
Chapter 5: General			
General Construction Mitigation 5.1	Inadequate design / implementation of environmental mitigation measures in to the detailed Scheme design.	<ul style="list-style-type: none"> • A procedure to undertake environmental reviews during detailed design will be prepared by the detailed design team and agreed with the Agency prior to commencing detailed design. • The biodiversity potential of any soft landscaping to be provided as part of the authorised development will be maximised via detailed design. 	Development Consent Order ("DCO") Schedule 2, requirements 3, 7, 8 and 24.
General Construction Mitigation 5.2	Inadequate staff training / awareness leading to environmental impacts during site works.	<ul style="list-style-type: none"> • Prior to commencing work on site, all staff will be made aware of their environmental obligations, roles and responsibilities and any site restrictions/requirements through a site induction. • Regular communication must be maintained between representatives at all levels of the contract to ensure that everyone is fully aware of Scheme environmental issues. Communication methods will include inductions, toolbox talks, briefings and review meetings. • It will be the responsibility of the Contractor to ensure that the environmental issues and protocols related to the works are communicated to all staff, and that the staff on Site adhere to the contents of the final CEMP. It will be the responsibility of the Contractor to ensure that an appropriate communication matrix is implemented throughout the works for the Scheme. Prior to, and during, the works the Contractor will communicate to all personnel on site: <ul style="list-style-type: none"> i) site specific environmental information which all personnel should be aware of; ii) details of the final CEMP and associated emergency response procedures; iii) details of any pending/actual enforcement action; and iv) any other specific environmental requirements relating to the site 	DCO Schedule 2, requirements 7 and 8. Construction Environmental Management Plan ("CEMP") paragraphs 3.12.1 and 3.12.2, 4.2.1 and 4.2.2.
General Construction Mitigation 5.3	Environmental incidents occurring during construction works due to lack of guidance.	<ul style="list-style-type: none"> • An Environmental Co-ordinator / Environmental Manager will be assigned to manage all environmental issues during construction. The Co-ordinator / Manager will ensure that the guidance documented in the Outline CEMP and final CEMP is effectively implemented. 	DCO Schedule 2, requirements 7 and 8. CEMP Table 3.1 and paragraph 3.9.5.
General Construction Mitigation 5.4	Inappropriate auditing of works leading to environmental incidents on site.	<ul style="list-style-type: none"> • The Project Team will have established systems and procedures for responding to environmental incidents. Within the CEMP two registers will be set up as follows: <ul style="list-style-type: none"> ○ a Non-Conformance & Corrective Action Register (which forms part of the Contractor's Quality Procedures and is not exclusively for environmental issues); and ○ an Environmental Incidents Register. 	DCO Schedule 2, requirements 7 and 8. CEMP paragraph 3.13.5.
General Construction Mitigation 5.5	Not achieving Scheme objectives due to inappropriate working method and environmental incidents.	<ul style="list-style-type: none"> • Progress towards environmental objectives and targets will be monitored, measured and reported by the Contractor on a monthly basis to the Highways Agency Project Manager. The CEMP will detail arrangements for the implementation of Scheme objectives and targets. 	CEMP paragraph 3.2.4.
General Construction Mitigation 5.6	Breach of legislation due to not having appropriate consent for works in place.	<ul style="list-style-type: none"> • All statutory consents, permits or licences required for the construction, but which do not form part of the DCO, will be obtained. 	DCO Schedule 2, requirements 7 and 8. CEMP Table 3.1 and paragraphs 3.3.1(e), 5.2, 12.3.1, 12.4, 13.2.5 o), 13.5.8, 13.6.2 and 14.2.5.
General Construction Mitigation 5.7	Breach of legislation due to non-compliance with licence requirements.	<ul style="list-style-type: none"> • Any conditions included in consents/licences/permits will be documented in the CEMP and considered as part of the planning, design and construction process. • A copy of all relevant environmental applications and consents/authorisations will be kept in the Scheme Environmental File and 	DCO Schedule 2, requirements 7 and 8.

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		copies provided to the Agency of all applications and consents/authorisations as soon as practical after submission and receipt.	CEMP paragraphs 5.2.
General Construction Mitigation 5.8	Inappropriate working procedures during site works.	<ul style="list-style-type: none"> The Contractor must identify best practices on a regular basis and submit these to the Agency for consideration and wider circulation. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 5.1.3.</p>
Chapter 6: Air Quality			
Scheme Wide 6.1	Impacts resulting from construction dust.	<ul style="list-style-type: none"> Develop and implement a series of dust management measures and monitoring measures. Monitoring may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections; Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results and complaint resolution, and make the log available to the local authority etc. when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary; Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period; Keep site fencing, barriers and scaffolding clean using wet methods where there is the risk of dust accumulation; Remove materials that have the potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; Cover, seed or fence stockpiles to prevent wind whipping; Avoid excessively steep slopes on stockpiles to avoid material slippage and wind whipping; Materials handling areas will be maintained to the minimum required area to constrain dust emissions; Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided); Where possible, haul routes should be located away from off-site sensitive properties and watered regularly; Vehicle and construction plant exhausts should be directed away from the ground and be positioned at a height to facilitate appropriate dispersal of exhaust emissions where possible; The movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the Scheme; Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods; and 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 6.2.1 (General Mitigation Measures) (a)-(f), (i), (k), (l) and (r).</p> <p>Table A6.1.1 'Standard Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>
Scheme Wide 6.2	Impacts from dust resulting from surfacing works.	<ul style="list-style-type: none"> Surfacing equipment (e.g. planer) only to be operated with any manufacturer's dust abatement measures in place. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 6.2.1 (Surfacing Measures) (e).</p> <p>Table A6.1.1 'Standard Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>

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Scheme Wide 6.3	Impacts from dust resulting from inappropriate storage and construction methods.	<ul style="list-style-type: none"> Avoid scabbling (roughening of concrete surfaces) if possible. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 6.2.1 (Construction Measures) (f).</p> <p>Table A6.1.1 'Standard Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>
Scheme Wide 6.4	Impacts from dust resulting from vehicle track out.	<ul style="list-style-type: none"> Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. Use water-assisted dust sweeper(s) on access and local roads to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. Avoid dry sweeping of large areas. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Record all inspections of haul routes and any subsequent action in a site log book. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site) where reasonably practicable. Maintain and inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Install hard surfaced haul routes if possible, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. Access gates to be located at least 10m from receptors where possible. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 6.2.1 (Construction Measures) (g), 6.2.1 (Trackout Measures) (i)-(m) and 6.3.4 (Trackout Measures) (cc)-(ee) and (gg).</p> <p>Table A6.1.1 'Standard Mitigation Measures' and Table 6.1.2 'Additional Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>
Construction Site Mitigation 6.5	Impacts resulting from poor communications.	<ul style="list-style-type: none"> Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Display the name and contact details of person(s) accountable for air quality and dust issues on the construction compound site boundaries. This may be the environment manager/engineer or the site manager. Display the head or regional office contact information. Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. Make the complaints log available to the local authority etc. when asked. Record any exceptional incidents that cause dust and/or air emissions, either on or off-site, and the action taken to resolve the situation in the log book. Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes. Carry out regular site inspections to monitor the effectiveness of mitigation measures, record inspection results and make an inspection log available to the local authority etc. when asked. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 6.3.4 (Communication Measures) (a)-(c) and 6.3.4 (General Mitigation Measures) (d)-(i).</p> <p>Table 6.1.2 'Additional Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>

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		<ul style="list-style-type: none"> Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. 	
Construction Site Mitigation 6.6	Impacts resulting from insufficient dust monitoring.	<ul style="list-style-type: none"> Undertake dust deposition, dust flux, or real-time PM10 continuous monitoring. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 6.3.4 (General Mitigation Measures) (j).</p> <p>Table 6.1.2 'Additional Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>
Construction Site Mitigation 6.7	Impacts resulting from construction dust at construction sites.	<ul style="list-style-type: none"> Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Erect solid screens or barriers around particularly dusty activities or the site boundary that are at least as high as any stockpiles on site. Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Avoid bonfires and burning of waste materials. Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. Avoid explosive blasting where possible, using appropriate manual or mechanical alternatives. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 6.3.4 (General Mitigation Measures) (k)-(l) and (s)-(w), 6.3.4 (Demolition Measures) (x)-(y) and 6.3.4 (Construction Measures) (aa)-(bb).</p> <p>Table 6.1.2 'Additional Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>
Construction Site Mitigation 6.8	Impacts from dust resulting from construction vehicles/plant.	<ul style="list-style-type: none"> Ensure that, within Greater London, all on-road vehicles comply with the requirements of the London Low Emission Zone and the London non-road mobile machinery standards. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. Manage the sustainable delivery of goods and materials through careful programming of delivery. Implement a travel plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 6.3.4 (General Mitigation Measures) (n)-(q) and section 13.4.</p>

