21 Schedule of Environmental Commitments

21.1 Introduction

21.1.1 This chapter summarises the Northern Leg mitigation measures as identified in the ES, which are considered necessary to protect the environment prior to or during construction, or during operation of the AWPR.

21.1.2 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. It is intended to provide a record of commitments that will be incorporated within the Contract Documents and to which the Contractor will be obliged to adhere throughout the Contract period. However, it is recognised that there may be a need to revise or supplement the commitments as the design proceeds by agreement between the client, the Contractor(s), Scottish Executive, and other parties as appropriate.

21.1.3 The Schedule of Environmental Commitments (Table 21.1) addresses the potential impacts as summarised in the Environmental Impact Tables (Table 20.1). The Mitigation Item Numbers provided in the first column of Table 21.1 enable cross-referencing between these two Tables.

21.1.4 Should the client or contractor propose significant changes or modifications to the proposed development assessed for this EIA, impacts could be different and therefore appropriate mitigation measures to address these impacts would be required. If this is the case, it may be necessary to publish an addendum to the ES, identifying appropriate impacts and mitigation measures. The addendum would include a revised Schedule of Environmental Commitments to reflect any changes which would be included in the Contract Documents. The final design will not give rise to impacts which are any worse than those described in this ES unless a subsequent addendum is issued for consultation.

Table 21.1 - Schedule of Environmental Commitments

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
Land Use (Chapter 7)						
LU1n	See Appendix A7.5 for details of location required per land interest	Permanent loss of agricultural land and forestry has been reduced through route selection. In addition, loss will be reduced by re-instatement plans where appropriate, post construction.	Reduction in loss of agricultural and forestry land.	Scheme design	n/a	n/a
LU2n	See Appendix A7.5 for details of location required per land interest	Access for the land interests to their agricultural land and woodland will be provided at all times during the construction process and post construction (except where severed). Where appropriate and justified, agricultural overbridges and underpasses will be incorporated into the road design.	Reduction in severance and access restrictions.	Scheme design	n/a	n/a
LU3n	See Appendix A7.5 for details of location required per land interest	Damage to the agricultural capability of soils will be avoided by the adoption of appropriate measures during construction and reinstatement.	Prevention of damage to soils.	Construction	n/a	n/a
LU4n	See Appendix A7.5 for details of location required per land interest	Existing field and forestry drainage systems will be re-instated to ensure that land capability is maintained and flooding will not be exacerbated.	Reinstatement of field drainage system and prevention of flooding.	Construction Post-construction	Monitoring post construction to access flood risk	n/a
LU5n	See Appendix A7.5 for details of location required per land interest	Financial compensation, where appropriate, will be provided for the loss of agricultural land, forestry or land with a sporting interests, as agreed with the District Valuer.	Offset loss through financial compensation.	Construction Post-construction	n/a	District Valuer
LU6n	See Appendix A7.5 for details of location required per land interest	Notice of intention to commence construction work will be given to the owners and occupiers of all land along the route before entry is made to such land. Disturbance will be minimised, where practicable.	Minimise disturbance to farm activities.	Pre-construction Construction	n/a	land owner/occupier
LU7n	See Appendix A7.5 for details of location required per land interest	Preparation of a schedule of condition will be undertaken for agricultural land (including drainage), forestry, roads and paths likely to be affected by the proposed development. This will be made available to the owner or occupier and will ensure that land, roads and paths are restored to the reasonable satisfaction of the landowner or occupier.	Minimise disturbance to agriculture and forestry activities.	Pre-construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
LU8n	See Appendix A7.5 for details of location required per land interest	Agriculture, forestry and sporting roads and paths will be re-instated to a condition equivalent to that subsisting before the commencement of any works.	Minimise disturbance to agriculture and forestry activities.	Construction Post-construction	n/a	n/a
LU9n	See Appendix A7.5 for details of location required per land interest	Agricultural land will be re-instated to a condition as near as is reasonably practicable to that subsisting before the commencement of the works. Re-grading where appropriate will be undertaken and land returned to agricultural use.	Minimising disturbance and loss of agricultural land.	Construction Post-construction	n/a	n/a
LU10n	See Appendix A7.5 for details of location required per land interest	Where ancillary apparatus and material is sited on agricultural land this will be with agreement of the land owner/occupier.	Minimising the disturbance to farm practices.	Construction	n/a	land owner/occupier
LU11n	See Appendix A7.5 for details of location required per land interest	There will be provision of temporary fences, lights and guards in appropriate locations for the protection of the health and safety of the public and animals and to avoid trespass. Where appropriate, fencing of the working area to a standard adequate for the purpose of excluding any stock kept on adjoining land will be undertaken. All temporary fencing will be maintained in position during construction.	Minimising the disturbance to farm practices.	Construction	n/a	land owner/occupier
LU12n	See Appendix A7.5 for details of location required per land interest	Where boundary features such as fences, walls and hedges have to be removed to allow construction these will be reinstated with appropriate materials in each case to provide a secure field boundary.	Minimising effect of boundary features and where appropriate, allowing opportunities for enhancement to be incorporated.	Construction Post-construction	n/a	n/a
LU13n	See Appendix A7.5 for details of location required per land interest	Precautions relating to the exclusion of stock will be combined with due care and attention by construction staff to prevent the straying of livestock.	Minimising the disturbance to livestock.	Construction	n/a	n/a
LU14n	See Appendix A7.5 for details of location required per land interest	Where access will require to be altered either temporarily or permanently as a result of construction, alternative access for stock and machinery will be provided where appropriate in consultation with the land owner/occupier. Additionally, where appropriate recessed access would be provided off main and side roads with loading/unloading area if required.	Minimising the disturbance farm practices.	Pre-construction Construction	n/a	land owner/occupier

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LU15n	See Appendix A7.5 for details of location required per land interest	All reasonable precautions will be taken during construction to avoid as far as is possible, the spreading of soil borne pests and diseases, and animal and crop diseases. Precautions as recommended by the Scottish Executive Environment and Rural Affairs Department will be observed.	Minimising the risk of spreading soil borne pest and diseases.	Construction	n/a	SEERAD
LU16n	See Appendix A7.5 for details of location required per land interest	Careful excavation, storage and replacement of topsoil and subsoil will avoid damage to soils and soil structure and to protect the agricultural capability.	Protecting the soil structure and land capability.	Construction	n/a	n/a
LU17n	See Appendix A7.5 for details of location required per land interest	Care taken to ensure that the minimum amount of damage or disturbance to field drains is caused. Laying of new drains will be undertaken as required to keep the affected and adjoining land in good order. Repairing and reinstatement of field drains will be agreed with the land owner/occupier. Where appropriate the integrity of the drainage system will be secured in advance through the installation of header drains (cut off drains) to facilitate construction. All remaining remedial and new drainage works will be undertaken post construction.	Minimising the disturbance to field drainage and where appropriate, allowing for the improvement of such systems.	Construction Post-construction	n/a	land owner/occupier
LU18n	See Appendix A7.5 for details of location required per land interest	Water supplies for livestock will be protected at all times and alternative supplies would be provided where access would be compromised by any works.	Minimising the disturbance to livestock.	Construction Post-construction	n/a	n/a
LU19n	See Appendix A7.5 for details of location required per land interest	An assessment will be made of the risk of windthrow from any proposed felling and management measures defined for each section of woodland. These will include felling to windfirm edges, topping, pollarding and coppicing.	Minimising the risk of windthrow to woodland areas.	Pre-construction	n/a	n/a
LU20n	See Appendix A7.5 for details of location required per land interest	All felling to create a windfirm edge will take account of ecological landscape and visual effects and design would maximise where possible ecological, landscape and visual opportunities.	Allowing opportunities for other mitigation to be incorporated, where appropriate.	Scheme design Pre- construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
LU21n	See Appendix A7.5 for details of location required per land interest	Where there are no windthrow or landscape visual issues, tree felling will be minimised to that necessary to allow the safe construction and operation of the road.	Minimising the loss of trees.	Pre-construction	n/a	n/a
LU22n	See Appendix A7.5 for details of location required per land interest	Soil disturbance and compaction from the harvesting and extraction will be minimised.	Minimising disturbance to soil.	Pre-construction	n/a	n/a
LU23n	See Appendix A7.5 for details of location required per land interest	Reasonable claims in respect of damage to agricultural land or sporting rights will be payable, as will professional charges.	Offsetting damage through financial compensation.	Pre-construction Construction Post-construction	n/a	n/a
LU24n	Refer to Table 20.1	Where permanent loss of land or demolition of property occurs, consideration will be given to the provision of appropriate financial compensation to relevant landowner, to an amount determined by the District Valuer.	Offsetting loss through financial compensation.	Pre-construction	n/a	District Valuer
LU25n	Refer to Table 20.1	Where access arrangements for businesses are disrupted by the route access will be maintained/restored to these businesses. Diversions and modifications may be required.	Preventing severance and minimising disruption to business access.	Scheme design	n/a	liaison with local business
LU26n	Refer to Table 20.1	Areas of woodland replaced or planted (see ecology/landscape mitigation for further details).	Offsetting loss of woodland.	Design Post-construction	n/a	n/a
Geology, Groundwater and Contaminated Land (Chapter 8)						
G1n	Newtownhill cut (Ch327750 – 329750)	Use of technological methodologies such as low explosive loading densities	Reduces magnitude of impact to low-negligible	Construction	n/a	n/a
G2n	ch315700, ch317200, ch318400, ch323250, ch325550, ch327850, ch328550, ch331000	Additional pre-construction investigation of any areas of known contamination that may be encountered, including land in vicinity of Wester Hatton Landfill.	Avoidance of human contact with contamination, avoiding any potential health and safety risks or risk of environmental pollution.	Construction	n/a	n/a
G3n	All Northern Leg	Treatment and removal if necessary of any identified contaminated ground in accordance with the Duty of Care Regulations (1991).	Avoidance of human contact with contamination, avoiding any potential health and safety risks or risk of environmental pollution.	Construction	n/a	n/a

