M5 Junction 10 Improvements Scheme

Register of Environmental Actions and Commitments (REAC)

TR010034 - APP 7.4

Regulation 5 (2) (q)

Planning Act 2008

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

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Infrastructure Planning

Planning Act 2008

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

M5 Junction 10 Improvements Scheme

Development Consent Order 202[x]

7.4 Register of Environmental Actions and Commitments (REAC)

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Author:	M5 Junction 10 Improvements Scheme Project Team

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Contents

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1. Introduction

1.1.1. This Register of Environmental Actions and Commitments (REAC) relates to an application made by Gloucestershire County Council (GCC) ("the Applicant") to the Planning Inspectorate under the Planning Act 2008 for a Development Consent Order (DCO). If made, the DCO would authorise the construction, operation and maintenance of the M5 Junction 10 Improvements Scheme ("the Scheme"). A description of the Scheme can be found in Chapter 2 of the Environmental Statement (ES) (application document TR010063 – APP 6.2).

1.1.2. The REAC sets out the mitigation measures that have been committed to within the ES to manage the effects of the construction and operation of the Scheme to the environment, and how those mitigation commitments will be implemented through the construction of the Scheme and into its operation.

1.1.3. The REAC forms part of a suite of DCO application documents and is informed by those documents and should be read alongside them, specifically the ES which contains detailed information on the assessment and mitigation of impacts. The REAC sets out the mitigation committed for the Scheme as part of the ES.

1.1.4. In accordance with the Design Manual for Roads and Bridges (DMRB) LA 120 Environmental Management Plans[1], the REAC forms part of the Environmental Management Plan (EMP) (1st iteration) document (application document TR010063 – APP 7.4) but for the purposes of this DCO application, has been produced as a separate document to the EMP.

1.1.5. For information, the EMP (2nd iteration) will be prepared by the appointed Principal Contractor (PC) during the implementation of the Scheme and will reflect the mitigation contained within the REAC. Any remaining items from the REAC which relate to the post construction and operational stage of the Scheme will be part of the EMP (3rd iteration). The REAC acts in part as a 'bridge' between the three iterations of the EMP through the lifecycle of the Scheme.

1.1.6. The second and third EMP iterations will be prepared and maintained by the appointed PC.

1.1.7. In accordance with DMRB LA 120 the REAC provides the following details for the mitigation measures or commitments that have been made:

- Clear and specific description of the mitigation measure or commitment.
- The objective of the mitigation measure or commitment.
- How the mitigation measure or commitment is to be implemented/achieved.
- The source of the mitigation measure or commitment, including references for source documentation.
- Naming of the person responsible for the mitigation measure or commitment i.e., the PC or Environmental Manager.
- Achievement criteria and reporting requirements for the mitigation measure or commitment.
- The project stage, date or implementation and/or achievement for the mitigation measure or commitment.
- Details of any monitoring required, what should be monitored and how results should be used to effect necessary action.

1.1.8. The REAC is a working document and will be updated as the construction of the Scheme progresses. It will be finalised at the end of construction of the Scheme where it will be

[1] DMRB LA 120 Environmental management plans (formerly IAN 183/14 Environmental Management Plans, IAN 183/16 (W) Environmental Management Plans)

incorporated into the EMP (3rd iteration), the main vehicle for passing essential environmental information to the Applicant and to the body/bodies responsible for the future maintenance and operation of the Scheme.

1.1.9. The responsibility for undertaking the action to implement the mitigation measure or commitment has been allocated as clearly as possible - as a minimum to the relevant corporate body (the Applicant, Principal Contractor (PC) or the Designer). As each action is achieved throughout the pre-construction/detailed design, construction and post-construction stages, the date of achievement will be added to the REAC, with the initials of the organisation and person signing it off.

1.1.10. If the action requires consultation, agreement or approval from one or more third parties, they are identified in the 'action/commitment implementation methods' column.

1.1.11. The actions are categorised as being required prior to the commencement of the DCO works (pre-commencement), during construction, or at the end of construction or during operation.

1.2. Actions required before the commencement of the DCO (pre-commencement)

1.2.1. These actions cover:

- Designing/planning for other actions required before construction and for actions required during construction.
- Consultation with and/or seeking agreement where required, from third parties.
- Applications for European Protected Species Licences (EPSLs) and any other.
- Consents or legal procedures still required in advance of construction.
- Implementation of mitigation measures required in advance of the main works.
- Environmental works in preparation of the main construction works (archaeological watching briefs, ecology works, root protection for trees, noise monitoring, etc).

1.3. Actions required during the construction period

1.3.1. These actions cover:

- Continued designing/planning for actions required during construction and after construction.
- Implementation of the construction related mitigation measures.

1.4. Actions required after the end of construction / during operation

1.4.1. These actions cover:

- Implementation of actions required after construction, to ensure the successful establishment of mitigation measures.
- Implementation of the Scheme long-term maintenance/management measures.
- If applicable, any post-construction monitoring and evaluation measures to determine the success or otherwise of mitigation measures.

2. Register of environmental actions and commitments

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
	General (G)						
G1	Production of an Environmental Management Plan (EMP)	Preparation of an EMP. The PC to prepare an EMP for their works prior to the commencement of the works and which details the measures that shall be undertaken prior to, and during construction of, the Scheme. The construction of the authorised development must be carried out in accordance with the approved EMP. No part of the authorised development is to commence until an EMP (2nd iteration), substantially in accordance with the EMP (1st iteration), for that part has been submitted to and approved by the county planning authority, following consultation with the relevant planning authority and strategic highway authority to the extent that it relates to matters relevant to its functions. The EMP (2nd iteration) must be written in accordance with ISO14001 and so far as is relevant to that part of the authorised development, must reflect the mitigation measures set out in this REAC. An EMP (3rd iteration) must be developed and completed by the end of the construction, commissioning and handover stage of the authorised development, in accordance with the process set out in the approved EMP. The authorised development must be operated and maintained in accordance with the EMP (3rd iteration).	N/A	An EMP 1st (iteration) has been produced as part of the DCO submission (application document TR010063 – APP 7.3). The EMP (2nd iteration) shall be prepared in accordance with the approved EMP (1st iteration), secured by DCO Schedule 2, Requirement 3(2)(a). The EMP (1st iteration) will be updated by the PC to form the EMP for the construction stage (EMP 2nd iteration). The completion of an EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(1), Requirement 3(3) requires the implementation of the EMP (2nd iteration) during construction. The mitigation measures to be implemented after construction, for example covering maintenance activities for new planting will be addressed through the EMP 3rd iteration. This document will be produced from the EMP 2nd iteration document. This is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	Approval of the EMP	PC	P, C, O
G2	An effective EMP	Environmental management system. The PC shall have an Environmental Management System (EMS) certified to BS EN ISO 14001. The PC's EMS will define appropriate control measures and monitoring systems to be employed during the planning and construction of the works for all relevant topic areas. The PC's EMS shall cover the activities of all their sub-contractors. The PC will also be required to coordinate with other contractors and relevant parties that may affect their works. This will be	N/A	The EMP (1st iteration) paragraph 5.2.1 requires PCs to be accredited or seeking to be accredited under ISO 14001 and for EMS to be maintained throughout the Scheme. The implementation of this is secured by preparation and approval of the 2nd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration)	Project EMS certification to ISO 140001, maintained for duration of construction.	PC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		documented in their EMS, as appropriate. As part of their EMS, the PC shall commit to planning works in advance to ensure that, in so far as is reasonably practicable, measures to reduce environmental effects are integrated into the construction methods.		is secured by DCO Schedule 2, Requirement 3(3).			
G3	An effective EMP	Environmental policy. The PC shall develop a Scheme specific environmental policy, prior to the EMS, and to be included as part of the EMS. This policy will be developed in line with environmental policies of GCC and the Scheme objectives and will set out how the PC will: - Adhere to the requirements of environmental legislation during the works. - Commit to mitigating the impacts associated with the works. - Commit to good practice in environmental performance throughout the phase of works. - Identify opportunities to improve the Scheme's whole life performance in terms of environmental and social implications.	EMP 1st iteration	The EMP (1st iteration) paragraph 6.1.3 outlines that all personnel on site will be made aware of the PC's Environmental Policy. The implementation of this is secured by the preparation and approval of the 2nd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	Production of the policy	PC	P, C, O
G4	Management plans	Management plans. The PC shall prepare Management Plans for certain environmental topic areas as the detailed design is developed, to include as a minimum the plans listed in Annex B of the EMP (1st iteration) (application document TR010063 – APP 7.3). These plans will be appended to the EMP as appropriate. The plans shall be prepared in consultation with the relevant regulatory organisation, relevant planning authority and strategic highway authority and submitted to and approved in writing by the county planning authority.	N/A	DCO Schedule 2, Requirement 3(2)(e) requires the EMP (2nd iteration) to include the following management plans: i. Materials Management Plan. ii. Soil Handling Management Plan. iii. Noise and Vibration Management Plan. iv. Air Quality Management Plan. v. Landscape and Ecology Management Plan. vi. Emergency Preparedness and Response Plan including Flood Management Plan, and a Severe Weather Plan. vii. Pollution Prevention and Control Management Plan. viii. Archaeological Management Plan. ix. Invasive Non Native Species (INNS) Management Plan. (If shown to be required through	Approval of the EMP (2nd iteration)	PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				measures in the Landscape and Ecology Management Plan). x. Operational Unexploded Ordnance Emergency Response Plan. xi. Traffic Management Plan including Emergency Vehicle Movement Management Plan. xii. Site Waste Management Plan. xiii. Public Rights of Way Management Plan. xiv. Emergency Vehicle Movement Management Plan. xv. Community Engagement Plan. xvi. PAS 2080 Carbon Management Plan. xvii. Nuisance Management Plan. The preparation and approval of the 2nd iteration EMP is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).			
G5	Monitoring of actions	Monitoring of actions. The PC's EMS and EMP (2nd iteration) shall include procedures to monitor compliance with the Scheme's environmental actions and requirements (as set out in this REAC table) together with provisions for any corrective actions required.	N/A	The EMP (1st iteration) section 5 outlines the environmental monitoring requirements. Paragraph 5.2.4. outlines how monitoring requirements will be managed during construction. The implementation of this is secured by the preparation and approval of the 2nd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	Approval of the EMP (2nd iteration)	PC	P, C
G6	Environmental method statements	Method statements The PC shall prepare Method Statements for certain environmental topic areas as the detailed design is developed, to include as a minimum the plans listed in Annex C of the EMP (1st iteration) (application document TR010063 – APP 7.3).	N/A	Paragraph 3.2.4 of the EMP (1st iteration) outlines that the PC shall prepare Environmental Method Statements for environmental topic areas. Annex C outlines the method statements to be produced as part of the 2nd iteration EMP. The implementation of this is secured by the preparation and approval of the 2nd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration)	Approval of the EMP (2nd iteration)	PC	P