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			Table 6.1.2 'Additional Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).
Construction Site Mitigation 6.9	Impacts resulting from site restoration/earthworks.	<ul style="list-style-type: none"> • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Only remove the cover in small areas during work and not all at once. • Avoid site runoff of water or mud. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 6.2.1 (Earthworks Measures) (a)-(c) and 6.3.4 (General Mitigation Measures) (m)</p> <p>Table 6.1.2 'Additional Mitigation Measures' within Appendix 6.1 of the ES (Application Document Reference 6.3).</p>
Chapter 7: Cultural Heritage			
Construction Mitigation 7.1	Impacts to previously unknown archaeological remains within the area of construction compound 5.	<ul style="list-style-type: none"> • A programme of archaeological work, including a WSI is to be prepared in relation to construction compound 5, pursuant to a requirement in the DCO. The WSI will include: <ul style="list-style-type: none"> i) a programme and methodology of site investigation and recording; ii) a programme for post investigation assessment; iii) provision for analysis of the site investigation recording; iv) provision for publication and dissemination of the analysis and records of the site investigation; v) provision to be made for archive deposition of the analysis and records of the site investigation; and vi) nomination of a competent person or persons/organisation to undertake the works set out within the WSI. • 	<p>DCO Schedule 2, requirements 7, 8, 15 and 16.</p> <p>CEMP paragraph 7.3.10.</p> <p>Paragraph 7.8.15 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 7.2	Impacts to previously unknown archaeological remains.	<ul style="list-style-type: none"> • Potential impacts to any sub-surface archaeological remains will be mitigated by maintaining archaeological watching briefs during topsoil stripping and excavations into previously undisturbed ground during the construction phase. Any archaeological watching brief should be followed by an appropriate programme of assessment, analysis and reporting. 	<p>DCO Schedule 2, requirements 7, 8, 15 and 16.</p> <p>CEMP paragraphs 7.2.4, 7.5.3 and 7.5.6.</p> <p>Paragraph 7.8.16 of the ES (Application Document Reference 6.1).</p>
Chapter 8: Landscape			
Construction	Loss of existing vegetation during	<ul style="list-style-type: none"> • The contractor is required to prepare at detailed design stage an existing vegetation plan which will show areas of vegetation to 	DCO Schedule 2,

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Mitigation 8.1	construction.	<p>be retained and protected and areas of vegetation to be removed. This will be based on the schedule of existing vegetation to be retained set out in the Environmental Statement ("ES"), Appendix 8.4 and on the vegetation clearance drawing Document Reference 7.4 Annex A2 (sheets 1 to 32)).</p> <ul style="list-style-type: none"> The contractor is required to prepare at detailed design stage a landscape planting and grass seeding plan along with a landscape specification to cover the mitigation proposals outlined in the Environmental Masterplan, Document Reference 7.4 Annex A (sheets 1 to 32). The contractor is required to maintain the replacement planting for a period of 5 years starting from the completion date of the works. The maintenance will include rectifying all planting defects during this period, which will be carried out on an annual basis. 	<p>requirements 3, 7, 8 and 9.</p> <p>CEMP paragraphs 8.3.2(b), (c), (f), and 8.4.8.</p> <p>Paragraph 8.2.14 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 8.2	Loss of existing vegetation during construction and visual intrusion on residential properties.	<ul style="list-style-type: none"> The contractor is required to minimise the loss of vegetation during the construction phase. At sensitive locations identified in the ES Chapter 8 and in Appendix 8.4, i.e. where it presently acts as a visual screen to the M4 for adjacent residential properties, the contractor is required to look at the construction methodology and extent of the working area to ensure the maximum possible width of vegetation is retained. In order to carry out this requirement, the contractor is required to employ the services of an arboriculturalist to carry out a tree survey and report in accordance with BS5837 to identify the extent of the intervening vegetation to be retained and protected and its full root zone. It will also identify the measures to be implemented by the contractor to protect the roots and the tree for the duration of the construction work. Where it is not possible to retain the full tree, consideration will be given to coppicing the tree. This will involve cutting the tree back to the base, allowing the new shoots to establish. The coppiced stool, its root system and new growth will then be protected during the construction period. 	<p>DCO Schedule 2, requirements 7, 8 and 9</p> <p>CEMP paragraphs 8.4.7(b), 8.5.1, 8.5.2 and 8.5.3.</p> <p>Paragraph 8.4.17 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 8.3	<p>Vegetation clearance and construction impacts on trees with TPOs:</p> <ul style="list-style-type: none"> Ascot Road overbridge - TPO 13/1979 (Maidenhead & Windsor): Individual trees along Ascot Road which lie adjacent to construction compound 5, and also the tie-in works within the Holyport Conservation Area. Bray Wick - TPO 14/2000: Individual tree on eastbound side on Old Marsh Lane which lies very close to the Order limits. Old Slade Lane - TPO 3 of 1982: Westbound side - three individual trees along Old Slade Lane. 	<ul style="list-style-type: none"> Avoid direct impacts on trees subject to Tress Preservation Order ("TPO") through detailed design to ensure trees are retained. <p>Construction:</p> <ul style="list-style-type: none"> The Contractor must identify, retain and protect the areas of vegetation identified in Appendix 8.4 and the trees covered by TPO or that lie within Conservation Areas throughout the construction phase. 	<p>DCO Schedule 2, requirements 3, 7, 8, and 9.</p> <p>CEMP paragraphs 8.5.1 and 8.5.2.</p>
Construction Mitigation 8.4	Loss or damage to trees covered by a Tree Preservation Order	<ul style="list-style-type: none"> The contractor is required to minimise the loss or damage to trees covered by a TPO or which lie within conservation areas during the construction phase. The contractor is required to look at the construction methodology and extent of the working area adjacent to these trees to ensure their retention and protection. In order to carry out this requirement the contractor is required to employ the services of an arboriculturalist to carry out a tree survey and report in accordance with BS5837. This survey will identify protection zones and protective measures to all the trees covered by a TPO and within conservation areas, including those trees located outside the Order limits but which have root systems that are likely to extend into the area covered by the Order limits. The tree survey is required to identify the full root zone of these trees and to provide measures to protect the roots and the tree for the duration of the construction work. Where it is not possible to retain the tree the contractor will agree the replacement tree species and tree size with the relevant local planning authority. 	<p>DCO Schedule 2, requirements 7, 8 and 9.</p> <p>CEMP paragraphs 8.5.1, 8.5.2 and 8.6.2.</p> <p>Paragraph 8.4.17 of the ES (Application Document Reference 6.1).</p>
Chapter 9: Ecology and Nature Conservation			
Construction Mitigation 9.1	Potential pollution impacts on statutory and non-statutory sites adjacent to the	<p>Construction:</p> <ul style="list-style-type: none"> Best practice pollution prevention and control measures will be adopted to ensure that designated sites are not adversely affected 	DCO Schedule 2, requirements 7 and

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	Scheme.	by dust created during construction, storm water runoff or accidental spillages from construction sites.	8. CEMP paragraphs 5.7, 9.3.3 and 9.3.9 a). Paragraph 9.4.18 of the ES (Application Document Reference 6.1).
Construction Mitigation 9.2	Potential impact on habitats and plants (ancient woodland) immediately adjacent to the Scheme resulting from vegetation clearance and airborne pollution during construction.	Construction: <ul style="list-style-type: none"> Vegetation removal within the Order limits will be minimised and areas that are not cleared will be fenced off to prevent accidental incursions into the Root Protection Areas (“RPA”) of trees as per BS 5837:2012. To include those trees that lie immediately outside the Order limits, best practice pollution prevention and control measures including the control or airborne particulates will be adopted. Land cleared of vegetation for temporary construction works will be replanted using native species appropriate to the local area – planting to follow the design as detailed in the Environmental Masterplan. 	DCO Schedule 2, requirements 3, 7, 8, and 9. CEMP paragraphs 8.4.7(b), 8.5.2, 8.5.4, 9.3.2, 9.3.3 and 9.3.4. Paragraph 9.4.22 and 9.4.24 of the ES (Application Document Reference 6.1).
Construction Mitigation 9.3	Potential spread of invasive non-native species during construction phase including: <ul style="list-style-type: none"> Giant Hogweed (<i>Heracleum mantegazzianum</i>); Japanese Knotweed (<i>Fallopia japonica</i>); Indian Balsam (<i>Impatiens glandulifera</i>); Rhododendron (<i>Rhododendron ponticum</i>); Wall Cotoneaster (<i>Cotoneaster horizontalis</i>); and Virginia Creeper (<i>Parthenocissus inserta</i>). 	Pre-construction: <ul style="list-style-type: none"> A detailed pre-construction survey will be undertaken to map the locations of all invasive non-native plant species. Construction: <ul style="list-style-type: none"> The Schedule 9 species identified within the Order limits will be managed to ensure that construction of the Scheme does not lead to the spread of these species, either through treatment, appropriate removal or demarcation and avoidance in accordance with Environment Agency (“EA”) best practice guidance. Detailed method statements will be strictly implemented throughout the construction phase. All site staff will be briefed on the identification and treatment of invasive non-native plant species as part of the contractor’s environmental training programme, including toolbox talks. The removal or management of invasive non-native species within the Order limits. 	DCO Schedule 2, requirements 7, 8 and 24. CEMP paragraphs 9.6.1, 9.6.2, 9.6.3 and 9.6.4. Paragraph 9.4.29 of the ES (Application Document Reference 6.1).
Construction Mitigation 9.4	Impacts on amphibians: great crested newts (<i>Triturus cristatus</i>) during vegetation clearance.	Pre-construction: <ul style="list-style-type: none"> Any potentially suitable breeding ponds within 250m of the Order limits for which access was not previously available will be surveyed prior to vegetation clearance. Pre-construction surveys to confirm the continued absence of great crested newts within all ponds within the study area will be undertaken to confirm the current assessment that an offence is considered to be “highly unlikely”. Construction: <ul style="list-style-type: none"> Where there is a low risk that great crested newts might be present, vegetation clearance will be undertaken in a phased manner, under ecological supervision. The removal of refugia will be overseen by an Ecological Clerk of Works. The timing of these works should avoid disturbance during the hibernation period (October to February, inclusive). Features which may be used as refuges by the great crested newts will be removed by hand by an ecologist and searched for the presence of great crested newts (and reptiles). A destructive search of any larger features will be undertaken by hand or using a small excavator. 	DCO Schedule 2, requirements 7, 8, 11 and 13. CEMP paragraphs 9.1.2, 9.3.8, 9.3.9, 9.4.1, 9.4.2, 9.4.3, 9.4.4 and 9.5.1. Paragraph 9.4.41 of the ES (Application Document Reference 6.1).

