

20 Schedule of Environmental Commitments

20.1 Introduction

- 20.1.1 This chapter summarises the mitigation measures identified in the ES, which are considered necessary to protect the environment, prior to construction, during construction and/or during operation of the proposed scheme.
- 20.1.2 The purpose of the Schedule of Environmental Commitments is to collate mitigation measures, both for ease of reference and for use by those overseeing the Contract Documents. These mitigation measures are those identified as necessary for the proposed scheme as reported in this ES.
- 20.1.3 As described throughout this ES, the proposed scheme design has been progressed taking account of identified environmental constraints and considerations, enabling avoidance of potential environmental impacts.

20.2 Mitigation Schedules

- 20.2.1 Tables 20.1 to 20.11 summarise the mitigation measures identified within the ES to avoid, reduce or offset potential impacts.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.1: Community and Private Assets Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
CP1	Throughout scheme	Construction Post-Construction	Access to/from land, properties and businesses will be maintained throughout construction period via diversions where necessary, and the contractor will be required to notify the local community of the estimated duration and location of diversions ahead of them being put in place.
CP2	Throughout scheme	Construction Post-Construction	Measures should be taken to ensure adequate signage is maintained during construction and any planned diversions should avoid, where possible, affecting the centre.
CP3	All agricultural land	Operation	Loss of agricultural land and forestry is to be reduced by implementing re-instatement plans i.e. returning land to agricultural use, where appropriate, post construction. A photographic and video survey is to be undertaken to ensure all land is restored as near to its original state as is reasonably practicable and will be made available to the owner or occupier.
CP4	All agricultural land	Construction Operation	Access to agricultural land and woodland to be maintained during the construction process and post construction.
CP5	All agricultural land	Construction	Potential for damage to the agricultural capability of soils to be minimised by the adoption of appropriate measures during construction and reinstatement. This includes the careful excavation, storage and replacement of topsoil and subsoil.
CP6	All agricultural land	Construction Operation	Provision of temporary fences in appropriate locations during construction for the health and safety of the public and animals and to avoid trespass. Where appropriate, fencing of the working area is to be to a standard adequate to excluding any stock kept on adjoining land.
CP7	All agricultural land	Construction	Where boundary features such as fences, walls and hedges have to be removed to allow construction these are to be reinstated with appropriate materials to provide a secure field boundary.
CP8	All agricultural land	Construction	Where access points require temporary or permanent alteration as a result of construction, alternative access for stock and machinery will be provided as appropriate in consultation with the land owner/occupier. If required, recessed access to be provided off side roads with loading/unloading area.
CP9	All agricultural land	Construction	Reasonable precautions are to be taken during construction to avoid the spreading of soil borne pests and diseases, animal and crop diseases and invasive species. Soil testing pre and post construction to be completed to ensure land returned pest/disease free.
CP10	All agricultural land	Construction	Particular care to be taken to reduce damage or disturbance to field and forestry drainage systems. Laying of new drains to be undertaken to maintain drainage systems during construction. Repairing and reinstatement of field drains affected by construction to be agreed with the land owner/occupier to ensure that land capability is maintained and flooding is not exacerbated. Where appropriate the integrity of the drainage system is to be secured in advance through the installation of header drains (cut off drains) to facilitate construction. All remaining remedial works will be undertaken post construction.
CP11	All agricultural land	Construction	Water supplies for livestock are to be protected at all times and alternative supplies provided where access is compromised by any works, unless agreed with the landowner.
CP12	All agricultural land	Pre-Construction Construction	Where individual stands of trees are to be affected an appropriate arboricultural assessment will be undertaken pre-construction and appropriate mitigation employed.
CP13	All agricultural land	Construction	Where there are no windthrow or landscape/visual issues, tree felling is to be reduced to that necessary for safe construction and operation.
CP14	All agricultural land	Construction	Where commercially viable timber is to be felled this will be provided to the landowner. Any remaining forest residues in commercial woodland areas are to be dealt with in accordance with existing forest development plans.
CP15	All agricultural land	Post-Construction	Approximately 8ha of land within CPO for mitigation as flood compensatory storage to be returned to agricultural use following imposition of the appropriate burdens by Transport Scotland.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.2: Geology, Contaminated Land and Groundwater Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
G1	ch2700 and ch4480	Construction	Small amounts of peat are likely to be extracted. Excavation, storage, and any off-site removal required will be undertaken with cognisance of guidance in '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 (Scottish Government, 2011).
G2	Throughout scheme	Construction	SUDS features will be lined unless the contractor confirms agreement with SEPA during the detailed design that this is not necessary to protect the water environment.
G3	Contamination Sources: 1, 6, 10, 18, 20, 25, 26, 27, 28, 31, 36, 37, 38, 41, 43, 58, 59, 60, 65. (Refer to Figure 8.3).	Pre-Construction Construction Operation	Establishment of appropriate health and safety and waste management procedures for working with potentially contaminated soils. Waste management procedures shall include but not be limited to: Waste Management Licence Regulations 1994 (as amended by Waste management licensing Amendment (Scotland) Regulations 2003), HSE Guideline Note MS13 Asbestos 1988, the Health and Safety Commission Approved Code of Practice and Guidance Note.
G4	Contamination Sources: 1, 6, 10, 18, 20, 25, 26, 27, 28, 31, 36, 37, 38, 41, 43, 58, 59, 60, 65. (Refer to Figure 8.3).	Construction	The risks to construction workers will be mitigated by the adoption and use of appropriate PPE. The level of PPE protection should be selected on the basis of the completed land contamination section within the Environmental Statement or subsequent assessments.
G5	Contamination Sources: 1, 6, 10, 18, 20, 25, 26, 27, 28, 31, 36, 37, 38, 41, 43, 58, 59, 60, 65. (Refer to Figure 8.3).	Pre-Construction Construction	Implement a 'watching brief' in order to take account of the fact that there may be isolated pockets of previously unidentified contamination.
G6	Throughout scheme	Construction Operation	Additional site investigations and monitoring will be undertaken to gather additional information on gas issues.
G7	Throughout scheme	Construction Operation	Assessment of gassing issues will be undertaken in accordance with CIRIA 665 following receipt of ground gas monitoring results.
G8	Throughout scheme	Pre-Construction Construction	A ground gas monitoring programme, to be produced prior to construction and adhered to during construction.
G9	Throughout scheme	Pre-construction Construction	The contractor will adopt appropriate working methods for 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.
G10	Throughout scheme	Construction	Establishment of appropriate health and safety and waste management procedures for working with potentially contaminated soils, developed as part of standard Health and Safety procedures.
G11	Throughout scheme	Construction	Store excavated made ground material using bunding facilities.

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
G12	Throughout scheme	Pre-Construction Construction	Re-use criteria to be developed to protect groundwater, surface waters and any ecological receptors. Material exceeding criteria to be treated contained and/or removed for off-site disposal.
G13	Throughout scheme	Construction Operation	Groundwater to be tested prior discharging to a surface water feature.
G14	Throughout scheme	Pre-Construction Construction	The local Environmental Health department (Perth & Kinross Council) will be consulted in order to ensure that ground investigation and subsequent remediation (where necessary) is carried out in order to ensure minimal risk to the groundwater environment.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.3: Road Drainage and the Water Environment Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
Generic/Best Practice			
W1	Throughout scheme	Pre-Construction Construction	The contractor shall prepare a Construction Environmental Management Plan (CEMP), or equivalent, which will address and mitigate risks identified in the ES, and is required to be approved by SEPA prior to construction.
W2	Throughout scheme	Pre-Construction Construction	An Environmental Clerk of Works will ensure that the mitigation measures identified within the CEMP are fully implemented and activities carried out in such a manner as to prevent or reduce impacts on the surface water environment.
W3	Throughout scheme	Pre-Construction Construction	Measures to avoid, reduce or control pollution of surface water and groundwater will incorporate SEPA requirements and CIRIA guidelines for pollution control, including relevant SEPA PPGs and the SEPA (2009) Good Practice Guide: Temporary Construction Methods.
W4	Throughout scheme	Construction	To reduce potential increases in flows into the receiving watercourses during construction, the period of exposure of bare areas and uncontrolled runoff from newly paved areas will be limited as far as practicable.
W5	Throughout scheme	Construction	Plant and material will be stored in safe areas above the 1:200yr flood event floodplain, where practicable, and the aim will be for temporary construction works to be resistant to flood impacts in order to prevent movement or damage during potential flooding events.
W6	Throughout scheme	Pre-Construction Construction	The contractor will prepare construction method statements for any in-stream working for approval by SEPA prior to these specific works. The method statement will include measures to: <ul style="list-style-type: none"> • protect fish; • deal with flowing water appropriately e.g. temporary diversions, over-pumping; • reduce the risk of mobilisation of sediments to an acceptable level by employing reasonably practicable measures; • protect banks where they are particularly vulnerable to erosion; • undertake diversion of flow back into a channel in a manner that reduces the risk of erosion, with temporary bank stabilisation incorporated if necessary; • avoid unnecessary in-stream working; and • comply with SEPA's Good Practice Guide: Temporary Construction Methods (SEPA, 2009).
W7	Un-named tributary 4 of Ordie Burn, Un-named tributary 3 of Gelly Burn & Broomhill Burn (vertical only).	Construction	Where channel realignment is proposed, the following principles will be followed where possible: <ul style="list-style-type: none"> • construct the new channel as early as possible prior to diverting flow from the existing channel to the new course to allow vegetation to colonise bank faces (e.g. one growing season or more); and • minimise length of channel realignment.
W8	Throughout scheme	Pre-Construction Construction	Temporary drainage systems will alleviate localised flood risk and help to prevent obstruction of surface runoff pathways.
W9	Throughout scheme	Pre-Construction Construction	Temporary SUDS systems, or equivalent, will be used to reduce the potential for contaminated runoff to watercourses.
W10	Throughout scheme	Construction	Appropriate control measures for construction site runoff and sedimentation will be implemented during construction, this includes: <ul style="list-style-type: none"> • cleaning of roads to reduce mud and dust deposits (away from watercourses, into appropriate drainage sites); • limit exposed bare areas and uncontrolled runoff from newly paved areas;