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G4n	Potentially all along the route, but more likely at same chainages as listed for G3.	Appropriate off-site removal of any contaminated waters, or treatment on site and discharge in compliance with a SEPA Consent to Discharge.	Avoidance of human contact with contamination, avoiding any potential health and safety risks or risk of environmental pollution. Avoidance of impacts on surface water quality.	Construction	n/a	n/a
G5n	Ch315000-315400 ch317350-317650 ch318000-318400 ch319400-319700 ch320850-32100 ch321700-322700 ch323700-3242000 ch325100-325900 ch327000-327200 ch328100-328400	Road drainage to be lined	Avoid contamination of groundwater in known areas of groundwater used as water supply	Operation	n/a	n/a
G6n	All Fastlink	Survey of private water supplies identified as being at risk: confirm their location, nature of supply (spring/well), pipeline network and analyse water quality.	Enable a private water specific assessment and refine the scope of the detailed ground investigation. Information to be used as baseline for items G7 and G8	Pre-construction	During construction application of G7 and G8 mitigation measures	Additional site visits may be required as monitoring (G7G8-n)
G7n	Cutting areas	Pre-construction and construction monitoring of selected groundwater supply sources	Limit impact on groundwater levels and flows. Identification of potential impacts to enable further mitigation to be identified if necessary.	Construction	Potentially extending into operation	n/a
G8n	All Northern Leg	Pre-construction and construction monitoring of groundwater quality in the vicinity of selected groundwater supply sources	Assess impact on groundwater quality. Identification of potential impacts to enable further assessment and mitigation to be identified if necessary	Construction	During construction only	n/a
G9n	Corby and Lily lochs(ch327000- 327200)	See hydrology chapter for mitigations Install a network of piezometers to monitor groundwater level	Gain a better understanding of the interaction between groundwater and surface water.	Pre-construction Construction	Prior construction & construction	n/a
Water Environment (Chapter 9)						
W1n	All locations	Adherence to best practice including SEPA PPG01, PPG04, PPG05, PPG06, PPG07, PPG08, PPG10, PPG13, PPG18 and PPG21.	Avoidance and reduction of construction impacts	Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W2n	All locations	Runoff and erosion control measures to include perimeter cut-off ditches at the base of embankments; settlement lagoons and site fences on cut slopes, around drainage inlets and any drainage path, hay bales, mulching and erosion control blankets; sediment fencing and hydro-seeding. Should chemical flocculants be proposed for settlement, SEPA will be consulted to obtain the necessary approvals.	Minimise sediment and pollution release into environment	Construction	Inspection and maintenance of all erosion controls weekly and after heavy rainfall events. ECoW on site during construction period.	SEPA
W3n	All locations	Stockpiles will not be located near watercourses. Stockpiles will be covered when not in use and silt fencing provided around the perimeter. Vehicles or vehicle wheels will not be washed near watercourses.	Minimise sediment and pollution release into environment	Construction	Monitor water quality prior to, and during, construction assessing chemical (temperature, pH, conductivity, suspended solids, heavy metals etc.) and biological parameters (macroinvertebrate communities and macrophytes.) ECoW on site during construction period.	Monitoring locations, parameters, frequency of sampling and discharge limits will be agreed with SEPA /SNH in advance of construction.
W4n	All locations	Use bridges to cross watercourses rather than temporary culverts and avoid fording watercourses.	Minimise sediment release into the environment	Construction		
W5n	All locations	Minimise dust release during blasting activities by damping with water.	Minimise sediment release into the environment	Construction		
W6n	All locations	Ensure minimal disturbance to the banks and beds of watercourses and minimal disturbance to existing land drainage systems.	Minimise sediment release into the environment	Construction		
W7n	All locations	Provision of bunded areas with impervious walls and floor lining for the storage of fuel, oil and chemicals.	Minimise pollutant release into the environment	Construction		
W8n	All locations	Storing potential pollutants or undertaking potentially polluting activities (e.g. concrete batching and mixing) will be undertaken away from watercourses, ditches and surface water drains.	Minimise pollutant release into the water environment	Construction		
W9n	All locations	If service diversions need to be carried out, the diversion will be undertaken prior to construction and will be undertaken using good engineering practices to ensure spillage risk is minimised.	Minimise pollutant release into the environment	Construction		

