

21 Schedule of Environmental Commitments

21.1 Introduction

- 21.1.1 As described throughout this ES, the design of the proposed scheme has been progressed taking account of identified environmental constraints and considerations, enabling avoidance or reduction of potential environmental impacts where practicable. This chapter summarises the additional mitigation measures identified in the ES, which are considered necessary to avoid; reduce; or offset potential impacts.
- 21.1.2 The purpose of the following Schedule of Environmental Commitments is to collate mitigation measures, both for ease of reference and for use by the Contractor. These mitigation measures are those identified within Chapters 8-18 of this ES (Table 21.2 to 21.11), as well as four overarching mitigation items (Table 21.1). A description, location, and purpose of each mitigation item is given. The tables also state whether consultation or approval with a consultee is required.
- 21.1.3 The timing of mitigation varies and may be a design requirement, or implemented prior to construction, during construction and/or during operation of the proposed scheme. The stated mitigation measures have been identified through the EIA process, and whilst some of these are also necessary to achieve separate legislative compliance (e.g. protected species licences), they are included as they still encompass mitigation commitments of this ES.

Table 21.1: General Standard Construction Mitigation

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|-------------------------------|---|--|--|
| Standard A9 Mitigation | | | | | |
| SMC-S1 | Throughout proposed scheme | Pre-Construction Construction | <p>A Construction Environmental Management Plan (CEMP) will be prepared by the Contractor. The CEMP will set out how the Contractor intends to operate the construction site, including construction-related mitigation measures identified below in Tables 21.2 to 21.11. The relevant section(s) of the CEMP will be in place prior to the start of construction work.</p> <p>The CEMP will include, but not be limited to, subsidiary plans relating to: land (including a specific Soil Management Plan), geology and land contamination; surface water and groundwater (including a Flood Response and Pollution Incident Response Plan); ecology (Ecological Management Plan which will include specific Species Protection Plans and Habitat Management Plans); landscape, cultural heritage, air quality and noise and vibration.</p> | To provide a framework for the implementation of construction activities in accordance with the environmental commitments and mitigation measures in the ES. It will be developed and evolve to avoid, reduce or mitigate construction impacts on the environment and the surrounding community. | Consultation with the relevant local authorities, other statutory bodies and regulatory authorities (Refer to Tables 21.2-21.11). |
| SMC-S2 | Throughout proposed scheme | Pre-Construction Construction | <p>Prior to construction an Environmental Coordinator and team of suitably qualified Environmental Clerk of Works (EnvCoW) (i.e. professionally qualified in a relevant environmental discipline) will be appointed by the Contractor. The EnvCoW(s) will report to the Environmental Coordinator and be present on site, as required, during the construction period to monitor the implementation of the mitigation measures identified and ensure that activities are carried out in such a manner to prevent or reduce impacts on the environment.</p> | To monitor the implementation of mitigation measures identified and ensure that activities are carried out in such a manner to prevent or reduce impacts on the environment. | Approval by Transport Scotland. |
| SMC-S3 | Throughout proposed scheme | Pre-Construction Construction | <p>Throughout the construction period the Contractor will, as required, contribute towards the overall communications strategy for the A9 Dualling Programme.</p> <p>As part of this the Contractor will appoint a Community Liaison Officer supported by a liaison team as necessary who will:</p> <ul style="list-style-type: none"> liaise with the following: relevant local authorities; other statutory bodies and regulatory authorities; community councils and relevant community groups; and businesses and residents in local communities affected by the construction works; notify occupiers of nearby properties a minimum of two weeks in advance of the nature and anticipated duration of planned construction works that may affect them; support the production of project communications such as the project website and newsletters; and establish a dedicated Freephone telephone helpline together with a dedicated email address and postal address for enquiries and complaints during the construction phase. The relevant contact numbers, email and postal addresses will as a minimum be displayed on signs around the construction site and will be published on the project website. Enquiries and complaints will be logged in a register and appropriate action will be taken in response to any complaints. | To inform stakeholders and consultees throughout the construction period. | Consultation with the relevant local authorities, other statutory bodies and regulatory authorities, community councils and relevant community groups, and businesses and residents in local communities affected by the construction works. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|---|--|
| SMC-S4 | Throughout proposed scheme | Construction | The Contractor will ensure that all site workers receive adequate environmental training relevant to their role prior to working on the construction site, including specific environmental project inductions and 'toolbox talks' on best practice construction methods as appropriate. | To ensure site workers are aware of best practice construction methods, mitigation measures and how they are implemented. | None required |

Table 21.2: People and Communities – Community and Private Assets

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--|---|--|--|---|
| Standard A9 Mitigation | | | | | |
| SMC-CP1 | Throughout proposed scheme | Pre-Construction Construction | Access to/from residential, commercial and industrial and agricultural, forestry and sporting assets will be maintained throughout the construction period by means of signed diversions, where necessary. The estimated duration and location of these diversions will be communicated to affected parties, as required, before they are put in place. | To maintain access to/from residential, commercial and industrial and agricultural, forestry and sporting assets. | None required |
| SMC-CP2 | Throughout proposed scheme | Construction Post-Construction/ Operation | Existing access arrangements to agricultural and forestry land outwith the land made available (LMA) boundary will not be prevented by the construction works during or post construction, unless alternative access is provided for in the Road Orders. | To maintain access to/from residential, commercial and agricultural/forestry land. | None required |
| SMC-CP3 | Throughout proposed scheme | Pre-Construction | Consultation with affected landowners and occupiers will be undertaken on the location and timing of planned construction works to reduce disturbance, where practicable, taking into account the overall construction programme. | To reduce disturbance on affected landowners. | Consultation with affected landowners and occupiers |
| SMC-CP4 | All agricultural land | Pre-Construction | Notice of intention to commence construction work will be provided to owners and occupiers of agricultural land adjacent to the proposed scheme before works commence. | To ensure owners and occupiers of agricultural land adjacent to the proposed scheme are informed of the intention to commence construction work prior to works commencing. | None required |
| SMC-CP5 | All agricultural land, woodland and forestry | Construction | Where practicable, temporary construction compounds that are required outwith the LMA boundary will not be sited on prime agricultural land or on areas of woodland and forestry. | To reduce potential impacts from temporary construction compounds on prime agricultural land or on areas of woodland and forestry. | None required |
| SMC-CP6 | All agricultural land, woodland and forestry | Construction Operation | Where appropriate, temporary fences will be provided during construction for the health and safety of the public and animals and to avoid trespass. Fencing of working areas will be to a standard adequate for excluding any livestock kept on adjoining land. Access by non-authorised personnel will not be permitted, unless prior permission is granted by the Contractor(s). | For the health and safety of the public and animals and to avoid trespass. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|------------------------------|---|---|--|
| SMC-CP7 | All agricultural land, woodland and forestry | Construction | Where boundary features (e.g. fences, walls and hedges) require temporary or permanent alteration to allow construction, these will be reinstated with appropriate materials to provide a secure boundary. | To provide a secure boundary and reduce disruption to agriculture. | None required |
| SMC-CP8 | Throughout proposed scheme | Construction | Soil resources will be managed in accordance with the 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (Defra, 2009). This will include the careful excavation, storage and replacement of topsoil and subsoil. | To ensure that soil mitigation measures are fully implemented and soil resources are protected. | None required |
| SMC-CP9 | All agricultural land, woodland and forestry | Construction | Reasonable precautions will be taken during construction to avoid the spreading of soil-borne pests and diseases; animal and crop diseases; tree pests and diseases; and invasive species. A biosecurity protocol will be developed by the Contractor in consultation with the Animal and Plant Health Agency, the Scottish Government's Environment and Forestry Directorate and the Scottish Government's Agriculture, Food and Rural Communities Directorate, taking cognisance of relevant UK and Scottish Government biosecurity guidance. | To avoid the spreading of soil-borne pests and diseases; animal and crop diseases; tree pests and diseases; and invasive species. | Consultation with the Animal and Plant Health Agency, the Scottish Government's Environment and Forestry Directorate and the Scottish Government's Agriculture, Food and Rural Communities Directorate |
| SMC-CP10 | Throughout proposed scheme | Pre-Construction | Pre-construction drainage surveys will be undertaken to reduce the likelihood of damage or disturbance to field and forestry drainage systems during construction. Where required, the integrity of the drainage system will be secured in advance of construction. Repairing and reinstatement of drains affected by construction will be agreed with the landowner/occupier to ensure that land capability is maintained and the risk of flooding is not exacerbated. | To reduce the likelihood of damage or disturbance to field and forestry drainage systems during construction. | Consultation with affected landowners and occupiers |
| SMC-CP11 | Throughout proposed scheme | Pre-Construction | Water supplies for livestock will be identified pre-construction and where supplies are lost or access is compromised by any construction works, temporary and/or permanent alternative supplies will be provided as agreed with the landowner/occupier. | To reduce disruption to landowners/occupiers. | Consultation with affected landowners and occupiers |
| SMC-CP12 | Throughout proposed scheme | Post-Construction/ Operation | LMA that is declared surplus following completion of construction of the proposed scheme (including redundant road pavement and/or access tracks) will be offered back to former owners or their successors in accordance with the Crichton Down Rules. | To return surplus land to former owners or their successors in accordance with the Crichton Down Rules. | Consultation with affected landowners and occupiers |
| SMC-CP13 | Throughout proposed scheme | Construction | Where there are sporting or fishing rights adjacent to the working area, reasonable endeavours will be taken to minimise interference or enjoyment of them while recognising the primary objective to maintain a safe working environment for both contractors and users of the land and water. | To reduce interference or enjoyment of sport/fishing while maintaining a safe working environment for both contractors and users of the land and water. | None required |
| SMC-CP14 | Throughout proposed scheme | Pre-Construction | Where stands of trees are to be affected an appropriate arboricultural and/or windthrow assessment will be undertaken pre-construction and appropriate mitigation employed for the purposes of safety of land and infrastructure. | To address safety risk to land within the proposed scheme and reduce impacts to forestry. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|---|--------------------------------|--|---|---|
| SMC-CP15 | Throughout proposed scheme | Post-Construction/ Operation | On completion of works, any land required temporarily for construction works will be reinstated as far as practicable and in line with mitigation plans. A record of condition survey is to be undertaken of any land to be returned to agriculture, to ensure all land is restored as near to its original condition as is reasonably practicable. | To ensure appropriate restoration of land following completion of proposed scheme. | None required |
| Project Specific Mitigation | | | | | |
| P03-CP16 | Throughout proposed scheme | Construction Post-Construction | Consideration will be given by Transport Scotland to the replacement of existing roadside signage on the proposed scheme for certain businesses whose access has changed and whose business is particularly dependent upon vehicular movements from the A9. | To reduce disruption to businesses where access arrangements have changed as a result of the proposed scheme. | None required |
| P03-CP17 | Flood compensatory storage areas and graded out embankments | Post-Construction | Where areas of land within the CPO are identified as being surplus and having the potential to be returned to agriculture following construction of the proposed scheme, for example areas included in the CPO where land will be allowed to flood to greater depths to mitigate flood impacts, these shall be offered back to the former owner for return to agricultural/forestry use following imposition of appropriate burdens by The Scottish Ministers in accordance with normal procedures (Crichel Down Rules) . | To reduce disruption to landowners/occupiers, minimise permanent land-take and reduce agricultural impacts. | Affected landowners and occupiers |
| P03-CP18 | All agricultural land | Construction | Where field access points require temporary or permanent alteration as a result of construction, alternative field access will be provided in consultation with the land owner/occupier. Where recessed field access from local roads is identified as being required, this shall be provided. | To reduce disruption to landowners/occupiers. | Consultation with affected landowners and occupiers |
| P03-CP19 | All forestry and woodland | Pre-Construction | Where individual stands of trees and woodland compartments will be affected, and risk of windthrow or damage to root protection areas has been identified as a safety risk to land within the proposed scheme, appropriate mitigation will be applied to address safety risk to land within the proposed scheme. Any felling to create a windfirm edge or stabilise trees will take account of potential ecological, landscape and visual impacts and designed where feasible to maximise ecological, landscape and visual opportunities. | To address safety risk to land within the proposed scheme and reduce impacts to forestry and maximise ecological, landscape and visual opportunities. | None required |
| P03-CP20 | All forestry and woodland | Pre-Construction | Where individual stands of trees and woodland compartments would be affected, and where there are no windthrow or landscape/visual issues, a tree protection plan will be prepared and tree felling restricted to what is necessary to allow the safe construction and operation of the proposed scheme. | To allow the safe construction and operation of the proposed scheme while protecting trees. | None required |
| P03-CP21 | Forestry areas throughout proposed scheme | Pre-Construction | Tree felling will be avoided where feasible in areas of woodland identified as having the potential to be retained for landscape and visual purposes (areas to be retained identified on Figure 13.5), taking cognisance of the tree protection plan and/or windthrow assessment. | To reduce landscape and/or visual impacts. | None required |
| P03-CP22 | Flood compensatory storage areas and graded out embankments | Pre-Construction Construction | A Soil Resource Plan (SRP) will be prepared for the Compensatory Flood Storage areas where this land has the potential to be returned to agriculture. This will be prepared in accordance with the 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (Defra, 2009). The SRP will be informed by pre-construction soil surveys, soil nutrient and texture analysis and Land Capability Classification for Agriculture in accordance with MLURI Land Capability Classification or Agriculture guidelines (MLURI | To reduce disruption to landowners/occupiers, minimise permanent land-take and reduce agricultural impacts. | Affected landowners and occupiers |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|---|------------------------------|--|
| | | | <p>1991). The SRP will:</p> <ul style="list-style-type: none"> • identify, describe and record the soil resources and LCA Class of land that will be disturbed by construction activities; • identify the volumes of the different types of soil resources that will be stripped, stored and re-used in the construction of the Compensatory Flood Storage areas; • define the methods to be employed in stripping, handling, storing and replacing soils and the moisture conditions under which soils will be moved; and • specify the volumes of the different types of soil resources that will be disturbed and re-used to construct the Compensatory Flood Storage areas and identify the volumes and use of soil resources surplus to requirements. <p>The SRP will provide the factual basis for the specification of contracts for works involving the restoration of land to agricultural and other land uses, and provide the target LCA class to be achieved.</p> <p>The SRP will include the following (where applicable):</p> <ul style="list-style-type: none"> • maps showing the LCA grade; • maps showing topsoil and upper and lower subsoil types and thicknesses and volumes; • maps showing the areas to be stripped and those left in-situ; • schedules of volumes for each material, soil audits based on the thicknesses, textures and volumes of soils to be stripped, volumes of soils to be separately stored; • specification of the thicknesses of topsoils and subsoils in reinstated soil profiles for return to each Compensatory Flood Storage area and the identification of any surpluses or shortages; and • methods for stripping, stockpiling, reinstating and ameliorating the soils. | | |