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				is secured by DCO Schedule 2, Requirement 3(3).			
G7	Emergency response procedures	Emergency response procedures. The PC will develop and implement a set of emergency response procedures as detailed in Annex D of the EMP (1st iteration) and will ensure that site operatives are familiar with all emergency arrangements through, for example training and test exercises. The procedures will include an Emergency Response Plan and a record of Environmental Incidents that may occur.	N/A	Annex D of the EMP (1st iteration), paragraph 7.3.8. requires the PC to develop and implement a set of emergency response procedures, which will include an Emergency Response Plan and record of Environmental incidents to be included as part of EMP (2nd iteration). The implementation of this is secured by the preparation and approval of the 2nd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC	P, C
G8	Evaluation of change register	A record of any design changes after the completion of the Environmental Statement. A description as to how these design changes have been assessed and any environmental actions required as a result of these changes (e.g., further environmental survey required).	N/A	Annex E of the EMP (1st iteration) will contain a register of the design changes after the completion of the ES and any environmental actions required as a result of these changes. EMP (2nd iteration) will accord with EMP (1st iteration) as secured by DCO Schedule 2, Requirement 3(2)(a). The preparation and approval of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC	P, C
G9	Environmental monitoring	Production of relevant reports relating to protected species / habitats and cultural heritage investigations, and any environmental monitoring reports, in advance of construction.	N/A	Annex F of the EMP (1st iteration) outlines the monitoring reports that are required to be produced prior to construction by the PC, to be included as part of EMP (2nd iteration). The preparation and approval of the 2nd iteration EMP, are secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC	P
G10	Effective traffic management	Traffic management will be implemented by the PC to maintain traffic flows during the construction of Junction 10, the Link Road and the widened A4019. This will include local service roads linked to the signalised junctions to enable local	Chapter 2 – The Scheme and Chapter 5 – Air Quality.	DCO Schedule 2, Requirement 3(e)(x) requires the EMP (2nd iteration) to include a Traffic Management Plan including an emergency vehicle movement management plan. The preparation and	N/A	PC	C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		residents to retain an ease of access onto the A4019, particularly for turning right (onto the A4019). A minimum of one eastbound (E/B) and one westbound (W/B) traffic lane will typically be maintained on the A4019 throughout the construction period. Exceptions may be required for essential overnight lane closures where single lane working under traffic control may need to be deployed; and in instances where stakeholder engagement through the Public Liaison Officer (see PHH9) proposes alternative traffic management arrangements that are assessed as having Scheme benefits during construction, and approved in writing by county planning authority following consultation with the relevant local planning authority and the strategic highway authority as an acceptable alteration to the Traffic Management Plan. The movements of construction traffic (including the journeys for construction staff to and from the Scheme) will also be managed through this Traffic Management Plan to avoid adverse environmental impacts on the local road network. Construction vehicles will be managed by: - Preferred routes to access each area of the site and from each major source of materials. - Preferred routes during road diversions. - Management measures for construction worker traffic. The Traffic Management Plan will include temporary diversion routes for all vehicles when sections of the existing highway network must be closed. These diversions will prioritise routing via A-roads. Signage will be implemented to discourage the use of the local road network by HDVs (Heavy Duty Vehicles), except where access is required.		approval of the 2nd iteration EMP, are secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3). Appointment of PLO to be implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC. Consultation aspects implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).			
G11	Working hours	Construction works will take place during normal work hours 07:00 - 19:00 weekdays and Saturdays. Construction works outside of these hours shall be minimised as far as possible. To maximise productivity within the core hours, contractors would require a period of up to one hour before and up to one hour after core working hours for start-up and closedown of activities. This would include but not be limited to deliveries,	EMP Section 1.6	Working hours are secured by the implementation of the EMP (2nd iteration). The preparation and approval of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1). Working hours are secured by DCO Schedule 2, Requirement 3(2)(d).	N/A	PC	C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		movement to and from a place of work, unloading, maintenance and general preparation works. This would not include operation of plant or machinery likely to cause a disturbance. These periods would not be considered an extension of core working hours. Where possible, advance notice of construction works outside of these hours will be given through the Community Engagement process.		Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).			
G12	Protection and maintenance of the Sheldon Cottages and gardens during the construction stage.	The residents of the two properties at Sheldon Cottages (located on Stanboro Lane) will relocate to other accommodation during the construction phase. The cottages will be re-occupied on completion of construction by the existing residents (pre-construction), or new residents. Whilst Sheldon Cottages and gardens are within the Order limits the cottages and gardens will be protected and maintained during the construction period so that they can be re-occupied on completion of construction.	Chapter 2: The Scheme. Chapter 13: Population and Human Health.	The retention of Sheldon Cottages and gardens is shown on the Environmental Masterplan (application document TR010063 – APP 2.13), and described in Chapter 2 – The Scheme (application document TR010063 – APP 6.2), and Chapter 15 – Population and Human Health (application document TR010063 – APP 6.11).	N/A	GCC PC	P, C.
G13	To minimise impacts from lighting at the construction stage.	Ensure that lighting required for construction activities (including site security) during the construction stage is located and maintained so as to cause minimal effects.	Statement of Statutory Nuisance	Construction lighting requirements are secured through DCO Schedule 2, Requirement 3, as part of the EMP (2nd iteration). The preparation and approval of the 2nd iteration EMP, are secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC	C
	Air Quality (AQ)						
AQ1	Control of dust during construction	Scheme specific mitigation measures to control dust during construction would be specified within contract documentation and incorporated into the EMP (2nd iteration) prior to commencement of the Scheme. Prior to commencement of the Scheme, Best Practice guidance will be followed to determine appropriate limits for the implementation of dust control measures. These measures will be captured in the Nuisance Management Plan annexed to the EMP (2nd iteration). The EMP (2nd iteration) will be submitted to and approved by the county planning authority following consultation with the relevant local planning authority and strategic highway	Chapter 5: Air Quality, Section 5.8	Requirement 3(2)(e) requires the EMP (2nd iteration to include a Nuisance Management Plan. The preparation and approval of the 2nd iteration EMP, are secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	Consultation with local planning authorities and strategic highway authority; and approval from the county planning authority prior to the start of the work at each location.	PC	C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		authorities to the extent that it relates to matters relevant to its functions. - Appropriate mitigation measures for the management of dust include the following. Full details are presented in the Nuisance Management Plan:Regular water-spraying and sweeping of unpaved and paved roads to minimise dust and remove mud and debris. - Using wheel washes, shaker bars or rotating bristles for vehicles leaving the site where appropriate to minimise the amount of mud and debris deposited on the roads. - Sheeting vehicles carrying dusty materials to prevent materials being blown from the vehicles whilst travelling. - Enforcing speed limits for vehicles on unmade surfaces to minimise dust entrainment and dispersion. - Ensuring any temporary site roads are no wider than necessary to minimise their surface area. - Damping down of surfaces prior to their being worked. - Storing dusty materials away from site boundaries and in appropriate containment (e.g. sheeting, sacks, barrels etc.). - Locating construction plant away from sensitive receptors (including residential and ecological). - Securing an adequate water supply on site for the effective suppression of dust.					
AQ2	Control of engine emissions during construction	Scheme specific mitigation measures to limit engine emissions during construction would be incorporated into the EMP (2nd iteration) prior to commencement of the Scheme. Specifically these measures will be captured in the Nuisance Management Plan annexed to the EMP (2nd iteration). The EMP (2nd iteration) will be submitted to and approved by the county planning authority following consultation with the relevant local planning authority and strategic highway authorities to the extent that it relates to matters relevant to its functions. Appropriate mitigation measures include the following. Full details are presented in the Nuisance Management Plan:	Chapter 5: Air Quality	Requirement 3(2)(e) requires the EMP (2nd iteration to include a Nuisance Management Plan. The preparation and approval of the 2nd iteration EMP, are secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	Consultation with local planning authorities and strategic highway authority; and approval from the county planning authority prior to the start of the work at each location.	PC	C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		- Ensuring plant and equipment is maintained in good working order. - Ensuring construction plant is not left running when not in use.					
	Noise and Vibration (NV)						
NV1	Manage noise and vibration at construction stage	Apply mitigation measures in alignment with the guidance detailed in BS 5228: 2009+A1:2014 - Part 1: Noise 'Code of Practice for noise and vibration control on construction and open sites', Part 1: Noise and Part 2: Vibration. (See paragraph 12.8.1) and best practicable means (BPM) in accordance with the Control of Pollution Act 1974. Details will be presented in the Noise and Vibration Management Plan. Local residents to be given advance notice of any activities likely to generate high levels of noise or vibration. Managed through the Community Engagement Plan as implemented by the PLO.	Chapter 6 – Noise and Vibration	Requirement 3(2)(e)(iii) requires the EMP (2nd iteration to include a Noise and Vibration Management Plan. The preparation and approval of the 2nd iteration EMP, are secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC	C
NV2	Manage noise and vibration in the operation of the project	Implementation of the noise barriers as described in Chapter 6 (Noise and Vibration) (application document TR010063 – APP 6.4, and shown in the General Arrangement Plans.	Chapter 6 – Noise and Vibration	The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans.	N/A	PC	C
	Biodiversity (B)						
B1	To ensure legal compliance in relation to bats	Preparation of an EPSL for bats. A draft licence application has already been produced. A number of the measures detailed in REAC Items B14 and B15 below are required in order to comply with the licence.	N/A	Details are included in the Method Statement forming part of the EPSL, including details of post-construction monitoring and reporting. Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for bats. The preparation and approval of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC GCC	P, C, O
B2	To ensure legal compliance in relation to dormice	Preparation of an EPSL for dormice. A draft licence application has already been produced. A number of the measures detailed in REAC Items B11, B12 and B13 below are required in order to comply with the licence.	N/A	Details are included in the Method Statement forming part of the EPSL, including details of post-construction monitoring and reporting.	N/A	PC GCC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for dormice. The preparation and approval of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).			
B3	To ensure legal compliance in relation to badgers	Preparation of a licence to allow for the closure of seven badger setts. A draft licence application has already been produced. A number of the measures detailed in REAC Items B13 and B17 below are required in order to comply with the licence.	N/A	Details are included in the Method Statement forming part of the EPSL, including details of post-construction monitoring and reporting. Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for badger. The preparation and approval of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC GCC	P, C, O
B4	To ensure legal compliance in relation to great crested newts	Managed through a commitment to the District Licensing Scheme for great crested newts (GCN), which is run by NatureSpace in Gloucestershire.	Chapter 7 of the ES.	Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for great crested newts. The preparation and approval of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1). Implementation of the EMP (2nd iteration) is secured by DCO Schedule 2, Requirement 3(3).	N/A	PC GCC	P, C, O
B5	Minimise adverse ecological impacts and ensure compliance with legislation	Establishment of an appropriately sized, resourced and experienced site environmental management team (including at least one Ecological Clerk of Works (ECoW)) to ensure effective implementation of all environmental mitigation. Ecological briefings and toolbox talks for all site operatives will be required to make them aware of relevant constraints and requirements prior to commencing work on the Scheme. This will require the following actions:	Chapter 7 of the ES.	The EMP (1st iteration) paragraph 2.4.3. outlines that the responsibilities for site environmental management will be delegated to key personnel by the PC. These personnel will be responsible for implementation, reporting and monitoring of mitigation and compliance during the contract period. To be implemented by regular site audits as identified in EMP (2nd and 3rd iterations). Completion, approval and implementation of the 2nd iteration EMP, is secured by	Site diary/permit to work system to be implemented.	PC	C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		• Clear demarcation of retained habitats and no allowance of vehicles or storage of materials within these areas. • Location of haul roads away from sensitive features and use of dust suppression measures during dry periods. • Covering excavations overnight or incorporating features such as ramps to prevent animals getting trapped. • Good working practices in order to minimise noise impacts during construction and operation. Specific requirements to be reviewed with the ECoW. • Avoid where practical night-time working to minimise impacts to species including bats, otters and dormice. • Specific vegetation and soil management measures will be required during construction to prevent the spread of Himalayan balsam and any other invasive non-native species present within the Scheme footprint and ensure compliance with the Wildlife and Countryside Act 1981 (as amended). Biosecurity protocols will be followed to prevent the spread of invasive species, such as restricting access to the demarcated areas and requiring boots and machinery to be cleaned before leaving these demarcated areas.		DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B6	Minimise loss of vegetation and avoid damage to existing vegetation (see also LV1 and LV2 below) to retain existing biodiversity resource as far as possible	Removal of minimal extent of vegetation necessary for the works. In particular, within areas of land temporarily required for topsoil storage or compounds, boundary features such as hedgerows will be retained. The design has ensured retention of three key areas, as follows: • An area of lowland meadow priority habitat immediately north of Stanboro Lane will be retained. • Embankments on the M5 at the point where the River Chelt passes under the motorway have been designed so that the existing culvert does not require extending on either side of the motorway. Consequently, there will be no direct loss	Chapter 7 of the ES.	PC to consider alternative working methods to further limit loss of vegetation wherever possible. Annex C of the EMP (1st iteration) requires a site clearance method statement to cover existing vegetation and an arboriculture method statement to be included with EMP (2nd iteration). EMP (2nd iteration) is secured by DCO Schedule 2 Requirement 3(1) and 3(2)(a). Opportunities to reduce habitat loss will be reviewed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	N/A	Design team PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		of river habitat or alterations to channel bed and banks in this location. • River Chelt bridge (Work No. 5(d)) will be a clear span structure with set-back abutments (approximately 4 m from the watercourse margin), thereby avoiding direct impacts to the in-channel and bank top habitats, ensuring fauna can continue to move along the watercourse unimpeded. Any retained vegetation will be clearly demarcated with no allowance of vehicles or storage of materials within these areas. The root zones and canopies of trees and areas of woodland to be retained will be protected during construction. Protection of retained vegetation (trees and hedges) in accordance with the Arboricultural Impact Assessment (AIA) to avoid detrimental damage. Detailed design to review opportunities for further reducing habitat loss.		Retained vegetation to be protected in accordance with AIA (Appendix 9.4 (application document TR010063 - APP 6.15), secured by DCO Schedule 2, Requirement 5(4)(e).			
B7	Habitat creation and management (terrestrial) to compensate for unavoidable habitat loss and provide enhancements	An area of farmland to the southeast of Junction 10 will be transformed into an area supporting wetland habitats, scrub, woodland and species-rich grassland, whilst also fulfilling its role as a flood storage area (Work No. 7). The embankments along the Link Road will be planted with blocks of woodland and hedgerows with trees. The A4019 planting comprises hedgerows and trees to the north and south, as well as trees within the central reserve and areas of species rich grassland. The focus of the planting around the junction itself and along the motorway is blocks of woodland and linear belts of trees and shrubs, along with areas of species rich grassland. Attenuation basins and ditches will be sown with wet grassland and marginal planting. Where in strategic highway authority jurisdiction, planting is to be in accordance with NH requirements (including the Manual of Contract Documents for Highway Works (MCHW), Landscape Design (LD117) and the Low Nutrient Grasslands policy (ref.: *Major Projects Delivery Services (October 2020), Low Nutrient Grasslands (version number MPI-85-102020)*) (NB. liaison with NH to be undertaken during detailed design to agree plant species in NH jurisdiction). Where	Chapter 7 of the ES.	The location and preliminary design of the new habitats is shown on the Environmental Masterplan (application document TR010063 – APP 2.13). Management of the created habitats will be implemented through the Landscape and Ecology Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(v). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Opportunities for further habitat creation will be reviewed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	Review of detailed design by Environment specialists. Environmental audits during, and post, construction.	Design team PC GCC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		in the county planning authority jurisdiction, planting will be in accordance with GCC Highways and Biodiversity Guidance for Gloucestershire May 2022 – to be undertaken at detailed design. Species rich grass areas will have low nutrient/minimal topsoil, to promote wildflower growth. Habitat creation will occur in suitable planting seasons as early as possible throughout the construction programme to reduce the time lag between habitat loss and habitat planting and establishment. Natural refugia comprising log piles will be created for small mammals, reptiles and amphibians using cleared vegetation. Unwanted logs from vegetation clearance and stones from ground works will be used to create piles close to newly created drainage attenuation basins. Split logs, dead wood, rocks and bricks, loosely filled with topsoil on gentle slope provide a good refuge and hibernaculum for great crested newts. Careful consideration of placement and design to maximise use and prevent possible flooding, drying out and aesthetic complaints from the public will be necessary. These details will be addressed as part of the detailed design. The function of the new habitat created will be to maintain the functionality and connectivity of the existing green infrastructure network, in conjunction with the existing vegetation that is retained.					
B8	Habitat creation and management (aquatic) to compensate for unavoidable habitat loss and provide enhancements	In the sections 100 m upstream and downstream of the River Chelt Link Road crossing (Work No. 5(d)) and the M5 culvert for the River Chelt, mitigation measures will be implemented to improve hydromorphological and ecological diversity. These include: • Enhanced riparian and marginal aquatic planting to enhance biodiversity and allow for dappled lighting. • Bank reprofiling or the creation of berms and two stage channels to enhance flood plain connectivity. • Installation of in channel morphological enhancements for example: riffle pool	Chapter 7 of the ES.	The location and preliminary design of the new aquatic habitats is shown on the Environmental Masterplan (application document TR010063 – APP 2.13). Opportunities for further habitat creation will be reviewed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	Review of detailed design by Environment specialists. Environmental audits during, and post, construction.	Design team PC GCC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		sequences and/or large wood sections/pieces. On the Leigh Brook, downstream of the Leigh Brook culvert (Work No. 1(m)), a section of approximately 200 m of channel will be enhanced through: • Bank reprofiling. • Re-meandering. • Vegetation management. • Installation of large wood sections/pieces. Six attenuation basins will be created as part of the drainage strategy for the Scheme. They will include variations in bed topography, shallow bank slopes to create drawdown zones, island features and marginal shelves. They will be planted with submerged and marginal plants, with additional surrounding planting to embed these features into the landscape. New ditches will be planted with a wet grassland seed mix of appropriate local provenance.					
B9	To achieve Biodiversity Net Gain	The achievement of Biodiversity Net Gain commitments relies on the above habitats being created and managed appropriately in order to reach the target condition, as follows (the timeframes refer to the time after planting): • Individual trees – assumed to meet moderate condition in 27 years. • Grassland with bulbs – assumed to meet moderate condition in four years. • Species rich grassland – areas assumed to meet moderate and good condition in five and ten years respectively. • Woodland – assumed to meet moderate condition in 15 years. • Linear belts of shrubs and trees/shrubs with intermittent trees, shrubs and scrub – assumed to meet moderate condition in five years. • Waterbodies and associated plants – Assumed to meet moderate condition in three years.	Appendix 7.18	The location and preliminary design of these habitats is shown on the Environmental Masterplan (application document TR010063 – APP 2.13). Implemented through the detailed design. Details of how the habitat creation measures will be implemented, managed, and monitored will be within the EMP (2nd iteration). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	Design team OC GCC	C, O

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		• Banks and ditches sown with wet grassland – Assumed to meet moderate condition in four years. • Wet grassland with marginal planting – Assumed to meet moderate condition in five years. • Native species hedgerow – Assumed to meet moderate condition in five years. • Native species rich hedgerow with trees – Assumed to meet moderate condition in ten years.					
B10	Habitat creation and management to compensate for unavoidable loss of lowland meadow priority habitat	22.46 ha of species rich road verge will be created within the Order limits. Part of this area is specifically to compensate for the loss of approximately 0.1 ha of lowland meadow priority habitat along the A4019. The approach to habitat creation will be refined during detailed design and a Road Verge Compensation Strategy will be produced during the detailed design stage which will include details about the creation and long term management of the species-rich grassland. The strategy will follow the broad principles listed below, which have been agreed with Natural England, and will ensure compliance with Gloucestershire Highways and Biodiversity Guidance, National Highways Manual of Contract Documents for Highway Works (MCHW), DMRB Landscape Design (LD117) and National Highways Low Nutrient Grasslands policy (Major Projects Delivery Services (October 2020), Low Nutrient Grasslands (version number MPI-85-102020)): - The species rich grass areas will have low nutrient / minimal topsoil, to promote wildflower growth. - The approach to habitat creation will be to match the species composition and community to that which will be lost by utilising either collected seed and/or green hay sourced from an appropriate local donor site (potentially through the Glorious Cotswold Grasslands initiative run by the Cotswold AONB). Consideration will be given	Chapter 7 of the ES.	Species rich road verge shown in the Environmental Masterplan (application document TR010063 – APP 2.13), and described in Chapter 7 – Biodiversity (application document TR010063 – APP 6.5). Targets will be set to monitor against, focusing on target species and condition criteria in line with the habitat condition assessment as set out within the Biodiversity Metric 3.0 Technical Supplement[2]. These will be agreed with the relevant consultees, in addition to the method of monitoring and frequency of monitoring, during detailed design. Implemented through the Landscape and Ecology Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(v). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C, O

[2] Stephen Panks A , Nick White A , Amanda Newsome A , Jack Potter A , Matt Heydon A , Edward Mayhew A , Maria Alvarez A , Trudy Russell A , Sarah J. Scott B , Max Heaver C , Sarah H. Scott C , Jo Treweek D , Bill Butcher E and Dave Stone A 2021. Biodiversity metric 3.0: Auditing and accounting for biodiversity – Technical Supplement. Natural England.

