

A303 Sparkford to Ilchester Dualling Scheme TR010036

9.21 Environmental Mitigation Route Map

Planning Act 2008

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**A303 Sparkford to Ilchester Dualling
Scheme**

Development Consent Order 201[X]

Environmental Mitigation Route Map

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1 Introduction

1.1.1 This Environmental Mitigation Route Map has been prepared in order to demonstrate that all necessary controls and mitigation for the A303 Sparkford to Ilchester Dualling Scheme (hereafter referred to as ‘the scheme’) have been identified and secured. The purpose of this document is therefore to:

- Provide an audit trail of the controls and mitigation measures on which the Environmental Statement (ES), including related assessment documents, rely to avoid, reduce and / or offset potential significant environmental effects resulting from the scheme.
- Set out the way in which they have been, or will be, translated into clear and enforceable controls via the Development Consent Order (DCO) requirements and related environmental management plans.

1.1.2 This environmental mitigation route map does not have a formal status, but rather is intended to help the Examining Authority and Interested Parties to understand how mitigation, relied on in the Environmental Statement (ES), is to be secured in the DCO. The information contained within the current revision is in draft form and reflects the information contained within the Outline Environmental Management Plan (OEMP) (document reference 6.7, Volume 6, Revision A) submitted in April 2019 as part of the Deadline 5 submission. This document will be kept ‘live’ throughout the Examination so that it is consistent with the draft DCO application documents at key points in the examination timetable. The table below also incorporates mitigation measures embedded into the scheme design that were identified in the ES.

1.1.3 The table below references the environmental commitments included in the ES and the Outline Environmental Management Plan (OEMP) (document reference 6.7, Volume 6, Revision A) together with the environmental objective and a description of the action proposed. These are presented, alongside a column that provides a reference to where each ES commitment is secured in the draft DCO (document reference 3.1, Volume 3, revision 0.4, submitted as part of Deadline 5).

1.1.4 To facilitate discussion at the examination and referencing in examination documents and representations, each mitigation commitment is given its own reference number in the first column, which is consistent with the referencing used in Table 3.1 Register of Environmental Actions and Commitments contained within the OEMP (document reference 6.7, Volume 6, Revision A).

2 Mitigation route map

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
General (G)				
G1	ES – CH2 (APP-039)	Hours of working	Construction work will take place between 07.00 and 18.00 on weekdays and from 07.30 to 13.00 on Saturdays, with no working on Sundays, Bank and Public Holidays. There may be exceptions to these hours to accommodate elements such as oversize deliveries and tie-in works, likely to involve a maximum of 4 full weekend closures. Exceptions to working hours detailed above will be agreed in writing with South Somerset District Council.	Draft Development Consent Order (dDCO) Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (e)
G2	ES –CH8 (APP-045)	Protection of protected species during construction	During construction, toolbox talks or other instruction methods will be undertaken to allow operatives to: <ul style="list-style-type: none"> Identify habitats suitable for protected species, individual species themselves, and measures for when these are encountered. These toolbox talks will be included within the CEMP. In the event that any protected or priority species which were not previously identified in the environmental statement (or any nesting birds) are found during construction activities, works in the vicinity of the identified species must cease and it be reported immediately to the Ecological Clerk of Works.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
G3	ES – CH2 (APP-039)	Avoidance of double handling of materials	Material deliveries will be programmed on an 'as required' basis to avoid temporary storage and double handling.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Condition 3 (Construction Environmental Management Plan) Part (2) (a) and (f)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
G4	ES – CH2 (APP-039)	Reduce light disturbance for sensitive receptors.	<p>Construction:</p> <ul style="list-style-type: none"> Lighting will be directional, and positioned sympathetically, to minimise light spill and disturbance for sensitive receptors. Lighting would be at the minimum luminosity necessary and use low energy consumption fittings. Where appropriate, lighting would be activated by motion sensors to prevent unnecessary usage. It would comply with the Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01¹ and the provisions of BS 5489, Code of practice for the design of road lighting², where applicable. <p>Operation</p> <ul style="list-style-type: none"> The main A303 carriageway will not be lit. No local roads would be lit except for the existing Hazlegrove Roundabout and its approaches. At Hazlegrove Roundabout, each column shall be fitted with an LED P850 lantern. Each lantern shall be luminous intensity class G6, tilted at zero degrees. Hazlegrove Underbridge will be lit during the day time only. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 15 (Highway Lighting)
G5	ES – CH2 (APP-039)	Protection of local network.	Wheel washing facilities will be installed at all compounds and material storage areas to mitigate the risk of construction material fouling the local network. This may involve a simple coarse gravel running surface or jet wash, or in the case of a heavily used exit point, wheel washers.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

¹ Institute of Lighting Professionals (2011) Guidance notes for the reduction of obtrusive lights [online] available at: <https://www.theilp.org.uk/documents/obtrusive-light/> (last accessed May 2018).

² British Standards Institution (2013) BS 5489, Code of practice for the design of road lighting. Lighting of roads and public amenity areas [online] available at: <https://shop.bsigroup.com/ProductDetail/?pid=000000000030217237> (last accessed May 2018).