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Construction Mitigation 9.5	Impacts on reptiles during vegetation clearance and construction (J12-J5).	<p>Pre-construction:</p> <ul style="list-style-type: none"> Pre-construction surveys will be undertaken on any areas with potentially higher quality habitat than the large areas of representative habitat already surveyed to confirm the mitigation strategy (i.e. habitat manipulation versus translocation). An overarching Reptile Mitigation Strategy will then be produced detailing the specific areas where each approach should be undertaken. <p>Construction:</p> <ul style="list-style-type: none"> Where appropriate, reptiles will be displaced from working areas within the Order limits to adjacent suitable habitats by undertaking phased vegetation clearance, or if adjacent habitat is unsuitable a translocation programme will be implemented following guidance published in DMRB Vol10, Section 4, Part 7. Displacement is not considered an appropriate mitigation method in relation to proposed construction compound 3; widening at emergency refuge area E7-A3 at chainage 40+700 A and E7-B2 at chainage 38+750 B; widening area R33 between chainages 34350 to 31+050 B; between chainages 30+800 A to 31+800 A; at Datchet Road overbridge; Riding Court Road overbridge and construction compounds 3, 4, 6 and 8 as the habitats adjacent to these areas are not suitable for use by reptiles. Instead, translocation will be undertaken and suitable reptile receptor sites will be identified. Junction 5 - Junction 3: Precautionary habitat clearance (phased vegetation clearance), no direct ecological supervision required. 	<p>DCO Schedule 2, requirements 7, 8, 11 and 13.</p> <p>CEMP paragraphs 9.1.2, 9.3.1, 9.3.8, 9.3.9, 9.4.1, 9.4.5, 9.4.6 and 9.5.1.</p> <p>Paragraph 9.4.49 and 9.4.50 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 9.6	Impacts on nesting birds during vegetation clearance.	<ul style="list-style-type: none"> The removal of all suitable nesting habitat (scrub, shrubs and trees) to be planned, where possible, to take place over the autumn and winter period, outside the core bird nesting season (March to August inclusive), to overcome programming constraints relating to the presence of nesting birds. If vegetation clearance is required within the bird nesting period, all such vegetation will be checked by an ecologist for the presence of nesting birds no more than 24 hours prior to clearance. Wherever nests are found, a 10m cordon will be placed around the nest and no works will be permitted within that area until the chicks have fledged or confirmation from a qualified ecologist that work can proceed. In the unlikely event that a Schedule 1 species is recorded bespoke mitigation methods would be developed. New tree and shrub planting to be implemented to mitigate the loss of nesting habitats in the long term. Approximately 40 bird boxes will provide a variety of additional nesting opportunities and will be erected on trees at appropriate locations to be determined by an ecologist. 	<p>DCO Schedule 2, requirements 7, 8, 9, 11 and 13.</p> <p>CEMP paragraphs 8.5.7, 9.1.2, 9.3.4, 9.3.8, 9.3.9, 9.4.1, 9.4.2, 9.4.5, 9.4.6 and 9.5.1.</p> <p>Paragraph 9.4.59, 9.4.60, 9.4.61 and 9.4.124 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 9.7	<p>Impacts on bats during construction phase:</p> <ul style="list-style-type: none"> loss of potential roosting habitat (structures and trees); disturbance to bat roosts; and loss of foraging habitat. 	<p>Pre-construction:</p> <ul style="list-style-type: none"> All potential roost sites which could be affected by construction activities will be subject to a pre-construction survey to confirm the continued absence of bats. Trees with bat roost potential will be assessed by survey or climbing inspection in advance of felling (trees to be felled within 24hr of survey, where bats are absent, or during winter under precautionary method statement if felling is delayed). <p>Construction:</p> <ul style="list-style-type: none"> Avoid disturbance to confirmed roosts by timing works, where possible, to avoid the bat active season (May- September, inclusive). For minor disturbance to roost locations precautionary measures will be implemented, including: reducing light spill and restricting operational hours to daytime working. Where significant disturbance is anticipated or roost loss is required an EPS licence will be required. Works affecting bat foraging habitat will be timed (where possible) to avoid the core active season (May- September, inclusive) or mitigation, as detailed above, shall be implemented. New landscape planting and habitat reinstatement will provide bats with foraging habitat in the long-term. The Environmental Masterplan will incorporate the provision of approximately 60 bat boxes at suitable locations. A variety of boxes will be used to support a variety of species. 	<p>DCO Schedule 2, requirements 7, 8, 9, 11, 13 and 24.</p> <p>CEMP paragraphs 8.5.7, 9.1.2, 9.3.1, 9.3.4, 9.3.8, 9.3.9, 9.4.1, 9.4.7, 9.4.8, 9.4.9, 9.4.10 and 9.5.1.</p> <p>Paragraph 9.4.69, 9.4.73, 9.4.74 and 9.4.122 of the ES (Application Document Reference 6.1).</p>
Construction	Impacts on water voles from pollution or	Pre-construction:	DCO Schedule 2,

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
Mitigation 9.8	direct loss of habitat during construction phase. J12-J11 only.	<ul style="list-style-type: none"> In areas potentially suitable for water vole that require vegetation removal/ground breaking works but within which no water vole populations have been identified, a pre-construction survey will be undertaken to confirm the continued absence of water voles. <p>Construction:</p> <ul style="list-style-type: none"> The potential effects of pollution upon watercourses which are suitable for use by water voles will be mitigated through compliance with the EA's Pollution Prevention Guidance 5 ("PPG5"). 	<p>requirements 7, 8, 11, 13 and 24.</p> <p>CEMP paragraphs 9.1.2, 9.3.1, 9.3.8, 9.3.9, 9.4.11, 9.4.12 and 9.5.1.</p> <p>Paragraph 9.4.82 and 9.4.83 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 9.9	Impacts on otters from pollution or direct loss of habitat during construction phase. J12 – J7 only.	<p>Pre-construction:</p> <ul style="list-style-type: none"> In proposed works areas that were considered to contain potentially suitable habitat to support otter holts or couches, but within which no evidence of otter presence has been identified, pre-construction surveys will be undertaken to confirm the continued absence of this species. <p>Construction:</p> <ul style="list-style-type: none"> Where works are to be undertaken to structures on watercourses which may be used by otters, measures to minimise disturbance will be implemented. Night working will be minimised to avoid disturbance to otters commuting along watercourses from significant construction noise or vibration. Construction/site lighting will use directional lamps, so that light-spill to the watercourses and their banks is avoided. Wherever possible, allowance for the passage of otters along one or both banks of the watercourse will be incorporated within the temporary works arrangements. The potential effects of pollution upon watercourses which are suitable for use by otters will be mitigated through compliance with PPG5. The Environmental Masterplan will incorporate the installation of otter ledges on culverts or under bridges where no ledge is currently present, in accordance with DMRB Volume 10 Section 4 Part 4. Otter ledges will be provided as part of the permanent works where the presence of otters has been identified. Otter-resistant fencing will be installed in key locations to be outlined in the Environmental Masterplan in order to prevent otters from accessing the Scheme. This installation will be focussed around bridges over watercourses where evidence of otters has been recorded. The fencing will be designed and installed in accordance with detailed guidance in DMRB Vol.10 Section 4 Part 4. 	<p>DCO Schedule 2, requirements 7, 8, 11, 13 and 24.</p> <p>CEMP paragraphs 9.1.2, 9.3.1, 9.3.8, 9.3.9, 9.4.13, 9.4.14, 9.4.15 and 9.5.1.</p> <p>Paragraph 9.4.88, 9.4.89, 9.4.90, and 9.4.113 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 9.10	Impacts on badgers during vegetation clearance and construction .	<p>Pre-construction:</p> <ul style="list-style-type: none"> A pre-construction survey within the vicinity of construction works will be undertaken prior to the start of works to ensure that badgers have not dug another sett within the application area or to determine any changes in the use of already identified setts. It is usual to re-survey the construction site immediately following vegetation clearance to confirm the total number of setts affected by the works <p>Construction:</p> <ul style="list-style-type: none"> A licence from NE will be required where it is considered that any works will cause disturbance to an active badger sett. A licence application will be compiled on a case by case basis, and will require mitigation to be put in place as a condition of the licence. The licence will include a detailed method statement setting out the measures to be implemented and the timings of work to follow, which will be specific to each sett. Appropriate tree/scrub species will be planted to include native fruit, berry and nut producing species such as hawthorn, blackthorn, hazel and bramble to provide alternative food resources for badgers. Confidential Appendix 9.2 Figure 1 of the ES (Application Document Reference 6.3) incorporates the locations of badger proof fencing along the Scheme in accordance with DMRB Volume 10 Section 4 Part 2, in order to prevent badgers from accessing the Scheme. The installation will be focussed at known badger crossing points and close to badger setts. 	<p>DCO Schedule 2, requirements 7, 8, 11, 13 and 24.</p> <p>CEMP paragraphs 9.1.2, 9.3.1, 9.3.8, 9.3.9, 9.4.18, 9.4.20, 9.4.21, 9.4.22 and 9.5.1.</p> <p>Paragraph 3.1.9, 3.1.11, 3.1.14 and 3.1.15 of Appendix 9.2 of the ES (Application Document Reference 6.3).</p>
Chapter 10: Geology and Soils			
Construction Mitigation	Removal and off-site disposal of,	<ul style="list-style-type: none"> Not generally possible but at off-line side roads, earthworks retaining solutions have been included to minimise the footprint of 	DCO Schedule 2,