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		to habitat translocation, noting that the success of any translocation relies on habitat being translocated very rapidly to a pre-prepared receptor area. This option therefore may not align with the construction programme. - The areas of species-rich road verge (once created) will receive management and maintenance at an appropriate frequency and time of year and all arisings will be collected and taken off site. - Targets will be set to monitor against, focusing on target species and condition criteria in line with the habitat condition assessment as set out within the Biodiversity Metric 3.0 Technical Supplement. All parties will be signed up to the targets and objectives necessary to achieve 'good' condition. - The areas will be monitored and management will be reviewed and adapted as required to ensure the target condition is reached. - The strategy will be designed and agreed with Natural England and other relevant stakeholders.					
B11	Habitat creation to compensate for loss of dormouse habitat	Measures include (as shown on the Environmental Masterplan (application document TR010063 - APP 2.13), with specific hedgerow numbers shown in Figure 7-2A in Appendix 7.2 (application document TR010063 - APP 6.15)): New hedgerows will be planted parallel with and to the north of the A4019, and a new hedgerow is proposed from H205 to H207, south to north, perpendicular to the A4019 (Work No. 4 (j)). New hedgerows will be planted with a mixture of species including those of value to dormice such as hazel, pedunculate oak, honeysuckle, bramble, sallow, blackthorn and hawthorn. Note no blackthorn to be planted on NH land. Planting will take place between early November and March using 60-90 cm whips with biodegradable tree guards, in a double row at a spacing of 20-30 cm. New scrub will be planted on the M5 southbound soft estate, north of Junction 10. This will include a mixture of species including hazel, hawthorn, honeysuckle and bramble, all of which are of	Chapter 7 of the ES. Dormouse licence	Habitat creation shown in the Environmental Masterplan (application document TR010063 – APP 2.13), and described in Chapter 7 – Biodiversity (application document TR010063 – APP 6.5). Post-construction monitoring of the dormouse population will be undertaken in accordance with the Method Statement that will form part of the EPSL, which will be agreed with Natural England. This will include three nest box monitoring visits each monitoring year in February/March (to clean and repair or replace dormouse nest boxes), in May/June (pre-breeding) and September/October (post-breeding), for a period of five years following completion of development within the dormouse licence area. Monitoring of newly created habitat is described below.	Requirements for reporting will be detailed within the licence received from Natural England.	PC GCC	P, C, O

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		value to dormice. No blackthorn to be planted on NH land. Planting will take place between early November and late March using 60-90 cm whips with biodegradable tree guards and planted in clumps with unplanted gaps to create open ground as part of the mosaic. New woodland will be planted on the M5 southbound soft estate, north of Junction 10, and along the A4019 soft estate eastbound near to Junction 10. This will be planted with a mixture of species; field maple, hornbeam, hazel, hawthorn, holly, crab apple, dog rose, elder and guelder rose. Planting will take place between early November and late March using 60-90 cm whips with biodegradable tree guards, spaced 2.5 m apart. No blackthorn to be planted on NH land. Nest boxes will be installed in H48, HT18, H88 and H+WD2 (approximately five in each hedgerow) during the hibernation period when the first stage of the two-stage vegetation clearance is commencing (see below). These will provide immediate resting and nesting opportunities for dormice as new planting develops and once dormice emerge from hibernation. The creation of the new hedgerow perpendicular to the A4019 will be undertaken as advance works.		Implemented through the Landscape and Ecology Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B12	Habitat enhancement to compensate for loss of dormouse habitat	Measures include (as shown on the Environmental Masterplan (application document TR010063 - APP 2.13), with specific hedgerow numbers shown in Figure 7-2A in Appendix 7.2 (application document TR010063 - APP 6.15)): Management intensity at H199, H199a, H200, H201, H205 and H206 will be reduced to being cut no more than once every three years, with their height kept at no less than 3 m. In addition, localised coppicing and planting will be undertaken at H199, H199a and H200 to increase the number of woody species to seven. H48 will have gaps planted up with a mixture of hazel, pedunculate oak, and honeysuckle. H201 will have gaps planted up with hazel, pedunculate oak, honeysuckle, bramble, sallow and hawthorn. HT18 is currently a line of poplar sp. trees, which will have hazel, pedunculate oak, and	Chapter 7 of the ES. Dormouse licence	As per the management measures described. Habitat creation shown in the Environmental Masterplan (application document TR010063 – APP 2.13), and described in Chapter 7 – Biodiversity (application document TR010063 – APP 6.5). Implemented through the Landscape and Ecology Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(v). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	Requirements for reporting will be detailed within the licence received from Natural England.	PC GCC	P, C, O

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		honeysuckle planted to create a dense understory. The habitat enhancement will be undertaken as advance works.					
B13	Habitat management to ensure success of newly created habitats for dormice	Hedgerows will be managed for 10 years following completion of the enhancement works as follows: Hedgerows to be retained and enhanced will be managed less intensively, being trimmed every three years on rotation, with a minimum height of 3 m maintained. Newly planted hedgerows will be cut in an 'A' shape to maintain a wide base. Weeding and annual top up of mulch within 0.5 m radius of each whip to 50 mm depth. Woodland will be managed for 15 years following completion of planting as follows: Maintain a weed free zone of 0.5 m radius around the base of each plant. Poorly performing or dead specimens will be removed. Annual top up of mulch within 0.5 m radius of each whip to 50 mm depth. Infill planting/gapping up, as appropriate. Annual pruning, appropriate to species. Scrub will be managed for 10 years following completion of planting as follows: Maintain a weed free zone of 0.5 m radius around the base of each plant. Poorly performing or dead specimens will be removed. Annual top up of mulch within 0.5 m radius of each whip to 50 mm depth. Protective fencing and guards will be checked annually and repaired or replaced as required. This will be undertaken until planting is established, anticipated to be five years. Replacement specimens will be planted as appropriate in early November to late March for 10 years following the planting.	Chapter 7 of the ES.	As per the management measures described. Habitat creation shown in the Environmental Masterplan (application document TR010063 – APP 2.13), and described in Chapter 7 – Biodiversity (application document TR010063 – APP 6.5). Implemented through the Landscape and Ecology Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(v). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	Requirements for reporting will be detailed within the licence received from Natural England.	PC GCC NH	O
B14	Structures, boxes and features to compensate for loss of bat roosts	Two structures will be constructed to provide compensation for loss of confirmed/assumed bat roosts. One is located within the flood storage area (Work No. 7) and another is located just north of the A4019, to the east of Uckington (Work	Chapter 7 of the ES.	Details will be included in the Method Statement that will form part of the EPSL, which will also include details of post-construction monitoring. Post construction monitoring is likely to require monitoring of	Requirements for reporting will be detailed within the licence received	PC GCC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		No. 4(p)). The location at Uckington is within a proposed dark corridor within the Elms Park development, and planting is included between the structure and the A4019 to minimise disturbance. Proposed designs of the buildings are included in Appendix 7.15, the Bat Mitigation Strategy (application document TR010063 - APP 6.15) but will be designed during the detailed design stage. These structures must be built and be functional for roosting bats prior to the demolition of any buildings. Heras fencing or similar will be installed around the buildings (the ECoW will advise on an appropriate buffer), within which no works will take place, including vehicular access and storage of materials. In addition to the two compensatory bat roost structures, the following features are proposed: - North of the A4019, west of the M5 – 3 crevice dwelling bat roost structures, 5 artificial bat boxes for crevice dwelling species, 1 artificial maternity bat box, 1 tree roosting feature. - North of the A4019, east of the M5 – 2 horseshoe night roosts, 3 hibernation bat boxes, 1 tree roosting feature. - South of the A4019, east of the M5 – 3 horseshoe night roosts, 2 crevice dwelling bat roost structures, 5 hibernation bat boxes, 1 artificial maternity bat box. - South of the A4019, west of the M5 – 1 artificial bat box for crevice dwelling species, 2 tree roosting features. The precise number of additional features will be reviewed and agreed with Natural England following further surveys. Locations to be agreed during detailed design. Further detail is included in Appendix 7.15, the Bat Mitigation Strategy (application document TR010063 - APP 6.15).		maternity, hibernation, tree roost features and the bat mitigation buildings for approximately five years post-construction. All bat boxes will be maintained for a minimum of 10 years, which is the anticipated lifespan of a tree feature. Should the bat boxes show evidence of degradation in this time the bat boxes will be replaced with a like-for-like bat box where possible. The bat mitigation structures will be maintained for a minimum of 25 years, and designed for longevity of 50 to 100 years, in line with the likely lifespan of roosting features within a building. At monitoring visits, the bat mitigation structures will be assessed for necessary maintenance. Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for bats. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5). The two structures are shown in the Environmental Masterplan (application document TR010063 – APP 2.13), and described in Chapter 7 – Biodiversity (application document TR010063 – APP 6.5).	from Natural England.		
B15	Additional mitigation measures specifically for bats	The following additional measures will also be implemented to minimise impacts to bats: Demolition of structures or felling of trees with confirmed roosts will be undertaken under licence and will avoid the key sensitive periods for bats. This will require avoidance of works between May	Chapter 7 of the ES.	Details will be included in the Method Statement that will form part of the EPSL, which will also include details of post-construction monitoring. Annex C of the EMP (1st iteration) requires environmental method statements to be	Requirements for reporting will be detailed within the licence received from Natural England.	PC GCC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		and August (to avoid the breeding season) and December to February (to avoid the hibernation season). Demolition of structures or felling of trees with bat roost potential but where the likely absence of bats has been confirmed will be completed under a Precautionary Method of Working (PMW) under guidance from an appropriately licenced ECoW. The key sensitive periods above will also be avoided. Trees with confirmed or potential bat roosts will be inspected by a licenced ecologist using an endoscope, or alternatively an emergence/re-entry survey will be undertaken immediately prior to the works to confirm the absence of bats. Trees will then be soft felled. Any tree roost features will be retained and the limbs/sections that have the bat roost features will be strapped onto other trees or carefully positioned artificial poles. Localised acoustic barriers to reduce disturbance to known roosts where roosts can be maintained. Temporary installation of Heras fencing or similar to protect flight lines where key commuting route vegetation is cleared (along the River Chelt Link Road crossing and north of the River Chelt parallel to the M5). Bat 'hop-overs' comprising tall planting at least 6 m high have been included within the landscape design at 11 strategic locations across the Scheme. These aim to encourage bats to cross the road at a greater height, and thereby reduce potential collisions with vehicles. Locations are shown in Appendix 7.15, the Bat Mitigation Strategy (application document TR010063 - APP 6.15).		produced as part of the EMP (2nd iteration) and includes a precautionary method statement for bats. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B16	Construction of artificial badger setts to compensate for the loss of two main badger setts and ensure legal compliance.	Two artificial badger setts have been incorporated into the design to provide compensation for the loss of two main badger setts. The design of artificial badger setts is included in the Draft Badger Licence. Locations are within 100 m of the original setts and are shown in the Draft Badger Licence. Both artificial setts will be planted with a meadow mix and scrub to provide suitable habitat and cover for badgers. Artificial sett creation must take place and be ready for badger habitation ahead of badger exclusions and closure process.	Chapter 7 of the ES.	Monitoring of the artificial setts will be undertaken on a regular basis following their installation to ensure badgers have found the setts. Exclusion of the main setts will not be undertaken until it can be confirmed that badgers have found the respective artificial sett. Following the closure of the main setts, the artificial setts will be checked twice annually throughout construction. Details will be included in the Method Statement that will form part of the EPSL	Requirements for reporting (if necessary) will be detailed within the licence received from Natural England.	PC GCC	P, C, O

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				licence application, which will also include details of post-construction monitoring and reporting. Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for badgers. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B17	Badger sett exclusion and closure to ensure legal compliance.	The proposed process of sett exclusion and closure is as follows, subject to Natural England agreement: Closure will be planned for between 1 July to 30 November (outside of badger breeding season). At least four weeks prior to the start of the exclusion, the area over and across the setts will be strimmed of vegetation, to ensure all the entrances have been located. All of the entrances will be monitored for evidence of badger activity to confirm use/disuse. This will be achieved using sticks placed vertically in front of the entrances, or by placing a plug of loose hay in the entrance, and by loosening the soil on the spoil heaps. Motion sensor cameras may also be used to aid the monitoring of activity at the setts. On receipt of a licence from Natural England, one-way badger gates will be fitted to all entrances showing evidence of use by badgers. Entrances that have been shown to be disused throughout the four weeks prior to the exclusion will be hard stopped. The area around the one-way gates and across all hard-stopped entrances will be proofed with 2.5 mm gauge medium stock netting (C8/80/15) extending to at least 5 m radius around all the sett entrances. The netting will be laid on the ground and tightly moulded to the contours of the sett and attached to wooden pegs and metal J pegs driven	Chapter 7 of the ES.	The setts for closure will be monitored at least once every three days over the exclusion period (three weeks). The monitoring visits will also include a check and any necessary maintenance of the badger proof netting and gates. The use of the gates will be monitored using small sticks placed in front of the gates and sticks placed at arm's length down the tunnels will be used to monitor for badgers remaining inside the sett. Motion sensor cameras will be used to monitor badger activity around the setts. Monitoring will be undertaken either by the named ecologist or a suitably qualified accredited agent who is named on the licence, to ascertain the level of activity, to ensure the gates are working correctly and to assess the condition of badger-proof netting. Details will be included in the Method Statement that will form part of the licence application, which will also include details of post-construction monitoring. Annex C of the EMP (1st iteration) requires environmental method statements to be produced as part of the EMP (2nd iteration) and includes a precautionary method statement for badgers. This will be	Requirements for reporting (if necessary) will be detailed within the licence received from Natural England.	PC GCC NH	P, C, O

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		firmly into the ground, to deter badgers from digging back into the sett. The one-way gates will remain in place for a minimum period of 21 days and will be checked every three days to ensure badgers have not re-entered the sett or breached the netting. The use of the gates will be monitored using small sticks placed in front of the gates and sticks placed at arm's length down the tunnels will be used to monitor for badgers remaining inside the sett. Motion sensor cameras will be used to monitor badger activity around the setts. Following 21 days with no evidence of badgers entering the setts, the gates will be secured (prevented from opening in either direction) or removed and the entrances hard stopped, under the direction of the licence holder or an accredited agent. The setts will then be destroyed to their full extent using a mechanical digger or excavator, under the direction of the named ecologist or an accredited agent, as soon as possible after completion of exclusion. All conditions of the Natural England licence will be adhered to during the closure of the sett. Any non-licensed works that encroach within 30 m of a sett will be assessed by competent ecologists to ensure disturbance is minimised. Exclusion zones will be marked out around setts to ensure works do not encroach.		implemented by the preparation and approval of the 2nd and 3rd iteration EMP, Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B18	Construction of the Withybridge (A4019) underpass to provide a safe route for bats and other species	A large underpass (5 m wide and 4 m high) will be constructed underneath the A4019 east of Junction 10 (the Withybridge (A4019) underpass) (Work No. 4(b)). This will provide mitigation for bats that cross the existing A4019 to the east of the M5, providing a traffic free route for the bats across this road. The Withybridge (A4019) underpass will also provide traffic free access for pedestrians and equestrians across the A4019. Low level lighting will be provided through the underpass, with the lights switched off between sunset and sunrise. The underpass will also allow safe movement of other mammal species, reptiles and amphibians across the A4019 in this location. Light levels will be maintained at no more than 0.2 lux at the entrances to the underpass. This will be achieved through a bespoke back guard on the luminaires directly above the underpass and,	Chapter 7 of the ES.	The Withybridge (A4019) underpass is shown in the General Arrangement Plans (application document TR010063 – APP 2.9) and described in Chapter 2 – The Scheme (application document TR010063 – APP 6.2), secured by DCO Schedule 2, Requirement 11(1). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans. Details of post-construction monitoring will be agreed with Natural England but will likely include monitoring of this structure for use by bats for approximately five years post-construction.	N/A	PCGCC	P, C, O