Table 21.3: People and Communities – All Travellers

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|-------------------|---|---|--|
| Standard A9 Mitigation | | | | | |
| SMC-AT1 | Throughout proposed scheme | Construction | The construction programme will minimise the length of closures or restrictions of access for NMUs as far as reasonably practicable. | To minimise length of closures or restrictions of access for NMUs. | None required |
| SMC-AT2 | Throughout proposed scheme | Construction | Where practicable, temporary diversion routes and/or assisted crossings will be provided to maintain safe access for NMUs throughout the construction works. Any closure or re-routing of routes used by NMUs would take cognisance of the 'Roads for All: Good Practice Guides for Roads' (Transport Scotland, 2013). These will be agreed in advance with the relevant local authorities and will be clearly indicated with signage as appropriate. | To maintain safe access for NMUs throughout the construction works. | Any closures will be agreed with Transport Scotland (Rights of Way), CNPA and/or PKC (local and core paths). |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------------------|--|--|--|
| SMC-AT3 | Throughout proposed scheme | Construction | In consultation with the relevant Roads Authority and public transport provider, bus stops affected by the works will be relocated safely with a safe access route provided for NMUs. | To maintain access to Public Transport facilities. | Consultation with the relevant Roads Authority and public transport provider |
| SMC-AT4 | Throughout proposed scheme | Pre-Construction Construction | The Contractor will produce a traffic management plan that will include measures to avoid or reduce disruption to the road traffic, and in accordance with the Traffic Signs Manual (Department of Transport, 2009). The plan will include consideration of the timing of works, the location of haul roads to reduce site traffic on the public roads and a well maintained traffic management system with sweeping of roads to reduce construction debris on the carriageway. | To avoid or reduce disruption to the road traffic. | None required |
| SMC-AT5 | Throughout proposed scheme | Construction | Reasonable precautions will be taken by the Contractor to avoid or reduce road closures. One lane in each direction will be provided for A9 traffic during peak hours (Mon to Fri) except in exceptional circumstances and for closures which are pre-approved by Transport Scotland e.g. those required during blasting. | To avoid or reduce road closures and resulting disruptions to traffic. | Approval required from Transport Scotland in the event of required A9 lane closures during peak hours. |
| SMC-AT6 | Throughout proposed scheme | Construction | Road diversions will be clearly indicated with road markings and signage as appropriate. Any road closures will be notified in advance through road signage and appropriate signage will be provided for the duration of the closure. The Contractor will also be responsible for identifying any notable changes in patterns of road network use during construction, where such changes may cause significant disruption elsewhere (such as drivers re-routing away from the A9), and will review and update traffic management provisions as appropriate in discussion with Transport Scotland. | To reduce disruption to the road users. | None required |
| SMC-AT7 | Throughout proposed scheme | Construction | Appropriate lighting will be provided during any necessary night-time working, taking into account the requirements of Mitigation Items E10 and LV4 . | To mitigate potential impacts on driver stress such as fear of potential accidents due to inadequate lighting provision. | None required |
| SMC-AT8 | NMU facilities | Construction | Access for NMUs will be maintained and improved in accordance with the following principles: <ul style="list-style-type: none"> • The requirements of the Equality Act 2010 and 'Roads for All: Good Practice Guides for Roads' (Transport Scotland, 2013) shall be incorporated into the proposed scheme wherever practicable; e.g. any bridges, ramps or footpaths will not present potential barriers to disabled people such as the gradient or surfacing. • NMU access shall be provided in accordance with the objectives set out in the A9 Dualling NMU Access Strategy (Transport Scotland, 2016). • Surfacing of any new paths including alongside roads will be considered on a case by case basis, taking into account factors such as safety, the type of user and should comply with current standards. • Safety of paths will be considered in accordance with the outcome of the Road Restraints Risk Assessment Process and may require provision of barriers. | To maintain access for NMUs and provide appropriate facilities based on use and improve access for NMUs. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|---|-------------------------------|--|--|--|
| | | | <ul style="list-style-type: none"> New cycleways/footpaths will use non-frost susceptible materials to reduce risk of degradation. | | |
| <i>n/a (note)</i> | <i>n/a</i> | <i>n/a</i> | <i>Further to the above, the mitigation items detailed in Table 21.7 (Landscape and Visual), Table 21.9 (Air Quality) and Table 21.10 (Noise and Vibration) will reduce the adverse amenity impacts on NMU and vehicle travellers during construction.</i> | <i>To reduce the adverse amenity impacts on NMU and vehicle travellers during construction.</i> | <i>n/a</i> |
| Project Specific Mitigation | | | | | |
| P03-AT9 | RCR 83 (incl. RCR 83 (South of Rotmell), Path 56/RCR 83, Path 63/RCR 83, Path 65/RCR 83 and RCR 83 (North of Westhaugh of Tulliemet)) | Pre-Construction Construction | Provision of appropriate signage to direct NMUs along cycle route | To maintain access for NMUs and provide specific facilities for cyclists and equestrians. To maintain and improve access for NMUs. | None required |
| P03-AT10 | Path 60, Path 67, RCR 83 | Pre-Construction Construction | Provision of appropriate signage to direct NMUs to new overbridge. | To maintain access for NMUs and provide specific facilities for equestrians. To maintain and improve access for NMUs. | None required |
| P03-AT11 | Public transport to service communities of Dowally, Guay and Kindallachan. | Pre-Construction Construction | Route and timings of public transport to service communities of Dowally, Guay and Kindallachan to be determined in consultation with local authority (PKC) and public transport provider. | To maintain access to public transport for local communities during construction. | None required |

Table 21.4: Geology, Soils, Contaminated Land and Groundwater

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|-------------------|--|---|--|
| Standard A9 Mitigation | | | | | |
| SMC-G1 | Throughout proposed scheme | Pre-Construction | Prior to construction, consultation will be undertaken with the relevant local authorities and SEPA regarding works in relation to land affected by contamination to support the obligations set out in 'Planning Advice Note 33: Development of Contaminated Land' (Scottish Government, 2000). Any remedial action undertaken in relation to land affected by contamination will be carried out under the appropriate remediation licencing. | To reduce impacts from contaminated land sources. | Consultation with PKC and SEPA. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|---|---|--|--|
| SMC-G2 | Throughout proposed scheme | Pre-Construction | Prior to construction and where potential contamination has been identified, further site investigations sufficient to determine the extent and type of contaminants present will be undertaken, as necessary, to inform identification of appropriate construction methods and any additional mitigation. | To determine the extent and type of contaminants present and to inform identification of appropriate construction methods and any additional mitigation. | None required |
| SMC-G3 | Throughout proposed scheme | Pre-Construction Construction | Prior to construction, appropriate health and safety and waste management procedures for working with potentially contaminated soils will be established. Waste management procedures will include, but are not limited to: Waste Management Licence Regulations 1994 (as amended by Waste Management Licensing Amendment (Scotland) Regulations 2003), HSE Guideline Note MS13 Asbestos 1988 and the Health and Safety Commission Approved Code of Practice and Guidance Note L143. These procedures will be implemented as appropriate during construction. | To ensure appropriate health and safety and waste management procedures for working with potentially contaminated soils are followed. | None required |
| SMC-G4 | Throughout proposed scheme | Construction Post-Construction/ Operation | Risks to construction and maintenance staff working with/near contaminated land will be mitigated by the implementation of Mitigation Item SMC-G3 in combination with the adoption of appropriate systems of work, including personal protective equipment (PPE) as a last resort. In the event that unrecorded contamination is encountered, works should be stopped and the working procedures reassessed to confirm the working methods remain appropriate. | To reduce impacts from contaminated land sources and confirm the safety of construction and maintenance staff. | None required |
| SMC-G5 | Throughout proposed scheme | Construction | Appropriate training will be provided for personnel involved in earthworks activities to enable implementation of a watching brief to identify presence of previously unidentified contamination. | To identify potential presence of previously unidentified contamination. | None required |
| SMC-G6 | Throughout proposed scheme | Pre-Construction Construction | Where required, landowner consultation and site visits will be undertaken to confirm the location and network of septic tanks. Where septic tanks are located within the LMA they will be relocated and/or rebuilt subject to discussion and agreement with the affected landowner(s). | To mitigate the loss of any septic tanks. | Approval from landowners |
| SMC-G7 | Throughout proposed scheme | Construction | To prevent cross contamination and pollution from piling works undertaken in areas of land affected by contamination, the Contractor will adhere to appropriate guidance including the 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, National Groundwater and Contaminated Land Centre Report NC/99/77'. | To prevent cross contamination and pollution from piling works undertaken in areas of land affected by contamination. | None required |
| SMC-G8 | Throughout proposed scheme | Construction | Excavated soils deemed unsuitable for reuse will be assessed in line with the 'Waste Classification: Guidance on the Classification and Assessment of Waste' (Technical Guidance WM3) (Natural Resources Wales, SEPA, Northern Ireland Environment Agency, Environment Agency, May 2015) to determine whether they are hazardous or non-hazardous. This will establish the most appropriate and cost effective waste stream for the waste materials. | To determine whether disposed soils are hazardous or non-hazardous. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|--|---|--|--|
| SMC-G9 | Throughout proposed scheme | Pre-Construction | To maximise the reuse of site-won materials on-site (and minimise the need for disposal of waste in line with the principles of the "Waste Hierarchy") whilst ensuring that no risks are posed to human health nor the water environment a soil reuse assessment will be undertaken prior to construction. The soil reuse assessment will identify any potential risks posed to both human health and the water environment from potentially contaminated soils reused throughout the proposed scheme. | To identify any potential risks posed to human health and the water environment. In addition, this mitigation item would maximise re-use of site-won materials on-site and minimise the need for disposal of waste in line with the principles of the "Waste Hierarchy" through re-use of excavation arisings (refer to Mitigation Item SMC-M3). | None required |
| SMC-G10 | Throughout proposed scheme | Construction | If peat is encountered during construction, it will be extracted, excavated, stored, with any off-site removal undertaken with cognisance of 'Development on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste' (Scottish Renewables and SEPA, 2012) and will comply with relevant waste management practices under The Waste Management Licensing (Scotland) Regulations 2011. | To comply with relevant waste management practices under The Waste Management Licensing (Scotland) Regulations 2011 and reduce impacts on peatlands. | Consultation with SEPA |
| SMC-G11 | Throughout proposed scheme | Pre-Construction Construction | Where concrete materials are proposed to be used, appropriate guidance such as 'Building Research Establishment (BRE) SD1:2005' and 'British Standard (BS) BS8500' should be followed to ensure that ground conditions are appropriate for the use of concrete at each given location. | To ensure that ground conditions are appropriate for the use of concrete at each given location. | None required |
| SMC-G12 | Contamination sources: KP-C13, KP-C15, KP-C17, KP-17, KP-C18, KP-C21, KP-C22, KP-C25, PGG-C5, PGG-C6, PGG-C7, PGG-C8, PGG-C33 | Pre-Construction, Construction Post-Construction/ Operation | Where potential pollutant pathways for ground gas have been identified, a ground gas monitoring program will be developed prior to construction in adherence to 'CIRIA 665 Assessing Risks Posed by Hazardous Ground Gases to Buildings'. This will include an assessment of gassing issues following receipt of additional ground gas monitoring results at selected boreholes. Appropriate working methods will be developed and adopted during below ground site construction works (including piling works and excavations). This should include as a minimum, gas monitoring undertaken prior to any entry into excavations, confined spaces or below ground structures and use of PPE as a last resort. If significant ground gas issues are identified during construction, further post construction monitoring will be undertaken and/or appropriate gas protection measures will be incorporated into the final design. | To mitigate against potential impacts on human health during construction and Off Site Receptors (Local residents, transient traffic (foot, road and rail traffic) in the surrounding area) due to ground gas. | None required |
| SMC-G13 | Throughout proposed scheme | Construction | Unless it can be demonstrated by the Contractor via a Quantitative Risk Assessment that no water quality impacts will occur due to leaching from SuDS ponds, basins or wetland features, operational SuDS features will be lined. | To mitigate against potential impacts on water quality due to leaching from SuDS features. | SEPA |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|--------------------------------|--------------------------------|--|---|--|
| SMC-G14 | Throughout proposed scheme | Construction | Storage of excavated soils and made ground will be minimised on site (spatially and in duration) and storage areas will be appropriately lined, with adequate drainage management in place. | To ensure that no polluted water percolates into the ground or contaminated run-off is generated. | None required |
| SMC-G15 | Throughout proposed scheme | Pre-Construction Construction | Risk assessments will be undertaken before explosives can be used on site to minimise or control the impact of blasting on bedrock geology. | To minimise or control the impact of blasting on bedrock geology. | None required |
| <i>n/a (note)</i> | <i>n/a</i> | <i>n/a</i> | <i>Further to the above, the implementation of Mitigation Items W1, W3, W4, W6 to W10 and W12 (as detailed in Chapter 11: Road Drainage and the Water Environment) and the measures detailed in Chapter 16 (Air Quality).</i> | <i>To mitigate the water pollution risk to groundwater and avoid the creation of a statutory nuisance associated with dust and air pollution when working with contaminated land.</i> | <i>n/a</i> |
| Project Specific Mitigation | | | | | |
| P03-G16 | Throughout proposed scheme | Design, Construction Operation | Appropriate design and construction methods, in particular the provision of suitable drainage, including cut-off drainage, to mitigate risk of future landslides. Some minor watercourses running down-slop towards the A9 may require debris protection measures locally, for example, the installation of catch fences. | To mitigate risk of future landslides. | None required |
| P03-G17 | Throughout proposed scheme | Pre-construction Construction | Additional groundwater quality investigations will be undertaken in areas of cuttings intercepting the water table, where necessary. This will be the basis for a risk assessment to be carried out, including assessment of risks from migration of groundwater. Where required, water treatment will be put in place prior to discharge. | To inform a ground improvement risk assessment. | None required |
| P03-G18 | Throughout proposed scheme | Pre-Construction | Seven cuttings are expected to intercept groundwater as per Table 10.13. The potential volume of groundwater drainage would be considered in the context of potential groundwater abstraction CAR licences prior to works commencing. | Compliance with CAR licensing to protect the water environment. | Approval required from SEPA |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|---|--|--------------------------------------|--|
| P03-G19 | Throughout proposed scheme | Construction, Post-Construction Operation | <p>PWS identified as potentially at risk (TB-PWS2) will be monitored. A supply specific replacement strategy will be developed in communication with affected landowners and in consultation with SEPA and implemented by the Contractor. The replacement strategy will include the following elements, based on initial correspondence with the land owner:</p> <ul style="list-style-type: none"> • Decommissioning of the existing borehole. • Two drilling attempts within land ownership boundaries will be made to replace the existing supply by another well. The strategy should consider monitoring current water usage for a period of 12 months prior replacement is undertaken, with permission from the land owner, to ensure that the demand is well understood and a like-for-like alternative well is provided. The sustainability of the newly drilled wells will be demonstrated by pumping tests and the water quality will need to be tested and verify it conforms with Drinking Water Standards. • Should the two drilling attempts fail, mains connection will be adopted. • The replacement will be completed prior construction works starting in vicinity of the property. • A contingency plan will be in place to provide bottled water supply to the parties affected in the unlikely eventuality that the supply would be accidentally impacted before the alternative supply is in place. | To safeguard private water supplies. | Inform landowners of monitoring results and consult over alternative source of water if applicable. Consultation with SEPA |
| P03-G20 | Throughout proposed scheme | Construction, Post-Construction | <p>PWS identified as potentially at risk (TB-PWS3 and TB-PWS1) will be monitored 12 months prior to construction to establish a baseline on groundwater levels and groundwater quality and during construction, with permission from the land owner. Should a significant adverse impact on a PWS be confirmed, an alternative source of water will be provided. To this effect, the Contractor will be required to prepare a supply-specific monitoring plan and mitigation strategy in communication with affected land owners and in consultation with SEPA.</p> | To safeguard private water supplies. | Inform landowners of monitoring results and consult over alternative source of water if applicable. Consultation with SEPA |

Table 21.5: Road Drainage and the Water Environment

For details of the Water Features (WF) locations in Table 21.5, refer to Chapter 11 (Road Drainage and the Water Environment) and Figure 11.1.

