A12 Chelmsford to A120 Widening Scheme TR010060

6.5 First Iteration Environmental Management Plan

Appendix A: Register of Environmental Actions and Commitments (REAC)

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 6

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Infrastructure Planning

Planning Act 2008

A12 Chelmsford to A120 widening scheme

Development Consent Order 202[ ]

First Iteration Environmental Management Plan

Appendix A: Register of Environmental Actions and Commitments (REAC)

Regulation Reference	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010060
Application Document Reference	TR010060/APP/6.5
Author	A12 Project Team & National Highways

Version	**Date**	**Status of Version**
Rev 5	November 2023	Submission to Secretary of State 24 November 2023
Rev 4	July 2023	Deadline 7
Rev 3	June 2023	Deadline 6

Rev 2	April 2023	Deadline 4
Rev 1	August 2022	DCO Application

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Appendix A Register of Environmental Actions and Commitments (REAC)

Table A.1 Register of Environmental Actions and Commitments

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
GN1	Chapter 2: The proposed scheme, of the Environmental Statement (ES) [TR010060/APP/6.1] First iteration Environmental Management Plan (EMP) [TR010060/APP/6.5]	Preparation of a second iteration EMP	A second iteration Environmental Management Plan (EMP) would be prepared and approved by the Secretary of State for Transport prior to commencement of any works. The second iteration EMP would detail the measures that shall be undertaken prior to, and during construction of the proposed scheme. The construction of the proposed scheme must be carried out in accordance with the approved second iteration EMP. The second iteration EMP must be based on, and incorporate, the requirements of the first iteration EMP [TR010060/APP/6.5] and shall include the implementation of industry standard practice and control measures for environmental impacts arising during construction. The second iteration EMP would incorporate (as a minimum) and adhere to the supporting management plans presented within the first iteration EMP [TR010060/APP/6.5]. These plans include: • Archaeological Management Plan • Construction Compound Management Plan • Contaminated Land Management Plan • Dust Management Plan • Emergency Procedures and Record of any Environmental Incidents • Energy and Resource Use Management Plan	Yes (as defined per each management plan).	To ensure the EMP is appropriate to the project phase and the scope of works delivered by the Principal Contractor.	The assessment assumes that the EMP would be implemented throughout the construction phase of the proposed scheme.	Secretary of State for Transport approval of the second iteration EMP.	Principal Contractor	Pre-construction	Development Consent Order (DCO) Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• Invasive Species Management Plan • Landscape and Ecology Management Plan • Materials Management Plan • Noise and Vibration Management Plan • Site Waste Management Plan • Soil Handling Management Plan • Water Management Plan							
GN2	Chapter 2: The proposed scheme, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Training	Construction workers would undergo training to increase their awareness of environmental issues where appropriate to their role. Topics would include but not be limited to: • Dust management and air quality control • Location and protection of sensitive environmental sites and features (including buffer zones where appropriate) • Noise management • Water receptors present onsite and working in or near watercourses • Surface water pollution and control, for example silt management • Identification of contaminated land • Use of spill kits and emergency response procedures • Agreed traffic management measures (e.g. haulage routes, carriageway restrictions, carriageway closures and diversions)	No	To reduce environmental impacts.	The assessment assumes that construction workers would undergo training prior to any construction works.	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction and during construction	DCO Requirement 3
GN3	Chapter 2: The proposed scheme, of the ES [TR010060/APP/6.1]	Construction Traffic Management Plan	A Construction Traffic Management Plan would be developed and implemented based on the measures and approaches detailed within the Outline Construction Traffic Management Plan	No	To ensure continued performance of transport network, protect	The assessment assumes that measures outlined in the	Development and implementation of the Construction Traffic Management Plan.	Principal Contractor	Pre-construction	DCO Requirement 9

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	Outline Construction Traffic Management Plan [TR010060/APP/7.7] First iteration EMP [TR010060/APP/6.5]		[TR010060/APP/7.7]. The Construction Traffic Management Plan would include but not be limited to information on: • Traffic management measures • Carriageway restrictions • Carriageway closures and diversions		safety for all travellers and minimise disruption to communities.	Construction Traffic Management Plan would be followed during the construction phase.				
GN4	Chapter 12: Noise and Vibration, of the ES [TR010060/APP/6.1]	Construction Phase Communications Plan	A Construction Phase Communications Plan would be developed and implemented, detailing the approach to managing external communications to stakeholders and communities.	No	To ensure appropriate advanced notifications are given to stakeholders and communities.	N/A	Development and implementation of the Construction Phase Communications Plan.	Principal Contractor	Pre-construction	DCO Requirement 3
GN5	First iteration EMP [TR010060/APP/6.5]	Haul Road Management Plan	A Haul Road Management Plan will be developed and implemented, detailing the measures that shall be undertaken to control the environmental impacts during construction and operation of the temporary haul roads of the proposed s	No	To ensure the environmental impacts of the haul roads are managed appropriately across the proposed scheme.	Assessment assumes good practice mitigation measures would be followed during the construction phase.	Development and implementation of the Haul Road Management Plan.	Principal Contractor	Pre-construction	DCO Requirement 3
AQ1	Chapter 6: Air quality, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Dust Management Plan [TR010060/APP/6.5]	Dust Management Plan	A Dust Management Plan (DMP) would be developed and implemented based on the DMP in the first iteration EMP [TR010060/APP/6.5]. The DMP would adopt a range of industry standard good practice construction phase dust mitigation and monitoring measures, and general control measures in compliance with Design Manual for Roads and Bridges (DMRB) LA 105, relating to: • Dust management • Demolition and earthworks activities • Surfacing works • General and site specific construction activities and locations • Community liaison	Yes (as defined in the Dust Management Plan).	To ensure fugitive dust is managed appropriately across the proposed scheme.	Assessment assumes good practice mitigation and monitoring measures would be followed during the construction phase.	Development and implementation of the Dust Management Plan [TR010060/APP/6.5]. Regular inspections of receptors to monitor dust. Recording of inspection results and making logs available to the relevant local authority upon request.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			These measures would be consulted on with affected local authorities pre-construction. These measures would be applied during all works undertaken based on the level of construction dust risk at sensitive receptors.							
CH1	Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Archaeological Management Plan [TR010060/APP/6.5]	Archaeology	An Archaeological Management Plan (AMP) would be developed and implemented based on the measures and approaches detailed within the AMP in the first iteration EMP [TR010060/APP/6.5].	No	To manage the historic environment and ensure it is protected in a consistent and integrated manner across the proposed scheme.	The assessment assumes that the AMP would be implemented throughout pre-construction and construction phase of the proposed scheme.	Implementation of the AMP [TR010060/APP/6.3].	Principal Contractor	Pre-Construction as part of advanced works and during construction	DCO Requirement 7
CH2	Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1] Appendix 7.10: Archaeological Mitigation Strategy, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Archaeology	Implement the measures and approaches set out within the Archaeological Mitigation Strategy (AMS) [TR010060/APP/6.3], subject to the outcome of ongoing consultation with the relevant stakeholders. The Written Scheme of Investigation (WSI) shall be prepared based on the Archaeological Mitigation Strategy (AMS) [TR010060/APP/6.3] and Archaeological Management Plan (AMP) [TR010060/APP/6.5] and shall define the details of specific mitigation measures for protection or recording of heritage assets that would be implemented before or during construction at locations identified within the AMS and AMP. The WSI shall set out the arrangements and responsibilities for implementing, monitoring and auditing the mitigation measures identified in the WSI for the recording and protection of heritage assets before or during construction, including the roles of the local authority Curators and Historic England.	Yes (as defined in the AMS).	To ensure that all archaeological works are undertaken in accordance with an approved strategy.	The assessment assumes that the measures and approaches as set out within the AMS and further refined in the written scheme of investigation (WSI) would be implemented throughout pre-construction and construction phase of the proposed scheme.	Implementation of the WSI informed by the AMS [TR010060/APP/6.3]. A post-excavation report will be completed within one year of completion of the mitigation works.	Principal Contractor	Pre-construction as part of advanced works and during construction	DCO Requirement 7

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			The WSI shall include proposals for the publication of the results of the mitigation investigations, and for the deposition of the resulting archaeological and archive.							
CH3	Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Cultural Heritage	Use of sympathetic designs or materials, where practicable, to respect the settings of sensitive built heritage receptors during the construction or operational phases.	No	To minimise impact of works to built heritage.	N/A	Implementation of the second iteration EMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3
CH4	Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Landscape and Ecology Management Plan (LEMP) [TR010060/APP/6.5]	Cultural Heritage	Implementation of good construction working principles and considerate working practices during the utility works within the Kelvedon Conservation Area (Asset 566) and affecting the adjacent listed buildings in order to avoid, as far as practicable, the effects of noise, vibration, dust and construction traffic. No trees would be removed, and historic street furniture would also be protected during construction. The works would be 'made-good' with appropriate materials and quality hard surfaces finishes to match the character and appearance of the conservation area.	No	To reduce, as far as practicable, the impact of works within Kelvedon Conservation Area.	N/A	Implementation of the second iteration EMP and LEMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3
CH5	Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1] Appendix 7.10: Archaeological Mitigation Strategy, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Archaeology	A programme of archaeological excavation and investigation of Palaeolithic and Quaternary Deposits would be developed and implemented, subject to the outcome of ongoing consultation with the stakeholders. Full details of the scope and extent of the required work are contained in the Archaeological Mitigation Strategy in Appendix 7.10 of the Environmental Statement [TR010060/APP/6.3]. The Written Scheme of Investigation (WSI) shall be prepared based on the Archaeological Mitigation Strategy (AMS) [TR010060/APP/6.3] and Archaeological Management Plan (AMP) [TR010060/APP/6.5] and shall define the details of specific mitigation measures for protection or recording of heritage assets that would be implemented	Yes (as defined in the AMS).	To record archaeological sites prior to impact from construction of the proposed scheme.	Effects on sites and features of known or potential value.	Implementation of the WSI informed by the AMS [TR010060/APP/6.3].	Principal Contractor	Construction	DCO Requirement 7

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			before or during construction at locations identified within the AMS and AMP. The WSI shall set out the arrangements and responsibilities for implementing, monitoring and auditing the mitigation measures identified in the WSI for the recording and protection of heritage assets before or during construction, including the roles of the local authority Curators and Historic England. The WSI shall include proposals for the publication of the results of the mitigation investigations, and for the deposition of the resulting archaeological and geoarchaeological archive.							
LV1	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Soil Handling Management Plan [TR010060/APP/6.5]	Bunds	Topsoil and subsoil to be stripped from temporary works areas such as sites proposed for construction compounds and areas allocated for the stockpiling of materials. Where practicable, stripped soil to be stored in grass seeded bunds around the perimeter of the temporary works and construction areas including borrow pits to provide temporary visual screening. Stockpile heights would not exceed 4m for topsoil and 6m for subsoil, and would be kept as low as practicable.	No	Minimise visual impacts of the proposed scheme during construction.	Where not practicable to store soil in grass seeded bunds around the perimeter of the temporary works and construction areas, including borrow pits, soil would be stored in soil storage areas illustrated on Figure 2.3 of the ES [TR010060/APP/6.2] and the Construction Phase Plans [TR010060/APP/2.15].	Implementation of the Soil Handling Management Plan [TR010060/APP/6.5].	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 3
LV2	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1]	Bunds	Where environmental bunds are proposed as part of both the construction and permanent works, they would be constructed as early as is practicable and seeded to provide screening of the	No	Minimise noise and visual impacts of the proposed scheme	The maximum and minimum heights of bunds to	Implementation of the Soil Handling Management Plan [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5] Soil Handling Management Plan [TR010060/APP/6.5]		construction work. There would be grass seeded bunds at least 2m high around the southern and western sides of junction 20b main compound and around the perimeter of junction 22 main compound. Breaks in the bunds would be required for utilities.		during construction.	meet the objectives are as set out in LV1 and LV2.				
LV3	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Consideration would be given during detailed design stage to the type of site security fencing near large construction compounds, proposed structures, listed buildings and residential properties to provide an additional temporary screening function.	No	Minimise visual impacts of the proposed scheme during construction.	Fencing around main compounds would be chain link. Fencing around satellite compounds would be heras fencing.	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
LV4	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] Retained and Removed Vegetation Plans [TR010060/APP/2.14] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Retention of vegetation	Existing vegetation within the Order Limits including temporary works areas would be retained as far as reasonably practicable. Particular attention would be given to the retention of mature vegetation including the following, which would be retained in accordance with, as a minimum, the Retained and Removed Vegetation Plans [TR010060/APP/2.14]. Vegetation to be removed is shown on the same plan. • Ancient, veteran and notable trees (both verified and potential) • Trees subject to tree preservation orders • Specimen trees • Category A and B trees • Important hedgerows • Ancient woodlands All trees to be retained would be protected throughout the construction period in accordance with BS 5837:2012	No	Minimise landscape and visual impacts of the proposed scheme during construction. Protection of trees.	N/A	Implementation of the LEMP [TR010060/APP/6.5]. Measures implemented as indicated and included in the Retained and Removed Vegetation Plans [TR010060/APP/2.14]. Protective measures in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.	Principal Contractor	Pre-construction as part of advanced works and during construction	DCO Requirement 5

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			Trees in relation to design, demolition and construction – Recommendations. Where it is necessary to remove trees subject to tree preservation orders, such as in front of Boreham House, and trees within the Chelmer and Blackwater Navigation Conservation Area, they would be replaced on completion of construction using the same or similar species to that removed as close to the location of the original as practicable, subject to consideration of species with regards to climate change and resilience to pests and disease.							
LV5	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] Retained and Removed Vegetation Plans [TR010060/APP/2.14] Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Trees	Works to Tree Preservation Orders, veteran, ancient and notable trees would be supervised by the Ecological Clerk of Works (ECoW) and supported by an experienced arboriculturist. In the event tree canopy pruning is required to facilitate the works, this would be undertaken by qualified and competent staff working to BS 3998:2010 Tree work – Recommendations.	No	Protection of trees.	Tree Preservation Orders, veteran, ancient and notable trees are as identified within Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3]. Legal status of tree feature would be checked again prior to works affecting trees commencing.	Implementation of the LEMP [TR010060/APP/6.5]. Measures implemented as indicated and included in the Retained and Removed Vegetation Plans [TR010060/APP/2.14] and within Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3]. Pruning undertaken in accordance with BS3998: 2010 Tree work – Recommendations.	Principal Contractor	Construction	DCO Requirement 5
LV6	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] Retained and Removed Vegetation Plans	Arboricultural Method Statement and Tree Protection Plan	An Arboricultural Method Statement and Tree Protection Plan would be prepared during the detailed design phase, refined following final design agreement and in place prior to works affecting trees commencing and appended to the EMP. The Arboricultural Method Statement and Tree Protection Plan would include	No	Protection of trees.	N/A	Implementation of the LEMP [TR010060/APP/6.5]. Measures implemented as indicated and included in the Retained and Removed	Principal Contractor	Pre-construction	DCO Requirement 5