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
G6	ES – CH2 (APP-039)	Ensure positive community relations.	<p>Prior to construction, the contractor will register with the National Considerate Constructor's Scheme and establish a forum to disseminate construction information to the Statutory Authorities, advisory bodies, landowners, parish councils, local interest groups and the general public, in line with the stakeholder communications plan. A Community Relations Officer will be appointed who will be responsible for these specific tasks.</p> <p>In cases where the construction works have an impact on neighbouring properties, businesses and buildings as identified within Chapters 5 to 14 of the ES, the occupants of these premises will be advised of these works no later than 6 weeks prior to their occurrence. The frequency of these meetings will be determined in consultation with South Somerset District Council and the PC.</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
Air Quality (AQ)				
AQ1	ES - CH5 (APP-042)	To limit and control emissions to air during construction.	<p>Works will be carried out in accordance with the best practicable means, as described in Section 79 (9) of the Environmental Protection Act 1990, to reduce fumes or emissions which may impact upon air quality. This will include:</p> <ul style="list-style-type: none"> • Minimise height of stockpiles and profile to minimise wind-blown dust emissions and risk of pile collapse. • Locate stockpiles out of the wind (or cover, seed or fence) to minimise the potential for dust generation. • Ensure that all vehicles with open loads of potential dusty materials are securely sheeted or enclosed. • Enforce a maximum speed limit of 15mph on surfaced roads and a 10mph speed limit on unsurfaced haul roads and work areas, to prevent the generation of dust by fast moving vehicles. • Damp down surfaces in dry conditions. • Water should be sprayed during cutting / grinding operations (such as cutting curb slabs). 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> All vehicle engines and plant motors shall be switched off when not in use. High dust generating activities within site compounds should be located as far away from nearby receptors as possible. 	
Cultural Heritage (CH)				
CH1	ES – CH2 (APP-043)	Protection of archaeological remains during construction.	<p>The temporary site compounds will be prepared by the removal of vegetation and overlaying with geotextile membrane prior to placement of temporary granular fill material. For the section of the haul route that runs adjacent to the Camel Hill Scheduled Monument, the ground will be raised through the installation of geotextile over the existing ground, prior to the placement of temporary granular fill material.</p> <p>On completion of the scheme, these compound areas will be restored to their original condition, before being returned to the landowner or incorporated into the environmental mitigation proposals.</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH2	ES – CH2 (APP-043)	Protection and reinstatement of heritage asset during construction (Howell Hill stone boundary wall).	<p>Where Howell Hill stone wall (a linear feature forming the eastern boundary to the highway) is removed to make way for permanent works related to the scheme, stone will be set aside to be reused in construction of the scheme. The location and method of construction will be decided in consultation with SSDC. Recording of the length of wall to be removed will be carried out in line with the methodology set out in the OHWSI.</p> <p>Where the wall is to be removed for temporary works during construction it will be reinstated in the same location. The method of reconstruction will be decided in consultation with South Somerset District Council.</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
CH3	ES – CH 6 (APP-043)	Protection of Camel Hill Scheduled Monument during construction	Protection fencing and a buffer zone around Camel Hill Scheduled Monument to be erected prior to construction, following consultation on the type of fencing, location of fencing, extent of buffer zone, and methodology of erection, maintenance and removal, with Historic England and Somerset County Council. The fence is to be located outside of the footprint of the designated area. The fencing and buffer zone is to remain in place throughout construction.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH4	ES – CH 6 (APP-043)	Protection and reinstatement of listed milestone during construction	If the milestone is located during works prepare a methodology detailing the recording, removal, safe storage, restoration and reinstatement of the grade II listed milestone at Canegore Corner (National Heritage List for England (NHLE) reference 1345996) following.. This methodology, including the proposed location of the milestone will be prepared in consultation with Somerset County Council, Historic England and South Somerset District Council. The work is to be carried out in accordance with this methodology.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH5	ES – CH 6 (APP-043)	Protection of archaeological remains related to Hazlegrove House RPG during construction.	Protection fencing and a buffer zone around the areas of driveway earthworks to be retained within the Hazlegrove House RPG to be erected prior to construction. This will be erected following consultation on the type of fencing, location of fencing, extent of buffer zone, and methodology of erection, maintenance and removal, with Historic England, the Gardens Trust, and the Somerset County Council. The fencing and buffer zone is to remain in place throughout construction.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH6	ES – CH 6 (APP-043)	Protection of heritage assets during construction (Royal Observer Core at Camel Hill)	Protection fencing and a buffer zone around the areas the Royal Observer Corps at Camel Hill to be erected during construction, following consultation on the type of fencing, location of fencing, extent of buffer zone, and methodology of erection, maintenance and removal, with South Somerset District Council. The fencing and buffer zone is to remain in place throughout construction.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
				(2) (a) and Requirement 9 (Archaeology)
CH7	ES - CH 6 (APP-043)	Preservation by record of archaeological remains.	Prepare an archaeological Written Scheme of Investigation (WSI) (based on the Outline Heritage WSI to be submitted during the DCO Examination) in consultation with Somerset County Council, South Somerset District Council and Historic England. Undertake the archaeological works as described within the WSI. The WSI should include any mitigation or recording identified as a result of the evaluation work. The archaeological works may take the form of archaeological excavation and / or strip map and sample recording and / or watching brief. The works will be monitored by the Somerset County Council. A report will be produced and published for the results of the mitigation; these will require approval from the local authority archaeological advisor.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH8	ES - CH 6 (APP-043)	Preservation by record of archaeological remains (driveways at Hazlegrove RPG).	Within Hazlegrove House RPG, the remains of the driveways that will be removed by the scheme will be subject to archaeological recording in line with the WSI.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH9	ES - CH 6 (APP-043)	Reduce adverse views from Hazlegrove House RPG	The layout of the soil storage area at Hazlegrove House RPG to be designed in such a way to minimise the impact on static views south west from the house and kinetic views moving south west through the parkland. This will include the location of areas and functions of the storage area and screening by way of suitable fencing or timber hoardings. The design of the soil storage area will be prepared in consultation with SSSC, The Gardens Trust and Historic England prior to construction.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
CH10	ES - CH 6 (APP-043)	Protect the character of Hazlegrove House RPG.	The landscape scheme at Hazlegrove House RPG including screening, landscape planting, erection of fences, surfacing and appearance of the balancing pond should reflect the parkland character of the RPG. This includes location of planting and species to be used. The landscaping scheme including maintenance will be prepared in consultation with SSDC, The Gardens Trust and, Historic England prior to undertaking any landscape works within the RPG.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH11	ES - CH 6 (APP-043)	Protect the setting of and archaeological remains associated with Medieval settlement remains 100m and 250m north of Downhead Manor Farm scheduled monument	No excavation will be undertaken to install the ecological mitigation area to the east of Downhead. The fence will take the form of a hand driven post fence. The design and method of installation of the fencing will be prepared in consultation with Historic England and Somerset County Council prior to its installation.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH12	ES - CH 6 (APP-043)	Protection of heritage assets during construction (Milestone on B3151 at NGR ST56382471)	Protection fencing and a buffer zone around the areas the Milestone on B3151 at NGR ST56382471 to be erected during construction, following consultation on the type of fencing, location of fencing, extent of buffer zone, and methodology of erection, maintenance and removal, with South Somerset District Council. The fencing and buffer zone is to remain in place throughout construction.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 9 (Archaeology)
CH13	ES Addendum - CH 4 (OD-010)	Protection of heritage assets during construction (Eyewell)	Protection fencing and a buffer zone around the Eyewell to be erected during construction, following consultation on the type of fencing, location of fencing, extent of buffer zone, and methodology of erection, maintenance and removal, with the South Somerset District Council Conservation Officer. The fencing and buffer zone is to remain in place throughout construction.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
				(2) (a) and Requirement 9 (Archaeology)
N/A	ES - CH 6 (APP-043)	Embedded design measures to reduce adverse effects to Hazlegrove House RPG	At the Hazlegrove Junction the environmental masterplan has included the retention of part of the woodland in the southern park and screening of the proposed A303. This would remove moving traffic from key historic views from the northern parkland and Hazlegrove House, looking south west across and beyond the park through the design of false cuttings and planting. The screening would be sensitive to the surrounding parkland species, and the remaining surrounding land would be reinstated following construction and incorporated into the parkland through the planting of specimen trees. Lighting of the Hazlegrove Junction would also be screened from views once planting has become established.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping) and Requirement 6 (Implementation and maintenance of landscaping)
N/A	ES - CH 6 (APP-043)	Embedded design measures to reduce adverse effects to heritage assets along the length of the scheme	For the remainder of the route, screening has been introduced by way of landscape planting, cuttings, and false cuttings. This would minimise the impact of new junctions and traffic on the setting of nearby heritage assets including Downhead Scheduled Monument, Glebe Farm Group, Henderson's Cottage, The Cottage, and House to the South of Glebe Farm. The new road alignment and screening would improve the current situation for The Hollies and Appletree Cottage non-designated heritage asset.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping) and Requirement 6 (Implementation and maintenance of landscaping)
Landscape (L)				
L1	ES - CH7 (APP-044)	To limit visual intrusion and impacts upon landscape character during construction.	The following measures to be undertaken to reduce visual intrusion and impacts upon the landscape throughout construction: <ul style="list-style-type: none"> • Keep a well-managed and tidy site. • Welfare units and temporary site offices in a colour that will aid integration with the surrounding landscape where possible. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> Boundary fencing or timber hoarding (2 metres in height) will be erected around all compounds and material storage areas. 	
L2	ES - Appendix 7.1 Arboricultural Constraints Report (APP-069) and Appendix 7.3 Arboricultural Impact Assessment (AIA) (APP-071)	To limit the impact of construction on existing trees and vegetation to be retained	<p>Erection and maintenance of tree protection fencing in compliance with the Arboricultural Method Statement (Annex B.6 of this report) and BS5837:2012 (Trees in relation to design, demolition and construction – Recommendations) during the construction period. This should include:</p> <ul style="list-style-type: none"> Check the robustness and positioning of tree protection fencing. Check that no materials or plant are stored within the tree protection fencing. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f) and Requirement 5 (Landscaping)
L3	ES – CH7 (APP-044)	To limit visual intrusion and impacts upon landscape character during operation	Mitigation planting areas to be maintained for a period of 5 years from completion of the scheme. This will be detailed in the Landscape and Ecological Management Plan (LEMP). The LEMP should include the required management regime for the grassland areas within the red line boundary to increase biodiversity.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (f) and Requirement 5 (Landscaping)
N/A	ES – CH7 (APP-044)	To limit visual intrusion and impacts upon landscape character during operation	Local native species would be introduced in areas where vegetation removal is required to accommodate construction. Swathes of native tree and shrub species would be introduced along the road corridor helping to reinforce the landscape setting to the linear road corridor. Hedgerows would also be incorporated to restore hedgerow boundaries and integrate the rural landscape as shown in the Environmental Masterplan.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping) and Requirement 6 (Implementation and maintenance of landscaping)
N/A	ES – CH7 (APP-044)	To limit visual intrusion and impacts upon	A series of landscape bunds and false cuttings have been incorporated into the scheme design to reduce adverse visual impacts, which would be 2 metres in	dDCO Schedule 2 (Requirements) Part 1 (Requirements)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
		landscape character during operation	height from the proposed carriageway. These mitigation measures have been placed along the Hazlegrove Junction in order to screen the scheme from Hazlegrove RPG and to the east of Howell Hill to reduce effects on West Camel. The false cuttings at Hazlegrove have been developed in consultation with the TWG to reduce likely significant effects on the RPG and the PRoW which runs through it. The proposed false cuttings east of Howell Hill would reduce visual effects from traffic on the road in the short and long term on West Camel and residential properties on Howell Hill. The scheme would appear in cutting from the west of Howell Hill to the Camel Cross Junction, which would reduce the visibility of the proposed A303 and compared to the existing A303.	Requirement 5 (Landscaping) and Requirement 6 (Implementation and maintenance of landscaping)
Biodiversity (B)				
B1	ES - CH8 (APP-045)	Protection and creation of priority habitats	<p>During works:</p> <ul style="list-style-type: none"> Where hedgerows are required to be removed to facilitate the works, these will be replaced within the same location and any existing gaps planted with appropriate native species. Topsoil, containing the seedbank, will be translocated from the woodland within Hazlegrove RPG (works numbers 100 and 101 on the works plans, AS-004) and used within the new areas of woodland creation, notably the area either side of Pepper Hill Copse. Minimal topsoil to be applied for all grassland areas to encourage the establishment of nutrient poor species rich grassland. To mitigate the loss of 2 veteran trees, the intact hulk of the veteran tree should be felled and relocated in close proximity to a nearby veteran tree, woodland or parkland area. This will provide an opportunity for those invertebrates and fungi resident within the tree to relocate, provided there is suitable habitat nearby 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>and will ensure that the hulk of the tree continues to provide deadwood resource in the future.</p> <ul style="list-style-type: none"> • Works to install vehicular access across the ditch within the main compound area would be supervised by an Ecological Clerk of Works to ensure that access is positioned in the most appropriate place to minimise potential habitat degradation. • Once works have been completed, the ditch habitat would be reinstated and enhanced. This would include removal of any material used to construct the crossing and planting of aquatic and marginal vegetation in line with the landscape masterplan. <p>During operation:</p> <ul style="list-style-type: none"> • ‘Cut and remove’ to be employed for grassland management (including amenity grassland) to reduce nutrient levels and increase diversity. 	
B2	ES – Confidential Badger Report which will be issued to the PC.	Protection of badgers	<p>Before works:</p> <ul style="list-style-type: none"> • In advance of construction works commencing on site, a badger survey would be undertaken to ensure that the status of the setts remains the same and also to identify any additional setts which may have been excavated within the construction footprint since. • Permanent closure of setts 1a, 1b, 1c, sett 19, sett 30 and sett 64 (licensable period is between 1 July – 30 November, with 21 clear days of badger activity required). • Temporary closure of setts 5,18,63 (licensable period is between 1 July – 30 November, with 21 clear days of badger activity required). • Refer to Appendix D of the Confidential Badger Report for the badger sett mitigation locations. <p>During works:</p> <ul style="list-style-type: none"> • Cover open excavations or provide ramps. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> • Exclusion zone of 30 metres for all works around the retained badger setts (or until the exclusion of badger setts to be closed has been completed, for those being permanently closed). • Refer to Appendix B of the Confidential Badger Report for badger sett locations. <p>Operational:</p> <ul style="list-style-type: none"> • Installation of badger tunnel and badger fencing and around the tunnel. • Monitoring of badger tunnel, twice annually for 2 years. 	
B3	ES - CH8 and Bat Technical Report (Appendix 8.4, APP-077)	Protection of bats	<ul style="list-style-type: none"> • Before works: An internal inspection of the building (F001 at land parcel WS64408, grid reference ST581256) to be scheduled a year prior to the planned demolition, along with emergence and re-entry surveys. Results from these surveys to be used to determine whether roosts within the building have become active again, and therefore the need for an EPS licence. • Installation of a bat house within suitable habitat, to mitigate the loss of building F001 at land parcel WS64408. • Temporary hop overs installed, using sizeable trees placed in tubs or dead hedging, approximately 220m east of Canegore Corner, which links to the northern soil bund vegetated with trees and edges, leading to Steart Wood. <p>During works:</p> <ul style="list-style-type: none"> • Building F001 to be re-surveyed for bats 1 year prior to demolition. Building to be subject to a soft strip immediately prior to demolition. • Bat house to be constructed within ecological mitigation area to the east of F001. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> • Habitat on site to be retained where possible; habitat loss to be minimised. • Where hedgerows require removal only during the construction phase, hedgerows to be reinstated and enhanced • Hedgerow removal to be minimised where possible, and gaps restricted to 10m wide where this is feasible to reduce the potential for severing commuting lines. However, there are areas within the scheme where larger extents of hedgerow require removal to accommodate the scheme design. • All areas of hedgerow to be retained must be fenced to prevent encroachment of plant and materials. • Buffer zones of at least 10m to be retained between construction activities and all hedgerows and woodland, and a buffer of at least 15m to be retained between construction activities and any trees and buildings, where roosts have been identified. It is not possible to retain a 15m buffer between works and roosts WS56543; ST106774 and ST84283. However, WS56543 is inactive and works within 15m of ST106774 are minor and will not lead to disturbance impacts. Works are proposed 14.5m from ST84283 (supporting a small number of common species); this buffer is considered appropriate. Please refer to Figure E.7 of Appendix 8.4 Bat Technical Report (document reference TR010036/APP/6.3) for confirmed bat roost locations. • ‘Dead hedging’ to be put in place to maintain linear features during construction. • Night time working to be avoided where possible to minimise the need for artificial lighting. • Where artificial lighting is required, directional and wildlife sensitive lighting to be used to prevent light spill onto hedgerows and treelines. 	

