

A57 Link Roads

TR010034

7.3 Register of Environmental Actions and Commitments

APFP Regulation 5(2)(q)

Planning Act 2008 Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

May 2022

Infrastructure Planning

Planning Act 2008

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

A57 Link Roads Scheme

Development Consent Order 202[x]

7.3 REGISTER OF ENVIRONMENTAL ACTIONS AND COMMITMENTS

Regulation Number:	Regulation 5(2)(q)
Planning Inspectorate Scheme Reference	TR010034
Application Document Reference	TR010034/APP/7.3
Author:	A57 Link Roads Scheme Project Team, National Highways

Version	Date	Status of Version
Rev 7.0	May 2022	Deadline 11
Rev 6.0	May 2022	Deadline 10
Rev 5.0	April 2022	Deadline 9
Rev 4.0	March 2022	Deadline 6
Rev 3.0	February 2022	Deadline 5
Rev 2.0	November 2021	Section 51 Advice
Rev 1.0	June 2021	DCO Application

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1. Introduction

1.1 Background

- 1.1.1 This Register of Environmental Actions and Commitments (REAC) relates to an application made by National Highways (the “Applicant”) to the Planning Inspectorate under the Planning Act 2008 for a Development Consent Order (DCO). If made, the DCO which would authorise the construction, operation and maintenance of the A57 Link Roads Scheme (the “Scheme”). A description of the Scheme can be found in Chapter 2 of the Environmental Statement (ES) (application document TR010034/APP/6.3).
- 1.1.2 The REAC forms part of a suite of DCO application documents. It is informed by those documents and should be read alongside them. In particular this REAC refers to sections of the ES (application document TR010034/APP/6.3) which contain detailed information on the assessment and mitigation of impacts. The REAC sets out the mitigation committed for the Scheme as part of the ES
- 1.1.3 In accordance with the Design Manual for Roads and Bridges (DMRB) LA 120 Environmental management plans¹, the REAC also forms part of the Environmental Management Plan (EMP) (First iteration) (application document TR010034/APP/7.2).
- 1.1.4 The EMP (Second iteration) prepared by the appointed Principal Contractor during the implementation of the Scheme 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 (Third iteration). The REAC acts in part as a ‘bridge’ between the three iterations of the EMP through the lifecycle of the Scheme.
- 1.1.5 The second and third EMP iterations will be prepared and maintained by the appointed Principal Contractor and are secured by requirement 4 of the DCO.

1.2 Requirements of the REAC

- 1.2.1 In accordance with DMRB LA 120 this REAC includes:
- Clear and specific description of the Action;
 - The objective of the Action;
 - How the Action is to be implemented/achieved;
 - The source of the Action, including references for source documentation;
 - Naming of the person responsible for the Action i.e. Principal Contractor or Environmental Manager;
 - Achievement criteria and reporting requirements;
 - The project stage or date of implementation and/or achievement; and
 - Details of any monitoring required, what should be monitored and how results should be used to effect necessary action
- 1.2.2 The REAC is a working document and will be updated as the Scheme progresses. It will be finalised at the end of construction on completion of the

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

Scheme where it will be incorporated into the EMP (Third iteration), the main vehicle for passing essential environmental information to the Applicant and to the body responsible for the future maintenance and operation of the Scheme.

1.2.3 Tables 2.1, 2.2 and 2.3 all set out the following:

- The schedule of mitigation commitments and summarises the mitigation measures that have been committed to within the ES;
- The action plan during pre-construction (including Detailed Design), during construction, and post construction. This sets out environmental objectives that are derived from environmental mitigation measures identified, together with the actions required to achieve those objectives and the targets (or achievement criteria) that would be used to determine whether the objectives have been met.

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

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

Actions required before the start of construction (pre-construction)

1.2.6 Table 2.1 outlines the actions required at the pre-construction stage, which fall into the following main categories

- 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 (i.e. archaeology watching briefs, ecology works, root protection for trees, noise monitoring, etc)

Actions required during the construction period

1.2.7 Table 2.2 outlines the actions required at the construction stage, which fall into the following main categories

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

1.2.8 In this instance, actions during this period include actions required while the main construction works are taking place.

Actions required after the end of construction

1.2.9 Table 2.3 outlines the actions required at this stage which into the following main categories

- Implementation of actions required during the first few years after construction, to ensure the successful establishment of mitigation measures
- Implementation of the Scheme long-term maintenance/management measures; and
- 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

Table 2.1: Register of Environmental Actions and Commitments pre-construction (i.e. during detailed design stage and/or before construction)