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W10n	All locations	Any areas of contaminated land identified (Chapter 8 Geology, Groundwater and Contaminated Land) will be avoided or further investigated if subject to disturbance. Methods to ensure disturbed sediment does not enter the watercourses will be used to prevent contamination of surface water features (temporary sediment removal measure, e.g. settlement lagoons, cut-off ditches, etc).	Minimise sediment and pollution release into environment	Construction	Monitor water quality prior to, and during, construction assessing chemical (temperature, pH, conductivity, suspended solids, heavy metals etc.) and biological parameters (macroinvertebrate communities and macrophytes). ECoW on site during construction period.	Monitoring locations, parameters, frequency of sampling and discharge limits will be agreed with SEPA /SNH in advance of construction.
W11n	All locations	Minimise the duration and spatial extent of works in the vicinity of watercourses and progressive rehabilitation of exposed areas throughout the construction period and avoid, working during periods of low flow, through appropriate timing.	Minimise sediment release into the environment	Construction		
W12n	All locations	Any abstractions from the river will be identified and quantified and formal consent of SEPA will be sought.	Minimise impact on water quality and aquatic species.	Construction		
W13n	All locations	Installation of temporary settlement/sedimentation lagoons, where appropriate.	Minimise sediment and pollution release into environment to ensure compliance with the water quality standards throughout construction.	Construction		
W14n	All locations	An ecological clerk of works (ECO) will be on site during construction.	Ensure the implementation of appropriate environmental safeguards	Construction		
W15n	ch315200 ch316390 ch316990 ch317330 – A96 Dyce Drive link rd ch319950-320870 ch325005 link rds ch327500 ch329950 E of A90(N) ch330050 A90 Middlefield Burn	Watercourse will be diverted or pumped away from the construction site during the construction of culverts to minimise potential contamination of the watercourse. This will also include measures to ensure fish and mammal passage is facilitated. If temporary culverts are required they will be appropriately sized (1:200 years flow) to ensure adequate passage of water during high flow conditions.	Prevent potential adverse impact on water quality and aquatic environment.	Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W16n	ch315200 ch316390 ch316990 ch317330 – A96 Dyce Drive link road ch319950-320870 ch325005 link rds ch327500 ch329950 E of A90(N) ch330050 A90 Middlefield Burn	Culverts will be designed to pass the 1:200 year flow (0.5% AEP) and must be designed to ensure fish passage following SEERAD guidance and SEPA policy. Culverts will be depressed invert to ensure continuity of bed sediments through the structure. In areas of high scour potential culverts will include scour protection to dissipate flow energy.	Ensure hydrological connectivity of watercourses, maintaining flow patterns and catchment characteristics downstream. Minimise flood risk upstream and downstream of proposed crossing point. Allow sediment transfer and ensure bed connectivity through structure. Prevent potential adverse impact on water quality and aquatic environment.	Operation	On-going monitoring of culvert and realignments following installation will be undertaken including regular inspections for erosion and deposition. In particularly on the Bogenjoss Burn. On-going maintenance and rubbish removal to ensure efficient functioning and minimise impact on flood risk.	Details to be agreed with SEPA
W17n	ch317300 ch320710 ch322930 ch323900 ch324600 Little Goval Roundabout ch327240 ch329940 A90 south of New Blackdog Estate Middlefield Burn at the A90 north of Fifehill	Detention basins will be designed to attenuate flows of up to the 1:200 year event back to pre-development rates.	Minimise impact upon existing flood regime of the watercourse.	Operation	n/a	n/a
W18n	ch317300 ch320710 ch322930 ch323900 ch324600 at proposed Little Goval Roundabout ch327240 ch329940 A90 south of New Blackdog Estate Middlefield Burn at the A90 north of Fifehill	Treatment ponds, detention basins, filter drains/catchpits and all parts of the treatment train will be designed to maximise pollutant removal and will be designed in accordance with best practice set out in CIRIA C609.	Ensure existing water quality in receiving watercourses does not fail EQS.	Operation	Ongoing monitoring to be undertaken at Key outfalls, in particular the outfall at the River Don. Monitoring will include ecological (macroinvertebrate) and water quality sampling.	Details to be agreed with SEPA

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W19n	ch315200 ch316390 ch316430 ch316990 ch317330 A96 Dyce Drive link road ch320100 ch320215 ch320260 ch320475 ch320500 ch320870 ch325085 B977 SW link road Corsehill Burn SE link rd ch327500 ch329950 A90 South (SE side rd) ch330065 A90 North A90 Junction: NW link rd A90 Junction: NE link rd	Watercourse will be diverted or pumped away from the construction site during the construction of culverts to minimise potential contamination of the watercourse. This will also include measures to ensure fish and mammal passage is facilitated. If temporary culverts are required they will be appropriately sized to 0.5% AEP (1:200 years flow) to ensure adequate passage of water during high flow conditions.	Prevent potential adverse impact on water quality and aquatic environment.	Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W20n	ch315200 ch316390 ch316430 ch316990 ch317330 A96 Dyce Drive link rd ch320100 ch320215 ch320260 ch320475 ch320500 ch320870 ch325085 B977 SW link rd Corsehill Burn SE link road ch327500 ch329950 A90 South (SE side rd) ch330065 A90 North A90 Junction: NW link rd A90 Junction: NE link rd	Culverts will be designed to pass the 1:200 year flow (0.5% AEP) and must be designed to ensure fish passage following SEERAD guidance and SEPA policy. Culverts will be depressed invert to ensure continuity of bed sediments through the structure, similarly sized bed material will be used to cover bottom of culvert. In areas of high scour potential baffles will be installed within the culvert to dissipate flow energy and stabilise the bed sediments.	Ensure hydrological connectivity of watercourses, maintaining flow patterns and catchment characteristics downstream. Minimise flood risk upstream and downstream of proposed crossing point. Allow sediment transfer and ensure bed connectivity through structure. Prevent potential adverse impact on water quality and aquatic environment.	Operation	On-going monitoring of culvert and realignments following installation will be undertaken including regular inspections for erosion and deposition, particularly on Bogenjoss Burn. On-going maintenance and rubbish removal to ensure efficient functioning and minimise impact on flood risk.	Details to be agreed with SEPA
W21n	ch317060 ch317470 ch320810 ch322930 ch323900 ch324850 ch327245 ch329940 ch330765 A90 North Junction	Detention basins will be designed to attenuate flows of up to the 1:200 year (0.5% AEP) event back to pre-development rates. Basins will be located outwith 0.5%AEP floodplain.	Minimise impact upon existing flood regime of the watercourse.	Operation	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W22n	ch317060 ch317470 ch320810 ch322930 ch323900 ch324850 ch327245 ch329940 ch330765 A90 North Junction	Treatment ponds, detention basins, filter drains/catchpits and all parts of the treatment train will be designed to maximise pollutant removal and will be designed in accordance with best practice set out in CIRIA C609, CIRIA C648, CIRIA C521 and CIRIA C697. These will be located outwith 0.5%AEP floodplain.	Ensure existing water quality in receiving watercourses does not fail EQS.	Operation	Ongoing monitoring to be undertaken at Key outfalls, in particular the outfall at the River Don. Monitoring will include ecological (macroinvertebrate) and water quality sampling.	Details to be agreed with SEPA
W23n	ch317060 ch317470 ch320810 ch322930 ch323900 ch324850 ch327245 ch329940 ch330765 A90 North Junction	Ensure construction of outfall is not conducted during periods of high flow	Minimise erosion of river banks	Construction	n/a	n/a
W24n	ch317060 ch317470 ch320810 ch322930 ch323900 ch324850 ch327245 ch329940 ch330765 A90 North Junction	Road drainage network will be maintained to ensure maximum efficiency. Maintenance regime will include: maintenance of filter drains, filtration devices; detention basins, treatment ponds and their receiving watercourses, including culverts; if herbicides are used, those recommended by SEPA for use near watercourses to be applied in line with manufacturer's instructions to reduce pollution of watercourses; and, provision of scour protection at the drainage discharge outfall.	Ensure efficacy of pollutant removal techniques. Protect the banks and bed of the receiving ditch and to limit erosion.	Operation	Ongoing monitoring to be undertaken at Key outfalls, in particular the outfall at the River Don. Monitoring will include ecological (macroinvertebrate) and water quality sampling.	Details to be agreed with SEPA

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W25n	ch323150 B977 ch324600 A947 (at confluence of Goval Burn and Corsehill Burn) Under A947	Bridge design will ensure minimal impact upon watercourse and riparian zone by clear spanning the channel and having no in-channel supports. Bridges will be included in the design over the Goval Burn, River Don and the Mill Lade system. Bridges will be designed to ensure minimal (following SPP7) impact upon 1:200yr flood levels and may accommodate flows of higher return period events due to their structural form.	Minimised sediment release into watercourse during construction and minimise impact upon geomorphology and riparian zone during the operation by maintaining channel.	Construction Operation	n/a	n/a
W26n	ch315200 ch316390 ch316430 ch316990 ch317330 A96 Dyce Drive link road ch320100 ch320215 ch320260 ch320475 ch320500 ch320870 ch325085 B977 SW link road Corsehill Burn SE link rd ch327500 ch329950 A90 South (SE side rd) ch330065 A90 North A90 Junction: NW link rd A90 Junction: NE link rd	Watercourse realignments will be designed to ensure realigned lengths and local gradients are similar to those of the original watercourses. Sensitive realignment design reintroducing meanders, alternating pools and riffle sequences, and morphological diversity where possible to offset straightening of channel and other culverting proposed on the watercourse. New banks of realignment appropriately graded	Offset straightening of channel and other culverting proposed on the watercourse by re-introducing geomorphological diversity. Limit bank erosion	Operation	On-going monitoring of culvert and realignments following installation will be undertaken including regular inspections for erosion and deposition, particularly for the Bogenjoss Burn.	Details to be agreed with SEPA