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> • Approximately 60 bat boxes to be installed within suitable habitats adjacent to the scheme (location of boxes to be determined during detailed design). Bat boxes will be of a range of designs to support a variety of different bat species. • All trees to be felled for the scheme should be re-inspected for roosting bats prior to felling. This should comprise climb and inspect surveys with endoscopes. • Where no further evidence of bats is identified, then trees must be soft felled, and left on the ground for at least 1 day before being disposed of. • Where evidence of bats is recorded, the tree must not be felled as further emergence and return surveys may be required to establish which species of bat is roosting within the tree, and the type of roost. Natural England will then need to be consulted and an EPSM licence prepared. <p>Operational</p> <ul style="list-style-type: none"> • Planting of mature trees to act as a hop over for the hedgerow approximately 220m east of Canegore Corner, which links to the northern soil bund vegetated with trees and edges, leading to Steart Wood. In addition, planting to encourage bats to use the nearby underbridge (located to the west) and potentially installing illuminated bollards in the verge to deter species, such as lesser horseshow bats, crossing the road should be considered during the detailed design. South Somerset District Council should be consulted on the detailed design for mitigation in this location. • Annual monitoring of bat boxes and bat house for 3 years post construction. • Annual crossing point surveys at locations which were subject to severance, 3 years post construction. 	