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
1 - General Environmental Management								
GEM1.1	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure the correct procedures and plans are adhered to manage effects on the environment during construction	<p>The Principal Contractor must prepare an EMP (Second iteration) for their works prior to the commencement of their works and which details the measures that shall be undertaken prior to, and during construction of, the Scheme.</p> <ul style="list-style-type: none"> The construction of the authorised development must be carried out in accordance with the approved EMP (Second iteration). No part of the authorised development is to commence until an EMP, substantially in accordance with the EMP (First iteration), for that part has been submitted to and approved in writing by the Secretary of State, following consultation with the relevant planning authority and local highway authority to the extent that it relates to matters relevant to its functions. <p>The EMP (Second iteration) must be written in accordance with ISO14001:2015 and so far as is relevant to that part of the authorised development, must reflect the mitigation measures set out in this REAC, and must include the following environmental control/management plans (ECPs):</p> <ul style="list-style-type: none"> Soil Resource Plan (SRP) – Outline SRP has been submitted into Examination (EMP Annex B1). Detailed SRP will be prepared prior to construction commencing and included in EMP (Second iteration). Noise and Vibration Management Plan (NVMP) – Outline NVMP has been submitted into Examination (EMP Annex B2). Detailed NVMP will be prepared prior to construction commencing and included in EMP (Second iteration). Pollution Prevention Plan (PPP) Emergency Spillage Response Plan Emergency Flood Response Plan Dewatering Management Plan Construction Water Management Plan (CWMP) – Outline CWMP has been submitted into Examination (EMP Annex B3). Detailed CWMP will be prepared prior to construction commencing and included in EMP (Second iteration). Site Waste Management Plan (SWMP) – Outline SWMP has been submitted into Examination (EMP Annex B4). Detailed SWMP will be prepared prior to construction commencing and included in EMP (Second iteration). Materials Management Plan (MMP) – Outline MMP has been submitted into Examination (EMP Annex B5). Detailed MMP will be prepared prior to construction commencing and included in EMP (Second iteration). Asbestos Management Plan 	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Approval of EMP (Second iteration) by the Applicant and LPAs	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> Arboricultural Method Statement Community Engagement Plan (CEP) – Outline CEP has been submitted into Examination (EMP Annex B6). Detailed CEP will be prepared prior to construction commencing and included in EMP (Second iteration). Nuisance Management Plan (NMP) – Outline NMP has been submitted into Examination (EMP Annex B7). Detailed NMP will be prepared prior to construction commencing and included in EMP (Second iteration). Ecological Management Plans Biosecurity Management Plan Invasive Non-Native Species Management Plan Carbon Management Plan (CMP) – Outline CMP has been submitted into Examination. Detailed CMP will be prepared prior to construction commencing and included in EMP (Second iteration). Design Approach Statement <p>The following standalone documents have also been submitted into the Examination in Outline form with the Detailed versions being finalised prior to commencement of construction:</p> <ul style="list-style-type: none"> Landscape Ecological Management Plan (LEMP) (REP8-014). Traffic Management Plan (TMP) (REP1-038) 					
GEM1.2	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure relevant environmental protection measures are in place for construction	<p>The EMP (Second iteration) will be prepared and implemented by the appointed Principal Contractor prior to the commencement of construction works. The EMP will outline the following:</p> <ul style="list-style-type: none"> Environmental management and responsibilities Construction mitigation measures Monitoring and auditing processes Procedures that will be used to complete different construction activities Complaints response procedures Community and stakeholder liaison processes. 	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Approval of EMP (Second iteration) by the Applicant and Tameside Metropolitan Borough Council and Derbyshire County Council	Initial: Date:
GEM1.3	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure design is to standard	Construction design of the embankments would consider band drains or other geotechnical techniques. The geotechnical design will be in accordance with BS EN 1997-1:2004 Eurocode 7 Geotechnical Design Part 1 General rules. Cuttings and embankment works should be designed based on slope-stability analysis using site specific soil parameters. The geotechnical construction will be in line with DMRB CD 622 Managing Geotechnical Risk.	ES assessment assumes the identified measures will be implemented	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures to be implemented as identified	Initial: Date:
GEM1.4	Chapter 2: Scheme description (TR010034/APP/6.3)	Effective management of traffic during construction.	A Traffic Management Plan (TMP) (TR010034/APP/7.5) will be prepared prior to construction by the appointed Principal Contractor. The TMP will include measures to reduce worker vehicle movements and HGV movements, particularly at peak periods. The typical core working hours for the Scheme are expected to be between 07:30 and 18:00 on weekdays (excluding bank holidays) and from 07:30 to 16:00 on Saturdays. In addition, there would be a start-up and close down period of one hour either side of these	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Inclusion of TMP in the EMP Approval of TMP by the Applicant	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<p>times to maximise efficiency of the core hours. This would include activities such as deliveries, staff travel to work, maintenance and general preparation works, but would not include running plant and machinery that are likely to cause a disturbance to local residents or businesses.</p> <p>The TMP will include a commitment to not route HGVs associated with the construction works along the A57 Snake Pass through the Peak District National Park, in recognition of the sensitivity of the area.</p>					
GEM1.5	Chapter 2: Scheme description (TR010034/APP/6.3)	Minimising Land Take and Habitat Loss	<p>Pre-construction and Construction</p> <p>The phasing of land take for construction works will be planned to enable early release of land and thereby minimise the extent of disruption.</p> <p>Impacts on landowners will also be minimised through seeking alternatives to taking land.</p> <p>Where sensitive receptors do fall within the DCO boundary, construction impacts, particularly for temporary land-take (e.g. for site compounds and material storage areas), have been designed out/minimised as far as possible.</p> <p>Operation</p> <p>The DCO boundary has been reviewed to minimise land take and avoid receptors where possible.</p> <p>Minimising land take/habitat loss during construction will be through clearly demarcated areas with dedicated access routes, located outside of ecologically sensitive habitats. Habitat losses to be quantified to ensure no net loss (and where possible increase to provide more robust and resilient ecosystem) in quantity and quality.</p>	ES assessment assumes the identified measures will be implemented	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Measures to be implemented as identified	Initial: Date:
2 – Air Quality								
AQ1.1	Chapter 5: Air Quality, Section 5.9 (TR010034/APP/6.3)	Control dust during construction	<p>Scheme specific mitigation measures to control dust during construction would be specified within contract documentation and incorporated into the EMP (Second Iteration) prior to construction of the Scheme.</p> <p>Prior to construction commencing, 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 (Second iteration).</p> <p>The EMP (Second iteration) will be subject to consultation with the relevant planning authorities and local highway authorities to the extent that it relates to matters relevant to its functions.</p>	Assessment within the ES assumes best practice measures (BPM) would be incorporated throughout the construction phase.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Consultation with Local Planning Authorities (LPAs) and approval from the Applicant prior to the start of the work at each location.	Initial: Date:
3 – Cultural Heritage								
CH1.1	Chapter 6: Cultural Heritage, Section 6.9 (TR010034/APP/6.3)	Determine the location and extent of any required archaeological remediation works either prior to, or	A staged programme of archaeological mitigation would be undertaken. Archaeological evaluation works would be undertaken prior to construction, comprising geophysical survey, archaeological trial trenching and geotechnical monitoring.	Data from the Historic Environmental Records (HERs) of Greater Manchester Archaeology Advisory Service (GMAAS)	Contractual requirement between the Applicant and the Appointed Principal	Designer / Appointed Principal Contractor	Completion of programme of archaeological investigation and reported in the	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
		during construction, and presented	The results of these investigations would be used to determine the location and extent of any required archaeological remediation works either prior to, or during construction which will be presented in a proposed Archaeological Fieldwork Strategy.	and Derbyshire County Council	Contractor under DCO Requirement 4		Archaeological Fieldwork Strategy.	
CH1.2	Chapter 6: Cultural Heritage, Section 6.9 (TR010034/APP/6.3)	Set out the planned archaeological fieldwork	The proposed Archaeological Fieldwork Strategy would be issued alongside the EMP (Second iteration). This will be prepared in consultation with Historic England, GMAAS and Derbyshire County Council and agreed prior to the commencement of the construction phase. .	Archaeological Fieldwork Strategy to be prepared. Consultation with Historic England, GMAAS and Derbyshire County Council	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 Agreement with Archaeological Officers of the GMAAS and Derbyshire County Council	Designer / Appointed Principal Contractor	Archaeological Fieldwork Strategy to be prepared prior to construction and implemented during construction.	Initial: Date:
CH1.3	Chapter 6: Cultural Heritage, Section 6.9 (TR010034/APP/6.3)	Provide detailed record of identified asset	Historic building recording of the Cottages on the north side of Old Hall Lane (HA78) will be undertaken to provide a detailed record of this asset prior to its removal for construction of the Scheme. Historic building recording will be undertaken to Level 3 standards as defined in the Historic England guidance Understanding Historic Buildings, A Guide to Good Recording Practice (2017).	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Works undertaken in accordance with DCO Requirement.	Initial: Date:
CH1.4	Chapter 6: Cultural Heritage, Section 6.9 (TR010034/APP/6.3)	Ensure the effectiveness of proposed mitigation	The Written Scheme of Investigation (WSI) (Appendix 6.2 of the ES (TR010034/APP/6.5)) will be refined in conjunction with the Archaeological Fieldwork Strategy. The WSI also includes contingency for hitherto unidentified archaeological remains.	Archaeological Fieldwork Strategy and WSI to be prepared	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 Agreement with Archaeological Officers of the GMAAS and Derbyshire County Council	Designer / Appointed Principal Contractor	Implementation of maintenance and monitoring by the Applicant's Maintenance Agent in agreement with the Applicant	Initial: Date:
4 – Landscape and Visual Effects								
LV1.1	Chapter 7: Landscape & Visual, Section 7.9 (TR010034/APP/6.3)	Minimise construction impacts	An Environmental Clerk of Works or Site Environmental Manager would be appointed to ensure that objectives of the EMP (Second iteration) are achieved. The Environmental Clerk of Works or Site Environmental manager would be required to monitor construction activities that would cause likely significant effects including: <ul style="list-style-type: none"> The effectiveness and suitability of root protection fencing ensuring no impacts to trees that are to be retained. The areas of most concern are areas covered by TPO's as outlined in Appendix 7.3 Arboricultural Impact Assessment Report of the environmental statement (TR010034/APP/6.5) and TPOs and hedgerows Regulation 5 (2)(o) drawings (TR010034/APP/2.13). Working hours of operation of the main works and in site compounds which may produce visual, noise or lighting impacts in particular on adjacent residential receptors. The angle and direction of night-time lighting, to ensure that it is not directly focussed on adjacent residential receptors. Construction programme would be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts 	Successful delivery of proposed mitigation measures	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures to be implemented as identified	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> Construction plant and materials storage areas would be appropriately sited to minimise their landscape and visual impact. 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. Construction would be managed such that the loss of any existing vegetation not affected by the permanent works is minimised Links to PRoW and footpaths would be reinstated and created (where severance or diversion has resulted from the Scheme construction). 					
LV1.2	Chapter 7: Landscape & Visual, Section 7.9 (TR010034/APP/6.3)	Ensure the effectiveness of proposed mitigation	<p>Detailed landscape design would be undertaken at a later stage and the mitigation design would be further detailed and refined during this process. The detailed landscape design would include a planting schedule, a specification and a LEMP.</p> <p>Current planting proposals in the vicinity of the houses are indicative only, however it is anticipated that the final proposals will be for grassland with bulbs, native hedgerow, and trees to provide visual screening. Tree planting is proposed to provide a screen to the road and would be located at a safe distance from houses. Tree species will be carefully selected to ensure they don't become overly large or block light and residents will have a choice as to whether they want trees outside of their properties, or if they prefer a view of the road.</p> <p>The LEMP will be based on the requirements outlined in the EMP. This would include information on long-term operational management of the landscape and ecological resource within the Scheme boundary. The LEMP would ensure that landscape works are undertaken in accordance with good practice and in a consistent basis across the Scheme.</p>	Successful delivery of proposed mitigation measures	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Successful delivery of mitigation and implementation of maintenance and monitoring by the Applicant's Maintenance Agent in agreement with the Applicant	Initial: Date:
LV1.3	Chapter 7: Landscape & Visual, Section 7.9 (TR010034/APP/6.3)	Ensure retention and removal of identified trees and shrubs	<p>Confirmation on tree removals and trees to be retained will be undertaken prior to construction using the Tree Protection Plans included within the Arboricultural Impact Assessment contained in Appendix 7.3 of Chapter 6.7 of the ES (TR010034/APP/6.5) and detailed within a final Arboricultural Method Statement, that shall also confirm protection measures for the retained trees. Any works recorded for retained trees will be confirmed prior to construction and included within a final AMS.</p> <p>The appointed Principal Contractor is to review the trees impacted by the Scheme as part of the detailed design stage of the Scheme and will update the final Arboricultural Method Statement to support the EMP in line with BS 5837:2012.</p> <p>The production of the final Arboricultural Method Statement is to be undertaken by a suitably qualified arboricultural specialist, appointed by the Principal Contractor, to ensure appropriate mitigation measures are implemented during the construction works and confirm protection measures and trees for retention.</p>	Successful retention of trees and hedgerows/ vegetation is assumed within the ES. Trees not identified within the original Arboricultural Impact Assessment may require removal.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Works undertaken in accordance with DCO Requirement.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<p>The arboriculturist is to produce the final Arboricultural Method Statement and consult with the relevant stakeholders during its production, notably the Local Authority Tree Officers.</p> <p>The final Arboricultural Method Statement that will be produced by the appointed Principal Contractor shall confirm key roles and site contacts. The contacts list should include an arboriculturist to support the construction phase of the Scheme.</p>					
LV1.4	Chapter 7: Landscape & Visual, Section 7.9 (TR010034/APP/6.3)	Outline details of new green space at Roe Cross Road / Old Road	The design will be refined for the space included at Roe Cross Road / Old Road, above the Mottram Underpass will be agreed in full consultation with Tameside MBC.	Mitigation measures outlined have been assumed in the ES.	Agreement with Tameside MBC. Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Successful completion of Detailed Designs. Works undertaken in accordance with DCO Requirement.	Initial: Date:
5 - Biodiversity								
BD1.1	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Protection of European Protected Species	Obtain EPSL to carry out works affecting bats under Wildlife and Countryside Act 1981 (as amended) – Natural England	Legal requirement to obtain a EPSL where potential exists for works to injure or kill a European Protected Species	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Successful EPSL licence as agreed with Natural England	Initial: Date:
BD1.2	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Protection of European Protected Species	Obtain EPSL to carry out works affecting badgers under Wildlife and Countryside Act 1981 (as amended) – Natural England	Legal requirement to obtain a EPSL where potential exists for works to injure or kill a European Protected Species	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Successful EPSL licence as agreed with Natural England	Initial: Date:
BD1.3	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	The SuDS design would at a minimum result in no net loss of standing water body area across the Scheme. Further details of the Environmental Masterplan are provided in the Drainage Strategy (TR010034/APP/7.7) and on Figure 2.4: Environmental Masterplan of the ES (TR010034/APP/6.4).	Impacts on aquatic ecology	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Successful delivery of identified habitat	Initial: Date:
BD1.4	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Bats</p> <p>The recommendations from the Bat Conservation Trust and the Institution of Lighting Professionals, titled 'Guidance Note 8 Bats and Artificial Lighting' would be followed when designing the lighting schedules. This includes the following measures:</p> <ul style="list-style-type: none"> All luminaires would lack UV elements and would not use metal halide or fluorescent sources. LED luminaires would be used due to their sharp cut-off, lower intensity, good colour rendition and dimming capability. A warm white spectrum (2700-3000 Kelvin) would be adopted to reduce blue light component. Luminaires would feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats. Research indicates that while lower UV components attract fewer invertebrates, warmer colour temperatures with peak wavelengths greater than 550 nm (~3000°K) cause less impacts on bats. 	Lighting requirements have been assumed in the ES.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Lighting scheme to be delivered as identified.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> Only luminaires with an upward light ratio of 0% and with good optical control would be used. 					
BD1.5	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Bats</p> <p>The design of the bat structure would be refined during the detailed design phase.</p> <p>The size of the structure would be approximately 4-6 m high x 1-2 m width and be of cylindrical design based on existing natural stone vent structures (primarily the Mottram aqueduct air vents) within the local area. The proposed bat structure would be based on a design of this character using a cylindrical design with an appropriate roof structure.</p> <p>The design will include:</p> <p>A dedicated loft space measuring approximately 2 m in diameter and including at least six internally fitted bat boxes (for example Kent bat boxes) and softwood battens to create a variety of roosting heights. At least three entrance holes or tiles would be located around the roof to allow access into the loft space with gaps in felt roof lining</p> <p>Two internal chambers with external access within the main body of the column with several access holes within the exterior to provide two further internal spaces for roosting bats</p> <p>At least one lockable door located externally and a maintenance hatch within the main column would be installed to allow monitoring by bat licensed individuals. The entrance would be designed into the structure to be inconspicuous and blend in with the structure as far as reasonably possible</p> <p>At least 10 ridged roof tiles to provide crevices for additional external roosting</p> <p>At least 10 bat bricks located within the external brick work for crevice dwelling species.</p> <p>It is anticipated that this structure would be able to accommodate up to 200 bats</p>	The design of the bat roost structure will be undertaken at the detailed stage	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Bat mitigation structure to be delivered as identified.	Initial: Date:
BD1.6	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	To update information for confirmed bats present within the Scheme boundary. To ensure legal compliance.	<p>Bats</p> <p>Targeted pre-commencement surveys will be undertaken within the areas identified for bat mitigation measures to update the current baseline. If no presence is confirmed following the survey, the proposed mitigation would still be implemented as enhancement measures.</p>	The updated surveys would be suitable to inform a Natural England EPSL	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Completion of licence. Monitoring and reporting arrangements would be made in consultation with Natural England and approved by the Applicant (if applicable).	Initial: Date:
BD1.7	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	To update information for confirmed badgers present within the Scheme boundary. To ensure legal compliance.	<p>Badgers</p> <p>Pre-commencement surveys would be undertaken within the DCO boundary due to the mobile nature of the species to ensure the current baseline information is fully kept up to date.</p>	The updated surveys would be suitable to inform a Natural England EPSL	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Completion of licence. Monitoring and reporting arrangements would be made in consultation with Natural England and approved by the Applicant (if applicable).	Initial: Date:
BD1.8	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	To update information for confirmed Kingfisher	General bird assemblage	The updated surveys would inform the mitigation requirements.	Contractual requirement between the Applicant and the Appointed Principal	Designer / Appointed	Implementation of the identified actions.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
		present within the Scheme boundary. To ensure legal compliance.	Pre-commencement surveys for breeding birds and kingfisher would be undertaken prior to works commencing on the River Etherow to update the current baseline.		Contractor under DCO Requirement 4	Principal Contractor		
BD1.9	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	To update information for confirmed otter present within the Scheme boundary. To ensure legal compliance.	Otters In order to update the current baseline, pre-commencement survey on the River Etherow and watercourses on site will be undertaken prior to construction.	The updated surveys would inform the mitigation requirements.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation of the identified actions.	Initial: Date:
BD1.10	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	To update information for confirmed mammal present within the Scheme boundary. To ensure legal compliance.	Priority mammals (including hedgehog and brown hare) Pre-commencement checks for brown hare and hedgehog will be undertaken within suitable habitats prior to operations.	The updated surveys would inform the mitigation requirements.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation of the identified actions.	Initial: Date:
BD1.11	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	To update information for confirmed common toad present within the Scheme boundary. To ensure legal compliance.	Common toad Pre-commencement checks for common toad within suitable habitats will be undertaken prior to operations.	The updated surveys would inform the mitigation requirements.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation of the identified actions.	Initial: Date:
BD1.12	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Ensure appropriate protection measures are in place for Reptiles	Reptiles A Precautionary Working Method Statement (PWMS) will be prepared prior to construction and will detail appropriate mitigation measures to avoid reptiles from coming to harm during construction.	The PWMS would be informed by the ES	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation of the identified actions.	Initial: Date:
BD1.13	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Watercourses Ecologically sensitive realignment of the Hurstclough Brook would replace 220 m of watercourse with limited habitat complexity with 225 m of improved habitat. The realignment of Tara Brook would replace 95 m of channel lost under the footprint of the Scheme with 375 m of new channel. New channels would be designed to maximise morphological and ecological complexity through provision of diverse planforms and the appropriate sizing of channels to promote a self-sustaining channel form. Riparian planting strategies and/or natural colonisation strategies shall be determined at detailed design stage but will consider the relative costs and benefits for specific locations. Natural colonisation is the preferred option for new watercourses as it promotes the establishment of species prevalent within the locality. However, it is recognised that this approach may not be appropriate if invasive species are likely to take hold and/or if rapid plant establishment is required to stabilise the banks or for landscaping purposes.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD1.14	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Bats In order to ensure that continued roosting spaces and to provide enhancements for roosting bats, at least 37 artificial bat boxes would be installed around the Scheme on retained trees or on artificial poles (if suitable trees aren't available). Bat boxes would	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			include a mixture of Schwegler 2F, 1FF, and 2FN bat boxes to provide a range of roosting spaces. Dark corridors would be maintained around any artificial bat boxes through ensuring the minimal lighting is used and ensuring that any artificial roosts are not directly illuminated. 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 would also be installed at the same location, where feasible. All bat boxes would be installed prior to construction and would be maintained for a minimum of five years.				Agree and obtain Natural England EPSL (if required)	
BD1.15	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Bats The lighting design has considered the presence of the dedicated bat structure located within the north of the Showground area. As the highway is located within a cutting, any light spill from the proposed lighting columns within this area would be reduced. Screen planting in the form of hedgerows would further provide a natural screen to provide dark corridors for bats. No lighting is proposed upon the vegetated area on the Mottram Underpass which, in combination with the scrub planting, would provide a dark corridor encouraging bats to cross this area east and west.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD1.16	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe otter passage	Otters A clear span design will be utilised as part of the River Etherow Bridge to avoid impacts to the banks and retain aquatic connectivity within this area.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
6 – Geology and Soils								
GS1.1	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Soil sustainability and protection	As outlined in the CL:AIRE Definition of Waste Code of Practice (DoW CoP), the sustainable reuse of soils should be implemented through good practice as set out in Defra's "Construction Code of Practice for the Sustainable Use of Soils on Construction Sites". This involves the production of an SRP, MMP and a SWMP. Further to this, a verification plan will also be provided with the MMP which must be produced prior to any excavation taking place on site and provide descriptions of materials to be used and tracking of material movements. All materials subject to excavation, disposal, treatment and/or reuse must be tracked throughout, and evidence generated to provide an auditable trail.	The ES assessment assumes the protection and management of soils	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Adherence to identified guidelines. Production of SRP, MMP and SWMP	Initial: Date:
GS1.2	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Mitigate potential adverse effects during construction	An EMP (Second iteration) will include but is not limited to construction activities, stockpile management, emergency procedures, records of environmental incidents, environmental monitoring, etc and will be captured in the form on a SRP.	Relevant plans and procedures are outlined in the EMP (first iteration) and will be appended to the EMP (Second iteration)	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Works undertaken in accordance with the EMP /DCO.	Initial: Date:
7 – Material Assets and Waste								
MW1.1	Chapter 10: Material Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Mitigate potential construction effects of the Scheme	The EMP (Second iteration) will include a MMP and a SWMP. The MMP and SWMP would be developed prior to construction by the appointed Principal Contractor.	Identified Plans to be prepared and appended to the EMP (Second iteration)	Contractual requirement between the Applicant and the Appointed Principal	Designer / Appointed Principal	Implementation of suitable supply chain process	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
					Contractor under DCO Requirement 4	Contractor / the Applicant		
MW1.2	Chapter 10: Material Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Management plan to maximise reuse of soils on-site	Reduction and reuse will be achieved on the Scheme through the implementation of the MMP. A tracking system will be established and used to track the movement, storage and placement of excavated materials within the Scheme and included in the EMP (Second iteration). Upon completion of the works, a verification report will be submitted to CL:AIRE and the EA.	Assessment within the ES assumes materials and waste appropriately managed throughout Scheme construction phase.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Approval of identified plans by the Applicant Adherence to the identified plans	Initial: Date:
MW1.3	Chapter 10: Material Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Maximise the use of recycled materials	The appointed Principal Contractor is committed to off-site manufacturing of components and use of modular construction and other modern methods of construction.	Reduction of construction-related material use, waste and emissions	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation and approval by the Environment Manager.	Initial: Date:

8 – Noise and Vibration

NV1.1	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Appropriate management of noise and vibration during construction	<p>The EMP (Second iteration) shall also include a NVMP to control noise and vibration emissions from the construction works. The NVMP shall incorporate good working practices and BPM, including but not limited to the following measures:</p> <ul style="list-style-type: none"> • Use of vehicles, plant and equipment that generate lower levels of noise or vibration should be selected over alternatives that produce higher levels of noise or vibration as far as reasonably practicable • All vehicles and plant fitted with effective exhaust silencers which should be maintained in good and efficient working order • All compressors and generators 'sound reduced' models fitted with properly lined and sealed acoustic covers which should be kept closed whenever the machines are in use • All ancillary pneumatic percussive tools should be fitted with mufflers or suppressors as recommended by the manufacturers which should be kept in a good state of repair • Machines in intermittent use shut down when not in use or where this is impracticable, throttled down to a minimum • The site compound and static machines be sited as far as is practicable from noise sensitive buildings • Where practicable, plant with directional noise characteristics orientated to minimise noise at nearby properties • Plant certified to meet the current EU legislation and should be not be louder than the noise levels provided in Annex C and D of BS 5228-1 • Where appropriate, temporary noise barriers or other noise containment measures installed to minimise construction noise levels • The loading or unloading of vehicles and the movement of equipment or materials undertaken in a manner that minimises noise generation 	<p>The Appointed Principal Contractor's activities are likely to generate noise and vibration which require management.</p> <p>Assessment within the ES assumes BPM would be incorporated throughout the construction phase.</p>	<p>Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4</p> <p>Consultation with Environmental Health Departments at the relevant LPAs</p>	Designer / Appointed Principal Contractor	Consultation on the NVMP with the relevant LPAs NVMP implemented during construction	Initial: Date:
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REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> Cleaning of concrete mixers to not be undertaken by hammering the drums When handling materials, care shown not to drop materials from excessive heights. 					
NV1.2	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Agree requirements for managing and controlling noise and vibration from construction work	The NVMP will also require the Principal Contractor to consult with the Environmental Health Departments at the relevant Local Planning Authorities prior to the commencement of construction works. From this, guidance will be obtained on their requirements for managing and controlling noise and vibration from construction works, including communication preferences for updates during the construction phase.	The preliminary works contractor's activities are likely to generate noise and vibration which require management.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 Consultation with Environmental Health Departments at the relevant LPAs	Designer / Appointed Principal Contractor	Approval of NVMP by the Applicant and relevant LPAs	Initial: Date:
NV1.3	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Potential for obtaining Section 61 Prior Consent (agree construction phase noise and vibration levels with local authorities)	The Principal Contractor will have the option to apply for a Section 61 Prior Consent under the Control of Pollution Act 1974 for some or all of construction works, including daytime working and any of the limited activities taking place at night. This should be discussed when engaging with the Local Authorities prior to works commencing.	Section 61 consents could be used in relation to the Scheme.	Consultation with Environmental Health Departments at the relevant Local Planning Authorities	Designer / Appointed Principal Contractor	Agreement of Sections 61s with relevant LPAs (if required).	Initial: Date:
NV1.4	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Mitigate construction phase vibration	<p>Piling methods will be selected to carefully minimise noise and vibration impacts at receptors. Although the Applicant's preference is to use a rotary bored method at all piling locations, which results in low levels of vibration, it may not be possible due to the ground type or other engineering constraints. The piling methods that will be used for the Scheme will be confirmed during the detailed design stage.</p> <p>Alternative piling methods such as vibratory piling or the Giken method will be considered at locations where methods producing the lowest levels of vibration are not feasible at certain locations. Methods that generate high levels of vibration such as percussive piling shall be avoided as far as practicable.</p>	The ES assessment assumes a reduction in vibration during construction impact based on the identified piling method.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Inclusion of monitoring proposal with the NVMP. Adhering to the specified monitoring regime throughout the construction period.	Initial: Date:
NV1.5	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Determine extent of mitigation measure requirements	The need for temporary rehousing of residents would be determined at the detailed design stage. The contractor will offer noise insulation or ultimately temporary rehousing if situations arise, despite the implementation of BPM and other measures stated in the Noise and Vibration Management Plan, where construction noise levels exceed certain threshold noise levels (to be specified in the NVMP) for a time period exceeding 10 days or more in a consecutive 15 day period or any 40 days in a consecutive 6 month period.	Measure would be determined at detailed design.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Implement appropriate mitigation measures during construction of the Scheme, if required.	Initial: Date:
NV1.6	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Mitigate operational noise effects	The specification and material of the noise barriers will be determined during the Detailed Design of the Scheme.	The ES assessment assumes mitigation measures implemented during operation	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Implement appropriate mitigation measures during operation of the Scheme	Initial: Date:
9– Population and Human Health								
PH1.1	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	Temporary closure of PRoWs	Temporary closure orders will be agreed under the Road Traffic Regulations Act with Tameside MBC / Derbyshire County Council. Closures are identified on 2.4 Streets, Rights of Way and Access Plans (TR010034/APP/2.4).	ES assessment assumes the temporary closure of the identified PRoWs and prior notification of works	Contractual requirement between the Applicant and the Appointed Principal	Appointed Principal Contractor	Successful temporary closure of PRoWs and reopening following completion of works.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
					Contractor under DCO Requirement 4		Prior notification would be given for all identified temporary closures	
PH1.2	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To minimise disruption to agricultural holdings	<p>The mitigation measures to minimise impacts on agricultural holdings during construction, these include:</p> <ul style="list-style-type: none"> • Arrangements through land agreements with the landowner for the maintenance of farm and field accesses affected by construction • The protection and maintenance of livestock water supply systems, where reasonably practicable, in agreement with the landowner through the agricultural liaison officer and the Community Engagement Plan that would be prepared at prior to construction and annexed to the EMP (Second iteration) • The protection of agricultural land adjacent to the construction site, including the provision and maintenance of appropriate stock-proof fencing. This would be in agreement with the landowner through the agricultural liaison officer and the Community Engagement Plan that would be prepared at prior to construction and annexed to the EMP (Second iteration) • The adoption of measures to control the deposition of dust on adjacent agricultural crops. Best Practice guidance will be followed to determine appropriate limits for the implementation of dust control measures to inform the development of the Nuisance Management Plan, annexed to the EMP (Second iteration) • The control of invasive and non-native species and the prevention of the spread of weeds generally from the construction site to adjacent agricultural land through an Invasive Non-Native Species Management Plan, that would be prepared at prior to construction and annexed to the EMP (Second iteration) • The adoption of standard industry best practice measures to prevent, insofar as reasonably practicable, the spread of soil-borne, tree-crop and animal diseases from the construction area • Liaison and advisory arrangement with affected landowners, occupiers and agents, as appropriate, through the agricultural liaison officer and the Community Engagement Plan that would be prepared at prior to construction and annexed to the EMP (Second iteration) 	ES assessment assumes the measures in place to reduce effects on agricultural holdings during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	To be agreed with the Applicant and relevant LPAs relevant stakeholders	Initial: Date:
PH1.3	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To minimise disruption to pedestrians, equestrians and cyclists.	Planning of the Scheme construction works would be undertaken in order to minimise the need to close and divert footways, PRoW and cycle facilities, and minimise closures and diversion durations. Where the closure of WCH routes would be required, safe and appropriate alternative means of access would be provided to ensure access would be maintained at all times in order to minimise temporary severance.	Assessment within the ES assumes appropriate provisions are put in place to minimise disruption to pedestrians, equestrians and cyclists.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	To be agreed with the Applicant and relevant LPAs	Initial: Date:

10 – Road Drainage and the Water Environment

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
RD1.1	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Protection of River Etherow	<p>Obtain Flood Risk Activity Permit (FRAP) from Environment Agency (EA) in accordance with Flood Risk Assessment (FRA) (TR010034/APP/5.5).and Drainage Strategy (TR010034/APP/7.7).</p> <p>FRAPs will be required for the River Etherow for:</p> <ul style="list-style-type: none"> Erecting any temporary or permanent structure in, over or under a Main River. Any activity within 8m of the bank of a main river, or 16m if it is a tidal main river. Any activity within 8m of any flood defence structure or culvert on a Main River, or 16m on a tidal river. Consent applications need to be supported by Detailed Design drawings, construction method statements, and an environmental risk assessment. 	<p>Assessment within the ES assumes works are to be programmed to minimise the cumulative impact of the proposed works including that of the compensatory flood storage area and wider flood alleviation measures</p> <p>Appointed Principal Contractor will obtain prior to construction commencement.</p>	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Successfully obtain Permit from EA	Initial: Date:
RD1.2	Chapter 6.13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Protection of Ordinary Watercourses	<p>Obtain Ordinary Watercourse Consent for relevant locations from Tameside MBC and High Peak Borough Councils</p> <p>Required for works with the potential to impeded flow in any ordinary watercourse. Consent will be required for the proposed new culverts on 10 ditches as shown in the Works Plans (TR010034/APP/2.3).</p> <p>Consent applications need to be supported by Detailed Design drawings and a construction method statement.</p>	Appointed Principal Contractor will obtain prior to construction commencement	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Successfully obtain consent from LPAs	Initial: Date:
RD1.3	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Permission to allow temporary dewatering	<p>Obtain license for temporary dewatering (small scale dewatering in the course of building or engineering works) – Environment Agency</p> <p>An abstraction license is required unless exempted. Exempted if:</p> <ul style="list-style-type: none"> Lasting less than 6 consecutive months from commencement of first abstraction Has no potential to cause impact at any conservation site Has no potential to cause damage to protected species Is immediately discharge to a soakaway Is less than 100 m³/day If within 500 m of a conservation site, 250 m of a spring, well or borehole used to supply water for a lawful use, the volume restriction is reduced to 50 m³/d from 100 m³/day. <p>This permit will be applied for by the appointed Principal Contractor.</p>	Appointed Principal Contractor will obtain prior to construction commencement	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Successfully obtain licence from EA	Initial: Date:
RD1.4	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Permission to discharge from excavations	<p>Obtain permit for discharge from excavations – Environment Agency or Water Company</p> <p>A permit to discharge is not required from the Environment Agency if the discharge is to foul sewer, however the discharge conditions must be agreed by the water company.</p> <p>However, a discharge permit is usually needed if the discharge is from an excavation to surface water. The permit is made to the Environment Agency if the discharge is to a main river and to the lead local flood authority if into a non-main river. A site can be exempted if the following is true:</p> <ul style="list-style-type: none"> have a short term, temporary discharge of uncontaminated water which is wholly or mainly rainwater, from an excavation to surface water (such as pumping water out of excavations on a building site) 	Appointed Principal Contractor will obtain prior to construction commencement	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Successfully obtain Permit from EA/ water company	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> complies with all the conditions listed in the relevant guidance document (https://www.gov.uk/government/publications/temporary-dewatering-from-excavations-to-surface-water/temporary-dewatering-from-excavations-to-surface-water) 					
RD1.5	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Permission for new outfall structures	New outfall structures as part of the highway drainage may require Environmental Permit or a Land Drainage Consent if connecting into a Main River or Ordinary Watercourse respectively. Consent will be required for both the temporary works and the permanent outfall structure. The requirements for the permit or consent will be agreed in full consultation with the Environment Agency and/or Lead Local Flood Authority at the Detailed Design stage of the scheme.	Appointed Principal Contractor will obtain prior to construction commencement	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Successfully obtain Permit from EA/ Lead Local Flood Authority	Initial: Date:
RD1.6	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on water quality during operation	Mitigation measures at discharge outfalls to be determined during the Detailed Design stage.	The assessment within the ES assumes mitigation measures at discharge outfalls	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Design feature included within the Detailed Design	Initial: Date:
RD1.7	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on water quality during operation	Adherence to the Drainage Strategy (TR010034/APP/7.7).	The assessment within the ES assumes adherence to the Drainage Strategy	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	The Drainage Strategy will be used to inform the Detailed Design	Initial: Date:
RD1.8	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during construction	Watercourse realignments will be designed to be ecologically sensitive and to promote the natural hydromorphological regime (for example, allowance for a two-stage channel profile). Designs should be considered by an appropriately qualified fluvial geomorphologist in order to ensure long-term channel stability.	The assessment within the ES assumes design will be sympathetic to biodiversity.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	ECPs to be prepared and included in the EMP (Second iteration)	Initial: Date:
RD1.9	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during operation	Hydraulic modelling will be used to further inform the design – including comparison of velocities (and potential for scour) between the baseline and the proposed works both upstream and downstream.	Hydraulic modelling would be used to inform the Detailed Design	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Modelling outcomes will be used to inform the Detailed Design	Initial: Date:
RD1.10	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during operation	Minimise the lengths required for physical modifications (i.e. culvert length to be as short as possible).	The assessment within the ES assumes that lengths required for physical modifications would be minimised	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Design feature included within the Detailed Design	Initial: Date:
RD1.11	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during operation	Use grey/green measures to “soften” the aesthetic of the hard measures (e.g. culverts), where practicable.	The assessment within the ES assumes grey/green measures will be incorporated into the Detailed Design	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Design feature included within the Detailed Design	Initial: Date:
RD1.12	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on flood risk during construction	Where construction activity is at risk of flooding from fluvial sources it is required that the site signs up to EA’s Floodline.	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Appointed Principal Contractor sign up to EA floodline	Initial: Date:
RD1.13	Chapter 13: Road Drainage and the Water Environment, Section	Prevent adverse effects on flood risk during operation	Culverted reaches of all watercourse crossings are to be sized appropriately. Culverts would be designed so as to maximise the	The assessment within the ES assumes minimum culvert sizing when	Contractual requirement between the Applicant and the Appointed Principal	Designer / Appointed	Design feature included within the Detailed Design	Initial: Date:

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	13.9 (TR010034/APP/6.3)		longitudinal connectivity with the open watercourse, following best practice guidance.	designing watercourse realignments.	Contractor under DCO Requirement 4	Principal Contractor		
RD1.14	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on flood risk during operation	Where watercourse alignments are proposed, the design should incorporate features to ensure existing flow conveyance characteristics are replicated.	The assessment within the ES assumes that groundwater mitigation measures will be included at the detailed design stage and will replicate existing flow conveyance characteristics when designing watercourse realignments.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Design feature included within the Detailed Design	Initial: Date:
RD1.15	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on groundwater	The supplementary ground investigation was carried out in 2021 and has been used to further inform the assessment in terms of groundwater level and quality information in the areas of the Scheme not covered by existing data. This assessment is presented in ES Appendix 13.2 Hydrogeological Risk Assessment (REP3-025). The Hydrogeological Risk Assessment will be updated during Detailed Design, including the results of an updated water features survey, and to address technical comments from the EA following review of version (REP3-025) submitted into the DCO examination. The HRA will be used to inform the Dewatering Management Plan and will be appended to it (and therefore included within Annex B of the EMP (2nd iteration)). A monitoring strategy will be prepared to outline baseline monitoring of identified receptors prior to, during and post-construction, as recommended in the Hydrogeological Risk Assessment. Baseline monitoring at key receptors will be undertaken prior to the start of construction as outlined in the monitoring strategy. This monitoring strategy will form part of the Dewatering Management Plan. The development will be undertaken in accordance with all the mitigation measures and the monitoring strategy detailed in the Dewatering Management Plan, as informed by the updated HRA and as approved by the EA.	Use of supplementary Ground Investigation data and Hydrogeological Risk Assessment to inform detailed design	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Ground investigation results used to inform the Detailed Design. Monitoring strategy prepared and baseline monitoring undertaken.	Initial: Date:
RD1.16	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on groundwater during construction	The supplementary ground investigation was carried out in 2021 and has been used to further inform the assessment in terms of groundwater level and quality information in the areas of the Scheme not covered by existing data. This assessment is presented in ES Appendix 13.2 Hydrogeological Risk Assessment which will be used to inform detailed design and the Dewatering Management Plan, along with any further investigations and assessments that are considered necessary following consultation with the EA.	Measure has been assumed in the ES assessment	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Ground investigation results used to inform the Detailed Design	Initial: Date:
RD1.17	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on groundwater during construction	Appropriate piling techniques will be reviewed, and appropriate design will be included to safeguard the underlying groundwater regime to ensure that groundwater quality is not compromised. Deep foundations extending beneath the groundwater table will be designed in accordance with industry standards taking into account the site-specific water level and flow monitoring data obtained from intrusive ground investigation for the scheme. Where piling is planned, a piling risk assessment will be carried out to ensure the selected piling method does not introduce contamination pathways into the aquifer. Risks associated with	Measure has been assumed in the ES assessment	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Granting of any permits/ consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			groundwater flood risk upgradient. have been assessed in the Hydrogeological Risk Assessment (ES Appendix 13.2). Mitigation principles to managing this risk during both construction and operation has been included in the Drainage Design Strategy Report (TR010034/APP/7.7) to allow for management of groundwater contributions to surface water flow and design of longitudinal piling taking into account local groundwater conditions. A Hydrogeological Risk Assessment has been undertaken and will be used to inform the detailed design for works associated with Mottram Underpass.					
RD1.18	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on groundwater	A Hydrogeological Risk Assessment (see ES Appendix 13.2 (REP3-025)) has been undertaken which will be used to inform the detailed design and the Dewatering Management Plan, along with any further investigations and assessments that are considered necessary following consultation with the EA. The Hydrogeological Risk Assessment includes a dewatering risk assessment and considers any potential pollution pathways which may contribute to groundwater contamination.	Hydrogeological Risk Assessment will be used to inform Detailed Design	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Preparation and approval of a hydrogeological risk assessment by the Environment Manager.	Initial: Date:
RD1.19	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on flood risk during construction and operation	Localised change in flood defence arrangement along the left bank of the River Etherow immediately upstream of the proposed scheme crossing will be incorporated in the design of the Scheme during the Detailed Design stage.	Assessment within the ES assumes that adequate flood defence measures would be employed.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD1.20	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on flood risk during construction	Construction activity in the vicinity of the River Etherow, including compensatory flood storage provision, flood embankment and right bank groundworks will require careful programming. Works here will require sequencing so as not to increase risk to others. However, during construction there will be a localised risk of flooding to the construction site whilst works the aforementioned works take place within the River Etherow floodplain. Compensatory flood storage provision is to be provided prior to construction commencing in this area. The agreed Scheme programming for the delivery of the flood compensation works will be included in the 'Construction Programme' section of Chapter 1 the EMP (Second iteration) prior to construction commencing.	Assessment within the ES assumes that adequate flood risk measures would be employed.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD1.21	Flood Risk Assessment (TR010034/APP/5.5)	Ensure flood modelling is updated to include latest climate projections.	The FRA will be updated during the Detailed Design stage of the Scheme to reflect any design changes. The updated Detailed Design flood model and FRA will be consulted upon and agreed with the EA at the earliest opportunity during the Detailed Design stage. This will include consultation and associated reporting (technical note) on the Applicants sensitivity checks, model accuracy and re calibration to the model. This detail will enable formal adoption of the model and alteration of existing flood mapping (zonation) for the surrounding area.	The FRA assumes that the FRA will be updated in line with latest climate change projections.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Adherence to the most current guidance/projections.	Initial: Date:
11 - Climate								
C1.1	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Reduction of on-site emissions during construction phase	The Scheme is committed to selecting materials for pavements that require less compaction, to reduce emissions from construction plant.	Reduction of construction-related emissions	Contractual requirement between the Applicant and the Appointed Principal Contractor	Designer / Appointed Principal Contractor	Scheme designed to specified standard.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
					Contractor under DCO Requirement 4			
C1.2	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Reduction of on-site emissions during construction phase	Plant emissions will be managed through specified plant operator efficiency requirements. These requirements would be set at pre-construction stage and would be implemented via the EMP (Second iteration), which would specify plant operator efficiency requirements.	Reduction of construction-related emissions	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Inclusion of identified measures in the EMP (Second iteration)	Initial: Date:
C1.3	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Inclusion of appropriate design measures	<p>The design will ensure continuity of drainage in the pavement and road layers. This will reduce the risk of water getting trapped in the foundation layers which could lead to an increase in moisture content and thus a decrease in performance.</p> <p>The design specifies a Thin Surface Course System (TSCS) with a minimum water sensitivity category of 70 (indirect tensile strength ratio) and a minimum binder content of 5.0% reflecting the revised requirements of MCHW 942 updated in May 2018. Where reflective cracking is considered a high risk, the design may include a geosynthetic (i.e. geogrid) which will stop surface water penetrating the bound layers through the reflective cracks. To further improve the Scheme's longevity the detailed design will investigate the use of warm mix asphalt, which has a reduced binder ageing during production as it is not heated to the same high temperatures as the conventional hot mix asphalt.</p> <p>The design team considered including a maintained drainage network to remove sub-surface moisture but considered it would not be appropriate due to the local high groundwater levels.</p>	The design would be included in the detailed design of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Scheme designed to specified standard.	Initial: Date:
C1.4	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Inclusion of appropriate design measures	The design will ensure structures can adapt to expected future variations in temperature. The Eurocodes used for the two bridges in the Scheme stipulate design to a temperature range of -18°C to 34°C which is adjusted to take account of altitude, material type and depth of surfacing thickness.	The design would be included in the detailed design of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Scheme designed to specified standard.	Initial: Date:
C1.5	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Inclusion of appropriate design measures	<p>The geotechnical design will be in accordance with BS EN 1997-1:2004 Eurocode 7 Geotechnical Design Part 1 General rules. For example, cuttings and embankment works will be designed based on slope-stability analysis using site specific soil parameters. Additionally, to avoid waterlogging around embankments appropriate drainage will be included, for example so that runoff is collected and stored before being released gradually to infiltrate after a storm has passed, see DMRB, CG501 - Design of highway drainage systems.</p> <p>The geotechnical construction will be in line with DMRB Standards (DMRB CD 622 Managing Geotechnical Risk) so risks will be controlled, for example, by:</p> <ul style="list-style-type: none"> • Providing appropriate soil compaction • Completing stability assessments as part of design. Including analysis and modelling to predict maximum and permissible magnitude of movement • Undertaking appropriate ground investigations • Collecting appropriate groundwater flow data • Where foundations extend below the existing groundwater table or could extend below the future groundwater level, they are designed in accordance with industry standards 	The design would be included in the detailed design of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Scheme designed to specified standard.	Initial: Date:

REAC Ref	ES ref	Objective	Action/commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> Monitoring during the construction works to measure movements, with agreed trigger level and action plan. <p>In addition to the above, existing vulnerable assets in the study area will be regularly inspected to assess movements. This will be supported by reference to the full arboricultural survey that has been completed for the site and identifies large and/or unstable trees.</p>					
C1.6	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Inclusion of appropriate design measures	The drainage system will be designed in line with current standards set out in DMRB CG 501. The design will include raising the riding surface, using an appropriate camber and providing appropriate maintenance. With regard to pluvial flood risk on the road surface, the surface water drainage system is designed to control runoff rates up to 1 in 100-year return period. Although there are various design storm-periods for different aspects of highway construction, ultimately the absolute rainfall thresholds are highly dependent on the local topography, adjacent land-use, gradient and location within the wider catchment. The DMRB standards highlight the importance of this local information to assess absolute rainfall thresholds. This information is provided in the Schemes FRA (TR010034/APP/5.5) which also includes consideration and allowance for climate change. The FRA sets out the allowance that has been used for the surface water drainage design with adjustment factors in line with the latest information in the Planning Practice Guidance, EA and LLFA requirements. A 40% climate change allowance has been used for the preliminary drainage design, as outlined in the Drainage Design Strategy Report (TR010034/APP/7.7).	The design would be included in the detailed design of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Scheme designed to specified standard.	Initial: Date:
C1.7	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Inclusion of appropriate design measures	At the detailed design stage, electrical calculations will be carried out for the lighting and a risk assessment detailed in section 443 of BS7671:2018 will be undertaken to determine if protection against transient overvoltage (lighting strike) is required. In advance of this, based on professional judgement and consideration of the location of the lighting power supplies/feeder pillars, it is expected at this stage that transient overvoltage protection will be included in the final design.	The design would be included in the detailed design of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Scheme designed to specified standard.	Initial: Date:
C1.8	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Effective monitoring of GHG emissions from the Scheme during construction	<p>To ensure that the carbon emissions (greenhouse gases or carbon dioxide equivalents) associated with the whole life of the Scheme are minimised, the Principal Contractor has committed to adhering to the principles of PAS 2080:2016 – Carbon Management in Infrastructure Verification technical standard. An Outline Carbon Management Plan (CMP) has been prepared to detail the approach and methodology for carbon management at scheme level. This will be developed into a detailed CMP for the Scheme.</p> <p>The detailed CMP will be implemented throughout the Detailed Design stage and through construction. This will follow a data collection and analysis methodology which adheres to the requirements of the PAS 2080. This would assess carbon use for the whole lifecycle of the project and promote embodied carbon management and commit to achieving carbon reductions.</p> <p>All reporting of saved carbon emissions achieved will be in accordance with the detailed CMP.</p>	The ES assessment assumes that a carbon management process that adheres to the principles of PAS 2080:2016 would be implemented prior to and during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:

Table 2.2: Register of Environmental Actions and Commitments - during construction