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
<p>10.1 Immediately adjacent to M4 carriageway and existing link roads (all locations)</p>	<p>significant disturbance of, or the burial below imported fills of geological materials presently existing below at grade sections of the existing highway alignment.</p> <p>Formation of new cutting exposures within an area where there are virtually no natural geological outcrops available for study.</p>	<p>the works.</p>	<p>requirements 3, 7 and 8.</p> <p>CEMP paragraphs 10.2.1, 10.3 and 10.4.1 (c), (g) and (i).</p> <p>Annex A to the CEMP (Outline Site Waste Management Plan ("SWMP")) contains outline provisions in paragraphs 2 - 6.</p> <p>Paragraph 10.5.1 of the ES (Application Document Reference 6.1).</p>
<p>Construction Mitigation 10.2 Immediately adjacent to M4 carriageway and slip roads and also at existing side roads (all locations)</p>	<p>Removal and off-site disposal of, or significant disturbance of, existing soils covering highway verges and existing earthworks slopes.</p> <p>Pollution of on-site soils due to migration of contaminants from contaminated earthworks fills employed during embankment construction.</p> <p>Pollution of on-site soils due to migration of contaminants onto site due to encroachment of new earthworks cuttings into adjacent landfill.</p> <p>Removal of soils potentially contaminated due to previous herbicide spraying and/or grit-salt spreading regimes and replacement with imported or conditioned soils less likely to contaminate surface water courses and likely to improve biodiversity.</p>	<ul style="list-style-type: none"> Careful site control of excavation, separation, handling and storage activities to ensure those soils identified as contaminated are not mixed with uncontaminated soil. If previously unknown contaminated land or groundwater is found, construction must cease in the immediate vicinity of the contamination and the incident must be reported to the Secretary of State, EA and relevant planning authority. A risk assessment of the contamination must be undertaken and, if required by the Secretary of State, a written scheme and programme of remedial measures must be submitted. Remediation must only be carried out in accordance with the approved written scheme. Ground investigation will be undertaken within the Order limits during the detailed design phase. The results of the ground investigation will be used to ensure that new earthworks and structures do not encroach into existing areas of contaminated land. 	<p>DCO Schedule 2, requirements 7, 8, 12 and 14.</p> <p>CEMP paragraphs 10.2.1, 10.3 and 10.4.1 (c), (g) and (i).</p> <p>Annex A to the CEMP (SWMP) contains outline provisions in paragraphs 2 - 6.</p> <p>Paragraph 10.5.12 (c) and 10.5.5 of the ES (Application Document Reference 6.1).</p>
<p>Construction Mitigation 10.3 J5 to J6 (Ch24100-24350 (Datchet Rd)) J6 to J7 (Ch27250-27300 (Wood Lane)) J6 to J7 (Ch28950-28900 (Huntercombe)) J7 to J8/9 (Ch31600-31650 (Monkey Island)) J7 to J8/9 (Ch33300-33350 (Ascot Lane))</p>	<p>Removal and off-site disposal of, or in situ degradation of, existing comparatively higher grade (e.g. agriculturally improved) soils on land lying adjacent to, but not within the existing highway boundary, due to construction of the off-line link road bridges and approach earthworks that form part of the Scheme.</p> <p>Degradation of existing comparatively higher grade (e.g. agriculturally improved) soils on land lying adjacent to, but not</p>	<ul style="list-style-type: none"> At off-line side roads, earthworks retaining solutions have been included within the design in order to minimise the footprint of the works. Potentially valuable topsoil to be stripped and potentially reused within the Scheme or, where surplus to requirements, potentially offered for beneficial reuse off-site in the surrounding area. 	<p>DCO Schedule 2, requirements 3, 7, 8, 12 and 14.</p> <p>CEMP paragraphs 10.2.1, 10.3 and 10.4.1 (c), (g) and (i).</p> <p>Annex A to the CEMP (SWMP) contains outline provisions in</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
	<p>within the existing highway boundary, due to construction-related surface water pollution.</p> <p>Improvement of drainage and/or value of agricultural land lying adjacent to the off-line link road bridges and approach earthworks that form part of the Scheme as a result of incidental ground improvement.</p>		<p>paragraphs 2 - 6.</p> <p>Paragraph 10.5.1 and 10.5.3 of the ES (Application Document Reference 6.1).</p>
<p>Construction Mitigation 10.4</p> <p>J4b to J5 (Ch17850-18200)</p> <p>J5 to J6 (Ch23200-24400)</p> <p>J7 to J8/9 (Ch31100-31980 (Monkey Island)) J8/9 to J10 (Ch39000- 39300)</p> <p>J4b to J5 (Ch17750-18700)</p> <p>J5 to J7 (Ch21300-27600)</p> <p>J7 to J8/9 (Ch30100-31100)</p> <p>J7 to J8/9 (Ch31980-32580)</p> <p>J10 to J11 (Ch45550-46950)</p> <p>J11 to J12 (Ch54080-60500)</p> <p>J5 to J6 (Ch20000-21300)</p> <p>J7 to J10 (Ch29900-43500)</p> <p>J10 to J11 (Ch44350-46950) and (Unknown, theoretical only)</p>	<p>Disturbance of existing ground leading to increased turbidity in the groundwater causing pollution of the public water supply.</p> <p>Disturbance of existing contaminated land and/or the creation of sub-surface pathways for contaminant migration (e.g. via piling activities) causing pollution of aquifers.</p> <p>Surface water pollution due to poorly managed construction operations which enters groundwater regime and pollutes groundwater aquifers.</p> <p>Construction causing disruption to sub-surface groundwater flow paths resulting in onerous modification to aquifer properties (e.g. well yields).</p> <p>Removal of potential sources of aquifer polluting contaminants due to the partial or wholesale removal of contaminated ground or the in situ remediation of such materials.</p> <p>Diminution of aquifer yields due to severance of shallow aquifer by new infrastructure or new drainage measures.</p>	<ul style="list-style-type: none"> Careful management of construction site drainage (e.g. use of sediment traps etc.) will mitigate against the attendant risks. Use of full permanent pile casings where piled structures are required will minimise effects on groundwater. If previously unknown contaminated land or groundwater is found, construction must cease in the immediate vicinity of the contamination and the incident must be reported to the Secretary of State, EA and relevant planning authority. A risk assessment of the contamination must be undertaken and, if required by the Secretary of State, a written scheme and programme of remedial measures must be submitted. Remediation must only be carried out in accordance with the approved written scheme. Following local enquiries to confirm the presence of unlicensed/minor abstractions, mitigation is likely to be similar to Construction Mitigation 10.4. In addition to the excavation and treatment of contaminated soils, it may also be necessary to install gas and leachate control systems within affected sites, on a temporary or permanent basis, in order to ensure that gas and leachate migration pathways are controlled and do not adversely affect the operation of the Scheme or the wider environment as a consequence of the Scheme. 	<p>DCO Schedule 2, requirements 7, 8, 12 and 14.</p> <p>CEMP paragraphs 10.2.1, 10.2.4, 10.3, 10.4.1 (f), 14.3.1, 14.5.1, 14.6.1 and 14.6.2.</p> <p>Paragraph 10.5.4 and Table 10.9, of the ES (Application Document Reference 6.1).</p>
<p>Construction Mitigation 10.5</p> <p>J3 to J4 (Ch11800-12450)</p> <p>J3 to J4 (Ch12700-13800)</p> <p>J4 to J4b (Ch14300-14950)</p> <p>J4 to J4b (Ch16450-16800)</p> <p>J4b to J5 (Ch18350-19400)</p> <p>J6 to J7 (Ch27250-28450)</p>	<p>Disturbance of existing contaminated land and/or the creation of sub-surface pathways for contaminant migration (e.g. via piling activities) causing migration of liquid and gaseous contaminants that subsequently impact upon vulnerable receptors (e.g. domestic dwellings).</p> <p>Modification of local sub-surface stress regime due to Scheme construction causing modifications to landfill environment, leading to increased on-site settlements / venting / leachate production that may also have off-site effects.</p>	<ul style="list-style-type: none"> Boreholes are planned at sites identified as former landfills in order to determine accurately the extent (if any) of contaminated materials. The results will be used to ensure that new earthworks do not encroach into existing areas of contaminated land. Where encroachment is unavoidable (e.g. by replacing a cutting slope with a vertically retained or reinforced cutting of smaller plan footprint) then appropriate mitigation to minimise the potential short term health and safety and environmental risks to sensitive receptors will be implemented. 	<p>DCO Schedule 2, requirements 7, 8 and 12.</p> <p>CEMP paragraph 10.2.1 (also 10.4.1(c) in relation to stockpiles and low permeability liners).</p> <p>Paragraph 10.5.5 of the ES (Application Document Reference 6.1).</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
J7 to J8/9 (Ch32800-33250) J11 to J12 (Ch57450-58250) J4 to J5 (Ch16400-17400) J5 to J6 (Ch21200-21750) J5 to J6 (Ch23500-24750) J11 to J12 (Ch57950-58750) J11 to J12 (Ch59200-59850)			
Construction Mitigation 10.6 J5 to J6 (Ch23900-23950 (eastbound) (Recreation)) J5 to J6 (Ch24250-24350 (eastbound) (Datchet Rd)) J6 to J7 (Ch27300-27400 (westbound) (Wood Lane)) J7 to J8/9 (Ch33300-33350 (Ascot Lane))	Significant disturbance to existing contaminated land and/or the creation of sub-surface pathways for contaminant migration (e.g. via piling for off-line link road bridges) causing migration of liquid and gaseous contaminants that subsequently impact upon vulnerable receptors (e.g. domestic dwellings). Significant modification of local sub-surface stress regime due to off-line link road construction causing modifications to landfill environment, leading to increased on-site settlements / venting / leachate production that may also have off-site effects.	<ul style="list-style-type: none"> At off-line side roads, earthworks retaining solutions have been included within the design in order to minimise the footprint of the works. Use of full permanent pile casings where piled structures are required will minimise migration of leachates/gases. 	DCO Schedule 2, requirements 3, 7, 8, 12 and 14. CEMP paragraphs 10.2.4, 10.4.1(f), 14.3.1, 14.5.1, 14.6.1 and 14.6.2. Paragraph 10.5.1 and Table 10.9 of the ES (Application Document Reference 6.1).
Operational Mitigation 10.7 Immediately adjacent to M4 carriageway and existing link roads (all locations)	Continuing pollution of on-site soils due to continued migration of contaminants onto site due to encroachment of new earthworks cuttings into adjacent landfill.	<ul style="list-style-type: none"> Long term monitoring to be undertaken in areas at risk. 	DCO Schedule 2, requirements 7, 8 and 12. CEMP paragraphs 10.2.1, 10.2.3 and 10.2.4. Table 10.10 of the ES (Application Document Reference 6.1).
Operational Mitigation 10.8 J5 to J6 (Ch24100-24350 (Datchet Rd)) J6 to J7 (Ch27250-27300 (Wood Lane)) J6 to J7 (Ch28950-28900 (Huntercombe)) J7 to J8/9 (Ch31600-31650 (Monkey Island)) J7	Pollution due to drainage contaminated with vehicle emission particulates and grit-salt spreading residues entering areas adjacent to study area. Pollution due to major fuel/chemical spillages following traffic accidents. Flooding of areas immediately local to the	<ul style="list-style-type: none"> Regular maintenance of highway drainage. Mitigation is built into the planned drainage to ensure that flows are restricted to existing discharge rates. Site activities and the prevention of pollution will be controlled by adopting measures to comply with relevant PPGs: temporary construction methods and CIRIA publications (including 'Control of water pollution from construction sites. Guidance for consultants and contractors' (C532), 'Control of water pollution from linear construction projects. Technical guidance' (C648), 'Control of water pollution from linear construction projects. Site guide' (C649). 	DCO Schedule 2, requirements 7, 8, 12 and 14. CEMP paragraphs 10.5.2, 14.6.2, 14.8.1 and 14.8.2. Drainage Strategy