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	[TR010060/APP/2.14] Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]		areas of special measures to protect and retain features that would be subject to encroachment and localised removal. This would be based on the special measure areas, construction exclusion zones and outline tree protection measures presented within the Arboricultural Impact Assessment (Appendix 8.4 of the Environmental Statement [TR010060/APP/6.3]).				Vegetation Plans [TR010060/APP/2.14] and within Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3]. Arboricultural Method Statement and Tree Protection Plan to be in place prior to works affecting trees commences.			
LV7	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] Retained and Removed Vegetation Plans [TR010060/APP/2.14] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Planting	Where it would be necessary to remove vegetation within temporary works areas, such as construction compounds, utility routes, haul roads and regrading areas, this would be replaced on completion of construction using the same or similar species to that removed where practicable (subject to restrictions to planting over and around pipeline easements and consideration of species with regards to climate change and resilience to pests and disease, and landowner agreement). All land used temporarily would be restored and returned to an appropriate condition relevant to its previous use wherever practicable and appropriate, including the ripping, minor regrading and re-spreading of topsoil. Hedgerows, fences and walls would be reinstated to a similar style and quality to those that were removed with landowner agreement.	No	To ensure all planting is undertaken in accordance with best practice and achieves its intended function.	N/A	Implementation of the LEMP [TR010060/APP/6.5]. Measures implemented as indicated and included in Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2], Retained and Removed Vegetation Plans [TR010060/APP/2.14] and within Appendix 8.4: Arboricultural Impact Assessment, of the ES [TR010060/APP/6.3].	Principal Contractor	Pre-construction as part of advanced works and during construction	DCO Requirement 5
LV8	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Soil	No topsoil would be incorporated within grassland areas on new earthworks to create low nutrient substrate suitable for species rich grassland establishment and increase local biodiversity where reasonably practicable, in accordance with Major Project Instructions (Highways England, 2020). Low nutrient	No	To ensure the successful establishment of low nutrient grassland.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 5

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	LEMP [TR010060/APP/6.5]		grassland would be seeded along highway verges and at junctions							
LV9	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Soil Handling Management Plan [TR010060/APP/6.5]	Soil	Locally extracted soil would be replaced as close to its source of origin as reasonably practicable, and appropriate to the design, including within utility trenches.	No	To reduce the risk of spreading noxious weeds and retain local seed bank balance.	N/A	Implementation of the Soil Handling Management Plan [TR010060/APP/6.5].	Principal Contractor	Pre-construction as part of advanced works and during construction	DCO Requirement 3
LV10	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Planting	Opportunities for planting early in the construction phase would be sought where practicable.	No	Minimise visual impacts of the proposed scheme during construction.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 5
LV11	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Lighting	Temporary lighting would be provided to ensure safe working conditions and to maintain security within construction compounds and working areas. Best practice measures would be implemented where practicable to ensure temporary lighting is avoided or directed away from heritage assets, residential and/or ecological receptors such as watercourses, woodland, badger setts, bat roosts and important commuting habitats.	No	To minimise light spill during construction of the proposed scheme and control effects of lighting to biodiversity.	N/A	Measures to meet BS 5489 standard (British Standards Institution, 2020) and guidance notes from the Institution of Lighting Professionals, including Guidance Note 01/21 – The Reduction of Obtrusive Light (2021) and Guidance Note 08/18 – Bats and Artificial Lighting in the UK (2018).	Principal Contractor	Construction	DCO Requirement 3
LV12	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Landscape design	Refinement of the design of earthworks, where space and material are available, to create natural gradients and slopes that achieve better integration with the surrounding landform.	No	To ensure all landscaping is undertaken in accordance with best practice.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
LV13	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Trees	Routes of final utility diversions and the gas main diversion and methods of construction to be refined to retain as much existing vegetation as practicable, in particular mature vegetation and woodland.	No	Protection of trees.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
LV14	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Trees	Replanting along the easement of the gas main diversion would be carried out in accordance with utility company's guidance and best practice standards. Where woodland vegetation is lost and trees cannot be replaced *in situ* due to the restrictions of utility easements, native shrub planting would be used in line with the relevant utility company's guidance. Where tree lines and tree belts are lost and cannot be replaced due to the restrictions of utility easements, native hedgerow planting would be used in line with the relevant utility company's guidance.	No	To ensure all planting is undertaken in accordance with best practice and achieves its intended function.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 5
LV15	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Gas pipeline	Working width for the installation of the gas main diversion would be reduced as far as reasonably practicable through woodland and where the gas main diversion crosses through hedgerow field boundaries. All main river crossing(s) would be installed using trenchless techniques, such as horizontal drilling. Directional drilling would be considered where practicable.	No	Minimise visual impacts of the proposed scheme during construction.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Detailed design and during construction	DCO Requirement 3
LV16	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	LEMP	The Landscape and Ecology Management Plan (LEMP) would be developed and implemented based on the measures and approaches detailed within the LEMP in the first iteration EMP [TR010060/APP/6.5]. The second iteration EMP would include measures to improve the condition and structure of retained hedgerows where practicable, for example through incorporation of trees, coppicing of existing trees, and planting of gaps.	Yes (as defined in the LEMP).	To ensure all landscaping is undertaken in accordance with best practice and achieves its intended function and to ensure successful establishment of all planting and seeding areas.	The Landscape Architect would oversee planting and undertake inspections during the establishment period.	Sign off of the LEMP [TR010060/APP/6.5] by the Secretary of State for Transport in consultation with relevant local authorities. Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 5

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
						Following this period, the long-term management, maintenance and monitoring of the soft estate would pass to National Highways.				
LV17	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5] Design Principles document [TR010060/APP/7.10]	Landscape design	The landscape proposals illustrated on the Environmental Masterplan Figure 2.1 [TR010060/APP/6.2] would be refined at the detailed design stage based on the design principles presented within the Design Principles document [TR010060/APP/7.10], including design principles for landscape, veteran trees and borrow pit restoration. Where practicable, the layout of new trees and hedgerows would seek to replicate historically lost hedgerows and field patterns appropriate to the character of the area.	No	To ensure landscape design achieves its intended function.	N/A	Implementation of the design principles within the Design Principles document [TR010060/APP/7.10].	Principal Contractor	Detailed design	DCO Requirement 10
LV18	Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Landscape maintenance	A five-year aftercare period as outlined within the LEMP, which is appended to the first iteration EMP [TR010060/APP/6.5], would be established for all soft environmental features of the proposed scheme.	Yes	To ensure all landscaping is undertaken in accordance with best practice and achieves its intended function.	The long-term management, maintenance and monitoring of the soft estate would pass to National Highways.	Implementation of the LEMP [TR010060/APP/6.5].	National Highways	Operation	DCO Requirement 5
BI1	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site clearance	An ECoW would be available during the phase of site clearance to assess and advise on retention of habitats. The ECoW would assess each area prior to clearance commencing and would advise whether full ECoW supervision is required for the work. If full ECoW supervision is not required, the ECoW	No	To avoid loss of habitats with importance to wildlife.	The assessment assumes that the ECoW would supervise clearance of habitats	Site clearance or demolition works would not be carried out on any area until the ECoW has confirmed that there are no biodiversity constraints	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 8

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			would 'sign off' clearance of that particular area.			where there is potential for impacts.	to undertaking the works.			
BI2	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Retained and Removed Vegetation Plans [TR010060/APP/2.14] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Site layout and arrangement	Exclusion zones would be marked where appropriate around protected habitat areas such as trees, woodlands, hedgerows and watercourses to avoid accidental damage in accordance with the Retained and Removed Vegetation Plans [TR010060/APP/2.14]. Marking of protected areas would be based on proximity and risk of encroachment, and based on these factors, markings may include physical barriers or signage. Construction compounds would be fenced off.	No	To minimise impacts to habitats and protected and notable species.	N/A	Implementation of the LEMP [TR010060/APP/6.5]. Measures implemented as indicated and included in the Retained and Removed Vegetation Plans [TR010060/APP/2.14].	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 5
BI3	Retained and Removed Vegetation Plans [TR010060/APP/2.14] Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Local Nature Reserve/Local Wildlife Site	Exclusion zones would be marked around Brockwell Meadows Local Wildlife Site (LWS) which is adjacent to the Order Limits, and around retained parts of Whetmead Local Nature Reserve (LNR)/LWS,Riverview Meadows LWS and Blue mills proposed LWS in accordance with the Retained and Removed Vegetation Plans [TR010060/APP/2.14].	No	To protect LWSs/LNRs and prevent harm to wildlife.	Types of fencing would be considered further during detailed design.	Implementation of the LEMP [TR010060/APP/6.5]. Measures implemented as indicated and included in the Retained and Removed Vegetation Plans [TR010060/APP/2.14].	Principal Contractor	Construction	DCO Requirement 5
BI4	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Construction programme	Works would be timed to avoid sensitive periods for protected species where reasonably practicable and appropriate. Where this cannot be achieved, this would be managed in accordance with advice and, where required, supervision from an ECoW and in accordance with any protected species licence requirements.	No	To prevent harm to wildlife.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 3 DCO Requirement 8
BI5	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1]	Site clearance	Following inspection by the ECoW, clearance of habitats within the construction area would be conducted under appropriate supervision where there is potential for impacts to protected	No	To minimise impacts to habitats and protected and notable species.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction as part of the advanced works and	DCO Requirement 3 DCO Requirement 8

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]		species. For example, where bird nesting habitat would be removed in the bird breeding season, a suitably competent person would check vegetation and habitats no more than 24 hours prior to work occurring. Any vegetation and habitats found to contain active nests would not be removed or disturbed until the nest is no longer active. What is considered 'appropriate supervision' in each scenario would be at the discretion of the ECoW and would be based on the works required and the ecological receptors present (e.g. in some instances the ECoW may consider themselves the most suitable supervisor, but in others with fewer risks they may deem it appropriate to delegate supervision to someone else on site with suitable briefing on the requirements of supervision).						during construction	
BI6	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Creation of features which could attract wildlife into works areas would be avoided where practicable. This may include the maintenance of habitat in an unsuitable condition for species (to discourage species from using such areas). Where appropriate, the construction site boundary would be designed to discourage wildlife entering the site.	No	To prevent harm to wildlife.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 3
BI7	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Important commuting features such as mammal pathways and river channels would be left clear of obstruction. Where an ECoW deems it beneficial to local wildlife, temporary fencing would be raised slightly off the ground (150mm) where reasonably practicable; if not, gaps would be provided at regular intervals (as assessed on site) to allow wildlife to move freely throughout their normal territories where appropriate. Where wildlife travelling freely through fencing is considered likely to increase the risk of mortality (e.g. fencing between habitat and the existing A12),	No	To maintain wildlife mobility throughout their existing territories during construction phase.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 8

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			then fencing would be installed to reduce likelihood of wildlife moving freely through it where practicable, i.e. not leaving a gap beneath fencing or at regular intervals.							
BI8	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Where practicable, trenches, trial pits and excavations would be covered overnight or fenced off in order to prevent animals falling in and becoming trapped within excavations. Where excavations could not be fenced, closed or filled on a nightly basis, a means of escape would be provided. Examples of 'means of escape' include: • Making one edge/section of each excavation sloped at such an angle such that any animal which may fall into an excavation could leave of their own accord • Placing a plank of wood (or similar) of a suitable width and angle that both touches the bottom of the excavation and overlaps with the top lip of the excavation such that an animal could use it as a ramp to walk out of an excavation should they fall in. • Borrow pits would be fenced to prevent animals falling in, and where appropriate, a gradually sloping access track would be used as a safe means of escape for wildlife. • Pre-works checks would be undertaken to ensure that wildlife has not become trapped overnight/while works have paused.	No	To prevent harm to wildlife.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 3
BI9	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Buffer zones around sensitive features such as confirmed bat roosts, badger setts, otter holts, water vole burrows, birds' nests and watercourses would be implemented as directed by the ECoW. Appropriate buffers would be implemented around watercourses where suitable, using physical barriers during construction works to protect aquatic species from destruction and	No	To protect sensitive biodiversity features from construction works.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			disturbance. Where appropriate, professional judgement would be exercised by the ECoW to amend buffer zones to accommodate works, with the option of introducing additional control measures such as a watching brief to ensure risks to habitats and wildlife are appropriately managed. Buffer zones would be suitably demarcated to prevent encroachment of works.							
BI10	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Invasive Species Management Plan [TR010060/APP/6.5]	Invasive Species Management Plan	The Invasive Species Management Plan (ISMP) would be developed and implemented based on the measures and approaches detailed within the ISMP in the first iteration EMP [TR010060/APP/6.5]. The ISMP would describe how non-native plant and animal species would be managed or removed where required in order to prevent their spread in the terrestrial and aquatic environment during construction of the proposed scheme.	No	To control and prevent the spread of invasive non-native species.	The assessment assumes the measures set out within the plan would be adopted as best practice.	Implementation of the ISMP [TR010060/APP/6.5]. The ISMP would follow the Environment Agency's regulatory position statement 178 for treatment and disposal of invasive non-native plants (2019) guidance and Defra's guidance on how to stop invasive non-native plants from spreading, stating any risks associated with removal of invasive non-native species.	Principal Contractor	Pre-construction	DCO Requirement 3
BI11	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Surveys	As the construction of the proposed scheme progresses, pre-construction surveys using current best practice guidance would be undertaken for bats, badger, barn owl, otter, water vole and reptiles to update baseline surveys prior to construction.	No	To ensure legal compliance and minimise impacts to protected and notable species.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction and during construction	DCO Requirement 3
BI12	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Ecological Clerks of Works	An ECoW would be employed where relevant to the works being undertaken.	No	To ensure all measures and method statements, including monitoring of important ecological features and biodiversity	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
					resources, are adhered to.					
BI13	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Local Nature Reserve/Local Wildlife Site	Habitats would be created south of the River Brain. The newly created habitats would include scrub to offset the loss in the Whetmead LNR/LWS and ecologically valuable habitats, namely species-rich grassland, hedgerows with trees, and a pond and ditch complex. National Highways will work with Witham Town Council to develop a planting and landscaping design to enhance habitats, so that as these areas mature they complement the existing nature reserve.	No	To mitigate impacts to the Whetmead LNR/LWS and improve the condition of the formerly wet habitats within the site.	The assessment assumes successful establishment of all planting and seeding areas.	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 5
BI14	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Monitoring	Monitoring of the establishment of newly created habitat south of the River Brain (BI13) and newly created woodland to offset impacts to Perry's Wood ancient woodland (BI16) would be undertaken.	Yes	To ensure habitats are establishing as desired and to make recommendations for alterations to management regimes where required.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	National Highways	Post-construction	DCO Requirement 5
BI15	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Local Nature Reserve/Local Wildlife Site	Reptile hibernacula and log piles would be created within Whetmead LNR/LWS and the new mitigation areas south of the River Brain.	No	To mitigate impacts to the LNR/LWS and reptiles.	The number of hibernacula and log piles would be determined during detailed design.	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 5
BI16	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5]	Air quality	An area of broadleaved woodland habitat would be created as part of the restoration of borrow pit F as shown on the Environmental Masterplan [TR010060/APP/6.2] and as detailed in the LEMP in the first iteration EMP [TR010060/APP/6.5]. Indicative species mixes are described in the LEMP. The proposed species composition would reflect the species typical of Perry's Wood and other ancient woodlands in the local area, although not ash due to the prevalence of ash dieback in the	No	To compensate impacts of increased nitrogen at Perry's Wood.	N/A	Implementation of the LEMP [TR010060/APP/6.5]. Establishment of broadleaved woodland habitat in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 5