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
1 - General Environmental Management								
GEM2.1	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure the correct procedures and plans are adhered to manage effects on the environment during construction	The appointed Principal Contractor will adhere to the measures outlined in the EMP (Second iteration) during construction as follows: <ul style="list-style-type: none"> The construction of the authorised development must be carried out in accordance with the approved EMP (Second iteration). No part of the authorised development is to commence until an EMP (Second iteration), substantially in accordance with the EMP (First iteration), for that part has been submitted to and approved in writing by the Secretary of State, following consultation with the relevant planning authority and local highway authority to the extent that it relates to matters relevant to its functions. The EMP (Second iteration) must be written in accordance with ISO14001 in so far as is relevant to that part of the authorised development, must reflect the mitigation measures set out in this REAC and must include the management plans as set out in Requirement 4. 	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Approval of EMP (Second iteration) by the Applicant and LPAs and implementation during construction	Initial: Date:
GEM2.2	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure the correct procedures and plans are adhered to	The EMP will be refined to become the Third iteration by the appointed Principal Contractor. The Third iteration of the EMP will contain environmental information needed to support the future maintenance and operation of the Scheme. <ul style="list-style-type: none"> The EMP (Third 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 (Second iteration). The authorised development must be operated and maintained in accordance with the EMP (Third iteration) 	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Approval of EMP (Third iteration) by the Applicant and LPAs and implementation during construction	Initial: Date:
GEM2.3	Chapter 2: Scheme description (TR010034/APP/6.3)	Protect soil quality	Materials used to create the embankments (site won or imported) would be chemically analysed to ensure that they are of suitable chemical quality, as detailed in the earthworks specification and an MMP. Topsoil would be used from the compound area to form a 3 m high bund around the compound area which would separate the compound from the back gardens of the residential properties on Hyde Road, Littlefields, Meadowcroft, Ash Close and Four Lanes (see Insert 2). The 3 m bund would be made up of 1m fill material with 2m of topsoil on top to ensure the compounds office is sufficiently screened.	ES assessment assumes the identified measures will be implemented	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures to be implemented as identified	Initial: Date:
GEM2.4	Chapter 2: Scheme description (TR010034/APP/6.3)	Protect soil quality	To protect soil quality for the purposes of landscape planting for the Landscape and ecology design strategy, the following measures would be implemented, as outlined in the LEMP: <ul style="list-style-type: none"> Uncontaminated topsoil for re-use shall be stored in un-compacted mounds no more than 2 m in height and stored separately from subsoil material. Stripped topsoil shall be used in areas of the same proposed vegetation type to utilise the existing natural seed bank. Subsoil in planting areas shall be replaced after construction and ripped to a minimum of 450 mm prior to top soiling and planting. Proposed planting areas in existing arable and pasture, land not subject to construction activity, and would be ripped to 600 mm to alleviate compaction. 	ES assessment assumes the identified measures will be implemented	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures to be implemented as identified	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
GEM2.5	Chapter 2: Scheme description (TR010034/APP/6.3)	To reduce impacts on local residents / stakeholders affected by the Scheme.	A TMP (TR010034/APP/7.5) would be implemented by the appointed Principal Contractor to reduce the impacts from construction traffic, including measures to reduce worker vehicle movements and HGV movements, particularly at peak periods. The typical core working hours for the Scheme are expected to be between 07:30 and 18:00 on weekdays (excluding bank holidays) and from 07:30 to 16:00 on Saturdays. In addition, there would be a start-up and close down period of one hour either side of these times to maximise efficiency of the core hours. This would include activities such as deliveries, staff travel to work, maintenance and general preparation works, but would not include running plant and machinery that are likely to cause a disturbance to local residents or businesses. The TMP will include a commitment to not route HGVs associated with the construction works along the A57 Snake Pass through the Peak District National Park, in recognition of the sensitivity of the area.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Approval of TMP by the Applicant and relevant LPAs	Initial: Date:
GEM2.6	Chapter 2: Scheme description (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	If night working is required, this would be agreed in advance with the relevant LPA	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Consultation with the relevant LPA	Initial: Date:
GEM2.7	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	Repairs or maintenance of construction equipment (other than emergency repairs) would typically be carried out outside of core working hours, normally on Saturday afternoons (13:00 to 18:00) or on Sundays between 09:00 and 17:00.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation identified measures.	Initial: Date:
GEM2.8	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	Seasonal construction activities such as earthworks could be subject to an application for extended hours working to make best use of the season. The expected extended working hours would cover 07:00 to 07:30 and 18:00 to 20:00 during weekdays.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation identified measures.	Initial: Date:
GEM2.9	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	Dedicated haul routes will follow the new main line alignment where possible in accordance with the TMP. Access for construction vehicles to the site would be from the trunk road network on designated routes which will be clearly signposted.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation identified measures.	Initial: Date:
2 – Air Quality								
AQ2.1	Chapter 5: Air Quality, Section 5.9 (TR010034/APP/6.3)	Control dust during construction	The precise measures, suitable for a 'high' construction dust risk site would depend on the intended construction methods and the degree of dust generation of construction activities. If necessary, monitoring parameters and a programme will be established, and the effectiveness of mitigation will be evaluated in line with DMRB LA 105 Table 2.108.1. It is expected that the use of standard industry best practice would mitigate the risk of construction dust impacts in the majority of cases. Such measures may include but not necessarily be limited to: <ul style="list-style-type: none"> Regular water-spraying and sweeping of unpaved and paved roads to minimise dust and remove mud and debris 	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor		Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> 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 public highway Sheeting vehicles carrying dusty materials to prevent materials being blown from the vehicles whilst travelling Enforcing speed limits for vehicles on unmade surfaces and site haul roads 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.). 					
3 – Cultural Heritage								
CH2.1	Chapter 6: Cultural Heritage, Section 6.9 (TR010034/APP/6.3)	Ensure the correct procedures are adhered to	The appointed Principal Contractor will adhere to the measures set out in the Archaeological Fieldwork Strategy during the construction of the Scheme.	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful protection of archaeological assets	Initial: Date:
4 – Landscape and Visual Effects								
LV2.1	Chapter 7: Landscape & Visual, Section 7.9 (TR010034/APP/6.5)	Visual screen and landscape integration.	Proposed landscape mitigation would be delivered in accordance with the Environmental Masterplan (Figure 2.4 of the ES (TR010034/APP/6.4)) and in line with the appropriate construction measures set out in the EMP (Second iteration) and LEMP.	The successful completion of mitigation measures is assumed within the ES assessment. Early establishment of planting/ seeding areas would reduce visual impact.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Successful establishment of all planting and seeding areas, throughout the Scheme.	Initial: Date:
LV2.2	Chapter 7: Landscape & Visual, Appendix 7.3 (TR010034/APP/6.3)	Protection of existing trees and shrubs	All existing trees and shrubs not affected by the construction of the permanent works shall be fenced off with a suitable type of temporary fencing in accordance with BS5837:2012 as outlined in the Arboricultural Method Statement. Fencing shall extend to the drip line of the tree canopies (unless otherwise agreed by an arboricultural advisor) and also to be erected prior to any construction activities in that area and shall remain for the entire period of construction in that area.	ES assessment assumes successful protection existing trees and shrubs	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures to be agreed with Arboricultural Clerk of Works (ACoW) and implemented as identified.	Initial: Date:
LV2.3	Chapter 7: Landscape & Visual, Appendix 7.3 (TR010034/APP/6.3)	Ensure retention and removal of identified trees and shrubs	All construction works in the vicinity of trees will be undertaken in accordance with the final Arboricultural Method Statement.	Successful retention of trees and hedgerows/ vegetation is assumed within the ES.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Works undertaken in accordance with DCO Requirement.	Initial: Date:
LV2.4	Chapter 7: Landscape & Visual, Appendix 7.3 (TR010034/APP/6.3)	Ensure construction mitigation measures are implemented	The EMP (Second iteration) will set out the monitoring requirements and procedures to be implemented to reduce or eliminate impacts on the environment during the construction phase of works. An Environmental Clerk of Works or Site Environmental Manager would be appointed to ensure that objectives of the EMP (Second iteration) are achieved and to monitor construction activities that would cause likely significant effects, including:	The successful completion of monitoring requirements is assumed within the ES assessment.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Works undertaken in accordance with DCO Requirement.	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> The effectiveness and suitability of root protection fencing ensuring no impacts to trees that are to be retained. The areas of most concern are areas covered by TPO's as outlined in Appendix 7.3 Arboricultural Impact Assessment Report of the environmental statement (TR010034/APP/6.5) and TPOs and hedgerows Regulation 5 (2)(o) drawings (TR010034/APP/2.13). Working hours of operation of the main works and in site compounds which may produce visual, noise or lighting impacts in particular on adjacent residential receptors. The angle and direction of night-time lighting, to ensure that it is not directly focussed on adjacent residential receptors. 					
5 - Biodiversity								
BD2.1	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Lowland mixed deciduous woodland enhancement	Lowland mixed deciduous woodland Approximately 6.5 ha of mixed deciduous largely native woodland planting would be incorporated around the Scheme to mitigate for the loss of broadleaved woodland and provide a significant increase in deciduous woodland cover as enhancement. The woodland would be planted during the construction phase and would continue to establish during the operational phase of the Scheme. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.2	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	New woodland specification	Lowland mixed deciduous woodland New woodland would be species-rich, comprising a range of largely native species of local provenance adapted to a wide range of climatic conditions, ensuring it is resilient to future pressures. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.3	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	New planting and specification	Lowland mixed deciduous woodland Where fragmentation would occur through the loss of an area of approximately 0.3 ha of deciduous woodland just east of Old Hall Lane through the installation of the Mottram Underpass, new planting would be incorporated within this location to ensure that a green corridor is retained. Planting here would include lower scrub and grasslands including such native species as hawthorn, blackthorn, elder, hazel, and holly. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.4	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Wet woodland Three SUDS water bodies would be created across the Scheme which provides opportunities to mitigate and enhance the coverage of wet woodland within the peripheries of these areas. On the borders of each water body, a combined total of at least 1 ha of wet woodland would be planted to reflect what would be lost within the DCO boundary and provide a significant increase of this habitat as an enhancement. The new wet woodland would include a mixture of willow, alder and birch species planted densely in close proximity to the new water bodies. The woodland would be planted during the construction phase and would continue to establish during the operational phase of the Scheme. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.5	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Lowland dry acid grassland The Scheme would result in the permanent loss of approximately 0.31 ha of lowland dry acid grassland, predominantly located north of Mottram Moor within the DCO boundary. In order to mitigate, and provide an increase in cover of this habitat, an area measuring approximately 1 ha of new lowland dry acid grassland would be created south of the new highway east of Old Hall Lane. This area is considered	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:

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			suitable due to it being an area of free draining soil and would also incorporate a gravel embankment. Tree planting would be sparse in this area but would consist of more acid tolerant species such as rowan and silver birch and complimented with plugs of heather and bracken to create a greater habitat mosaic. In order to ensure the successful establishment of the new area and encourage a more rapid colonisation of vegetation, the existing lowland dry acid grassland soils would be translocated during the constructional stage to the newly proposed area. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)					
BD2.6	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Hedgerows</p> <p>Construction of the Scheme would result in the permanent loss of approximately 3312 m of hedgerow. In order to mitigate and enhance the hedgerows within the Scheme, hedgerow planting is proposed either side of the route measuring approximately 5 km.</p> <p>New hedgerow planting would be species-rich, comprising a range of native species (including hawthorn, blackthorn, holly, and dog rose) of local provenance adapted to a wide range of climatic conditions, maximising their resilience. Sensitive management and monitoring regimes would be applied during operation to ensure maintenance and enhancement of the habitats, where necessary. Hedgerows would be largely linked to provide a network of habitats to aid connectivity across the Scheme. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.7	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Flood plain mire</p> <p>The Scheme would result in the permanent loss of approximately 0.3 ha of flood plain mire, predominantly located north of Mottram Moor within the DCO boundary. In order to mitigate, and provide an increase in cover of this habitat, an area measuring approximately 1.4 ha of new flood plain mire habitat would be created within the shallow depression which would be formed within the east of the Scheme as part of the flood alluviation. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.8	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Watercourses</p> <p>The Scheme would result in permanent and temporary losses of riparian habitat (namely mature trees, tall herbs, grasses and scrub) under the River Etherow Bridge and associated with bank lowering works. Riparian vegetation would be reinstated on completion to allow replacement habitat to establish. Mature trees lost as a result of bank lowering activities would be replaced with appropriate planting along the River Etherow corridor. Locations of prescribed planting are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.9	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>River Etherow</p> <p>Riparian vegetation would be reinstated on completion to allow replacement habitat to establish. Mature trees lost as a result of bank lowering activities would be replaced with appropriate planting along the River Etherow corridor. During construction of the River Etherow Bridge, slow start up of piling machinery away from the watercourse would be employed to minimise impacts of noise and vibration disturbance to fish and other animals within the river and its corridor.</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.10	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Protection of retained bat roosts	<p>Bats</p> <p>Implementation of buffer zones and sensitive timings (such as undertaken outside of key periods, including the breeding and hibernation period) would be adhered to during construction. In order to ensure that continued roosting is available during the construction period, a variety of artificial bat boxes would be installed within retained</p>	The ES assumes retention of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful retention of identified habitats Agree and obtain Natural England EPSL (if required)	Initial: Date:

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			vegetation prior to construction commencing. Installation of bat box locations are identified on Figure 8.11 of the ES Chapter 6.8: Biodiversity (TR010034/APP/6.3).					
BD2.11	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Replacement roosting features	<p>Bats</p> <p>A dedicated bat structure would be constructed to provide appropriate mitigation for the loss of the four potentially present maternity roosts within the DCO boundary based on a worst-case scenario. The structure will be located within the northern limits of the Scheme which ensures that it is in proximity (< 150 m) to the existing roosts to be lost, nearby to suitable habitat (broadleaved woodland and hedgerows) and is connected via several hedgerows to the wider landscape. Additional native planting would be provided on the northern and western areas surrounding the bat structure to provide additional habitat and to provide screening to aid with visual and landscaping elements.</p> <p>The bat structure in this location would be situated behind retained trees with proposals for additional planting screening for local residents and associated designated heritage assets adjacent to the structure.</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan Agree and obtain Natural England EPSL (if required)	Initial: Date:
BD2.12	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Replacement roosting features	<p>Bats</p> <p>The clear span River Etherow Bridge is proposed over the River Etherow at the eastern end of the Scheme. In order to provide additional roosting opportunities (mainly for Daubenton's or Natterer's bats) as enhancements, at least four integrated bat tubes would be installed within the bridge. These would comprise 1FR Schwegler Bat Tubes (or similar design) and would be located in suitable locations on the northern and southern aspects.</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan Agree and obtain Natural England EPSL (if required)	Initial: Date:
BD2.13	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Bats</p> <p>Dark corridors would be maintained around any artificial bat boxes through ensuring the minimal lighting is used and ensuring that any artificial roosts are not directly illuminated. All bat boxes would be maintained for a minimum of five years.</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan Agree and obtain Natural England EPSL (if required)	Initial: Date:
BD2.14	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Bats</p> <p>Loss of bat foraging and roosting habitat would be mitigated through the creation of significant areas of replacement habitat, which includes a net increase in broadleaved woodland, tree and hedgerow planting and the creation of species-rich grasslands, shrubs and scrub. Woodland planting is within several blocks resulting in an increase in woodland edge habitat generally favoured by pipistrelle species. These new habitats would support an abundance of invertebrate prey providing foraging habitat for bats. There would be an initial reduction of habitat during the constructional period, however, there is sufficient suitable habitat (consisting of hedgerows and woodland immediately adjacent to the site) that would be available until the newly created habitat matures and becomes available.</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan Agree and obtain Natural England EPSL (if required)	Initial: Date:
BD2.15	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe bat passage through use of hop-overs	<p>Bats</p> <p>Bat hop-overs would be created at strategic locations around the Scheme which would consist of tall vegetation planted on either side of a road. These bat hop-overs would be installed at strategic locations where bat activity transect surveys have identified important commuting and foraging corridors. The vegetation would be approximately 4-5 m high and be adjoined by additional species-rich hedgerow or</p>	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:

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			woodland planting to facilitate movement. Locations of proposed bat hop-overs are identified on the Environmental Masterplan Figure 2.4 of the ES (TR010034/APP/6.4)				Agree and obtain Natural England EPSL (if required)	
BD2.16	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	<p>Badgers</p> <p>There is one main badger sett (S16) located within the DCO boundary which would require closing under a Natural England licence and compensatory mitigation in the form of the creation of an artificial sett within the clan's respective territory. Two further main setts are located within the survey area, however, outside of the DCO boundary, and will be fully retained. Whilst a subsidiary sett (S3) (due to very limited use by badgers), no associated main sett has been recorded to give full confidence of this classification. It is assessed that there is potential that this sett could be re-occupied as to classify it as a main sett in the future. In the event that this would occur, an artificial main sett would be created within the west of the Scheme within the clan's territory to provide adequate compensatory mitigation. This will be confirmed through the pre-commencement surveys. Locations of setts are presented on the confidential Appendix 8.2 of the ES however; exact locations will not be disclosed within this report due to their confidential nature. This confidential appendix will only be released to the Planning Inspectorate and to other individuals as deemed appropriate (upon request).</p>	The ES assumes that the identified sett would be closed under licence as agreed with Natural England	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 EPSL licence conditions	Appointed principal contractor	Agree and obtain Natural England EPSL. Implementation of working methods and monitoring regime.	Initial: Date:
BD2.17	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Closure of badger setts	<p>Badgers</p> <p>Seven further setts are located within the DCO boundary (one annexe, one subsidiary, and five outlier setts) which would be required to be closed under a Natural England licence. No compensatory mitigation is required for the closure of these setts, due to them not being classified as a main active sett.</p>	The ES assumes that the identified setts would be closed under licence as agreed with Natural England	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 EPSL licence conditions	Appointed principal contractor	Agree and obtain Natural England EPSL. Implementation of working methods and monitoring regime.	Initial: Date:
BD2.18	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Temporary closure of badger setts (if required)	<p>Badgers</p> <p>Six setts are located within 30 m of the DCO boundary and there is a risk that these setts may be damaged or destroyed during the constructional period. It is possible that these setts would be temporarily closed under a Natural England licence during the constructional period. This will be confirmed through the pre-commencement surveys.</p>	The ES assumes that the identified measures would be taken if the identified risk is probable	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 EPSL licence conditions	Appointed principal contractor	Agree and obtain Natural England EPSL. Implementation of working methods and monitoring regime.	Initial: Date:
BD2.19	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe badger passage	<p>Badgers</p> <p>Safe crossing points will be provided to maintain connectivity during the operational stage and enable badgers access to the wider landscape as required. This will be in the form embedded mitigation through underpasses (such as Mottram Underpass, Carr House Underpass and Old Mill Farm Underpass), as well as five purpose-built mammal crossings across the Scheme. These tunnels would be constructed of Class M 600 mm diameter concrete pipes and widened at the entrances. The entrances will be 'softened' through the use of appropriate planting to encourage badgers to use these crossing points.</p>	The ES assumes connectivity is maintained between habitats	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:
BD2.20	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe badger passage	<p>Badgers</p> <p>Linear fencing will be utilised to prevent road mortalities and guide badgers to the aforementioned safe crossing points. Acoustic fencing is proposed around a significant portion of the Scheme (2-2.5 m in height) which would be modified (specifically through the addition of the 600 mm buried underground) to be used for both badger and acoustic fencing. In areas where acoustic fencing isn't proposed, badger fencing will be installed 500 m from each crossing point (on both sides of the road) and artificial sett. Badger fencing would be minimum standard 1 m high above ground level with a lower section buried 300 mm below ground and a further 300 mm turned away from the fence in the direction from which badgers would approach.</p>	The ES assumes that measures are implemented to prevent badgers being harmed/killed through gaining access to the Scheme	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:

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			Fencing would be designed to encourage badgers towards the crossing points through the use of indents or recesses towards each crossing entrance.					
BD2.21	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe badger passage	Badgers Dark corridors with no or very limited artificial lighting will be implemented at strategic locations (such as at safe crossing points) to aid movement. This will either be through controlling lighting levels, or through planting of sufficient screen planting to create darker pockets.	The ES assumes connectivity is maintained between habitats	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:
BD2.22	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Badgers The loss of badger foraging habitat would be mitigated through the creation of significant areas of replacement habitat, which includes a net increase in native woodland, tree and hedgerow planting, and the creation of species-rich grasslands, shrubs and scrub.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.23	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Avoid adverse effects and provide appropriate reinstated and created habitats	General bird assemblage Vegetation clearance would be undertaken outside of the breeding bird season (April-August). Loss of suitable bird nesting and foraging habitats would be mitigated through net increases in native woodland, hedgerow, tree planting, watercourses and waterbodies, and the provision of species-rich grassland, shrubs and scrub.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.24	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	General bird assemblage Based on the results of the breeding bird surveys at least 10 sparrow terrace, 10 starling nest boxes, and 10 general purpose nest boxes will be installed within suitably vegetated locations within the Scheme to provide additional nesting opportunities to further enhance the suitability of habitats within the Scheme to support breeding birds. The boxes for the general breeding bird species (house sparrow and starling) will be provided in close proximity to Mottram Underpass with the retained broadleaf woodland and newly created habitats as to be close to the existing urban habitats. The River Etherow Bridge provides opportunities to provide nesting enhancements for river-based bird species including dipper and grey wagtail. This can be achieved through providing dedicated nesting boxes or ledges underneath the proposed bridge. These boxes will include at least two No. 19 Schwegler dipper and pied wagtail nest boxes or similar design.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.25	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	General bird assemblage Habitat for non-breeding waders including curlew and lapwing that were recorded during the breeding bird surveys will be created within the east of the Scheme. Areas of wet, moderately cattle grazed, rushy grassland would be provided within the proposed flood alleviation area within east of Scheme which consists of a scraped shallow depression that will be seasonally wet.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.26	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe barn owl passage	Barn owl Barn owl 'fly-overs' and taller screen planting would be created at strategic locations around the Scheme. These fly-overs and screen planting would consist of tall vegetation planted on either side of the road with the aim to encourage barn owls to cross the road at a safe height above traffic. These fly-overs and screen planting will be installed at strategic locations, including just east of the M67 Junction 4 and at the Carrhouse Lane Underpass where barn owls are breeding in close proximity or have been recorded foraging and commuting. The vegetation will be of a larger or higher specification and include pine and standard trees at a minimum of 3-4 m planted to ensure that an instant screen is available. Trees will also be incorporated into the hedge adjoining the farm access track north of the M67 Junction 4 to provide added screening in very close proximity to the recorded breeding barn owls. In order to	The ES assumes connectivity is maintained between habitats	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:

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			discourage barn owls from foraging within the grassed area adjacent to the highway, these areas will include regularly mowed amenity grassland. Any areas of rough grass, which are likely to support small mammals (the food prey of barn owls), would only be located behind continuous screens to mitigate against potential road collisions.					
BD2.27	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Lowland scrub and lowland damp grassland species, including grasshopper warbler An area of damp, marshy grassland with patches of wet woodland (approximately 0.3 ha) planting would be created adjacent to the three proposed SuDS water bodies within the eastern section of the Scheme. The peripheries of the SuDS would be planted with patches of willow scrub to compensate for the loss of wet woodland where species such as grasshopper warbler and reed bunting have been recorded breeding. This area would be relatively unmanaged to allow a denser structure to develop providing the necessary cover and protection for these species. These habitats would be protected (through the use of fencing, dry-stone walls or screen planting) to ensure that the area does not become grazed or poached as a result of the neighbouring pastoral field use.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.28	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe otter passage	Otter Otter-proof fencing will be installed, extending from each side of the River Etherow Bridge, to be installed on either side of the Scheme for a distance of at least 100 m in each direction, to prevent mortality through traffic collision. Fencing would be minimum standard 1 m high above ground level with a section protruding at least 0.5 m at a 45-degree angle in the direction from which otters would approach and would be installed on both sides of the road.	The ES assumes that measures are implemented to prevent otters being harmed/killed through gaining access to the Scheme	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:
BD2.29	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe otter passage	Otters In order to ensure that connectivity is maintained across the site, crossing points will be provided in the form of piped culverts (five locations throughout the Scheme), underpasses (such as Mottram Underpass, Carr House Underpass and Old Mill Farm Underpass), and five purpose-built mammal crossings across the Scheme. These tunnels would be constructed of Class M 600 mm diameter concrete pipes and widened at the entrances.	The ES assumes connectivity is maintained between habitats	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:
BD2.30	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Protection of otter population	Otters The bank side habitat will be maintained for otter, where no construction works are planned to take place. An 8 m buffer either side of retained and unmodified sections of the river will be marked and fully retained. This buffer will be fully fenced off to prevent any machinery or personnel from using these areas. Where works are required within 8m of the of a watercourse consent will be obtained from the Environment Agency (FRAP).	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.31	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Otters In order to provide enhancements for otters, an artificial otter holt would be installed along the River Etherow within a suitable location with sufficient vegetation cover. Otters have been recorded foraging and commuting within the River Etherow, however, currently no holts have been recorded within the survey area. As otters are expanding within the wider area, the creation of an artificial otter holt would provide an additional secure resting site to facilitate the expansion of this species further.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.32	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Priority mammals (including hedgehog and brown hare) New high-quality habitat for brown hare and hedgehog will be created within the DCO boundary, including a mix of new broadleaved woodland, grassland and hedgerow planting. In order to provide dedicated habitat for brown hares, a gradual woodland boundary would be created through providing longer grassed field margins generally preferred by brown hare.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:

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BD2.33	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe mammal passage	Priority mammals (including hedgehog and brown hare) In order to ensure that connectivity is maintained across the site, crossing points will be provided in the form of underpasses (such as Mottram Underpass, Carr House Underpass and Old Mill Farm Underpass), and five purpose-built mammal crossings across the Scheme. Fencing (using a combination of acoustic and badger fencing) will be used to guide hedgehog and brown hare to these crossing points and prevent road mortality.	The ES assumes connectivity is maintained between habitats	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:
BD2.34	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Priority mammals (including hedgehog and brown hare) Hibernacula (comprised of logs or brash) will be created at strategic locations to provide continued hibernation and refuge places for hedgehog.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.35	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Common toad Three new large SUDS water bodies will be created during the constructional period which will provide continued and enhanced breeding opportunities for common toad. New high-quality habitat (including wet woodland, marshy grassland and mixed deciduous woodland) will be created in close proximity to the water bodies.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.36	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Safe common toad passage	Common toad In order to ensure that connectivity is maintained across the site, crossing points will be provided in the form of piped culverts (five locations throughout the Scheme), underpasses (such as Mottram Underpass, Carr House Underpass and Old Mill Farm Underpass), and five purpose-built mammal crossings across the Scheme. Fencing (using a combination of acoustic and badger fencing) will be used to guide common toads to these crossing points and prevent road mortality.	The ES assumes connectivity is maintained between habitats	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	No recorded injury or mortality of protected species.	Initial: Date:
BD2.37	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Provide appropriate reinstated and created habitats	Common toad Hibernacula (comprised of logs or brash) will be created within close proximity to the water bodies to provide continued hibernation or refuge opportunities (measuring at least 4 m x 2 m x 1 m). The use of wildlife kerbs and 'Enkamet' climbing ladders would be installed within any constructed gully pots to mitigate against entrapment.	The ES assumes establishment of specified habitats.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Successful delivery of habitats identified in the ES and the Environmental Masterplan	Initial: Date:
BD2.38	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Removal of identified trees	Removal of trees during site clearance will be permitted under the DCO with exclusion of vegetation noted as being retained on the Tree Protection Plans included within the Arboricultural Impact Assessment contained in Appendix 7.3 of Chapter 6.7 of the ES (TR010034/APP/6.5).	Removal of identified trees would be undertaken as identified	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation of the identified actions in line with the identified plans and DCO requirements	Initial: Date:
BD2.39	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Removal of identified hedgerows	Removal of hedgerows during site clearance will be permitted under the DCO with exclusion of vegetation noted as being retained on the Tree Protection Plans included within the Arboricultural Impact Assessment contained in Appendix 7.3 of Chapter 6.7 of the ES (TR010034/APP/6.5).	Removal of identified hedgerows would be undertaken as identified	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation of the identified actions in line with the identified plans and DCO requirements	Initial: Date:
BD2.40	Chapter 8: Biodiversity, Section 8.9 (TR010034/APP/6.3)	Reduce/prevent impacts on watercourses during construction of the Scheme	Biodiversity - Watercourse monitoring Monitoring of watercourses during construction shall be undertaken to ensure any impacts to watercourses arising from construction of the Scheme are identified and remedial works undertaken if necessary. This will comprise surface water quality monitoring of watercourses affected by the Scheme. This may be supplemented by biological quality monitoring using aquatic macroinvertebrate community sampling	To mitigate loss of habitat.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation and sign off by ECoW.	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			should the assemblages present be assessed as being sensitive to construction related pressure e.g. siltation.					
6 – Geology and Soils								
GS2.1	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Maximise soil reuse onsite	All works will be undertaken in accordance with measures identified in the MMP, SRP and SWMP.	Assessment within the ES assumes that appropriate soils and material handling would be incorporated throughout the construction phase to mitigate significant effects.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Consultation with relevant stakeholders and development of the Soils Handling and Management Plan and adherence to the document	Initial: Date:
GS2.2	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Protection of soil resources	On the flood compensation area beside the River Etherow the topsoil shall be stripped and stockpiled before being replaced on the lowered ground surface. Measures for this action will be set out in the SRP.	Assessment within the ES assumes that appropriate soils and material handling would be incorporated throughout the construction phase to mitigate significant effects.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Development of the Soils Handling and Management Plan and adherence to the document.	Initial: Date:
GS2.3	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Ensure no adverse effects on soils during construction/operation of the Scheme	Verification testing and reporting will be required for the project throughout construction to assess/reduce any potential operational effects.	Assessment within the ES assumes that appropriate soils and material testing/handling would be incorporated throughout the construction phase to mitigate significant effects.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Requirement for monitoring to be captured in the EMP (Second iteration) and approved by the Applicant	Initial: Date:
GS2.4	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Incorporation of enhancements identified in the ES	The creation of the Mottram Underpass will provide an opportunity to create a geological benefit associated with the visual exposure of local geology within the cutting. It is envisaged that the cutting may become an asset to the visual landscape which can be seen on journeys through the area. Any geology exposed from the creation of the underpass will be recorded and may be utilised for a learning opportunity (e.g. recorded online).	Action will support the potential for geological learning experiences.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Requirement for monitoring to be captured in the EMP (Second iteration) and approved by the Applicant	Initial: Date:
7 – Material Assets and Waste								
MW2.1	Chapter 10: Materials Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Mitigate potential construction effects of the Scheme	Strict adherence to the SWMP and MMP contained in the EMP (Second iteration) during construction.	Management of materials used and waste generated during construction.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Implementation and adherence to identified targets within the SWMP.	Initial: Date:
MW2.2	Chapter 10: Materials Assets & Waste,	Mitigate potential construction effects of the Scheme	The Principal Contractor will reduce primary material use through a commitment to achieve, at minimum, the 30% recycled content target for the region.	Management of materials used during construction.	Contractual requirement between the Applicant and the Appointed	Appointed principal contractor	Implementation and adherence to identified targets within the SWMP.	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
	Section 10.9 (TR010034/APP/6.3)		As an enhancement measure, a stretch target of 40-50% recycled content for the region has also been set by the appointed Principal Contractor, through working with the supply chain and designing the road surface to best suit recycled content.	Stretch target will support responsible material procurement.	Principal Contractor under DCO Requirement 4			Date:
MW2.3	Chapter 10: Materials Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Reduction of waste sent to landfill	To support the recycling and recovery aspect of the waste hierarchy, the Principal Contractor has committed to recycle or recover 95% of wastes that leave site, therefore diverting them from landfill.	Waste would be generated and managed during construction.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	All vegetation waste diverted from landfill	Initial: Date:
MW2.4	Chapter 10: Materials Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Identification and appropriate management of hazardous waste	Waste that cannot be recycled or recovered, such as hazardous wastes, including any contaminated soil will be identified, removed, and kept separate from other construction wastes, in order to avoid contaminating 'clean' materials.	Waste would be generated and managed during construction.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	The Applicant approval of the SWMP.	Initial: Date:
MW2.5	Chapter 10: Materials Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Ensure effective waste disposal	The waste producer must characterise wastes prior to their removal from site. This may require testing and assessment to determine the waste classification—inert, non-hazardous or hazardous. Further testing, in the form of Waste Acceptance Criteria (WAC) testing, may need to be undertaken for wastes requiring disposal at landfill.	Waste would be generated and managed during construction.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Waste testing undertaken (where required).	Initial: Date:
MW2.6	Chapter 10: Materials Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Reduction of imported material from off-site sources	Reduction and reuse will be achieved on the Scheme through the implementation of the MMP which will be produced under the CL:AIRE Definition of Waste: Code of Practice (DoWCoP) for the reuse of soils within the DCO boundary. The MMP will be produced in conjunction with the Principal Contractor and a declaration submitted by a Qualified Person registered with CL:AIRE. A tracking system will be established and used to track the movement, storage and placement of excavated materials within the Scheme. Upon completion of the works, a verification report will be submitted to CL:AIRE. The MMP will allow over 99% of the excavated soil to be reused onsite, which will reduce the need for materials and generation of waste to be managed or disposed of offsite and will ensure the Scheme achieves a cut/fill balance. The appointed Principal Contractor would not cut the material until the fill areas is available. In the case that a temporary gap appears in the programme the appointed Principal Contractor would stop the cut and not use temporary storage. For example, the construction programme requires the embankment areas to be prepared before the cut areas. Work would stop if the fill area was not prepared in time, as the material would not be taken to the compound	Maximising material re-use	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation and approval by the Environment Manager.	Initial: Date:
MW2.7	Chapter 10: Materials Assets & Waste, Section 10.9 (TR010034/APP/6.3)	Incorporation of enhancements identified in the ES	Discussions will also take place with the supply chain to use reusable packaging and take back unused materials, instead of them being disposed of.	Action will support sustainable material usage.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Designer / Appointed Principal Contractor	Implementation and approval by the Environment Manager.	Initial: Date:
8 – Noise and Vibration								
NV2.1	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Effective public communication during the construction phase	Local residents and other affected parties will be kept informed of the progress of the works, including when and where the noisiest activities will be taking place and how long they are expected to last. The Community Engagement Plan should outline the communication mechanisms, including newsletters, newspaper and radio announcements, and other communications from the Principal Contractor, for example, door-knocking, leaflet drops etc.	Noise levels would temporarily increase during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Communication mechanisms to be implemented.	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			The Highways England website will include a webpage for the Scheme that is regularly updated to reflect the status of construction works, construction working hours, information about traffic diversions or road closures, mitigation measures that are implemented to reduce noise and vibration levels.				Communications to be issued to local residents as/when required allowing sufficient notice prior to identified works.	
NV2.2	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Effective complaint procedure	The Principal Contractor will provide all local residents with a point of contact to discuss any queries relating to the construction works or to raise complaints. All noise complaints shall be effectively recorded, investigated and addressed.	Noise levels would temporarily increase during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Communication mechanisms to be implemented. Communications to be issued to local residents as/when required allowing sufficient notice prior to identified works.	Initial: Date:
NV2.3	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Mitigate construction phase noise	Temporary noise barriers will be installed in accordance with the NVMP during the construction phase to reduce construction noise as far as possible. These locations include the boundary of the construction compound and work sites close to sensitive receptors. The appointed Principal Contractor has indicated the planned use of a 3 m bund along the perimeter of the compound.	The ES assessment assumes a reduction in noise impact based on installation of noise barrier.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Temporary noise mitigation measures to be installed in the relevant areas prior to construction commencing.	Initial: Date:
NV2.4	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	To ensure that additional protection for residents is in place in the event that it is not practicable to mitigate airborne noise to tolerable levels during the construction works.	To minimise construction noise level further, the Principal Contractor will undertake the following additional measures: <ul style="list-style-type: none"> When working adjacent to residential areas, quieter engine-powered plant will be sourced. Construction plant with electric engines are new to the UK market – where possible, these will be used to remove the noise from diesel engines. Alternatively, plant using the most up to date diesel engines will be used. Reduce the level of the working platform used to construction the Mottram Moor Link Road so that the cutting slopes provide additional screening of noise Undertaking only one noise-generating operation in sensitive areas at one time <p>The threshold noise levels that could trigger the Applicant to implement these measures are shown in Section 11.8 of Chapter 6.11: Noise and Vibration (TR010034/APP/6.3).</p>	Availability of quieter plant. Insulation and temporary rehousing may be required to protect residents from significant effect.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Implementation and adherence to the policy.	Initial: Date:
NV2.5	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Mitigate construction phase vibration	Equipment and processes that result in low vibration levels will be used as far as reasonably practicable. In particular, the piling methods will be selected to carefully to minimise noise and vibration impacts at receptors.	The ES assessment assumes a reduction in vibration during construction impact based on the identified piling method.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Inclusion of monitoring proposal with the NVMP. Adhering to the specified monitoring regime throughout the construction period.	Initial: Date:
NV2.6	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Construction of operational mitigation measures	Permanent noise barriers are included in the Scheme's design to reduce road traffic noise levels at five locations. Proposals for the noise barriers were developed in consultation with other discipline specialists to avoid the noise barriers themselves creating significant effects, for example, in terms of landscape and visual impact, biodiversity and cultural heritage assets. All of the noise barriers were designed in accordance with DMRB LD 119 and modelled as reflective noise barriers and are likely to resemble a close-boarded fence construction to avoid visual impacts. The specification and material of the noise barriers will be determined during the detailed design of the Scheme.	The ES assessment assumes a reduction in noise impact based on installation of noise barrier.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Implementation of noise barriers, as per the specifications listed in the ES and shown on the Environmental Masterplans	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			The locations, lengths and heights of the noise barriers are described in Table 11.17 of Chapter 6.11: Noise and Vibration (TR010034/APP/6.3) and are mapped in the Environmental Master Plan (TR010034/APP/6.4).					
NV2.7	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Mitigate construction phase noise	If percussive methods of piling are used at Mottram Underpass, vibration monitoring is required in sensitive areas. Predicted percussive vibration levels are high enough for structural damage to occur at the closest receptors to planned piling works. Percussive piling vibration would be perceptible at sensitive receptors and attended vibration monitoring may be appropriate at key locations if it is not possible to use a low vibration piling method. However, methods that generate high levels of vibration such as percussive piling shall be avoided as far as practicable.	The ES assessment assumes that percussive piling will not be used during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Vibration monitoring in the identified areas would be undertaken (if required)	Initial: Date:
NV2.8	Chapter 11: Noise and Vibration, Section 11.8 (TR010034/APP/6.3)	Mitigate construction phase noise	In addition to the monitoring of construction noise and vibration levels, regular site inspections would be undertaken to ensure that suitable and appropriate mitigation measures are being implemented to reduce noise and vibration emissions. Noise and vibration management procedures and practices would be reviewed on a regular basis to ensure that the adverse effects of construction are minimised as far as reasonably practicable.	The ES assessment assumes the identified measures would be implemented during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed principal contractor	Regime of regular site inspections to be agreed with the Applicant and relevant LPAs and undertaken by the Appointed Principal Contractor	Initial: Date:
9– Population and Human Health								
PH2.1	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	The main areas where the construction sites would interface with the travelling public would be at locations where connections to the existing network would be created. In these locations, extensive traffic management would be required to segregate the construction sites from road vehicles.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation identified measures.	Initial: Date:
PH2.2	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on landowners affected by the Scheme.	Land temporarily acquired for construction will be restored to a condition equivalent to its original state. This will be achieved by means of a SRP following best practice set out in Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites .	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Effective communication with landowners/ tenants and the production of the Soil Handling and Management Plan and adherence to measures within.	Initial: Date:
PH2.3	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on landowners affected by the Scheme.	Field drains and field water supplies will be diverted or replaced, as necessary. Proposals for this will need to be agreed with the relevant landowner(s).	Assessment within the ES assumes that appropriate measures would be incorporated to reduce impacts on landowners.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / the Applicant	Implementation identified measures.	Initial: Date:
PH2.4	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on farm holdings affected by the Scheme.	Livestock fencing will be installed around construction sites and beside the new road on its completion. Fencing type/design would be with agreement of the landowner and depends on the field usage at the time. An agricultural liaison officer will be available to deal with issues affecting the operation of agricultural holdings during construction.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce effects on farm holdings.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Appropriate communication with landowners/ occupiers/ agents and implementation identified measures.	Initial: Date:
PH2.5	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on landowners affected by the Scheme.	During the Scheme construction phase, appropriate mechanisms to communicate with local residents and businesses would be set up to highlight potential periods of disruption (e.g. web-based, newsletters, newspapers, radio announcements, etc.). This would include the appointment of a Community Relation Manager (CRM) responsible for leading engagement with affected communities. The Community Engagement Plan would be prepared prior to construction and annexed to the EMP	Assessment within the ES assumes that appropriate measures would be incorporated	Contractual requirement between the Applicant and the Appointed Principal Contractor	Appointed Principal Contractor	Appropriate communication with landowners/ occupiers/ agents and	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			(Second iteration) to outline the methods in which the local and surrounding community will be engaged during construction of the Scheme including contact details for key site management, including agricultural liaison officer. The Applicant's webpage will continue to provide updates regarding progress, details of areas affected by construction, and mitigation in pace to reduce adverse effects.	to reduce effects on farm holdings.	under DCO Requirement 4		implementation identified measures.	
PH2.6	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on landowners/stakeholders affected by the Scheme.	The Applicant's Customer Contact Centre will also be available to deal with queries from the public. This includes an information line staffed by the Applicant at all times. A complaint management system will be in place, in line with systems used by the Applicant on other major infrastructure projects. Any complaints will be investigated and appropriate action taken as required. The complainant will be provided with a response outlining the results of the investigation and any action taken.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce effects on farm holdings.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Appropriate communication with landowners/ occupiers/ agents and implementation identified measures.	Initial: Date:
PH2.7	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	The following mitigation measures would be implemented through the EMP (Second iteration) to minimise impacts on agricultural holdings during construction, these include: <ul style="list-style-type: none"> • Arrangements through land agreements with the landowner for the maintenance of farm and field accesses affected by construction • The protection and maintenance of livestock water supply systems, where reasonably practicable, in agreement with the landowner through the agricultural liaison officer and the Community Engagement Plan that would be prepared at prior to construction and annexed to the EMP (Second iteration) • The protection of agricultural land adjacent to the construction site, including the provision and maintenance of appropriate stock-proof fencing. This would be in agreement with the landowner through the agricultural liaison officer and the Community Engagement Plan that would be prepared at prior to construction and annexed to the EMP (Second iteration) • The adoption of measures to control the deposition of dust on adjacent agricultural crops. Best Practice guidance will be followed to determine appropriate limits for the implementation of dust control measures to inform the development of the Nuisance Management Plan, annexed to the EMP (Second iteration) • The control of invasive and non-native species and the prevention of the spread of weeds generally from the construction site to adjacent agricultural land through an Invasive Non-Native Species Management Plan, that would be prepared at prior to construction and annexed to the EMP (Second iteration) • The adoption of standard industry best practice measures to prevent, insofar as reasonably practicable, the spread of soil-borne, tree-crop and animal diseases from the construction area • Liaison and advisory arrangement with affected landowners, occupiers and agents, as appropriate, through the agricultural liaison officer and the Community Engagement Plan that would be prepared at prior to construction and annexed to the EMP (Second iteration) 	Assessment within the ES assumes that appropriate measures would be incorporated to reduce effects on farm holdings.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation identified measures.	Initial: Date:
PH2.8	Chapter 12: Population and Human Health, Section 12.9 (TR010034/APP/6.3)	To reduce impacts on local residents/stakeholders affected by the Scheme.	Public Rights of Way will be realigned as close to their original alignment as practical to avoid extending WCH routes, where possible. Where the Scheme would affect existing PRoW and bridleways, replacement network provision would be made to ensure routes remain open by providing suitable crossing points or diversions. Where new footpaths are required, they would be designed to be as fully accessible as possible.	Assessment within the ES assumes that appropriate measures would be incorporated to reduce effects on active travel	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation identified measures.	Initial:

10 – Road Drainage and the Water Environment

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
RD2.1	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on drainage and the water environment during construction	Strict adherence to the EMP (TR010034/APP/7.2) and the Drainage Strategy (TR010034/APP/7.7) during construction.	The assessment within the ES assumes adherence to the EMP/REAC	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation and approval on the EMP/REAC by the Applicant.	Initial: Date:
RD2.2	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on drainage and the water environment during construction	Construction works would adhere to environmental best practice, such following the guidance provided in Pollution Prevention Guidance (PPG) notes, specifically PPG 5 for Works and Maintenance In or Near Water (Environment Agency, 2014a) and PPG 6 for Construction and Demolition Sites (Environment Agency, 2014b) to ensure any contaminants from construction activities do not enter the watercourse.	The assessment within the ES assumes adherence to best practice	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation and approval on the EMP/REAC by the Applicant.	Initial: Date:
RD2.4	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on water quality during construction	Visual inspections and water quality monitoring of watercourses that would be impacted during construction activities would be undertaken where in-channel works have been identified. These requirements will be agreed with the Environment Agency and the Lead Local Flood Authority.	Assessment within the ES assumes that adequate protection of watercourses would be employed throughout the construction period.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD2.5	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during construction	Where the erection of temporary in-channel structures is required for construction, use appropriate isolation techniques. These measures would be in place for the minimum possible period of time in order to minimise disruption of flow, sediments and biota. Where in-channel working cannot be eliminated entirely, best practice guidance would be adhered to. Timing of any temporary in-channel works should consider seasonality for watercourse biota.	Assessment within the ES assumes that adequate protection of watercourses would be employed throughout the construction period.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD2.6	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during construction	Any riparian vegetation clearance required for construction will be minimised.	Assessment within the ES assumes that adequate protection of watercourses would be employed throughout the construction period.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD2.7	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on hydromorphology during construction	Use appropriate erosion control and silt management measures to minimise the volume of sediment produced. Use appropriate silt management measures to reduce volume of sediment entering watercourses (e.g. silt curtains, silt matting).	Assessment within the ES assumes that adequate protection of watercourses would be employed throughout the construction period.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD2.8	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on flood risk during construction	Temporary drainage systems would be implemented to alleviate localised surface water flood risk and prevent obstruction of existing surface runoff pathways. This could include localised realignments, over-pumping, storage and coffer dams etc.	Assessment within the ES assumes that adequate protection of watercourses would be employed throughout the construction period.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO). Adherence to the most current standards.	Initial: Date:
RD2.9	Chapter 13: Road Drainage and the Water Environment,	Prevent adverse effects on flood risk during construction and operation	Where flood plain is lost, compensatory flood storage shall be provided on a volume for volume and level for level basis. The location and volume of the compensatory flood storage replacement will be provided as agreed with the EA as identified in the FRA for the detailed design and as shown in the Works Plans (TR010034/APP/2.3).	Assessment within the ES assumes that adequate protection of watercourses would	Contractual requirement between the Applicant and the Appointed Principal Contractor	Appointed Principal Contractor	Granting of any permits/consents (if required outside of the DCO).	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
	Section 13.9 (TR010034/APP/6.3)			be employed throughout the construction period.	under DCO Requirement 4		Adherence to the most current standards.	
RD2.10	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on groundwater during construction	Monitoring of groundwater level, quality and where appropriate, spring flows, would be undertaken during construction in line with the Monitoring Strategy for the Scheme. The Monitoring Strategy will be included in the Dewatering Management Plan.	The ES assessment assumes that the identified monitoring measures would be implemented during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:
11 - Climate								
C2.1	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Reduction of on-site emissions during construction phase	During construction, plant emissions will be managed through specified plant operator efficiency requirements. These requirements would be implemented via the EMP (Second iteration) (TR010034/APP/7.2).	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation and approval of the EMP/REAC by the Applicant.	Initial: Date:
C2.2	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Reduction of on-site emissions during construction phase	Where feasible, electric and hybrid vehicles and construction plant will be used. This would be considered via the PAS2080 analysis of the Scheme and included in the Carbon Management Plan.	Reduction of construction-related emissions	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:
C2.3	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Reduction of on-site emissions during construction phase	Electricity used on the site will be from the renewable sources where viable. This would be considered via the PAS2080 analysis of the Scheme and included in the Carbon Management Plan.	Reduction of construction-related emissions	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:
C2.4	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Effective monitoring of GHG emissions from the Scheme during construction	The Carbon Tool will be populated on a quarterly / monthly return basis through the construction process and during maintenance activities through the life of the Scheme, as part of Highways England's existing reporting processes. The objective of this activity is to allow tracking of actual construction and maintenance emissions, which can be compared against those forecast in this assessment. The Carbon Tool will be updated and shared by the Principal Contractor and the Applicant during construction.	The ES assessment assumes that the identified monitoring measures would be implemented during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:
C2.5	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	BPM adherence	Best practice construction techniques and appropriate material quality standards will be followed to ensure the design lives specified can be met. For example, roads and pavements will use sufficiently hard binders in the asphalt. Polymer modified bitumen will be used in the pavement surface course and a resistance to permanent deformation will be specified as a requirement. Furthermore, heavy-duty macadam will be used in the binder and base course below which has an increased rut resistance. The drainage design will ensure the bound material is constructed on a sound foundation that should perform at it's optimum over the design life.	The ES assessment assumes that best practice construction techniques and appropriate material quality standards would be implemented during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:
C2.6	Chapter 14: Climate, Section 14.9 (TR010034/APP/6.3)	Effective monitoring of GHG emissions from the Scheme during construction	Adherence to the requirements set out in the detailed CMP during construction.	The ES assessment assumes that a carbon management process that adheres to the principles of PAS 2080:2016 would be	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Measures implemented as indicated	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
				implemented during construction				