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W27n	ch315200 ch316390 ch316430 ch316990 ch317330 A96 Dyce Drive link road ch320100 ch320215 ch320260 ch320475 ch320500 ch320870 ch325085 B977 SW link road Corsehill Burn SE link rd ch327500 ch329950 A90 South (SE side road) ch330065 A90 North A90 Junction: NW link rd A90 Junction: NE link rd	Diversion or pumping away during construction of culverts/realignments will require cut-off ditches and sediment fencing; treatment ponds or settlement/sedimentation lagoons to reduce sediment release. Batching or mixing in the vicinity of watercourses to be avoided. All pumps will have drip trays and be set away from watercourses.	Minimise sediment and pollutant release into the environment.	Construction	On-going monitoring of culvert and realignments following installation will be undertaken including regular inspections for erosion and deposition, particularly for the Bogenjoss Burn.	Details to be agreed with SEPA
W28n	ch317060 ch317470	The installation and operation of 1 Filter Drain, Detention Basin, and 3 Treatment Ponds. Ponds will be located outwith the 0.5%AEP floodplain.	EQS levels achieved and accidental spillage reduced to acceptable limits and flows reduced to pre-development rates	Construction Operation	n/a	n/a
W29n	ch320810	The installation and operation of 1 Filter Drain, Detention Basin, 1 Treatment Pond and 1 Swale. Ponds will be located outwith the 0.5%AEP floodplain.	EQS levels achieved and accidental spillage reduced to acceptable limits and flows reduced to pre-development rates.	Construction Operation	n/a	n/a
W30n	ch322930	The installation and operation of 1 Filter Drain, Detention Basin and 2 Treatment Ponds. Ponds will be located outwith the 0.5%AEP floodplain.	EQS levels achieved and accidental spillage reduced to acceptable limits and flows reduced to pre-development rates.	Construction Operation	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
W31n	ch323900 ch324850 ch327245 ch329940 ch330765 A90 North Junction	The installation and operation of 1 Filter Drain, Detention Basin and 1 Treatment Pond. Ponds will be located outwith the 0.5%AEP floodplain.	EQS levels achieved and accidental spillage reduced to acceptable limits and flows reduced to pre-development rates.	Construction Operation	n/a	n/a
W32n	ch320100 ch320215 ch320260 ch320475 ch320500 ch320870	Sensitive realignment design. However due to sedimentation risk it was not considered practical to include meanders in this realignment.	Minimise change to morphological diversity and stability of the channel, thereby minimising associated floodrisk.	Construction Operation	n/a	Geomorphologist will be consulted during the detailed design phase.
Ecology and Nature Conservation (Chapter 10)				*Note: ECoW ensures adherence to all following construction mitigation*		
Generic Mitigation						
E1n	All	Comply with the requirements of the Ecological Clerk of Works (ECoW).	Ensure of schedule of commitments is enforced.	Pre-construction	n/a	n/a
E2n	All	ECoW to ensure all mitigation agreed is implemented.	Ensure of schedule of commitments are enforced.	n/a	n/a	
E3n	All	Ensure that work compounds and access tracks etc are not located in, or adjacent to, areas that maintain habitat value.	Prevents additional impacts to terrestrial and freshwater habitats.	Pre-construction Construction	n/a	n/a
E4n	All	Establish site fencing to prevent access to areas outside of working areas, particularly in areas adjacent to features of interest/value.	Prevents additional impacts to terrestrial and freshwater habitats.	Pre-construction Construction	n/a	n/a
E5n	All	Cover site safety issues including storage of potentially dangerous materials.	Prevents additional impacts to terrestrial and freshwater habitats.	Construction	n/a	n/a
E6n	All	Pre-construction surveys in impacted areas for protected species.	Prevents direct mortality and disturbance to breeding.	Pre-construction Construction	n/a	n/a
E7n	All	Covering of pits or provision of mammal ramps to prevent animals falling in holes and becoming trapped.	Prevents direct mortality.	Construction	n/a	n/a
E8n	All	Follow SEPA pollution prevention guidelines to prevent pollution of water courses through siltation or chemicals.	Prevents additional impacts to terrestrial and freshwater habitats.	Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E9n	All	Best practice methods will be followed throughout.	Prevents additional impacts to terrestrial and freshwater habitats.	Construction	n/a	n/a
E10n	All	New landscape planting will comprise native species.	Minimise impacts on terrestrial habitats.	Construction Post-construction	n/a	n/a
E11n	All	A 30 m 'no disturbance' buffer will be adhered to around all badger setts, bat roosts, otter holts & lying up sites, red squirrel dreys and water vole burrows.	Reduces disturbance on protected and sensitive species.	Construction	n/a	n/a
E12n	All	Night time working to be avoided where practicable.	Reduces disturbance to bats, otters and salmonids.	Construction	n/a	n/a
E13n	Along watercourse crossing points	Carriageway lighting reduced or designed to be sympathetic to bats, otters, salmonids.	Reduces disturbance to bats, otters and salmonids.	Scheme design Operation	n/a	n/a
E14n	All	Use of Sustainable Urban Drainage Systems (SUDS).	Prevents pollution incidents.	Scheme design Construction	n/a	n/a
E15n	Along watercourse crossing points	Creation of riparian woodland along side burns including species of local importance.	Compensates for habitat loss. Minimises disturbance through noise reduction on otters, water voles and salmonids.	Pre-construction Construction Post-construction	n/a	n/a
Badger						
E16n	Where setts have been identified (confidential)	Sett exclusion and creation of replacement setts will be according to SNH guidelines. Replacement setts at least 9 months prior to destruction of existing setts.	Prevents direct mortality and minimises disturbance.	Pre- construction (9 months)	As set out in SNH guidelines and in exclusion methodologies	SNH
E17n	Pre-identified locations (confidential)	Artificial setts will be provided to compensate for those setts that lie within the footprint of the scheme and need to be destroyed.	Replaces destroyed setts.	Pre-construction	As set out in SNH guidelines and methodology	SNH
Bats						
E18n	<u>Habitat Areas</u> N1-N4, N6-N8, N11-	Exclusion of bats from roosts that are to be destroyed. To be undertaken at least 1year in advance of construction.	Prevents direct mortality to bats.	Pre-construction (12 months)	Provision of replacements roosts as directed by ECoW	SEERAD

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E19n	N14, N16 N18, N19, N23-N28, N30, N33, N35-N43, N45-N50, N52-N54, N58, N61-N63, N65, N69, N71-N72, N74, N76, N78-N80, N82-N85, N87-N88, N90-N91	Construction activities will be timed to avoid periods when bats are sensitive to disturbance i.e. summer and winter. Trees to be felled and buildings to be demolished will be inspected immediately prior to removal by licensed ecologists and a precautionary approach to their removal adopted e.g. the sectional felling of trees in spring or autumn.	Prevents direct mortality to bats.	Pre-construction Construction	n/a	n/a
E20n		Use of screens to protect bats which may be roosting in trees during construction.	Reduces the risk of direct road mortality.	Construction	n/a	n/a
E21n		Works must follow BS 5837 (1991) guidance for trees in relation to construction and to safeguard trees to be retained.	Avoids damaging trees and reduces habitat loss.	Construction	n/a	n/a
E22n		Culverts and Underpasses will be designed and managed to allow water to flow through and include lead-in structures or planting.	Increases potential use by bats and reduces fragmentation.	Scheme design Construction Post-construction	n/a	n/a
E23n		Bat boxes will be erected in pre-identified locations and buildings to provide potential roosts for bats.	Reduces habitat loss.	Pre-construction Construction	n/a	n/a
E24n		Linear habitat planting will be incorporated along bat flyways and within 30m of bat roosts to direct bats over the scheme.	Reduces the risk of direct road mortality.	Scheme design Construction	n/a	n/a
Breeding and Wintering Birds		Construction activities including the felling of trees and clearing of scrub will be timed to avoid periods when birds are nesting i.e. March-August.	Prevents disturbance to breeding birds.	Construction	n/a	n/a
E25n	Habitat Areas N12-N13, N15-N16, N21, N25, N26, N28, N29, N31-N33, N35, N37-N40, N42-N43, N46-N47, N52, N54-N55, N58-N61, N64, N66, N69, N84-N87, N89, N93-N95					
E26n	Habitat Areas N11-N17, N18-N20, N23-N26, N28, N30-N33, N39, N34-N40, N41-N48	Construction activities in the vicinity of key winter bird habitats will be timed to avoid October to March.	Prevents disturbance to wintering birds.	Construction	n/a	n/a