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	LEMP [TR010060/APP/6.5]		area. The maintenance and management of this area of habitat would be the responsibility of National Highways.							
BI17	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Trees	Where potential ancient and veteran trees are unavoidably removed to accommodate the proposed scheme, their loss would be partially compensated (acknowledging that features such as ancient and veteran trees are considered irreplaceable and therefore cannot be fully compensated) as per the latest guidance from Natural England and the Forestry Commission (2022): • Young trees of the same species as that which is removed would be planted with sufficient space around them to encourage development of an open crown. • Where practicable, trees would be planted close to the trees they are replacing, taking into account post-construction air quality levels. • Where practicable and safe to do so, the intact hulk of the potential ancient or veteran tree would be left where it is (preferably standing) to benefit invertebrates and fungi. Where this is not possible, the hulk would be moved near to other unimpacted potential ancient or veteran trees or parkland in the area.	No	To partially mitigate against the loss of ancient and veteran trees (acknowledging that their loss cannot be fully mitigated as they are considered an irreplaceable habitat).	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
BI18	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.16: Draft Bat Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Bats	Pre-construction bat surveys would be undertaken to support the European Protected Species Mitigation licence application following DCO consent (BI11). Surveys would include internal inspections, climbing surveys and/or emergence and re-entry surveys as appropriate to the feature. If new roosts are identified during pre-construction surveys, the following general principles would be applied to any future iterations of the bat licence:	No	To ensure legal compliance and reduce impact to bats.	N/A	Works compliance with the Draft Bat Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence.	Principal Contractor	Pre-construction	DCO Requirement 3 DCO Requirement 8

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• Exclusion of bats from roosting features ahead of demolition works, for example using one-way excluders and internal lighting. • Avoidance of mortality, injury or disturbance to bats, through timing of demolition works for when bats are least vulnerable to harm (i.e. when bats are not hibernating in winter or in maternity roosts in summer). March, April and October are typically the preferred times for works in relation to bats, although this may be deviated from depending on a number of factors (e.g. the type of roost). • Pre-demolition inspection by a licensed bat ecologist including supervised removal of roosting features by hand (i.e. roof tiles in the case of buildings) ahead of demolition as practicable. • The provision of alternative roosting habitat. A number and variety of bat boxes would be erected in nearby trees (on a ratio of at least three bat boxes erected per roost removed) prior to works taking place which would impact a roost. An updated plan, detailing the location of all replacement roosts/bat boxes, would be included in the second iteration EMP for reference during construction. • The size and style of the box would be suitable for the species in the existing roost. Boxes would be positioned within retained habitat (either attached to retained trees or a free-standing post) in proximity to the roosts to be lost. These would be positioned to avoid any impacts from construction or operation of the proposed scheme, e.g. away from sources of noise or lighting disturbance.							
BI19	Chapter 9: Biodiversity, of the	Bats	Felling of roost T1149, and demolition of roosts B1463 and BE11, would be conducted in accordance with a method statement (which would be licensed to	No	To reduce impact to bats.	Timing of works to avoid the seasons	Works compliance with the Draft Bat Licence [TR010060/APP/6.3] and/or European	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	ES [TR010060/APP/6.1] Appendix 9.16: Draft Bat Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]		ensure legal compliance) and under supervision of a licensed bat ecologist. Bats would be excluded before demolition or felling, for example using one-way excluders and internal lighting, and T1149 would be soft felled.			when bats are most likely to be present (April to September for day roosts, October to March for hibernation roosts and spring/autumn for transitional roosts).	Protected Species Mitigation licence.			DCO Requirement 8
BI20	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] Appendix 9.4: Bat Survey Report, of the ES [TR010060/APP/6.3] Appendix 9.16: Draft Bat Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Bats	Bat boxes would be provided for every tree, building and structure assessed as having moderate to high suitability in the bat report that would be lost as a result of construction of the proposed scheme. Boxes would be provided at a ratio of 2:1 for every tree, building or structure lost to account for variance in bat roosting preferences. Boxes would comprise a range of types to also account for variance in bat roosting preferences. The locations in which these boxes are to be installed are shown on the Environmental Masterplan [TR010060/APP/6.2].	No	To mitigate loss of potential bat roosting features.	N/A	Works compliance with the Draft Bat Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence. Establishment of bat boxes in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 3
BI21	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2]	Bats	Landscaping and habitat planting outlined in the Environmental Masterplan [TR010060/APP/6.2] would be further developed at the detailed design stage to include linear woody planting on the embankments of Braxted Road Overbridge, Highfields Overbridge Replacement, Ewells Overbridge Replacement, Prested Hall Overbridge, Easthorpe Road Overbridge and Wishing Well Overbridge. The linear	No	To improve biodiversity within the region.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]		planting at these locations would include larger stock and faster growing native trees at strategic locations on the new embankments and existing A12 where practicable, to act as hop overs and to guide bats over the new road. Where practicable, linear planting would tie in with culverts to guide bats through these as opposed to over nearby side roads.							
BI22	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.16: Draft Bat Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Bats	Monitoring would be conducted of the roosts to be retained and roosts supplied as compensation for loss of roost resource as part of the requirements of the European Protected Species Mitigation licence. This would be undertaken during construction one year after they are installed, and post-construction as per the specifications of a granted European Protected Species Mitigation licence. Monitoring would also be carried out during and post-construction at identified bat crossing points to allow for comparative analysis with previously completed baseline bat surveys.	Yes	To analyse the effectiveness of mitigation measures designed to guide bats safely under or over the proposed scheme.	N/A	Works compliance with the Draft Bat Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence. Consultation with Natural England on monitoring and reporting arrangements.	Principal Contractor	Pre-construction, construction and post-construction	DCO Requirement 3
BI23	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	Pre-construction surveys would be undertaken (BI11) to confirm the status of all setts and also identify any new setts prior to the start of works. These data would be used to inform the final licence application and to amend mitigation proposals accordingly.	No	To ensure legal compliance and reduce impacts to badgers. To confirm the status of all setts and also identify any new setts prior to the start of works.	N/A	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence.	Principal Contractor	Pre-construction	DCO Requirement 3
BI24	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3]	Badger	In accordance with the Draft Badger Licence application [TR010060/APP/6.3], which would be updated following pre-construction survey, it is anticipated that the following setts would be closed: • Two main setts • 20 outlier setts (18 permanent closures and two temporary closures)¶	No	To ensure legal compliance and reduce impact to badger.	Evidence of use of the artificial setts would be obtained and provided to Natural England prior to closure of	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]		• Two subsidiary setts¶ • One annex setts This would be reviewed and updated following pre-construction badger surveys (BI11) and any changes to the baseline survey results.			the main setts.				
BI25	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	Two artificial setts would be provided to mitigate for the loss of main setts, as outlined in the Draft Badger Licence [TR010060/APP/6.3]. The artificial setts would be created at least six months prior to the exclusion phase (governed by the licence). The total number of artificial setts to be created is based on the current assessment of setts in relation to the proposed scheme and may be subject to change depending on the findings of pre-construction surveys (BI11) and the granted licence.	No	To ensure legal compliance and reduce impact to badger.	N/A	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence. Consultation with Natural England on locations and creation of artificial setts. Works under supervision of an ECoW.	Principal Contractor	Pre-construction	DCO Requirement 3
BI26	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	Badger exclusion works would be undertaken from 1 July and would be completed by the end of November the same year so as to avoid impacts to pregnant badgers or cubs. Exclusion would take place over a minimum period of 21 days after the last date when badgers were recorded leaving the sett. One-way badger gates would be fitted to any entrances exhibiting current use by badgers. All other entrances would be hard stopped using wooden stakes or a similarly robust material. Heavy duty chain link, stock or weld mesh fencing, secured to the ground using metal pegs or wooden stakes and staples, would be installed around the entire sett to prevent badgers from re-entering. Exclusion would take place over a minimum period of 21 days after the last date when badgers were recorded leaving the sett. Monitoring visits would take place at least once every three days during the exclusion to determine whether badgers are still active in the sett.	Yes	To ensure legal compliance and reduce impact to badger.	N/A	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence. Works under supervision of an ECoW.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
BI27	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	Once badgers have been excluded, setts requiring temporary closure would be securely closed (i.e. the fencing would remain in place and wooden stakes, or metal pins would be inserted in front of the gates so they cannot be opened again). These setts would be monitored by the ECoW for signs of badgers attempting to regain entry. If evidence of digging around was identified during a check, additional exclusion fencing would be installed over that area. If evidence suggested that a badger may have fully re-entered the sett, then construction works would need to cease until full exclusion methods had been re-applied. Upon completion of works in the area, the sett would be re-opened, and all proofing removed on completion of construction at that location.	No	To ensure legal compliance and reduce impact to badger.	N/A	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence. Works under supervision of an ECoW.	Principal Contractor	Construction	DCO Requirement 3
BI28	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	Any setts requiring destruction would be dismantled mechanically as per the specifics of the licence and under the direction of the licence holder or appointed accredited agent as soon as practicable after the successful completion of badger exclusion. Once each tunnel has been excavated, the excavation would be backfilled, and the entire sett area covered over with chain link, stock-proof or weld mesh fencing to prevent badgers from re-excavating the sett until construction activity in the area is completed.	No	To ensure legal compliance and reduce impact to badger.	N/A	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence.	Principal Contractor	Construction	DCO Requirement 3
BI29	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	Typically, exclusion zones of 30m would be implemented around any retained active setts within the Order Limits to avoid disturbance. The exact distance of exclusion zones may be altered based on assessment by an ECoW, who would look at the type and condition of the sett(s) present and the works planned for the area. Exclusion zones may be reduced or increased based on these assessments.	No	To avoid disturbance to badgers.	N/A	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
BI30	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Badger	Main sett 80 would be retained but would be located between the existing and new A12. Linear planting would be installed to guide badgers to a culvert formed of a 1,200m diameter pipe. Mammal ledges at least 500mm wide and 150mm above the 1 in 100 year flood level and with at least 600mm headroom would be fitted to either side of the culvert to ensure the usage of badgers even during times of flooding.	No	To prevent fragmentation of habitats.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
BI31	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Appendix 9.17: Draft Badger Licence, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Badger	In accordance with the badger licence, any setts requiring closure (whether permanent or temporary) would be subject to monitoring to confirm the 'active' and 'disused' sett entrances at each sett, and all licensable activities would be undertaken between July to November inclusive. During sett closure, each sett would be monitored by an ECoW at least once every three days during the exclusion period. Monitoring would be achieved using camera traps and by placing small sticks within tunnels and in front of the one-way gates and would also be used to ensure the gates are working as expected and to assess the condition of the wire mesh overlaying hard-blocked entrance holes. Monitoring of the artificial setts would be undertaken during the construction phase, and for year 1 after the construction works in the relevant area of the proposed scheme to check for signs of use by badgers.	Yes	To ensure these species are correctly and fully excluded before demolition of currently used setts, and to determine whether replacement setts are being utilised during the post-construction period.	Appropriate licences would be granted by Natural England.	Works compliance with the Draft Badger Licence [TR010060/APP/6.3] and/or European Protected Species Mitigation licence. Consultation with Natural England on monitoring and reporting arrangements.	Principal Contractor	Pre-construction and post-construction	DCO Requirement 3
BI32	General Arrangement Plans for the relevant culverts [TR010060/APP/2.9] Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1]	Protected species	Mammal ledges (positioned at least 150mm above the 1 in 100 year flood level and with at least 600mm headroom) would be fitted within Domsey Brook east and Roman River culverts, as well as River Brain Bridge, headroom and health and safety risk assessment permitting. Mammal ledges would be at least 500mm wide and accessible from the bank by ramps. In addition, the provision of numerous	No	To prevent fragmentation of habitats.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]		600mm, 1,200mm, and 1,500mm culverts for minor ditches would enable mammals, reptiles and great crested newt to safely cross beneath the proposed scheme. Where practicable two mammal ledges will be provided for each of the above main river crossings. Where only one mammal ledge can be provided the positioning will be informed by mammal survey data, where practicable. Where practicable, landscape planting would be designed to guide mammals to these features. Domsey Brook west and Rivenhall Brook Culverts will include riparian zones either side of the formed river channel.							
BI33	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Dormouse	Dormouse surveys would be undertaken to assess habitats associated with the proposed gas main diversion. Should the surveys to the east of the River Blackwater identify dormice presence within the footprint of the proposed gas main diversion, additional mitigation for dormice would include the following measures: • A European Protected Species Mitigation licence would be obtained from Natural England which would agree the specific mitigation approach. • Timing of clearance of vegetation with the potential to support dormouse (e.g. vegetation which is suitable in terms of quality and is connected to habitats to the east of the River Blackwater known to support dormouse) to avoid sensitive periods, for example removal of the roots and stumps of trees within hedgerows would not be undertaken during the hibernation season. • Removal of vegetation would be undertaken under the supervision of a licensed ecologist.	No	To protect and mitigate impacts to dormice.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5]. Application and return of Natural England European Protected Species Mitigation licence (if necessary).	Principal Contractor	Pre-construction	DCO Requirement 3 DCO Requirement 8