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		potentially, a 'hood' on the entrance of the underpass.		This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B19	Additional underpasses to allow safe movement of mammals and other species across the Scheme	The following additional underpasses are proposed which will allow safe movement of badgers and otters, as well as other mammals, reptiles and amphibians across the Scheme: To the south of the River Chelt, within 50 m of the watercourse, designed specifically for otters but with the capacity to be used by other species. The design will follow DMRB guidance[3], and will comprise a 900 mm pipe located above possible flood levels. An additional two underpasses are included along the Link Road (one north of the River Chelt and one to the south) at existing hedgerows where badger activity has been identified, designed for use by badger, as well as other mammals, reptiles and amphibians. The design will follow DMRB guidance[4], and will comprise at least 600 mm pipes. The approaches will be 'softened' with appropriate planting. In addition, a series of flood relief structures are incorporated underneath the Link Road (Work No. 5(l) and (m)). These are located to the north of the River Chelt and will also function as underpasses for badgers and other species. A ledge has been incorporated in the northern-most culvert to enable use by badgers and otters during flood conditions.	Chapter 7 of the ES.	Monitoring strategy to be produced in advance of construction. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	N/A	PC Design team GCC	P, C, O
B20	Mammal proof fencing to prevent mammals gaining access to the carriageway, and to direct them to safe crossing locations	Mammal proof fencing will be installed to direct mammals into the underpasses and prevent them from accessing the carriageway. Fencing design will follow DMRB guidance[44] and will comprise chain link or welded mesh fencing attached to wooden post and rail fences using heavy duty staples. As a minimum standard, this will be at	Chapter 7 of the ES.	A monitoring strategy to be produced in advance of construction. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP.	N/A	PC Design team GCC	P, C, O

[3] Design Manual for Roads and Bridges Nature Conservation Advice in Relation to Otters. Volume 10, Section 4, Part 4. HA 81/99. (February 2001). Online: https://cieem.net/wp-content/uploads/2019/07/ha8199.pdf
[4] Design Manual for Roads and Bridges Mitigating against effects on badgers. Volume 10, Section 4, Part 2.HA 59/92. (February 2001). Online: DMRB VOLUME 10 SECTION 4 PART 2 - HA 59/92 - MITIGATING AGAINST EFFECTS ON BADGERS (publishing.service.gov.uk)

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		least 1 m high above ground with a lower section of 600 mm buried below ground, 300 mm down into the soil and a further 300 mm turned away from the fence in the direction from which badgers will approach. Where necessary (within 100 m of the River Chelt) badger and otter fencing can be combined, by adding a 300 mm mesh overhang at the top of the fence, angled away from the road. Planting will guide animals to safe crossing locations.		Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B21	Fitting of an otter ledge within the existing River Chelt culvert beneath the M5 to provide safe passage to otters at times of flood.	An otter ledge will be retrofitted within the existing River Chelt culvert beneath the M5, on the opposite side of the footbridge. Otters currently use the footbridge, but camera footage and observations have identified that it floods. Retro-fitting an otter ledge will provide safe passage during times of flood. The design will follow DMRB guidance[3]. The ledge will be 500 mm wide, 150 mm above the highest water level and will allow for 600 mm headroom.	Chapter 7 of the ES.	Monitoring strategy to be produced in advance of construction. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	N/A	PC Design team NH	P, C, O
B22	To minimise adverse impacts from lighting on biodiversity.	The Link Road will not be lit, apart from a short section at the junctions at the northern and southern ends. Wildlife-friendly lighting is to be implemented throughout the Scheme, where lighting is required. Lighting columns are proposed to be 12 m mounting height, and it is proposed to use LED luminaires with a colour temperature of 2700k which emit no upward light. Colour temperature is in accordance with ILP guidance GN08 Bats and Artificial Lighting[5]. Lighting is proposed along both sides of the A4019 from the Gallagher Retail Park (the eastern extent of the Scheme) to Junction 10 but incorporates two dark corridors to the east and west of Uckington respectively, in locations that have been identified to be frequently used by commuting and foraging bats. This includes a stretch of 92 m between the West Cheltenham Fire Station and Uckington, and a stretch 150 m west of Uckington. The 92m section will align with	Chapter 7 of the ES.	Lighting design described in Chapter 7 – Biodiversity (application document TR010063 – APP 6.5). Lighting arrangement shown on the General Arrangement Plans (application document TR010063 – APP 2.9) (secured by DCO Schedule 2, Requirement 11(1)) and described in Chapter 2 – The Scheme (application document TR010063 – APP 6.2). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans. Schedule 2, Requirement 15(1) of the DCO outlines the requirements for highway lighting. Requirement 15(2) states that the standard of the highway lighting to reflect the standard of highway lighting included in Chapter 9 (landscape and visual) of the ES.	N/A	PC Design team GCC	C, O

[5] Bat Conservation Trust (2018). Guidance Note: Bats and Artificial Lighting in the UK.

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		the dark corridor proposed as part of the Elms Park development. The lighting design is predicted to achieve a level of no more than 0.2 lux adjacent to all bat roosts to avoid illuminating roosts, potentially resulting in disturbance of the roost. Light spill on all commuting and foraging corridors will be less than 0.2 lux wherever possible. Where this is not possible, taller hedgerows will be planted in order to create a wider 'shadow'		Details of post-construction monitoring will be agreed with Natural England but will likely include monitoring of lux levels at key locations for approximately five years post-construction. The monitoring details agreed will be included in the 3rd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B23	To minimise disturbance to migratory fish within the River Chelt	The following measures will be put in place and overseen by a suitably qualified and experienced ECoW: All haul roads, lay down areas and compounds will be located at least 10 m from watercourses, except where access is required to specific locations for works to bridges/culverts for example. Site tracking routes will be arranged to avoid watercourse margins. Rotary drilling rather than percussive piling will be used during the construction of the Link Road bridge. Soft start up methods will be employed on plant being used for any in-channel works and works within 20 m of the River Chelt, including piling, at the start of each working day. The soft-start duration should be a period of not less than 20 minutes and should piling cease for a period greater than 20 minutes, the soft start procedure must be repeated. Prior to any in-channel works or de-watering, measures shall be implemented that act to temporarily displace fish from the working area. Measures may include the removal of channel features from the working area that provide cover such as large wood to reduce the overall attractiveness of the working area for fish species. This is particularly relevant to benthic species such as European eel that frequently occupy voids between larger substrates. Such in channel features that provide cover will be replaced after the construction works. In the event that dewatering is required during the installation of bank protection, only part of the width of the channel will be dewatered. Therefore, continuity of flow and fish passage would be	Chapter 7 of the ES.	The implementation and monitoring of these measures will be the responsibility of the ECoW. Table 2-2 of the EMP (1st iteration) outlines the roles and responsibilities of the ECoW. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. The EMP (2nd iteration) will be in accordance with the EMP (1st iteration), as secured by DCO Schedule 2, Requirement 3(2)(a). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	As detailed in the fish rescue plan (to be developed and instigated in consultation with the Environment Agency and Natural England).	PC GCC	C

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		maintained at all times during construction. A fish rescue plan will be developed in consultation with the Environment Agency and Natural England, which may include the need to relocate lamprey ammocoetes prior to dewatering in order to reduce the potential for injury/mortality. The fish rescue plan will also include a requirement for an ecological watching brief. Appropriate screening of any pumping equipment during dewatering activities will be implemented (2 mm screens) to avoid any potential entrainment/mortality of fish during the works. Consider the use of temporary stop nets across the channel upstream of the works to prevent fish from becoming entrained in the working area. Works most likely to cause disturbance to migratory species in the River Chelt (i.e., the construction of the new bridge crossing and installation of bank protection associated with the crossing) will be timed to occur outside of the key ecologically sensitive periods for migratory species. February to July and October to November will be avoided as they are the key migratory periods for European eel (this also avoids the spawning period for lamprey (March to April), trout (peaks in October to November) and salmon should they be present). These periods will be confirmed through ongoing consultation with Natural England and the Environment Agency. Where works during migratory periods is unavoidable, no night-time (taken to be between 30 minutes prior to sunset until 30 minutes following sunrise) vibration work will be undertaken. If night working is essential, minimal and directional lighting will be used.					
B24	Pre-commencement surveys to update ecological constraints	A suite of pre-commencement surveys will be undertaken prior to construction. The surveys will focus on the following species in particular: Dormice – a walkover survey within 3 months of the formal licence application being submitted will be required. Badgers - Given the potential for new setts to be excavated in a short space of time, pre-construction surveys will be undertaken to ensure the current baseline information is kept fully up to date, preferably six months ahead of any works	Chapter 7 of the ES.	Section 4.3 of the EMP (1st iteration) outlines the further surveys to be obtained prior to construction. The EMP (2nd iteration) will be in accordance with the EMP (1st iteration), as secured by DCO Schedule 2, Requirement 3(2)(a). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP,	Results of pre-commencement surveys will be documented appropriately and shown on drawings.	PC	P

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		being carried out. Badger bait marking surveys are required to inform the final badger licence application, to establish territory of the clans (between February and April). Otters – pre-construction monitoring surveys will be undertaken prior to the start of works to ascertain the current status of otter resting sites. Barn owl – any potential nest sites to be directly impacted, or within 150 m of any works, will be surveyed within 48 hours prior to any work being undertaken to confirm that the feature remains unoccupied. If an occupied nest site is confirmed within 150 m of the works, an ECoW will provide advice regarding specific mitigation, such as buffer zones or temporary screening to mitigate potential disturbance. Kingfisher – A survey should be undertaken in late spring/summer to identify the presence/location of any nesting kingfisher along the River Chelt or Leigh Brook. INNS - A pre-construction INNS survey will be undertaken to enable mapping and demarcation of all stands of INNS within the Scheme footprint and identification of an appropriate control/eradication strategy. Bats - Details of pre-construction surveys for bats will be discussed and agreed with Natural England but are likely to include gap filling and updates to support final bat licence application.		post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
B25	Sensitive clearance of structures/vegetation to minimise impacts to protected species	Dormice All clearance of habitat suitable for supporting dormice to the north of the A4019 and east of the M5 will be carried out under an EPSL for dormice. All vegetation to be cleared with suitability for dormice (woody vegetation) will first be searched by hand by a licensed ecologist. Vegetation clearance will be undertaken using a two-stage approach. The first stage of clearance is between November and March (inclusive) and involves removing suitable woody vegetation to no lower than 300 mm above ground level, to encourage dormice emerging from hibernation in April or May to move to more appropriate habitat nearby. Clearance will be done by hand and in a sensitive manner to minimise the likelihood of impacting dormice hibernating at ground level. Arisings from the first-stage of the habitat clearance will be used	Chapter 7 of the ES.	Section 7.7. of Chapter 7 Biodiversity (application document TR010063 – APP 6.5) of the ES details the essential mitigation measures that will be included with the EMP (2nd iteration), which includes the recommended vegetation clearance methods and is secured by DCO Schedule 2, Requirement 3(2)(c). The EMP 1st iteration also requires the production of a site clearance method statement as part of the EMP (2nd iteration) which is secured by DCO Schedule 2 Requirement 3(a). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP,	Site diary/permit to work system to be implemented.	PC	P, C

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		to create dead hedging. These dead hedges will run either parallel or perpendicular from the cleared hedgerows to areas of retained suitable dormouse habitat to maintain connectivity and allow any hibernating dormice to disperse away from the Site when they emerge from hibernation in spring. The second stage of vegetation clearance is undertaken in April/May and involves removal of vegetation to ground level, followed by a hand search by a licensed ecologist. The methods and timing of vegetation clearance will be set out in the PMW, and in the licence method statement. Nesting birds In order to avoid destruction of active bird nests, clearance of suitable bird nesting habitat will be undertaken outside of the main bird nesting season (generally March to August inclusive in southern England) as far as possible. Any clearance during the nesting period must be preceded by a nesting bird check and overseen by an ECoW. In the event that active bird nests are found, an appropriate buffer zone must be established around the nest and clearance activities delayed within that zone until the nesting attempt has reached its natural conclusion. In order to prevent disturbance of nesting Schedule 1 bird species (e.g. barn owl and kingfisher), it may be necessary to restrict construction activities in the vicinity of Schedule 1 bird nests while they are active (see also pre-construction surveys). Reptiles and amphibians Habitat manipulation, hand and destructive searches will proceed as follows: Immediately prior to works starting on Site, all suitable habitats within the working area will be checked by the ECoW for the presence of great crested newts and reptiles. Work will not be permitted to start at the site until hand searching of the working areas has been completed. Any piles of wood, brash and rubble within the working area will be dismantled by hand and immediately removed from the working area, with the ECoW on-hand to provide advice, in advance of the works and ideally not during the winter hibernating period for great crested newts (November to February). Where it is not essential		post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5). Details will be captured within the relevant EPSL licence.			

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		to remove potential refuges in order to undertake the works, these will be left undisturbed. Hand searching will include carefully checking within and underneath any potentially suitable refuges such as leaf piles around logs, tree trunks, bush stems and within coppice stools. Vegetation will be strimmed / cut by the PC, with the ECoW on-hand to provide advice, to approximately 150 mm height and all debris removed from the site using hand tools (i.e., rakes and wheel barrows) to prevent use by great crested newts or reptiles. Following this initial cut the area will be checked for the presence of great crested newts or reptiles by the Ecologist. A further vegetation cut will be carried out following the initial cut to reduce the vegetation to ground level and litter removed as above. Vegetation will be maintained at a height of less than 50 mm throughout the course of the works.					
B26	Installation of bird boxes	Bird boxes will be erected to compensate for the loss of territory suitable for priority hole-nesting species. The precise location will be agreed during detailed design, but will include a minimum of ten nest boxes suitable for displaced hole-nesting species and at least one nest box specifically designed for tawny owl (such as that provided by Schwegler or the RSPB) erected in retained woodland at a height of approximately 4 m; and one grey wagtail box , which will be attached to the underside of a bridge on the River Chelt. Enhancements for hole-nesting species of birds in the form of additional nest boxes will be provided on retained mature trees, ideally situated at least 50 m from the construction footprint, and preferably prior to the commencement of any works. The precise location and number of boxes to be provided would need to be agreed during detailed design, but all boxes will be located on suitable trees between 2 m and 4 m from ground level. The boxes will comprise 20 open-fronted and hole nest boxes made of 'woodcrete' and 'woodstone' and suitable for a range of species associated with woodland and residential areas, such as 1SP Schwegler Sparrow Terrace, 3S Schwegler Starling Nest Box, 1B Schwegler Nest Box and Barcelona Open Nest Box for example.	Chapter 7 of the ES.	Section 7.7. of Chapter 7 Biodiversity (application document TR010063 – APP 6.5) of the ES, details the essential mitigation measures that will be included with the EMP (2nd iteration), which includes the installation of bird boxes and is secured by DCO Schedule 2, Requirement 3(2)(c). This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Completion, approval implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	N/A	PC GCC	P, C

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		Birds frequently occupy bat boxes, but this can be reduced by the installation of bird boxes in close proximity to bat boxes to reduce competition. Therefore, for each bat box installed, an equivalent number of bird boxes will be installed at the same location, where feasible. These boxes are in addition to those listed above. As an enhancement for barn owl, four barn owl boxes will be installed outside of 1.5 km of the Scheme boundary (and 1.5 km from any major road) following appropriate guidance[6].					
B27	Ecology surveys of signage locations on the M5 north and south of the Junction 10	New signage and associated equipment will be required in the highway verges along the M5 within the Order limits for the Scheme, to the north and south of Junction 10. The locations for this signage will be confirmed at detailed design stage, and ecology surveys will be required to identify any existing environmental constraints, for example the presence of badger setts. If such constraints are identified then the planned locations of the signs and equipment will be moved to avoid or minimise any impact.	Chapter 7 of the ES	Ecology surveys to be undertaken when preferred locations for the signage and associated equipment has been identified. Completion of these surveys to be a requirement of the DCO. Section 4.3 of the EMP (1st iteration) outlines the further surveys to be obtained prior to construction. The EMP (2nd iteration) will be in accordance with the EMP (1st iteration), as secured by DCO Schedule 2, Requirement 3(2)(a). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	Results of survey works reported and shown on drawings.	Design team PC	P
	Road Drainage and the Water Environment (WE)						
WE1	Minimising deterioration in surface water quality resulting from construction activities	The management plans to be developed as part of the EMP will address good site practice and the preparation of robust method statements (e.g., Guidance for Pollution Prevention (GPP)). An assessment of impacts from pollution during construction should align with CIRIA C648 which outlines potential impacts and mitigation measures. Measures will include: - Temporary works sites, haul roads and other associated works should be designed and maintained to minimise impact.	Chapter 8 of the ES	Complete a EMP (2nd iteration) which outlines: - Methods for reducing the risk of pollution to surface and groundwater which should follow best practice guidance (i.e., guidance on pollution prevention) in particular, GPP1, GPP5 and GPP21. - Methods for undertaking works along watercourses to ensure limited impacts to hydromorphology. This	Approval of the EMP (2nd iteration)	PC	P

[6] Such as The Barn Owl Trust (2012) Barn Owl Conservation Handbook. Pelagic Publishing, Exeter.