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
			<ul style="list-style-type: none"> covering and bunding, if required, of soil stockpiles; use of silt fences where appropriate; early covering/seeding/planting of exposed surfaces where practicable; where appropriate, provision of peripheral cut-off ditches or drainage system to intercept runoff from outside the working area such that it does not encroach on the working area; lay suitable surfacing materials in site compound and on main access routes; and regular proactive visual inspection of the sedimentation measures and receiving watercourses.
W11	Throughout scheme	Pre-Construction Construction	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.
W12	Throughout scheme	Pre-Construction Construction	Where required, CAR authorisation will be obtained from SEPA and oil interceptor(s) will be provided for vehicle parking areas, if required by SEPA.
W13	Throughout scheme	Construction	The contractor will comply with the relevant sections of BS6031:2009 Code of Practice for Earthworks with respect to protection of water quality and control of site drainage including washings, dewatering, abstractions and surface water.
W14	Throughout scheme	Pre-Construction Construction	Where the contractor considers the use of alternative materials to those assumed at the Stage 3 design stage for use as fill, e.g. in embankments, agreement with SEPA will be required prior to use of such material.
W15	Throughout scheme	Construction	Works related to new and extended culverts will require in-channel works, and to reduce the potential for sediment release it is recommended that works are conducted during forecast low flow periods. The length of channel disturbed will be minimised as far as practicable. Requirements for grey (hard) bank scour protection (e.g. rock armour, rip-rap, gabion baskets) at culverts will be limited to that absolutely required and options for use of alternatives such as none or green (soft) bank scour protection will be considered.
W16	Throughout scheme	Construction	Effective mitigation for impacts associated with outfalls will be based on the following principles: <ul style="list-style-type: none"> construction of outfalls will not be conducted during periods of high flow, in order to reduce the risk of scour and erosion around the outfall structures or to the disturbed river bank. limit extent of channel/bank disturbance; consider the use of set-bank outfalls first and use of swales rather than directly excavating into a watercourse. where practicable, provide sediment fences to prevent sediment being washed into the watercourses. use of grey bank scour protection at outfalls will be limited to that absolutely required.
W17	Throughout scheme	Construction	Best practice measures associated with storage of oils and fuel will be followed in compliance with The Water Environment (Oil Storage) (Scotland) Regulations 2006, SEPA PPG02 and PPG26, and will be included within the contractor's CEMP.
W18	Throughout scheme	Construction	Effective mitigation for impacts associated with storage, handling and use of chemicals will be based on the following measures: <ul style="list-style-type: none"> PPG26 will be followed. Chemicals stored in drums will, as far as practicable, be stored within a secondary containment system. Containers without secondary containment will not be placed within 10m of a watercourse or water body or within 50m of a spring, well or borehole. Chemical stores will be located above the 0.5% AEP (1 in 200-year return period) flood level. Pesticides, including herbicides, should only be used if there are no alternative practicable measures, and will be used in accordance with the manufacturer's instructions and application rates. Choice of pesticides should be those with least harm to the environment (i.e. least toxic and least persistent) suitable for the required purpose. Pesticide use near watercourses will require the prior approval of SEPA.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
W19	Throughout scheme	Construction	Concrete mixing and washing areas will: <ul style="list-style-type: none"> • be located more than 10m from watercourses and waterbodies; • have settlement and re-circulation systems for water reuse; • have a contained area for washing out and cleaning of concrete batching plant or ready mix lorries; and • collect wash-waters and, where necessary, discharge to foul sewer (with the sewerage provider's permission) or contain wash-water for authorised disposal off-site.
W20	Throughout scheme	Construction	Wash-water from concrete and cement works will not be discharged to the water environment. These waste waters will be collected and, where necessary, discharged to the foul sewer (with the sewerage provider's permission) or authorisation sought for disposal off-site.
W21	Throughout scheme	Pre-Construction Construction	Sewage from site facilities will be disposed of appropriately either to: <ul style="list-style-type: none"> • foul sewer with the permission of Scottish Water; or • appropriate treatment and discharge as agreed with Building Control and SEPA in advance of construction in accordance with PPG04 and CAR requirements.
W22	Throughout scheme	Construction	Service diversions, protection of utilities and local water supplies, excavations and ground penetration will be carried out according to good practice.
W23	Throughout scheme	Pre-Construction Construction	A programme will be developed to facilitate practicable implementation of mitigation at the stage where they will be most effective. In particular: <ul style="list-style-type: none"> • Detention basins will be scheduled for construction early in the programme, 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. Additional temporary settlement ponds may also be required during construction, particularly in the vicinity of sensitive waterbodies. • In-channel works and works within the floodplain, i.e. construction activities or presence of personnel or construction plant within the 0.5% AEP (1 in 200-year return period) floodplain, will be avoided during periods of high flow and increased flood risk, for health and safety reasons. In-channel works will avoid spawning periods in salmonid watercourses.
W24	Throughout scheme	Construction	A detailed method statement for the layout and management of each part of the working area subject to a CAR licence will be provided to the SEPA for approval a minimum of four weeks, or by a date otherwise agreed with SEPA, prior to the start of construction.
W25	Shochie Burn, Ordie Burn and Garry Burn	Pre-Construction Construction Operation	In the designated SAC watercourses, the contractor will be required to monitor water quality prior to, during and post-construction. Parameters, duration, frequency and limits of sampling will be agreed with SEPA in advance of construction. Monitoring of smaller watercourses, particularly those near Cairnleith Moss SSSI, may also be required, as advised by SEPA and SNH.
W26	Throughout scheme	Construction	Regular inspections are to be carried out by the Environmental Clerk of Works to identify and recommend appropriate actions for aspects such as unacceptably high pollution risk, or any suspected incidences of pollution.
W27	Throughout scheme	Construction	Where necessary, a Pollution Incident Response Plan will be implemented, in line with SEPA PPG21 and PPG22. This will include formulation of emergency procedures to address accidental pollutant releases and spillages, and will include appropriate staff briefings, toolbox talks and other staff training, as required.
Drainage			
W28	Throughout scheme	Pre-Construction Construction Operation	Where it has been identified as necessary for road drainage to discharge to receiving watercourses, mitigation will be designed to limit the volume of discharge and the risk to water quality. Where required, authorisation for road drainage discharges under CAR 2011 will be obtained from SEPA.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
W29	Throughout scheme	Pre-Construction Construction Operation	For each outfall, a 'treatment train' of SUDS measures will be incorporated to attenuate the road runoff to pre-development rates, reduce the polluting load carried within this runoff to acceptable levels and significantly reduce the risk of any accidental spillages. The drainage arrangements for the mainline carriageway will consist of two levels of treatment in line with SEPAs request.
Detention Basins			
W30	Throughout scheme	Pre-Construction Construction Operation	SUDS basins will be sized to attenuate and store the 1% AEP (1 in 100 year return period) + 20% climate change flood event and restrict the outflow to the greenfield pre-development runoff rate of 50% AEP (1 in 2 year return period) flood event. SUDS systems will be located outwith the functional (0.5% AEP) floodplain.
Outfall Structures			
W31	Throughout scheme	Pre-Construction Construction Operation	Each outfall will be correctly positioned, informed by a geomorphologist or appropriately qualified person, to limit scour potential around the culvert. The outfall location and design will be such that there would be no significant alteration to flow patterns which may lead to turbulence and/or excessive deflection of flow towards the bed or banks of the channel. The outfall will not project out into the channel and will not be located where flow converges with river banks causing higher shear stresses or where active bank erosion is occurring.
W32	Throughout scheme	Pre-Construction Construction Operation	Design and construction of outfall structures will comply with best practice in CIRIA and DMRB and take cognisance of SEPA's Good Practice Guide: Intakes and Outfalls (SEPA, 2008b).
Maintenance of Road Drainage Network			
W33	Throughout scheme	Construction Operation	Regular inspection to inform maintenance frequency requirements will be required, with the minimum recommended maintenance as follows: <ul style="list-style-type: none"> • maintenance of filter drains include inspection and weed control, removal of sediment and vegetation build up, replacement of clogged filter material typically at least once every 10 years; • maintenance of filtration devices include inspections, grass cutting and site rubbish removal, annual reinstatement of eroded areas or damaged vegetation and removal of sediment; • regular maintenance of SUDS to enable efficient operation and the settlement of solids and removal of pollutants (e.g. hydrocarbons); • regular maintenance of receiving watercourses and culverts to reduce the risk of blockages and associated flood risk; • if herbicides are used, those recommended by SEPA for use near watercourses are to be applied in line with manufacturer's instructions to reduce pollution of watercourses; and • provision of scour protection at the drainage discharge outfall to protect the banks and bed of the receiving watercourse and to limit erosion.
Culvert Extension			
W34	Throughout scheme	Pre-Construction Construction Operation	Based on SEPA guidance, it is proposed that existing culverts will be extended without limiting their existing hydraulic capacity.
W35	Throughout scheme	Pre-Construction Construction Operation	Culvert extensions will match the existing structures in most cases to ensure that there is no change in form (widening, narrowing and separation) which could interrupt sediment transport. The only exceptions are where 'betterment' is provided (i.e. existing undersized Broomhill Burn Culvert being widened) and the Shochie Burn and Ordie Burn mainline culverts. The Shochie Burn and Ordie Burn culvert extensions will match the dimensions of the existing culverts but the form will be portal frame structures in preference to box culverts. Specific proposals and justification for watercourse crossing extensions are provided in Appendix A9.5 (Watercourse Crossings).