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|--|--|---|---|
| Standard A9 Mitigation | | | | | |
| SMC-W1 | Throughout proposed scheme | Design Pre-Construction Construction | In relation to authorisations under CAR, the Contractor will be required to provide a detailed Construction Method Statement which will include proposed mitigation measures for specific activities including any requirements identified through the pre-CAR application consultation process. | To mitigate construction impacts on the water environment. | CAR applications require approval from SEPA |
| SMC-W2 | Throughout proposed scheme | Construction | <p>In relation to flood risk the Contractor will implement the following mitigation measures during construction:</p> <ul style="list-style-type: none"> • The Flood Response Plan (as part of the CEMP, refer to Mitigation Item SMC-S1 in Table 21.1 of Chapter 21 (Schedule of Environmental Commitments)) will set out the following mitigation measures to be implemented when working within the functional floodplain (defined here as the 0.5% AEP (200-year) flood extent): <ul style="list-style-type: none"> ➢ Routinely check the MET office Weather Warnings and the SEPA Floodline alert service for potential storm events (or snow melt), flood alerts and warnings relevant to the area of the construction works. ➢ During periods of heavy rainfall or extended periods of wet weather (in the immediate locality or wider river catchment) river levels will be monitored using, for example, SEPA Water Level Data when available/visual inspection of water features. The Contractor will assess any change from base flow condition and be familiar with the normal dry weather flow conditions for the water feature, and be familiar with the likely hydrological response of the water feature to heavy rainfall (in terms of time to peak, likely flood extents) and windows of opportunity to respond should river levels rise. ➢ Should flooding be predicted, works close or within the water features will be immediately withdrawn (if practicable) from high risk areas (defined as: within the channel or within the bankfull channel zone - usually the 50% (2-year) AEP flood extent). Works will retreat to above the 10% AEP (10-year) flood extent with monitoring and alerts for further mobilisation outside the functional floodplain should river levels continue to rise. • Plant and materials will be stored in areas outside the functional floodplain where practicable, with the aim for temporary construction works to be resistant or resilient to flooding impacts, to minimise/prevent movement or damage during potential flooding events. Where this is not possible, agreement will be required from the Environmental Clerk of Works (EnvCoW). • Stockpiling of material within the functional floodplain, if unavoidable, will be carefully controlled with limits to the extent of stockpiling within an area, to prevent compartmentalisation of the floodplain, and stockpiles will be located >10m from watercourse banks. • Temporary drainage systems will be implemented to alleviate localised surface water flood risk and prevent obstruction of existing surface runoff pathways. Where practicable, temporary haul routes will be located outside of the functional floodplain. | To reduce the risk of flooding impacts on construction works. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|---|--|--|
| SMC-W3 | Throughout proposed scheme | Construction | <p>The Contractor will implement appropriate controls for construction site runoff and sedimentation, including but not limited to:</p> <ul style="list-style-type: none"> • avoiding unnecessary stockpiling of materials and exposure of bare surfaces, limiting topsoil stripping and phasing stripping to areas where bulk earthworks are immediately programmed; • installation of temporary drainage systems/SuDS (or equivalent) including pre-earthworks drainage; • pre-earthworks drainage/SuDS with appropriate outfalls to be in place prior to any earthworks activities; • treatment facilities to be scheduled prior to any works which may generate site run-off and sedimentation, to allow settlement and treatment of any pollutants contained in site runoff and to control the rate of flow before water is discharged into a receiving watercourse; • the adoption of silt fences, check dams, settlement lagoons, soakaways and other sediment trap structures as appropriate; • the maintenance and regrading of haulage route surfaces where issues are encountered with the breakdown of the existing surface and generation of fine sediment; • provision of wheel washes at appropriate locations (in terms of proposed construction activities) and >10m from water features; • protecting soil stockpiles using bunds, silt fencing and peripheral cut-off ditches, and location of stockpiles at distances of >10m; and • restoration of bare surfaces (seeding and planting) throughout the construction period as soon as possible after the work has been completed. | To implement appropriate controls for site runoff and sedimentation and reduce impacts on the water environment. | <p>If flocculants are considered necessary to aid settlement of fine suspended solids, such as clay particles, the chemicals used must first be approved by SEPA.</p> <p>Where required, temporary discharge consents to be obtained from SEPA through the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended).</p> |
| SMC-W4 | Throughout proposed scheme | Construction | <p>In relation to in-channel working, the Contractor will adhere to GPP/PPGs (SEPA, 2006-2017) and other good practice guidance (Table 11.1), and implement appropriate measures, including but not limited to:</p> <ul style="list-style-type: none"> • undertaking in-channel works during low flow periods (i.e. when flows are at or below the mean average) as far as reasonably practicable to reduce the potential for sediment release and scour; • no in-channel working during the salmonid spawning seasons unless permitted within any CAR licence; • minimise the length of channel disturbed and size of working corridor, with the use of silt fences or bunds where appropriate to prevent sediment being washed into the water feature; • limit the removal of vegetation from the riparian corridor, and retaining vegetated buffer zone wherever reasonably practicable; and • limit the amount of tracking adjacent to watercourses and avoid creation of new flow paths between exposed areas and new or existing channels. | To reduce impacts on the water environment during in-channel working. | Method statements for any in-channel working require approval by SEPA |
| SMC-W5 | Throughout proposed | Construction | Where channel realignment is necessary the Contractor will adhere to good practice guidance (Table 11.1) and implement appropriate measures, including but not limited to: | To reduce impacts on the water environment where | Consultation with SEPA. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|---|--|
| | scheme | | <ul style="list-style-type: none"> once a new channel is constructed, the flow should, where practicable, be diverted from the existing channel to the new course under normal/low flow conditions; diverting flow to a new channel should be timed to avoid forecast heavy rainfall events at the location and higher up in the catchment (the optimum time will be the spring and early summer months to allow vegetation establishment to help stabilise the new channel banks); with offline realignments, the flow will be diverted with a steady release of water into the newly constructed realignment to avoid entrainment of fine sediment or erosion of the new channel; and any proposed channel realignment works will be supervised by a suitably qualified geomorphologist. | channel realignment is proposed. | |
| SMC-W6 | Throughout proposed scheme | Construction | <p>In relation to refuelling and storage of fuels the Contractor will adhere to GPP/PPGs (SEPA, 2006-2017) and other good practice guidance (Table 11.1), and implement appropriate measures, including but not limited to:</p> <ul style="list-style-type: none"> only designated trained and competent operatives will be authorised to refuel plant; refuelling will be undertaken at designated refuelling areas (e.g. on hardstanding, with spill kits available, and >10m from water features) where practicable; appropriate measures adopted to avoid spillages (refer to Mitigation Item W7); and compliance with the Pollution Incident Control Plan (refer to Mitigation Item S1). | To avoid spillages and reduce impacts on the water environment in relation to refuelling. | None required |
| SMC-W7 | Throughout proposed scheme | Construction | <p>In relation to oil/fuel leaks and spillages the Contractor will adhere to GPP/PPGs (SEPA, 2006-2017) and other good practice guidance (Table 11.1), and implement appropriate measures, including but not limited to:</p> <ul style="list-style-type: none"> stationary plant will be fitted with drip trays and emptied regularly; plant machinery will be regularly inspected for leaks with maintenance as required; spillage kits will be stored at key locations on-site and detailed within the Construction Environmental Management Plan (CEMP) (refer to Mitigation Item S1); and construction activities will comply with the Pollution Incident Control Plan (refer to Mitigation Item S1). | To reduce impacts on the water environment in relation to oil/fuel leaks and spillages. | None required |
| SMC-W8 | Throughout proposed scheme | Construction | <p>In relation to chemical storage, handling and reuse the Contractor will adhere to GPP/PPGs (SEPA, 2006-2017) and other good practice guidance (Table 11.1), and implement appropriate measures, including but not limited to:</p> <ul style="list-style-type: none"> chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and >10m from any watercourse; chemical, fuel and oil stores will be locked and sited on an impervious base within a secured bund with 110% of the storage capacity; and pesticides, including herbicides, will only be used if there are no alternative practicable measures, and will be used in accordance with CAR requirements, the manufacturer's instructions and application rates. | To reduce impacts on the water environment in relation to chemical storage, handling and reuse. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|---|---|
| SMC-W9 | Throughout proposed scheme | Construction | <p>In relation to concrete, cement and grout the Contractor will adhere to GPP/PPGs (SEPA, 2006-2017) and other good practice guidance (Table 11.1), and implement appropriate measures, including but not limited to:</p> <ul style="list-style-type: none"> concrete mixing and washing areas will be: <ul style="list-style-type: none"> > be located more than 10m from any water bodies; > have settlement and re-circulation systems for water reuse; and > have a contained area for washing out and cleaning of concrete batching plant or ready-mix lorries. wash-water will not be discharged to the water environment and will be disposed of appropriately either to the foul sewer (with permission from Scottish Water), or through containment and disposal to an authorised site; where concrete pouring is required within a channel, a dry working area will be created; where concrete pouring is required within 10m of a water feature or over a water feature, appropriate protection will be put in place to prevent spills entering the channel (e.g. isolation of working area, protective sheeting); and quick settling products (cement, concrete and grout) will be used for structures that are in or near to watercourses. | To reduce impacts on the water environment in relation to concrete, cement and grout. | Permission required from Scottish Water. Consultation with SEPA. |
| SMC-W10 | Site Compound/ Facilities | Construction | Sewage from site facilities will be disposed of appropriately either to foul sewer (with the permission of Scottish Water) or appropriate treatment and discharge agreed with SEPA in advance of construction in accordance with 'PPG04 Treatment and Disposal of Sewage' (SEPA, 2006 – 2017). | To ensure sewage from site facilities is disposed of appropriately. | Permission required from Scottish Water for disposal to foul sewer or SEPA, in advance of construction, for appropriate treatment and discharge to a water course |
| SMC-W11 | Throughout proposed scheme | Construction | <p>In relation to service diversions and to avoid damage to existing services from excavations and ground penetration, including temporary severance of public and private water supplies through damage to infrastructure, the Contractor will:</p> <ul style="list-style-type: none"> locate and map all private or public water supply assets and other service infrastructure prior to construction; take measures to prevent damage to services and to avoid pollution during service diversions, excavations and ground works; and provide a temporary alternative water supply (e.g. bottled or tankered) if services are to be disrupted or diverted by the works. | To mitigate service diversions and disruptions from excavations and ground penetration. | Consultation with SEPA. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|--------------------------------|---|--|--|
| SMC-W12 | Throughout proposed scheme | Construction | <p>For works within areas identified as potentially containing contaminated land and sediment the Contractor will reduce the risk of surface water pollution to an acceptably low level through:</p> <ul style="list-style-type: none"> • further site investigation to determine the level of contamination prior to construction beginning; • the installation of temporary treatment facilities to enable removal of pollutants from surface waters; and • adoption of mitigation measures relating to contaminated land as outlined in Chapter 10 (Geology, Soils, Contaminated Land and Groundwater). | To reduce risk of surface water pollution from areas identified as potentially contaminated land to an acceptably low level. | Details of any temporary treatment measures to be agreed with SEPA prior to commencement of construction |
| SMC-W13 | Throughout proposed scheme | Design Operation(appraisal) | <p>In relation to bank reinforcement, design principles and mitigation measures will adhere to good practice (SEPA, 2008a), including but not limited to:</p> <ul style="list-style-type: none"> • non-engineering solutions and green engineering (e.g. vegetation, geotextile matting) to be the preference during options appraisal; • requirements for grey engineering to control/prevent scour (e.g. rock armour, rip-rap, gabion baskets) to be minimised; and • post project appraisal to identify if there are issues that can be investigated and addressed at an early stage. | To reduce impacts of in-channel structures on the water environment. | Consultation with SEPA. |
| SMC-W14 | Throughout proposed scheme | Design Operation(appraisal) | <p>In relation to outfalls, specimen and detailed design will ensure compliance to good practice (e.g. CIRIA, 2015b; Highways Agency et al., 2004; SEPA, 2008b), including but not limited to:</p> <ul style="list-style-type: none"> • directing each outfall downstream to minimise impacts to flow patterns; • avoiding projecting the outfall into the watercourse channel; • avoid installation of outfalls at locations of known historical channel migration; • avoid positioning in flow convergence zones or where there is evidence of active bank erosion/instability; • directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank); • minimising the size/extent of the outfall headwall where possible to reduce the potential impact on the banks; and • post project appraisal to identify if there are issues that can be investigated and addressed at an early stage. | To reduce impacts of outfalls on the water environment. | Consultation with SEPA. |
| SMC-W15 | Throughout proposed scheme | Design Operation(appraisal) | <p>In relation to watercourse crossings, specimen and detailed design will ensure compliance with good practice (SEPA, 2010), including but not limited to:</p> <ul style="list-style-type: none"> • Detailed design will mitigate flood risk impacts through appropriate hydraulic design of culvert structures. Flood risk will be assessed against the 0.5%AEP (200-year) plus an allowance for climate change design flood event. Detailed design will mitigate any loss of flood plain storage volume, where required, by appropriate provision of compensatory storage. Where culvert extension is not practicable or presents adverse impact on the water environment, appropriately designed replacement culverts may be installed. | To reduce impacts of culverts on the water environment. | Consultation with SEPA. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|--------------------------------|--|--|--|
| | | | <ul style="list-style-type: none"> • Detailed design will mitigate impacts on the water environment through appropriate design of culvert structures and watercourse modifications (e.g. realignments) with respect to fluvial geomorphology, and both riparian and aquatic ecology. • Detailed design of culverts and associated watercourse modifications shall incorporate wherever practical: <ul style="list-style-type: none"> ➢ adherence to design standards and good practice guidance (Table 11.1); ➢ allowance for the appropriate conveyance of water and sediment for a range of flows (including at low flow conditions); ➢ maintenance of the existing channel gradient to avoid erosion at the head (upstream) or tail (downstream) end of a culvert; ➢ avoidance of reduction of watercourse length through shortening of watercourse planform; ➢ minimisation of culvert length; ➢ close alignment of the culvert with the existing water feature; ➢ depressing the invert of culverts and interiors to allow for formation of a more natural bed (embedment of the culvert invert to a depth of at least 0.15m to 0.3m); ➢ roughening of culvert inverts to help reduce water velocities; and ➢ post project appraisal to identify if there are issues that can be investigated and addressed at an early stage. | | |
| SMC-W16 | Throughout proposed scheme | Design Operation(appraisal) | <p>In relation to channel realignments, specimen and detailed design will ensure compliance with good practice (Table 11.1), including but not limited to:</p> <ul style="list-style-type: none"> • minimising the length of the realignment, with the existing gradient maintained where possible; • design of the realignment in accordance with channel type and gradient; • if required, low flow channels or other design features to reduce the potential for siltation and provide an opportunity to improve the geomorphology of the water feature; • realignments designs will be led by a suitably qualified geomorphologist; • where realignments result in an increase or decrease of channel gradient, the following principles will be applied: <ul style="list-style-type: none"> ➢ an increased gradient within the channel (resulting in higher stream energies) will require mitigation in the form of energy dissipation, which could include the creation of a step-pool sequence; boulder bed-checks; plunge pools at culvert outlets; and/or; increased sinuosity; and ➢ a decrease in gradient within the channel will require mitigation in the form of the construction of a low flow channel to minimise the impacts on locally varying low flow conditions and reduce the risk of siltation of the channel. • post project appraisal to identify if there are issues that can be investigated and addressed at an early stage. | To reduce impacts of channel realignment on the water environment. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|--------------------------------|---------------------|--|--|--|
| SMC-W17 | Throughout proposed scheme | Design Construction | <p>In relation to <u>SuDS</u>, the following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> • where required, authorisations for the road drainage discharge under CAR would be obtained from SEPA; • detailed design to adhere to design standards and good practice guidance (Table 11.1), including The SuDS Manual (CIRIA, 2015b) and SuDS for Roads (SCOTS, 2010); • for each drainage run, wherever practicable, a minimum of two levels of SuDS treatment within a 'treatment train' (see Table 11.19 in Chapter 11 for further details) to limit the volume of discharge and risk to water quality; • management of vegetation within ponds and drains through grass cutting, pruning of any marginal or aquatic vegetation (as appropriate to the SuDS component) and removal of any nuisance plants, especially trees; • SuDS retention ponds will be designed with an impermeable liner to maintain a body of standing water and provide treatment volume; • inspect inlets, outlets, banksides, structures and pipework for any blockage and/or structural damage and remediate where appropriate; and • regular inspection and removal of accumulated sediment, litter and debris from inlets, outlets, drains and ponds to avoid sub-optimal operation of SuDS; and • adherence to the maintenance plans specific to each SuDS component type as detailed within The SuDS Manual (CIRIA, 2015b). | To reduce impacts of drainage discharges on the water environment. | Where required, authorisation for the road drainage discharge under CAR 2011 (as amended) would be obtained from SEPA. |