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> Annual landscape scale transects, 3 years post construction. 	
B4	ES - CH8 and Barn Owl Technical Report (Appendix 8.5, APP-078)	Protection of barn owls	<ul style="list-style-type: none"> Before works: Prior to the start of the works the 2 recorded Occupied Breeding Sites (OBS) and all previously identified Potential Nesting Sites (PNS) must be rechecked within 1km of the works. Please refer to Appendix A of Appendix 8.5 Barn Owl Technical Report (APP-078). Closure of OBS1 will need to take place outside of the breeding season by a licenced ecologist. Installation of 3 new nest boxes to mitigate for the loss of OBS1. <p>During works:</p> <ul style="list-style-type: none"> No works will take place within 20m of an active barn owl nest. Please refer Appendix A of Appendix 8.5 Barn Owl Technical Report (APP-078) for the location of active barn owl nest. 13 additional nest boxes to be provided at least every 1km, if this can be negotiated with local landowners. <p>Operational:</p> <ul style="list-style-type: none"> Annual monitoring of nest boxes and screening planting, for 5 years post construction. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)
B5	ES - CH8 and Breeding Bird Technical Report (Appendix 8.6, APP-079)	Protection of breeding birds	<p>During works:</p> <ul style="list-style-type: none"> If works commence in the bird breeding season (March to August inclusive), a suitably experienced ecologist should carry out a nesting bird check on any vegetation to be cleared, or vegetation to be retained, but which is directly adjacent to major works, no more than 24 hours prior to works commencing. Where nesting birds are identified works should cease within the evidenced zone of likely disturbance of the nest for that species until birds have fledged 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) and Requirement 10 (Protected Species)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>and the nest is no longer in use. The buffer zones for nesting bird species found during construction works will be determined by the Ecological Clerk of Works, dependent on the nesting bird species and nature of works in proximity to the nest.</p> <ul style="list-style-type: none"> • Replacement planting of hedgerows and woodland and the installation of 100 bird boxes (location of boxes to be determined during detailed design). • Construction works within the vicinity of the breeding hobbies should be undertaken outside the breeding season, or otherwise screening of the works should be undertaken using hoarding or similar. 	
B6	ES - CH8 and Reptile Technical Report (Appendix 8.7, APP-080)	Protection of common reptiles	<ul style="list-style-type: none"> • Before works: Reptile displacement to be undertaken, which involves the removal of habitat in a careful phased manner within the active reptile season (March to September inclusive), to be carried out at reptile area B6, B7 and B8. Please refer to Figure D.1 of Appendix 8.7 Reptile Technical Report (APP-080) for reptile site locations. • Reptile exclusion fencing to be installed under supervision of suitability experienced ecologist during the reptile active season (March – September) in area B6, B7, B8, area C26, area D10, D11, D13, D14, D15 and area D16, D17. Please refer to Appendix F of Appendix 8.7 Reptile Technical Report (APP-080) for exclusion fencing locations. • Reptile capture and translocation at area B6, B7, B8, area C26, area D10, D11, D13, D14, D15 should be carried out for a minimum of 60 days and area D16, D17 should be carried out for a minimum of 70 days until 5 clear days are achieved. Please refer to Figure D.1 of Appendix 8.7 Reptile Technical Report (APP-080) for reptile site locations. • After the capture programme, the remaining grassland habitat should be strimmed to ground 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>level, and destructive searches of tree roots and a supervised topsoil strip should be undertaken before commencing construction activities within the excluded area. This need to be carried out with a suitably experienced ecologist present.</p> <ul style="list-style-type: none"> The reptile receptor site for captured individuals needs to be enhanced prior to start of translocation; 2 hibernacula to be installed and stock proof fencing to be installed in the northern area, to stop sheep grazing to allow grass structure to develop. Please refer to Figure D.1 of Appendix 8.7 Reptile Technical Report (APP-080) for receptor site location and enhancement. <p>During works:</p> <ul style="list-style-type: none"> An Ecological Clerk of Work to be present during habitat clearance, to assess and carry out hand searches in any potential reptile habitat prior to removal. Reptile exclusion fencing to remain in place during construction and regularly inspected and maintained. Please refer to Appendix F of Appendix 8.7 Reptile Technical Report (APP-080) for exclusion fencing locations. In 2021: Allow grazing within northern receptor area; mow 1m width strips during winter months within southern field to increase structural diversity. Grass areas at receptor site are to be left unmanaged between 2022- 2023 <p>Operational:</p> <ul style="list-style-type: none"> Replacement and creation of habitats of value to reptiles, such as grassland, scrub, ponds, woodland glades and the provision of log and brash piles where appropriate. 	

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> In 2024: Allow grazing within northern receptor area; mow 1m width strips during winter months within southern field to increase structural diversity. In 2025: Grass area to be left unmanaged. In 2026, management of receptor areas returns to landowner on the assumption that the Highways England verge has established and provides suitable habitat for reptiles to colonise. Reptile monitoring is required at the receptor site 5 years (2021 - 2025) following completion of translocation and construction works. Please refer to Figure D.1 of Appendix 8.7 Reptile Technical Report (APP-080) for receptor site location. 	
B7	ES - CH8 and Hazel Dormouse Technical Report (Appendix 8.8, APP-081)	Protection of hazel dormice	<ul style="list-style-type: none"> Before works: Prior to any clearance of woodland, scrub or hedgerow vegetation, personnel should receive a toolbox talk by a suitably qualified ecologist, covering the identification, ecology, conservation status and legislative protection of dormice. All retained woodland and hedgerow habitat to be fenced off so that it is protected from physical disturbance during the construction phase. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)
B8	ES - CH8 and Great Crested Newt (GCN) Technical Report (APP-082)	Protection of GCN	<p>Before works:</p> <ul style="list-style-type: none"> Update presence / likely absence surveys of all ponds scoped out of the surveys completed in 2017 and those where GCN were not recorded. eDNA surveys to be completed, with further population surveys required if the eDNA surveys find GCN to be present. GCN mitigation licence to be obtained from Natural England, based on the Ghost Licence accepted by Natural England (REP4-007). Installation of exclusion and drift fencing around Meta-population A located at Downhead and meta- 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>population C located at Hazlegrove. Please refer to Appendix B of Appendix 8.9 GCN Technical Report (APP-082) for pond and receptor site locations.</p> <ul style="list-style-type: none"> • Relocation programme of individuals from these areas to be carried out for a minimum of 60 days until 5 clear days are achieved. Individuals caught to be relocated into the receptor sites close by. • Receptor sites to be enhanced before translocation including the creation of hibernacula at each site. • Relocation programme to be undertaken during the active GCN season (between March and September inclusive). • A 30 day trap out period is planned for ponds 41 and 7 until 5 clear days have been achieved. Please refer to Appendix B of Appendix 8.9 GCN Technical Report (APP-082) for pond site locations. • If either pond is found to be holding water during the trapping period the ponds should be drained down under ecological supervision and any remaining GCN relocated. • As part of the translocation, the exclusion fencing should be inspected and any damaged fixed. • Any scrub within the trap out areas (and within the working area) should be progressively strimmed in sections to increase the effectiveness of the translocation. This should occur under the supervision of an ecologist, by reducing the height to 150mm above ground, hand searched by the ecologist, then taken to 50mm above ground. • Once the capture programme has been completed, any potential hibernacula in the capture area should be dismantled by hand or under supervision by a licensed ecologist. • Following completion of the trap out period, all remaining vegetation within the fenced off areas should be strimmed to 150mm above ground, hand 	

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>searched by a licenced ecologist, then taken to 50mm above ground.</p> <ul style="list-style-type: none"> • A hand search should be undertaken, before strimming as close to the ground as possible, at least 24 hours after the initial cuts. The arisings should be removed. • Once the phased vegetation clearance is complete, a destructive search should be undertaken to ensure no newts remain within the works areas. • As a precautionary measure, all excavation works should be covered at the end of each shift or a ramp installed. • Following clearance of habitats, the works area should be maintained as unsuitable for GCN for the duration of the works. • Exclusion fencing should remain intact around the works areas to ensure that GCN do not enter the works areas following completion of the relocation. <p>During works:</p> <ul style="list-style-type: none"> • No kerbs to be installed around the gully pots which are within 500m of meta-population A and C. However, if kerbs are essential, the gully pots should be located at least 10cm from the edge of the kerb to reduce the risk of GCN being channelled into the gully pots. • Gully pots within 500m of the meta-populations should be fitted with amphibian gully pot ladders. • Exclusion fencing will be monitored and maintained throughout construction to ensure GCN do not re-enter the works area. <p>Operational:</p> <ul style="list-style-type: none"> • Re-instatement and enhancement of suitable GCN habitat. Please refer to environmental master plan (Figure 2.8, APP-107) and Appendix 8.9 GCN Technical Appendix (APP-082) 	