Table 2.3: Actions required post-construction (i.e. during operation)

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
1 - General Environmental Management								
GEM3.1	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure the correct procedures and plans are adhered to	<p>The appointed Principal Contractor is responsible for correcting defects (as defined under the main construction contract) for 52 weeks following contract completion. This is known as the 'defects period'.</p> <p>The defects period applies to relevant works following completion of the main construction works and completion of a subsequent five-year period where the appointed Principal Contractor has responsibility for the correction of any defects for all assets constructed or modified and management of environmental landscaping and planting. This does not include maintenance of the infrastructure; this will be handed back over to the local management team at the end of the scheme.</p> <p>The appointed Principal Contractor and the Applicant's will also adhere to any additional measures outlined in the EMP (Third iteration) following the completion of the construction phase and during the five-year maintenance period.</p>	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor/ the Applicant	Approval of EMP (Third iteration) by the Applicant and LPAs and implementation during operation	Initial: Date:
GEM3.2	Chapter 2: Scheme description (TR010034/APP/6.3)	Ensure the correct procedures and plans are adhered to	The EMP (Third iteration) and LEMP will be adhered to for the duration set out in each relevant document.	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Approval of EMP (Third iteration) by the Applicant and LPAs and implementation during operation	Initial: Date:
GEM3.3	N/A	Outlining agreed maintenance period of PRoW and responsibilities	Details regarding the maintenance of PRoW during operation of the Scheme will be included in the LEMP. The Applicant will be responsible for maintaining these links for five years. After the initial five-year aftercare period the PRoW would be adopted by the relevant LPA.	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Approval of EMP (Third iteration) by the Applicant and LPAs and implementation during operation	Initial: Date:
2 – Air Quality								
No actions/commitments have been proposed during operation of the Scheme in Chapter 5: Air Quality (TR010034/APP/6.3)								
3 – Cultural Heritage								
No actions/commitments have been proposed during operation of the Scheme in Chapter 6: Cultural Heritage (TR010034/APP/6.3)								
4 – Landscape and Visual Effects								
LV3.1	Chapter 7: Landscape and Visual Effects (TR010034/APP/6.7)	Ensure the effectiveness of proposed mitigation during operation of the Scheme	<p>In order to enable the proposed planting regime to establish and mature to fulfil its environmental, landscape and visual function the appropriate management regime is undertaken in line with the requirements of the LEMP. Management requirements to ensure the successful establishment of the proposed planting would be set out in the LEMP, to be secured by Requirement 4 of the draft DCO (TR010034/APP/3.1).</p> <p>The specification for this Scheme will identify a 5-year maintenance regime to ensure the establishment and maintenance of the landscape design.</p> <p>A further period of management would be proposed to ensure the continued successful establishment of the proposals with</p>	ES assessment assumes monitoring measures will be in place to ensure the effectiveness of landscape mitigation measures	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation of maintenance and monitoring by the Applicant's Maintenance Agent in agreement with the Applicant	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			details set out in a LEMP. A programme of monitoring visits and reports would be carried out during the maintenance and management periods as outlined in the LEMP. Remedial operations identified by the monitoring required to ensure the success of the planting and management proposals would be carried out.					
5 - Biodiversity								
BD3.1	Chapter 8: Biodiversity (TR010034/APP/6.8)	Outlining agreed maintenance period	Biodiversity - Maintenance period The initial maintenance period will encompass the first five years after construction and will be undertaken by the Applicant.	N/A	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	The Applicant	Implementation of maintenance and monitoring by the Applicant	Initial: Date:
BD3.2	Chapter 8: Biodiversity (TR010034/APP/6.8)	Ensure the effectiveness of proposed mitigation during operation of the Scheme	Biodiversity - Monitoring Newly created habitats will be monitored as part of the EMP to ensure successful establishment. Monitoring will take the form of ecological field surveys (as required) of newly planted trees, hedgerows, woodland and species-rich grassland to inform appropriate ongoing management practices. Monitoring will be undertaken by walkover survey annually in the first two years after seeding and planting. Bird and bat boxes installed within the Scheme will also be monitored, to track the effectiveness of the mitigation design for these ecological receptors. An ongoing schedule of monitoring and maintenance of newly created habitats will be agreed for at least 30 years post-construction. Further details of ecological monitoring will be outlined in the LEMP and undertaken in line with the relevant agreements with Natural England secured through the EPSL.	To mitigate loss of habitat. Monitoring measures are included in this REAC	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	The Applicant	Implementation and sign off by Ecological Clerk of Works (ECoW)	Initial: Date:
BD3.3	Chapter 8: Biodiversity (TR010034/APP/6.8)	Ensure the effectiveness of proposed mitigation during operation of the Scheme	Biodiversity - Bat monitoring Monitoring will be required as part of the EPSL conditions for bats during the operational stage. Bat populations will be monitored in accordance with the Method Statement, which will be agreed with Natural England. The monitoring will assess the effectiveness of the mitigation methods and determine if the new dedicated bat structure is effective in maintaining the distribution and abundance of this species. The results of the monitoring will be used to inform ongoing management to ensure its long-term suitability in providing suitable habitat for bats. Monitoring would be undertaken by the Applicant for two years following completion of construction as agreed under the EPSL with Natural England.	To mitigate loss of habitat.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4 Details to be agreed through the EPSL application.	The Applicant	Agree and obtain EPSL from Natural England Agree method statement Implementation and sign off by ECoW.	Initial: Date:
BD3.4	Chapter 8: Biodiversity (TR010034/APP/6.8)	Ensure the effectiveness of proposed mitigation during operation of the Scheme	Biodiversity - Badger monitoring Monitoring will be required as part of the mitigation licence conditions for badgers and will be undertaken by the Applicant. The use of the artificial badger setts will be monitored in accordance with a Method Statement, which will be agreed with Natural England. Monitoring will be discontinued once use of sett is confirmed.	To mitigate loss of habitat.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	The Applicant	Agree and obtain licence from Natural England Agree method statement Implementation and sign off by ECoW.	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
BD3.5	Chapter 8: Biodiversity (TR010034/APP/6.8)	Ensure the effectiveness of proposed mitigation during operation of the Scheme	Biodiversity - Watercourse monitoring Monitoring of watercourses after construction shall be undertaken to ensure any impacts to watercourses arising from construction of the Scheme are identified and remedial works undertaken if necessary. This will comprise surface water quality monitoring of watercourses affected by the Scheme. This may be supplemented by biological quality monitoring using aquatic macroinvertebrate community sampling should the assemblages present be assessed as being sensitive to construction related pressure e.g. siltation.	To mitigate loss of habitat.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	The Applicant	Implementation and sign off by ECoW.	Initial: Date:
BD3.6	Chapter 8: Biodiversity (TR010034/APP/6.8)	New woodland specification	Lowland mixed deciduous woodland Sensitive management and monitoring regimes would be applied during operation to ensure maintenance and enhancement of the habitats, where necessary. These measures would be set out in the LEMP.	To mitigate loss of habitat.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation and sign off by ECoW.	Initial: Date:
BD3.7	Chapter 8: Biodiversity (TR010034/APP/6.8)	Provide appropriate reinstated and created habitats	Hedgerows Sensitive management and monitoring regimes would be applied during operation to ensure maintenance and enhancement of the habitats, where necessary. These measures would be set out in the LEMP.	To mitigate loss of habitat.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation and sign off by ECoW.	Initial: Date:
6 – Geology and Soils								
GS3.1	Chapter 9: Geology and Soils, Section 9.9 (TR010034/APP/6.3)	Ensure no adverse effects on agricultural soils during Scheme operation	The land acquired temporarily and restored to Agricultural Land Classification Grade 4 and will be monitored during an agreed period of aftercare, normally five years, during which time problems with compaction, surface stones, drainage and settlement shall be rectified. Monitoring would be carried out in line with measures set out in the SRP and LEMP.	ES assessment assumes that the identified measures will be implemented during operation of the Scheme	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation by the Applicant's Maintenance Agent/ Appointed Principal Contractor following approval by the Applicant.	Initial: Date:
7 – Material Assets and Waste								
No actions/commitments have been proposed during the operation of the Scheme in Chapter 10: Material Assets and Waste (TR010034/APP/6.3)								
8 – Noise and Vibration								
NV3.1	Chapter 11: Noise and Vibration (TR010034/APP/6.3)	Ensure noise levels are below expected thresholds during operation	The operational phase includes routine maintenance of road surfacing to ensure that road roughness is minimised and avoids generating addition noise or vibration. Remedial works will be undertaken where defects to the road surfacing are identified.	To mitigate increases in noise levels during operation of the Scheme	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation of maintenance and monitoring by the Applicant's Maintenance Agent in agreement with the Applicant	Initial: Date:
NV3.2	Chapter 11: Noise and Vibration (TR010034/APP/6.3)	Ensure noise levels are no worse than those described in the Environmental Impact Assessment.	Likely significant environmental effects from noise during the operation phase shall be monitored and include: <ul style="list-style-type: none"> Ensuring that embedded and essential mitigation measures for the operational phase are incorporated in the as-built project Where mitigation measures in the Scheme's design are excluded from the as-built project, ensuring that the resultant noise levels are no higher than set out in the Environmental Statement. Ensuring that the specifications of noise mitigation measures meet design specifications 	To identify and mitigate increases in noise levels during operation of the Scheme	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation of monitoring by the Applicant's Maintenance Agent/Appointed Principal Contractor in agreement with the Applicant	Initial: Date:

REAC Ref	ES ref	Objective	Action / commitments (including specific locations and any monitoring required)	Assumptions (on which the action is based on)	How the action is to be implemented	Responsible Person(s)	Achievement criteria & reporting requirement	Completion record
			<ul style="list-style-type: none"> During the operation phase, routine maintenance of road surfaces is required to avoid further noise and vibration impacts from surface discontinuities Inspections of the permanent noise barriers will be undertaken and remedial works would be completed where defects are found, including sources of sound leakage such as holes or gaps in the noise barrier panels. 					
9 – Population and Human Health								
No actions/commitments have been proposed during the operation of the Scheme in Chapter 12: Population and Human Health (TR010034/APP/6.3)								
10 – Road Drainage and the Water Environment								
RD3.1	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on water quality during operation	Adherence to the Drainage Strategy (TR010034/APP/7.7) during operation of the Scheme.	The assessment within the ES assumes adherence to the Drainage Strategy	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation and approval on the Drainage Strategy by the Applicant.	Initial: Date:
RD3.2	Chapter 13: Road Drainage and the Water Environment, Section 13.9 (TR010034/APP/6.3)	Prevent adverse effects on groundwater during operation	Monitoring of groundwater level, quality and, where appropriate, spring flows, would be undertaken during operation in line with the Monitoring Strategy for the Scheme. This Monitoring Strategy will be included in the Dewatering Management Plan.	The ES assessment assumes that the identified monitoring measures would be implemented during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation of monitoring by the applicant	Initial: Date:
11 - Climate								
C3.1	Chapter 14: Climate (TR010034/APP/6.14)	Ensure effective monitoring of	Implementation of the EMP (Third iteration) including the following measures: <ul style="list-style-type: none"> Structures will be monitored throughout the life of the Scheme. Vulnerable assets in the study area will be regularly inspected to assess movements. 	ES assessment assumes that structures will be maintained and monitored throughout the lifetime of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor	Implementation of monitoring by the Applicant's Maintenance Agent.	Initial: Date:
C3.2	Chapter 14: Climate (TR010034/APP/6.14)	Ensure effective functionality of technology during operation of the Scheme	Key electrical components will be regularly checked and replacement cycles may be shortened if deterioration rates increase.	ES assessment assumes that key electrical components will be maintained and monitored throughout the lifetime of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation of monitoring by the Applicant's Maintenance Agent.	Initial: Date:
C3.3	Chapter 14: Climate (TR010034/APP/6.14)	Ensure safety of road users	Maintenance assessments of the road will be undertaken in line with the DMRB CS 228: Skidding Resistance standard which takes into account climate change.	ES assessment assumes that regular maintenance assessments of the will be maintained and monitored throughout the lifetime of the Scheme.	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	Appointed Principal Contractor / The Applicant	Implementation of monitoring in line with DMRB CS 228 by the Applicant's Maintenance Agent.	Initial: Date:
C3.4	Chapter 14: Climate (TR010034/APP/6.14)	Effective monitoring of GHG emissions from the Scheme during construction	The National Highways Carbon Tool will be completed by the Applicant during maintenance works in the operation phase.	The ES assessment assumes that the identified monitoring measures would be implemented during construction	Contractual requirement between the Applicant and the Appointed Principal Contractor under DCO Requirement 4	The Applicant	Measures implemented as indicated	Initial: Date:

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Printed on paper from well-managed forests and other controlled sources.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
National Highways Limited registered in England and Wales number 09346363