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E27n	Habitat Areas N12-N16, N21, N25, N26, N28-N35, N37-N40, N42-N43, N46-N47, N52, N54-N55, N58-N62, N64, N66, N69, N84-N87, N89, N90, N93- N95	Woodland and scrub will be planted a predetermined distance away from the carriageway including the provision of a grassland buffer either side of the road allowing a clear sightline for the traffic.	Minimise RTAs.	Pre-construction Construction	n/a	n/a
E28n		Protective barriers (set back from the alignment) should be installed to deflect flying birds up and over moving traffic.	Prevents RTAs.	Construction Pre-operation	n/a	n/a
E29n		Planting of dense native tree and scrub species to screen noise and vibration disturbance due to operation of the proposed scheme from birds located within adjacent habitats.	Prevents disturbance to breeding birds.	Construction Post-construction	n/a	n/a
E30n	Habitat Areas N12-N16, N21, N25-N26, N28-N30, N32-N34, N50-N51, N55, N60, N62, N64 N84-N85, N87, N90, N94-N97	Sympathetic planting of second (and subsequent) stage detention basins.	Encourages use by wintering birds.	Construction Post-construction	n/a	n/a
Otters						
E31n	Habitat Areas N64, N66, N68, N84-N87, N91, N93, N94, N97, N11-N13, N22-N26, N28, N30, N33, N37-N44	Exclusions of holts that are to be destroyed, and provision of artificial holt sites and habitat creation at least one year prior to construction.	Prevents direct otter mortality.	Pre-construction (12 mths)	Adherence to SNH prescribed measures and method statement.	SNH, SEERAD
E32n		The erection of otter-proof fencing wherever the scheme comes within 150m of a watercourse or a known otter commuting route.	Reduces risk of RTAs.	Pre-operation	n/a	n/a
E33n		Marking off 3m from watercourses banks.	Prevents disturbance to the riparian zone.	Construction	n/a	n/a
E34n	Habitat Areas N60, N61	Creation of artificial otter holts and mitigation enhancement of existing riparian habitat.	Compensate for habitat loss for otters, water voles and water shrew.	Construction Post-construction	Adherence to SNH prescribed measures	SNH
Red Squirrels						
E35n	Habitat Areas Woodland 8, N24, N25, N33-N35, N37-N43, N47, N58, N71, N72	No clearance for construction works during red squirrel breeding period (Dec-Aug inclusive). Construction works where squirrels present to be avoided during this period.	Prevents disturbance of red squirrels while breeding.	Construction	n/a	n/a

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E36n	Habitat Areas Woodland 8, N24, N25, N33-N35, N37-N43, N47, N58, N71, N72	New 'core' areas of woodland to be created. Existing woodland to be managed for red squirrels by removal of species favourable to grey squirrels and planting trees of age and species composition favourable to red squirrels.	Compensates for the loss of existing habitat, prevents isolation of red squirrel populations, reduces fragmented by providing commuting corridors.	Construction Post-construction	n/a	n/a
E37n	Habitat Areas Woodland 8, N24, N25, N33-N35, N37-N43, N47, N58, N71,N72	Partnership with the Forestry Commission to control grey squirrel numbers.	Reduces and prevents establishment of grey squirrels in the study area and beyond.	Construction Post-construction	n/a	n/a
Reptiles						
E38n	Habitat Areas N13, N19, Woodlands 4 &,7 N33, N37-N41, RPH3, RPH4, RPH,6 RPH8, RPH9, RPH13, RPH16-RPH19, RPH21-RPH24, N54-N55, N60-N61, N64, N80, N83-N84, N87.	Areas identified as being well connected, with high to moderate value to reptiles to be lost or severed will be made unsuitable for reptile habitation. Vegetation will be strimmed/removed, searched for reptiles, and timed for periods when reptiles are least vulnerable to disturbance. Any reptiles captured will be released into suitable habitats or in sites already identified but not affected.	Reduces disturbance and potential mortality to reptiles.	Prior to site clearance	n/a	n/a
Amphibians						
E39n	Habitat Areas N1, N26, N49, N61, N68, N80	Destructive searches of pond-side habitat and draining-down of ponds. Any newts captured to be transferred to receptor ponds or adjacent areas of suitable habitat.	Reduces disturbance and direct mortality of newts.	Prior to site clearance	n/a	n/a
Fish and Freshwater Habitat						
E40n	Habitat Areas N22-N24, N28, N30, N38	Activities that require works in watercourses and/or de-watering or re-alignment avoided where possible. If unavoidable, to be undertaken Apr-Sept.	Reduces disturbance to salmonids.	Construction	n/a	n/a
E41n	Habitat Areas N22-N24, N28, N30, N38	Fish removed from sections to be de-watered, re-aligned or excavated, using electrofishing, and translocated to appropriate alternative site.	Reduces direct mortality of fish.	Construction	n/a	n/a
E42n		Construction works near/in watercourses will avoid the first third of the egg incubation period (mid Oct-end Dec). A 'soft start' approach will be adopted in the event of any piling works. Suspended solid works carried out May-Sept.	Reduces disturbance to salmonids through noise and vibration.	Construction	n/a	n/a
E43n		Any lights on site compounds or during construction will be directed away from water.	Prevents disturbance of salmonids.	Construction	n/a	n/a