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• Where removal of hedgerows cannot be avoided, dead hedging would be installed upon completion of works in each section of hedgerow to maximise connectivity, and replacement hedgerow shrubs would be planted in the next planting season. Dead hedging would be left in situ until new planting has sufficiently matured.							
BI34	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Otter	Pre-construction surveys would be conducted to identify any newly created holts or couches (BI11). Should any new resting places be identified, and should they be located in a place that would be disturbed, damaged or destroyed as a result of the proposed scheme, a European Protected Species Mitigation licence would be obtained from Natural England to agree the specific mitigation approach.	No	To ensure legal compliance and reduce impact to otter.		Application and return of Natural England European Protected Species Mitigation licence (if necessary).	Principal Contractor	Pre-construction	DCO Requirement 3 DCO Requirement 8
BI35	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Water vole	Where water vole burrows are present, bankside habitat would be fenced off and a buffer of 5m from works maintained where practicable and as directed by the ECoW to prevent unnecessary damage to water vole burrows and disturbance to water voles. Site control measures are detailed within the LEMP in the first iteration EMP [TR010060/APP/6.5]. Where this is not practicable, a licence would be obtained from Natural England.	No	To protect and mitigate impacts to water voles.	N/A	Implementation of the LEMP [TR010060/APP/6.5]. Application and return of Natural England European Protected Species Mitigation licence (if necessary).	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 8
BI36	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5]	Water vole	Ecological mitigation areas incorporating pond and ditch complexes would be implemented near junction 19 and the River Brain (areas most likely to have water vole presence) as shown on the Environmental Masterplan [TR010060/APP/6.2].	No	To maximise biodiversity value in the availability of suitable water vole habitat and mitigate potential impacts to the species should avoidance not be possible.	N/A	Establishment of ecological mitigation areas in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
BI37	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Water vole	At the detailed design stage, the proposals for new ditches and ponds would be developed to include planting schedules. Ditches and wildlife ponds would be planted or seeded with suitable water vole food plants to provide cover and foraging resource	No	To protect and mitigate impacts to water voles.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
BI38	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Birds	Bird nesting boxes would be installed in retained vegetation within the Order Limits during the pre-construction phase, on new or existing structures, or on free-standing posts as appropriate. Boxes would be provided for a variety of species, including cavity-nesting species with entrance holes of different sizes, open-fronted boxes, and larger boxes to accommodate birds of prey. The boxes would be constructed of hardwearing materials such as exterior grade plywood, recycled plastic or woodcrete.	No	To mitigate for the temporary loss of nesting habitats whilst newly planted habitats mature.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3
BI39	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Barn owl	Pre-construction surveys would be conducted to identify any new potential barn owl nest sites within the Order Limits (BI11). Should any new barn owl roosting or nest sites be identified and determined to be lost as part of the proposed scheme, barn owl boxes at a ratio of 2:1 for each nest site lost would be installed at least 1.5km from the Order Limits to increase nesting opportunities and avoid increased barn owl road casualties. Barn owl boxes would be made from hard wearing materials such as exterior grade plywood or recycled plastic and locations of boxes would be identified through consultation with Essex Wildlife Trust.	No	To ensure no impacts on barn owl nesting sites.	N/A	Implementation of the second iteration EMP. Consultation with Essex Wildlife Trust on locations for barn owl boxes.	Principal Contractor	Pre-construction	DCO Requirement 3
BI40	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the	Reptile	For localised areas of impact to reptiles, habitat manipulation would be used to displace reptiles into adjacent habitats to avoid killing or injury. For the majority of suitable habitats where clearance of vegetation is required, a translocation exercise would be undertaken by suitably experienced ecologists to move reptiles to receptor	No	To ensure legal compliance and reduce impacts to reptiles.	Assessment assumes the identified mitigation measures would be implemented prior to	Implementation of the second iteration EMP. Establishment of ecological mitigation areas in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Pre-construction and during construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5]		sites ahead of works and avoid direct mortality of animals. Reptile receptor sites suitable for translocated reptile populations are shown as ecological mitigation areas on the Environmental Masterplan [TR010060/APP/6.2]. Receptor sites would be established well ahead of any translocation, as assessed by a suitably experienced ecologist, to allow newly created and enhanced habitats to become sufficiently established prior to introducing the animals.			construction works.	Works under supervision of an ECoW.			
BI41	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] LEMP [TR010060/APP/6.5]	Reptile	Following translocation for reptiles, monitoring would be conducted of receptor sites as defined in the LEMP [TR010060/APP/6.5].	Yes	To ensure/ prolong habitat suitability and to determine success of the translocations.	N/A	Implementation of the LEMP [TR010060/APP/6.5].	Principal Contractor	Construction and post-construction	DCO Requirement 5
BI42	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Freshwater fish	Where sections of watercourses are to be isolated as part of construction work, fluming would be used to protect any fish species present preventing direct mortality of fish. Barriers would be installed upstream and downstream of the construction work to keep the area dry. A gravity fed flume (or pipe) would connect the sections of the watercourse upstream and downstream of the construction works, positioned on the bed of the watercourse within the construction work area, and would allow for the migration of freshwater fish species. Where fluming is not practical, overpumping may be required (see RDWE14). Utilised pumps would be appropriately screened (2mm screens) to avoid fish entrainment and the duration of use minimised.	No	To protect and reduce impact to freshwater fish.	N/A	Implementation of the second iteration EMP. Consultation with Environment Agency on fluming or overpumping (including fish rescues as required).	Principal Contractor	Construction	DCO Requirement 3
BI43	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1]	Terrestrial invertebrates	Habitat piles (e.g. hibernacula and log piles) would be created from some of the felled vegetation and dead timber (including felled potential veteran trees)	No	To protect and mitigate impact to terrestrial invertebrates.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]		within retained habitat and ecological mitigation areas where practicable and as directed by the ECoW.				Works under supervision of an ECoW.			
BI44	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Terrestrial invertebrates	Areas of south facing sandy banks and earth 'cliffs' would be included within the ecological mitigation areas.	No	To mitigate impact to terrestrial invertebrates.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
BI45	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Terrestrial invertebrates	Species planting lists for new habitats would develop during detailed design and would include food plants of notable invertebrate species, for example grasses such as fescues *Festuca* sp., meadow-grasses *Poa* sp., and bents *Agrostis* sp. which are the favoured food plants of small heath butterfly caterpillars. Ivy would be planted in areas where there are currently mature trees (and therefore sufficient shade for this species to establish) and in areas away from highway structures (for example around the artificial badgers setts) in order to benefit the ivy bee which is an important local pollinator.	No	To mitigate impact to terrestrial invertebrates.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
BI46	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Notable plants	Areas where notable plants have been recorded would be avoided where practicable and suitable buffers maintained to prevent encroachment of working areas.	No	To protect and mitigate impact to notable plants.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
BI47	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Notable plants	Notable plant species (as identified in Phase 1 Habitat Survey) that would be directly lost as a result of clearance of vegetation during construction of the proposed scheme would be translocated as directed by an ECoW into the ecological mitigation areas where practicable. A suitably competent person would conduct ecological monitoring of the translocated plants in subsequent growing seasons.	Yes	To protect and mitigate impacts to notable plants. To measure and ensure survivability of the translocated plants.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
BI48	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Cadent gas main diversion	The arboricultural survey confirmed that the mature black poplar within the Order Limits at Blue Mills proposed LWS qualified as a potential veteran tree. The results of the arboricultural survey will be used to inform an appropriate control, whereby a combination of route and construction methodology would be designed to minimise the impacts on the black poplar and other sensitive features in this area.	No	To protect sensitive features at Blue Mills proposed LWS.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
BI49	Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Mammal ledges	Appropriate monitoring of mammal ledges would be undertaken post-construction to determine whether the ledges are utilised by wildlife, including otters, for safe passage under the A12. Details of the monitoring, including the time periods and length of monitoring, will be included in the second and third iteration EMPs.	Yes	Data collected would be used to inform the design of river crossings for future National Highways projects.	Mammal ledges would be fitted within culverts along the Rivenhall Brook, Domsey Brook east, Domsey Brook west and Roman River, as per commitment BI32.	Implementation of the second and third iteration EMPs.	Principal Contractor	Construction and operation	DCO Requirement 3 DCO Requirement 4
BI50	Detailed design	Cadent Gas Diversion	The Cadent gas pipeline, Work No. U69, would be installed using no-dig techniques underneath the River Blackwater and the woodland subject to Tree Preservation Order 07/22 at Blue Mills proposed LWS (Figure 1 - Woodland TPO at Blue Mills proposed LWS). The line, depth and locations of temporary works required to install the pipe including the launch and receptor pits, would be selected to minimise impacts to the woodland protected by the Tree Preservation Order, the proposed Blue Mills Local Wildlife Site, the black poplar and otter holt at grid reference TL 83264 1361, and transitional veteran trees T2045 and T2078 as identified in the Supplementary Arboricultural Survey Report [REP3-008].	No	To minimise impacts on the Blue Mills proposed LWS.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
BI51		Brain Bridge	Investigate options in conjunction with the Environment Agency that could reasonably be implemented that would increase flow depths through the structure during low flows and thus improve fish passage through this section of the River Brain.	No	To improve fish passage over the existing sill during low flows.	Measures to be installed would need to be approved by the Environment Agency.	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
BI52		Brain Bridge	Consider, subject to further approvals, further measures to improve fish passage to be implemented to the concrete bed through the bridge, these may include rocks placed on the channel bed under the bridge (preferred), coir roll or woody debris.	No	To improve fish passage over the concrete bed.	Measures to be installed would need to be approved by the Environment Agency.	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
BI53		Rivenhall Brook	Introduction of natural light into the structure corridor.	Yes (see BI49)	To encourage mammal passage.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
BI54		Rivenhall Brook	The design of the river channel and embankments to create a more 'natural' form, where practicable. Subject to hydraulic and cross-sectional constraints, a two-stage channel with a gravel bed would be formed potentially utilising a firm bed of flints and gravel and avoiding the use of gabion baskets. The embankments and channel margins should as far as practicable present an opportunity for vegetation to establish.	No	To improve the hydromorphology of the watercourse.	Measures to be installed would need to be approved by the Environment Agency.	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
BI55		Ashmans Bridge	Scour protection of the new piers should be through means such as including rock mattresses, and/or the use of materials such as 'grasscrete' type products for the floodplain facing revetments where practicable.	No	To reduce the loss of natural banks.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
BI56		Domsey Brook Underbridge (West)	Where the structure is being extended the existing parallel wing walls will be replaced with splayed wing walls to widen the opening of the proposed structure and minimise the restriction on riverine processes.	Yes (see BI49)	To encourage riparian mammals to cross the A12 under the carriageway reducing road traffic casualties and to improve the hydromorphology	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
					of the watercourse					
BI57		Domsey Brook East	The design of the river channel and embankments to create a more 'natural' form, where practicable. Subject to hydraulic and cross-sectional constraints a two-stage channel with a gravel bed, would be formed potentially utilising a firm bed of flints and gravel and avoiding the use of gabion baskets. The embankments and channel margins should as far as practicable present an opportunity for vegetation to establish.	No	To improve the hydromorphology of the watercourse	Measures to be installed would need to be approved by the Environment Agency.	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
BI58		Roman River	Installation of baffles in the culvert invert.	No	To improve fish passage through the structure.	Measures to be installed would need to be approved by the Environment Agency.	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 10
GS1	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Pollution Prevention Measures	Pollution prevention measures would be developed and implemented based on the first iteration EMP [TR010060/APP/6.5]. This would include pollution prevention measures, e.g. to prevent mobilisation of soil contaminants to surface waters.	No	To minimise water pollution	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3
GS2	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Materials Management Plan [TR010060/APP/6.5]	Materials Management Plan	A Materials Management Plan (MMP) (or earthworks plan) for reuse of materials under the CL:AIRE DoWCoP would be developed and implemented based on the MMP in the first iteration EMP [TR010060/APP/6.5]. The MMP would detail any safeguards required for soils reuse, storage and transportation. Reuse of fill materials may require remedial treatment and would be developed with the MMP for the CL:AIRE DoWCoP declaration.	Yes (as defined in the MMP)	To track and monitor the movement of materials and, where necessary, test materials requiring remedial treatment. To manage waste arising from construction of the proposed scheme, monitor	The assessment assumes the measures set out within the plan would be adopted as best practice.	Implementation of MMP [TR010060/APP/6.5] and associated monitoring.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
					its performance, and achieve compliance with relevant permits and consents.					
GS3	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Risk assessment	To avoid impacts to sensitive receptors from any land contamination exposed during construction, risk assessment and method statements would be completed as part of the construction phase with reference to controls identified within the first iteration EMP [TR010060/APP/6.5].	No	To help inform measures to be adopted during construction to avoid impacts to sensitive receptors from any land contamination exposed during construction.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3
GS4	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Risk assessment	A Detailed Quantitative Risk Assessment (DQRA) is required for the management and potential treatment of any dewatering at major excavations for proposed cuttings, widenings and borrow pits and to support environmental permitting requirements for discharge to surface water bodies or back to groundwater through a groundwater recharge arrangement.	No	To protect quality of surface water and groundwater.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3
GS5	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Risk Assessment	Areas of hazardous materials (such as asbestos) identified in the ground investigation would inform the detailed design, and where necessary remedial treatment or disposal would be undertaken where identified through the detailed design.	No	To help inform measures to be adopted during construction to avoid impacts to sensitive receptors from any land contamination exposed during construction.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
GS6	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] Appendix 10.2: Agricultural Land Classification Survey Report, of	Soil Handling Management Plan	A Soil Handling Management Plan would be developed and implemented based on the plan in the first iteration EMP [TR010060/APP/6.5].	No	To help achieve good soil management at all stages of the construction process and help identify sustainable reuse of soil resources	The assessment assumes the measures set out within the plan would be adopted as best practice.	Implementation of the Soil Handling Management Plan [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] Soil Handling Management Plan [TR010060/APP/6.5]				disturbed by the proposed scheme.					
GS7	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Water quality	Additional monitoring of selected main rivers close to (upstream and downstream and at locations subject to available access) the proposed scheme and the borrow pits would be undertaken prior to construction of the relevant works to confirm the initial monitoring carried out in 2018 and identify changes to water quality before, during and post-construction. Chemical analysis data for surface water and groundwater would be compared against values derived from a site-specific DQRA. Exceedances of the defined values would cause additional monitoring to confirm results and changes in the method of working where practicable. The groundwater and surface water monitoring programme would be included within the second iteration EMP.	Yes (as defined in the Water Management Plan)	To protect quality of surface watercourses.	N/A	Monitoring of surface watercourses and laboratory analysis.	Principal Contractor	Pre-construction	DCO Requirement 3
GS8	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Fill materials	Site-specific material acceptability criteria would be adopted, derived from a DQRA for any fill materials excavated from the borrow pits for placement on the proposed scheme (particularly in locations where sensitive aquifers and surface water are located).	No	To protect and limit the impact of contaminated land to groundwater.	The assessment assumes fill materials would be determined for suitability of reuse before used.	Adoption of material acceptability criteria derived from a DQRA and subject to CL:AIRE DoWCoP during construction.	Principal Contractor	Construction	DCO Requirement 3
GS9	Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Asbestos-containing materials	An exclusion zone would be set up around the area of infilled land containing suspected asbestos-containing materials in borrow pit J and at BH3045 (close to Marks Tey roundabout) where chrysotile asbestos was identified. No works would be undertaken in this area including	No	To limit the impact of contaminated land on uncontaminated soils and construction workers.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			excavation, vehicle movements and storage to avoid ground disturbance and potential release of airborne asbestos fibres. Appropriate signage would be secured to the fencing displaying the potential risks of the area. However, if due to design requirement ground disturbance cannot be avoided (particularly at BH3045), then further risk assessment would be undertaken to determine if remediation is required.							
MW1	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Resource efficiency principles	Implementing design for resource efficiency principles in a systematic manner to suit the scale of the proposed scheme, to identify, prioritise and select appropriate opportunities to improve project resource efficiency and design out waste.	No	To maximise resource efficiency during the construction of the proposed scheme.	N/A	Implementation of the design for resource efficiency principles. Evidence of material resource efficiencies and waste reductions would be demonstrated in a number of ways, for example value engineering registers, design meeting records, designing out waste workshops, site waste management plans, specifications, drawings or site photographs.	Principal Contractor	Detailed design	DCO Requirement 3
MW2	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Sustainable Procurement Plan	Developing and implementing a Sustainable Procurement Plan (SPP). The SPP would set out a clear framework to increase the procurement and use of sustainably and responsibly sourced construction materials and products with proven sustainability credentials that reduce adverse impacts on people and the environment during the construction of the proposed scheme. The plan would specify the following: • Use of key material elements (asphalt, concrete, aggregate, steel, aluminium and plastics) responsibly sourced from suppliers with industry recognised responsible sourcing certification for that material (such as	Yes (as defined in the SPP)	To maximise the procurement and use of sustainably and responsibly sourced materials and minimise adverse impacts on people and the environment during construction of the proposed scheme.	N/A	Production and implementation of the SPP and associated monitoring.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			certification to BES 6001 (Building Research Establishment, 2014), or membership of a sector-specific scheme that complies with BS 8902 (British Standards Institution, 2009)). • Use of timber and wood-derived products that are sustainably sourced from independently verifiable legal and sustainable sources certified by Central Point of Expertise on Timber approved scheme such as Forestry Stewardship Council or Programme for the Endorsement of Forest Certificate. Other certification schemes are available. • Use of locally sourced and recycled materials, where available and permitted by the Specification for Highway Works, and where practicable and cost-effective to do so. This could include materials that already exist on site, can be recovered from demolition activities, removal of existing pavement, or can be sourced from other projects and suppliers. • Seeking to source materials from local suppliers, where practical and cost-effective to do so, in order to reduce the travel distance of materials and associated GHG emissions. • Use of imported aggregates that comprise reused, secondary or recycled content at levels in line with the East of England regional guideline for aggregates provision 2005-2020 target of 31% where available for those applications and where it is technically and economically feasible to substitute these alternatives to primary aggregates. Where primary aggregates are mandated within DMRB they are excluded from the target. This target excludes site-won material and recycled demolition materials. • Use of minimal quantities of hazardous materials or high-volatile organic compound applied coatings that							