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
<p>to J8/9 (Ch33300-33350 (Ascot Lane)) J4b to J5 (Ch17850-18200) J5 to J6 (Ch23200-24400) J7 to J8/9 (Ch31100-31980 (Monkey Island)) J8/9 to J10 (Ch39000-39300) J4b to J5 (Ch17750-18700) J5 to J7 (Ch21300-27600) J7 to J8/9 (Ch30100-31100) J7 to J8/9 (Ch31980-32580) J10 to J11 (Ch45550-46950) J11 to J12 (Ch54080-60500) J5 to J6 (Ch20000-21300) J7 to J10 (Ch29900-43500) J10 to J11 (Ch44350-46950)</p>	<p>Scheme due to long term settlement and consequent loss of function of existing land drainage. Pollution due to drainage contaminated with vehicle emission particulates and grit-salt spreading residues entering hydrogeological regime.</p> <p>Pollution due to fuels/chemicals entering hydrogeological regime following major traffic accidents/spillages.</p>		<p>Report paragraph 1.3.18.</p> <p>Table 10.9 of the ES (Application Document Reference 6.1).</p>
<p>Operational Mitigation 10.9 J3 to J4 (Ch11800-12450) J3 to J4 (Ch12700-13800) J4 to J4b (Ch14300-14950) J4 to J4b (Ch16450-16800) J4b to J5 (Ch18350-19400) J6 to J7 (Ch27250-28450) J7 to J8/9 (Ch32800-33250) J11 to J12 (Ch57450-58250) J4 to J5 (Ch16400-17400) J5 to J6 (Ch21200-21750) J5 to J6 (Ch23500-24750) J11 to J12 (Ch57950-</p>	<p>Continuing disturbance of existing contaminated land due to ongoing settlement causing migration of liquid and gaseous contaminants that subsequently impact upon vulnerable receptors (e.g. domestic dwellings).</p> <p>Residual modification of local sub- surface stress regime during Scheme operation causing modifications to landfill environment, leading to increased on-site settlements / venting / leachate production that may also have off-site effects.</p>	<ul style="list-style-type: none"> • Long term monitoring of settlement and leachate / gas regimes within disturbed areas of landfill will be implemented. • It may also be necessary to install gas and leachate control systems within affected sites, on a temporary or permanent basis, in order to ensure that gas and leachate migration pathways are controlled and do not adversely affect the operation of the Scheme or the wider environment as a consequence of the Scheme. 	<p>DCO Schedule 2, requirements 7, 8 and 12.</p> <p>CEMP paragraphs 10.2.4 and 10.3.1 in relation to gas monitoring.</p> <p>CEMP paragraph 10.4.1 in relation to construction control measures for contaminated land.</p> <p>Paragraph 10.5.8 of the ES (Application Document Reference 6.1).</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
58750) J11 to J12 (Ch59200-59850) J5 to J6 (Ch23900-23950 (eastbound) (Recreation)) J5 to J6 (Ch24250-24350 (eastbound) (Datchet Rd)) J6 to J7 (Ch27300-27400 (westbound) (Wood Lane)) J7 to J8/9 (Ch33300-33350 (Ascot Lane))			
Chapter 11: Materials			
Construction Mitigation 11.1	Material resources and waste handled in a manner which poses a risk of harm to human health.	<ul style="list-style-type: none"> The development and implementation of the Scheme's Materials Management Plan ("MMP") will ensure that material resources and waste arisings are handled and used in a manner which prevents harm to human health and pollution of the environment. This objective will be secured by the further development and implementation of the 'Approach to waste management during construction' section of the Outline MMP. The MMP will be based on an appropriate risk assessment that will underpin the Scheme design and any need for remediation. 	DCO Schedule 2, requirements 3, 7 and 8. CEMP paragraphs 11.2.2, 11.4.1, 11.4.4, 11.8.1 c) and Annex B which contains the Outline MMP. Outline MMP paragraphs 2, 3 and 6 (which contains the 'approach to waste management during construction' section). Paragraph 11.4.46 of the ES (Application Document Reference 6.1).
Construction Mitigation 11.2	Depletion of landfill void capacity and available waste management infrastructure capacity and increased disposal costs due to failure to maximise waste minimisation, management and reuse opportunities.	<ul style="list-style-type: none"> The contractor will ensure that waste materials are sorted into separate waste groups, (according to the waste streams generated by the scope of the works), either onsite or off-site by a licensed contractor for reuse, recycling or recovery. All waste arisings will be managed by the contractor in accordance with the waste hierarchy (i.e. prevention, preparing for reuse, recycling, other recovery and disposal as set out in the Waste (England and Wales) Regulations 2011) and in such a way as to prevent harm to human health, amenity and the environment. The Outline Site Waste Management Plan ("SWMP") sets a framework to facilitate good practice and will be developed further by the contractor to: <ul style="list-style-type: none"> identify the volume and tonnes of excavated materials and other waste streams and volume and tonnes (for example wood, brick, concrete, soils, plastics) likely to be produced during construction and demolition, to establish the potential for reuse (on or off-site) and recycling; identify opportunities for waste minimisation and management; identify possible options for designing out waste; identify the most significant opportunities to increase reuse and recycling rates (termed Waste Recovery Quick Wins) and the realistic recovery rates for each waste type; 	DCO Schedule 2, requirements 3, 7 and 8. CEMP paragraphs 11.3.1, 11.3.2, 11.4.1, 11.4.2, 11.4.3 and Annex A which contains the Outline SWMP. Annex A to the CEMP (SWMP) contains outline provisions in paragraphs 1.1.2 -