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
Channel Realignments			
W36	Un-named tributary 4 of Ordie Burn, un-named tributary 3 of Gelly Burn (north) and Broomhill Burn (vertical realignment).	Pre-Construction Construction Operation	The detailed design of channel realignments should include the input from a range of appropriate specialists (e.g. engineers, ecologists and geomorphologists), as well as SEPA representatives where appropriate, to incorporate appropriate mitigation measures and consider any feasible improvements to the watercourses morphology and habitats.
W37	Un-named tributary 4 of Ordie Burn, un-named tributary 3 of Gelly Burn (north) and Broomhill Burn (vertical realignment).	Pre-Construction Construction Operation	Where channel realignment is proposed, the following principles should be followed where practicable: <ul style="list-style-type: none"> • minimise length of realignment; • maintain gradient of watercourse; and • increase sinuosity of channel, create low flow channel to narrow channel and reduce siltation potential.
W38	Un-named tributary 3 of Gelly Burn (north).	Pre-Construction Construction Operation	The realignment should occur before commencing the construction of the embankments of the access track overbridge to Gelly and Murthly Estate. The realignment should be constructed at least 2m from the base of the proposed embankments. This is to reduce the amount of sediment introduced to the channel during construction. The new channel should not be deeper than the existing channel.
Compensatory Storage			
W39	Ordie Burn at A9 (Crossing 2)	Pre-Construction Construction Operation	Flood extent is not predicted to increase significantly with the proposed scheme (less than 4m) and the land is currently subjected to flooding with low impact on existing land use i.e. agricultural (grazing), and there are no other significant high risk flood receptors nearby. Allowing the land to continue to flood, albeit to a greater depth and possibly greater frequency, has been confirmed as the preferred option and agreed with SEPA. The area of land subjected to an increased risk of flooding for the 0.5% AEP (1:200) design scenario flood event will be included in the CPO to provide a compensatory storage area.
W40	Ordie Burn and its tributary at Newmill	Pre-Construction Construction Operation	Flood extent is not predicted to increase significantly with the proposed scheme, although a new area to the north will be at risk of flooding. The land including the new flood risk area is currently used as agricultural (grazing) land and the impact due to occasional flooding is considered to be low, and there are no other high risk flood receptors nearby. Allowing the land to continue to flood, albeit to a greater depth and possibly greater frequency, has been confirmed as the preferred option and agreed with SEPA. The area of land subject to an increased risk of flooding for the 0.5% AEP (1:200) design scenario flood event will be included in the CPO to provide a compensatory storage area.
W41	Ardonachie Burn (Crossing 3)	Pre-Construction Construction Operation	Approximately 77m ³ of floodplain storage would potentially be lost as a result of the culvert extension and road widening. However, the proposed scheme includes embedded mitigation whereby the existing channel will be widened to form a two-stage channel to win the relatively small compensatory storage volume required.
W42	Un-named tributary 4 of Ordie Burn upstream of A9 (Crossing 2a).	Pre-Construction Construction Operation	Approximately 215m ³ of floodplain storage would potentially be lost as a result of the extension of the existing A9 culvert and road widening. However, the proposed scheme includes embedded mitigation whereby the existing channel will be widened to form a two-stage channel to win the relatively small compensatory storage volume required.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.4: Ecology Mitigation

Note: There are a number of mitigation measures (E35-E55) which have been incorporated into the proposed scheme design; this includes proposed crossing locations, otter fencing and planting areas which are shown on Figure 11.2. Additional genetic mitigation measures required during construction and operation are also described in Table 20.4.

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
Generic Mitigation Measures			
E1	Throughout scheme	Pre-Construction	Prior to construction, a Species Protection Plan will be drawn up for European Protected Species (including otter) and will be provided by the contractor and agreed by SNH in advance of works commencing. (Mitigation for Bats, Pine Marten, Red Squirrels, Wildcats, Otters, Freshwater Fish (Atlantic Salmon & Lamprey sp)).
E2	Throughout scheme	Pre-Construction Construction	A suitably qualified (or team of suitably qualified) Ecological Clerk of Works (ECoW) will be appointed to supervise the construction works, undertake pre-construction surveys for protected species of the areas affected by the proposed scheme plus a 250m buffer and ensure mitigation measures are implemented to avoid and reduce impacts on ecological receptors. (Mitigation for all Ecological Receptors).
E3	Throughout scheme	Pre-Construction Construction	Pre-construction surveys will inform the need for any European Protected Species (EPS) licences required any additional measures to be undertaken by the contractor to obtain the necessary licences. During construction, destructive searches of terrestrial habitats will be undertaken by an ECoW prior to site clearance making the habitat unsuitable for amphibians. Searches will be carried out between March – October when amphibians are active and out of hibernation. Amphibians captured during this procedure should be relocated under the supervision of an ECoW to pre-identified areas that are sheltered and close to a suitable refuge or pond, in weather conditions conducive to activity. The location of pre-identified areas will be established through consultation with SNH. (Mitigation for all Ecological Receptors).
E4	Throughout scheme	Pre-Construction Construction	An Environmental Management Plan including control of airborne pollution, surface water and sediment will be provided by the contractor and agreed by SNH, SEPA and any other appropriate body in advance of works commencing. During construction, site management practices to avoid or reduce the risks of secondary impacts on habitat adjacent to the proposed scheme will be adopted. (Mitigation for all Ecological Receptors).
E5	Throughout scheme	Pre-Construction Construction	During pre-construction and construction, site clearance of vegetation will be undertaken in woodland with red squirrel outside the red squirrel breeding season (February to September) where practicable. Where clearance must be undertaken during the red squirrel breeding season pre-works checks will be undertaken to identify active dreys no more than two days prior to tree felling works. If found, clearance must wait until kittens have left the drey. Any clearance works undertaken during February or August will be supervised by an ECoW who will also undertake the pre-works check. Removal of active or inactive dreys will be carried out under a derogation licence from SNH. (Mitigation for Red Squirrels).
E6	Throughout scheme	Pre-Construction Construction	During pre-construction and construction, site clearance of vegetation will be undertaken outside of the main bird breeding season (typically March - July inclusive) where practicable. Where site clearance works must be undertaken during the main bird breeding season pre-works checks by the ECoW will be undertaken no more than two days in advance and if no bird nests are found then the vegetation will be cleared. If found then clearance will wait until chicks have fledged. If necessary methods of exclusion and deterrent will be developed in consultation with SNH to prevent birds beginning to nest in suitable areas following clearance or ahead of the breeding bird season. All cleared material is to be rendered unsuitable for nesting birds or taken away from the works area. (Mitigation for Breeding Birds).