| Project Specific Mitigation | | | | | |
| P03-W18 | Throughout proposed scheme | Pre-construction | <p>Measures to prevent water quality impacts during construction by controlling sources of suspended sediment and other contaminants, and treating and managing construction drainage, will be set out within a site specific Pollution Prevention Plan that will be submitted to SEPA for approval prior to construction. The document will comply with SEPA guidance WAT-SG-75 (SEPA, 2018b), with specific measures including, but not limited to:</p> <ul style="list-style-type: none"> • Soil stripping schedule and plans which show how the works will be phased to avoid unnecessary stockpiling of materials and exposure of bare surfaces. • Minimisation of soil stripping and bank disturbance activities. Frequent use of weather forecasts should be made to inform the timing of specific activities. • Rapid restoration of areas of exposed ground, including implementing reseeding plans during the growing season (spring to autumn). Geotextiles, mulch and the roughening of exposed ground would be adopted where reseeding cannot be rapidly undertaken. • Plans showing the location and proposed protection (bunds or silt fencing) for stockpiles, which on this project would be located out with the 0.5% AEP (200 year) functional floodplain at a distance of >50m from any water features and over stable and flat ground (as far as reasonably practicable). • Minimisation in the extent, length and gradient of drainage ditches, and erosion control measures within the ditches to include lining and check dams. • Use of an appropriate grade of material on temporary haul routes that would be clean, | To control sources of suspected sediment and other contaminants. | Approval required from SEPA for any required use of flocculants. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|---|---|
| | | | <p>washed, and would be durable under heavy trafficking; this may require the importing of appropriate material if the on-site sources are assessed as being inadequate. Material likely to result in metallic, sulphide rich or strongly acidic runoff will not be used. Frequent monitoring of the performance of haul routes, and maintenance and regrading where issues are identified.</p> <ul style="list-style-type: none"> • Use of biodegradable fuels, oils and chemicals on site, as far as reasonably practicable. If flocculants are considered necessary to aid settlement of fine suspended sediment, such as clay particles, only natural organic flocculants would be used for surface water treatment, if a requirement is identified, and permission from SEPA for the use of such chemicals would be sought at an early stage prior to construction. • An increased protection buffer distance of 50m from any surface water feature would be applied to all handling, storage and use of oils, fuels and chemicals (including concrete batching), as far as reasonably practicable. • Protocols would be developed for ceasing or reducing construction activities during periods of high rainfall to reduce the risks of erosion, sedimentation and pollution. • A temporary drainage design will be developed which would take consideration of the phasing of works, topography, land available for treatment of surface water and the location of surface water features. • Construction runoff would be discharged to land via temporary treatment measures (e.g. settlement ponds and/or soakaways) at frequent intervals along the working corridor to prevent unmanageable volumes of untreated runoff collecting at a single location. • Prior to the completion of operational SuDS, drainage will not directly enter water bodies but be directed over vegetation or vegetated channels to attenuate flow and treat sediment loads and pollutants, and a filter strip (10m minimum where practicable) will be provided between any drainage discharges and watercourses. Daily inspections of buffer strips will be undertaken during periods of high rainfall to ensure surface flow pathways do not develop. • For instances where the levels of fine sediment and volume of surface water cannot be treated using conventional methods, including where topography or land available is a constraint, an alternative treatment procedure may be used which would include: the use of portable settlement tanks, flocculants and dynamic separators. This 'emergency' treatment procedure would be put in place and agreed with SEPA prior to construction, so it can be enacted rapidly when issues are identified. • Settlement features would be sized appropriately to accommodate the maximum volume of runoff that would be reasonably expected to occur on any occasion during the period of construction (as to be agreed with SEPA). • All features associated with the temporary drainage system, including settlement ponds, settlement tanks, ditches and silt traps, will be maintained in a good state of repair by the Contractor. | | |
| P03-W19 | Throughout proposed | Pre-construction | A Construction Method Statement with specific pollution prevention measures will be developed and agreed with SEPA and SNH to prevent water quality impacts from the River Tay bank stabilisation works at ch1600 –1900. The outline methods and measures, which | To reduce impacts from suspended sediment and other contaminants on the | Approval of the Surface Water Management Plans is required from |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|---|--|---|
| | scheme | | <p>will be subject to further development and refinement by the contractor, will include but not be limited to:</p> <ul style="list-style-type: none"> • Constructing the working platform for the bored piles with a slight fall back into the slope to prevent surface runoff from entering the River Tay. • Construction of a low height bund between the pile bores and the River Tay, and a temporary slope between the A9 and the platform, with a small filter drain along the toe to collect runoff from the working platform. • Diversion of collected runoff to a series of settlement tanks or settlement ponds located within the area of the northbound carriageway and additional land available in the vicinity of operational SuDS outfall B. • Containment and removal from site, for disposal at a licensed waste facility, of any drilling muds, if required during piling works. • Geotextile matting or other erosion protection measures on bare slopes, downstream silt fencing and silt curtains to protect sensitive aquatic ecological interests in the event of sediment release. | water environment. | SEPA |
| P03-W20 | Throughout proposed scheme | Pre-construction | <p>To measure the effectiveness of implemented mitigation measures in protecting downstream water quality and aquatic ecological interests, monitoring protocols during the construction phase will be developed within a site specific Water Quality Monitoring Plan, which will be submitted to SEPA for approval prior to construction. This would include, but not be limited to:</p> <ul style="list-style-type: none"> • Appointment of a suitably qualified (minimum of 3 years' experience supervising construction sites, monitoring water quality and drainage design) Hydrological Clerk of Works (HCoW), who will review the scheduling of earthworks, storage of materials, implementation of drainage and surface water treatment measures, and undertake monitoring of water quality. The HCoW will be provided with the authority to stop works and implement remedial action with immediate effect. • Water quality monitoring one year prior to construction, during construction and one year's post construction. The monitoring regime to include monthly laboratory analysis, visual inspections and real time monitoring. • Water quality criteria and standards to be achieved for all site discharges during construction, and sampling locations, to be agreed in consultation with SEPA and SNH. The contractor will ensure compliance with these standards through the adoption of standard mitigation (Table 11.18 in Chapter 11) and Mitigation Items P03-W18 and P03-W19. • Real-time monitoring of electrical conductivity and turbidity to detect suspended solid concentrations in exceedance of baseline levels. An automated alert system would alert the HCoW and site staff of any pollution incidents, informing where further sampling is required to confirm compliance with the limits agreed with SEPA, and allow remedial actions to be implemented at specific locations. | To measure the effectiveness of implemented mitigation measures in protecting downstream water quality and aquatic ecological interests. | Approval of the Water Quality Monitoring Plan is required from SEPA |
| P03-W21 | Throughout proposed | Construction | Construction drainage systems/SuDS would be implemented prior to any significant earthworks to control/attenuate runoff during construction. Regular maintenance of | To control/attenuate runoff during construction. | SEPA consultation required for any |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|------------------------|---|--|--|
| | scheme | | construction SuDS and associated outfalls will be undertaken to ensure the basins are not susceptible to flood damage, and that flood risk is not increased locally during construction. In advance of extreme flood events (e.g. 0.5% AEP (200-year) + CC event), in stream working areas would be evacuated and allowed to flood to prevent any increases in flood levels from constriction of flows. | | activities requiring authorisation under CAR. |
| P03-W22 | WF 38 | Construction | Where feasible, new culverts/artificial channels will be constructed prior to the decommissioning of the existing culvert/channel and commencement of construction activities. Flows will be steadily released into the newly constructed realignment, and erosion protection measures will be put in place, to avoid sedimentation and erosion of the new channel. | To reduce the potential for excessive erosion to river banks (WF38) | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W23 | WF06 | Construction | The River Tay (WF06) is known to have a risk of natural channel migration with active processes of bank erosion and sediment deposition, caution would be required and construction works (as far as possible) would need to remain a sufficient distance from the river bank as a means of not exacerbating these processes. The distance from the river bank would be determined at each site based on the specific locations at risk | To reduce risk of bank erosion to WF06. | None required |
| P03-W24 | WF06 | Construction | Re-planting of vegetation around outfall structures, tying in with natural vegetation. The planting of trees, if removed, is of particular importance. | To replace vegetation lost during construction. | None required |
| P03-W25 | WF16 WF18-WF25 WF30-WF42 WF47 WF49 WF50 WF52 WF53 | Design Construction | Geomorphological led design, construction supervision and post project appraisal of cascades and channel realignments/re-gradings. Incorporation of appropriate geomorphological features and suitable design of cross-section and planform to ensure movement of water downstream is not compromised. | To replicate the natural bed, minimise waste and improve functionality of the water feature. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W26 | WF16-WF39 WF41-WF53 | Design | Geomorphological input into detailed design, construction supervision and post-project appraisal of culverts. Measures to include use of depressed invert culverts, enabling the formation of a natural bed and minimising impact on existing channel bed and bank. | To reduce the potential for excessive erosion to river banks and beds (WF115). | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W27 | WF40 | Post-Construction | Reinstate riparian vegetation where possible. | To replace vegetation lost during construction. | None required |
| P03-W28 | WF40 | Design/Operation | Set-back bridge abutments for new extended bridge as far back as practicable from back top. | To minimise impacts upon water feature from bridge structure | None required |
| P03-W29 | WF36 and 39 | Design/Operation | Install a depressed invert culvert and existing gravel substrate to be reinstated within culvert or similar, appropriately sized substrate to be used where existing substrate is unsuitable/impractical. Tie-in of the new channel cross-section to the upstream and downstream existing water feature to minimise potential erosion, such as an energy dissipation pool at the culvert outlet. | To reduce the risk of erosion, replicate the natural bed and improve functionality of the water feature. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W30 | WF06 and WF55 | Design/Operation | Operational Mainline SuDS: Management Train 1 (MT1) comprising filter drains and a pond/basin. This management train will be adopted for drainage catchments A1, A2, C, E and H. | To treat/attenuate runoff during operation and minimise impacts on flood | SEPA consultation required for any activities requiring |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|--|--|
| | | | | risk and water quality | authorisation under CAR. |
| P03-W31 | WF06 and WF38 | Design/Operation | Operational Mainline SuDS: MT2 comprising filter drains and swales. This management train will be adopted for drainage catchments D1 and D2. | To treat/attenuate runoff during operation and minimise impacts on flood risk and water quality | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W32 | WF06, WF42 and WF50 | Design/Operation | Operational Mainline SuDS: MT3 comprising filter drains and a hydrodynamic vortex separator. This management train will be adopted for drainage runs B, F1, F2, G1 and G2. | To treat/attenuate runoff during operation and minimise impacts on flood risk and water quality | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W33 | WF06 | Design/Operation | Operational Mainline SuDS: MT4 comprising filter drains and a detention basin. This management train will be adopted for drainage catchments C. | To treat/attenuate runoff during operation and minimise impacts on flood risk and water quality | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W34 | WF06 | Design/Operation | Location of outfalls along River Tay to minimise potential risk of altering fluvial processes, such as erosion and depositional, in the vicinity of and downstream of the structure processes: <ul style="list-style-type: none"> At ch700, microsite outfall to avoid depositional feature as far as practicable. At ch1600-1900, geomorphological input into the design of River Tay bank stabilisation works. At ch3870 the outfall should be orientated in line with the direction of flow. Maintain fallen trees in situ where possible as they provide natural bank protection. Plant bank face around the outfall structure. At ch5500 the outfall should be set-back from the banks of the River Tay and connected via a small drainage channel. The drainage channel should be orientated in line with the direction of flow. | To reduce the risk of erosion, replicate the natural bed and improve functionality of the water feature. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W35 | WF06 WF49 WF50 | Design/Operation | To prevent an increase in flood risk to the Haugh of Kilmorich and other areas between the railway and the A9, compensatory flood storage will be provided in an area of higher ground in a field to the north of Haugh of Kilmorich. This will provide additional floodplain storage capacity and ensure change in flood risk to the property will be negligible. To accommodate the compensatory flood storage at this location, watercourse WF50 (which currently infiltrates to groundwater in an area of forestry) will be realigned to discharge into the realigned WF49 (which subsequently discharges into WF42/WF41). | To reduce the risk of flooding to properties. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W36 | WF06 | Design/Operation | The field between the A9 and General Wade's Military Road immediately north of Guay will be connected to the existing floodplain with a culvert through the A9 and the railway embankment, with additional culverts just through the A9 and excavations undertaken to lower ground levels and provide additional floodplain storage. This will provide additional | Forms part of managing the overall flood risk impacts. | SEPA consultation required for any activities requiring authorisation under |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|---|--|--|
| | | | floodplain storage and mitigate the predicted increased flood risk to the Highland Mainline Railway as well as properties and farmland further downstream in the unmitigated case. | | CAR. |
| P03-W37 | WF39 | Design/Operation | A flood wall will be provided on the right (north) bank of the Sloggan Burn to provide protection to Guay farmhouse and mitigate the increase in flood risk. | Forms part of managing the overall flood risk impacts. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W38 | WF06 | Design/Operation | Geomorphological input into the detailed design of River Tay bank stabilisation works between ch1600-1900. | To reduce the risk of erosion and replicate the natural bank as far as reasonable practicable. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W39 | WF39 | Design/Operation | An additional culvert will be provided on the Sloggan Burn downstream of the Highland Mainline Railway to mitigate increases in flood risk to agricultural land. | To mitigate increased flood risk to agricultural land. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W40 | WF06 WF38 | Design/Operation | Compensatory flood storage will be provided between the Highland Mainline Railway and the A9 south of Guay to mitigate increased flood risk to the railway and downstream receptors. | To mitigate increased flood risk to agricultural land and downstream receptors. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W41 | WF41 WF42 WF50 | Design/Operation | An Ecological/Compensatory Flood Storage Pond will be provided between the A9 and Highland Mainline Railway north of Kindallachan to mitigate increased flood risk to agricultural land and the railway in this area. | To mitigate increased flood risk to agricultural land and the railway in this area. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W42 | WF52 | Design/Operation | Floodplain compensation will be provided on the north bank of the watercourse downstream of the A9 to mitigate increases in flood risk to agricultural land and the railway embankment. | To mitigate increased flood risk to agricultural land and the railway in this area. | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W43 | WF06 | Pre-construction | A monitoring programme will be implemented at the location of the bank stabilisation works at ch1600-1900 prior to construction, consisting of collection of detailed baseline bank conditions, annual inspections of the river bank by a geomorphologist and a geotechnical engineer, estimates of rates of bank erosion and records of survey conditions (including weather, flow levels and any recent significant flood/drought events). Results of monitoring works would inform the final design of the River Tay bank stabilisation works. | To reduce the risk of erosion and replicate the natural bank as far as reasonable practicable. | None required |
| P03-W44 | WF06 | Operation | Implementation of bank protection/re-instatement of bank in front of exposed piled wall (if erosion of bank occurs during operation and additional surface roughness is required at the | To reduce the risk of erosion and replicate the natural bank as far as reasonable | SEPA consultation required for any activities requiring |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|-----------------------------------|-------------------|--|---|--|
| | | | bank face). Material used would be determined at the detailed design stage. | practicable. | authorisation under CAR. |
| P03-W45 | WF06 WF36-WF39 WF47 WF52 | Operation | Side road drainage during operation will incorporate a single level of treatment through either filter drains and/or swales. Access track drainage during operation will be provided through over-the-edge (OTE) drainage and/or soakaways. | To treat/attenuate runoff during operation and minimise impacts on flood risk and water quality | SEPA consultation required for any activities requiring authorisation under CAR. |
| P03-W46 | WF42 WF55 | Operation | Outfalls into palaeochannels (F1, F2 and H) will be micro-sited within the CPO and designed to minimise disturbance to habitats and trees, and ensure low velocities to prevent disturbance of sediment and erosion. This design may incorporate a flow spreader outlet to promote shallow sheet flow into the palaeochannel, or energy dissipation measures such as a riprap apron. | To minimise disturbance to habitat within the water features | - SEPA consultation required for any activities requiring authorisation under CAR. |