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		- Where temporary watercourse diversions are required or in–channel working, specific mitigation strategies will be needed to ensure the temporary design is in line with the WFD and that temporary impacts are minimised. - Areas which may generate contaminated water, such as oil storage areas, will need to be bunded and have water discharged to self–contained units with treatment facilities. There would be no discharge to groundwater. - Tests will be undertaken to ensure contaminated material is identified, isolated and reworked or removed to special landfill to avoid any leachate problems. Temporary land–take required for construction will include adequate areas of land set aside for robust control measures, for example sustainable drainage control.		includes the bank reprofiling and bridge construction. - Construction compounds and works areas to be outside of the functional floodplain. - Requirements for the flood storage and compensation areas to be constructed prior to the loss of the floodplain. Over-pumping requirements (e.g., on the Leigh Brook and Drain 22) to reduce impacts on hydromorphological regime during construction. This will be implemented by the preparation and approval of the 2nd iteration EMP. Completion, approval, implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).			
WE2	Minimising deterioration in surface water quality resulting from the operation of the Scheme	The design of the highway drainage system for the Scheme will comply with all current standards and sustainable drainage system (SuDS) best practice techniques to ensure that sustainability is a key drainage design criterion. Six highway drainage catchments utilise attenuation basins to mitigate the impacts on water quality. One highway drainage catchment utilises a wetland to mitigate impacts on water quality. Swales and vegetated ditches are also implemented to reduce any impact to Negligible.	Chapter 8 of the ES	Implemented as part of the detailed design of the Drainage Strategy (copy provided as application document TR010063 - APP 6.15). The implementation of measures to mitigate deterioration of surface water quality as a result of the operation of the Scheme, will be reviewed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1). Requirements for future maintenance will be included in the 3rd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	N/A	Design team GCC NH	P, O
WE3	Minimising deterioration in surface water hydromorphology resulting from construction of the Scheme	To minimise the impact of the Scheme components on hydromorphological elements, the following guidance has also been adopted: - Bank reprofiling and near channel works will be carried out in an environmentally sensitive manner to reduce temporary impacts. - Where over-pumping is required, e.g., on the Leigh Brook and Drain 22, the pumping extent and duration will be minimised to reduce impacts on hydromorphological regime.	Chapter 8 of the ES	Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(c). This will be implemented by the preparation and approval of the 2nd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Approval of the EMP (2nd iteration)	PC	P

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		- Where construction works are taking place, care will be taken to minimise impact on riparian vegetation to reduce the impacts from surface runoff and sediment entrainment. Sediment management measures will be implemented where there is potential for surface water runoff to carry sediments from work areas to watercourses.					
WE4	Minimising deterioration in surface water hydromorphology resulting from operation of the Scheme	The West Cheltenham Link Road River Chelt Bridge (Work No. 5(d)): The structure has been designed as a clear span structure with a total deck of 20.8 m and abutments set back a minimum of 4 m from the bank tops. Mitigation measures have been implemented to generate a more natural channel approximately 160 m upstream and 100 m downstream including bank reprofiling, floodplain connectivity, vegetation planting, and creation of in channel morphological features such as pools, riffles and large wood sections/pieces. At the detailed design stage, further assessment (including a scour assessment) will determine the most pragmatic solution and confirm the need for bank protection, specify the materials and general arrangement which will aim to minimise and, where possible, utilise soft solutions rather than hard bank protection. This will be agreed through consultation with the Environment Agency.	Chapter 8 of the ES	The mitigation measures are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). A preliminary design of the bank reprofiling is shown as part of the Environmental Masterplan (application document TR010063 – APP 2.13). Details of the vegetation planting are shown in the Environmental Masterplan (application document TR010063 – APP 2.13). Additional assessments are required as part of the detailed design to determine and confirm the need for bank protection under the West Cheltenham Link Road River Chelt Bridge. A scour assessment will be required which will be used by a hydrological engineer to design the most pragmatic solution which will ensure the protection of the footpath, fence and bridge abutments while reducing impact on the water course. Consultation with the Environment Agency will be key to ensure the design is compliant with the WFD.	Reporting of scour assessment and implementation of greenest solution.	Design team	P
WE5	Minimising deterioration in surface water hydromorphology resulting from operation of the Scheme	River Chelt Culvert (Work No. 5(l) and (m)): The design has been adjusted to ensure no changes to the existing River Chelt M5 Culvert dimensions. Enhancement measures will be implemented in the form of bank reprofiling and vegetation management for 100m upstream of the crossing.	Chapter 8 of the ES Environment Plans (TR010063 – APP 2.13).	The mitigation measures are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). A preliminary design of the bank reprofiling is shown as part of the Environmental Masterplan (application document TR010063 – APP 2.13). Details of the vegetation planting are shown in the Environmental Masterplan (application document TR010063 – APP 2.13).	N/A	Design team	P

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
WE6	Minimising deterioration in surface water hydromorphology resulting from operation of the Scheme	Leigh Brook Culvert (Work No. 1(m)): Continuity of natural bed substrate and gradient through new or extended structures will be retained by embedding the structure 0.3 m below the surface. Vegetation management will be implemented for approximately 100m downstream of the crossing to improve the aquatic and hydromorphological environment.	Chapter 8 of the ES Environment Plans (TR010063 – APP 2.13).	The mitigation measures are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). A preliminary design of the bank reprofiling is shown as part of the Environmental Masterplan (application document TR010063 – APP 2.13). Details of the vegetation planting are shown in the Environmental Masterplan (application document TR010063 – APP 2.13).	N/A	Design team	P
WE7	Minimising deterioration in surface water hydromorphology resulting from operation of the Scheme	Piffs Elm Culvert (Work No. 2(c)): Baffled headwall and alignment to watercourse on the downstream end of the Piffs Elm Culvert will reduce potential for erosion in high flow events. Continuity of natural bed substrate, flow and gradient through the structures will be improved due to the culvert realignment. Culverts will be embedded 0.3 m below the surface. The culvert lengths will be kept to a minimum and sized to facilitate any environmental needs	Chapter 8 of the ES	The mitigation measures are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). Implemented as part of the detailed design of structures. This will be addressed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	N/A	Design team	P
WE8	Minimising deterioration in surface water hydromorphology resulting from operation of the Scheme	Drain 15 (Work No. 26): Culvert will be replaced and realigned to improve continuity of the upstream watercourse. The baseline lengths are unknown, but the replacement culvert will be at least 25.89 m in length. Structure will be embedded 0.3m below the surface.	Chapter 8 of the ES	The mitigation measures are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). Implemented as part of the detailed design of structures. This will be addressed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	N/A	Design team	P
WE9	Minimising deterioration in surface water hydromorphology resulting from operation of the Scheme	Scheme wide drainage ditches: Where watercourse or ditches are realigned or encroached, designs will replicate the natural character of the watercourse in line with aquatic and hydromorphological function.	Chapter 8 of the ES Environment Plans (TR010063 – APP 2.13).	The mitigation measures are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). Implemented as part of the detailed drainage design and landscaping plans. Annex B of the EMP (1st iteration) identifies the management plans to be produced as part of the EMP (2nd iteration) and includes a landscape and ecology management plan. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP, secured by DCO Schedule 2, Requirement 3(1), 3(2)(e)(v), and 3(4).	N/A	Design team	P

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
WE10	Minimising deterioration in groundwater quality and quantity as a result of construction of the Scheme	A piling risk assessment will be carried out to ensure the selected piling method would not introduce contamination pathways into the aquifer. Deep foundations extending beneath the groundwater table will be designed in accordance with industry standard best practice, such as the groundwater protection technical guidance which should take into account the site-specific water level monitoring data obtained from intrusive ground investigation for the Scheme. Areas which may generate contaminated water, such as oil storage areas, would need to be bunded and have water discharged to self–contained units with treatment facilities. Groundwater protection technical guidance - Environment Agency, 2017. Accessed via: Groundwater protection technical guidance - GOV.UK (www.gov.uk).	Chapter 8 of the ES	Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(c). A piling risk assessment is required to ensure the piling method is appropriate for the geology and groundwater parameters. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Annex C of the EMP (1st iteration) outlines the method statements and risk assessments that are required to be produced as part of the EMP (2nd iteration) which includes a Piling risk assessment. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	N/A	PC	P
WE11	Minimising deterioration in groundwater quality and quantity as a result of construction of the Scheme	Embankments: Where piling is required a piling risk assessment will be carried out to ensure the selected piling methods would not introduce contamination pathways into the aquifer. Deep foundations extending beneath the groundwater table will be designed in accordance with industry standards best practice, such as the groundwater protection technical guidance which should take into account the site-specific water level monitoring data obtained from intrusive ground investigation for the Scheme. Areas which may generate contaminated water, such as oil storage areas, would need to be bunded and have water discharged to self–contained units with treatment facilities. Groundwater protection technical guidance - Environment Agency, 2017. Accessed via: Groundwater protection technical guidance - GOV.UK (www.gov.uk).	Chapter 8 of the ES	Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(c). A piling risk assessment is required to ensure the piling method is appropriate for the geology and groundwater parameters. This will be implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Annex C of the EMP (1st iteration) outlines the method statements and risk assessments that are required to be produced as part of the EMP (2nd iteration) which includes a Piling Risk Assessment. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, requirement 3(4) and 3(5).	N/A	PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
WE12	Minimising deterioration in groundwater quality and quantity as a result of construction of the Scheme	West Cheltenham Link Road River Chelt Bridge (Work No.5 (d)) and Piffs Elm interchange bridges (Work No. 2(a)): Where piling is required a piling risk assessment will be carried out to ensure the selected piling methods would not introduce contamination pathways into the aquifer. Deep foundations extending beneath the groundwater table will be designed in accordance with industry standards best practice, such as the groundwater protection technical guidance which should take into account the site-specific water level monitoring data obtained from intrusive ground investigation for the Scheme. Areas which may generate contaminated water, such as oil storage areas, would need to be bunded and have water discharged to self–contained units with treatment facilities. Groundwater protection technical guidance - Environment Agency, 2017. Accessed via: Groundwater protection technical guidance - GOV.UK (www.gov.uk).	Chapter 8 of the ES	Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(c). A piling risk assessment is required to ensure the piling method is appropriate for the geology and groundwater parameters. This will be implemented by the preparation and approval of the 2nd iteration EMP. Annex C of the EMP (1st iteration) outlines the method statements and risk assessments that are required to be produced as part of the EMP (2nd iteration) which includes a Piling Risk Assessment. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
WE13	Minimising deterioration in groundwater quality and quantity as a result of construction of the Scheme	Precautionary measure. Review final design of cuttings and excavations against site specific groundwater level information to ensure that if the cutting interacts with the groundwater environment, then measures will be implemented to minimise potential impacts to groundwater quality.	Chapter 8 of the ES	Review of the cutting depths at detailed design stage. The cutting depths required will be reviewed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	N/A	Design team	P
WE14	Minimising deterioration in groundwater quality and quantity as a result of construction of the Scheme	Scheme wide: Groundwater site specific intrusive ground investigation must be undertaken to obtain appropriate groundwater level and quality monitoring in the vicinity of the works to feed into the design of any deep foundations extending beneath the groundwater table. Where piling is required a piling risk assessment will be carried out to ensure the selected piling methods would not introduce contamination pathways into the aquifer. Deep foundations extending beneath the groundwater table will be designed in accordance with industry standards taking into account the site-specific water level monitoring data obtained from intrusive ground investigation for the Scheme.	Chapter 8 of the ES	Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(c). A piling risk assessment is required to ensure the piling method is appropriate for the geology and groundwater parameters. This is implemented by the preparation and approval of the 2nd and 3rd iteration EMP. Annex C of the EMP (1st iteration) outlines the method statements and risk assessments that are required to be produced as part of the EMP (2nd iteration) which includes a Piling risk assessment. Completion, approval and implementation of the 2nd iteration EMP, is secured by	N/A	Design team PC	P, C

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				DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
WE15	Minimising impacts on flood risk as a result of the construction of the Scheme	Construction activities including temporary works, storage, and compounds within the functional floodplain will be minimised as far as possible.	Chapter 8 of the ES	Construction Schedule to place the provision of flood storage towards the front of the programme. Construction compounds and works storage areas to be located as detailed in the Works Plans (application document TR010063 – APP 2.4). The Works Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the Works Plans. A Flood Management Plan will be produced as part of the Emergency Preparedness and Response Plan, to be produced in the EMP (2nd iteration), and secured under Schedule 2, Requirement 3(2)(e)(viii) of the DCO. The Flood Management Plan will be put in place to ensure effective and safe evacuation of personnel (plant and materials if safe to do so) from the areas at risk on receipt of a flood warning. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	n/a	PC	C
WE16	Minimising impacts on flood risk as a result of the construction of the Scheme	The Environment Agency flood warning system will be adopted during construction. A suitable Flood Management Plan should be put in place to ensure effective and safe evacuation of personnel (plant and materials if safe to do so) from the areas at risk on receipt of a flood warning.	Chapter 8 of the ES	Implemented by the adoption of the Environment Agency flood warning system during construction and the production of the Flood Management Plan (as part of the Emergency Preparedness and Response Plan). Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration), and is secured by DCO Schedule 2, Requirement 3(2)(c).	N/A	PC	P
WE17	Minimising impacts on flood risk as a result of the construction of the Scheme	To mitigate the impact of permanent earthworks within the wider floodplain, construction work will be phased so that floodplain storage and compensation areas are constructed prior to loss of floodplain volume to ensure no overall adverse impact. Compensatory floodplain to offset the volume of water displaced by the Scheme during the design	Chapter 8 of the ES	The River Chelt and the Leigh Brook should be incorporated into the 3D highways model and detailed flood risk model. The mitigation measures proposed for these watercourses (e.g., bank reprofiling, large wood sections/pieces) should be incorporated into the designs to	N/A	PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		flood, will be implemented prior to the removal of any existing floodplain. This includes a flood storage basin between the M5 motorway and Withybridge Lane (Work No. 7), and two areas of compensatory floodplain immediately east of the West Cheltenham Link Road (Work No. 5n) and north of the B3634 (Work No. 6d).		ensure compatibility and flood risk requirements. Inclusion of the two watercourses in the model and the inclusion of the mitigation measures into the design will be made as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1). Section 8.7 of Chapter 8 of the ES outlines the mitigation measures to be included in an EMP (2nd iteration) and is secured by DCO Schedule 2, Requirement 3(2)(c). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).			
WE18	Minimising impacts on flood risk as a result of the operation of the Scheme	The permanent watercourse crossing of the River Chelt (Work No. 5 (d)) will be designed to convey the design flood with a minimum of 600mm freeboard to soffit.	Chapter 8 of the ES	The mitigation measures (namely the sizing of the River Chelt bridge to provide the required freeboard) are described in Chapter 8 of the ES (application document TR010063 – APP 6.6).	N/A	Design team	P
WE19	Minimising impacts on flood risk as a result of the operation of the Scheme	Floodplain conveyance structures will be placed through the West Cheltenham Link Road. In the DF3 design, the Scheme includes 37 box culvert openings, 36 no being 3 m wide and 1 m tall with an enlarged 6 m wide culvert accommodating an existing field drain (Work No. 5 (i), (l) and (m)).	Chapter 8 of the ES	The mitigation measures (namely the sizing, number and location of the floodplain conveyance structures) are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). The locations of the flood conveyance structures are shown in the General Arrangement Plans (application document TR010063 – APP 2.9). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans.	N/A	Design team	P
WE20	Minimising impacts on flood risk as a result of the operation of the Scheme	Extension of the Piffs Elm and Leigh Brook watercourse culverts underneath the M5 motorway (Work No. 2(c) and 1(m) respectively) will be made to suit the new roads at the same size as the existing culverts. Gradient of the extensions will be set to suit the feeding and receiving watercourse. The existing River Chelt culvert (under the M5) does not require extending as part of this Scheme.	Chapter 8 of the ES	The mitigation measures (namely the extension and sizing of the Piffs Elm and Leigh Brook culverts) are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). The locations of the Piffs Elm and Leigh Brook culverts are shown in the General Arrangement Plans (application document TR010063 – APP 2.9).	N/A	Design team	P