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
E7	Throughout scheme	Pre-Construction Construction	<p>During pre-construction and construction, as far as practicable, habitats will be removed when they have reduced value for species i.e. outside of the fruiting/seeding period; at a time when ponds are not used by amphibians.</p> <p>Minimise areas of vegetation clearance and demarcate clearly with fencing and signs areas of retained vegetation and retained dead wood habitat.</p> <p>During pre-construction and construction, where the removal of dead standing, fallen and felled timber is necessary, the material will be relocated into areas of existing and newly created woodland habitat, or adjacent habitats. Relocated deadwood will be placed in areas of partial shade.</p> <p>Where loss or degradation of valuable habitat is unavoidable and where watercourses are realigned, they will be returned, where practicable, to their former quality or improved once construction is complete.</p> <p>All areas of habitat and field boundary loss (including deer fence) due to temporary works, site compounds, easements, working areas or access roads will be reinstated following construction on a like-for-like basis.</p> <p>(Mitigation for all Ecological Receptors).</p>
E8	Throughout scheme	Pre-Construction Construction	<p>During pre-construction and construction, any tree felling will be carried out by experienced contractors according to agreed felling methods and any licensing conditions to reduce direct mortality of protected species including bats through loss of resting places, roosts, etc.</p> <p>(Mitigation for Bats and Red Squirrels).</p>
E9	Throughout scheme	Construction	<p>All pits will be kept covered at night or provide a means of escape for mammals that may become entrapped.</p> <p>(Mitigation for Otters).</p>
E10	Throughout scheme	Pre-Construction Construction	<p>Temporary otter resistant fencing is to be provided around construction compounds following a specification agreed through consultation with SNH. Compound gates will be sensitively designed to prevent otter from gaining access to compounds and will be closed at night.</p> <p>(Mitigation for Otters).</p>
E11	Watercourses	Pre-Construction Construction Operation	<p>During pre-construction, construction and operation, drainage systems are to be designed so as to prevent otter entering and becoming trapped.</p> <p>During construction, the extent of areas affected by culverts, watercourse realignment and dewatering will be minimised as far as practical.</p> <p>During construction, best practice guidance to be adhered to when working within salmonid watercourses (SEPA, 2010; Scottish Government, 2012). In-channel works and piling will avoid the salmonid and lamprey spawning and salmonid egg incubation periods and as such will be undertaken during months of least sensitivity (mid-October - June inclusive). Should works be required to be undertaken in June consultation will be undertaken with the Tay District Salmon Fisheries Board (TDSFB) and SNH. Soft-start techniques are to be applied to piling work procedures to encourage sensitive species to evacuate the area.</p> <p>During construction, reasonable precautions are to be undertaken to avoid/reduce in-channel works and translocation of channel substrate.</p> <p>During construction, remove and relocate fish from channels to be dewatered for construction of culverts, realignments or bridges using methodology in line with established guidance or in consultation with SNH and SEPA.</p> <p>During construction culverts on Ordie and Shochie burns will not be blocked and one side will be left open during extension works to allow otter to travel through. Dewatering during culvert extensions will be required and will be undertaken out with sensitive periods for fish as identified above. During operation blocked or poorly screened culverts may impede the natural migration of individuals or lead to greater fragmentation of habitats.</p> <p>Construction works to create new culverts, or to extend or upgrade culverts will abide by the relevant guidelines and will take into consideration the SAC's designation for Atlantic salmon (<i>Salmo salar</i>) and other migratory fish species: SEPA Good Practice Guidelines</p>

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
			<p>for Temporary Construction Methods (SEPA, 2009); SEPA Good Practice Guide for River Crossings (SEPA, 2010); SEPA Position Statement (SEPA, 2006); DMRB (Highways Agency, 2004), CIRIA Culvert Design and Operation Guide (C689) 2010 and The River Restoration Centre Manual of Techniques (River Restoration centre, 2002).</p> <p>During construction, where practicable, temporary diversion channels will be used instead of over pumping/siphons and gravity/flume pipes to maintain habitat connectivity during construction works in water features which require dewatering and to prevent death or injury to fauna. However, where over pumping is required, pumps will be screened to reduce this effect.</p> <p>During construction, temporary diversion channels will be created with suitable sized replacement substrate or transplanted substrate from the section being dewatered, making sure that the size and flow in the diversion channel is as near to the existing channel as possible. The temporary channel will be designed by a competent person with appropriate experience to ensure it functions fully. Watercourses will not be dammed during construction works.</p> <p>The watercourse substrate in the working area will be removed and stored for reuse. Where this is not possible imported materials for use as rip rap or stream bed will be appropriate for the location e.g. correct pH. The material will be free from invasive plants or animals. (Mitigation for Otters, River Habitats, Aquatic Invertebrates, Aquatic Macrophytes and Freshwater Fish).</p>
E12	Throughout scheme	Pre-Construction Construction	<p>Plant and personnel will be constrained to a prescribed working corridor through the use of temporary barriers, thereby minimising damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the proposed scheme working corridor. (Mitigation for all Ecological Receptors).</p>
E13	Watercourses	Construction	<p>Works compounds, storage sites, access roads and construction work will be located/carried out at least 10m from water features as advised by SNH. The exception being where works are being carried out at watercourse crossings. Temporary fencing and signage will be installed to prevent encroachment by vehicles, machinery and personnel into sensitive areas such as banks of rivers and ponds. The boundary will be clearly marked and maintained at all times. The contractor will abide by SEPA PPGs for working near water. (Mitigation for Otters and all Aquatic Receptors).</p>
E14	Throughout scheme	Construction	<p>During construction, habitat to be lost in areas where reptiles have been found to be present will be stripped of vegetation in stages under the direction and supervised of an ECoW. (Mitigation for Reptiles).</p>
E15	Throughout scheme	Operation	<p>Habitat management of areas of woodland, scrub and/or grassland should be undertaken outside the main bird breeding season (March - July inclusive) to ensure that breeding birds, their eggs and/or nestlings are not subject to direct mortality. Vegetation management will be undertaken to avoid sensitive times of the year for species such as breeding birds. Any maintenance works required during the breeding bird season would be subject to the same restrictions outlined in measure E6. (Mitigation for Breeding Birds).</p>
E16	Throughout scheme	Operation	<p>Undertake maintenance works in and/or close to key habitats outside of sensitive periods for birds. (Mitigation for Breeding Birds).</p>
E17	Throughout scheme	Operation	<p>Crossing points for bats and otters will be monitored as part of the operational aftercare management contract. (Mitigation for Bats and Otters).</p>
E18	Throughout scheme	Construction	<p>Landscape planting and newly created habitat will be comprised of locally obtained native species of local provenance, and will comprise a mixture of species. Sowing/planting should be undertaken in the appropriate planting season but as soon as possible following completion of the works to reduce the likelihood of the areas being colonised by invasive, non-native species which are of lower value to wildlife. (Mitigation for Terrestrial Habitats and Invasive Non-Native Species).</p>

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
E19	Throughout scheme	Construction	The loss of any bat roosts and roosting opportunities and habitat fragmentation will be offset by the provision of replacement roost habitat e.g. bat boxes, erected during construction. Bat surveys will determine the species, seasonal and dimensional requirements of replacement roost habitat. (Mitigation for Bats).
E20	Throughout scheme	Pre-Construction Construction	Earth movements from one site to another should be minimised to avoid cross-contamination. (Mitigation for Invasive Non-Native Species).
E21	Throughout scheme	Construction	Offsetting the loss of ecologically important habitats will occur through habitat creation including roadside planting, where appropriate, and has been integrated with landscape planting as shown on Figure 11.2. (Mitigation for all Ecological Receptors).
E22	Watercourses	Operation	The design of new culverts, extended or upgraded culverts have taken into account the relevant guidelines in relation to otter, Atlantic salmon and other migratory fish species: SEPA Good Practice Guide for River Crossings (SEPA, 2010); SEPA Position Statement (SEPA, 2006); DMRB (Highways Agency, 2004), CIRIA Culvert Design and Operation Guide (C689) 2010 and The River Restoration Centre Manual of Techniques (River Restoration centre, 2002). (Mitigation for Otters and Freshwater Fish).
E23	Throughout scheme	Operation	During the operation of the proposed scheme, management and maintenance of roadside verges will be undertaken to maintain and enhance floral diversity and to improve the linkages between similar habitats along the route corridor. (Mitigation for all Terrestrial Receptors).
E24	Throughout scheme	Operation	Appropriate management of existing boundary habitats such as hedgerows or rough edges will be undertaken for the benefit of key farmland species of conservation concern. (Mitigation for Breeding Birds).
E25	Throughout scheme	Operation	Replacement habitats will be monitored and managed during the aftercare and operation phase of the proposed scheme. Where practicable habitat creation should aim to fill in existing gaps in linear vegetation features, adjoin or connect existing blocks of woodland or act as stepping stones between habitat areas (Entwistle et al., 2001). (Mitigation for Terrestrial Habitats).
E26	Throughout scheme	Operation	Habitat connectivity will be enhanced through the reinstatement of appropriate linear features such as drystone walls and hedgerows along the boundary of the proposed scheme. (Mitigation for all Terrestrial Receptors).
E27	Throughout scheme	Operation	Severance and fragmentation of otter habitat will be prevented during operation by retention of commuting routes so movement between areas of habitat can be maintained. (Mitigation for Otters).
E28	Throughout scheme	Construction	Works compounds, storage sites, access roads and construction work will be located/carried out at least 30m away from known and potential bat roosts and sensitive habitats for birds, and at agreed minimum distances from sensitive habitats for otter as advised by the ECoW. Any works to be undertaken within 30m must be subject to consultation with SNH, and under licence where applicable. (Mitigation for Bats, Breeding Birds and Otters).
E29	Shochie Burn culvert Ordie Burn culvert Ardonachie culvert ch 9120	Operation	Provision of Dry Mammal Underpass (DMU) to mitigate fragmentation of otter habitat and to increase permeability of the road. (Mitigation for Otters).