Table 21.6: Ecology and Nature Conservation

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--|----------------------------------|--|---|--|
| Standard A9 Mitigation | | | | | |
| SMC-E1 | Throughout proposed scheme | Pre-Construction | Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions set out in the ES. The scope of the pre-construction surveys will be confirmed with SNH prior to them being undertaken. | To update the baseline ecological conditions set out in the ES. | SNH |
| SMC-E2 | Throughout proposed scheme | Pre-Construction | <p>Prior to construction a suitably qualified (or team of suitably qualified) Ecological Clerk of Works (ECoW) will be appointed and will be responsible for implementation of the Ecological Management Plan. The ECoW will:</p> <ul style="list-style-type: none"> • provide ecological advice over the entire construction programme; • undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme; and ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and • monitor the implementation of the mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the ES. <p>The ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and will have previous experience in similar ECoW roles. All ECoWs will be approved by Transport Scotland to be appropriately qualified for the role and compliance will be monitored by the employer's ecologist. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.</p> | To ensure the implementation of the Ecological Management Plan. | Consultation with the relevant salmon fisheries board. |
| SMC-E3 | At watercourses throughout proposed scheme | Construction | Noise and vibration will be minimised by working back from the river bank where possible or working within a dry area to avoid implications to fish such as behavioural changes e.g. avoidance of areas or physical damage e.g. to hearing. In addition, soft-start techniques will be applied to piling work procedures to enable sensitive species to evacuate the area. | To protect fish species from noise, vibration and light spill. | None required. |
| SMC-E4 | At watercourses throughout proposed scheme | Construction | Where areas are required to be temporarily dewatered to permit construction activities, fish will be removed by means of electrofishing and relocated prior to dewatering (SFCC, 2007). | To protect fish species during de-watering of watercourse sections and in-stream works. | CAR Licence approved by SEPA |
| SMC-E5 | At watercourses throughout proposed scheme | Construction | Water flow/passage will be sufficiently maintained to permit movement of Atlantic salmon, brook lamprey and brown/sea trout past areas of dewatering and/or significant alteration of water movement during any construction works within the watercourses. Suitable temporary channels may be implemented so that movement between areas of habitat can be maintained. Where any over pumping is required, screens will be used to prevent fish from entering pumps. | To protect fish species during de-watering of watercourse sections and in-stream works. | CAR Licence approved by SEPA |
| SMC-E6 | Throughout proposed scheme | Pre-Construction Construction | The Contractor will obtain and comply with the requirements of any protected species derogation licences in respect of works that have the potential to breach all applicable conservation legislation. Licensing may be for the UK and/or European protected species. | To comply with conservation legislation. | SNH |
| SMC-E7 | Throughout proposed | Pre-Construction Construction | Tree felling and vegetation clearance to be minimised as far as practicable and undertaken outside the core bird nesting season (01 March to 31 August) to avoid damage or destruction | To protect habitat and fauna during bird nesting season. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|--------------------------------|---|--|--|
| | scheme | | <p>of occupied nests or harm to breeding birds. If this cannot be achieved, works within the core bird nesting season will require an inspection of vegetation to be cleared for nesting birds by a suitably qualified ecologist no more than 24 hours prior to any works being undertaken. If any nesting birds are identified during the survey, they will be left in situ for their entire nesting period until the young birds have fledged. Alternative approaches to the work will need to be proposed e.g. leaving an exclusion zone around the nest to avoid disturbance.</p> <p>All cleared vegetation will be rendered unsuitable for nesting birds, for example, by covering or chipping depending on the end purpose of the vegetation, or will be removed from the works area.</p> | | |
| SMC-E8 | Throughout proposed scheme | Pre-Construction Construction | Any tree felling will be carried out by experienced contractors to reduce direct mortality of protected species according to agreed felling methods between contractors and the ECoW. | To protect fauna during removal of habitat. | None required |
| SMC-E9 | Throughout proposed scheme | Construction | Plant and personnel will be constrained to a prescribed working corridor through the use of, where practicable, temporary barriers to minimise the damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the proposed scheme working corridor. | To protect habitats and fauna. | None required |
| SMC-E10 | Throughout proposed scheme | Construction | A construction lighting plan and method statement will be developed by the Contractor. The plan, as part of the Species Protection Plans, will detail specific mitigation requirements and taking into account guidance on lighting (e.g. Bat Conservation Trust (2009), and Institution of Lighting Professionals (2011) and The Royal Commission on Environmental Pollution (2009)). The construction lighting design will take into account the need to avoid illuminating sensitive fish and mammal (e.g. for bats, otter and badger) habitats in locations such as: adjacent to watercourses; along woodland edges; and, where there is known activity identified through pre-construction ecological surveys (refer to Mitigation Item SMC-E1). Where this is not possible the Contractor will agree any exceptions with SNH. | To protect sensitive mammal habitats from illumination. | Exceptions to be agreed with SNH |
| SMC-E11 | Throughout proposed scheme | Construction | <p>During construction trees will be protected in line with guidelines provided in 'BS 5837 Trees in relation to Construction' (British Standards Institute, 2012). This includes the following:</p> <ul style="list-style-type: none"> • establishment of Root Protection Areas (RPA); • protective fencing will be erected around the RPA to reduce risks associated with vehicles trafficking over roots system or beneath canopies; • selective removal of lower branches of trees to reduce risk of damage by construction plant and vehicles; • prevent soil compaction measures; and • maintain vegetation buffer strips (where practicable). | To comply with guidelines provided in 'BS 5837 Trees in relation to Construction' (British Standards Institute, 2012). | None required |
| SMC-E12 | Throughout proposed scheme | Construction Post-Construction | Planting will be undertaken to replace any trees that were intended to be retained which are felled or die as a result of construction works. The size, species and location of replacement trees will be approved by Transport Scotland and other relevant stakeholders. | Replacement of trees lost that are to be retained. | Transport Scotland and other relevant stakeholders |
| SMC-E13 | Throughout proposed | Construction | Trenches, holes and pits will be kept covered at night or provide a means of escape for mammals that may become entrapped. Gates to compound areas will be designed | To avoid mammals becoming entrapped in and | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|--|-----------------------------------|--|--|--|
| | scheme | | sensitively to prevent mammals from gaining access and will be closed at night. | around compound areas during construction. | |
| SMC-E14 | Throughout proposed scheme | Construction | Temporary mammal-resistant fencing will be provided around construction compounds following a specification agreed through consultation with Transport Scotland. | To avoid mammals becoming entrapped in and around compound areas during construction. | Transport Scotland |
| SMC-E15 | Throughout proposed scheme | Construction | The Contractor will describe within the CEMP (Mitigation Item SMC-S1) the biosecurity strategy to be implemented for the appropriate treatment of invasive, non-native species (INNS). The strategy will set out appropriate construction, handling, treatment and disposal procedures to prevent the spread of INNS in line with recognised best practice. | To prevent the spread of INNS. | None required |
| <i>n/a (note)</i> | <i>n/a</i> | <i>n/a</i> | <i>Further to the above, the mitigation detailed in Table 21.5 (Road Drainage and the Water Environment), Table 21.7 (Landscape and Visual), Table 21.9 (Air Quality) and Table 21.10 (Noise and Vibration) will be implemented to protect aquatic and terrestrial habitats and species.</i> | <i>To protect aquatic and terrestrial habitats and species.</i> | <i>n/a</i> |
| Project Specific Mitigation | | | | | |
| P03-E16 | <ul style="list-style-type: none"> • ch150 • ch600-810 • ch920-1000 • ch1600-1900 • ch2000-2050 • ch3820-3870 • ch4240-4280 • ch4900 • ch5500 • ch6090 | Construction Post-Construction | Natural bed material will be retained and replaced on completion of construction works | To mitigate alteration of riverbed habitat in the River Tay SAC and other watercourses within the proposed scheme. | None required |
| P03-E17 | <ul style="list-style-type: none"> • ch150 • ch600-810 • ch920-1000 • ch1600-1900 • ch2000-2050 • ch3820-3870 • ch4240-4280 • ch4900 • ch5500 • ch6090 | Construction Post-Construction | Terrestrial SAC areas temporarily required for construction will be returned to their former habitat type using species appropriate to the local environment and of local provenance. Seeding and planting of bare ground areas will be undertaken as soon as possible after the completion of construction works. Appropriate measures, such as the use of geo-textile matting, will be put into place should vegetation establishment be delayed to prevent sediment entering watercourses | To mitigate temporary loss of terrestrial River Tay SAC habitat. | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|----------------------------------|---|---|--|
| P03-E18 | At watercourses throughout the proposed scheme. | Construction | An ECoW will be present on site prior to and during potentially sensitive works (e.g. installation/removal of in-channel structures) to continually monitor conditions. Toolbox talks with contractors on environmental sensitivities and implementation of mitigation will be conducted. The ECoW will regularly inspect pollution controls and site compounds as appropriate. An agreed working area will be established prior to the start of works which will avoid FWPM. | To mitigate effects of de-watering of watercourse sections and in-stream works during construction on FWPM and fish. | None required. |
| P03-E19 | <ul style="list-style-type: none"> • ch150 • ch600-810 • ch920-1000 • ch1600-1900 • ch2000-2050 • ch3820-3870 • ch4240-4280 • ch4900 • ch5500 • ch6090 | Construction | In-stream works will be undertaken between July and mid-October inclusive to avoid the sensitive periods for FWPM spawning and fish spawning and emergence. If in-stream works are required outwith this period, the working method will be agreed with SNH. In-stream works will comply with SEPA Good Practice Guidance – Temporary Construction Methods (WAT-SG-29) (SEPA, 2009). In addition, in-stream and bankside works will be restricted to daylight hours, except at Kindallachan Burn where works during the hours of darkness cannot be avoided. When working during the hours of darkness, directional and/or shielded lighting will be utilised to prevent light-spill and angle light away from the watercourse. | To mitigate effects of de-watering of watercourse sections and in-stream works during construction on FWPM and fish. | CAR Licence approved by SEPA |
| P03-E20 | River Tay throughout the proposed scheme | Construction | No pile driving will be undertaken within 100m of the River Tay SAC between mid-October and June inclusive, where FWPM have been confirmed to be present. Underwater noise monitoring will be undertaken during drilling or piling activities within 100m of the River Tay at any time. If noise levels mid-channel are above 50dBht (Atlantic salmon) works will only continue with agreement from SNH. | To mitigate the effects of noise and vibration on fish and FWPM | None required |
| P03-E21 | ch4240-4280 | Construction | In-stream works will be undertaken between mid-May and mid-October inclusive to avoid the sensitive period for Atlantic salmon and brown/sea trout spawning and emergence at this location. If in channel works are required outwith this period, the working method will be agreed with SNH. In-stream works will comply with SEPA Good Practice Guidance – Temporary Construction Methods (WAT-SG-29) (SEPA, 2009). In addition, in-stream and bankside works will be restricted to daylight hours. Where this is not possible directional and/or shielded lighting will be utilised to prevent light-spill and angled light away from the watercourse. | To mitigate effects of de-watering of watercourse sections and in-stream works during construction Atlantic salmon, brown/sea trout and European eel. | CAR Licence approved by SEPA |
| P03-E22 | ch4240-4280 | Construction | No drilling or piling will be undertaken within 100m of Dowally Burn between mid-October and mid-May inclusive. Underwater noise monitoring will be undertaken during drilling or piling activities within 100m of Dowally Burn at any time. If noise levels mid-channel are above 50dBht (Atlantic salmon) works will only continue with agreement from SNH | To mitigate the effects of noise and vibration on Atlantic salmon, brown/sea trout and European eel. | None required |
| P03-E23 | For locations see A12.3 (Confidential Ecology Features) | Pre-Construction Construction | A FWPM Protection Plan (including Emergency Action Plan) will be developed for locations where FWPM may be affected. As a part of this plan, prior to works commencing all suitable habitat in the area around in-stream works and bankside vegetation clearance will be re-surveyed, which will include a photographic record, to confirm the presence of FWPM. Upon discovery of any previously unrecorded FWPM, all works that could affect the FWPM will immediately cease. Works will not begin until the appropriate mitigations measures have | To mitigate effects of in-stream works and removal of bankside vegetation (trees) during construction on FWPM. | SNH |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|--------------------------------|--|---|--|
| | | | been implemented and SNH has been consulted. | | |
| P03-E24 | For locations see A12.3 (Confidential Ecology Features) | Pre-Construction Construction | <p>A Silt Control Management Plan (SCMP) will be developed and implemented which will include the following measures;</p> <ul style="list-style-type: none"> • appropriate controls for construction site runoff and sedimentation (Mitigation Item SMC-W3); • regular inspection and monitoring of receiving water features; • oils and fuels will be stored appropriately and spill response will follow best practice (Mitigation Item SMC-W7); • if flocculants are considered necessary to aid in settlement of fine suspended solids, such as clay particles, the chemicals used must first be approved by SEPA (Mitigation Item P03-W18); and • any other appropriate measures required following consultation or licencing discussions with SEPA. | To mitigate effects of de-watering of watercourse sections and in-stream works during construction on FWPM. | SEPA |
| P03-E25 | For locations see A12.3 (Confidential Ecology Features) | Pre-Construction Construction | The Contractor will monitor the weather and river level (as published by SEPA) conditions to assess the potential for high flows or spate events during sensitive works (see Mitigation Item SMC-W2). Where high flows are anticipated, works will be avoided in the first instance. If this is not possible, the ECoW will conduct spot-checks of sediment levels at least once per day. | To mitigate effects of increased sediment loading from high flows on FWPM. | None required. |
| P03-E26 | For locations see A12.3 (Confidential Ecology Features) | Construction | Where sediments exceed safe thresholds for FWPM (determined through monitoring detailed in Mitigation Item P03-W20) an Emergency Action Plan (produced as part of the FWPM Protection Plan) detailing how mussels will be protected, rapid installation of temporary barriers or temporary removal of FWPM (under licence) for example, will be enacted. Where fine sediment has infiltrated the substrate or sediment loading is persistent, temporary translocation of FWPM may be required and will follow guidelines for translocation as outlined in Killeen and Moorkens (2016). | To mitigate effects of an accidental fine sediment release on FWPM. | None required. |
| P03-E27 | For locations see A12.3 (Confidential Ecology Features) | Pre-Construction Construction | Bankside vegetation to be retained in confirmed FWPM locations. Where removal is essential, trees are to be pollarded, retaining as much height and as many overhanging branches as possible. Where this is not possible, removal will be by cutting trees down rather than extraction. The ECoW will be present on site during any pollarding or cutting of trees. | To mitigate effects of removal of bankside vegetation (trees) during construction on FWPM. | None required. |
| P03-E28 | For locations see A12.3 (Confidential Ecology Features) | Construction Post-Construction | Bankside vegetation to be reinstated as soon as possible upon completion of construction. | To mitigate effects of removal of bankside vegetation (trees) during construction on FWPM. | None required. |
| P03-E29 | Watercourses throughout the proposed scheme | Construction | Construction compounds, storage areas, temporary access tracks etc. (except for culvert, bridge, outfall and slope stabilisation works) will be at least 10m from watercourse banks. | To mitigate direct mortality of otter. | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|-------------------|---|---|--|
| P03-E30 | For locations see A12.3 (Confidential Ecology Features) | Construction | <p>The following measures will be adhered to:</p> <ul style="list-style-type: none"> piling will not be undertaken within 100m of a resting site. If this buffer distance cannot be achieved, for example where a resting site lies within 100m of the existing road, soft-starts of machinery will be applied to encourage otter to evacuate the area prior to the commencement of works; working during hours of darkness will be avoided in sensitive areas, where possible, such as watercourse crossings and within 30m of resting sites; directional and/or cowled lighting will be used to prevent light-spill and light angled away from all rest sites and areas of otter activity; and provision of temporary screening to create dark areas around rest sites where construction lighting would result in light spillage on the sites that cannot be controlled through the use of directional lights. | To mitigate for disturbance to otter and beaver resting sites. | SNH |
| P03-E31 | Suitable habitat throughout proposed scheme | Construction | Severance and fragmentation of habitat will be avoided or reduced during construction by retention of commuting routes, for example constructing culverts with mammal provision and dry mammal underpasses early in the construction process | To mitigate disturbance and fragmentation of otter, badger, beaver, pine marten and red squirrel caused by construction related activities. | None required |
| P03-E32 | Watercourses throughout the proposed scheme | Construction | Provision will be made to ensure that watercourses are accessible to otter during construction. Where practicable; one bank of a watercourse will remain open and accessible to otter at all times, culverts and bridges will remain open to otter at night, and one side of a double-celled culvert will remain open at all times. | To mitigate disturbance and fragmentation of otter by construction related activities. | None required |
| P03-E33 | ch5250 | Construction | <p>Potential impacts resulting from alteration (Wing of Guay Farmhouse ch5250) and demolition (Guay Cattle Shed ch5250) of buildings in particular will be mitigated through compliance with:</p> <ul style="list-style-type: none"> A Species Protection Plan will be prepared in compliance with Mitigation Item SMC-S1. The plan will include measures to mitigate for impacts on bats, including: <ul style="list-style-type: none"> exclusion of bats from any area which will be directly impacted by alteration, demolition and remedial works; and sensitive alteration to Wing of Guay Farmhouse to involve alteration by hand where practicable under a bat licensed ECoW's supervision, until such a time that the ECoW is fully satisfied that no bats remain within the structure and all reasonable precautions have been taken to avoid harming bats. | To mitigate for loss of roost and disturbance during demolition and construction works. | SNH |
| P03-E34 | Suitable habitat throughout proposed scheme | Construction | Severance of habitat will be avoided or reduced during construction by retention of commuting routes through culverts and underpasses, such that movement between areas of habitat is maintained | To retain commuting routes for bats through culverts and underpasses. | None required |
| P03-E35 | For locations see A12.3 (Confidential Ecology Features) | Construction | <p>The following measures will be adhered to:</p> <ul style="list-style-type: none"> piling/drilling will not be undertaken within 100m of a sett. However, if this buffer distance cannot be achieved, consultation with SNH will be required. If there is a risk of damage to | To mitigate for disturbance to badger setts. | SNH |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|-------------------------------|---|---|--|