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans.			
WE21	Minimising impacts on flood risk as a result of the operation of the Scheme	Extension of the existing flood culverts under the B4634 will be made, with the installation of two additional floodplain culverts, to match the existing conveyance over/under the highway in the baseline conditions (Work No. 6(a) and (b)).	Chapter 8 of the ES	The mitigation measures (namely the location and sizing of the flood culverts under the B4634) are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). The location of these culverts under the B4634 are shown in the General Arrangement Plans (application document TR010063 – APP 2.9). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans.	N/A	Design team	P
WE22	Minimising impacts on flood risk as a result of the operation of the Scheme	Run-off from the Scheme will be attenuated before reaching a watercourse for the 1 in 100 annual probability event (1%) taking into account a 25% allowance for climate change and hence there will be no increase in highways drainage discharge into receiving watercourses as a result of the Scheme.	Drainage design plans and reports (application document TR010063 - APP 6.15)	The mitigation measures (namely the design of the Scheme to minimise flood risk as a result of runoff from the Scheme) are described in Chapter 8 of the ES (application document TR010063 – APP 6.6). The locations of the attenuation basins and drainage channels are shown in the General Arrangement Plans (application document TR010063 – APP 2.9). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans.	N/A	Design team	P
	Landscape (LV)						
LV1	Avoid damage to existing vegetation	Protection of retained vegetation (trees and hedges) in accordance with the AIA to avoid detrimental damage.	N/A	Retained vegetation is identified in the Environmental Masterplan (application document TR010063 – APP 2.13), implementation of this is secured by DCO Schedule 2 Requirement 5(1) and 5(3). Retained vegetation to be protected in accordance with AIA (Appendix 9.4, application document TR010063 – APP 6.15), secured by DCO Schedule 2, Requirement 5(4)(e).	N/A	PC	C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
LV2	Minimise loss of vegetation	Removal of minimal extent of vegetation necessary for the works. Detail design to look to further reduce loss.	N/A	Detail design to investigate minor changes to retain more vegetation. PC to consider alternative working methods to further limit loss of vegetation wherever possible. Retained vegetation is identified in the Environmental Masterplan (application document TR010063 – APP 2.13), implementation of this is secured by DCO Schedule 2 Requirement 5(1) and 5(3). Retained vegetation to be protected in accordance with AIA (Appendix 9.4, application document TR010063 – APP 6.15), secured by DCO Schedule 2, Requirement 5(4)(e).	N/A	Design Team PC	P, C
LV3	Reinstatement of lost vegetation providing a specific screening or amenity function	Replacement of woodland, scrub, hedges, trees and grass land and new suitable planting to new features, including wetland areas, link road and central reserves, to integrate Scheme into the landscape, reinstate screening effect and replace lost habitats wherever possible. Evergreen native/non-invasive species to be included where screening is a function.	N/A	The approved landscape scheme will ensure the Scheme is constructed in accordance with the Environmental Masterplan (application document TR010063 – APP 2.13), secured by DCO Schedule 2 Requirement 5(1) and 5(3). Maintenance of the Scheme to ensure establishment and continued health of planting. Requirements for future maintenance will be included in the 3rd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(4) and 3(5).	N/A	Design Team PC GCC NH	P, C, O
LV4	Correct maintenance of new vegetation	Where in National Highways jurisdiction, planting is to be in accordance with NH requirements (NB. liaison with NH to be undertaken during detail design to agree plant species in NH jurisdiction). Where in GCC jurisdiction, planting to be in accordance with GCC Highways and Biodiversity Guidance for Gloucestershire May 2022 – to be undertaken at detail design. Species rich grass areas to have low nutrient/minimal topsoil, suitable for cutting or leaving to grow longer where desirable for maintenance and amenity value.	N/A	DCO Schedule 2, Requirement 3(1) requires the preparation of an EMP (2nd iteration). Requirement 3(2)(a) requires the EMP (2nd iteration to be substantially in accordance with the EMP (1st iteration). Annex C of the EMP (1st iteration) outlines the monitoring reports that are required to be produced as part of the EMP (2nd iteration) which includes a Planting (vegetation) method statement. Requirements for future maintenance will be included in the 3rd iteration EMP, which is secured by DCO Schedule 2, Requirement 3(4) and 3(5). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP,	N/A	Design team PC NH GCC	P, C, O

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				post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
LV5	Minimise lighting impacts	Ensure lighting design is minimal and limits light pollution.	N/A	The lighting design will be reviewed with regards to impacts from light spill and light pollution as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1). The lighting requirement is secured through Requirement 15.	N/A	Design team	P
LV6	Design of the noise barriers	Consult with LPA and directly affected receptors on options for the final design of noise barriers so that they provide visual amenity and/or biodiversity values as well as noise abatement.	N/A	Consult with the LPA and directly affected receptors on options for the final design of noise barriers so that they provide visual amenity and/or biodiversity values as well as noise abatement. DCO Schedule 2, Requirement 14(1) requires noise mitigation proposals to have been submitted to and approved in writing by the County planning authority, following consultation with the relevant planning authority prior to construction. Requirement 14(2)(a) states written details must reflect mitigation measures included in Chapter 6 (noise and vibration) of the ES and Noise and Vibration Management Plan approved as part of the EMP (2nd iteration). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5). The design of the noise barriers will be reviewed as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1).	N/A	Design Team GCC NH	P
LV7	Use of locally sourced soils to provide appropriate seedbank materials	Where possible reuse of site won soil should be considered for woodland/hedge areas. Locally sourced seed bank to be considered for planting where feasible and appropriate.	N/A	Annex C of the EMP (1st iteration) outlines the monitoring reports that are required to be produced as part of the EMP (2nd	N/A	PC	C

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				iteration) which includes a Planting (vegetation) method statement. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).			
LV8	Early planting of new vegetation	Consider early planting where this is identified for visual mitigation requirements where feasible within programme to allow planting to establish and the integration of the Scheme into the surrounding landscape sooner.	N/A	Annex C of the EMP (1st iteration) outlines the monitoring reports that are required to be produced as part of the EMP (2nd iteration) which includes a Planting (Vegetation) Method Statement. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
	Cultural Heritage (CH)						
CH1	Identify archaeological remains that may be encountered during construction and achieve preservation by record	The Scheme shall seek to avoid direct impacts on known heritage assets during enabling and construction works. This can be achieved through careful design, including well designed screening, to site works away from heritage assets.	N/A	Preservation of archaeological significance through evaluation, recording, and publication of information contributing to local and regional research objectives in line with an Archaeological Management Plan (AMP) which is acting as an overarching Written Scheme of Investigation for the Scheme. The PC will be required to prepare a final Archaeological Management Plan (AMP) which is secured under Schedule 2, Requirement 3(2)(e)(viii) of the DCO and Requirement 9(1) under the DCO. GCC will develop a programme of archaeological investigation (i.e., an AMP acting as an overarching Written Scheme of Investigation) to be undertaken in areas affected by the Scheme, including construction compounds and access routes, where there is a potential for significant archaeological remains to survive. The scope and extent of such investigations should be developed in consultation with the GCC Archaeological Advisor and associated with a specific Written Scheme of Investigation subject to their approval. This work may comprise a geophysical survey in the first instance, followed by evaluation trenching and/or a	N/A	Design team GCC PC	P, C

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				programme of archaeological stripping and recording.			
CH2	Minimising effects of the Scheme on the settings of designated heritage assets	The design of lighting and traffic signals should take account of potential impacts to the setting of the designated heritage assets at Moat House. Traffic signals at the realigned A4019/ Moat Lane junction should not be directly visible from the Bridge and Attached Pair of Lodges, Moat House (NHLE 1154528). Detailed design should ensure the retention of the dark corridors between Uckington and Cheltenham, on the A4019, to preserve the distinct boundaries around Uckington and the designated heritage assets at Moat House.	N/A	Implementation of the Environmental Masterplan (application document TR010063 – APP 2.13), secured under Schedule 2, Requirement 5(1) of the DCO. The effects of the detailed design with regards to specific impacts to designated heritage assets at Moat House will be reviewed as the detailed design is developed (at the detailed design stage). Developments to the design are secured by DCO Schedule 2 Requirement 11(1). Landscaping requirements to address specific impacts identified will be included in the Landscape and Ecology Management Plan produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), and secured by DCO Schedule 2, Requirement 3(2)(e)(v). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	Design team GCC	P
CH3	Implementation of the AMP	Implement the works identified in the Archaeological Management Plan (AMP) in accordance with the Written Scheme of Investigation and Archaeological Management Plan prepared under action CH1.	N/A	Implementation of the AMP, detailed in Annex B of the EMP (1st iteration) (application document TR010063 – APP 7.3) to be produced in the EMP (2nd iteration), and secured under Schedule 2, Requirement 3(2)(e)(viii) of the DCO. Completion, approval, and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Implementation of the archaeological investigation works is secured by DCO Schedule 2, Requirement 9.	N/A	PC	P, C
	Geology and Soils (GS)						
GS1	To minimise the effect on agricultural quality in temporary land take areas.	Land occupied or disturbed during the construction process that is not permanently acquired for engineering and landscaping, such as that utilised for construction compounds, will be	Chapter 10 of the ES	A SHMP will be produced prior to construction. Listed in Annex B of the EMP (1st iteration) (application document TR010063 – APP 7.3), to be produced for EMP (2nd iteration), secured under	N/A	PC	P, C, O

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		restored to a condition equivalent to its original condition. A Soil Handling Management Plan (SHMP) will be produced prior to any construction. This will ensure that the quality of soil in areas within the temporary footprint of the Scheme is maintained in accordance with the Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009a). Restoration of land occupied or disturbed during the construction process that is not permanently acquired for engineering and landscaping, will be subject to an aftercare period – during this agreed period any issues arising (e.g., settlement, drainage and weed infestation) will be rectified.		Schedule 2, Requirement 3(2)(e)(ii) of the DCO. The SHMP will have aftercare measures in it which will be for at least 5 years after construction. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
GS2	To reduce soil erosion and compaction during construction works.	Mitigation measures to include in the EMP comprising (but not limited to) the following: • Minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to prevent soil erosion and reduce temporary effects on soil compaction. • Stockpile management (such as water spraying and avoiding over stockpiling to reduce compaction of soil and loss of integrity) to reduce soil erosion, windblown dust and surface water run-off. Implementation of an appropriate Materials Management Plan (MMP) and a Soil Handling Management Plan (SHMP) to document how excavated materials and soils will be managed.	Chapter 10 of the ES	A SHMP and MMP will be produced prior to commencement, and then implemented through the construction work. Listed in Annex B of the EMP (application document TR010063 – APP 7.3). The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SHMP secured by DCO Schedule 2, Requirement 3(2)(e)(ii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
GS3	To prevent adverse risks to on-site and off-site human health, controlled waters, property and ecological receptors from the potential disturbance/ mobilisation of existing contaminated soil or groundwater and/or introduction of new sources of contamination (i.e. from spillages and leaks) during construction works.	A ground investigation has been undertaken which comprised laboratory analysis of soil and groundwater to identify potential signs of land contamination across the Scheme. An unacceptable risk to human health and controlled waters receptors was not identified from the data obtained. However, there is the potential for unidentified areas of land contamination to be present and construction activities could potentially introduce new sources of contamination (i.e., from spillages and leaks) and disturb and mobilise existing sources of contamination. Best practice measures will be implemented in the EMP (2nd iteration) including:	Chapter 10 of the ES	An EMP (2nd iteration) will be produced prior to commencement, and secured under Schedule 2, Requirement 3(1) of the DCO. This will include a MMP and a SHMP. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SHMP secured by DCO Schedule 2, Requirement 3(2)(e)(ii). Schedule 2, Requirement 8(1) of the DCO requires a contamination risk assessment in respect to controlled waters to be produced prior to the commencement of the authorised development. A	N/A	PC	P, C

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		• Health and safety risk assessments, method statements (RAMS) and appropriate Personal Protective Equipment (PPE) for the protection of construction workers in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations. • Preparation of piling risk assessments as required in accordance with Environment Agency guidance to assess and manage potential risks to controlled waters. • Working methods during construction to manage groundwater and surface water appropriately and ensure that there is no run-off from the works, any material / waste stockpiles, and storage containers into adjacent surface watercourses in accordance with DEFRA and Environment Agency's guidance. • Stockpile management (such as water spraying and avoiding over stockpiling to reduce compaction of soil and loss of integrity) and timely removal of stockpiled soil to prevent windblown dust and surface water run-off. Addressed through MMP and SHMP. • Implementing appropriate fuel storage and pollution incident control e.g., plant drip trays and spill kits. Implementation of a contamination watching brief by suitably qualified and experienced personnel. If unexpected soil and/or groundwater contamination is identified during the construction works which poses a risk to sensitive receptors, appropriate investigations and remediation, if required, to be discussed and agreed with stakeholders and completed in accordance with current best practice.		contamination watching brief will be implemented.			
GS4	To prevent adverse risks to on-site and off-site human health, controlled waters and ecological receptors during the operational phase associated with the potential introduction of new sources of contamination.	Design team to incorporate mitigation/remedial measures in the design of the Scheme to reduce impacts from contamination as required, should new sources of contamination be identified at detailed design stage. The Scheme will be operated in accordance with the relevant regulations and best practice guidance in applying Best Available Techniques and pollution prevention.	Chapter 10 of the ES	An updated EMP will be produced prior to operation (EMP 3rd iteration). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5). The development of the detailed design is secured by DCO Schedule 2, Requirement 11.	N/A	Design team PC	O