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
E30	Throughout scheme	Construction	A lighting plan will be developed for low light conditions and night-time working (that undertaken between sunset and sunrise). The use of construction lighting will be according to BS 5489 requirements and following guidance on lighting (e.g. Bat Conservation Trust and Institute of Lighting Engineers, 2007) including the use of directional lighting or preventative measures (e.g. installation of shields, hoods or limiting the height of lighting columns). Directional lighting is to be used to ensure that bat roosts, woodland edges, foraging areas and waterbodies are not disturbed, with any exceptions to be agreed with the ECoW. Sympathetic lighting will also mitigate for potential fragmentation of bat habitat. Night-time working to be avoided at the following sensitive locations: Shochie Burn culvert, Ordie Burn culvert, access road to Ordie Burn, Ordie Burn overbridge unless otherwise agreed with SNH.
E31	Watercourses	Pre-Construction Construction	<p>During pre-construction and construction, surface and foul water will be appropriately drained and stored. These control measures must be in place before earthworks commence.</p> <p>During construction, chemicals, oils and fuels will be kept safely stored and away from water features and waste will be appropriately managed.</p> <p>During construction, plant and machinery must not be fuelled in the vicinity of watercourses and must observe SEPA guidelines.</p> <p>Sites will be restored fully on completion of works and contractors will adhere to below, with respect to preventing pollution incidents near watercourses and water features.</p> <p>During construction, emergency procedures and spillage kits must be available and construction staff must be familiar with emergency procedures.</p> <p>During construction, road run-off will be treated using Sustainable Urban Drainage Systems (SUDS) techniques including collection in treatment facilities including petrol interceptors and silt traps according to SEPA PPG guidelines.</p> <p>During construction, vehicles must be prevented from fording watercourses by the provision of temporary culverts/bridges.</p> <p>During construction, silt traps must be placed beside all temporary watercourse crossings and maintained and cleaned regularly.</p> <p>During construction, silt fences will be used at the toe of slopes, made from geotextiles, to reduce silt transport.</p> <p>During construction, install cut off ditches to divert contaminated run-off and discharge away from water features. Also install cut off ditches to minimise the amount of water coming onto site to minimise the potential for silt and other pollutants.</p> <p>During construction, use cut-off trenches to prevent surface water run-off from entering excavations to reduce the quantity of silty water requiring treatment. Pump out and treat or take offsite any contaminated or silty water present in excavations (PPG 6). Suspended solids in silty water must be allowed to settle out before disposal.</p> <p>During construction, temporary SUDS will be used during construction to reduce and control velocities and volume for runoff to resemble pre-existing flow conditions within the water courses.</p> <p>During construction, works to drainage or watercourses will be undertaken so that upstream or downstream functioning of the water feature will be disturbed as little as possible. This may include maintaining downstream flow in dewatered sections and any use of pumps will reflect existing flow conditions.</p> <p>(Mitigation for Terrestrial Habitats (near water), Otters and Aquatic Receptors).</p>
E32	Throughout scheme	Pre-Construction Construction	<p>During construction, vegetation buffer strips are to be maintained.</p> <p>During construction, levels of dust will be managed so that this does not build up significantly on trees and scrub vegetation. Measures to avoid or reduce air pollution impacts will be implemented and will include measures such as: dampening down construction areas and material stockpiles, especially when weather conditions are dry and windy; use of cutting equipment, e.g. abrasive disc cutters, that utilise water dust suppression; significant material stockpiles to be enclosed as far as practicable; concrete batching to be carried out only in enclosed or shielded areas; setting and enforcing appropriate speed limits on haul roads; implementing regular dampening down of unsurfaced site and access roads using water bowsers, particularly during dry, windy conditions; and provision of wheel washing facilities at site exits.</p>

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
			During pre-construction and construction, the amount of exposed ground and soil stockpiles from which the water drains and the period of time such water drains will be minimised. Stockpiles will be covered or seeded. (Mitigation for Cairnleith Moss SSSI and Aquatic Receptors).
E33	Watercourses and locations adjacent to the mainline.	Operation	Road run-off will be treated using SUDS techniques including collection in treatment facilities including petrol interceptors and silt traps according to SEPA PPG guidelines as detailed above under Construction (SEPA, February 2003). To prevent pollution of water features during operation, SEPA PPG 1, 5, 21, and 22 (SEPA, 2003) will be abided by. Drainage systems must be suitably fenced to prevent otter entering and becoming trapped. Vegetation buffer strips are to be maintained. Maintenance works to drainage systems, culverts, bridges and channels will use a containment system as detailed in PPG5 (SEPA, 2003) where practical to prevent dust, debris and wastewater entering the water feature. SEPA PPG 5 (SEPA, 2003) will be abided by. Where there is a potential for oil leakage or spillage, SEPA PPG 3 (SEPA, 2003) will be abided by. New outfalls will be designed according to the SEPA Good Practice Guide for Intakes and Outfalls (SEPA, 2008). (Mitigation for Aquatic Receptors, Terrestrial Invertebrates, Breeding Birds, Otters, Pine Marten and Amphibians).
E34	Throughout scheme	Pre-Construction Construction Operation	Surveys will be undertaken pre- and post-construction to confirm the detailed location of any alien species. An invasive weed management strategy is to be developed prior to the start of construction. During construction and operation, an invasive none native species (INNS) management plan will be instigated which will include measures to prevent the spread of invasive species. During construction, an ECoW will be on site during the treatment and/or removal of any INNS. (Mitigation for Invasive Non-Native Species).
Specific Mitigation Measures (refer to Figure 11.2 for habitat mitigation and fencing, refer to relevant receptor figures for receptor locations)			
E35	Ordie Burn (ID -3)	Construction	To mitigate disturbance works will be undertaken under licence from SNH, consultation will first be undertaken to determine the requirement for a licence, which will detail a method statement to which work will comply. (Mitigation for Bats)
E36	Shochie Burn (ID -2) Ordie Burn (ID - 3)	Construction Operation	To mitigate habitat fragmentation linear planting of hedgerows and standard trees to replace lost commuting habitat. Current permeability of the road to be maintained by retaining existing height of culverts. (Mitigation for Bats)
E37	Newmill (ID - 4)	Construction Operation	Linear planting of hedgerows and standard trees to replace lost commuting habitat. (Mitigation for Bats)
E38	Coltrannie/ Cairnleith overbridge (ID - 8)	Construction	Linear planting of hedgerows and standard trees to replace lost commuting habitat. Vegetation planted during construction to mitigate for operational impact. (Mitigation for Bats).
E39	Quadrat 3 (ch7500 to ch8600)	Construction	Should works be required within an appropriate buffer zone as determined by consultation with SNH, they will not be allowed to take place during the osprey breeding season (March to July inclusive). (Mitigation for Breeding birds (Ospreys)).
E40	Muir of Thorn, Gelly Wood	Construction	Preconstruction surveys for dreys in trees to be felled. Any drey identified will need to be destroyed under SNH licence and replacement artificial dreys provided. (Mitigation for Red Squirrels).

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
E41	Muir of Thorn, Gelly Wood	Construction	A licence from SNH to legally allow disturbance to dreys to take place (within 50m during breeding season/zone of influence outside breeding season) will be required. (Mitigation for Red Squirrels).
E42	Along the route of the old A9 between ch3500 and ch5000. Between ch7800 and ch9200.	Operation	Planting of new trees will be undertaken at a variety of locations (see landscape mitigation plans). (Mitigation for Red Squirrels).
E43	Land Parcel 1, Shochie Burn, Land Parcels 2 and 3, Lower Ordie Burn and Upper Ordie Burn, Land Parcel 5 Garry Burn, Land Parcels 7 and 10, Semi-natural broadleaved woodland by the A9 and Muir of Thorn (north), Land Parcels 6 and 9, Cairnleith Moss SSSI and Gelly Woods.	Operation	Planting of new woodland will be undertaken at a variety of locations (see landscape mitigation plans). Creation of a new pond will create new habitat. Planting of species-rich grassland and mixed woodland will be undertaken at a variety of locations across the scheme, including around a SUDS pond at ch8300 to ch8400 (see landscape mitigation plans). (Mitigation for Terrestrial Invertebrates).
E44	Shochie Burn (ID-2) Newmill (ID-4), Westwood (ID-5), Coltrannie/ Cairnleith overbridge (ID-8),	Operation	Provision of bat boxes as replacement roosting habitat for every tree with potential lost. Bat boxes to be monitored. (Mitigation for Bats).
E45	Newmill (ID-4).	Operation	Provision of a structure which will maintain commuting routes. (Mitigation for Bats).
E46	Quadrat 1 (ch3000 to 3500), Quadrat 2 (ch6000 to ch7500), Quadrat 3 (ch7500 to 8600), Quadrat 4 (ch7500 to ch8600), Quadrat 5 (ch8600 to ch9400), Quadrat 6 (ch8600 to 9400).	Operation	Habitat creation (terrestrial habitats). (Mitigation for Breeding Birds).
E47	Quadrat 2 (ch6000 to ch7500).	Operation	Provision of landscape planting to encourage barn owl to fly over road at greater height. (Mitigation for Breeding Birds and Barn Owls).