| | Ecology Features) | | <p>an active sett from vibration, Mitigation Item SMC-E6 and Mitigation Item P03-E63 will need to be adhered to where relevant.;</p> <ul style="list-style-type: none"> directional and/or cowled lighting will be used to prevent light-spill and light angled away from all active setts and areas of badger activity; and maintenance of a 30m buffer zone from a main sett, where possible and following consultation with SNH. | | |
| P03-E36 | For locations see A12.3 (Confidential Ecology Features) | Pre-construction Construction | <p>To avoid disturbance of barn owl, temporary measures should be undertaken to discourage nesting during the construction works near Guay Farmhouse. These measures, as detailed by Shawyer (2011), must be undertaken prior to commencement of work and outside the bird breeding season (March to August inclusive). Measures could include:</p> <ul style="list-style-type: none"> securely covering openings into the building with plywood panels, focussing on specific features of the building where barn owls have bred or might offer potential nest sites. installation of barn owl boxes as mitigation for operational habitat loss should be carried out at this stage (Mitigation Item P03-E65) to ensure that alternative nest sites are available during the construction period also, with appropriate locations (sited in the suitable habitats that are available outwith the works area) defined in pre-construction surveys. | To mitigate against disturbance of Schedule 1 species (barn owl). | None required. |
| P03-E37 | For locations see A12.3 (Confidential Ecology Features) | Pre-construction Construction | <p>If barn owls are nesting in the building, the following measures to reduce disturbance, as detailed by Shawyer (2011), will be adhered to:</p> <ul style="list-style-type: none"> a suitable protection zone should be placed around the nest; construction work within the protection zone should avoid taking place between the months of March to August inclusive; construction works will take place in daylight hours when barn owls are largely inactive; and the roost will be visually screened, for example, by the use of high fine mesh netting which will prevent encroachment and shield birds visually from sudden changes in activity levels. | To mitigate against disturbance of Schedule 1 species (barn owl). | None required. |
| P03-E38 | Suitable woodland habitat throughout the proposed scheme | Pre-construction Construction | <p>Site clearance affecting pine marten and red squirrel habitat should be timed to avoid breeding season (March to June inclusive for pine marten and February to September inclusive for red squirrel).</p> | To mitigate against direct mortality of pine marten and red squirrel. | None required. |
| P03-E39 | Suitable woodland habitat throughout the proposed scheme | Pre-construction Construction | <p>No more than three weeks prior to the commencement of site clearance, and again at least two days prior to clearance, pre-works checks will be undertaken to identify active dens/dreys. Exclusion zones will be marked around dens/dreys. Exclusion zones will be to the following distances, and where works within these exclusions zones are required, these will be supervised by an ECoW, and where necessary will be carried out under a derogation licence from SNH:</p> <ul style="list-style-type: none"> pine marten: 100m for breeding dens and 30m for non-breeding dens; and red squirrel: 30m for breeding dreys and 5m for non-breeding dreys. | To mitigate against direct mortality of pine marten and red squirrel. | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|----------------------------------|--|--|--|
| P03-E40 | Suitable woodland habitat throughout the proposed scheme | Pre-construction Construction | Where site clearance is required to take place during breeding season and/or the destruction of dens/dreys is required, works will be conducted under licence following consultation with SNH. | To mitigate against direct mortality of pine marten and red squirrel. | None required |
| P03-E41 | Key reptile sites throughout the proposed scheme (Figure 12.10) | Pre-Construction Construction | The following measures will be adhered to by the Contractor prior to vegetation clearance of reptile habitat: <ul style="list-style-type: none"> pre-construction surveys to understand the population size and distribution of reptiles in Key Reptile Sites (KRS) (Edgar et al., 2010); translocation areas (Figure 13.5) will be created for KRS prior to site clearance; exclusion fencing will be installed around KRS areas that are to be lost and individuals will be captured by hand with use of ACOs and pitfall traps; exclusion fencing will be installed along the boundary of any KRS where it is directly adjacent to construction works to prevent reptiles moving into the works site; translocation of individuals from KRS into created areas; exclusion fencing will be installed along the boundary of translocation areas on commencement of the works to prevent movement of reptiles from the receptor site back into the works footprint. This is to be removed post-construction; phased strimming of favourable reptile habitat will take place during hibernation season (November to February inclusive) (Edgar et al., 2010) following fingertip searches when necessary and under the direction of an ECoW; and soil stripping and removal of potential hibernacula, including but not limited to drystone walls, dense tussocks of grass and log piles, will take place outwith hibernation season. | To mitigate potential direct mortality of reptiles. | None required. |
| P03-E42 | Watercourses throughout the proposed scheme | Design Operation | New structures (and extended structures where possible) and outfalls will be designed to minimise changes to current flow rates and velocities and in accordance with the following guidance: <ul style="list-style-type: none"> SEPA Good Practice Guide for River Crossings (WAT-SG-25) (SEPA, 2010); CIRIA Culvert Design and Operation Guide (C689) (CIRIA, 2010); and SEPA Good Practice Guide for Intakes and Outfalls (WAT-SG-28) (SEPA, 2008). | To mitigate the loss and alteration of aquatic habitat to accommodate the proposed scheme. | None required. |
| P03-E43 | Throughout the proposed scheme | Operation | To prevent pollution of water features from road run-off during operation, SEPA PPG/GPP 1, 5, 6, 21, 22 and 26 (SEPA, 2003; 2017) will be abided by. | To protect the water environment and freshwater ecology. | None required. |
| P03-E44 | Candidate sites for woodland compensation can be seen on Figure 13.5 | Construction Operation | Candidate sites for woodland compensation planting to the same extent as areas lost have been identified. The sites identified are those which currently do not have tree cover but which, when planted with appropriate native woodland species, have the best potential for connecting existing ancient woodland on sites, and thus reduce ancient woodland fragmentation in the landscape. Compensation planting will include the following: | To mitigate for the functions and importance of the woodland in respect of habitat connectivity and carrying capacity for other species. | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|---------------------------|--|--|--|
| | | | <ul style="list-style-type: none"> species mixes will reflect native woodland mixes to replace non-native plantations and maximise biodiversity benefit; AWI woodland soil will be stored appropriately and re-used to maintain soil microbial biodiversity and provide a seed bank to promote the re-establishment of ancient woodland ground flora; management will be undertaken in AWI woodland that is to be retained which will include the retention of dead and fallen wood; and development of an ancient woodland specific Habitat Management Plan (Mitigation Item S1). | | |
| P03-E45 | Throughout the proposed scheme | Construction Operation | The loss of woodland will be replaced through landscape and ecological planting, additional to compensation planting for ancient woodland loss, as shown on Figure 13.5. | To mitigate the loss of woodland. | None required. |
| P03-E46 | Throughout the proposed scheme | Construction Operation | The loss of this habitat will be replaced through landscape and ecological planting, as shown on Figure 13.5. | To mitigate for loss of semi-improved and poor semi-improved neutral grassland. | None required. |
| P03-E47 | Dowally Burn Culvert | Design Construction | Creation of pool habitat downstream of the proposed Dowally Burn Culvert to replace habitat lost under the footprint. | to reduce the effect of habitat loss on fish. | SEPA |
| P03-E48 | River Tay throughout the proposed scheme | Operation | Monitoring of FWPM populations will be required for a period of up to 10 years post-construction, to be agreed following consultation with SNH. | To monitor the populations of FWPM following construction works. | SNH |
| P03-E49 | River Tay throughout the proposed scheme | Construction Operation | Retention of bankside vegetation in confirmed FWPM locations, where possible should be undertaken. Where this is not possible agreement with SNH required. | To mitigate effects of disturbance on FWPM during construction works. | SNH |
| P03-E50 | Throughout the proposed scheme (Figure 13.5) | Construction Operation | The loss of areas identified as otter habitat will be replaced through woodland and riparian planting as shown on Figure 13.5. | To mitigate the loss of foraging habitat and fragmentation of connecting habitats. | None required. |
| P03-E51 | The locations of crossing points are shown on Figure 13.5 | Operation | Fragmentation of habitat will be prevented during operation by retention of commuting routes or creation of suitable crossing points, including culverts suitable for passage by mammals and dry mammal underpasses, so movement between areas of habitat can be maintained. | To mitigate against potential direct mortality of otter and badger. | None required. |
| P03-E52 | Throughout the proposed scheme | Design/Operation | Design to minimise need for operational lighting at crossing points. | To mitigate habitat loss, fragmentation of habitat for commuting and reduced availability of foraging resources under the footprint of the proposed scheme for | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|---|---|--|--|
| | | | | mammals including bats, badger and otter. | |
| P03-E53 | Throughout the proposed scheme | Construction Operation | A replacement artificial holt will be provided for any active holt lost resulting from the proposed scheme, following consultation with SNH. | To mitigate the loss of otter holt. | SNH |
| P03-E54 | The location of mammal fencing is shown on Figure 13.5 | Construction Operation | Otter fencing will be provided to prevent access onto the road and will be positioned in such a way that mammals will be directed to safe crossing points. Otter fencing will follow SNH guidance, Otters and Development (SNH, 2008b). | To mitigate against potential direct mortality of otter. | None required. |
| P03-E55 | Throughout the proposed scheme | Construction Operation | Landscape planting and woodland retention designed to encourage use of crossing points, including culverts suitable for passage by mammals and dry mammal underpasses, so movement between areas of habitat can be maintained. | To mitigate against potential direct mortality of otter and badger. | None required. |
| P03-E56 | Throughout the proposed scheme | Construction Operation | The loss of habitat and individual trees identified as having bat potential, and roost trees, will be mitigated by the provision of bat boxes, for example Schwegler 1FF and 2F boxes. Three bat boxes will be provided as mitigation for each roost tree or high potential tree lost under the footprint of the proposed scheme. | To mitigate the loss of roosts and potential roost habitat under the footprint of the proposed scheme. | None required. |
| P03-E57 | Throughout the proposed scheme | Pre-Construction Construction Operation | Following pre-construction surveys, any roosts in structures under the footprint of the design will be mitigated through the provision of bat boxes specifically designed for external surfaces of structures. The replacement of roost structures will include the following: <ul style="list-style-type: none"> • examples of suitable replacement roosts are Schwegler 1FQ, 1WQ and 2FE bat boxes; • bat boxes will be mounted on the abutments/piers (depending on construction) of the new structure; and • during construction of the new structure, bat boxes will be erected in the surrounding habitat to replace the lost roost in the interim. | To mitigate for the loss of bat roosts within the works footprint. | SNH |
| P03-E58 | ch1600 | Construction Operation | The loss of confirmed roost structures under the footprint that will not be replaced within the scheme design will be mitigated through the provision of bat boxes incorporated into a purpose built structure, constructed in advance of removal of the existing roost structure. The replacement roost structure will be built of reclaimed material from the existing structure, where possible, and will include the following: <ul style="list-style-type: none"> • suitable replacement roosts, for example, Schwegler 1FR, 2WI 1GS & 2FE bat boxes; and • during construction of the new structure, bat boxes will be erected in the surrounding habitat to replace the lost roost in the interim. | To mitigate for loss of bat roosts within the works footprint. | SNH |
| P03-E59 | ch5250 | Pre-Construction Construction Operation | The loss of roosts in buildings as a result of alteration of Guay Farmhouse Wing will be mitigated through compliance with measures detailed in a Species Protection Plan to be prepared as part of the contract documents (Mitigation Item SMC-S1). The following mitigation will be included: The following mitigation will be included: <ul style="list-style-type: none"> • provision of integrated bat boxes and bricks, and internal boarding, on and in the new | To mitigate for loss of roosts resulting from alteration to Wing of Guay Farmhouse. | SNH |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|------------------------|---|---|--|
| | | | walls; <ul style="list-style-type: none"> incorporating entrance points and openings to maintain air flow; and boarding up of windows and doors to prevent light ingress, to maintain current conditions. | | |
| P03-E60 | Throughout the proposed scheme | Construction Operation | Landscape planting (including planting of larger individual trees) and woodland retention designed to encourage use of crossing points, including culverts suitable for passage by mammals and dry mammal underpasses and hop-overs, so movement between areas of habitat can be maintained. | To mitigate bat habitat loss, fragmentation of habitat for commuting and reduced availability of foraging resources under the footprint of the proposed scheme. | None required. |
| P03-E61 | Throughout the proposed scheme | Construction Operation | Landscape planting around SuDS ponds/basins on the northbound carriageway (which is mirrored on the southbound carriageway), to create suitable habitat for foraging bats and to encourage higher flight lines to prevent vehicle collisions. | To mitigate bat habitat loss, fragmentation of habitat for commuting and reduced availability of foraging resources under the footprint of the proposed scheme. | None required. |
| P03-E62 | For locations see A12.3 (Confidential Ecology Features) Further locations to be confirmed following further survey, if required. | Pre-Construction | Any main sett that falls under the footprint of the proposed scheme, or which due to the nature of works will be at risk from partial destruction or significant disturbance will be replaced by an artificial badger sett, as close to the existing sett as possible. Further bait marking surveys will be required to identify the extents of the territories, if necessary. Artificial setts will be constructed six months prior to the closure of the main sett which will need to be undertaken between late-June to late-November inclusive. | To mitigate for loss of a main badger sett within the footprint of the proposed scheme. | SNH |
| P03-E63 | Throughout the proposed scheme | Pre-construction | Loss of areas identified as badger habitat will be replaced through habitat creation. | To mitigate the loss of badger setts and foraging habitat under the footprint of the proposed scheme. | None required. |
| P03-E64 | Throughout the proposed scheme | Construction | Badger fencing will be provided to prevent access onto the road and will be positioned in such a way that mammals will be directed to safe crossing points. | To mitigate against potential direct mortality of badger. | None required. |
| P03-E65 | Throughout the proposed scheme (Figure 13.5) | Construction | The loss of areas identified as breeding bird habitat will be replaced through landscape planting, including the planting of woodland, scrub, hedgerow and species-rich grassland. | To mitigate the loss of suitable breeding habitat, which could result in reduced breeding success, under the footprint of the proposed scheme. | None required. |
| P03-E66 | For locations see A12.3 | Construction | Provision of barn owl nest boxes as compensation for loss of breeding habitat. This should be carried out at construction stage to ensure alternative provision for barn owls when | To mitigate the loss of suitable barn owl breeding | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|----------------------|--|---|--|
| | (Confidential Ecology Features) | | Mitigation Item P03-E36 is implemented to reduce the effects of disturbance on this species. | habitat, which could result in reduced breeding success, under the footprint of the proposed scheme. | |
| P03-E67 | Throughout the proposed scheme | Construction | The loss of areas identified as pine marten and red squirrel habitat will be mitigated for through woodland retention and woodland planting as shown on Figure 13.5. Trees of different age and species composition will be planted, for example Scots pine, birch and alder, as appropriate, and as incorporated into Habitat Management Plans. | To mitigate the loss of and fragmentation of pine marten and red squirrel habitat under the footprint of the proposed scheme. | None required. |
| P03-E68 | Throughout the proposed scheme | Construction | Each lost pine marten den will be replaced by a breeding box. | To mitigate the loss of and fragmentation of pine marten habitat under the footprint of the proposed scheme. | None required. |
| P03-E69 | Throughout the proposed scheme | Construction | Each identified lost drey will be replaced by a red squirrel nest box. Locations for nest box replacement. | To mitigate the loss of and fragmentation of red squirrel habitat under the footprint of the proposed scheme. | None required. |
| P03-E70 | Throughout the proposed scheme | Pre-construction | The loss of areas identified as KRS will be replaced through landscape planting and habitat creation (to be provided pre-construction) (Figure 13.5), including appropriately located hibernacula (hibernation sites). Additional enhancement of areas used for reptile translocation pre-construction will include: <ul style="list-style-type: none"> • areas of insolation (sun exposure) with varied topography; • shelter from the elements, such as wind breaks consisting of woodland edges, wet and dry habitats, gullies and ditches; • hibernation sites such as gorse/birch root systems, rocky crevices and purple moor-grass tussocks; • habitats that support prey species for reptiles, for example insects, soft bodied invertebrates and small mammals; • shelter from predators; • breeding habitat that is structurally diverse; • habitat connectivity; and • ecotones (interfaces between habitats and transitional zones). | To mitigate the loss of reptile habitat under the footprint of the proposed scheme. | None required. |
| P03-E71 | At SuDS throughout the proposed scheme | Operation | Features to include, but not limited to, rock piles will be used to provide basking opportunities for reptiles where appropriate, within the grassland around SuDS | To mitigate the loss of reptile habitat under the footprint of the proposed scheme. | None required. |
| P03-E72 | Ecological/ Compensatory Flood Storage | Design/ Construction | The following specifications will be required for the Ecological/Flood Compensatory Storage Pond as part of the mitigation: <ul style="list-style-type: none"> • a constant water depth of approximately 30cm should be provided in the pond. Deeper | To mitigate for loss of northern damselfly habitat | None required. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|------------------------------|--|
| | Pond at ch6400-6500 | | <p>areas of at least 75cm deep (although no need to be any greater than 2m deep) should be provided to ensure the pond remains wet throughout the year, and adds diversity to the pond, providing a variety of niches. Shallower areas (c.20-25cm deep) to the north and west edges of the pond should also be provided (British Dragonfly Society, 2010);</p> <ul style="list-style-type: none"> • a variety of vegetation to be provided in the pond, including submerged, emergent and marginal vegetation, with large areas of open water, is needed. Suitable species for consideration are provided in BDS guidance (British Dragonfly Society, 2010); • the pond should be designed to be predominantly unshaded by bankside vegetation, but sheltered from wind. Trees/hedges to be provided to the north/west of the pond to achieve this specification. Overhanging trees should be avoided, however, as they can shade the ponds and drop leaf litter which can impact the habitat for damselflies and dragonflies; • landscape planting around the pond, where possible, should involve the establishment of species-rich grassland to encourage invertebrates and thus potential prey species for dragonflies and damselflies species; and • sediment from the pond habitat to be lost will be translocated to the receptor pond to allow for natural regeneration of species populations. This will be undertaken prior to construction and will be undertaken following guidance from relevant conservation bodies. | | |