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> • Creation of 2 new wildlife ponds. • Monitoring should be undertaken at the ponds of the Downhead population, including the newly created pond for 4 years post translocation (2021-2024). The monitoring should be carried out by a licenced ecologist. • 2 years of presence or absence monitoring should be undertaken at the Hazlegrove population (2021-2022). • Annual inspection of hibernacula condition and maintenance, for a period of 5 years (2020-2025). • Mitigation planting areas to be maintained for a period of 3 years from completion of the scheme. • After the 3-year management period is completed the management of land outside the highways boundary to be returned to the landowner. 	
B9	ES - CH8 and Otter and Watervole Technical Report (Appendix 8.10, APP-083)	Otter and water vole mitigation.	<p>During works:</p> <ul style="list-style-type: none"> • Where works, (including temporary works) are within close proximity to ditches known to support water vole, a minimum buffer of 5m from the edge of the ditch to be retained and fenced. Please refer to Appendix B of Appendix 8.10 Otter and Watervole Technical Report (APP-083). 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)
B10	ES - CH8 and Invertebrate Technical Report (Appendix 8.11, APP-084)	Terrestrial invertebrates mitigation.	<ul style="list-style-type: none"> • Before works: Hedgerow removal to be carried out in the winter months, where brown hairstreak identified. • Blackthorn bushes with brown hairstreak ovum to be translocated by a suitably experienced ecologist adjacent to hedgerows. <p>Operational:</p> <ul style="list-style-type: none"> • Re-instatement and enhancement of invertebrate habitat, including ivy to provide mitigation for thick-headed fly. • Once hedgerows have become established, when management is required, hedgerows containing 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			blackthorn will involve cutting of only 1 side of the hedgerow every other year to prevent local extinction of brown hairstreak. Cutting of hedgerows will be undertaken in early August, when eggs and larvae are less likely to be present within blackthorn, or in January and February.	
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on habitats	<p>Habitat planting and reinstatement would replace the 77.4 hectares of habitats temporarily damaged and compensate for the 13.7 hectares of habitat that would be permanently lost as hard standing (as a result of the scheme). The replanting would achieve a net biodiversity gain for all priority habitats to ensure greater long term (5 years) resilience against adverse events. The habitat replanting would result in the following:</p> <ul style="list-style-type: none"> • A net gain of 2.19 hectares of broadleaved woodland • The creation of 7.61 hectares of species-rich grassland to compensate for the 0.06 hectares loss of calcareous grassland • 10.443 kilometres of species-rich hedgerows to ensure no net loss • Creation of 1.81 hectares of wet grassland, 0.18 hectares of marginal planting and 2 wet ponds • Additional gain of 19.76 hectares of native trees and shrubs <p>Of the 13.7 hectares of habitat that would be permanently lost, 0.36 hectares would be from Hazlegrove Park LWS due to the road footprint. This would be mitigated by the provision of 1.33 hectares of woodland, 3.07 hectares of native trees and shrubs, 6.51 hectares of wildflower and species rich grassland, a pond with marginal planting and 40 individual trees, to be provided immediately adjacent to the area that would be lost. All measures can be seen in the Environmental Masterplan.</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on aquatic and riparian species in operation	The scheme drainage design would reduce the likelihood and severity of potential pollution incidents and flooding affecting the local ditch network (see Appendix 4.7 Drainage Strategy Report, Volume 6.3). This includes the provisions of attenuation ponds, drains and catchpits. This would reduce or eliminate adverse effects for aquatic and riparian species and habitats.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 13 Surface water drainage
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on badgers in operation	Where badgers are affected the most at Hazlegrove House RPG, habitat creation would be undertaken to provide foraging habitats of higher quality than the existing. These would include the new attenuation and wildlife ponds and surrounds, woodland, trees and species-rich grassland. The landscape would also provide opportunities for badger sett creation.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species)
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on bats in operation	Habitat creation and replacement would provide more foraging habitat within the landscape, and the planting of trees and hedgerows would provide connectivity for bats to commute between foraging grounds as shown in the Environmental Masterplan. Three attenuation ponds would be built as part of the scheme, and these would also provide foraging opportunities for bats. In order to ensure that the proposed scheme has a positive contribution towards local bat populations, a minimum of 220 bat boxes would be installed within suitable habitats adjacent to the proposed scheme, including boxes suitable for breeding and hibernation purposes.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species)
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate	Habitat creation and replacement would provide a greater extent of habitat suitable for breeding birds. The planted habitats would be of a higher quality than the existing	dDCO Schedule 2 (Requirements) Part 1 (Requirements)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
		adverse effects on breeding birds in operation	habitats available at baseline, and connectivity would be improved as shown in the Environmental Masterplan. The 3 attenuation ponds would also provide new habitat for birds. Loss of suitable nesting bird habitat would be mitigated by replacement planting of hedgerows and woodland, and the installation of 100 bird boxes.	Requirement 5 (Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species)
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on barn owls in operation	<p>To potentially reduce the number of barn owls killed by vehicles, barn owls should be encouraged to fly over the road at a height of at least 3 metres. This would be achieved by planting continuous hedges and shrubs and trees greater than 3 metres high adjacent to the carriageway along both sides of the road as screening. This would encourage barn owls to fly up and over the passing vehicles.</p> <p>Areas of rough species-rich grassland would be created away from the road verge to provide barn owls with foraging habitat. Thirteen additional nest boxes would be provided at least every 1 kilometre. Boxes should be installed where there is suitable roosting and foraging habitat. It is recommended that these are placed no closer than 1 kilometre, ideally 3 kilometres, from the scheme and in pairs within 500 metres of each other at a density of about 1 pair per kilometre.</p> <p>As barn owls are nocturnal, light emissions from the road would be minimised by using directed luminaires and back plates to reduce spill.</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species)
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on GCN in operation	To minimise the risk of killing and injury of GCN due to them becoming trapped in drainage gully pots associated with the new road, no kerbs would be installed around the gully pots which are within 500 metres of meta-population A and C. Additionally, gully pots within 500 metres of the metapopulations would be fitted with Amphibian Gully Pot	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping, Requirement 6 (Implementation and

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>Ladders to allow a means of escape for any amphibians which become trapped.</p> <p>In order to mitigate for the permanent loss of terrestrial habitat and 2 ephemeral ponds within 500 metres of GCN breeding ponds, habitat restoration and creation would be undertaken. The GCN mitigation strategy would ensure that there is sufficient terrestrial habitat to maintain the favourable conservation status of the affected GCN populations. The strategy includes the reinstatement of areas of temporary construction losses, re-seeding with native species-rich grassland mixes and planting with native trees and shrubs. To mitigate for the permanent habitat losses, the landscape design would enhance areas of retained and restored habitat through the creation of diverse species-rich grasslands, 2 wildlife ponds and diverse areas of native woodland, scrub and shrub habitats. These habitats would be subject to a habitat management plan to ensure that they remain suitable for GCN in the long term.</p>	<p>maintenance of landscaping) and Requirement 10 (Protected species)</p>
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate adverse effects on reptiles and invertebrates in operation	The environmental design includes the replacement and creation of habitats of value to reptiles, such as grassland, scrub, ponds, woodland glades and the provision of log and brash piles, and a variety of habitats for all invertebrate species to use, including the provision of replacement scrub and hedgerows, the planting of wildflower grassland and the creation of log piles to be placed in a range of sunny and shady locations as shown in the Environmental Masterplan. Once the vegetation along the highways verge has established, this would provide a wildlife corridor which reptiles can utilise for basking, foraging and shelter.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5 (Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species)
N/A	ES - CH8 (APP-045)	Measures embedded in the scheme design to reduce or eliminate	New hedgerows would be planted at an amount equivalent to hedgerow loss. The new hedgerows would incorporate native broadleaved trees with frequent or occasional blackthorn. Where possible, the new	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 5