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
E48	Gelly Muir, Murthly Muir, Clearfell and Cairnleith Moss SSSI.	Operation	The proposed scheme design mainline design does not have roadside kerbs on the majority of the route (exceptions being locations such as laybys). This aspect of the design will facilitate exit of any reptiles (and amphibians also) from the carriageway. (Mitigation for Reptiles).
E49	Gelly Muir, Murthly Muir, Clearfell and Cairnleith Moss SSSI.	Operation	Provision of habitat for reptiles reflecting that lost. Including, drystone walls as boundary features, situated in open, sunny, south facing positions. (Mitigation for Reptiles).
E50	Gelly Wood	Operation	New overbridge with enhanced design crossing existing carriageway. (Mitigation for Pine Marten, Red Squirrels and Otters).
E51	Muir of Thorn, Gelly Wood	Operation	Compensatory habitat planting of mixed native woodland, use of more mature species would accelerate replacement of habitat lost. (Mitigation for Pine Marten).
E52	Shochie Burn, Ordie Burn, Coral Burn (un-named tributary) ch7020 to ch7320, Gelly Burn (north) un-named tributary ch7450 to ch7750, Tullybelton/Stanley Junction, Ardonachie Burn, Gelly Burn (north), Broomhill Burn and Gelly Burn (north) un-named watercourse at ch9120.	Operation	Otter proof fencing will be provided along the proposed scheme where the burns cross the road. Fencing will be positioned in such a way that otter will be directed to safe crossing points. Asymmetrical fencing will be used where there is no permeability of the road. (Mitigation for Otters).
E53	Bankfoot SUDS pond (south), Bankfoot SUDS pond (east).	Construction Operation	Construction of a new pond at Bankfoot (east) with sensitive landscape and riparian planting will mitigate for the loss of ponds 8 and 9. (Mitigation for Amphibians and Ponds).
E54	Bankfoot SUDS pond (south), Bankfoot SUDS pond (east).	Construction	Drainage of ponds at appropriate time of year to minimise impacts to breeding animals and under supervision of ECoW. Amphibians to be captured and translocated to adjacent habitats to be retained. (Mitigation for Amphibians).
E55	Gelly Wood	Construction	Planting of mixed woodland to compensate for habitat loss. (Mitigation for Bats).

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.5: Landscape Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
Generic/Best Practice			
L1	Throughout scheme	Construction	<p>The following mitigation measures are proposed to avoid or reduce landscape impacts during construction:</p> <ul style="list-style-type: none"> • Programming of works to minimise disruption, including keeping the construction programme to the minimum practicable time and clearing areas for construction as close as possible to works commencing. • Careful selection of plant and machinery. • Avoidance of night-time working where possible. Where necessary, directed lighting will be used to minimise light pollution/glare. In addition to specific approval from the relevant road authority, the contractor may be required to comply with the specific requirements of the Local Authority, which may include providing advice to potentially affected residents. • Sensitive locating of site compounds to minimise their landscape impact. Where possible existing features such as trees should be used to screen from sensitive visual receptors. Where this is not possible, screening can be achieved using bunds or embankments which become part of the permanent works. Alternatively, temporary screens can be erected, designed and painted to be as inconspicuous in their surroundings as possible. • Construction sites to be kept tidy (e.g. free of litter and debris).
L2	Throughout scheme	Pre-Construction Construction	<p>Earthworks proposals aim to minimise the impact of cuttings and embankment slopes and to allow integration of the road with surrounding land, through:</p> <ul style="list-style-type: none"> • modification of embankment and cutting slopes to tie smoothly into existing landform and to allow as much land as possible to be returned to agriculture; • softening changes in slope at junctions and overbridges by smoothing out transitions; • rounding off top and bottom of cuttings and embankments; • modification of SUDS basin earthworks in order to improve integration with surrounding landform; and • utilisation of existing cuttings and embankments and placement of proposed new earthworks predominantly in locations of existing earthworks.
L3	Throughout scheme	Pre-Construction Construction	Retention of existing trees and vegetation wherever possible and incorporation with new planting proposals.
L4	Throughout scheme	Pre-Construction Construction	Enhancement of biodiversity through use of predominantly native species, providing new wildlife habitats and complementing existing adjacent habitats.
L5	Throughout scheme	Pre-Construction Construction	Planting to replace trees lost to the construction of the proposed scheme.
L6	Throughout scheme	Pre-Construction Construction	Planting at junctions and bridges to help assimilate the new structures into the surrounding landscape.
L7	Throughout scheme	Pre-Construction Construction	Planting to provide screening to reduce visual impacts of the road and structures.
L8	Throughout scheme	Pre-Construction Construction	Planting severed field corners and landlocked areas as appropriate.

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
L9	Throughout scheme	Pre-Construction Construction	Planting at focal points and junctions.
L10	Throughout scheme	Pre-Construction Construction	Planting will enhance the experience of travelling along the road by creating views to a variety of woodland types.
L11	Throughout scheme	Pre-Construction Construction	For all disturbed soft areas and road verges, different seed mixes will be used, dependent on location and use: <ul style="list-style-type: none"> • Roadside Verge Mix: suited to the road-side location being low maintenance, fast establishing and tolerant of traffic and salt spray; • Species-rich Grassland Mix: suited for use in all other areas disturbed by construction works, consisting of a mixture of native, non-invasive grasses and wildflower species to reflect locally occurring semi-natural flora. As well as enhancing biodiversity and visual interest along the road corridor, this type of grassland will require minimal maintenance; and • Pond and Swale Wetland Seeding suited for use in SuDS basins, designed ponds, and areas around culverts that are likely to experience wet conditions.
L12	Throughout scheme	Construction Operation	Any deer fencing damaged or removed during the construction of the proposed scheme will be repaired or replaced to maintain existing protection. The appointed contractor will also be required to undertake a risk assessment, taking account of Transport Scotland's strategic deer management planning and the operating company deer management plan which is currently in preparation. The contractor will be required to take appropriate measures so as to avoid increasing the risk of deer collisions on the highway and to protect new planting areas from browsing
Specific Mitigation			
Wooded Farmland LCT - Moneydie to Harrietfield LLCA			
L13	Along existing road corridor, Pitlandie Farm accommodation overbridge, and Roadside trees at Luncarty.	Scheme Design Construction	Replacement of mixed and scrub woodland on embankments and cuttings along road corridor. (Refer to Figures 11.1 and 11.2a-b).
Open Farmland LCT - Bankfoot LLCA			
L14	Along existing road corridor, Pitlandie Farm accommodation overbridge, Tullybelton/ Stanley Junction, Luncarty Link Road, Coltrannie Overbridge, Ladner and Broompark.	Scheme Design Construction	<ul style="list-style-type: none"> • Replacement of mixed and scrub woodland on embankments and cuttings along road corridor. • Mixed and scrub woodland planting around revised junction and new structures. • Grading out of embankment slopes for new bridge embankments and Luncarty link road. • Introduction of species rich grassland on embankments and SUDS ponds. • Introduction of specimen trees to reinstate field structure, particularly north of Rosevale House and along Stanley Link Road. (Refer to Figures 11.1 and 11.2a-e).
Woodland LCT – Muir of Thorn/ Gelly Wood LLCA			
L15	Along existing road corridor, pedestrian footbridge at Gelly, and	Scheme Design Construction	Replacement of mixed and scrub woodland on embankments and cuttings along road corridor. (Refer to Figures 11.1 and 11.2e-g).

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
	Muir of Thorn/ Gelly Wood.		
Urban LCT – Luncarty LLCA			
L16	To the east of existing road corridor at Luncarty.	Scheme Design Construction	Replacement of mixed and scrub woodland on embankments and cuttings along road corridor. (Refer to Figures 11.1 and 11.2a).
Urban LCT – Bankfoot LLCA			
L17	To the west of existing road corridor at Bankfoot.	Scheme Design Construction	Replacement of mixed and scrub woodland on embankments and cuttings along road corridor. (Refer to Figures 11.1 and 11.2a).