Table 21.7: Landscape and Visual

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|-------------------------------|---|--|--|
| Standard A9 Mitigation | | | | | |
| SMC-LV1 | Throughout proposed scheme | Construction | The construction programme will be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts and areas will be cleared for construction as close as possible to works commencing and topsoiling, reseeding and planting shall be undertaken as soon as practicable after sections of work are complete. | To reduce the duration of any landscape and visual impacts | None required |
| SMC-LV2 | Throughout proposed scheme | Pre-Construction Construction | As far as practicable, construction plant and materials storage areas will be appropriately sited to minimise their landscape and visual impact. | To reduce landscape and visual impact of plant and material storage areas. | None required |
| SMC-LV3 | Throughout proposed scheme | Construction | Construction sites will be kept tidy (e.g. free of litter and debris) | To reduce visual impact of construction sites | None required |
| SMC-LV4 | Throughout proposed scheme | Construction | Work during hours of darkness will be avoided as far as practicable, and where necessary, directed lighting will be used to minimise light pollution/glare. Lighting levels shall be kept to the minimum necessary for security and safety. | To reduce light pollution/glare during night-time working. | None required |
| SMC-LV5 | Throughout | Construction | To protect soil quality for the purposes of landscape planting, the following measures will | To protect soil quality for the | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|--------------------------------|----------------------|--|---|--|
| | proposed scheme | | <p>be implemented:</p> <ul style="list-style-type: none"> Uncontaminated topsoil for re-use shall be stored in un-compacted mounds no more than 2m in height, and stored separately from subsoil material. Topsoil stripped from areas designated as Ancient Woodland shall be stored separately to all other topsoil and sub-soil material, in un-compacted mounds no more than 2 m in height. Stripped topsoil shall be used in areas of the same proposed vegetation type to utilise the existing natural seed bank. Subsoil in planting areas shall be replaced after construction and ripped to a minimum of 450 mm prior to topsoiling and planting. Proposed planting areas in existing arable and pasture land, not subject to construction activity, shall be ripped to 600 mm to alleviate compaction. | purposes of landscape planting. | |
| SMC-LV6 | Throughout proposed scheme | Construction | The construction shall be managed such that the loss of any existing woodland, scrub, heath, mire, grassland vegetation, marshland, swamps and isolated trees and shrubs not affected by the permanent works is minimised. | To limit vegetation loss as far as practicable. | None required |
| SMC-LV7 | Throughout proposed scheme | Pre-Construction | All existing trees and shrubs not affected by the construction of the permanent works shall be fenced off with a suitable type of temporary fencing in accordance with BS5837. Fencing shall extend to the drip line of the tree canopies (unless otherwise agreed by an arboricultural advisor), and shall be erected prior to any construction activities in that area and shall remain for the entire period of construction in that area. | To protect existing trees and shrubs unaffected by the proposed scheme. | None required |
| <i>n/a (note)</i> | <i>n/a</i> | <i>n/a</i> | <i>Further to the above, Mitigation items SMC-E7 and SMC-E8 (as detailed in Table 12.10, Chapter 12: Ecology and Nature Conservation) will be implemented to protect vegetation which is identified to be retained.</i> | <i>To protect vegetation which is identified to be retained.</i> | <i>n/a</i> |
| Project Specific Mitigation | | | | | |
| P03-LV8 | Throughout proposed scheme | Design/ Construction | <p>Earthworks proposals aim to minimise the impact of cuttings and embankment slopes and to allow integration of the proposed scheme with surrounding land through:</p> <ul style="list-style-type: none"> use of retaining walls or engineered slopes where appropriate to avoid extensive cuttings into hill slopes or large embankments that 'chase the slope' and avoid the increase in the disturbance of the landscape; where soil nailed cutting slopes are required on soft-faced slopes, slopes will be fully vegetated to reduce visual impacts. The soil nail heads will be recessed with mesh and nail heads/plates concealed from view. The design will include for sufficient topsoil depths in order to support the proposed planting and seeding, which will establish to cover the nail heads and any mesh that may be required; where soil nailed cutting slopes are required on hard-faced slopes with acute angles which will not support vegetation, their aesthetic design will be carefully considered. The slope will be clad with patterned concrete panels which will mimic a battered retaining wall to aid integration within the surrounding landscape sensitive grading and profiling of all earthworks where possible to improve integration with the surrounding landform, modifying embankment and cutting slopes to reflect and tie smoothly into existing natural landform and to allow land to be returned to its previous use where appropriate; | To reduce the impact of cuttings and embankment slopes and to allow integration of the proposed scheme with surrounding land. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|--------------------------------|--|---|--|
| | | | <ul style="list-style-type: none"> softening changes in slope at junctions and overbridges by smoothing out transitions; rounding off top and bottom of cuttings and embankments; varying gradients along and across the length of the slopes; and modification of earthworks around SuDS features in order to improve integration with surrounding landform. | | |
| P03-LV9 | Throughout proposed scheme | Design/ Construction | <p>SuDS features required as part of the drainage system of the proposed scheme, provide the opportunity to create new beneficial features within the landscape and habitat for wildlife. Their design should comply with Appendix A13.7 (SuDS Design Principles) and include the following:</p> <ul style="list-style-type: none"> where practicable they are sited within naturally low areas and designed to look as natural as possible; their earthworks will be designed to integrate naturalistically with the surrounding landform. Abrupt changes in slope, sharp angles and steep side slopes will generally be avoided; boundary fencing, where required around SuDS, will be designed to be as unobtrusive as possible; planting of native tree and shrub species will help screen proposed fencing, outfall and inlet structures, enhance wildlife habitat and provide visual interest; open ground in the areas around proposed SuDS features will be seeded with native grasses and wildflowers or heathland vegetation, as appropriate, to provide added wildlife habitat and visual interest; and the margins of SuDS ponds/basins will be planted with native emergent and marginal plant species (e.g. greater bird's-foot trefoil, yellow iris, white water-lily, purple-loosestrife and meadowsweet) to help integrate them with the surrounding landscape and enhance their visual amenity and wildlife value. | To mitigate visual intrusion of SuDS features and to enhance their visual amenity and wildlife value. | None required |
| P03-LV10 | Throughout proposed scheme | Construction Post-Construction | The Compensatory Flood Storage Areas will have the potential to be visually intrusive and alter the character of the landscape. Where practicable they will be returned to their former land cover/land use so that they blend in with the surrounding landscape. The use of retaining walls and 'hard' structures will be avoided and earthwork slopes slackened where practicable, to integrate with the surrounding landform. | To reduce impacts on both landscape and visual receptors | None required |
| P03-LV11 | Structures throughout the proposed scheme | Design/ Construction | Noise barriers have the potential to be visually intrusive when viewed from the existing A9 and surrounding properties. Where possible earth bunding will be used to provide noise attenuation in order to reduce potential impacts on landscape character and visual amenity. Where earth bunding is not a practical option, stone walling is considered to be the most appropriate form of noise barrier to integrate with the local landscape character. In locations where stone walling is not practicable and noise fencing is required, timber fencing or similar will be used with careful consideration given to the detailed design of the noise barriers and use of planting considered in order to help screen the noise barriers from nearby visual receptors. | To reduce impacts on both landscape and visual receptors | None required |
| P03-LV12 | Throughout | Design | The design of structures, such as bridges along the length of the proposed scheme and | To reduce impacts on both | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-----------------------------------|---|--|--|
| | proposed scheme | | aspects of the landscape design, has been informed by specialist aesthetic advice and design meetings in order to reduce impacts on both landscape and visual receptors. While the measures to be adopted will be confirmed at the detailed design stage, mitigation will include measures such as a patterned or relief finish to sections of retaining wall and for bridges, carefully integrated abutments and/or refinement of the design process in order to achieve slender, elegant and well-proportioned structures | landscape and visual receptors | |
| P03-LV13 | Throughout proposed scheme | Construction | Retention of existing trees and vegetation wherever possible and incorporation with new planting proposals. | To retain existing trees and vegetation wherever possible | SNH |
| P03-LV14 | Throughout proposed scheme | Construction Post-Construction | Planting to replace trees lost during construction, particularly in areas designated as ancient woodland. | To provide new wildlife habitats, connectivity with existing woodland and complement existing adjacent habitats. | SNH |
| P03-LV15 | Throughout proposed scheme | Construction | Enhancement of biodiversity through use of native species, providing new wildlife habitats and complementing existing adjacent habitats. Planting proposals have been developed in consultation with ecology specialists. Refer to Chapter 12 (Ecology and Nature Conservation). | To provide new wildlife habitats, connectivity with existing woodland and complement existing adjacent habitats. | SNH |
| P03-LV16 | Throughout proposed scheme | Construction | Planting of woodland at junctions and bridges to help assimilate these elements into the surrounding landscape. | To reduce impacts on both landscape and visual receptors | SNH |
| P03-LV17 | Throughout proposed scheme | Construction | Planting to provide screening to reduce visual impacts of the road, structures and vehicle headlights. | To provide screening and reduce visual impacts of the road, structures and vehicle headlights | None required |
| P03-LV18 | Throughout proposed scheme | Construction | Use of severed field corners and landlocked areas as appropriate for planting. | To ensure planting mixes are appropriate and in-keeping with local area. | SNH |
| P03-LV19 | Throughout proposed scheme | Construction | Proposed planting mixes will be based on native species, proven by established presence within the local area and adapted to local conditions. The planting will be monitored for a minimum of five years after construction with annual replacement of any failed planting with stock of a suitable age so as to achieve full establishment and the required level of mitigation/impact reduction by summer 15 years after opening. | To ensure seed mixes are appropriate and suited to locations. | None required |
| P03-LV20 | Throughout proposed scheme | Construction | For all disturbed soft areas and road verges, different seed mixes will be used, dependent on location and use. | To ensure seed mixes are appropriate and suited to locations | None required |
| P03-LV21 | Throughout proposed scheme | Construction | Planting will be applied within the road corridor in order to enhance the experience of travelling along the proposed scheme by maintaining important open views and creating views to a variety of woodland types. The species composition of such planting will take | To enhance the experience of travelling along the proposed scheme. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------|--------------------------------|-------------------|---|---|--|
| | | | account of aspects such as natural woodland characteristics typical in the locality and designed landscape features. | | |
| P03-LV22 | Throughout proposed scheme | Construction | Refer to Chapter 14 (Visual) for details of mitigation measures necessary to reduce the landscape and visual impacts of the proposed lighting. | To reduce impacts on both landscape and visual receptors | None required |
| <i>n/a (note)</i> | <i>n/a</i> | <i>n/a</i> | <i>Further to the above, mitigation items P05-W29, P05-W30, P05-W31, P05-W32 and P05-W33 (as detailed in Table 21.5) will be implemented to reduce the risk of erosion, replicate the natural bed and improve functionality of the water feature.</i> | <i>To reduce the risk of erosion, replicate the natural bed and improve functionality of the water feature.</i> | <i>n/a</i> |

Table 21.8: Cultural Heritage

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|------------------------------------|--------------------------------|-------------------|--|--|---|
| Standard A9 Mitigation | | | | | |
| SMC-CH1 | Throughout the proposed scheme | Construction | The Contractor will consult with the relevant local authority and Transport Scotland's historic environment advisor should any archaeological or cultural heritage finds or sites be discovered or revealed during construction to enable appropriate measures to be implemented to mitigate potential impacts. | To enable appropriate mitigation measures to be implemented to mitigate impacts on assets found during construction. | HES and Perth & Kinross Heritage Trust (PKHT), Transport Scotland's cultural heritage advisors. HES if mitigation includes Scheduled Monument, Category A Listed Building, Historic Battlefield or Garden & Designed Landscape |
| Project Specific Mitigation | | | | | |
| P03-CH2 | Archaeological Remains | Pre-Construction | Trial trenching targeted on both known archaeological remains and areas of archaeological potential, to inform the nature, scope and scale of mitigation required will be undertaken prior to construction | To enable appropriate mitigation measures to be implemented to mitigate impacts on assets found during construction. | The appointed curator, Transport Scotland's cultural heritage advisors. HES for trial trenching of Scheduled Monuments |
| P03-CH3 | Refer to description | Pre-Construction | Following trial trenching (Mitigation Item P03-CH2), archaeological excavation would be undertaken in advance of construction to make a permanent record of any affected archaeological remains at: <ul style="list-style-type: none"> • Dunkeld to Inverness Military Road, Ledpetty Lodge to Dowally (Site of) (Asset 193); • Dowally, Possible Enclosure (Asset 213); • Dunkeld to Inverness Military Road, Guay to Kindallachan (Site of) (Asset 219); | To make a permanent record of any affected archaeological remains. | The appointed curator, Transport Scotland's cultural heritage advisor. HES for excavations of Scheduled Monuments |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--|-------------------|--|--|---|
| | | | <ul style="list-style-type: none"> • Haugh of Kilmorich, Township (Site of) (Asset 232); • Kilmorich/Guay, Possible Standing Stone (Site of) (Asset 233); • Cuil-An-Duin, Wade's Road Culvert (Asset 242); • Dunkeld to Inverness Military Road (Site of) (Asset 248); • Dowally Roadside Memorial (Asset 780); • Rotmell Farm, Curvilinear Features (Asset 783); • Dowally Farm, Field Boundaries (Asset 784); • Dowally Church, Field Boundary and Curvilinear Features (Asset 785); • Dowally Farm, Possible Enclosure and Pits (Asset 786); • Kilmorich, Possible Settlement (Asset 789); • Haugh Cottages, Rectilinear and Curvilinear Features (Asset 790); and • West Haugh of Tulliemet, Curvilinear Features and Possible Field Boundaries (Asset 791). | | |
| P03-CH4 | Kindallachan cairn (Asset 221; a Schedule Monument) | Pre-Construction | To mitigate the construction impacts on Kindallachan, cairn (Asset 221; a Scheduled Monument), a Level 3 archaeological earthwork record will be undertaken. | To avoid accidental damage to Kindallachan cairn | HES and the appointed curator, Transport Scotland's historic environment advisor. |
| P03-CH5 | Archaeological remains | Construction | Archaeological recording during construction (watching brief) | To make a permanent record of any affected archaeological remains. | The appointed curator, Transport Scotland's historic environment advisor. HES for recording of Scheduled Monuments |
| P03-CH6 | Kindallachan cairn (Asset 221) Kindallachan standing stone (Asset 225) | Pre-Construction | To mitigate the potential construction impacts on Kindallachan, cairn (Asset 221) and standing stone (Asset 225; a Scheduled Monument) a set piece excavation informed by trial trenching and dissemination of the results via a report, and the deposition of an ordered archive at the National Record of the Historic Environment (NRHE). | To make a permanent record of any affected archaeological remains. | HES and the appointed curator, Transport Scotland's historic environment advisor. |
| P03-CH7 | Kindallachan, standing stone (Asset 225) Westhaugh of Tulliemet (Asset 235) | Construction | To mitigate any potential for accidental damage to Kindallachan Standing Stone (Asset 225; a Scheduled Monument) during construction, the asset will be protected as required following discussion between HES and Transport Scotland's appointed contractor and will be clearly demarcated with protective fencing and appropriate signage. In addition, prior to works commencing a photographic survey of the standing stone and scheduled area will be undertaken and again on completion of the works to ensure that the condition of the scheduled area is returned to its previous state These measures would be agreed in advance with HES and will require Scheduled Monument Consent. To mitigate any potential for accidental damage to Westhaugh of Tulliemet, cross slab | To avoid accidental damage to Kindallachan standing stone and Westhaugh of Tulliemet | HES and the appointed curator, Transport Scotland's historic environment advisor. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|---|--------------------------------|---|---|---|
| | | | 180m SE of (Asset 235; a Scheduled Monument) during construction, the asset will be supported as required following discussion between HES and Transport Scotland's appointed contractor and will be clearly demarcated with protective fencing and appropriate signage. The proposed fenced area will be confirmed with HES prior to the erection of any protective fencing and will be located outwith the scheduled area. In addition, prior to works commencing a photographic survey of the standing stone and scheduled area will be undertaken and again on completion of the works to ensure that the condition of the scheduled area is returned to its previous state These measures would be agreed in advance with HES and may require Scheduled Monument Consent | | |
| P03-CH8 | Throughout the proposed scheme | Construction | Archaeological mitigation to make a permanent record of any affected previously unknown archaeological remains will include strip, map and sample. | To make a permanent record of any affected previously unknown archaeological remains. | The appointed curator, Transport Scotland's historic environment advisor. HES for matters relating to Scheduled Monuments |
| P03-CH9 | Guay Farmhouse (Asset 216) | Pre-Construction/ Construction | A Level 2 building record (Historic England, 2016) will be undertaken of Guay Farmhouse prior to construction to record the asset in its current condition. A Level 2 record comprises a drawn record, a detailed measured plan, drawn elevations of areas to be removed/impacted by the alterations, and a photographic and written record. | To record the current form and condition of Guay Farmhouse | PKC and PKHT, Transport Scotland's historic environment advisor, HES |
| P03-CH10 | Gable end of Guay Farmhouses' wing (Asset 216) | Pre-Construction | To mitigate the removal of the southern gable end of Guay Farmhouse Wing (Asset 216, a Category B Listed Building) during construction, two phases of alterations are proposed. The first phase will be the alteration of the Wing, and the second phase will be the implementation of measures to protect the longevity of the Wing. | To mitigate partial demolition of the Guay Farmhouse wing | PKC and PKHT, Transport Scotland's historic environment advisor, HES |
| P03-CH11 | Guay Farmhouse (Asset 216) | Construction | To mitigate any potential for accidental damage to Guay Farmhouse during construction, the asset will be protected as required following discussion between PKC and Transport Scotland's appointed contractor and will be clearly demarcated with protective fencing and appropriate signage . | To avoid accidental damage to Guay Farmhouse | PKC and PKHT, Transport Scotland's historic environment advisor, HES |
| P03-CH12 | Westhaugh of Tulliemet Possible Military Bridge (Asset 781) | Pre-Construction Construction | A Level 3 building record (Historic England, 2016) will be undertaken of Westhaugh of Tulliemet Possible Military Bridge (Asset 781) prior to construction to record the asset in its current condition. Level 3 provides an analytical record containing information obtained largely through an examination of the building itself and those documentary sources most readily accessible. | To record the current form and condition of Westhaugh of Tulliemet Possible Military bridge | The appointed curator, Transport Scotland's historic environment advisor. |
| P03-CH13 | Dowally Bridge (Asset 212) | Pre-Construction Construction | A Level 2 building record (Historic England, 2016) will be undertaken of Dowally Bridge (Asset 212) prior to construction to record the asset in its current condition. | To record the current form and condition of Dowally Bridge | The appointed curator, Transport Scotland's historic environment advisor. |
| P03-CH14 | Cuil-an-Duin Retaining Wall (Asset 782) | Pre-Construction | An historic building photographic survey (Historic England, 2016) will be undertaken of Cuil-an-Duin Retaining Wall (Asset 782) prior to construction to make a photographic record of the asset in its current condition. | To record the current form and condition of Cuil-an-Duin Retaining Wall | The appointed curator, Transport Scotland's historic environment advisor. |
| P03-CH15 | Throughout the proposed scheme | Pre-Construction Construction | To achieve adherence to good practice guidance, all cultural heritage mitigation, including that outlined in Appendix A15.4 (Cultural Heritage Impact, Mitigation and Residual Impact Tables) will be undertaken in accordance with relevant guidance | To record the current form and condition and avoid accidental damage to | The appointed curator, Transport Scotland's historic environment advisor. |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------------------|--|---|--|
| | | | provided by the Chartered Institute for Archaeologists, HES and Historic England, and a Written Scheme of Investigation (WSI) that will be agreed with Perth & Kinross Heritage Trust and Transport Scotland's historic environment advisor. For archaeological excavations at Kindallachan, cairn and Kindallachan, standing stone, the WSI will be agreed with HES as part of the SMC process. | specific cultural heritage assets. | HES for matters relating to Scheduled Monuments |
| P03-CH16 | Throughout the proposed scheme | Pre-Construction Construction | To achieve appropriate reporting and dissemination of the results, all cultural heritage mitigation will include a programme of assessment, reporting, analysis, publication and dissemination of results commensurate with the value of the archaeological remains and historic buildings affected. This will include the preparation of reports which will be submitted to the Perth & Kinross Historic Environment Record and the NRHE, along with ordered archives which will be submitted to an appropriate repository. | To ensure appropriate reporting and dissemination of the results. | The appointed curator, Transport Scotland's historic environment advisor. HES for matters relating to Scheduled Monuments |
| P03-CH17 | Guay Farmhouse (Asset 216) | Pre-Construction Construction | To facilitate the long-term future of the farmhouse, a detailed strategy will be developed for the management of Guay Farmhouse through to its resale after construction of the proposed scheme: completing any necessary initial remedial works to allow Guay Farmhouse to be let as a residential property (such as internal and external maintenance and repair); letting the property through to the commencement of construction of the proposed scheme in the immediate vicinity of the property; maintaining the property through the construction works whilst empty; completing improvements as necessary and introducing planting and landscaping to ensure it remains an attractive and viable dwelling prior to its resale; and marketing the property for resale and completing its sale. | To ensure the long-term future of Guay Farmhouse | PKC and PKHT, Transport Scotland's historic environment advisor, HES |