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
		adverse effects on brown hairstreak in operation	hedgerow planting would be undertaken prior to vegetation clearance to allow brown hairstreak to colonise new planting. The hedgerows would connect to existing hedgerows to retain the connectivity of the habitat and prevent habitat fragmentation.	(Landscaping, Requirement 6 (Implementation and maintenance of landscaping) and Requirement 10 (Protected species))
Geology and Soils (GS)				
GS1	OSMP (Annex B.3) ES – CH9 (APP-046)	The protection of soil structure and quality – to prevent degradation of soils both within and outside the permanent and temporary development areas.	<p>Completion of works in line with the site SMP (refer to Annex B.3 of this report for the Outline SMP). This is to ensure works are undertaken in accordance with appropriate guidelines including Defra’s Construction Code of Practice for the Sustainable use of Soils on Construction Sites (2009) and the British Standards Institution Specification for topsoil BS3882 (2015) particularly in areas where reinstatement of agricultural land is required. BS3882:2015 will also apply for topsoil spreading on areas of newly constructed earthworks where import is required.</p> <p>The use of a proprietary geotextile membrane to protect the existing ground condition where haul routes or site compounds / storage areas are located. A layer of inert crushed granular material placed on a geotextile membrane will form temporary running surfaces for construction plant and reinforcement of access tracks. Car parking and pedestrian areas will be bolstered with asphalt surfacing. On completion of the scheme, the temporary haul routes will be restored and the areas returned to their original condition.</p> <p>Where importation of topsoil is required for spreading on areas of newly constructed earthworks, this will be selected in accordance with BS 3882:2015³ to ensure that the topsoil provides suitable substrates for native</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)

³ British Standards (2015) BS 3882:2015 *Specification for topsoil*.

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			plant species and to maximise biodiversity, in accordance with industry best practice.	
GS2	OMMP (Annex B.2) OSWMP (Annex B.1) ES – CH9 (APP-046)	To maximise the re-use of suitable geological resources while minimising waste generated.	Completion of works in line with the site Materials Management Plan (MMP) (refer to Annex B.2), Site Waste Management Plan (SWMP) (refer to Annex B.1) and compliance with the CL:AIRE document 'The Definition of Waste: Development Industry Code of Practice' (2008).	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
GS3	ES – CH9 (APP-046)	The protection of controlled waters: general.	<p>Works to be carried out in accordance with Environmental Protection Act (EPA) 1990, Section 161A of the Water Resources Act 1991 and the Environmental Permitting (England and Wales) Regulations 2010. Reasonable and practicable steps to be taken to protect the water environment will include:</p> <ul style="list-style-type: none"> • The careful management of construction site drainage, including the use of cut-off ditches to collect site run-off, with run-off passed through settling lagoons or silt traps to allow removal of sediments prior to discharge. Where considered necessary, treatment plant will be made available on site for construction runoff water and groundwater from dewatering, including: <ul style="list-style-type: none"> ○ Settlement tanks ○ Chemical dosing plant ○ Concrete washwater plant ○ Oil-water separators ○ Materials separators • Management of excavated topsoils will be in line with the guidance provided within the SMP to minimise soil being entrained in runoff water. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> Works will be monitored by a suitably qualified Site Environmental Clerk of Works. An auditing programme will be implemented to verify environmental performance. 	
GS4	ES – CH9 (APP-046)	The protection of controlled waters during excavation and foundation works.	<ul style="list-style-type: none"> Where piling or penetrative ground improvement is required, the works will be carried out in accordance with the Environment Agency guidance^{4 5}. If following the scheme GI, contaminated land is identified in areas of piling or penetrative ground improvement, a foundation works risk assessment will need to be undertaken to determine the likely effects relating to the driving of piles through any contaminated Made Ground or landfilled materials and into the underlying Secondary A Aquifer, and to identify what mitigation measures are appropriate for the site. The batching of concrete to only be undertaken in designated impermeable areas with a segregated drainage system, placement of temporary bunds down-slope to contain any spillages, and the development of a spill response protocol. The discharge of potentially contaminated groundwater will be appropriately managed by the Contractor through the use of appropriate treatment prior to discharge. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
GS5	ES – CH9 (APP-046)	The protection of site soil and groundwater quality with respect to plant and working methods.	Working method statements to be in place during construction, to ensure environmentally safe working practices on site with respect to the underlying ground and groundwaters. These will include (but not be limited to):	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction

⁴ Environment Agency (2001) *Piling and penetrative ground improvement methods on land affected by contamination: guidance on pollution prevention*. National Groundwater and Contaminated Land Centre Report NC/99/72 [online] available at: <http://www.merseygateway.co.uk/publicinquirydocs/Core-docs/CD-256.pdf> (last accessed March 2018).

⁵ Environment Agency (2002) *Piling into contaminated sites*. National Groundwater and Contaminated Land Centre Report [online] available at: <http://webarchive.nationalarchives.gov.uk/20140329082414/http://cdn.environment-agency.gov.uk/scho0202bisw-e-e.pdf> (last accessed March 2018).

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> • The storage of oil, fuel and other potentially hazardous substances will be within a secure site compound located on a hardstanding area. Storage of these substances will be within an appropriately bunded area (110% of total capacity volume). • There will be designated refuelling and maintenance areas and concrete batching areas located on impermeable hardstanding with drainage treated appropriately. Placement of temporary bunds down-slope of potentially polluting activities. will contain any spillages. A spill response protocol will be developed. • Regular inspections of site plant will be carried out and the use of drip trays and training in the location and use of spill kits and emergency spillage procedures will be provided for site workers. Action Plans will be in place to effectively deal with any contamination issues during construction for example for spillages and leaks from construction plant. • Adjacent areas outside the development boundary will be protected by site fencing to prevent accidental encroachment and damage of topsoil by site plant. 	Environmental Management Plan) Part (2) (a)
GS6	ES – CH9 (APP-046)	The management of soil and groundwater contamination risks.	<p>Following development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of Environmental Protection Act (1990).</p> <ul style="list-style-type: none"> • Completion of works in line with the recommendations included within the scheme Remediation Strategy (to be written following the completion of the intrusive GI and subsequent contaminated land risk assessment). • Completion of works in line with the Method Statement produced (if necessary) for the removal, transportation, deposition and monitoring of any identified contaminated material, fuels, chemicals and waste. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> All contaminated waste created on site will undergo basic characterisation prior to disposal to an appropriate landfill. Waste Acceptance Criteria (WAC) testing will be undertaken where necessary. Every effort will be made to minimise waste to be landfilled with treatment at an appropriate facility or on-site treatment hub considered in the first instance. Any imported materials will comply with standards provided within the Remediation Strategy. 	
GS7	ES – CH9 (APP-046)	Management of contamination risks: reporting	<p>A qualitative and quantitative Contaminated Land Risk Assessment (CLRA) to be prepared following the receipt of GI results for the scheme during the examination period, prior to commencement of construction. This will inform the conceptual site model and identify any unacceptable contamination risks and enable the selection of appropriate mitigation measures to ensure protection of human and environmental receptors (including controlled waters) during construction. Any mitigation measures required will be incorporated into the CEMP on completion of the CLRA. The CLRA scope will include:</p> <ul style="list-style-type: none"> Confirmation of the current geo-environmental baseline for the proposed route including its potentially contaminative history along with geological, hydrogeological and hydrological factors updated with factual site data. Assessment of site specific GI chemical testing data using current best practice and standards to accurately determine the potential risks to human health, controlled waters, building materials, vegetation and in relation to ground gas risks given the different options for long term end use. Production of a revised Site Conceptual Model, to be used to determine the potential contaminant linkages present (source-pathway-receptor model). 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>A Remediation Strategy to be prepared on completion of the CLRA, and consultation with the Environment Agency and South Somerset District Council on the Remediation Strategy prior to completion.</p> <p>The Remediation Strategy will include (but not be limited to):</p> <ul style="list-style-type: none"> • Review contaminated land risk assessment to identify pollutant linkages with unacceptable risks that require mitigation. • Identifying feasible remediation options for each relevant pollutant linkage. • Producing a remediation strategy that addresses all relevant pollutant linkages, where appropriate by combining remediation options. <p>Following on from the Remediation Strategy, the preparation of a site-specific Method Statement for the removal, transportation, deposition and monitoring of any identified contaminated material will be developed by the Contractor if necessary and in line with the Pollution Prevention and Control Regime and the Environmental Permitting Regulations. The Method Statement will be incorporated within the CEMP, where necessary.</p> <p>The Method Statement will include specific instructions in relation to:</p> <ul style="list-style-type: none"> • The control of excavation, separation, handling and storage activities, to ensure that those soils identified as contaminated are not combined with uncontaminated soil. • The on-site treatment of contaminated material if appropriate to allow re-use as appropriate thereby minimising the amount for offsite disposal. • The issue of appropriate health and safety procedures when working with contaminated materials. 	