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E44n	Habitat Area N52	High span bridges with set-back piers will be constructed over the River Don.	Prevents damage and disturbance to salmonid habitat.	Scheme design	n/a	n/a
E45n	Habitat Areas N22-N24, N28, N30, N38	Road drainage treatment to ensure adherence to strict water quality standards (see water quality section).	Prevents pollution to watercourses, direct mortality of species and sediment settling on mussel beds.	Scheme design Operation	n/a	n/a
E46n		Realignments to include meander bends, habitat creation and retention of similar river lengths where feasible.	Provides a more natural setting, reduces habitat fragmentation.	Construction	n/a	n/a
E47n		Use of depressed invert box culverts, minimisation of culvert length and use of bridges for valuable habitat areas.	Allows the retention of natural substrate and geomorphological regime, to avoid habitat fragmentation and potential barriers for migratory species.	Scheme design	n/a	n/a
Planting and Habitat Creation						
E48n ref L12n	ch314900 (e), Habitat Area N11	1ha of scrub woodland planted east of AWPR for ecology & landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for breeding birds, terrestrial habitat and badgers.	Construction Post-construction	n/a	n/a
E49n ref L12n	ch314800 (w), Habitat Area N11	0.2ha of scrub woodland planted west of AWPR for ecology & landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for breeding birds and badgers.	Construction Post-construction	n/a	n/a
E50n ref L20n	ch316450-316900 (w), Habitat Areas N28 & N25	3 blocks of coniferous woodland planted west of AWPR 1.86ha for ecology purposes only.	Compensates for loss of existing habitat, and reduces fragmentation for red squirrel, bats and badgers.	Construction Post-construction	n/a	n/a
E51n	ch317000-317150 (w), Habitat Area N28	2.05ha coniferous woodland planted for ecology purposes only.	Compensates for loss of existing habitat, and reduces fragmentation for red squirrel, bats and badgers.	Construction Post-construction	n/a	n/a
E52n	ch317000-317050 (e), Habitat Area N28	Block of 0.67ha coniferous plantation to east of the road and south of A96 for ecology purposes only.	Compensates for loss of existing habitat, and reduces fragmentation for red squirrel, bats and badgers.	Construction Post-construction	n/a	n/a
E53n ref L23n	ch317100-317310 (e), Habitat Area N28	1.17ha mixed woodland planted surrounding detention basins for ecology and landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for bats and otters.	Construction Post-construction	n/a	n/a
E54n	ch318930-319430. (w), Habitat Area N33 and N35	2 blocks of mixed woodland to the west of the road for ecology purposes only.	Compensates for loss of existing habitat, and reduces fragmentation for red squirrel, bats, badgers, breeding birds.	Construction Post-construction	n/a	n/a
E55n	ch318900-319450 (w) N34	1.18ha mixed woodland to the west of the road for ecology and landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for red squirrel, bats, badgers, breeding birds.	Construction Post-construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E56n	ch319430-319730 (west) Habitat Area N35	Coniferous woodland (4.0ha) planted wil; extend the habitat of Standingstones Wood.	Compensates for loss of existing habitat, and reduces fragmentation for habitats, red squirrel, bats, badgers, breeding birds.	Construction Post-construction	n/a	n/a
E57n ref L32n	ch319970-320400 (w), Habitat Area N37	A strip of scrub woodland planted east of Bogenjoss burn for ecology and landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for terrestrial habitats, bats and otters.	Construction Post-construction	n/a	n/a
E58n ref L33n	ch320000-320500 (w) Habitat Areas N37 & N41	A strip of riparian woodland planted west of Bogenjoss burn for ecology and landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for terrestrial habitats, bats and otters.	Construction Post-construction	n/a	n/a
E59n ref L38n	ch320400(w) Habitat Area N41	0.21ha mixed woodland planted contiguously with East woodlands for ecology and landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for terrestrial habitats, red squirrel, badgers, bats and breeding birds.	Construction Post-construction	n/a	n/a
E60n	ch320450-320950 (e), Habitat Areas N41 & N42	Localised scrub patches for ecology & landscaping.	Compensates for loss of existing habitat, and reduces fragmentation for breeding birds, badgers and bats.	Construction Post-construction	n/a	n/a
E61n	ch321490-321520 (west) Habitat Area N46	Coniferous woodland planted contiguous with the eastern leg of East Woodlands for ecology purposes only.	Compensates for loss of existing habitat, and reduces fragmentation for red squirrel, bats, breeding birds and badgers.	Construction Post-construction	n/a	n/a
E62n ref L42n	ch321630-322130 (n)	3 blocks of mixed woodland (3.92ha) planted North of Monument Wood for ecology and landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for terrestrial habitats, bats, red squirrel, badgers and breeding birds.	Construction Post-construction	n/a	n/a
E63n ref L54n	ch324400 (n), Habitat Area N61	0.54ha mixed woodland planted north of the road including 0.04ha of riparian woodland planted for ecology & landscape purposes.	Compensates for loss of existing habitat, and reduces fragmentation for bats, otter and badger.	Construction Post-construction	n/a	n/a
E64n	ch324530-324650 (e) Habitat Area N61	At Goval, north of the road, east of A947, creation of land set aside for otter habitat between Goval Mill Lade and Goval Burn.	Compensates for loss of existing habitat, and reduces fragmentation for bats, otter and badger.	Construction Post-construction	n/a	n/a
E65n ref L54n	ch324400 (s), Habitat Area N61	0.66ha mixed woodland planted south of the road including 0.04ha of riparian woodland for ecology & landscape purposes.	Compensates for the loss of existing habitat, and reduces fragmentation for bats, otter and badger.	Construction Post-construction	n/a	n/a
E66n ref L54n	ch324400 (s), Habitat Area N61	0.17ha small triangle of mixed woodland planted south of the road and south of Goval burn for ecology & landscape purposes.	Compensates for the loss of existing habitat for bats and otter.	Construction Post-construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E67n	Ch325400 (s) Habitat Area N71	Replacement pond at Corsehill	Compensate for loss of pond habitat for amphibians and terrestrial habitats	Construction Post-construction	n/a	n/a
E68n ref L62n	ch325700-325950, (s) Habitat Area N72	2 blocks of 1.4ha of mixed woodland planted in Littlejohn's Wood for ecology & landscape purposes.	Replaces felled trees and compensates for loss of existing terrestrial habitats, red squirrel, badger, bats and breeding birds.	Construction Post-construction	n/a	n/a
E69n ref L71n	ch328030-321300 (n), Habitat Area N87	0.7ha of scrub woodland planted for ecology & landscape purposes.	Compensates for the loss of existing habitat for badger and breeding birds.	Construction Post-construction	n/a	n/a
E70n ref L78n	ch330000 (s), Habitat Area N91	Creation of riparian habitat east of Blackdog for ecology & landscape purposes (0.37ha).	Compensates for the loss of existing habitat for otters and bats.	Construction Post-construction	n/a	n/a
E71n ref L77n	ch329900-329950 (n), Habitat Area N91	Planting of 0.17ha scrub and riparian mosaic on either side of Blackdog Burn for ecology & landscape purposes.	Compensates for the loss of existing habitat for otters and bats.	Construction Post-construction	n/a	n/a