Table 21.9: Air Quality

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|-------------------|---|--|--|
| Standard A9 Mitigation | | | | | |
| SMC-AQ1 | Throughout proposed scheme | Construction | In relation to minimising fugitive dust emissions from earthworks, material storage and concrete batching the following mitigation items will be implemented: <ul style="list-style-type: none"> • stockpiles and mounds will be at a suitable angle of repose to prevent material slippage, will be enclosed or securely sheeted, and/or kept damped as necessary during dry weather; • the surfaces of any long-term stockpiles which give rise to a risk of dust or air pollution will be covered with appropriate sheeting or will be treated to stabilise the surfaces; • mixing of large quantities of concrete will be carried out only in enclosed or shielded areas; • all handling areas will be maintained in a dust free state as far as is practicable with sprinklers and hoses used to prevent dust escaping from the site boundaries; and • procedures will be established so that the site is regularly inspected for spillage of dusty or potentially dusty materials and any such spillage would be dealt with promptly where | To reduce fugitive dust emissions from earthworks, material storage and concrete batching. | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|---|--|---|
| | | | necessary to prevent dust nuisance. | | |
| SMC-AQ2 | Throughout proposed scheme | Construction | In relation to minimising dust from vehicle movements within the site the following mitigation items will be implemented: <ul style="list-style-type: none"> the Contractor will employ appropriate measures, such as covering materials deliveries or loads entering and leaving the construction site by a fixed cover or sheeting appropriately fixed and suitable for the purposes of preventing materials and dust spillage; where unsurfaced routes are identified as creating dust emissions during periods of dry weather, surfaces will be regularly dampened down using water bowsers; and appropriate speed limits will be established and enforced over all unmade surfaces. | To reduce dust from vehicle movements. | None required |
| SMC-AQ3 | Throughout proposed scheme | Construction | In relation to appropriate cleaning of public roads the following mitigation items will be implemented: <ul style="list-style-type: none"> wheel washing facilities will be installed as required and heavy vehicles will be required to use the facilities prior to leaving the site; subject to approval from Transport Scotland and the network operator, public roads immediately outside the site entrance will be cleaned using vacuum sweeper brushes and other specialised road cleaning equipment as necessary to maintain an appropriate state of cleanliness; and roads and footpaths adjacent to the proposed scheme will be cleaned, with damping if necessary. | To reduce potential of dust from public roads. | Approval required from the Roads Authority. |

Table 21.10: Noise and Vibration

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|----------------------------------|--|---|---|
| Standard A9 Mitigation | | | | | |
| SMC-NV1 | Throughout proposed scheme | Pre-Construction Construction | A scheme of noise and vibration monitoring will be agreed with the Environmental Health Officer of Perth & Kinross Council, and noise and vibration limits will be contained within the Construction Environmental Management Plan (refer to Mitigation Item S1). The contractor will be required to develop and implement a Noise and Vibration Management Plan to meet these requirements. | To predict the noise and vibration levels during the construction of the proposed scheme. It will include the design of receptor specific mitigation, over and above the standard mitigation detailed in SMC-NV2, where required. | PKC Environmental Health Officer |
| SMC-NV2 | Throughout proposed | Construction | Best Practicable Means will be used to limit the level of noise to which operators and others in the vicinity of site operations would be exposed. This includes the following: | To reduce, as far as practicable, the level of | PKC if any working outwith normal working hours |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-----------------|--------------------------------|-------------------|--|--|--|
| | scheme | | <ul style="list-style-type: none"> • the hours of working will be planned and account will be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods; • any work outside of normal working hours will be agreed with the relevant local authority; • where reasonably practicable, quiet working methods will be employed, including use of the most suitable plant, reasonable hours of working for noisy operations, and economy and speed of operations; • permanent noise mitigation measures such as acoustic screens and earthwork bunds are to be constructed as early as practical; • noise will be controlled at source, for example, by modification of existing plant/equipment, its use and location and ensuring maintenance of all noise-generating equipment; • the spread of noise will be limited, i.e. by distance between source and receiver and/or screening; • on-site noise levels will be monitored regularly, particularly if changes in machinery or project designs are introduced, by a suitably qualified person appointed specifically for the purpose. A method of noise measurement would be agreed with the local authority prior to the commencement of site works; • on those parts of a site where high levels of noise are likely to be a hazard to persons working on the site, prominent warning notices will be displayed and, where necessary, ear protectors will be provided; • proper use of plant with respect to minimising noise emissions and regular maintenance in line with plant manuals; • where practicable, vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers and will be maintained in good, efficient working order; • where appropriate, inherently quiet plant will be selected. All major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; • machines in intermittent use will be shut down in the intervening periods between work or throttled down to a minimum; • all ancillary plant such as generators, compressors and pumps will be positioned so as to cause minimum noise disturbance. If necessary, acoustic barriers or enclosures will be provided; and • adherence to the codes of practice for construction working and piling given in British Standard 'BS 5228:2009+A1:2014' and the guidance given therein minimising noise emissions from the site. | noise to which operators and others in the vicinity of site operations would be exposed. | |
| n/a (note) | n/a | n/a | In addition to the above, mitigation item SMC-S3 will also mitigate potential for noise disturbance through the overall communications strategy for the A9 Dualling Programme and | | |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|---|--|-------------------|---|---|--|
| | | | <i>appointed Community Liaison Officer and liaison team.</i> | | |
| Project Specific Mitigation | | | | | |
| <i>Note for P03-NV3 to NV7: stated noise barrier heights and lengths are based on the DMRB Stage 3 design, to achieve the residual; impacts stated in the ES.</i> | | | | | |
| P03-NV3 | ch1500-1600 around garden boundary of Ledpetty Lodge | Construction | A 1.8m high, 41m long noise barrier, bund or drystone wall (or a combination thereof) will be erected. For any noise barrier fences these would need to be of a minimum mass per unit area of 15kg/m ² with no holes or gaps. Timber fences will be overlapped to allow for shrinkage. | To reduce potential noise impacts at noise sensitive receptors. | None required. |
| P03-NV4 | ch2900-3000 | Construction | A 1.4m high, 61m long noise barrier, bund or drystone wall (or a combination thereof) will be erected. For any noise barrier fences these would need to be of a minimum mass per unit area of 15kg/m ² with no holes or gaps. Timber fences will be overlapped to allow for shrinkage. | To reduce potential noise impacts at noise sensitive receptors. | None required. |
| P03-NV5 | ch4070-4220 | Construction | A 1.5m high, 139m stone mortar wall will be erected. For any noise barrier fences these would need to be of a minimum mass per unit area of 15kg/m ² with no holes or gaps. Timber fences will be overlapped to allow for shrinkage. | To reduce potential noise impacts at noise sensitive receptors. | None required. |
| P03-NV6 | ch5200-5300 | Construction | A 1.5m high, 96m long noise barrier, bund or drystone wall (or a combination thereof) will be erected. For any noise barrier fences these would need to be of a minimum mass per unit area of 15kg/m ² with no holes or gaps. Timber fences will be overlapped to allow for shrinkage. | To reduce potential noise impacts at noise sensitive receptors. | None required. |
| P03-NV7 | ch5260-5300 | Construction | A 2.4m high, 24m long noise barrier, bund or drystone wall (or a combination thereof) will be erected. For any noise barrier fences these would need to be of a minimum mass per unit area of 15kg/m ² with no holes or gaps. Timber fences will be overlapped to allow for shrinkage. | To reduce potential noise impacts at noise sensitive receptors. | None required. |
| P03-NV8 | Beyond northern end of proposed scheme (including Inch of Tulliemet, Dalnabo Farm Cottage, Vine Cottage and Briar Cottage) | Construction | Application of Low Noise Road Surface (LNRS) to existing A9 carriageways. The exceedance of the noise mitigation criteria at the properties is due to traffic flow increases on the A9. | To reduce potential noise impacts at noise sensitive receptors. | None required. |

Table 21.11: Materials

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------------------|--------------------------------|-------------------------------|---|--|--|
| Standard A9 Mitigation | | | | | |
| SMC-M1 | Throughout proposed scheme | Pre-Construction Construction | <p>Prior to construction a Site Waste Management Plan (SWMP) will be developed as part of the CEMP (see Mitigation Item SMC-S1) to set out how all construction phase materials will be managed and it will be updated regularly during the construction of the proposed scheme. The SWMP will identify, prior to the start of construction works, the types and likely quantities of wastes that may be generated and it will set out, in an auditable manner, how waste will be reduced, re-used, managed and disposed of in accordance with relevant Zero Waste Scotland Guidance. The SWMP will include specific materials management and soil management plans developed under voluntary and industry regulated Codes of Practice including:</p> <ul style="list-style-type: none"> • Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009); • Land Remediation and Waste Management Guidelines (SEPA, 2009); and • Promoting the Sustainable Reuse of Greenfield Soils in Construction (SEPA, 2010). <p>Appropriate waste minimisation and associated KPI targets will also be included.</p> | To set out how all construction phase materials will be managed. | Consultation with SEPA. |
| SMC-M2 | Throughout proposed scheme | Pre-Construction Construction | The Contractor will comply with all relevant waste legislation in relation to waste handling, storage, transport and disposal (e.g. The Waste Framework Directive) and consultation with SEPA for advice on waste practices where appropriate. | To ensure waste handling, storage, transport and disposal is compliant with all relevant waste legislation. | Consultation with SEPA |
| SMC-M3 | Throughout proposed scheme | Pre-Construction Construction | The Contractor will apply the principles of the 'Waste Hierarchy' (Prevention, Preparing for Reuse, Recycling, Other Recovery, Disposal) to minimise waste generation, maximise re-use of site-won materials on-site and minimise the need for disposal of waste. Where re-use is not possible within the proposed scheme, alternative re-use and recycling options will be sought off-site with disposal the final option, with clear justification of options provided. | To reduce waste generation, maximise re-use of site-won materials on-site and reduce the need for disposal of waste. | None required |
| SMC-M4 | Throughout proposed scheme | Pre-Construction Construction | The Contractor will implement Zero Waste Scotland's Design for Resource Efficient Construction Principles. | To make the best use of materials, over the lifecycle of the proposed scheme's built assets, to reduce embodied carbon emissions | None required |
| SMC-M5 | Throughout proposed scheme | Pre-Construction Construction | Where practicable, the key material elements (i.e. aggregates, asphalt, cement, precast concrete products, ready-mixed concrete and steel) used within the proposed scheme shall be specified to be responsibly sourced from suppliers who have a minimum ISO 14001 certification and, if available, BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) certification for the material. | To reduce impacts associated with the extraction and manufacture of materials. | None required |
| SMC-M6 | Throughout proposed scheme | Pre-Construction Construction | All timber and timber products shall be sourced from independently verifiable legal and sustainable sources as defined in Scottish Procurement Policy Note(s) SPPN 09/2004 and SPPN (09) 2005. | To reduce impacts associated with the extraction and manufacture | None required |

| Mitigation Item | Approximate Chainage/ Location | Timing of Measure | Description | Mitigation Purpose/Objective | Specific Consultation or Approval Required |
|-------------------|--------------------------------|-------------------------------|--|---|--|
| | | | | of materials. | |
| SMC-M7 | Throughout proposed scheme | Pre-Construction Construction | Alternatives to primary aggregates shall be investigated, including opportunities to use recycled or secondary aggregates in the construction of the proposed scheme; either sourced from construction, demolition and excavation waste obtained on-site or off-site; or secondary aggregates obtained from a non-construction or post-consumer or industrial by-product source. | To reduce impacts associated with the extraction, manufacture and transport of materials and to reduce waste generation, maximise re-use of site-won materials on-site and reduce the need for disposal of waste. | None required |
| <i>n/a (note)</i> | <i>n/a</i> | <i>n/a</i> | <i>Further to the above, the following mitigation items detailed in Table 21.2 (Community and Private Assets), Table 21.4 (Geology, Soils and Contaminated Land), Table 21.5 (Road Drainage and the Water Environment) and Table 21.9 (Air Quality) will be implemented to ensure the appropriate management and handling of materials: SMC-CP8, SMC-G3, SMC-G8, SMC-G9, SMC-G10, SMC-G14, SMC-W2, SMC-W6 to SMC-W10, SMC-AQ1 and SMC-AQ2.</i> | <i>To ensure the appropriate management and handling of materials:</i> | <i>n/a</i> |