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			could harm human health or the environment; and that might cause problems for future reuse, recycling and recovery at end of first life. The SPP would also set out the policies that would be employed by the appointed Principal Contractor and its subcontractors to evaluate and specify the responsible sourcing of construction materials and products, and the procedures that are to be put in place to check and verify that the SPP is being implemented and adhered to during construction. This would include setting out any measurement criteria, methodology and performance indicators to assess progress and demonstrate success; and how the chain of custody of materials would be audited and evidenced during procurement.							
MW3	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site Waste Management Plan	Implementing a Site Waste Management Plan (SWMP), in a manner to suit the requirements of the proposed scheme, to plan, implement, monitor and review waste minimisation and management throughout the construction phase of the proposed scheme. The SWMP would: • Be prepared using either the good practice resources developed by Waste and Resources Action Programme or the appointed Principal Contractor's own SWMP tools and resources. • Include targets or key performance indicators for waste recovery in line with prevailing Government and National Highways targets. • Document the methods to be used to measure and record the quantity of waste generated during construction. • Be accompanied by appropriate communication between the Client, Designer and Principal Contractor as	Yes (as defined in the SWMP)	To manage waste arising from construction of the proposed scheme, monitor its performance, and achieve compliance with relevant permits and consents.	N/A	Implementation of the SWMP [TR010060/APP/6.5] and associated monitoring.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			well as sub-contractors and other members of the supply chain.							
MW4	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Duty of Care	Complying with waste 'duty of care' requirements during the construction of the proposed scheme. Taking all reasonable steps to ensure that surplus materials and waste are stored, treated, transferred, consigned, transported, reused, recovered or disposed of safely without endangering human health or harming the environment. This includes ensuring that: • All waste has been managed in accordance with the waste hierarchy, as a priority order, to achieve the best overall environmental outcome. • All reasonable steps have been taken to ensure that waste does not cause pollution or harm to human health. • All inert, non-hazardous and hazardous waste materials have been segregated, and care is taken to prevent contamination during storage. • All waste is transported by Registered Waste Carrier. • All waste transfer notes and consignment notes are completed and retained. • All waste has been taken to licensed, permitted or exempt facilities. • All transfers to disposal sites have been checked to ensure that they are licensed or permitted to accept the waste material. • To reduce any attendant effects from storing and processing material assets and waste, ensuring that construction site compounds and onsite storage, stockpiling and processing areas are designed to reduce impacts to those designated environmental sites and sensitive environmental receptors identified in other aspect chapters of the	No	To protect and limit the impacts of waste to people and the environment.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			Environmental Statement [TR010060/APP/6.1].							
MW5	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Materials and waste management	Obtaining and complying with all necessary waste carrier registrations, environmental permits, planning permissions, mobile plant deployments or waste exemptions in relation to the storage, sorting, treatment, use, disposal and transportation of waste during the construction of the proposed scheme; and preparing any necessary documentation required of statutory and industry-regulated codes of practice or end of waste quality protocols for converting waste into non-waste products (such as The Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011) and End of Waste Criteria for the Production of Aggregates from Inert Waste (Environment Agency, 2013)).	No	To protect and limit the impacts of waste to people and the environment.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3
MW6	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Materials and waste management	Ensuring that waste is stored, treated, reused, recycled, recovered or disposed of as close as practicable to the point of origin during the construction of the proposed scheme, with consideration of the proximity principle, self-sufficiency principles and value for money principle, provided there are no unacceptable adverse impacts on people, the environment or local amenities. Locally permitted transfer, reuse, recycling, other recovery and disposal sites would be used during construction, where sufficient capacity is available, to reduce the environmental impact and cost of waste transport and to support the economic wellbeing of local communities.	No	To minimise the environmental impact and cost of waste transport and support the economic wellbeing of local communities.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
MW7	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Materials and waste management	Investigating the potential of importing certain bulk construction materials by rail, using the rail head terminals located at either end of the proposed scheme in Chelmsford and Marks Tey, where it is environmentally and economically feasible to do so. These terminals are operated by national manufactures and	No	To minimise the environmental impact and cost of materials transportation.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			suppliers of construction materials, including aggregates, asphalt, cementitious materials and concrete. While any material imported via these terminals would typically be limited to the aforementioned materials (owing to the nature of the operating businesses), the opportunity of using these terminals to import inert construction, demolition and excavation waste as backfill materials to Colemans Farm Quarry should also be explored in the event that the quarry operators cannot perform this work themselves.							
MW8	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] Appendix 11.1: Mineral Resource Assessment, and Appendix 11.2: Mineral Infrastructure Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Mineral assessment	While the Mineral Resource Assessment (see Appendix 11.1 of the Environmental Statement [TR010060/APP/6.3]) has demonstrated that prior extraction of the sand and gravel resource would not be economically viable in the context of constructing the proposed scheme, any sand and gravel (a safeguarded mineral resource) that is incidentally extracted during site preparation should be processed and reused on site where practicable and disposed of as a last resort.	No	To protect and safeguard mineral resources.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
MW9	Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Pre-demolition assessment	Undertaking a pre-demolition assessment of all highway structures and assets and third-party buildings to be removed or demolished as part of the proposed scheme. This assessment would be undertaken prior to demolition and used to determine the quantities of demolition assets, elements, components, products and materials; and to make recommendations for their reuse (on and/or offsite), recycling, other recovery or final disposal. This assessment would also support the SWMP and SPP by identifying the types and quantities of each waste to be produced during demolition and any opportunities to use these site-won	No	To manage waste arising from construction of the proposed scheme.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			materials to offset the use of primary materials.							
NV1	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Noise and Vibration Management Plan [TR010060/APP/6.5]	Noise and Vibration Management Plan	A Noise and Vibration Management Plan (NVMP) would be developed and implemented based on the NVMP in the first iteration EMP [TR010060/APP/6.5], which would detail the management and monitoring processes to be introduced across all construction sites and compounds. The NVMP would adopt a range of industry standard good practice construction phase noise mitigation and monitoring measures and general control measures, including but not limited to, the following: • Where practicable, the use of best practicable means and examine measures to minimise noise and vibration during construction. • Where appropriate, integration of noise and vibration control measures into the preparation of method statements for the works. • Procedures for the installation of noise insulation (if deemed to be required) or provision of temporary re-housing (if deemed required) and to ensure such measures are in place as early as reasonably practicable. • Approach to noise and vibration monitoring. • Processes to ensure ongoing compliance with all controls and, where required, consent for the works. • Process for implementing corrective actions that may be required to avoid or address a potential non-compliance. • Framework to determine eligibility for noise insulation and temporary re-housing.	Yes (if agreed with local authorities)	To ensure that the effects of noise are controlled, and that the measures for controlling noise are implemented accordingly.	Assessment assumes good practice mitigation and monitoring measures would be followed during the construction phase.	Implementation of the NVMP [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 3 DCO Requirement 13

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
NV2	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Where concrete and asphalt batching plants are used within the junction 20b main compound, these would be placed as far from sensitive receptors as practicable.	No	To keep noisy activities away from residential areas in Hatfield Peverel and north of junction 20b.	N/A	Placing batching plants away from sensitive receptors.	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 13
NV3	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Site layout and arrangement	Where practicable, concrete batching plant, offices and welfare facilities would be strategically placed towards the north of the junction 22 main compound.	No	To keep noisy activities away from sensitive receptors.	N/A	Placing batching plants away from sensitive receptors.	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 13
NV4	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Construction programme	The Principal Contractor would adhere to standard working hours (07:30–19:00 Monday to Friday and 07:30–18:00 on Saturday) as far as is reasonably practicable, except in the case of emergency or in respect of exceptions as set out below: • During the summer months, the standard working hours would extend to make use of the longer daylight hours (07:00–21:00 Monday to Friday). In addition, there would be an hour before and after standard working hours for site set up and close down. These activities are outlined in the first iteration EMP [TR010060/APP/6.5]. • Off-peak working where works are undertaken outside standard working hours, as well as on Bank Holidays. Activities where off-peak working is required is outlined in the first iteration EMP [TR010060/APP/6.5]. • Night working hours (19:00–07:30 Monday to Friday and 18:00–07:00 on Saturday) • Sunday and Bank Holiday working hours (07:00–19:00 daytime and 19:00–07:00 night-time)	No	To ensure standard and off-peak working hours for construction works are defined.	N/A	Adherence to the specified working hours in the second iteration EMP throughout the construction phase.	Principal Contractor	Pre-construction as part of the advanced works and during construction	DCO Requirement 3
NV5	Chapter 12: Noise and vibration, of the	Noise barriers	The existing noise barriers alongside Market Lane (ENB1, CH20700 to CH21100) and Benton Close (ENB2,	No	To replace removed mitigation.	Assessment assumes that the barrier	Like-for-like replacement of the existing barriers.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]		CH20540 to CH20635) would be removed as a result of the construction of the proposed scheme and re-instated at the same height in relation to the A12 carriageway as previously *in situ* prior to construction phase.			could be replaced.				DCO Requirement 13
NV6	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5]	Surfacing	A surface with a road surface influence (RSI) of -3.5dB(A) or better would be laid on all sections of the A12 excluding sections mentioned in NV10.	No	To reduce the impact from noise.	Assessment assumes that the specified road surface would be laid in accordance with the Environmental Masterplan [TR010060/APP/6.2].	The surface used meets the required RSI and laid as indicated on the Environmental Masterplan [TR010060/APP/6.2]. The Principal Contractor would make sure that the specifications for noise mitigation measures are checked before installation. This would involve checking that the manufacturers' published specification meets what is required to deliver the mitigation.	Principal Contractor	Construction	DCO Requirement 3
NV7	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Noise insulation following scheme opening	A full assessment of likely eligibility for sound insulation measures in accordance with the Noise Insulation Regulations 1975 (as amended 1988) would be undertaken for the proposed scheme.	No	To comply with the Noise Insulation Regulations	N/A	Noise Insulation Regulations assessment.	Principal Contractor	Construction	-
NV8	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Outline Construction Traffic Management Plan [TR010060/APP/7.7]	Diversion route usage	Works would be planned to reduce the overall number of carriageway closures required (whilst ensuring a safe working environment for road workers) by aiming to carry out multiple works within planned carriageway closures. When planning and implementing carriageway closures needing the use of the strategic diversion route, consideration would be given to both the impacts for communities alongside the diversion route as well as aiming to avoid strategic traffic diverting through communities alongside the A12 between	No	To reduce the impact from noise and remove likely significant effects.	Assume the diversion route is that stated within Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1].	Reduction in number of carriageway closures.	Principal Contractor	Pre-construction and construction	DCO Requirement 3 DCO Requirement 9

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			junctions 19 and 25 to achieve an appropriate balance.							
NV9	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5]	Noise barriers	Noise barriers would be installed at the following locations at the following heights (relative to local ground/road surface): Southbound carriageway: • [PNB6] CH20370 to CH20480 (2m high relative to the road surface of the A12, absorptive) • [PNB5] CH20500 to CH20640 (2m, high relative to the road surface of the A12, absorptive) • [PNB4] CH24170 to CH24340 (3m, high relative to the road surface of the A12, absorptive) • [PNB3] CH35990 to CH36185 (4m, high relative to the road surface of the A12, reflective) • [PNB2] CH36680 to CH36920 (4m, high relative to the road surface of the A12, reflective) Northbound carriageway: • [PNB7] CH20395 to CH20510 (2m, high relative to the road surface of the A12, absorptive) • [PNB1] CH37110 to CH37480 (A section of noise barrier is required on top of this bund to ensure that the height of 4m above the new road surface is maintained along the bund. Any section of noise barrier would be reflective.) The location of these noise barriers is shown on the Environmental Masterplan [TR010060/APP/6.2].	No	To reduce the impact from noise.	Assessment assumes that noise barriers would be installed in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Implementation of specified noise barriers in accordance with the Environmental Masterplan [TR010060/APP/6.2]. The Principal Contractor would make sure that the specifications for noise mitigation measures are checked before installation. This would involve checking that the manufacturers' published specification meets what is required to deliver the mitigation.	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 13
NV10	Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1] Figure 2.1: Environmental Masterplan, of the	Surfacing	A surface with an RSI of -6.5 dB(A) or better would be laid on both carriageways at the following locations: • Through Hatfield Peverel (CH15375 to CH17125)	No	To reduce the impact from noise.	Assessment assumes that the specified surface would be laid in accordance with the	The surface used meets the required RSI and laid in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	ES [TR010060/APP/6.2] First iteration EMP [TR010060/APP/6.5]		• Witham bypass and the new Rivenhall End bypass between the existing junction 21 and junction 23, starting at approximately Howbridge Hall and finishing at the existing junction 23 (CH17950 to CH26175) • The new A12 bypass between the existing junction 24 and junction 25, starting west of Easthorpe Green and finishing east of Potts Green (CH35725 to CH38200) A surface with an RSI of -6.5 dB(A) or better would be laid on the southbound carriageway at the following location: • Between junction 19 and the existing junction 20A (CH11525 to CH15375) Subsequent resurfacing of these sections of the A12 would be undertaken with a surface meeting the RSI described above as a minimum.			Environmental Masterplan [TR010060/APP/6.2].	A Highways Agency Product Approval Scheme (HAPAS) certificate would be required from the supplier to demonstrate that the performance of the low noise surfacing meets the design specification. The Principal Contractor would make sure that the specifications for noise mitigation measures are checked before installation. This would involve checking that the manufacturers' published specification meets what is required to deliver the mitigation.			
PH1	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Human health (community wellbeing)	A Community Liaison Manager (CLM) responsible for leading engagement with affected communities and their representatives during the construction phase would be appointed. Appropriate mechanisms to communicate with local residents would be set up to highlight potential periods of disruption through the construction phase. The number of queries dealt with by the CLM would be monitored along with feedback responses from local residents, landowners and other community stakeholders. This would allow a method of identifying how effectively concerns are being addressed and provide a means of identifying measures for improvement if required.	Yes	To provide a means for the communities to have their concerns addressed, where appropriate, and to provide the protective factors for mental health: • Enhancing control • Facilitate participation	The assessment assumes the implementation of appropriate notifications to local residents during the construction phase.	Appointment of a CLM and engagement with affected communities and their representatives. Seek feedback on engagement to ensure the best practice measures are being employed at all times.	Principal Contractor	Pre-construction	DCO Requirement 3
PH2	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1]	Agricultural land use	An Agricultural Liaison Officer (ALO) would be appointed prior to construction for ongoing engagement about practical matters with affected agricultural landowners, tenants and their agents.	No	To address needs of agricultural landowners.	N/A	An ALO appointed and engagement with affected landowners, tenants and their agents.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]									
PH3	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Access	For residential properties, businesses, development land, community assets and agricultural landholdings where access would be directly affected during construction, an appropriate alternative temporary or permanent access would be provided where practicable.	No	To maintain access to residential properties, businesses, development land, community assets and agricultural land holdings.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
PH4	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Land use	All land required on a temporary basis would be reinstated to its previous condition in accordance with the provisions of Article 40 of the draft DCO (subject to the exceptions in that Article).	No	To maintain function of land use assets.	The assessment assumes that temporary land would be reinstated after the construction phase.	Implementation of the second iteration EMP.	Principal Contractor	Pre-operation	Article 40
PH5	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Land use	A record of condition of land to be temporarily used for the proposed scheme would be undertaken pre-construction.	No	To provide baseline conditions, against which appropriate reinstatement would be measured. To maintain function of land use assets.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 3
PH6	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Outline Construction Traffic Management Plan [TR010060/APP/7.7]	Public rights of way, footway and cycleway	The construction activities would be planned to limit requirements for public rights of way (PRoW), footway and cycleway closures or diversions during the construction phase, where practicable. Essential diversions for Health and Safety requirements are identified in the Outline Construction Traffic Management Plan [TR010060/APP/7.7].	No	To minimise disruption to users of PRoWs, footways and cycleways.	N/A	Implementation of the second iteration EMP and the Construction Traffic Management Plan.	Principal Contractor	Pre-construction	DCO Requirement 3 DCO Requirement 9