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
		<ul style="list-style-type: none"> ○ consider appropriate site practices such as how waste materials will be segregated and the measures that will be used for raising awareness among site operatives for waste reduction, reuse and recycling; and ○ set out the method for measuring and auditing construction, demolition and excavation waste to enable more effective waste management through the setting of performance targets for segregation, recycling, and monitoring sub-contractors. ● The contractor will be responsible for the storage and management of the earthworks material excavated from the Scheme. This material will be used wherever practicable to construct the engineering earthworks and to mitigate the environmental effects of the Scheme. The reuse of site-won materials will be maximised through the further development and delivery of the Outline MMP. ● The contractor will be responsible for the reduction of waste arisings from the Scheme where reasonably practicable. This will include measures such as careful storage of materials on site and ‘just in time’ deliveries which will be secured through the development and implementation of the MMP and Logistics Plan. ● Maximum reuse of excavated materials will be secured by the further development and delivery of Section 11.4 ‘Management of excavated materials and waste’ of the Outline CEMP and the ‘Approach to waste management during construction’ and ‘Soil Management Plan’ sections of the Outline MMP which will be fully populated by the contractor prior to commencement of the construction phase of the Scheme. 	<p>1.1.6 and sets out key roles in tabular format.</p> <p>Paragraph 10.5.8 of the ES (Application Document Reference 6.1).</p> <p>Paragraph 11.4.55, Table 11.11 and Table 11.17 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 11.3	Depletion of material resources and negative environmental impacts resulting from the procurement of material resources required by the Scheme not meeting appropriate environmental and sustainability criteria.	<ul style="list-style-type: none"> ● The environmental criteria by which material resources will be selected and Scheme-specific targets for the recycled content of key materials will be set and committed to prior to commencement of the material procurement process for the Scheme. This objective will be secured by the further development of the ‘Materials Resources to be used’ section of the Outline MMP and implementation of the MMP. The contractor will, where practicable, implement measures to manage material resources use during construction including: <ul style="list-style-type: none"> ○ using sustainably sourced materials; ○ using recycled or secondary materials; and ○ minimising the use of materials that have the potential to harm human health or the environment. ● The contractor will consider sourcing recycled or secondary materials locally. 	<p>DCO Schedule 2, requirements 3, 7 and 8.</p> <p>CEMP paragraphs 11.8.1 and 11.8.2.</p> <p>Paragraph 10.4.50 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 11.4	Transportation of material resources and waste: Safety and reliability risk associated with vehicle ingress and egress to the Scheme. Insufficient management measures leading to congestion and environmental impacts.	<ul style="list-style-type: none"> ● The Outline Logistics Plan will be further developed into the Scheme’s Logistics Plan to effectively manage all movements of material resources and waste on and off site. ● The contractor will implement the Logistics Plan that will be put in place to improve the safety and reliability of deliveries to the Scheme, reduce congestion and minimise the environmental impact, such as CO2 emissions. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 1.2.1(i), 11.2.3 and Annex C which contains the Logistics Plan.</p> <p>Outline Logistics Plan paragraphs 1-3.</p> <p>Paragraph 11.4.52 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 11.5	Non-compliance with legal duty of care leading to a failure to meet the relevant statutory requirements for waste transfer and hazardous wastes (as appropriate).	<ul style="list-style-type: none"> ● The contractor will manage material resources use with the aim of maximising the environmental and the Scheme’s benefits from the use of surplus materials and reducing the adverse environmental effects and risks associated with disposal off-site. ● All waste arisings will be appropriately transported and disposed of by the contractor (or their sub- contractors) at permitted or designated sites. ● The final SWMP will include detailed procedures for compliance with the requirements for waste transfer notes, in accordance with the Waste (England and Wales) Regulations 2011, and arrangements for auditing the actions of other parties in the waste handling chain. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 11.7.2, 11.7.3, 11.7.4, 11.7.5 and</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
		<ul style="list-style-type: none"> The arrangements for registering the Scheme, consigning, handling and transporting hazardous wastes will be followed by the contractor in the context of duty of care and the specific consignment note procedures applicable under the Hazardous Waste (England and Wales) Regulations 2005 (SI 2005 No.894) or any succeeding relevant legislation. Where appropriate, the contractor will consider using the Environment Agency e-doc system with regards to fulfilling the duty of care requirements. 	<p>11.7.6.</p> <p>Paragraph 11.4.55 and Table 11.2 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 11.6	Non-compliance with the Scheme's and statutory requirements due to failure to appropriately monitor the material resource and waste procedures and plans.	<ul style="list-style-type: none"> The contractor will undertake regular audit and inspection of waste management activities to ensure compliance with the requirements of the CEMP, statutory controls and other Scheme policies and procedures relevant to the management of surplus excavated material and waste. The types, quantities and destination of waste arisings from the Scheme will be identified, measured and recorded by way of the Scheme's SWMP. This information will be reported on a periodic basis. A register of all waste loads leaving the site will be maintained by the contractor to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities, destinations and management methods. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 11.9.1, 11.9.2 and 11.9.3.</p> <p>Paragraph 11.4.45 and 11.4.55 of the ES (Application Document Reference 6.1).</p>
Chapter 12: Noise			
Construction Site Mitigation 12.1	Site preparation and construction noise.	<ul style="list-style-type: none"> A range of good site practices will be adopted in order to mitigate construction phase noise and vibration, as detailed in the CEMP, and in accordance with BS 5228-1:2009 + A1:2014. Examples of mitigation to be implemented include: <ul style="list-style-type: none"> selection of quiet and low vibration equipment; review of construction programme and methodology to consider low noise/low vibration methods (including non-vibratory compaction plant and low vibration piling methods, where required); optimal location of equipment on site to minimise noise disturbance; the provision of acoustic enclosures to static plant, where necessary; use of less intrusive alarms, such as broadband vehicle reversing warnings; local screening of equipment and employment of perimeter hoarding; and where existing noise barriers are removed during the construction works, replacement with temporary noise barriers. Where existing barriers are removed to facilitate construction works, they will be reinstalled (or replaced if in poor condition) as early as possible in the construction process. Whilst the permanent barriers are not in place, temporary noise barriers will be installed where practicable. Prior to the start of construction, the contractor will draw up a detailed schedule for the removal and reinstallation / replacement of existing acoustic barriers, and the installation of proposed new barriers, 	<p>DCO Schedule 2, requirements 3, 7, 8, 21 and 22.</p> <p>CEMP paragraphs 12.2.1, 12.2.2, 12.2.3, 12.2.4 and 12.3.1, 12.3.6 and 12.3.8.</p> <p>Paragraph 12.4.27 of the ES (Application Document Reference 6.1).</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
Construction Site Mitigation 12.1	Construction noise	<ul style="list-style-type: none"> Prior to the start of construction a written scheme for noise management during construction of the Scheme will be approved in consultation with the local planning authorities. The construction noise management scheme will include particulars of: <ul style="list-style-type: none"> the reasonable noise management measures to be taken in relation to noise resulting from the construction of the scheduled works; and a scheme for monitoring noise levels during the scheduled works to ensure compliance with the scheme and the effectiveness of the management measures. 	DCO Schedule 2, requirement 21.
Operational Mitigation 12.2	Increased road traffic noise.	<ul style="list-style-type: none"> Mitigation has been incorporated in the Scheme design in the form of additional noise barriers. Barriers will be located in the following locations: <ul style="list-style-type: none"> Eastbound: <ul style="list-style-type: none"> Chainage 48950 to 49020, Height 2m Chainage 49020 to 49070, On Bridge, Height 2m Chainage 49070 to 49150, Height 2m Chainage 26550 to 27340, Height 2m Chainage 20275 to 20400, Height 2m Chainage 25500 to 25625, On Bridge, Height 2m Chainage 19900 to 20020, Height 2m Chainage 20020 to 20275, On Bridge, Height 2m Westbound: <ul style="list-style-type: none"> Chainage 49020 to 49070, On Bridge, Height 2m Chainage 20275 to 20400, Height 2m Chainage 24250 to 24400, Height 2.4m Chainage 25500 to 25625, On Bridge, Height 2m Chainage 19900 to 20020, Height 2m Chainage 20020 to 20275, On Bridge, Height 2m Mitigation has been incorporated in the Scheme design in the form of low noise surfacing along the length of the Scheme. Relocation of drainage covers away from traffic lanes. 	DCO Schedule 2, requirements 3, 5, 7, 8, 10 and 22. CEMP paragraphs 12.2.1, 12.2.2, 12.2.3, 12.2.4, 12.3.1, 12.3.8 and 12.3.9. Appendix 12.2 of the ES (Application Document Reference 6.3).
Chapter 13: Effects on all Travellers			
Construction Mitigation 13.1	Speed and flow reductions associated with 50 mph speed limit.	<ul style="list-style-type: none"> Traffic management on the M4 will be in place during the phased construction period with clear and appropriate signage provided for alternative routing. Three narrower lanes will be maintained in each direction during peak times, with a reduced speed limit of 50 mph in place. A 24-hour recovery service will be provided over the complete length of the section of M4 under traffic management. 	DCO Schedule 2, requirements 7, 8 and 18. CEMP paragraphs 13.2.1, 13.2.2, 13.2.4, 13.2.5 and 13.5.5. Construction Traffic Management Plan ("CTMP") sections 2.0, 2.1, 2.2 and

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
			2.6. Paragraph 13.6.3 of the ES (Application Document Reference 6.1).
Construction Mitigation 13.2	Temporary closure of overbridges and underbridges during construction resulting in increased journey times.	<ul style="list-style-type: none"> Temporary road/public rights of way ("PRoW") closures will be required at overbridges, which are to be increased in span to accommodate the Scheme. Careful phasing and on-site management will be controlled through the CEMP to ensure that disruption and the duration of PRoW closure are kept to a minimum. Where the Scheme works impact directly on existing Public Rights of Way ("PRsoW"), they will be properly reinstated and returned to their pre-construction condition. The condition of the PRsoW will be recorded as part of the pre-construction surveys. During the construction period multiple bridges may be shut at the same time where the closure of one bridge has no effect on another. Bridge works at each location will take between 12 and 24 months, but this would be concurrent with other bridge locations. Where one bridge will be required to act as a diversion route during the closure of another, these will be replaced sequentially. Overnight closure of the whole M4 carriageway, eastbound and westbound, will be necessary at certain times to accommodate demolition and construction works on the overbridges. All side road crossings of the motorway will be reinstated such that the long term effects on non-motorised users will be neutral. 	DCO Schedule 2, requirements 7, 8 and 18. CEMP paragraphs 13.2.1, 13.2.2, 13.6 and 13.7.4. CTMP sections 2.0 and 2.4. Paragraph 13.6.4, 13.6.5 and 13.6 of the ES (Application Document Reference 6.1).
Construction Mitigation 13.3	Short term overnight lane and carriageway closures for construction activities, such as demolition of bridges and erection of gantries.	<ul style="list-style-type: none"> Prior to carriageway closures the contractor will liaise with emergency services, the Agency and local authorities so appropriate diversion routes or alternative arrangements for emergency vehicles can be arranged. Where motorway closures are required, diversions will be signed along the existing strategic diversion routes using adjacent local authority roads. Coordination will take place to avoid any significant local events and bank holidays when arranging overnight closures. Other night time restrictions will be in accordance with the Area 3 and Area 5 schedule of permitted traffic management. 	CTMP section 2.4, 2.5 and 2.6.
Construction Mitigation 13.4	Cumulative effect of adjacent scheme resulting in disruption to road users.	<ul style="list-style-type: none"> The Contractor will take appropriate actions, including the design and installation of traffic management schemes to mitigate the effects of the authorised development on traffic in combination with the effects of the concurrent construction of any other major developments, including HS2 and HEX. 	CEMP paragraph 13.5.2 d).
Chapter 14: Community and Private Assets			
Construction Mitigation 14.1	Lack of benefit to the local community from the employment or training opportunities provided by the construction works.	<ul style="list-style-type: none"> Use of a proportion of the workforce from local communities, development of skills via training programmes and apprenticeship schemes Conditions setting out requirements to be included within the Contractor's contract accordingly. Use of a proportion of the workforce from local communities, development of skills and training programmes, apprenticeship schemes. 	DCO Schedule 2, requirements 7 and 8. CEMP paragraphs 3.8, 3.11.1 and 3.11.2. Paragraph 14.4.13 and 14.4.5 of the ES (Application Document Reference 6.1).
Construction Mitigation 14.2	Traffic delays/unreliability of journey times during major cultural and recreational events and through conflict with adjacent schemes.	<ul style="list-style-type: none"> Communications Plan to be pursued through the CEMP. Co-ordination for major events will be discussed at regular Traffic Management Co-ordination meetings during the works. Bank Holiday periods will typically remain under narrow lanes traffic management, with all other traffic management minimised as practicably and safely as possible. There will be no lane or carriageway closures during these periods. 	DCO Schedule 2, requirements 7, 8 and 18.