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GS5	To manage the re-use of waste soils/materials across the Scheme effectively	Prepare and implement an appropriate MMP in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice and to promote sustainable waste and material resource management in line with the Government's waste hierarchy to allow the re-use of suitable soils during the construction works. The Scheme will be operated in accordance with the relevant regulations and best practice guidance in applying Best Available Techniques and pollution prevention. Management measures to be implemented as appropriate in the EMP.	Chapter 10 of the ES	An EMP (2nd iteration) will be produced prior to commencement (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(1). This will include the production of a MMP for the Scheme, secured by DCO Schedule 2, Requirement 3(2)(e)(i).	N/A	PC	P, C
GS6	To maximise the use of site-won materials in the construction of the Scheme and reduce amount of soils disposed off-site.	Seek as far as reasonably practicable, to reduce the amount of soil/materials excavated and/or of a hazardous nature, to re-use and recycle waste soils/materials on-site, where possible and to promote sustainable waste and material resource management.	Chapter 10 of the ES	The identification of opportunities to re-use site-won materials will be investigated as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1). Details identified will be recorded in the Site Waste Management Plan (SWMP) that will be produced as part of the EMP (2nd iteration). The SWP is secured by DCO Schedule 2, Requirement 3(2)(e)(xi).	N/A	Design Team PC	P, C
	Materials and Waste (MS)						
MS1	Minimising consumption of primary materials or other resources	Adopt a material efficient design, to be implemented by the Design Team as the Scheme's design develops. Measurement will be via a brief statement from the design team estimating the overall quantity of material required through the application of an efficient design. Monitoring will be through confirmation from the Construction Team that the Scheme 'As Constructed' is in accordance with the design. Use land temporarily reserved to allow the storage of site won materials that can be reused within the Scheme and therefore reduce the import of primary or recycled materials. The aggregates used will have at least 22% recycled content, in line with the regional percentage minimum target. Adopt an efficient delivery system to ensure that materials are brought to site proportional to their use to avoid/reduce potential damage leading to waste.	Chapter 12 of the ES	Adopt a material efficient design. Design decisions that have reduced the materials required for the Scheme have been recorded in Chapter 12 of the Environmental Statement (application document TR010063 - APP 6.10). Any further revisions to the Scheme's design should consider using materials efficiently. The EMP 2nd iteration will include a SWMP and MMP. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SWMP secured by DCO Schedule 2, Requirement 3(2)(e)(xi).	Statement from Design Team estimating the overall quantity of material required through the application of an efficient design.	Design team	P

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		Develop and implement the EMP 2nd iteration to consider and manage the reuse of materials on-site, offsite secondary/recycled materials, locally sourced materials, and other responsibly sourced materials. The EMP 2nd iteration will include a SWMP and MMP, or equivalent, where required.					
MS2	Minimising consumption of primary materials or other resources		N/A	Implement good materials management and good practice construction methods, including the use of temporary materials storage areas. These will be implemented through the management plans listed in Annex B of the EMP (1st iteration), namely the MMP, SHMP, Pollution Prevention and Control Management Plan, and the SWMP. These plans will be produced as part of the EMP 2nd iteration. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SHMP is secured by DCO Schedule 2, Requirement 3(2)(e)(ii). The Pollution Prevention and Control Management Plan is secured by DCO Schedule 2, Requirement 3(2)(e)(vii). The SWMP secured by DCO Schedule 2, Requirement 3(2)(e)(xi). The completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Approval of a EMP 2nd iteration and SWMP.	PC	P
MS3	Minimising consumption of primary materials or other resources		N/A	Use site-won materials within the Scheme to reduce impact on primary materials or other resources, where feasible to do so. Development of Material Management Plan (MMP) to enable reuse of soil and wastes within the Scheme. The MMP is listed in Annex B of the EMP (1st iteration) and will be produced as part of the 2nd iteration of the EMP. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The completion, approval and implementation of the 2nd iteration EMP, is	Confirmation that a MMP has been produced during the pre-commencement phase. Consult with the Environment Agency on the MMP prior to implementation. Documentation and evidence in relation to materials reuse should be included in the verification report of the MMP upon	PC	P, C, O

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				secured by DCO Schedule 2, Requirement 3(1) and 3(3).	completion of the works.		
MS4	Generation and management of waste	Design out waste where possible (e.g. through use of offsite manufactured and modular elements to minimise on-site waste etc.). Use land temporarily reserved to allow storage of site won materials that can be reused within the Scheme and therefore reduce the import of primary or recycled materials. Develop a MMP and a SWMP as part of the EMP 2nd iteration to explore methods to manage waste arising from the construction, demolition and excavation (CD&E) in accordance with the waste hierarchy and Duty of Care. Segregate waste areas on site to ensure waste is classified correctly and to reduce/avoid cross contamination. All wastes will be managed in accordance with the waste hierarchy and Duty of Care.	Chapter 12 of the ES	The identification of opportunities to reduce waste generated from the construction of the Scheme will be made as part of the development of preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1). The MMP and the SWMP are listed in Annex B of the EMP (1st iteration) and will be produced as part of the 2nd iteration of the EMP. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SWMP secured by DCO Schedule 2, Requirement 3(2)(e)(xi).Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Statement in SWMP estimating the overall quantity of waste reduced through the application of designing out waste measures	PC	P
MS5	Generation and management of waste	Consider good materials management and good practice construction methods, including use of temporary materials storage areas. Segregate waste at source, to reduce mixing of wastes and ensure wastes are managed or disposed correctly. Develop a SWMP as part of the EMP 2nd iteration in the pre-construction phase to explore methods to manage waste arising from the construction in accordance with the waste hierarchy.	N/A	The MMP and the SWMP are listed in Annex B of the EMP (1st iteration) and will be produced as part of the 2nd iteration of the EMP. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SWMP secured by DCO Schedule 2, Requirement 3(2)(e)(xi). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Waste classification, management and disposal to be carried out in accordance with Duty of Care, as described within the SWMP.	Approval of SWMP and EMP 2nd iteration by GCC. Record waste volumes generated and Duty of Care information.	PC	P
MS6	Reduce impacts associated with importing materials and exporting waste	Identify nearby sources of materials and suitable local or regional waste management facilities. Consider good practice construction methods and reduce haulage distances and/or need to travel. Maximise reuse of wastes and material generated on-site.	N/A	The EMP 2nd iteration will include a SWMP and MMP, considering the proximity principle and the social or environmental impacts of transporting waste and materials. The MMP is secured by DCO Schedule 2, Requirement 3(2)(e)(i). The SWMP secured by DCO Schedule 2, Requirement 3(2)(e)(xi).	Records related to the reuse of materials and waste, including (but not limited to): types and volumes, source and deposition plans, data to demonstrate compliance with MMP.	PC	P

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				Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Confirmation that a EMP 2nd iteration, SWMP and MMP have been produced and approved by National Highways during the pre-construction phase. Details of materials used, imported, and removed from site (wastes) should be reported in the verification report of the MMP upon completion of the works, and provided to National Highways, GCC and the Environment Agency for information.		
MS7	Minimise material use and impact of material use from the Scheme	Procurement of materials shall ensure optimal quantity of material delivery on-time to prevent over supply and waste generation on site. Where practicable, standardisation of materials and the use of prefabricated components will be incorporated into the Scheme design. In addition, where practicable, the materials required for the Scheme shall be sourced from local suppliers. Consider reuse of materials within the Scheme at all stages of construction. The possibility of using surplus material on other local schemes should also be explored. This will be subject to the required compliance with the Definition of waste Code of practice (DoW CoP) to avoid challenge on the reuse of soils and materials deemed to be a waste.	Chapter 12 of the ES	A MMP will be developed to ensure that materials imported to site and site-won materials are managed effectively. This document will be updated during the construction phase. The EMP 2nd iteration will include an MMP, secured by DCO Schedule 2, Requirement 3(2)(e)(i). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Under the CL:AIRE Definition of Waste: Development Industry Code Practice, a MMP must be reviewed by a Qualified Person and a declaration signed. The MMP will be regularly reviewed and updated during the construction phase. Confirmation from the PC that the Scheme 'As Constructed' is in accordance with the design. Where soil or waste is reused on-site under a MMP, a verification report will	PC	P

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					need to be produced and kept for 2 years. Monitor through programme of Environmental Auditing and Reporting.		
MS8	Minimise waste generation and impact of wastes arising from the Scheme	Implement good materials management and good practice construction methods to minimise waste generation. Wastes that are generated will be segregated and stored in dedicated areas. All wastes will be managed in accordance with the waste hierarchy. Wastes generated during the construction phase of the Scheme will be sampled and characterised to determine the appropriate waste classification, i.e., inert, non-hazardous or hazardous. Transfer of waste offsite will be carried out by a licensed waste carrier and with the appropriate documentation including: • non-hazardous waste will be accompanied by a waste transfer note (WTN). • hazardous waste will be accompanied by a consignment note. Checks will be made by the PC to ensure the receiving facility is authorised to receive the waste and undertake the required waste activity. An appropriate exemption or environmental permit will be sought for storing, treating, using or disposing of waste as part of the Scheme. For example, crushing of demolition waste may be required to produce an aggregate which can be used. A dedicated Waste Manager from the PC shall be responsible for all the waste management measures including segregation, collection, storage, transportation and disposal/treatment wastes arising from the Scheme. The PC must ensure that Waste Electrical and Electronic Equipment produced in CD&E is segregated and managed separately from other wastes.	Chapter 12 of the ES	A SWMP will be implemented by the PC. All personnel working on the site should be aware of waste management procedures. The PC will manage CD&E wastes in accordance with the SWMP. The PC will manage and implement reuse of materials. The PCs responsibilities are outlined in the EMP (1st iteration) and will be implemented during construction through EMP (2nd iteration). The SWMP is secured by secured by DCO Schedule 2, Requirement 3(2)(e)(xi). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Confirmation from the PC that the Scheme 'As Constructed' is in accordance with the design. Implement EMP 2nd iteration, MMP and SWMP, with all construction workers aware of measures identified in plans. Monitor through programme of Environmental Auditing and Reporting. Reporting of reused materials under MMP in a verification report upon completion of the Scheme. WTNs and consignment notes will be kept during the construction phase and as required by legislation. Waste carrier licences and waste management facility permits will be checked to ensure they are authorised to undertake the waste activity. Records will be kept relating to the reuse	PC	C