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
PH7	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Outline Construction Traffic Management Plan [TR010060/APP/7.7]	Walkers, cyclists and horse riders	Temporary diversion routes for walkers, cyclists and horse riders (WCH) would be provided around areas of works or nearby PRoWs where practicable and would be appropriately signed. Diversion routes would be suitable for all potential users of the existing provision (for example, where a bridleway is severed, the diversion route provided would be suitable for WCH). The proposed temporary diversion routes and closures are set out in the Outline Construction Traffic Management Plan [TR010060/APP/7.7]. Where closure of PRoWs is required during construction and no local diversion can be provided, appropriate signage would be supplied at each end of the PRoW closure to ensure the public are informed. Where relevant (for example FP 90_34 (Hatfield Peverel)) this would include provision of signage at the access points for PRoW to ensure the public do not have a wasted journey where they need to turn back on themselves part way along the PRoW at the point of closure.	No	To maintain accessibility for WCH as far as practicable and minimise disruption.	The assessment assumes the implementation of appropriate measures for diversion, segregation and closure of existing routes during construction.	Implementation of the second iteration EMP and the Construction Traffic Management Plan	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 9
PH8	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Outline Construction Traffic Management Plan [TR010060/APP/7.7]	Accessibility and community amenity	Traffic management measures as documented in the Outline Construction Traffic Management Plan [TR010060/APP/7.7], would be implemented to ensure safe access along roads within the site where necessary. The construction works would be phased such that disruption to access is reduced, with full road closures restricted to nights and weekends wherever practicable and feasible.	No	To ensure and facilitate continued performance of transport network, protect safety for all travellers and minimise disruption to communities.	The assessment assumes the implementation of appropriate traffic management measures during construction.	Implementation of the Construction Traffic Management Plan.	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 9
PH9	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Accessibility	For the period during which Bury Lane and Station Road would be closed to allow for the demolition and replacement of the bridge structures over the A12, the measures outlined in the Outline Construction Traffic Management Plan [TR010060/APP/7.7] to mitigate potential	No	To maintain access.	N/A	Implementation of the Construction Traffic Management Plan. Consultation with stakeholders such as residents, local authorities and	Principal Contractor	Construction	DCO Requirement 9

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	Outline Construction Traffic Management Plan [TR010060/APP/7.7]		severance to communities and services would be undertaken.				emergency services on measures to mitigate potential severance prior to demolition of the bridges.			
PH10	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Agricultural land use	The Principal Contractor will set method statements for i) biosecurity, ii) protection of farm assets, and iii) soil management, prior to construction, and follow the agreed method statements during construction. The method statements will make reference to the controls set out in the first iteration EMP and any subsequent detail set out in the second iteration EMP.	No	To protect agricultural assets	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5]	Principal Contractor	Pre-construction	DCO Requirement 3
PH11	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1]	Human health - Access to employment, education and skills	Temporary and/or permanent job openings identified by the Principal Contractor working on the construction of the proposed scheme shall be advertised in local job centres in settlements along the route of the proposed scheme, including Witham Job Centre.	No	To ensure that local communities, including those in areas of higher than average rates of unemployment and income deprivation, have an opportunity to benefit from employment openings which may arise from the proposed scheme	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5]	Principal Contractor	Pre-construction and construction	DCO Requirement 3
PH12	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1]	Human health - Access to employment, education and skills	The Applicant and Principal Contractor will aim to use national and local partnerships to benefit the area and will set targets ahead of the construction phase for spend through local small and medium-sized enterprises.	Yes	To provide opportunities for local business to benefit	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5]	Principal Contractor National Highways	Pre-construction	DCO Requirement 3
PH13	Chapter 13: Population and human health, of the ES [TR010060/APP/6.1]	Human health - Access to employment, education and skills	The Principal Contractor shall prepare an Employment & Skills Strategy which will set out measures such as: • Offer of apprenticeships • Work placements • Engagement with local schools and colleges with Science, Technology,	Yes	To leverage opportunities for employment and skill development and to understand the social value outcomes	Essex County Council would contribute to target setting.	Implementation of the first iteration EMP [TR010060/APP/6.5] The Principal Contractor shall engage relevant stakeholders such as	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			Engineering and Maths (STEM) ambassadors Engagement with organisations such as Local Enterprise Partnerships, Prince's Trust and community organisations to support access into construction for diverse groups.				Essex County Council to inform the monitoring target setting. Performance of the Employment & Skills Strategy shall be monitored through the quantification of the following employment and skills indicators: • Apprenticeship starts • Job starts • Placement positions • Professional status attainment • Sector skills qualifications Further targets would be agreed and could include number and proportion of new starts who would be employed from the local area, along with the number who were previously unemployed.			
RDWE 1	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5] Emergency Procedures and Record of any Environmental Incidents [TR010060/APP/6.5]	Water Management Plan (water quality)	A Water Management Plan would be developed and implemented based on the plan in the first iteration EMP [TR010060/APP/6.5] to mitigate potential adverse impacts on the water environment during construction of the proposed scheme. Spill response and measures to support an emergency pollution response plan would be developed and implemented based on the Emergency Procedures and Record of any Environmental Incidents appendix of the first iteration EMP [TR010060/APP/6.5].	Yes (as defined in the plan)	To prevent pollution of watercourses and ensure no increase in flood risk.	N/A	Implementation of the Water Management Plan [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 3
RDWE 2	Chapter 14: Road drainage and the	Water Management	A water quality monitoring plan would be included in the Water Management Plan	Yes (as defined in the	To minimise construction	N/A	Implementation of the Water Management	Principal Contractor	Pre-construction,	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Plan (water quality)	[TR010060/APP/6.5] prior to construction covering the pre-construction phase, during construction, and post-construction, where considered appropriate. It would cover the water bodies that may be impacted as a result of construction works (refer to GS7, RDWE42, RDWE44, RDWE47 and RDWE48).	Water Management Plan)	impacts on groundwater and surface water quality within the proposed scheme footprint.		Plan [TR010060/APP/6.5]. Consultation with the Environment Agency on groundwater and surface water monitoring programme prior to the start of construction.		during construction and post-construction.	
RDWE 3	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Site layout	Where practicable, site layout would ensure material stockpiles and storage areas would not be located less than 10m from adjacent watercourses, ponds, boreholes, site drainage and not within Flood Zone 3 and overland flow paths. Where this cannot be achieved, stockpiles would be limited such that they can be moved upon receipt of any flood warning/adverse weather conditions or on site additional mitigation measures (such as bunds) would be implemented to provide an adequate barrier between the potential source of contaminated runoff and the receptor. Fuel, oil and chemicals would be stored in a safe and secure bund or other container from which they cannot leak, spill or be open to vandalism.	No	To protect the hydromorphology of watercourses and to ensure no increase in flood risk.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3 DCO Requirement 12
RDWE 4	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Construction programme	Where practicable, permanent works attenuation ponds would be constructed early in the programme. It is proposed to make use of the permanent works attenuation ponds for settlement of construction discharge water; however, some additional temporary attenuation ponds may be required in certain areas. The management and use of the ponds would be in accordance with the Water Management Plan within the first iteration EMP [TR010060/APP/6.5]. Where the permanent attenuation ponds are used during construction for drainage and treatment, any sediment accumulated would be removed prior to the end of the construction phase so as to maintain the capacity of the ponds for	No	To minimise construction impacts on groundwater and surface water quality within the proposed scheme footprint.	N/A	Implementation of the Water Management Plan [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			attenuation and water quality treatment purposes during operation.							
RDWE 5	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Attenuation ponds	Water would be pumped into attenuation ponds when required and water bowsers would use them as a water source when dust suppression is required (AQ1). The management requirements of the use of water from these ponds would be detailed in the second iteration EMP. If determined to be appropriate by regulatory bodies, alternative supplies would be considered such as connection to mains supplies.	No	To minimise construction impacts on groundwater and surface water quality within the proposed scheme footprint.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 6	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood risk	Activities within areas at risk of flooding would be managed (i.e. kept to a minimum) with temporary land-take required for construction located outside the floodplain as far as reasonably practicable, or allowances made for floodplain control measures and contingency actions. Where necessary, implementation of temporary mitigation measures would prevent an increase in flood risk as a result of flood waters displaced during temporary construction works (for example due to raised storage areas, haul roads and cabins).	No	To ensure no increase in flood risk	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 12
RDWE 7	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] Borrow Pits Report [TR010060/APP/7.8]	Construction programme	Construction work would be phased such that any required flood mitigation areas would be constructed prior to any encroachment into the floodplain caused by the proposed scheme.	No	To ensure no overall adverse impact to flood risk.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 12
RDWE 8	Chapter 14: Road drainage and the water environment,	Groundwater	Risk from groundwater flooding (during excavation) would be managed through appropriate working practices and with	No (not by default, but monitoring	To provide safe dry working environment	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 12

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]		adequate plans and equipment in place for dewatering. Specific discharge locations for flows from dewatering activities have not yet been established. Generally, discharge of such flows would be to the closest drainage ditch/watercourse. Where dewatering to watercourses is proposed, discharge rates would be carefully controlled to achieve no environmentally significant change to flood risk associated with the receiving watercourses as a result of dewatering discharges. Dewatering discharge would be temporarily paused during flood events to prevent any increased flood risk during the flood event. The Flood Risk Assessment [TR010060/APP/6.3] contains an assessment of anticipated dewatering flows.	during larger scale dewatering likely to be required by permits)	during construction and protect receiving waters from dewatering activities.		Consultation with relevant consenting authority on discharge rates.			
RDWE 9	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	All discharge peak flows would be controlled (as discharging water at high velocities into a watercourse can cause disturbance and erosion of the banks or bed) in accordance with the requirements of the permitting authority. The exit velocity at the outfall would be reduced, where required, using baffles or similar systems, and aligned downstream by 45°, ensuring they do not protrude into the channel. The same precautions would be taken when overpumping water along a watercourse. Outfalls from temporary site drainage would be to local surface water bodies and would maintain existing catchment boundaries wherever practicable.	No	To avoid deterioration of channel morphology.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 10	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Water discharge	Where groundwater control is required, isolation techniques would be considered in preference to dewatering, if feasible, to limit impacts to stream baseflow and subsequently downstream designated sites. Where discharge of water is required from the proposed scheme, for example from borrow pit dewatering or temporary	No	To prevent deterioration of water quality in receiving waterbodies.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			construction drainage, the relevant regulator would be consulted by the Principal Contractor to obtain the necessary licences, where exemptions do not apply. This would include Environmental Permits from the Environment Agency or watercourse consent from Essex County Council as the Lead Local Flood Authority, which would be subject to conditions including specific water quality requirements. For surface water quality, water would be discharged following settlement to remove suspended solids. To achieve this, temporary storage basins may be required or the attenuation ponds constructed for the proposed scheme would be used temporarily. For groundwater, water would be discharged following groundwater recharge arrangements to manage groundwater levels. The suitability of this method would be investigated through detailed design of the proposed scheme, and further investigations and impact assessments would be required for both surface water and groundwater as part of the licensing process to confirm rates of abstraction, discharge, flood risk, and areas of influence and to identify potential receptors within the area of influence.							
RDWE 11	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Groundwater	Working practices would be aligned with the Protect Groundwater and Prevent Groundwater Pollution guidance (Environment Agency, 2017).	No	To protect groundwater.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 12	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk	Drainage	Permanent drainage (including culverts) would be designed and constructed in accordance with the Surface Water Drainage Strategy (Appendix 14.6 of the Environmental Statement [TR010060/APP/6.3]) and with the	No	To ensure no increase in flood risk. To protect construction works and ensure safety of the	N/A	Permanent drainage designed and constructed in accordance with the Surface Water Drainage Strategy [TR010060/APP/6.3]	Principal Contractor	Detailed design	DCO Requirement 10

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	Assessment, of the ES [TR010060/APP/6.3] Appendix 14.6: Surface Water Drainage Strategy, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]		specifications outlined in the Flood Risk Assessment [TR010060/APP/6.3].		proposed scheme from flooding.		and with the specifications outlined in the Flood Risk Assessment [TR010060/APP/6.3].			
RDWE 13	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood risk	The Environment Agency's Flood Warning Service would be adopted by the Principal Contractor during construction and a suitable flood risk action plan developed.	No	To plan for the effective and safe evacuation of personnel (and plant, if safe to do so) from areas at risk on receipt of a flood warning.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 12
RDWE 14	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Flood risk	Where overpumping of watercourses would be utilised during construction (e.g. to enable works within watercourse channels), overpumping pipes would be sized appropriately (see BI42) for the watercourse flows in consultation with regulators.	No	To ensure no increase in flood risk	N/A	Implementation of the second iteration EMP. Consultation with regulators on overpumping.	Principal Contractor	Construction	DCO Requirement 12
RDWE 15	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1]	Flood risk	Where water retaining structures would be utilised during construction to restrict flows in watercourse channels (e.g. to enable works within watercourse channels), the structures would be designed so that they would be	No	To ensure no increase in flood risk	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 12