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
		<ul style="list-style-type: none"> A traffic management working group (“TMWG”) will be formed for the Scheme at the construction phase. 	<p>CEMP Table 3.1 (Traffic Control Officer), paragraphs 4.3.7 and Annex E which contains the Outline Construction Traffic Management Plan (“CTMP”).</p> <p>CTMP paragraph 2.6.</p>
Construction Mitigation 14.3	Construction nuisance and impact on local residents and businesses.	<ul style="list-style-type: none"> Contractor to sign up to a Considerate Contractor’s scheme. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 3.8.</p> <p>Paragraph 14.4.5 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 14.4	Impact on operation of Reading motorway service area (“MSA”).	<ul style="list-style-type: none"> Appropriate temporary signage at appropriate locations to advise vehicular travellers of the continued operation of Reading MSA. 	<p>DCO Schedule 2, requirements 7, 8 and 18.</p> <p>CEMP paragraphs 13.2.1, 13.2.2 and 13.6.1.</p> <p>Paragraph 14.6.4 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 14.5	Impact of on-line construction of Marsh Lane overbridge on Dorney County Primary School.	<ul style="list-style-type: none"> Appropriate diversion for vehicular travellers to school; diversion to link in with the Jubilee River car park to enable continuation of ‘walk to school’ activities undertaken by the School. Continued consultation with school to minimise access disruption and to ascertain prior to bridge rebuilding whether a minibus service may be necessary. 	<p>DCO Schedule 2, requirements 7, 8 and 18.</p> <p>CEMP paragraphs 4.3.9 to 4.3.13, 5.6.2(m), 13.2.1, 13.2.5, 13.7.2 and 13.7.3.</p> <p>Paragraph 14.8.30 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 14.6	Impact of permanent and temporary land-take on landowners.	<ul style="list-style-type: none"> Continuation of consultation with landowners and occupiers to reduce land-take as far as possible and to help with management of day to day activities of residents/businesses 	<p>DCO Schedule 2, requirements 7, 8 and 18.</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
			CEMP paragraph 4.3.9 to 4.3.13.
Construction Mitigation 14.7	Impact of proposals on statutory utilities and landowners/occupiers.	<ul style="list-style-type: none"> Protective Provisions for the benefit of electricity, gas, oil, water and sewerage undertakers have been included in the DCO. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>DCO Schedule 10 contains protective provisions for statutory utilities.</p> <p>Paragraph 14.9.7, 14.6.14 and 14.10.26 of the ES (Application Document Reference 6.1).</p>
Construction Mitigation 14.8	Impact on pedestrian access to Cherry lane School.	<ul style="list-style-type: none"> The closures of Sipson Road subway will be restricted to periods of school holidays and/or weekends to maintain a pedestrian route to Cherry Lane School during term times. 	CEMP paragraph 5.3.1.
Construction Mitigation 14.9	Visual impact of motorway on Myrke allotment.	<ul style="list-style-type: none"> A close boarded fence (as shown on drawing H14 in Highways England's Highway Construction Details, http://www.standardsforhighways.co.uk/ha/standards/mchw/vol3/section1/h_series.pdf) will be provided along the southern edge of the motorway between approximate chainages 23+360 and 23+900 to screen the motorway from the Myrke allotments. 	CEMP paragraph 8.7.1
Chapter 15: Road Drainage and the Water Environment			
Water Resources (Construction) 15.1	Reduced water quality due to inappropriate working methods.	<ul style="list-style-type: none"> To ensure the quality of the water environment does not deteriorate during construction, a CEMP will document all construction phase mitigation measures. These will include a pollution control plan, standard best practices and relevant Pollution Prevention Guidelines ("PPGs"). Pursuant to the CEMP, method statements and management plans will be prepared by the successful contractor(s) detailing their approach to construction. These will include the control of site activities and the prevention of pollution by introducing measures including: <ul style="list-style-type: none"> Providing a suitable construction site drainage system including cut-off ditches or drains and Sustainable Drainage Systems ("SuDS"), or equivalent, with suitably sized treatment facilities such as settlement or detention basins; Completing flow attenuation ponds, pollution control ponds, swales and oil interceptors required for the permanent works before the start of earthwork operations. Obtaining the necessary consents for any soakaway or filtration systems or to enable discharge of surface water run-off from the construction site to watercourses or foul sewers or disposal off-site; Putting in place appropriate measures such as use of bunds of non-erodible material or silt or sediment fences adjacent to watercourses; Implementing a surface water or groundwater monitoring plan, particularly in relation to works that could affect aquifers or drilling works; and Adopting measures to comply with relevant PPG: temporary construction methods and CIRIA publications (including Control of water pollution from construction sites. Guidance for consultants and contractors (C532), Control of water pollution from linear construction projects. Technical guidance (C648), Control of water pollution from linear construction projects. Site guide (C649) and Site handbook for construction of SuDS (C698)). The contractor will comply with BS 6031 Code of Practice for earthworks regarding the general control of site drainage including, for example, all washings, dewatering, abstractions and surface water run-off, unless otherwise agreed by the employer's representative. The contractor will comply with The Control of Pollution (Oil Storage) (England) Regulations 2001 that apply in relation to storage of any oil-based materials including petrol, diesel, waste and vegetable and plant oil, but excluding uncut bitumen. 	<p>DCO Schedule 2, requirements 7, 8, 12 and 14.</p> <p>CEMP paragraphs 5.7, 9.3.9, 14.2.3, 14.2.6, 14.2.7, 14.3.1(a)-(e) and 14.4.1.</p> <p>Drainage Strategy Report paragraph 1.2.2.</p> <p>Paragraph 15.4.39, 15.4.40, 15.4.41 and 14.4.45 of the ES (Application Document Reference 6.1).</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
		<p>Above ground fuel and oil storage tanks will also comply with PPG2 which sets out requirements including those relating to positioning, specification, capacity, secondary containment and ancillary equipment for storage tanks. Stationary plant used by the contractor will be fitted with measures such as drip trays to retain any leakage of oil or fuel. The contractor will empty trays at regular intervals to prevent overflow.</p>	
<p>Water Resources (Construction) 15.2</p>	<p>Unmanaged abstraction of water resources.</p>	<ul style="list-style-type: none"> • If any water abstraction is required as part of the construction process, the Environment Agency will be contacted and the appropriate licences will be obtained. Any abstraction practices will be in accordance with the guidelines and requirements of these licences. 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP Table 3.1 and paragraphs 3.3.1(e) and 3.14.1 (in relation to environmental licences generally).</p> <p>Paragraph 15.4.42 of the ES (Application Document Reference 6.1).</p>
<p>Water Resources (Construction) 15.3</p>	<p>Unmanaged surface water run-off, ground water seepage and dewatering during construction.</p>	<ul style="list-style-type: none"> • Particular attention needs to be given to areas where dewatering will occur. This could include: <ul style="list-style-type: none"> ○ estimating the surrounding area potentially impacted by dewatering (e.g. use anticipated pump rates, rate of recharge etc.); ○ identifying all receptors susceptible to groundwater level changes (public and private); ○ minimising dewatering as far as practicable; ○ containing poor quality discharge water and treat prior to disposal; ○ undertaking measurements in boreholes (subject to permission); 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraph 14.6.3.</p> <p>Paragraph 15.4.46 of the ES (Application Document Reference 6.1).</p>
<p>Water Resources (Construction) 15.4</p>	<p>Reduced water quality due to inappropriate working methods and inadequate staff training.</p>	<ul style="list-style-type: none"> • Method statements for works in sensitive locations, such as over or adjacent to watercourses, will also be produced. These will include details of the environmental protection measures to be implemented. • As with many major construction projects, working areas are likely to affect existing, minor drainage channels and ditches. The mitigation for such effects is well understood (PPG 5 and 6) and includes: <ul style="list-style-type: none"> ○ Ensure appropriate bunding for construction areas and compounds, in particular compounds partially located within the floodplain (Compounds 5 and 7) and construction areas associated with works to the overbridges located in the floodplain at Ascot Road, Monkey Island Lane, Riding Court Road and Wood Lane. For any bunding the base and bund walls should be impermeable to the material stored and able to contain at least 110% of the volume stored. Spill kits should be located near drains; ○ The routes of any temporary traffic diversions should be planned and the routes should be covered by drainage Incident Plans; ○ Procedures for concreting, cement mixing and washing areas should be sited 10m from any watercourse or surface water drain to minimise the risk of run off entering a watercourse. Wash waters from any concrete and cement works should never be discharged into the water environment; ○ In any wash down areas ensure plant and wheel washing is carried out in a designated area of hard standing at least 10m from any watercourse or surface water drain; ○ The disposal of surface water runoff from excavations which may be contaminated with silt, consider the use of silt fences at the toe of slopes, made from geotextiles, to reduce silt transport. Minimise the amount of exposed ground and soil stockpiles from which the water drains and the period of time such water drains. 	<p>DCO Schedule 2, requirements 7, 8 and 14.</p> <p>CEMP Table 3.1 (EAD) and paragraphs 3.11.2, 5.7.2 d), 10.3.2, 14.2.2, 14.2.3 and 14.2.7 (a)-(d).</p> <p>Flood Risk Assessment ("FRA") paragraphs 5.1.17 and 5.1.41</p> <p>Paragraph 15.4.43 and 15.4.50 a) – e) of the ES (Application Document Reference 6.1).</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
		<ul style="list-style-type: none"> Any contractor will be required to demonstrate that all site managers, supervisors, foremen and operatives, together with security staff, will be provided with the relevant environmental training and awareness of site procedures and best construction practice. 	
Water Resources (Construction) 15.5	Reduced water quality due to inadequate emergency response procedures.	<ul style="list-style-type: none"> The CEMP will include an emergency preparedness and response plan. This will provide a full list of protocols and communication channels with the EA in the event of a pollution incident. 	<p>DCO Schedule 2, requirements 7 and 8. CEMP paragraphs 3.10.1, 5.7.10 - 5.7.13 and 10.4.1 j).</p> <p>Paragraph 5.4.48 of the ES (Application Document Reference 6.1).</p>
Flood Risk (Construction) 15.6	Increased flood risk due to inappropriate working methods.	<ul style="list-style-type: none"> Consultation with the EA and Lead Local Flood Authority will also be required where any of the Scheme lies within 20m of a stated designated main river or ordinary watercourse listed below. Such watercourses are ordinarily subject to byelaw control and consent would also be required under the Water Resources Act 1991 for works on, over or within the main river channel, including temporary works required for construction purposes and the construction of surface water outfalls. Construction activities will be undertaken by the Contractor taking into consideration the requirements to avoid any increase in flood risk. Appropriate measures, such as keeping watercourses clear of obstructions and debris to reduce blockage risk, will be implemented by the Contractor throughout the works in order to prevent potential flooding events. During the construction phase, there could be an increased mobilisation of silt in the surface water runoff. However, with good site management practice, the construction works are anticipated to generate only minor changes from the existing situation. Additional siltation or any blocked drains or areas where ponding occurs are likely to be identified earlier and remedial action will be taken to prevent flood events occurring. 	<p>DCO Schedule 2, requirements 3, 7, 8, 14 and 23.</p> <p>CEMP paragraphs 14.2.1, 14.2.2, 14.2.5, 14.7.1 14.7.2, 14.7.3.</p> <p>Drainage Strategy Report paragraphs 1.4.1. and 3.1.17.</p> <p>Flood Risk Assessment ("FRA") paragraph 9.1.3.</p> <p>Paragraph 1.4.51 and 15.4.54 of the ES (Application Document Reference 6.1).</p>
Flood Risk (Construction) 15.7	Increased flood risk due to inadequate emergency response procedures.	<ul style="list-style-type: none"> An Emergency Flood Response Plan is to form part of the CEMP. This plan will set out: <ul style="list-style-type: none"> What to do before a flood (to include the locations at risk of flooding and the sources of flooding); What to do during a flood (to include information about local volunteers/flood wardens, important telephone numbers and arrangements between authorities); and What to do after a flood (review the list of companies and reputable contractors whose help could be required after a flood). 	<p>DCO Schedule 2, requirements 7 and 8.</p> <p>CEMP paragraphs 14.7.3 and 14.7.7.</p> <p>Paragraph 15.4.52 a) – c) of the ES (Application Document Reference 6.1).</p>
Flood Risk (Construction) 15.8	Increased flood risk at construction compounds 5 and 7 due to inappropriate site layout and inadequate emergency	<ul style="list-style-type: none"> Construction compounds 5 and 7 are partially (4% and 27% of total compound areas respectively) located in the 1 in 100 year plus climate change floodplain. 	DCO Schedule 2, requirements 7 and 8.