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
GS8	ES – CH9 (APP-046)	Management of contamination risks: workers	Production of risk assessments specific to the works in order to identify risks and appropriate mitigation measures in line with all the relevant health and safety legislation and guidance, to ensure the safety of workers.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
GS9	ES – CH9 (APP-046)	Obtain Land Drainage Consent for excavations and dewatering activities.	Discharge to surface waters will require a Land Drainage Consent from Somerset Drainage Board Consortium, for the following aspects of the scheme: <ul style="list-style-type: none"> • Renewal of an existing gateway crossing by means of a culvert or bridge. • Creation of a new gateway crossing by means of a culvert or bridge. • Piping a watercourse for a length of 8 metres or less. • All structures or modifications in or within 9 metres of a watercourse (Headwalls, Sluices and Fencing). • Any temporary works in or within 9 metres of a watercourse, that will be in place for less than 6 months. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
GS10	ES – CH9 (APP-046)	Ensure appropriate methods of working in areas of historical landfills, infilled quarries or Made Ground.	<ul style="list-style-type: none"> • Further GI includes investigation at historic landfills and infilled quarries to accurately determine the extent and nature of contaminated materials within the red line boundary and a quantitative assessment of the associated risks and appropriate mitigation measures necessary. These are likely to include aquifer protection measures such as casing through any backfilled materials, recirculation or safe containment of drilling flush, plugging / reinstatement of landfill linings, appropriate disposal of excavated contaminated materials and reinstatement of capping materials if encountered. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> Landfill material, Made Ground and natural strata have the potential to produce ground gases. Ground gas risks will be assessed in accordance with current guidance following GI completion as part of the CLRA process and appropriate mitigation identified. 	
Material Assets and Waste (M)				
M1	ES - CH10 (APP-047)	Reduce the use of materials and ensure resource efficiency.	Minimise material requirements within the detailed design of the scheme, by specifying the use of infrastructure that contains a high proportion of recycled content (where design constraints allow), and by designing to reuse as much site-won material as possible.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
M2	ES - CH10 (APP-047)	Reduce impact of transportation of materials to site.	Locally sourced materials and suppliers to be used where possible.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
M3	ES - CH10 (APP-047)	Reduce generation of waste.	Completion of works in line with the SWMP (refer to Annex B.1) to reduce waste arisings by implementing the waste hierarchy (prevention, reuse, recycle, recovery and as a last resort disposal). For example, surplus excavated materials should be reused within the landscaping of the scheme where possible.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
M4	ES - CH10 (APP-057)	Reuse of inert waste in nearby quarries.	Somerset has a long history of aggregate and building stone production. Therefore, opportunities to be sought	dDCO Schedule 2 (Requirements) Part 1 (Requirements)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			for the reuse of inert waste in quarry restoration, and prioritised over disposal in landfill.	Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
M5	ES - CH10 (APP-047)	Ensure appropriate waste management facilities are identified and used	Where material must be taken to a recycling or disposal site, these sites must have the appropriate permits and should be located as close to the works as possible.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
Noise and Vibration (NV)				
NV1	ES - CH 11 (APP-048)	Limit noise emissions during construction.	<p>Implement following noise mitigation measures during construction:</p> <ul style="list-style-type: none"> • Select quieter plant than has been used in the assessment (worst-case scenario) • Ensure equipment is maintained, in good working order, and is used in accordance with the manufacturer's instructions. • Fit equipment with silencers or mufflers. • Setting time restrictions on certain noisy activities. • Manage deliveries to prevent queuing of site traffic. • Do not leave plant running unnecessarily • Careful orientation of plant with directional features • Materials to be lowered instead of dropped from height • Use of adjustable or directional audible vehicle-reversing alarms or use of alternative warning systems (for example, white noise alarms) • Train and advise members of the construction team during toolbox talk briefings on quiet working methods. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> Temporary barriers should be erected to fully obscure the construction works from a receptor. 	
NV2	ES- CH 11 (APP-048)	Mitigate effects of noise and vibration on local communities	Letter drops explaining the likely duration of construction works, along with the start and stop dates, and reassurance that everything is being done to minimise noise levels should be considered. A dedicated site contact for the public and complains handling procedure should be put in place. Further information that should be followed is contained in the Communications Relation Strategy (Annex B.6 of this report).	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
NV3	ES - CH 11 (APP-048)	Limit vibration during construction.	Where vibration levels have been predicted to exceed SOAEL (PPV 1.0mm/s) the Contractor should: <ul style="list-style-type: none"> Consider the use of alternative piling methods and/or plant. Avoid piling at night in locations where it may have a noise or vibration impact. Keep occupiers informed of the likely times and duration of works. Monitor the vibration level at the nearest receptors (or at an equivalent offset distance) to enable the vibration level at receptors to be determined. Please note that the locations would need to be determined by the Contractor once the construction plant has been confirmed. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
NV4	ES - CH 11 (APP-048)	Limit noise emissions and vibration during construction.	Appropriate risk assessment to be undertaken to ensure adverse levels of noise and vibration are not experienced both on-site (for members of staff on-site) and at dwellings.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
NV5	ES – CH11 (APP-048)	Limit noise emissions during construction	Routine noise and vibration monitoring to be carried out during construction works in addition to monitoring at	dDCO Schedule 2 (Requirements) Part 1

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			those properties identified as at risk from significant adverse effects from linear works and in the vicinity of construction compounds. Monitoring would include long term measurements at locations where construction activity is likely to exceed 10 working days.	(Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
NV6	ES – CH11 (APP-048)	Limit noise emissions during operation at The Spinney and Annis Hill Farm.	Compensatory mitigation in the form of secondary glazing and acoustic trickle vents will be offered to ensure increases in operational noise can be offset at The Spinney and Annis Hill Farm.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and Requirement 14 (Noise Mitigation)
N/A	ES – CH11 (APP-049)	Embedded design measures to mitigate noise emissions on communities in operation	<p>The mitigation within the design includes consideration of horizontal alignment, use of cuttings and embankments, noise barriers and low-noise running surfaces.</p> <p>Four barriers would be included along the alignment of the A303, 1 located at a property known as The Spinney, 1 located at Steart Hill and 2 located near Camel Hill. A total of 7 bunds would be provided along the scheme. Two bunds would be located towards the western end of the scheme, where the B3151 joins the A303 near Hawk House, another would be located to the east of Downhead junction, a false cutting would be provided between Howell Hill and Traits Lane, and 3 false cuttings would be provided at Hazlegrove Junction.</p> <p>A thin surface course would be applied to new carriageways associated with the scheme. These measures are all included on the Environmental Masterplan.</p>	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 14 (Noise Mitigation)
People and Communities (PC)				