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Table 20.6: Visual Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
V1	Throughout scheme	Scheme Design Construction Operation	All landscape mitigation in Table 20.5 will be provided.
V2	Throughout scheme	Scheme Design Construction Operation	Where temporary or operational maintenance lighting is essential, all reasonable precautions will be undertaken to reduce energy consumption and avoid/reduce the amount of light pollution of the night sky and rural landscape where this can be achieved safely and effectively.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.7: Cultural Heritage Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
CH1	Throughout scheme	Pre or During Construction.	The preferred mitigation option for archaeological sites is to preserve them <i>in situ</i> . However, where this is not feasible, the alternative is preservation by record. Preservation by record comprises recording works in advance of or during construction and the dissemination of the results of these works to provide a permanent record of the affected archaeological remains.
CH2	Throughout scheme	Pre-Construction	To mitigate potential physical impacts on known and potential unknown archaeological remains, a programme of archaeological works will be implemented in consultation with the Perth and Kinross Heritage Trust. This will comprise a staged programme of evaluation and detailed mitigation. The aims of evaluation works would be to: <ul style="list-style-type: none"> • identify any unknown archaeological remains that may be affected by the proposed scheme and identify appropriate mitigation; and • confirm the proposals for the mitigation of impact on known archaeological remains.
CH3	Applied throughout scheme at appropriate locations.	Pre-Construction	Detailed archaeological excavation will be undertaken where particularly significant, complex or densely-concentrated archaeological remains are expected to be present, then a detailed archaeological excavation in advance of construction would be undertaken.
CH4	Currently unknown. Applied throughout scheme at appropriate locations.	Pre-Construction	Strip, map and sample works may be appropriate where archaeological remains of relatively low significance and/or complexity are expected to be present, and particularly where they are expected to be spread over a large area at low density. Topsoil would be stripped over relatively large, defined areas using methods designed to maximize archaeological visibility, followed by inspection to define the scope of any archaeological recording works that might be required.
CH5	Currently unknown. Applied throughout scheme at appropriate locations.	Construction	Archaeological recording during construction ('watching brief'): where there is some potential for as yet unidentified archaeological remains to be present, but the risk is considered to be low, then archaeological monitoring of the main topsoil/overburden stripping operations, and other excavation works as appropriate, would be applied, followed by appropriate archaeological investigation and recording of any remains that are identified.
CH6	Marlehall Culvert (Asset 27) and Newmills Bridge (Asset 39).	Pre-Construction	To mitigate the potential impact on Marlehall Culvert (Asset 27) and Newmills Bridge (Asset 39), a photographic survey will be undertaken in accordance with the guidance provided in Understanding Historic Buildings: a guide to good recording practice (English Heritage 2006).
CH7	Throughout scheme, may not be applicable to all assets identified.	Construction Operation	Measures to reduce potential impacts on historic buildings have been incorporated into the design throughout its development. These measures include: <ul style="list-style-type: none"> • design of earthworks to avoid an overly engineered appearance and enable as much land as possible to be returned to agriculture; • avoidance of loss or damage to landscape features such as mature trees, walls, water features or field systems as far as possible; and • retention of existing trees and vegetation wherever possible and incorporation with new planting proposals.
CH8	HLT8: 17th-19th Century Policies and Parkland and HLT9: Murthly Castle.	Pre-Construction Construction	To mitigate the potential impact of the proposed scheme on HLT8: 17th-19th Century Policies and Parkland and HLT9: Murthly Castle, the following measures are proposed: <ul style="list-style-type: none"> • archaeological earthwork survey, including photographic survey, of the impacted ditches and walls defining the woodland plantations to Level 2 standards (English Heritage, 2007); • a photographic survey of the historic landscape type in its current form and condition; • landscape planting around the drainage pond and on the overbridge embankments to aid the integration of these features into the surrounding landscape; and • use of high quality materials and consistent application across A9 dualling programme.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.8: Air Quality Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
AQ1	Throughout scheme	Construction	<p>Minimise fugitive dust emissions from earthworks, material storage and concrete batching:</p> <ul style="list-style-type: none"> • any material stockpiles will be enclosed at all times, dusty materials will be damped down using water sprays during dry weather and the surfaces of any long-term stockpiles would be sprayed with bonding agents; • 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. Sprinklers and hoses will be used to prevent dust escape from 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 will be dealt with promptly.
AQ2	Throughout scheme	Construction	<p>Ensure that dust from vehicle movements within the site are minimised:</p> <ul style="list-style-type: none"> • unsurfaced routes will be regularly dampened down using water bowsers during periods of dry weather; • appropriate speed limits will be established and enforced over all unmade surfaces; and • wheel washing facilities will be installed and heavy vehicles leaving the site will be required to use the installation.
AQ3	Throughout scheme	Construction	<p>Implement appropriate cleaning of the public roads:</p> <ul style="list-style-type: none"> • subject to approval from the Highway Authority, the public highway 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 • the edges of roads and footpaths adjacent to the development will be cleaned, with damping if necessary.
AQ4	Throughout scheme	Construction	<p>Implement a public relations service:</p> <ul style="list-style-type: none"> • the contractor will provide, advertise and maintain a telephone number via which public dust complaints can be received and appropriate action taken; • details of all such complaints will be notified to the environmental health department of the Council for verification purposes; and • specific activities with the potential of causing dust problems will be notified to the environmental health department so that appropriate safeguards can be adopted.
AQ5	Throughout scheme	Construction	<p>Monitor compliance with CEMP measures:</p> <ul style="list-style-type: none"> • the contractor will be required to set up his own monitoring programme to evaluate compliance with this code; and • all policies, practices and procedures will be periodically reviewed to ensure their appropriateness.
AQ6	Throughout scheme	Pre-Construction	<p>The contractor will be encouraged to adopt the following measures:</p> <ul style="list-style-type: none"> • enter into pre-works discussions with the Council to agree method of works; • prepare a statement of commitment to control off-site environmental effects including fugitive dust emissions; • prepare an environmental management system to ensure procedures are monitored and controlled on a regular basis; • devise a management and supervisory structure which identifies named responsible individuals working on the site; • write down policies and procedures and make these available to staff and subcontractors using the site; and • ensure that all site workers receive adequate training in environmental control procedures including the control of dust and other airborne emissions which might cause off-site effects.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.9: Noise and Vibration Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
NV1	Broompark Cottage	Pre-Construction Construction	A noise barrier is proposed between Broompark Cottage and the A9 to reduce the potential noise impact to a residual impact of negligible significance. It is anticipated that this can be achieved with a timber acoustic fence 2m high running approximately 4m back from the retaining wall and on top of adjacent earthwork, for a total length of approximately 130m. The height, distance from the retaining wall, and, total length of this noise barrier may be adjusted during detailed design subject to achieving a negligible residual impact.
NV2	Throughout scheme	Pre-Construction Construction	All work would be undertaken to the guidance detailed in BS 5228: 2009 - Code of Practice for noise and vibration control on construction and open sites, Part 1: Noise and Part 2: Vibration. It is anticipated that the following mitigation measures should be employed on site to ensure that noise and vibration levels are attenuated as far as possible: <ul style="list-style-type: none"> • the use of 'best practicable means' during all construction activities, as defined in Section 72 of the Control of Pollution Act to minimise noise (including vibration) during construction; • switching off plant and equipment when it is not in use for longer periods of time; • establish agreement with the local authority on appropriate controls for undertaking significantly noisy works or vibration-causing operations close to receptors; • programming works so that the requirement for working outside normal working hours is minimised (taking into account the Roads Authority under the Roads Scotland Act's statutory duties under the Traffic Management Act 2004); • use of low noise emission plant where possible; • piling will be bored to protect sensitive sites;; • the use of temporary noise screens around particularly noisy activities; • regular plant maintenance; and • monitoring of vibration when compaction activities are near to properties.
NV3	Throughout scheme	Pre-Construction	It is anticipated that a scheme of noise and vibration monitoring would be agreed with The Environmental Department of Perth & Kinross Council, and noise and vibration limits be contained within any Construction Environmental Management Plan agreed. The contractor will be required to develop and implement a Noise and Vibration Management Plan to meet these requirements.
NV4	Throughout scheme	Construction	BS 5228 advises that effective community engagement providing prior notification of particularly noisy or vibratory activities can reduce perceived nuisance/disturbance experienced by local residents. The contractor will be required to develop a communications strategy to manage this process, including establishing an enquiries and complaints procedure (to include a contact telephone number and email address).