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
	response procedures.	<ul style="list-style-type: none"> Existing ground levels will be maintained within the areas of the compounds that are in the floodplain and the use of these areas to accommodate welfare or office facilities should be avoided. During construction the contractor(s) will be required to monitor EA Flood Warnings, and take action to minimise the effect of flooding. If flood warnings are given, action will include the removal of plant and materials from those compounds prior to flood events. If movement is not practical, protective measures will be undertaken to safeguard the construction compounds. So far as practicable, the storage of material within the floodplain will be prohibited. 	<p>Flood Risk Assessment ("FRA") paragraphs 5.1.17 and 5.1.41</p> <p>CEMP paragraphs 5.6.2(f), 14.2.5 and 14.7.2.</p> <p>Table 15.14 and Paragraph 15.4.53 of the ES (Application Document Reference 6.1).</p>
Water resource (operational) 15.9	Reduced water quality and increased run-off due to inappropriate design and working methods.	<ul style="list-style-type: none"> The Drainage Strategy is based on the principle to not pollute the water environment. The Agency has a proprietary approach to drainage design as detailed in Volume 4, Section 2, Part 9 (HA 119/06) which has been used to inform the Drainage Strategy for the Scheme. In accordance with HA 119/06, IAN 161/13 and the NN-NPS the Drainage Strategy has incorporated SuDS within the drainage design and it is proposed to use soakaways as part of the attenuation for the Scheme. When considering road runoff, relevant pollutants and their limiting concentrations need to be identified. Discharges from roads must not lead to a deterioration in the classification status of the receiving surface water body as determined in the relevant River Basin Management Plan. The assessment of Spillage Risk will be carried out during the detailed design phase of the Scheme. Where there is a significant modification of the drainage system, a Highways Agency Water Risk Assessment Tool ("HAWRAT") assessment will be undertaken for all outfalls within the Order limits as per the Agency's design guidance. This will confirm the environmental risk as a result of the Scheme, which will then be dealt with through the design to ensure the water quality will not deteriorate compared to the existing situation. The Scheme will include measures to augment or replace the existing drainage system in the motorway. The new measures will be specified during the HAWRAT, the deployment of this tool will ensure mitigation measures are included to ensure water quality will not deteriorate compared to the existing situation. Mitigation measures likely to be included will be interceptors and sluices. Realignment of ditches will only be considered if other options are not possible. Careful consideration of the design of the new river channel will be undertaken to ensure that it is geomorphically stable (i.e. the design does not result in increased erosion or deposition). Any channel realignments would be designed to account for the following: <ul style="list-style-type: none"> Reduction/increase in the channel length due to alteration of channel planform, potentially impacting channel gradient and consequentially flow and sediment dynamics; and Incorporation of geomorphological and ecological features. 	<p>DCO Schedule 2, requirements 7, 8 and 14.</p> <p>CEMP paragraphs 5.6.2(c), 14.3.1(a), 14.5.1, 14.8.1 and 14.8.2.</p> <p>Drainage Strategy Report paragraphs 1.2.2, 1.3.15, 1.3.16, 1.3.17, 1.4.1, 3.1.6 - 3.1.10 and 3.1.19.</p>
Flood Risk (Operational) 15.10	Increased flood risk resulting from construction in 1 in 100 year plus climate change floodplain	<ul style="list-style-type: none"> Works are required within the 1 in 100 year plus climate change floodplain at the following overbridge sites: Ascot Road, Monkey Island Lane, Wood Lane and Riding Court Road. Works at the Windsor Rail Bridge, Bray Bridge, several carriageway widening sites and two Emergency Refuge Areas will also encroach into the 1 in 100 year plus climate change floodplain. Mitigation to compensate for any loss of floodplain as a result of these works will be provided by the provision of a floodplain compensation scheme at each site. Compensation storage will be provided on a level for level or volume for volume basis and assessments have demonstrated that in each case sufficient land is available adjacent to the proposed works and within the Order limits to provide flood compensation. Each area of compensation storage will be connected to the adjacent floodplain via a suitable hydraulic link. These links will take the form of existing and new ditches and pipe culverts. Invert levels of the connecting features will be set to ensure that floodwaters (up to the 1 in 100 year plus climate change event) can be conveyed by gravity into the flood compensation areas during flood events and drain back towards watercourses after a flood event has receded, thereby providing flood compensation areas with capacity to contain flood waters during the next flood event. A 300mm freeboard provision would also be included where culverts or pipes provide the hydraulic link. The precise arrangement of any required floodplain compensation and associated hydraulic links will be confirmed following further assessment during the detailed design phase. 	<p>DCO Schedule 2, requirements 3, 7, 8, 14 and 23.</p> <p>FRA paragraphs 5.1.23, 5.1.28, 5.1.25, 5.1.38 and 5.1.48 and Section 6.</p> <p>Paragraph 15.4.55, 15.4.56, 15.4.57, 15.4.72d, 15.4.6 and 15.4.64 of the ES (Application Document Reference 6.1).</p>

Reference	Potential impact/Risk	Mitigation/enhancement	Method of delivery
Flood Risk (Operational) 15.11	Increased flood risk resulting from inadequate maintenance regime.	<ul style="list-style-type: none"> • Currently the maintenance regime is to rectify the causes of flood events that impact on the motorway. These maintenance requirements will continue to ensure that the risk of flooding from the Scheme will remain low. • When any failure of the drainage system occurs that results in flood events, this will be repaired or replaced, as required, to maintain the integrity of the drainage system, thereby managing the risk of flooding over the lifetime of the Scheme. 	DCO Schedule 2, requirements 7, 8, 14 and 23. The HEMP will set out the proposed strategy for the future maintenance and management of all environmental areas and mitigation (see CEMP paragraph 1.3.4(c)). Drainage Strategy Report paragraphs 1.3.18 and 3.1.17. Paragraph 15.4.62 of the ES (Application Document Reference 6.1).