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					of materials, including (but not limited to): types and volumes, source and deposition plans, data to demonstrate compliance with environmental requirements, etc.		
MS9	Reduce effects of importing materials and exporting waste	Give preference to nearby sources of materials and suitable local or regional waste management facilities. Implement good practice construction methods and reduce haulage distances and/or need to travel.	N/A	The EMP 2nd iteration will consider sources of construction materials. The EMP 2nd iteration and SWMP will consider suitable waste management facilities and is secured by, secured by DCO Schedule 2, Requirement 3(2)(e)(xi). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	Implement EMP 2nd iteration, MMP, and SWMP, with all construction workers aware of measures identified in plans. The EMP 2nd iteration and SWMP will be reviewed and updated on a regular basis.	PC	C
	Population and human health (PHH)						
PHH1	Effects on emergency vehicle movements through areas under construction traffic management, including from Cheltenham West Community Fire and Rescue Station	PC to develop and implement an Emergency Vehicle Movement Management Plan (see G4) as part of the Traffic Management Plan, for the movement of emergency vehicles and their access along the A4019 and the M5 during construction. This will need to apply to all emergency vehicles seeking to move through the Order limits under Blue Lights, and also egress from the Cheltenham West Community Fire and Rescue Station for emergency response vehicles.	N/A	Implemented through the production of the Emergency Vehicle Movement Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
PHH2	Temporary disruption to access for community facilities during construction	PC to develop and implement temporary traffic management measures provide continuity of access and egress for all community facilities during the construction stage. This includes for the Cheltenham Civil Service Tennis and Football Clubs. A clear and consistent signage strategy will be designed and implemented to direct vehicle users during construction and to support access to community and recreational facilities, reflecting temporary changes to access arrangements. A clear and consistent signage strategy will be designed and implemented, to direct NMUs during	N/A	Implemented through the production of the Traffic Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		construction and support access to community and recreational facilities; and bus stop provision, using footpaths and cycleways.					
PHH3	Effectively informing people of construction works and traffic arrangements to enable forward planning and manage expectations around nuisance and disruption, in the interests of human health	PC tender evaluation process to include specific criteria relating to: - proposed communication and engagement methodology and resources, including dedicated Public Liaison Officer (PLO), in anticipation of requirement to implement a Community Engagement Plan for the Scheme (see G4, PHH4 and PHH9). - proposals for the provision of support for the local community by the PC, associated with a process to assess needs, monetary value and definition of how this would be spent. - Considerate Contractors accreditation/ affiliation/ certification. - track record in pro-active implementation of project-level community/stakeholder engagement plans.	N/A	Implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC. The role and requirements of the PLO will be set out and implemented through the Community Engagement Plan. The Community Engagement Plan is within the 2nd iteration EMP. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	GCC PC	P
PHH4	Effectively informing people of construction works and traffic arrangements to enable forward planning and manage expectations around nuisance and disruption, in the interests of human health	A Community Engagement Plan should be prepared and implemented, outlining the methods in which the local and surrounding community will be engaged during construction of the Scheme including contact details for key site management. The plan should provide consistent and clear communication to a range of stakeholders including, but not limited to residents, businesses, parish councils and local members (GCC and TBC). The plan must acknowledge the differing perspectives and issues of each stakeholder. The communication methods must seek to meet the inclusivity/accessibility needs of each stakeholder. The PLO (see PHH3 and 9) will lead the implementation of the Community Engagement Plan (see supplementary information (PHH9) about Community Engagement Plan content in relation to effects on human health determinants (mental health triggers)).	N/A	Implemented through the production of the Community Engagement Plan, which must accord with the Local Transport Association National Code and the Code of Corporate Governance for GCC (including Actions and Behaviours in Appendix A of the Code). The Community Engagement Plan will be produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC GCC	P, C, O
PHH5	Maintaining WCH access, connections to and availability of public transport during construction to avoid severance and loss of	Bus stop provision along the A4019 must be retained in line with Scheme proposals, ensuring public transport access along this corridor during construction. Public transport provision and rescheduling of services to reflect temporary stops should be discussed and agreed with local	N/A	Bus stop provision managed through the implementation of the Scheme design as set out in the General Arrangement Plans (application document TR010063 – APP 2.9).	N/A	GCC PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
	access to key services and facilities, in the interests of human health	authorities, public bus companies and providers well in advance. Temporary stop relocation must be incorporated within the Traffic Management Plan (see G4) and should be based on targeted engagement to understand and respond to needs, to be led by the PLO. The PC should programme construction works so that affected PRoW, footpaths or cycleways remain open for as much of the construction phase as is reasonably practicable and safe; and ensure that alternative routes are available as diversion routes for any temporary closures. The exception is bridleway ref.AUC1 which will be closed for the duration of the construction programme due to its proximity to the main construction compound. No diversion route should exceed 250m overall additional length over the route that it is replacing. Temporary signalised crossing facilities should be provided along key WCH desire lines (including on the A4019 at Uckington) during the construction phase, as part of the Traffic Management Plan. A clear and consistent signage strategy will be designed and implemented, to direct users during construction and support access to community and recreational facilities; and bus stop provision, using footpaths and cycleways. Users of affected PRoW, footpaths and cycleways should be notified of planned diversions (including via information required as part of the Community Engagement Plan (PHH4)), with signs along sections to be closed during construction, at least one month prior to the works. Existing crossings and routes only to be diverted or closed once alternative routes are in place.		The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans. PRoW aspects implemented through the production of the PRoW Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xii). Notifications to the local community to be through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Traffic management at construction stage to be managed through the Traffic Management Plan, produced as part of the EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).			
PHH6	Prevent adverse effects on human health determinants, derived from water, air and soil quality/pollutants and noise	PC to develop and implement a detailed Environmental Management Plan (2nd iteration) in accordance with the Environmental Management Plan (1st iteration), which will include measures for the construction phase, such as Best Practicable Means. The construction programme would also be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts and areas would be cleared for construction as close as possible to works commencing and top soiling, reseeding and planting shall be undertaken as	N/A	Implemented by the production of the EMP (2nd iteration). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC GCC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		soon as practicable after sections of work are complete. The EMP (1st iteration) will be used to inform the development of a post-construction monitoring programme, to be the responsibility of the Scheme promoter.					
PHH7	Prevent adverse effects on human health determinants, derived from light pollution nuisance, disturbed sleep/night-time working	Work during hours of darkness would be avoided as far as practicable and, where necessary, directed lighting would be used to minimise light pollution/glare. Lighting levels would be kept to the minimum necessary for security and safety. In the operation of the Scheme, street lighting along the Link Road will be as per the Scheme design. Landscape planting for the Scheme will be as per the Environmental Masterplan. Sensitive design of noise barriers to ensure they provide visual as well as noise amenity (see also LV6).	N/A	Landscaping to be implemented as shown in the General Arrangement drawings (application document TR010063 – APP 2.9) and the Environmental Masterplan (application document TR010063 – APP 2.13). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans. Working hours implemented by EMP (1st and 2nd iteration). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Highway lighting requirements are secured through DCO Schedule 2, Requirement 15. Noise mitigation requirements are secured through DCO Schedule 2, Requirement 14.	N/A	Design team PC	P, C, O
PHH8	Minimising disruption to access for residents of the informal Traveller site adjacent to the M5	PC to maintain access to the informal Traveller site (adjacent to the M5) through fields to the north of the A4019 for the duration of the construction phase. The timing of the creation of this access will ensure that access is maintained to the informal Traveller site during construction of the Scheme. Access to be maintained on the basis that the site remains in place. In operation of the Scheme, a new access track will be created to the north-east of the M5 Junction 10, as a replacement for the existing access points to the field areas and the informal Traveller site, that have been lost as a result of the new southbound off-slip.	N/A	At construction stage the mitigation will be implemented through the Traffic Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). For the operation of the Scheme, the mitigation will be implemented through the Scheme design as shown in the General	N/A	PC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				Arrangement drawings (application document TR010063 – APP 2.9). The General Arrangement Plans are secured by DCO Schedule 2 Requirement 11(1) which requires the detailed design to be compatible with *inter alia* the General Arrangement Plans.			
PHH9	Prevent adverse effects on human health determinants relating to anxiety and stress and support those who experience difficulty adapting to change	Public Liaison Officer (PLO) full-time role to be filled for the duration of the construction phase. The PLO is expected to work directly with the PC (and sub-contractors as appropriate), the Scheme Promoter (GCC) and nominated individuals representing the local community. Scope of role to include (but not be limited to): - Responsibility for development, implementation, monitoring and updating of the Community Engagement Plan (see below). - Proactive engagement with the local community, to include face to face introductions for directly affected stakeholders. - Physical and regular presence within the community. - Establishing the feedback loop, process and governance around implementing change in response to feedback during construction, where appropriate. - Commitment to responding to all communications, within agreed timescales and on an equitable basis, in cognisance of the GCC values in both representing and engaging with the local community. - Responsibility for managing communications, including Frequently Asked Questions. The PLO would be expected to provide regular updates and support at Scheme steering groups/board, in addition to the regular board updates that would be provided by the PC. A Community Engagement Plan should be prepared and implemented (by the PLO), outlining the methods in which the local and surrounding community will be engaged during construction of the Scheme including contact details for key site management. The Community Engagement Plan should provide consistent and clear communication to a range of stakeholders including, but not limited to	N/A	Appointment of PLO to be implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC. The role and requirements of the PLO will be set out and implemented through the Community Engagement Plan. Consultation aspects implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC GCC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		residents, businesses, parish councils and local members (GCC and TBC). The Community Engagement Plan must acknowledge the differing perspectives and issues of each stakeholder. The communication methods must seek to meet the inclusivity/accessibility needs of each stakeholder. The PLO will lead the implementation of the Community Engagement Plan. The Community Engagement Plan should include (but not be limited to): - Contractor-led 'Meet the Contractor' events for supply chain to cover pre-planning and planning stages. - Contractor-led 'Meet the Contractor' share events for the local community. - Dedicated contact routes for the public and stakeholders, to include email, post and telephone number. - Frequent and regular presence of the PLO and key Project personnel within the community, through public drop in surgeries or similar. - Mechanisms for the supply of frequent and regular updates on traffic management and closures, including signed diversion routes, throughout the construction phase, which should be developed to reflect all relevant planned traffic works (i.e. from other GCC projects). - Commitment to maintain/input to Scheme website with latest information throughout the construction phase. - Commitment to input to Scheme bulletins on a frequent and regular basis throughout the construction phase, covering progress, upcoming activities and traffic management and closures. - Process for generating change within the Scheme in response to feedback, using the Compensation Event procedure.					
PHH10	Minimising impacts on people from temporary land take (see also GS1)	The phasing of temporary land take for construction works should be planned in consultation with affected landowners (led by the PLO and PC, in accordance with the Community Engagement Plan) to enable early release of land and thereby minimise the extent of disruption. Land acquired temporarily for construction compounds and working areas will be restored to a condition equivalent to its original use, or such	N/A	A SHMP will be produced prior to construction. Listed in Annex B of the EMP (1st iteration), to be produced for EMP (2nd iteration), secured under Schedule 2, Requirement 3(2)(e)(ii) of the DCO. The SHMP will have aftercare measures in it which will be for at least 5 years after construction.	N/A	PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		other condition as agreed with the relevant landowner, before being returned to its owner. Land within the Order limits that is not within the permanent footprint of the Scheme will be restored to its original use in agreement with landowners. Restoration of land occupied or disturbed during the construction process that is not permanently acquired for engineering and landscaping, will be subject to an aftercare period – during this agreed period any issues arising (e.g., settlement, drainage and weed infestation) will be rectified.		Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP, post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5). The Community Engagement Plan is secured under Requirement 3(2)(e)(xiii).			
PHH11	Managing impacts on residential receptors (access)	PLO to prioritise direct liaison with owners/occupants of residential receptors anticipated to experience direct impacts on access during the construction phase, to ensure that suitable access and egress to their property is available at all times during the construction phase. This is to include (but not be limited to) residents at Homecroft Drive, Cooks Lane and along the A4019.	N/A	Implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
PHH12	Managing impacts on business receptors (access)	PLO to prioritise direct liaison with owners/lessees of business premises anticipated to experience direct impacts on access during the construction phase, to ensure that suitable access and egress to their property is available at all times during the construction phase, for all relevant business activities (i.e. staff and patron access, deliveries and servicing). This is to include (but not be limited to) businesses at Gallagher Retail Park and businesses accessed from Cooks Lane, as well as those experiencing land take and disruption to access arrangements.	N/A	Implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
PHH13	Managing impacts on community receptors (access)	PLO to prioritise direct liaison with operators/lessees of community facilities/premises anticipated to experience direct impacts on access during the construction phase, to ensure that suitable access and egress to their property is available at all times during the construction phase, for all relevant activities (i.e. staff/operator and patron access, deliveries and servicing).	N/A	Implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3) secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) a	N/A	PC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
PHH14	Enhancing opportunities for education and training, including through job creation	The construction phase may be a source of employment for local people. In addition to the requirement for the PC to commit to hosting a meet the contractor supply chain event, recruitment should be supported through local job centres. GCC will expect the PC to incorporate measures to use the local supply chain effectively, and including these as part of social value tender evaluation criteria. Ensure recruitment for construction jobs and procurement of goods and services starts at district and regional levels to ensure that the employment and economic benefits for the construction phase are realised in the district and region.	N/A	Supply chain engagement implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3) secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Recruitment and social value expectations to be implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC.	N/A	PC	P, C
PHH15	Providing accurate information to minimise temporary disruptions to access to development land and businesses	For temporary disruptions to access to development land and businesses, a clear and consistent signage strategy will be designed and implemented to direct motorists during construction and to support access to business and retail destinations, reflecting temporary changes to vehicular access arrangements. A clear and consistent signage strategy will be designed and implemented, to direct pedestrians and cyclists during construction and support access to business and retail facilities; and bus stop provision, using existing or replacement/temporary footpaths and cycleways.	N/A	Implemented through the Traffic Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
PHH16	Minimising construction stage impacts to local residents in a targeted and responsive manner	PLO to liaise with local residents along and with key access via the A4019 (including Uckington and Cooks Lane) in order to discuss the sequence of construction works and explore/agree the potential merits of temporary measures such as (but not limited to) siting of acoustic barriers and hoardings as part of the establishment and progression of construction works along the A4019; and provision of public transport infrastructure or community transport options (e.g. for residents of Cooks Lane).	N/A	Implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
PHH17	Informing the local community of the multimodal transport improvements of the Scheme, for example accessibility and connectivity	A Communications Plan for the community to be produced in the early stages of the operational phase of the Scheme, with an aim of informing the local community (particularly residents, employees of premises in the Scheme area, road users and walkers, cyclists and horse riders) of the improvements and encouraging their full use (for	N/A	Implemented through a Community Communications Plan. Produced as part of the Community Engagement Plan within the EMP (3rd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii).	N/A	PC GCC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
		example enhanced accessibility and new connections).		Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).			
PHH18	Safe access for pedestrians and cyclists through areas under traffic management.	PC to provide sufficient space (pavement width for example) to allow pedestrians, including wheelchair and pushchair users; and cyclists to travel safely through areas under traffic management.	N/A	Implemented through the Traffic Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3) secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
	Climate (C)						
C1	Reducing the impacts of extreme weather on construction processes/activities	Manage potential adverse impacts on construction processes that could occur during extreme weather. For example: - During a heatwave the construction programme and activity Schedule may need to be reviewed with those activities that are less vulnerable to the hot weather being prioritised. - During drought the construction Schedule may be vulnerable to disruption if water availability is limited. - Heavy rain could inundate the site, prevent access to the site and/or disrupt supply chains for construction materials. - During fog, lightning, or high winds it may not be possible to work safely, for example operating tall cranes or erecting scaffolding for work on bridges. - Construction staff health issues (e.g., heat stroke, dehydration, respiratory problems) could accompany work during a heatwave and/or time of reduced air quality (often associated with warmer temperatures).	Chapter 14 of the ES	In construction, impacts relating to extreme weather shall be mitigated by adherence to best practice, for example rescheduling some construction activities until an extreme weather event has passed. Implemented through the Emergency Preparedness and Response Plan, which includes a Severe Weather Plan, and a Flood Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3) secured by DCO Schedule 2, Requirement 3(2)(e)(vi). This will be implemented through the EMP (2nd iteration. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C
C2	Review and manage carbon emissions at construction stage.	Manage carbon emissions from the construction of the Scheme, through the development of a Carbon Management Plan. This plan will be produced as part of the Environmental Management Plan (EMP) 2nd iteration.	N/A	Implemented through the Carbon Management Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3) secured by DCO Schedule 2, Requirement 3(2)(e)(xiv). Completion, approval and implementation of the 2nd iteration EMP, is secured by	N/A	PC GCC	P, C

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				DCO Schedule 2, Requirement 3(1) and 3(3).			
	Cumulative Effects Assessment (CEA)						
CEA1	Reducing adverse inter-project cumulative construction impacts of the Scheme and other GCC and NH highways projects disrupting movement across the strategic and local transport network	PC will be required to submit all phasing plans associated with the management of construction traffic (as part of the Traffic Management Plan) to the GCC streetworks manager, and NH, on a rolling monthly basis. This will ensure co-ordinated consideration of all streetworks intervention information across projects, capturing all booking system requests for diversions on the GCC and NH highway networks; and works will not be implemented until approval and endorsement by GCC and NH is attained (where applicable). PC may be required to adapt proposals and scheduling in response to streetworks manager requests. The PLO will be required to coordinate dissemination of accurate network disruption information in advance, in accordance with the Community Engagement Plan. This information should incorporate interfaces with other project impacts on the transportation network, to the extent that they are known (see also PHH4 and PHH9).	N/A	PC will need to use the GCC and NH booking systems for streetworks interventions. This will be implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC. Consultation aspects implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). The Traffic Management Plan will implement proposals and any amendments. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3) secured by DCO Schedule 2, Requirement 3(2)(e)(x). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	GCC PC	C
CEA2	Seeking to secure the continued efficacy and realise long term benefits of the Scheme environmental design in the context of strategic development sites, to	GCC is committed to seeking to establish the right level of discussion, meeting, planning, coordination of programmes and engagement with the public and other stakeholders between GCC officers, the Scheme PC and relevant developers of the safeguarded land to the north-west of Cheltenham, the North West Cheltenham Development Area and the West Cheltenham Development Area. The aim of these endeavours	N/A	GCC to lead the endeavours to engage with third party developers, using established communication routes (e.g. through LPA planning process) and requests that will be made by GCC for engagement with relevant developers. The GCC expectations for PC role within the third party engagement will be	N/A	GCC PC	P, C, O

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
	manage inter-project cumulative effects	by GCC will be to ensure that proposals for change at these locations complement the intentions of the Scheme, particularly in relation to securing functional ecosystems that continue to support the protected species known to be present in the study area; building on the landscape structure; maintaining connectivity for WCH routes; as well as engaging meaningfully with local communities and stakeholders to support people in adapting to transformational change. The environmental design for the Scheme (Environmental Masterplan (application document TR010063 – APP 2.13)) has been developed to dovetail with the published masterplan that accompanies the outline application that has been made for the Elms Park proposals at the north-west Cheltenham Development Area (application reference 16/02000/OUT). Detailed design of the Scheme offers further opportunities for the interface with the Elms Park proposals to be refined, subject to the timeframes of third party developers. Maintenance of the Scheme environmental measures is part of LV3. Correct maintenance of new vegetation is part of LV4.		implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC. Consultation aspects for the Scheme to be implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Further opportunities for habitat creation will be reviewed as part of the development of the preliminary design, at the detailed design stage. Developments to the design are secured by DCO Schedule 2 Requirement 11(1). This can be informed by discussions with third parties, if successful. The approved landscape scheme will ensure the Scheme is constructed in accordance with the Environmental Masterplan (application document TR010063 – APP 2.13), secured by DCO Schedule 2 Requirement 5(1) and 5(3), and future Landscape Detail Design, as a minimum to replace lost habitats, reinstate screening and provide an attractive environment for all users. This includes maintenance of the Scheme to ensure establishment and continued health of planting. Annex C of the EMP (1st iteration) outlines the monitoring reports that are required to be produced as part of the EMP (2nd iteration) which includes a Planting (vegetation) method statement. Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3). Completion, approval, and implementation of the 3rd iteration EMP,			

Ref.	Objective of the commitment	Description of the mitigation measure or commitment	Source of the mitigation measure ES Reference (Relevant section within the ES where this mitigation is identified)	How the mitigation measure/commitment is to be implemented, and monitoring requirements (if applicable)	Achievement and reporting criteria (if applicable)	Responsible person(s): PC Design team GCC National Highways	When: P= pre-commencement of construction C= construction O= post-construction / operation
				post construction is secured by DCO Schedule 2, Requirement 3(4) and 3(5).			
CEA3	Managing the inter-project cumulative construction impacts of the Scheme, with the addition of activities from strategic development sites, on residential communities at Uckington, along the A4019, B4634 and at Withybridge Lane.	GCC is committed to seeking to establish the right level of discussion, meeting, planning, coordination of programmes and engagement with the public and other stakeholders between GCC officers, the Scheme PC and relevant developers of the safeguarded land to the north-west of Cheltenham, the North-west Cheltenham Development Area, and the West Cheltenham Development Area. The aim of these endeavours by GCC will be to ensure that proposals for change at these locations complement the intentions of the Scheme (see CEA2) and that all developers co-ordinate to engage meaningfully with local communities and stakeholders to support people in adapting to transformational change. This engagement should allow a route for members of the community to be informed, supported and influential in shaping how construction activities from all strategic developments are managed, allowing a route for pro-active prevention, as well as reactive response to issues emerging, particularly around noise, disturbance and community anxiety. The PLO and CEP proposals for the Scheme (see PHH4 and 9) will establish consultation and engagement routes and mechanisms. GCC will seek to encourage developers to integrate or build on these relationships as their proposals unfold, in cognisance of GCC values.	N/A	GCC to lead the endeavours to engage with third party developers, using established communication routes (e.g. through LPA planning process) and requests that will be made by GCC for engagement with relevant developers. The GCC expectations for PC role within the third party engagement will be implemented through the PC procurement process, led by GCC. GCC to include within the Invitation to Tender for the ECI contractor involvement for Stage 1, published through the pre-contract portal. GCC to expand on the evaluation criteria to confirm expectations within the Stage 2 process with the PC. The role and requirements of the PLO will be set out and implemented through the Community Engagement Plan. Consultation aspects for the Scheme to be implemented through the Community Engagement Plan. Produced as part of the EMP (2nd iteration) (application document TR010063 – APP 7.3), secured by DCO Schedule 2, Requirement 3(2)(e)(xiii). Completion, approval and implementation of the 2nd iteration EMP, is secured by DCO Schedule 2, Requirement 3(1) and 3(3).	N/A	PC	P, C

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