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
PC1	ES – CH12 (APP-049)	To ensure there is a safe environment for those travelling along the route, and for those delivering the construction works.	<p>Implementation of the Traffic Management Plan (TMP) (refer to Annex B.6) will include the following measures:</p> <ul style="list-style-type: none"> • Local road and A303 closures. • A reduction in speed limits to 40mph on the departure from Podimore Roundabout taking into account a 1 + 1 contraflow. • A reduction in speed limit to 50mph for approximately 1,100 metres on the western approach to the A303 works. • Employment of average speed cameras to enforce limits. • Temporary speed limits on local roads. • Closures to the A303 between Podimore Roundabout, Sparkford Roundabout and the A371 Wincanton and a diversion route via the A359 from Sparkford Roundabout to Yeovil, and the A37 to the A303. • Closures to local roads, although access will be maintained to adjacent villages and businesses at all times. • Management of NMU routes. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a) and (f)
PC2	ES – CH12 (APP-049)	To ensure that construction information is disseminated to landowners, parish councils, local interest groups and the general public.	Prior to construction, the appointed Contractor to register with the National Considerate Constructor's Scheme. Contractor to establish a forum established to disseminate construction information to landowners, parish councils, local interest groups and the general public. Properties, businesses and buildings, occupants of premises likely to be affected during construction are to be advised of the works prior to their occurrence.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
PC3	ES – CH12 (APP-049)	To minimise effects on all travellers during construction.	Constructions works to be phased to minimise effects on all travellers during construction. All temporary diversions for non-motorised users around the work site to be clearly signed, with alternative access arrangements maintained throughout the construction period, as required. The majority of existing crossings only to be closed once	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			diversions are in place or the new arrangement has been established.	Management Plan) Part (2) (a) and (f)
PC4	ES – CH12 (APP-049)	To ensure NMU routes impacted by the scheme are appropriately re-provided.	NMU facilities to be installed at locations as defined in the Figure 2.4 (APP-103).	dDCO Schedule 1 (Authorised Development)
Road Drainage and the Water Environment (RDWE)				
RDWE1	ES – Appendix 4.3 (APP-056)	To mitigate potential adverse effects upon surface waters and groundwater during the construction phase	Construction activities must be managed in accordance with CIRIA Guidelines. Guidance on best practice in relation to pollution prevention and water management is set out in the following documents: <ul style="list-style-type: none"> • CIRIA's <i>Environmental good practice on site</i>⁶. • CIRIA's <i>Control of water pollution from linear construction projects; Technical Guidance</i>⁷. • Environment Agency's <i>Protect groundwater and prevent groundwater pollution</i>⁸. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
RDWE2	ES – Appendix 4.3 (APP-056)	To mitigate potential adverse effects upon surface waters and groundwater during the construction phase	Specific measures to be implemented to limit the impact of construction activities on the water environment include: <ul style="list-style-type: none"> • All construction workers to be briefed on the importance of maintaining water quality, the location of surface water features, and the location and use of spill kits as part of the site induction. • The construction drainage network to incorporate measures (for example interceptors) to prevent the discharge of hydrocarbons to surface or groundwater systems. 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

⁶ Audus, Charles and Evans (2010) *Environmental Good Practice on Site* (Third Edition) (C692).

⁷ Murnane, Heap and Swain (2006) *Control of water pollution from linear construction projects; Technical Guidance*

⁸ Environment Agency (2017) *Protect groundwater and prevent groundwater pollution* [online] available at:

<https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution> (last accessed June 2018).

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<ul style="list-style-type: none"> • In areas where there is increased risk of hydrocarbon / chemical spillage and around hazardous substance stores, additional precautions to be taken. These include bunding, impermeable bases, suitable drainage systems, and siting away from any open drainage channels. • Any stockpiled materials to be stored within enclosed areas to enable the runoff to be stored and treated where required. • It is advised that soil storage is kept a minimum of 12 metres away from a watercourse to avoid unnecessary pollution run-off into the watercourses. • Any concrete works to be carefully controlled and where required, any concrete tankers will be washed out in controlled areas. • All plant and machinery to be maintained in a good condition and any maintenance required will be undertaken within safe areas. • Pollution prevention and spill response procedures (in the form of an Incident Control Plan) to be developed by the contractor and a spill kit and clean up equipment maintained on site. • Wheel washers and dust suppression measures to be used to prevent the migration of pollutants. • Monitoring of the surface watercourses to be carried out before, during, and after construction to ensure no adverse impact on water quality. • Manually operated penstocks to be provided immediately prior to all outfalls leading to a watercourse and upstream of attenuation pond flow control devices. 	
RDWE3	Statement of Common Ground between the Environment Agency and the Applicant (REP4-004).	To ensure the borehole / well at ST 55646 24982, within the footprint of the proposed works, does not provide a preferential	Continued liaison with the landowner (where the water supply is present) should be undertaken during detailed design and specific mitigation measures, such as appropriate decommissioning using current best practice, should be included within the CEMP.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
		pathway where contaminated runoffs / spills can enter the aquifer during construction or operation.		Environmental Management Plan) Part (2) (a)
N/A	ES – Appendix 4.3 (APP-056)	Embedded design measures to mitigate adverse effects on the road drainage and water environment in operation.	Conventional drainage systems to reduce pollution have been incorporated as part of the drainage strategy (drainage design has incorporated conventional pollutant treatment methods, as described in HD33, DMRB 4.2). The Drainage Strategy Report describes the proposed drainage systems incorporated into the drainage design to reduce pollution from soluble and sediment bound pollutants. The proposed system comprises a multi-stage treatment process, including filter surface/subsurface drains, wet retention ponds and manually operated penstock devices.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 13 (Surface water drainage)
Climate (C)				
C1	ES- CH13 (APP-050)	Reduce the waste and use of unnecessary materials and fuel.	Plant equipment and vehicles to be used on the scheme will be selected based on their relative environmental performance taken from a technical specification.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)
C2	ES- CH13 (APP-050)	Evaluate the final carbon emissions post-construction	Post-construction / as built carbon assessment to be undertaken to consider the actual emissions from the construction of the scheme. This will require the Principal Contractor to monitor the activities on site closely in order to have the data to undertake this final carbon assessment.	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 3 (Construction Environmental Management Plan) Part (2) (a)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
N/A	ES- CH13 (APP-050)	Embedded design measures to reduce the vulnerability of the scheme to climate change	<p>The storm design includes an allowance for the effects of climate change by allowing for a 40% increase. This goes above the 20% required standard in DMRB Volume 4, Section 2, Part 3, HD 33/16 Surface and Sub-Surface Drainage Systems for Highways. Species of grass which are more tolerant to seasonal flooding have been used around the attenuation ponds and open drainage features ensuring greater resilience. These species are outlined within the Environmental Masterplan.</p> <p>The use of integral structures to avoid the need for joints or the use of semi integral details to reduce risk of failure caused by increases in temperature, have been considered within the design.</p> <p>In addition, the following aspects would further reduce the scheme's vulnerability to climate change, and these have been detailed within the Outline Environmental Management Plan (OEMP):</p> <ul style="list-style-type: none"> • Foundation strength will be increased to reduce the risk of failure caused by increased winter precipitation, by evaluating the moisture regime. Foundations should incorporate hydraulically bound materials or the use of reinforcement such as geotextiles. • The pavement structural design methodology will be used for example, specific non-frost / heave susceptible layers to reduce the risk of pavement heaving through the pavement expanding in the winter (due to increased rainfall) and shrinking in the summer (due to reduced rainfall). • Increase the frequency of inspection and maintenance of Advanced Direction Sign (ADS), road markings, NMU facilities such as footpaths and 	dDCO Schedule 2 (Requirements) Part 1 (Requirements) Requirement 13 (Surface water drainage)

Reference	Document reference	Objective	Action (including specific location and any monitoring required)	Securing mechanism
			<p>signs, vehicle restraint systems, lighter structures and foundation strengthening.</p> <ul style="list-style-type: none"> • Hydraulically bound materials or the use of reinforced geotextiles will be used in the foundations to reduce the risk of premature pavement failure caused by increased rainfall and saturated material. • Better quality pain systems will be used for existing structures for weathered steel. • The laying of concrete in accordance with best practice and relevant standards. • Increased precipitation could increase risk to the earthworks stability resulting in the use of fill material that is less susceptible to moisture such as Pulverised Fuel Ash and aggregate. 	