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]		overtopped by the 5% (1 in 20) AEP event. Therefore, the retaining structures would have minimal impact on channel capacity during a more extreme flood event.							
RDWE 16	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Drainage	Temporary site drainage would be planned to manage the risks associated with heavy rainfall or flood events appropriate to the risk during construction such as the topography, catchment size and duration of the works. Where temporary drainage is required, it would be sized to provide an appropriate standard of flood protection, with a 10% (1 in 10) AEP event standard. This would be identified within the Water Management Plan [TR010060/APP/6.5] prior to commencement of applicable works in that catchment, for example earthworks.	No	To ensure no increase in flood risk and to protect construction works from flooding.	N/A	Implementation of the Water Management Plan [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 11 DCO Requirement 12
RDWE 17	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Extent of the vegetation clearance along the riparian corridor would be carried out where required to enable the construction of the proposed scheme. Vegetation clearance would be carried out under supervision of an ECoW or appropriate supervision.	No	To protect the hydromorphology of watercourses.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 18	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Temporary culverts (if required) carrying haul roads or other temporary works across watercourses would be as short as is practicable and tied into the beds and banks to prevent bank instability. This would involve submerging the invert below the bed substrate to prevent bed scour, knickpoint formation and to maintain sediment conveyance. In addition, wingwalls would be aligned with	No	To protect the hydromorphology of watercourses.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			the banks to prevent fluvial processes from outflanking the culvert.							
RDWE 19	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Channels would be reinstated appropriately following the deconstruction of temporary structures in the channel or channel banks (i.e. culverts and outfalls). If required, works would be undertaken in accordance with an environmental permit or licence for in-channel/bankside working that would include mitigation to address impacts.	No	To prevent knickpoint formation or additional channel instabilities from occurring.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-operation	DCO Requirement 3
RDWE 20	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Construction of haul roads and temporary watercourse crossings would be designed to reduce risk of erosion. Where this is not practicable, bed and bank reinforcement would be placed along areas that are at risk of or have evidence of erosion during the construction of haul roads and temporary watercourse crossings.	No	To protect the hydromorphology of watercourses and reduce the likelihood of increased bed and bank erosion.	The type of bed and bank protection would be determined during the detailed design stage.	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 21	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Construction programme	Construction of culverts and realignments would be timed during low flow conditions where practicable.	No	To reduce the impact on flow dynamics and sediment transport.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 22	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Construction of drains behind the riverbank would be carried out in advance of the connection to the receiving watercourse.	No	To prevent deterioration of water quality in receiving watercourses.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 23	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Surface water quality	Where borrow pits are excavated, a 10m buffer would be implemented, where practicable, around any ponds or watercourses present within or adjacent to where excavations are to take place. If required, works would be undertaken in accordance with an environmental permit or licence for in-channel/bankside working that would include mitigation to address impacts.	No	To prevent impacts arising from silt-laden runoff. To prevent deterioration of water quality in receiving watercourses.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
RDWE 24	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Detailed site-specific dewatering assessments	Detailed site-specific dewatering assessments would be developed for cuttings, widenings and borrow pits as required to inform the detailed design, temporary works and subsequent permit applications.	No	To prevent deterioration of water quality in receiving water bodies.	N/A	Undertaking detailed site-specific dewatering assessments and adhering to outcomes.	Principal Contractor	Pre-detailed design	DCO Requirement 3
RDWE 25	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Soil Handling Management Plan [TR010060/APP/6.5] First iteration EMP [TR010060/APP/6.5]	Soil storage	Storage of excavated soils and made ground would be managed in such a way that soil storage periods are minimised in duration and all storage areas would be managed in accordance with the Soil Handling Management Plan [TR010060/APP/6.5].	No	To ensure no polluted water percolates into the ground or contaminated runoff is generated.	N/A	Implementation of the Soil Handling Management Plan [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3
RDWE 26	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Piling Risk Assessment	Where contaminant land or groundwater issues have been identified, a piling risk assessment is required prior to the relevant piling being undertaken to ensure that the proposed piling method would not have any adverse impact by creating new pathways for the migration of potential contamination, primarily in relation to the protection of water resources.	No (not by default, but monitoring may be needed depending on the findings of the piling risk assessment)	To ensure no preferential flow paths would be created during piling works.	N/A	Undertaking piling risk assessment and adhering to outcomes.	Principal Contractor	Pre-construction and during construction	DCO Requirement 3
RDWE 27	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Groundwater	Typically any temporary works would be designed as to not create temporary build-up of groundwater levels leading to groundwater flooding. Where required, temporary works would be designed so that they could be removed. Any temporary supports such as sheet piles that cannot be removed would be left in situ. These would be assessed to ensure that they do not lead to the long-term build-up of groundwater leading to potential flooding risks or risks to groundwater receptors such as groundwater dependent terrestrial ecosystems by restricting long-term groundwater flow.	No	To mitigate risks of groundwater flooding and impacts on groundwater receptors.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction and during construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
RDWE 28	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Groundwater	Any contaminated groundwater intercepted during construction which cannot be treated to achieve consented discharge parameters would be tanked and disposed off-site at an appropriate licensed location.	No	To avoid discharge of poor quality water to watercourses.	Use of treatment vs. disposal would depend on scale of treatment or disposal required, and it may be economical to use upgraded treatment if large volumes require disposal.	Implementation of the Water Management Plan [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3
RDWE 29	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Water quality	Where practicable, precast concrete structures would be used to minimise the impact of wet cementitious materials on groundwater and surface water quality. Any work involving wet concrete and cement carried out over, under or near a watercourse would be carried out in accordance with the agreed consent from the relevant authority. Designated areas would be set out for the purpose of concrete wash out (i.e. for concrete mixer and associated chute, tools or equipment). Requirements are detailed in the first iteration EMP [TR010060/APP/6.5].	No	To prevent deterioration of water quality.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 30	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Water quality	Where water is to be discharged to watercourses, constraints on the discharge rate, pre-treatment and the scope of the quality and level monitoring required would be agreed in advance with the Environment Agency or the Lead Local Flood Authority as the appropriate consenting authorities. It is expected that baseline monitoring would be required by consenting authorities for a period in advance of the works which would be agreed with the authorities in advance and detailed in the second iteration EMP and for any permits or consents as required.	Yes (as defined in the Water Management Plan)	To prevent deterioration of water quality in receiving watercourses.	N/A	Implementation of the Water Management Plan [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
RDWE 31	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Water quality	To prevent deterioration of water quality in receiving watercourses from the construction compounds, the construction compounds would typically include the following: • A water management area to manage site runoff from the impermeable area. • Where feasible, rainwater would drain through the granular type construction of the hardstanding on each compound, with surface water from the cabins routed to suitable soakaways where practicable. • Foul drainage from the cabin and welfare units at each compound would either be collected in storage tanks which would be emptied regularly by a tanker (with appropriate waste carrier licence etc.) for offsite disposal at a suitably licensed waste-water facility, or connection to the main sewerage would be sought from the sewerage undertaker; or foul drainage would be discharged to a watercourse following suitable treatment.	No	To prevent deterioration of water quality in receiving watercourses.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction and during construction	DCO Requirement 3
RDWE 32	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Construction Industry Research and Information Association	Construction Industry Research and Information Association (CIRIA) guidance would be adopted as appropriate from the following publications: • Environmental Handbook for Building and Civil Engineering Projects (three parts: C512, C528 and C529) (CIRIA, 2000a-c) • Control of water pollution from construction sites. Guidance for consultants and contractors (C532) (CIRIA, 2001) • Control of water pollution from linear construction projects. Technical guidance (C648) (CIRIA, 2006a) and site guide (C649) (CIRIA, 2006b)	No	To prevent deterioration of water quality in receiving watercourses. To apply good practice to working methods in relation to environmental receptors.	The assessment assumes appropriate guidance would be adopted.	Adherence to the most current standards. An ECoW would undertake regular inspections during construction to ensure compliance with wildlife guidance.	Principal Contractor	Construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• Working with wildlife: guidance for the construction industry (C961) (CIRIA, 2011) • Groundwater control: design and practice, second edition (C750) (CIRIA, 2016) • Environmental good practice on site guide (fourth edition) (C741) (CIRIA, 2015b)							
RDWE 33	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.6: Surface Water Drainage Strategy, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Surface water quality and flood risk	Maintenance and management of the drainage network and assets would be required as part of the operation of the proposed scheme. Details of these are presented in the Surface Water Drainage Strategy (Appendix 14.6 of the Environmental Statement [TR010060/APP/6.3]).	No	To prevent impacts to flood risk and deterioration of water quality in receiving watercourses.	The assessment assumes that long-term management and maintenance of the proposed scheme would be undertaken.	Adherence to the most current standards. Implementation of the Surface Water Drainage Strategy [TR010060/APP/6.3].	National Highways	Operation	DCO Requirement 4
RDWE 34	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Where reasonably practicable, standard operational hydromorphological mitigation regarding the design of drainage outfalls would comply with CIRIA guidance (Culvert, screen and outfall manual (C786) (CIRIA, 2019)) and consider the SEPA Good Practice Guide: Intakes and Outfalls (SEPA, 2019). New outfalls to watercourses would be set back from the riverbank.	No	To protect the hydromorphology of watercourses.	The assessment assumes appropriate guidance on drainage outfall would be adopted.	Adherence to the most current standards.	National Highways	Operation	DCO Requirement 11
RDWE 35	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Detailed design would incorporate the following measures, where reasonably practicable: • Excavating a two-stage channel along the Main River realignments and Ordinary Watercourses • Retain the existing length and gradient of the watercourse • Encouraging natural processes and flow variation by excavating a gently sinuous planform	No	To protect the hydromorphology of watercourses.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• Transposing natural bed material present along the existing channel • Installing decomposable geotextile bank protection along the upper banks to encourage vegetation establishment and channel stabilisation							
RDWE 36	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Flood risk	Where watercourse crossings would be required during construction, a 10% (1 in 10) AEP event standard is proposed to be used to size these crossing structures. As part of the relevant Flood Risk Activity Permit or watercourse consent application, the flood event appropriate for each watercourse would be consulted on with the Environment Agency (for Main Rivers) or the Lead Local Flooding Authority (for Ordinary Watercourses), respectively.	No	To ensure a low risk of the works causing an increase in flooding to receptors, particularly as the risk of an event occurring during the short construction timescales would be low.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 37	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Flood risk	New culverts and extensions of existing culverts would be designed such that they would not result in an increase in flooding (for up to the 1% (1 in 100) AEP event plus allowance for climate change). Where this cannot be achieved due to local constraints, additional mitigation would be provided to ensure no significant effect on flood risk.	No	To ensure no increase in flood risk.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
RDWE 38	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood Risk	An assessment of blockage risk would be undertaken on all existing and new culverts in accordance with the guidance in the Blockage Management Guide (Environment Agency, 2021). Trash screens would be incorporated into the permanent design where this assessment identifies that they would be required. Where trash screens are identified as being required on culverts, an appropriate maintenance regime will be put in place by National Highways to reduce blockage risk.	No	To ensure no increase in flood risk.	Screens can be incorporated where required and would be suitably maintained to reduce blockage risk and ensure no increase in flood risk.	Undertaking blockage risk assessment on all existing and new culverts and adhering to outcomes.	Principal Contractor	Detailed design	DCO Requirement 10 DCO Requirement 11
RDWE 39	Chapter 14: Road drainage and the water environment,	Hydromorphology	Standard hydromorphological mitigation for designing culverts would comply with good practice. These would include the following, where practicable:	No	To protect the hydromorphology of watercourses.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5]	Principal Contractor	Detailed design	DCO Requirement 10

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	of the ES [TR010060/APP/6.1] Appendix 14.6: Surface Water Drainage Strategy, of the ES [TR010060/APP/6.3] First Iteration EMP [TR010060/APP/6.5]		• New culverts to include culvert diameters that match that of the natural channel. • Limit the length of newly constructed culverts and extensions to prevent loss of the natural bed and banks. • Bury the invert beneath the natural bed of watercourses to allow the continuation of sediment conveyance and reduce the impact on local flow dynamics. • Tie-in new and extended culverts with the bank to prevent the outflanking of the culvert by fluvial processes. • Where the outlets or inlets tie in with channel or realignment, these tie-in points to involve realigning the channel to a gentle bend rather than a perpendicular bend.				Implementation of the Surface Water Drainage Strategy [TR010060/APP/6.3].			
RDWE 40	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First Iteration EMP [TR010060/APP/6.5]	Hydromorphology	Standard hydromorphological mitigation for designing bridges would comply with good practice. These would include the following, where practicable: • Bed and bank reinforcement to only be considered if potential erosion due to new or extended structures cannot be prevented • If piers are required for the new or existing bridges, they would be designed to allow the passage of large woody debris	No	To protect the hydromorphology of watercourses.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
RDWE 41	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Water Management Plan [TR010060/APP/6.5]	Hydromorphology	Monitoring would be required on Ordinary Watercourse 11, River Chelmer, River Blackwater, Boreham Brook, River Ter, Domsey Brook and Roman River to determine whether bank protection is required. This would involve geomorphological walkover surveys over the course of one year following the completion of the construction of the works likely to impact the channel. The surveys would be carried out by a geomorphologist and involve	Yes (as defined in the Water Management Plan, undertaken twice a year in May/June and September. This would ensure	To prevent lateral adjustment along the watercourse.	N/A	Implementation of the Water Management Plan [TR010060/APP/6.5].	National Highways	Operation	DCO Requirement 4

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			observations of the channel through taking photographs of the affected areas and comparing them with either images taken from the previous surveys or baseline conditions. This would be used to inform any potential need for adaptive management.	vegetation is visible but not so well developed that it obscures observations or makes access difficult.)						
RDWE 42	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Hydromorphology	Introduce sediments along the realignments of Rivenhall Brook and Roman River to replicate a pool-riffle sequence, which would act as a natural flow regulation. Sediments would also be introduced to Domsey Brook (east and west) and the River Brain. For all named crossings this would be subject to no reduction in peak flow capacity. During detailed design, input to the frequency of riffles, their grain size and the associated channel cross-sections and long-profile gradient would be provided by a hydromorphologist.	No	To prevent changes in flow regime and dynamics, and sediment transport dynamics. To improve riverine habitats along the named watercourses and natural processes along the realignments and reduce the likelihood of channel instability.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design and construction	DCO Requirement 3
RDWE 43	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.4: Groundwater Assessment of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Groundwater abstractions	Ongoing consultation with the Environment Agency, the local authority and private landowners during detailed design would be undertaken to confirm the status of licensed and unlicensed groundwater abstractions potentially impacted by the proposed scheme and request that all the details be provided. This includes but is not limited to the following locations identified in the Environmental Statement [TR010060/APP/6.1] and shown in Figure 14.3 [TR010060/APP/6.2]: • LGA-17 • LGA-7 • LGA-5 • LGA-6	Yes (as defined in the Water Management Plan)	To protect groundwater users.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• LGA-2 • LGA-3 • LGA-24 • LGA-27 • LGA-33 • PGA-2 • PGA-5 • PGA-1 • PGA-3 • PGA-7 • PGA-8 • PGA-13 • LGA-10 • LGA-26 For all active abstractions (licensed or unlicensed), the following mitigation measures would be implemented during detailed design: • Gather further information on groundwater abstractions (including nature, depth and confirming location of the abstraction) and update the impact assessment to confirm whether additional measures would be implemented. • Should the revised assessment confirm that additional measures are required, monitoring of the groundwater abstractions prior to and during construction would take place and potentially be extended for a short period post-construction. • Should monitoring indicate an impact during the proposed work, a temporary replacement water supply would be provided, where practicable. If monitoring demonstrates a long-term impact, an alternative solution would be proposed.							