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.10: Effects on All Travellers Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
AT1	In the proximity of current NMU facilities, proposed construction sites and current bus stops throughout the scheme.	Construction	Measures to mitigate potential impacts on NMUs include: <ul style="list-style-type: none"> • The construction works are to be programmed in such a manner to reduce the length of closures or restrictions of access as far as practicable. Any diversion routes must be safe for NMUs and all inclusive in accordance with the Roads for All: Good Practice Guides for Roads, 2013 (Transport Scotland, 2013). • The construction site is to be fenced and access by non-authorised personnel will generally not be permitted. • Temporary diversion routes are to be provided to maintain access for NMUs throughout the works, and any closure or re-routing of routes used by NMUs will be agreed in advance with the local authorities. • Where necessary, bus stops are to be relocated safely with a safe access route provided for NMUs.
AT2	NMU facilities	Construction	General principles for maintaining and improving access for NMUs are: <ul style="list-style-type: none"> • The requirements of the Equality Act 2010 should be incorporated into the proposed scheme wherever practicable; e.g. any bridges, ramps or footpaths should take into account potential barriers to disabled people such as the gradient or surfacing. • Surfacing of any new paths including alongside roads should be considered with regard to the type of user and should comply with current standards. • Safety of paths can be improved by providing barriers to segregate traffic from paths. • Safety of road crossing points can be improved by providing signalised crossings. • Cycling provision can be improved by including designated cycle lanes and clear signing. • Creation of new recreation areas and/or paths/cycleways linking existing community facilities. • New cycleways/footpaths should use non-frost susceptible materials to reduce risk of degradation.
AT3	NMU facilities	Pre-Construction Construction	Amenity value of paths can also be improved as a result of the mitigation measures employed to reduce potential visual and noise impacts. Refer to Table 21.6 and 21.9
AT4	Pitlandie overbridge (JLA 1) (Path ref. LUNC/123, LUNC/125)	Pre-Construction Construction	Provision for equestrians, such as path widening and identification of appropriate signage and dismounting facilities on the approaches to each structure. Bridges should be at least 3m wide and have parapets of 1.5m. New signage to direct NMUs to overbridge.
AT5	Tullybelton / Stanley Compact Grade Junction and associated paths (JLA 2 and 3) (Path ref. AGVN/115, AGVN/110)	Pre-Construction Construction	Provision for equestrians, such as path widening bridges should be at least 3m wide with parapets. Parapets will be at least 1.8m in height to prevent jumping by horses or falls from rider in accordance with BHS guidance (BHS, 2013). Consultation with BHS in October 2013 confirmed this was the only location for the proposed scheme where high parapets (1.8m) are required. New signage to direct NMUs to overbridge.
AT6	Coltrannie overbridge and associated paths (JLA 4) (Path ref. AGVN/117, AGVN/107)	Pre-Construction Construction	Provision for equestrians, such as path widening. Bridges should be at least 3m wide and have parapets of 1.5m. New signage to direct NMUs to overbridge.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
AT7	Gelly Wood overbridge and associated paths (JLA 5) (Path ref. SPIT/101, AGVN/113)	Pre-Construction Construction	Provision for equestrians, such as path widening. Bridges should be at least 3m wide and have parapets of 1.5m. New signage to direct NMUs to footbridge.
AT8	Access for East Mains and Loak to Five Mile Wood (Path ref. AGVN/115, AGVN/110)	Pre-Construction Construction	Signage directing NMUs northwards towards underpass at Bankfoot and then on to Five Mile Wood.
AT9	Between the villages of Luncarty and Bankfoot	Pre-Construction Construction	A new combined footway/cycleway (as shown on Figure 16.3) will enable NMUs to travel north from Luncarty on the eastern side of the A9 to the Newmills junction, over a distance of approximately 1.8km. From here NMUs will be able to safely cross the A9 using proposed crossing points and then the proposed 940m long footway/cycleway linking to the core path network to enter Bankfoot from the south. This new footway/cycleway will also connect into pre-existing routes used by NMUs.
AT10	Throughout scheme	Pre-Construction Construction	To improve safety for NMUs using combined footway/cycleways, verges and safety barriers will be constructed to allow for a safe separation distance between NMUs and traffic. For combined footway/cycleway on side roads located near to the A9 (such as the Luncarty Link Road) there will be a minimum of 1m verge separating the footway/cycleway and the side road carriageway. However, where the footway/cycleway runs directly parallel to the A9 (such as the footway/cycleway at East Mains) there will be a minimum of a 2m verge separating the footway/cycleway and the carriageway.
AT11	Throughout scheme	Pre-Construction Construction	The predominant landscape mitigation affecting view from the road is the replacement of trees lost during construction and the grading of earthworks so land can be returned to agriculture. Refer to Table 21.5 and 21.6 for further details.
AT12	Throughout scheme	Pre-Construction Construction	Mitigation measures designed to minimise adverse impacts on the view from the road include the following: <ul style="list-style-type: none"> • Where possible, the established trees and woodland adjacent to the road will be protected or will be replaced to maintain the character of the landscape affected by proposals. • Planting proposals using broadleaved and mixed woodland, as well as scrub and tree groups are proposed to create a diverse range of species along the route. • Planting on the slopes of deep cuttings and screening bunds will help to soften the sense of enclosure created by the new earthworks. • Species rich grassland on areas for which re-seeding is required, such as road verges. • Grading out of earthworks to tie smoothly into the surrounding landscape. Where appropriate, the land adjacent to the road will be re-graded to allow for potential return to agricultural use.
AT13	Throughout scheme	Construction	Measures to mitigate potential impacts on driver stress during construction include the following: <ul style="list-style-type: none"> • Traffic management during construction to take reasonable precautions to reduce disruption and delays, and in accordance with the Traffic Signs Manual (Department of Transport, 2009). • Reasonable precautions to avoid or reduce disruption to the road traffic, including consideration of the timing of works, earthworks balance, haul roads to reduce site traffic on the public roads and a well maintained traffic management system with regular sweeping of roads to reduce construction debris on the carriageway. • Reasonable precautions to avoid or reduce road closures. No A9 lane closures permitted during peak hours (Mon-Fri) except in exceptional circumstances approved by Transport Scotland.

A9 Dualling: Luncarty to Pass of Birnam

DMRB Stage 3 Environmental Statement

Chapter 20: Schedule of Environmental Commitments

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
			<ul style="list-style-type: none">• Road diversions will be clearly indicated with road markings and signage as appropriate. Closures to be notified in advance and signage provided.• Appropriate lighting will be provided during any necessary night-time working.
AT14	Throughout scheme	Construction	<p>The proposed scheme will be designed to current road design standards and it is considered that aspects of the design may contribute to reducing driver stress during operation, such as:</p> <ul style="list-style-type: none">• improved signage to reduce confusion and uncertainty and improve navigation confidence;• improved operational reliability and resilience in respect of maintenance requirements to reduce driver frustration during periods of maintenance; and• reduction in the frequency and impact of incidents on traffic flow to reduce driver frustration arising from delays due to unplanned events.

A9 Dualling: Luncarty to Pass of Birnam
DMRB Stage 3 Environmental Statement
Chapter 20: Schedule of Environmental Commitments

Table 20.11: Materials Mitigation

Mitigation Item	Approximate chainage/location	Timing of Measure	Description
M1	Throughout scheme	Design and Construction	Throughout the detailed design and construction stages the principles of the waste hierarchy will be applied to minimise waste generation and maximise re-use of waste arisings on-site, where possible. Where re-use is not possible within the scheme design, alternative options will be sought off-site such as reprocessing into aggregate or the use of inert materials on local farms. For all potential waste arisings, the contractor will consult SEPA for advice where appropriate and will comply with The Waste Management Licensing (Scotland) Regulations 2011 (WML) and the UK Forestry Standard and associated Environmental Guidelines. Consideration will also be given to SEPA guidance on sustainable waste management. If wastes cannot be legitimately re-used on site, these will be removed to a licensed recycling or disposal facility in line with regulation requirements.
M2	Throughout scheme	Design and Construction	Development and implementation of a Construction Environmental Management Plan (CEMP). CEMP developed by the contractor during detailed design (i.e. before the start of construction) and implemented during the construction phase. The CEMP will include the following: <ul style="list-style-type: none"> • details of the approach to environmental management throughout the construction phase, with the primary aim of mitigating any adverse impacts from construction activity on the identified sensitive receptors. • methods for the prevention and control of any potential short-term construction-phase impacts (e.g. construction dust and the risk of accidental spillages of contaminating materials) and also permanent impacts (e.g. disturbance to vegetation, archaeology and heritage). • good materials management methods, such as co-location of temporary haul routes on permanent capping and recovery and re-use of temporary works materials from haul routes, plant and piling mattresses, etc. • risk/impact-specific method statements and strategic details of how relevant environmental impacts will be addressed throughout the proposed scheme, embodying the requirements of the relevant SEPA Pollution Prevention Guidelines.
M3	Throughout scheme	Construction	A Site Waste Management Plan (SWMP) will be developed and regularly updated during construction of the proposed scheme. The SWMP will identify, prior to the start of construction, the types and likely quantities of wastes that may be generated. It will set out, in an auditable document, how these wastes will be reduced, re-used, managed and disposed of. The SWMP will be developed by the contractor before commencement of the construction phase and, where possible, incorporated within the CEMP. <p>The SWMP will contain a Materials Management Plan (MMP), which will set out how all construction phase materials will be managed and quantities recorded. As recommended by the SEA, strategic programme level discussions with SEPA will be held with regard to material resource efficiency, and the MMP will further include specific soils management plans developed under the following voluntary and industry regulated Codes of Practice:</p> <ul style="list-style-type: none"> • Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009) provides best practice guidance for the excavation, handling, storage and final placement of soils. • The Definition of Waste: Development Industry Code of Practice Version 2 (CL:AIRE, 2011) provides a process whereby contaminated soils can be re-used on the site of origin (i.e. they do not become a waste) if they are proven through appropriate risk assessment to be suitable for use, and provides for soils with naturally elevated contamination to be used directly on another site provided that they are suitable for use. <p>Implementation of the SWMP and the accompanying MMPs will minimise waste at source, during detailed design and construction, by facilitating measures to maximise re-use of materials on-site and reduce the need for new construction materials.</p>
M4	Throughout scheme	Construction	Where materials cannot be used on the proposed scheme, opportunities will be sought to re-use materials on other A9 projects as part of the strategic commitment to waste management. It is acknowledged that any soils or peat stored for greater than 3 years will require a permit under The Landfill (Scotland) Regulations 2003.
M5	Throughout scheme	Construction	If contaminated soils are encountered during the construction works, further investigation, testing and risk assessment will be undertaken to determine whether the soils could stay on-site, require treatment to make them suitable to remain on-site or will need to be disposed of off-site.