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
RDWE 44	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.4: Groundwater Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Groundwater differential settlement	A detailed differential settlement risk assessment based on the detailed design and supplementary ground investigation would be undertaken to assess the potential for differential settlement to all buildings identified in Groundwater Assessment (Appendix 14.4 of the Environmental Statement [TR010060/APP/6.3]). Following supplementary ground investigation and updated dewatering assessment, the predicted drawdowns at buildings would be determined and settlement risks assessed. Where required, detailed settlement risk assessment would be undertaken at locations where risks of differential settlement are identified. Should the detailed risk assessment(s) identify buildings at risk of differential settlement, a condition survey would be undertaken for any such building(s) prior to the relevant works commencing. Asset protection measures as specified in the condition survey would be implemented, subject to landowner consent (where required), prior to relevant works.	No	To prevent significant effects to buildings.	N/A	Undertaking detailed differential settlement risk assessment and adhering to outcomes.	Principal Contractor	Detailed design	DCO Requirement 3
RDWE 45	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Groundwater quality	Following a refined characterisation of groundwater quality at road cuttings and widenings expected to intercept groundwater, the detailed groundwater quality assessment would be updated as part of the surface water drainage detailed design. This would determine whether intercepted groundwater at individual cuttings, widening or other structures can be mixed with road runoff or whether it should be kept separate through separate drainage systems.	No	To determine whether intercepted groundwater at individual cuttings, widening or other structures can be mixed with road runoff or whether it should be kept separate.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 10
RDWE 46	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.4: Groundwater	Groundwater	Groundwater level monitoring using dataloggers would continue at boreholes BH2058, BH2059 and BH2060 within Wet Woodland 7, and beside borrow pit I and the A12. This would be complemented by a National Vegetation Classification (NVC) survey to refine baseline habitat at Wet Woodland 7 and	Yes (as defined in the Water Management Plan)	To prevent significant effects to Wet Woodland 7.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]		surface water monitoring to provide an understanding of the proportion of surface water which supports Wet Woodland 7 prior to excavation of borrow pit I. Additional ground investigation would include pumping tests at borrow pit I to support a more detailed dewatering impact assessment. BH2058, BH2059 and BH2060 would continue to be monitored during the pumping tests and during construction if necessary.							
RDWE 47	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.4: Groundwater Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Groundwater	A Water Balance Compensation strategy would be put in place to compensate the loss of natural groundwater recharge to Wet Woodland 7 by diverting extracted groundwater from borrow pit I towards Wet Woodland 7. The volume of water to be diverted would be based on the detailed design and dewatering impact assessment and long-term groundwater monitoring around Wet Woodland 7. The Water Balance Compensation strategy would determine whether monitoring of boreholes BH2058, BH2059 and BH2060 would continue during construction of borrow pit I and up until groundwater has rebounded. A post-construction NVC survey would be undertaken by the Principal Contractor to verify that no significant change in vegetation has taken place during construction at Wet Woodland 7.	Yes (as defined in the Water Management Plan in the second iteration EMP)	To prevent significant effects to Wet Woodland 7.	N/A	Development and implementation of the Water Balance Compensation strategy	Principal Contractor	Pre-construction	DCO Requirement 3
RDWE 48	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3]	Flood Risk	A flood mitigation bund along the right bank of the Rivenhall Brook immediately downstream of the new A12 crossing would be constructed. Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3].	No	To ensure no increase in flood risk.	N/A	Establishment of flood mitigation in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 12

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
RDWE 49	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3]	Flood Risk	The following mitigation works associated with Ordinary Watercourse 21 would be constructed: • A flood storage area upstream of the proposed A12 on Ordinary Watercourse 21 • A flood mitigation diversion (composed of a culvert and an open channel) diverting a portion of Ordinary Watercourse 21 flows to the River Blackwater south of the A12 • A flood mitigation bund alongside flood mitigation diversion open channel Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3].	No	To ensure no increase in flood risk and to protect proposed scheme from flooding.	N/A	Establishment of flood mitigation in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 12
RDWE 50	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3]	Flood Risk	The following mitigation works associated with Ordinary Watercourse 21a would be constructed: • A flood mitigation channel on Ordinary Watercourse 21a • A flood mitigation bund • A weir Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3].	No	To protect proposed scheme from flooding.	N/A	Establishment of flood mitigation in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 12
RDWE 51	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood Risk	Several flood storage areas associated with mitigating flood risk to Inworth Road would be constructed. Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3].	No	To protect proposed scheme from flooding.	N/A	Establishment of flood mitigation in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 12
RDWE 52	Chapter 14: Road drainage and the water environment,	Flood Risk	Flood storage area downstream of the proposed scheme on Ordinary Watercourse 23 and one flood mitigation	No	To ensure no increase in flood risk and to protect	N/A	Establishment of flood mitigation in accordance with the	Principal Contractor	Construction	DCO Requirement 12

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]		bund would be constructed. Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3].		proposed scheme from flooding.		Environmental Masterplan [TR010060/APP/6.2].			
RDWE 53	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood Risk	Flood storage area upstream of the proposed scheme on Ordinary Watercourse 26 would be constructed. Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3]	No	To ensure no increase in flood risk and to protect proposed scheme from flooding.	N/A	Establishment of flood mitigation in accordance with the Environmental Masterplan [TR010060/APP/6.2].	Principal Contractor	Construction	DCO Requirement 12
RDWE 54	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood Risk	Where private means of access routes, haul roads and temporary roads would cross areas of floodplain, existing ground levels would be maintained where practicable.	No	To ensure no increase in flood risk.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
RDWE 55	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3]	Flood Risk	Where access tracks for the purpose of maintenance are located in areas susceptible to flood risk, risk assessments would be completed, and appropriate mitigation would be identified as part of the operation of the proposed scheme.	Yes (as outlined in the third iteration EMP)	To reduce risk to users.	N/A	Implementation of the third iteration EMP [TR010060/APP/6.5].	National Highways	Operation	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	First iteration EMP [TR010060/APP/6.5]									
RDWE 56	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood Risk	Where additional permanent watercourse crossings are identified as being required, they would be designed to pass the 1% (1 in 100) AEP plus 40% allowance for climate change.	No	To ensure no increase in flood risk.	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 11
RDWE 57	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] Appendix 14.5: Flood Risk Assessment, of the ES [TR010060/APP/6.3] First iteration EMP [TR010060/APP/6.5]	Flood risk	Where temporary and permanent proposed WCH routes and permanent private means of access would be located in areas susceptible to flood risk, public safety risk assessments would be completed, and appropriate mitigation (such as signage) would be identified and included within the proposed scheme. Further details can be found in the Flood Risk Assessment [TR010060/APP/6.3].	No	To reduce risk to users.	N/A	Undertaking a public safety risk assessment and adhering to outcomes. Consultation would be undertaken (as appropriate) with relevant authority undertaking long-term management of the WCH routes and private means of access.	Principal Contractor	Detailed design	DCO Requirement 3
RDWE 58	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1]	Gas main diversion main river crossing	The proposed gas main diversion would use trenchless techniques to take the pipes under the River Blackwater. The minimum depth under the hard bed of the main river would be 1.5m, and this depth would be maintained for 5m either side of the banks of the river before rising. The launch and reception pits would be more than 8m from the bank of the main river. These works would fall under the Environmental Permitting Regulations.	No	Preserve bed of the River Blackwater	N/A	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3
RDWE 59	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1]	Fire water	The approach to Fire Water management will be developed and included in the second iteration EMP during the detailed design stage.	No	Mitigate water quality impacts	N/A	Implementation of the second iteration EMP.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
RDWE 60	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1]	Water quality	Measures will be included to protect waterbodies that may remain as surface expressions of groundwater after excavation from external sources of pollution during the operation of the proposed scheme. Such measures may include fencing to prevent vehicles from accessing the site to unlawfully deposit waste, and bunding to prevent excess run-off from agricultural land reaching the waterbody.	No	Prevent surface water and groundwater contamination	N/A	Implementation of the third iteration EMP.	Principal Contractor	Operation	DCO Requirement 4
RDWE 61	Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1]	Cadent Gas Diversion	Hydrological impacts on wet woodland at Blue Mills proposed LWS would be mitigated through incorporating impermeable material to prevent flow of water along any trenches excavated during construction.	No	To reduce hydrological impacts during construction.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
CC1	Chapter 15: Climate, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Greenhouse gas emissions	Preparation and implementation of a Logistics Management Plan (or similar) to manage the transport to/from and on site of employees and materials required for the construction of the proposed scheme. The Logistics Management Plan (or similar) would set out measures where practicable, to reduce distances travelled, optimise journeys and use low emission modes of transport (such as public transport) or vehicles (e.g. electric vehicles) to reduce greenhouse gas (GHG) emissions associated with transport. The Logistics Management Plan would set out measures with the aim of achieving 20% car share and 20% travel by public transport (with the use of mini-buses from local rail stations to the construction sites) for employee transport.	No	To reduce greenhouse gas emissions during construction.	The assessment assumes that measures outlined in the Logistics Management Plan (or similar) would be followed during the construction phase.	Preparation and implementation of a Logistics Management Plan (or similar).	Principal Contractor	Pre-construction	DCO Requirement 3
CC2	Chapter 15: Climate, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Greenhouse gas emissions	Identify the potential for using/reusing site-arising materials and resources, such as: • From borrow pits within the Order Limits. • Existing carriageway materials.	No	To reduce greenhouse gas emissions during construction.	N/A	Maximising the use/reuse of site-arising materials and resources.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
			• Rainwater for dust management purposes.							
CC3	Chapter 15: Climate, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Vulnerability to changes in climate	Incorporation of the requirement to use weather forecasting and to develop plans for extreme weather events (e.g. very high intensity rainfall events or heat waves) within the second iteration EMP.	No	To prevent impacts associated with extreme weather events.	N/A	Implementation of the second iteration EMP.	Principal Contractor	Construction	DCO Requirement 3
CC4	Chapter 15: Climate, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Pavement	When choosing permitted materials for sub-bases and bases at the detailed design stage, and in accordance with DMRB CD 226, have regard to the nature of those materials and of the sub-grade or any capping and the need to protect them from deterioration due to the ingress of water, the adverse effects of weather and the use of construction plant.	No	To reduce vulnerability of the proposed scheme to climate change.	The assessment assumes that materials would be selected with regards to impacts to/from climate change.	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Detailed design	DCO Requirement 3
CC5	Chapter 15: Climate, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Pavement	Laying and compaction of the sub-base and the subsequent pavement courses would be programmed, where practicable, and other steps considered, if necessary, to afford protection to the base, sub-base and subgrade to changes in climatic conditions, such as increases in heavy rainfall periods.	No	To reduce vulnerability of the proposed scheme to climate change.	The assessment assumes that pavement would be laid according to programme.	Implementation of the first iteration EMP [TR010060/APP/6.5].	Principal Contractor	Construction	DCO Requirement 3
CC6	Chapter 15: Climate, of the ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]	Maintenance	Implementation of an appropriate asset management strategy by the scheme operator to proactively identify and, where necessary, rectify potential climate related impacts (e.g. additional visual inspections of the proposed scheme's assets after extreme weather events).	Yes (as defined in the management strategy)	To reduce vulnerability of the proposed scheme to climate change.	The assessment assumes that materials would be selected with regards to impacts to/from climate change.	Implementation of the third iteration EMP [TR010060/APP/6.5].	National Highways	Operation	DCO Requirement 4
CE1	Chapter 14: Road drainage and the water environment, and Chapter 16: Cumulative effects assessment, of the	Groundwater (cumulative effect with other development)	Review groundwater levels at proposed scheme dewatering locations near Colemans Farm Quarry prior to construction works to inform dewatering strategies.	No	To mitigate significant effects on groundwater receptors from cumulative dewatering impacts from	Dewatering would be required for both schemes and timeframes may overlap	Consultation with Colemans Farm Quarry on dewatering programme.	Principal Contractor	Pre-construction	DCO Requirement 3

Ref. No.	Source Ref.	Topic	Action/commitment	Monitoring required	Objective	Assumptions	Achievement criteria	Responsible person(s)	Stage	How the action is to be implemented
	ES [TR010060/APP/6.1] First iteration EMP [TR010060/APP/6.5]				Colemans Farm Quarry and the proposed scheme.	giving rise to cumulative effects.				

Figure 1 - Woodland TPO at Blue Mills proposed LWS

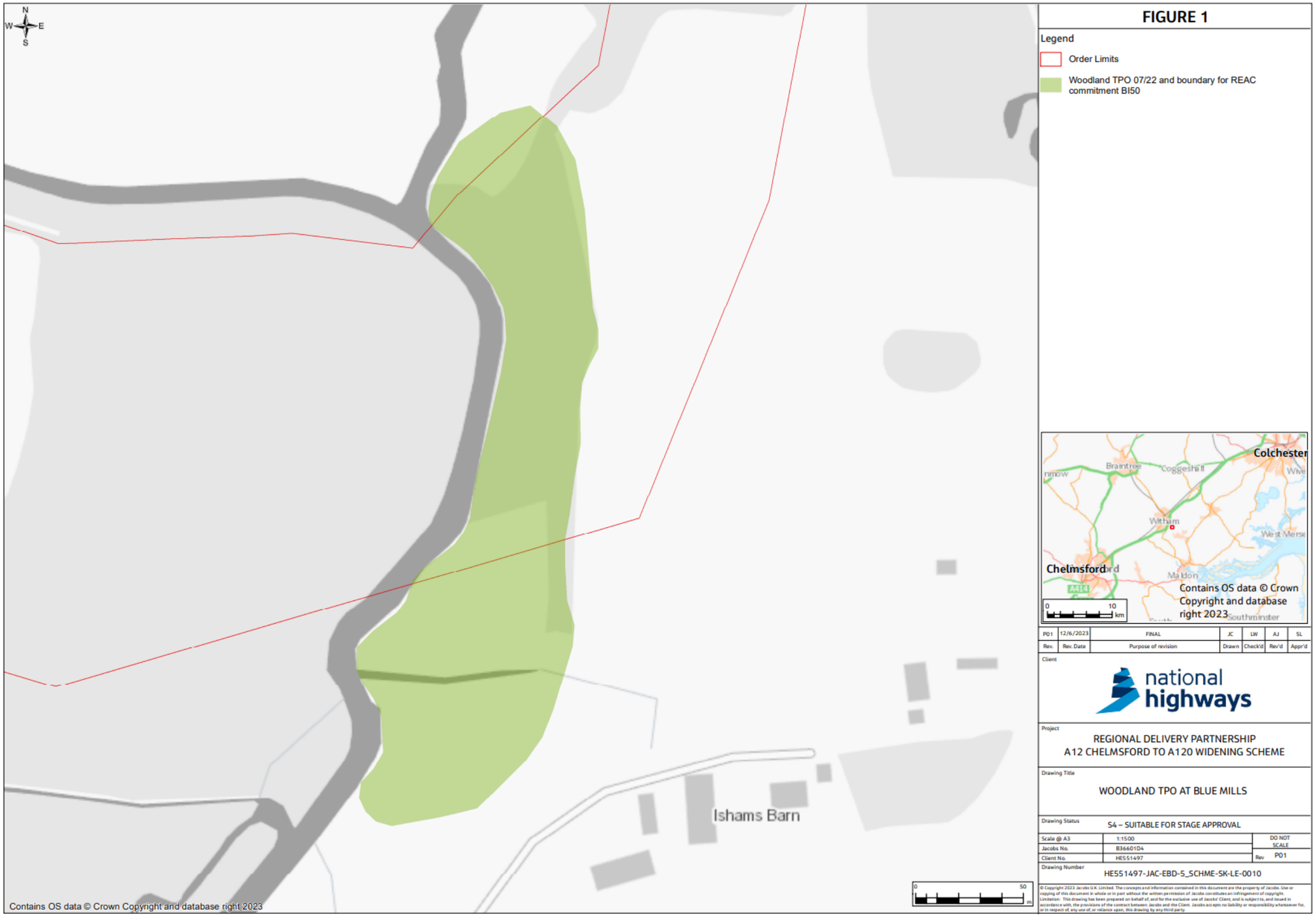

FIGURE 1

Legend

Order Limits

Woodland TPO 07/22 and boundary for REAC commitment BI50

Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	12/6/2023	FINAL	JC	LW	AJ	SL

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: WOODLAND TPO AT BLUE MILLS

Drawing Status: S4 – SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:1500	DO NOT SCALE	
Jacobs No.	B36601D4	Rev	P01
Client No.	HE551497		

Drawing Number: HE551497-JAC-EBD-5_SCHME-SK-LE-0010