E72n ref L89n – L90n	AWPR and A90 Junction (Fife Hill), Habitat Area N97	Species-rich grassland and scattered scrub to be created on embankment and cutting slopes around the A90 north junction to offset habitat loss and enhance habitat diversity. 2.8ha of riparian woodland to be planted on both banks of Middlefield Burn to maintain riparian corridor and offset impacts on otter populations. Above Fife Hill (HA N97) east of the road and east of the A90 Junction there will be 0.47 ha strip of scrub woodland surrounding an detention basin, and 1.07 ha east of the A90 junction next to road. East and west of AWPR at the A90 junction there is a 1.30 ha of scrub woodland.	Compensates for the loss of existing habitat for otters and bats.	Construction Post-construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E73n	ch314800-315080 (inc. junction) and ch315620-316180 ch315000 roundabout side roads ch316180-317500 ch315580-316200 ch317070 (A96) ch317500-317770 ch318020-318400 ch319160-319800 ch321280-323050 ch323390-325220 323610 (B9770) ch325220-326990 ch327710-329750 ch330340-331000 ch324100 ch324400 ch324850	Provision of badger proof fencing (also suitable for otter).	Prevents RTAs and reduces habitat fragmentation for badgers.	Construction Post-construction	Refer to Ecology Chapter and Appendix Reports for details of monitoring requirements	n/a
E74n	ch315080-315680. ch316180-317500 ch317770-318020. ch318400-319180 (inc. side road). ch319800-321280. ch322850-323040. ch323370-325220. ch323610 (B977 bridge). ch326990-327710. ch329750-330340. ch324100 (Roundabout)	Provision of otter proof fencing (also suitable for badger).	Prevents RTAs and reduces habitat fragmentation for badger, otter, water vole and water shrew.	Construction Post-construction	Refer to Ecology Chapter and Appendix Reports for details of monitoring requirements	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E75n	Otters, Badgers, Bats: ch316390, ch316990, ch317330, ch327500, ch329950, and 5 offline culverts. Otters and Badgers: ch315200, ch318450 off-line, ch324800 off-line, ch324870 off-line, and ch325080. Otters: ch319950 off-line, ch320100 off-line, ch320220 off-line, ch320260 off-line, ch320500 and ch320870.	Provision of multi-use depressed invert box culverts.	Prevents RTAs and reduces habitat fragmentation for otters, badgers and bats.	Design Construction Post-construction	Refer to Ecology Chapter and Appendix Reports for details of monitoring requirements	n/a
E76n	Otters and Badgers: ch324230, ch324400 off-line. Otters and Bats: ch323950. Badgers: ch317850, ch319250, ch321330, ch326280 (Buried structure). Otters, Badgers, Bats: ch323610 off-line, ch324400 off-line, and ch324530 (Aqueduct).	Provision of multi-use mammal underpasses landscape planting will be designed to encourage usage.	Prevents RTAs and reduces habitat fragmentation for otters, badgers and bats.	Design Construction Post-construction	Refer to Ecology Chapter and Appendix Reports for details of monitoring requirements	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
E77n	Badgers Road bridges at ch314970, ch315620, ch316020, ch322540, ch325940, ch326730, ch328560, ch329500 All species: Green overbridge at ch319960. Wildlife bridge at ch320180. Otters, badgers, bats: Wide span bridge river crossing: ch323050-323370 Red squirrel: Wire bridge: ch324400 off-line. Badgers and bats: Formartine & Buchan Way bridge at ch324620	Provision of a multi-use bridge structures landscape planting will be designed to encourage usage.	Prevents RTAs and reduces habitat fragmentation for protected species including otters, badgers, bats and red squirrels.	Design Construction Post-construction	Refer to Ecology Chapter and Appendix Reports for details of monitoring requirements	n/a
Terrestrial Invertebrates						
E78n	Habitat Areas N82 and N85	Pollution control through best practice at site over and above SEPA pollution prevention guidelines to prevent hydrological and/or pollution impacts on drainage channels connecting Red Moss and Lily and Corby Lochs.	Minimises potential hydrological disruption affecting the quality of the surrounding habitat.	Construction Post-Construction	n/a	n/a
Landscape (Chapter 11)						
L1n	Throughout the scheme	Achieve best fit of alignment design with existing contours and landform where possible. Avoid existing features and ecological and archaeological sites.	Prevention of physical impact on particular landscape elements, features and sensitive sites.	Scheme design Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L2n	Throughout the scheme	Earthworks: embankment and cuttings constructed to tie in with existing levels and where appropriate return slope to agricultural use. Softening of differences of slope gradients at junction and structures etc. by smoothing out of transitions. Careful rounding off of top and bottom of cuttings and embankments.	Reduction of impact of embankment / cutting gradients on existing levels.	Scheme design Construction	n/a	n/a
L3n	Throughout the scheme	Rock Cuttings: Creation of irregular, naturalistic rock faces; integration of pockets of soil and native seed onto ledges and terraces to encourage area of vegetation establishment.	Reduction of visual impact of regular cuttings and offset any loss of vegetation.	Scheme design Construction	n/a	n/a
L4n	Throughout the scheme	Drystone walling: to be constructed to local and traditional design, of reclaimed materials from the local vicinity and be approximately 1m high and 0.5m wide.	Offset impacts of field boundary severance and replacement of field enclosures.	Construction	n/a	Local Authority and maintaining authority
L5n	Throughout the scheme	Detention Basins and Treatment Ponds: create habitat for wildlife within naturally low areas. Design to look as natural as possible (in consultation with ecologist). Integrate contours with existing and proposed levels. Unobtrusive boundary fencing design. Use of native scrub species for screening of structural features (outfall / inlet/ fencing etc). Wildflower and native grass seeding on open areas.	Opportunity to offset loss of / impact on and/or enhance landscape elements and ecological habitats.	Construction	Monitoring of planting/seeding establishment during aftercare period	SNH and the maintaining authority
L6n	Throughout the scheme	Noise Barriers: where appropriate provision of tree and shrub planting to screen noise barriers and provide continuity of woodland character along road corridor.	Reduction of visual impact of noise barriers and offset of loss to woodland elements.	Scheme design Construction	Monitoring of planting establishment during aftercare period	n/a
L7n	Throughout the scheme	Structures: Design of structures such as bridges along the length of the route has been informed by a combination of specialist aesthetic advice, design workshops and consultation with Architecture and Design Scotland.	Reduction of visual impact of structures though aesthetic design and materials.	Scheme design	n/a	Local Authority, Architecture and Design Scotland and maintaining authority
L8n	Throughout the scheme	Planting: Retention of existing trees / vegetation wherever possible / incorporation into new planting proposals.	Prevention of physical impact on trees / vegetation reduction of visual impact of proposals.	Scheme design Construction	n/a	n/a
L9n	Throughout the scheme	Grass Seeding: dependent on location, grass seed mixes should be supplied: (E.g. roadside verge mix; agricultural mix; species rich mix).	To reduce/ offset impact on loss of existing field area and to integrate proposals into landscape character.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority

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L10n	Throughout the scheme	Public Rights of Way: Reinstate links to path network.	To reduce impact on public right of way route severance and maintain enhance links to the countryside.	Scheme design Construction	n/a	Local Authority and maintaining authority
Overhill (ch314800-316300)						
L11n	Throughout section	Groups of feathered trees along new field boundaries and along road edge.	To reflect existing open character and soften and frame views from local properties, roads and paths.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L12n	North Kingswells junction	Scrub woodland planting around North Kingswells junction.	To strengthen remaining woodlands and reflect landscape character and screen views of the junction.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L13n	Northbound ch315120-315600 Southbound ch315260-315630	Drystone walls.	To tie into existing walls and reflect existing landscape pattern.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L14n	Southbound ch316200-316380	False cutting and scrub woodland between AWPR and the Chapel of Stoneywood to Fairley access road.	To provide screening between mainline and access road.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L15n	Ashtown overbridge ch316020	Overbridge embankments eased.	To improve integration with surrounding landform.	Scheme design Construction	n/a	n/a
Craibstone (ch316300-317500)						
L16n	Craibstone North of roundabout	Scrub planting.	To provide enclosure to the roundabout.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L17n	Within A96 roundabout junction and along A96	Graded landform, mixed woodland and scrub planting and / or feature within roundabout.. A96 bridge lit with feature lighting. Ponds to the north of the A96 to be terraced to provide interest.	To highlight approach to Aberdeen and airport.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L18n	Along Green Burn and to the north of the A96 roundabout junction	Scrub and mixed woodland planting.	To enclose Green burn and roundabout junction and screen views of the route from properties.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L19n	Southbound ch316440 - 317000	Mixed woodland planting.	To screen views from Craibstone College buildings including residences and integrate with adjoining woodland areas and path network.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority, Craibstone College and maintaining authority
L20n	Southeast of the A96 roundabout junction	Mixed woodland planting.	To screen views to A96 roundabout junction from Craibstone properties to east of AWPR.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L21n	Between Northern Leg and slip roads ch316900- ch317200	Scrub woodland planting.	To screen views between new road and slip roads.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L22n	Northbound ch317200 - 317380	False cutting and mixed woodland.	To screen views from properties west of AWPR at Chapel of Stoneywood.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L23n	Around n ponds and the Green Burn	Mixed woodland planting.	To improve integration with surroundings and promote biodiversity and assist with screening.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L24n	All existing woodland in Craibstone area	Protection of woodland.	To minimise losses.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L25n	On eastern side of the A96 roundabout	Drystone walls.	To provide noise attenuation for properties (Mill of Craibstone Veterinary Centre)	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L26n	Northbound ch316450 - 316900	Coniferous and mixed woodland planting.	To screen views and integrate with adjoining woodland areas west of SAC estate.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L27n	Northbound and Southbound ch317200 - 317400	Embankments eased.	To improve integration with the surrounding landform.	Scheme design Construction	n/a	n/a
Newton Open Farmland (ch317500-318900)			To integrate road with surrounding landform and allow potential return to agriculture.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L28n	Northbound and southbound ch317450 - 318900	Easing of embankments.				
L29n	Northbound ch318100 - 318750 and Southbound ch317850-318900	Drystone walls.	To tie into existing walls and reflect existing landscape pattern.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L30n	Throughout section ch317500-318900	Groups of feathered tree planting and scrub woodland along field boundaries, false cuttings and road edge.	To reflect existing pattern of vegetation.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L31n	Northbound ch317685-318100	False cutting and noise barrier.	To provide screening and noise attenuation for properties at Greenacres and Walton View.	Scheme design Construction	n/a	n/a
L32n	Southbound ch317450-317700	False cutting.	To provide screening for Walton Cottages.	Scheme design Construction	n/a	n/a
L33n	Southbound ch318100-318900	False cuttings and scrub woodland planting.	To provide screening for Howemoss Farm.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Tyrebagger Hill / Kirkhill (ch318900-322300)						
L34n	Northbound ch318900-319450 ch320420-322150 Southbound ch321580-321780 ch322000-322100	Mixed woodland planting.	To marry into adjoining woodlands and provide screening of road from Bogenjoss House.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L35n	Northbound alongside realigned Bogenjoss Burn	Riparian woodland planting.	To improve integration with surroundings and promote biodiversity.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L36n	Northbound between mainline and realigned access track to Bogenjoss House	Scrub woodland planting.	To provide screening to access road.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L37n	Northbound ch320430-320545	Noise barrier.	To provide screening and noise attenuation for Bogenjoss House.	Scheme design Construction	n/a	n/a
L38n	Northbound ch318900-319550	Easing of embankments.	To improve integration with surroundings.	Scheme design Construction	n/a	n/a
L39n	On field remnants – Southbound ch319450-319580 and ch319700-319820 and throughout character area	Scrub woodland planting.	To screen views from properties, maintain setting of Tyrebagger Hill stone circle (SAM refer to Cultural Heritage schedule) and help integrate road into surroundings and reflect existing landscape pattern.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L40n	Southbound ch319250-319450 and ch319580-319700	Drystone walling to enclose severed fields.	To enclose severed fields and reflect existing landscape pattern.	Scheme design Construction	n/a	Liaison with local land owners / stakeholders
L41n	Southbound ch318920 - ch319600	False cutting and scrub woodland planting.	To assist screening traffic movement and the road corridor from the wider landscape.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L42n	Wildlife overbridge ch319950	Overbridge embankments eased.	To improve integration with the surrounding landform.	Scheme design Construction	n/a	n/a
L43n	Northbound ch320500-321500	Easing of embankments to allow a potential return to agriculture.	To integrate with surrounding landform, allow potential return to agriculture and mitigate the road in views from the wider landscape.	Scheme design Construction	n/a	Liaison with local land owners / stakeholders
L44n	Southbound ch320500-321000	Easing of gradients and scrub woodland planting	To improve integration with the surrounding landform of the Bogenjoss valley and soften views from the road.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L45n	Northbound ch320900-322150	Mixed woodland planting.	To screen traffic movement and the road in views from Pitmedden Road, Pitmedden House estate properties and in distant views.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L46n	Northbound ch321500 - 322200	Drystone walls to enclose fields.	To enclose field boundaries.	Scheme design Construction	n/a	Liaison with local land owners / stakeholders
L47n	Northbound at East Woodland ch320900	Broadleaved woodland around ponds.	To improve integration with surroundings.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Newton Open Farmland (ch322300-322800)						
L48n	Northbound and Southbound ch322200-322750	Easing of embankments to allow a potential return to agriculture.	To improve integration with surrounding landform and allow potential return to agriculture.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L49n	Northbound and southbound ch322200 - 322500	False cuttings and scrub woodland.	To assist in screening road from nearby properties and the wider landscape.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L50n	Northbound ch322210 - 322685	Noise barrier.	To provide screening and noise attenuation for Lyndmoor and Tillybrig.	Scheme design Construction	n/a	n/a
L51n	Southbound ch322200 - 322475	Noise Barrier.	To provide screening and noise attenuation for Upper Kirkton.	Scheme design Construction	n/a	n/a
L52n	Southbound ch322705-322855	Noise Barrier.	To provide screening and noise attenuation for Nether Kirkton.	Scheme design Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L53n	Northbound and Southbound ch322500 - 322750	Easing of embankments and scrub woodland planting.	To complement the bridge over the River Don and reduce impact on the River Don Valley.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Lower Goval Valley (ch322800-324000)						
L54n	Northbound and Southbound ch3227550-323700	Easing of embankments and scrub woodland planting.	To complement the bridge over the River Don and the realigned B9777 and reduce impact on the River Don Valley.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L55n	Around 3 ponds and access roads to the southwest of the River Don	Scrub woodland planting.	To improve integration with surroundings.	Scheme design Construction	n/a	Local Authority and maintaining authority
L56n	Alongside sections of the realigned B977 and northbound ch323600-324100 and southbound ch323600-323950	Drystone walls.	To tie into existing walls and reflect landscape pattern.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L57n	Southbound ch323955 - 324055	Drystone wall.	To provide noise attenuation for Parkhill Cottage and Parkhill Pumping Station.	Scheme design Construction	n/a	n/a
L58n	Southbound ch322345-323620 and along edge of the realigned B977	False cutting and scrub woodland planting.	To assist screening views from Goval Villa.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L59n	Northbound ch323650-324050	Cutting to be graded out and to allow a potential return to agriculture.	To tie smoothly into existing levels and allow potential return to agriculture.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L60n	Southbound around 2 ponds and Goval Burn	Riparian woodland planting.	To improve integration with surroundings.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Goval Open Farmland (ch324000-325350)						
L61n	Northern section of realigned A947	Broadleaved woodland planting.	To link existing broadleaved woodland of Goval Belt.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L62n	Around Goval junction and alongside Northern Leg	Scrub and mixed woodland planting.	To assist in screening views.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L63n	Around Goval junction northbound ch324650-326400 and along southbound slip road from Goval junction southbound ch324600-324800	False cuttings and scrub woodland planting.	To assist screening views from properties to the north and south of the junction and the Formartine and Buchan Way.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L64n	Northbound and southbound ch324550-325400	Easing of embankments.	To improve integration of road with surrounding landform.	Scheme design Construction	n/a	n/a
L65n	Southbound ch325100-325330	Easing of embankment.	To integrate road with surrounding landform and allow potential return to agriculture.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L66n	Southbound ch324500-325100 around 2 retention ponds and Corsehill Burn	Riparian woodland planting.	To improve integration with surroundings.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L67n	Both sides of realigned A947	Grade and ease embankments.	To reflect undulating landform and visually integrate road with surroundings.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L68n	Both sides of realigned A947	Broadleaved and mixed woodland planting.	To screen movement of traffic on A947 from nearby properties.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L69n	Southbound ch323955-324055	Noise barrier (drystone wall).	To provide noise attenuation to Parkhill Cottage and Parkhill Pumping Station.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L70n	Southbound ch325000-325375	Noise barrier (drystone wall).	To provide noise attenuation to Corsehill Cottage.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L71n	A947 Goval junction roundabout ch324800	Existing Scots Pine trees.	To be retained as possible.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Braes of Don (southern end of A947 realignment)						
L72n	Alongside realigned A947 through Parkhill Estate	Mixed woodland planting.	To replace existing TPO trees lost to the route, tie into existing woodland and provide screening for Old Toll House.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L73n	To either side of the A947 overbridge	Grade embankments.	To reflect undulating landform and visually integrate road with surroundings.	Scheme design Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L74n	Southern section of the A947 Northbound	Noise barrier.	To provide screening and noise attenuation to Old Toll House and The Bungalow.	Scheme design Construction	n/a	n/a
Red Moss wooded farmland (ch325350-326000)			To reduce visual impact on properties at Corsehill.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L75n	Southbound ch325380-325620 and ch325700-325950	Mixed woodland planting.				
L76n	At B977 overbridge	Ease embankments of overbridge.	To improve integration with surrounding landform.	Scheme design Construction	n/a	n/a
Perwinnes Open Farmland (ch326000-328200)			To assist screening of views from properties east of Littlejohn`s Wood and reflect landscape pattern.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L77n	Northbound ch326000-324000					
L78n	Northbound and southbound ch327000-327750	Scheme design Construction	To improve integration with surroundings and a potential return to agricultural use.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L79n	Northbound and southbound ch326340-327500	Groups of feathered tree planting.	To reflect existing field boundary character and soften views of road from Lochgreens Farm.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L80n	Southbound ch326755-326980	False cutting.	To assist in screening views for Lochgreens Cottage.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L81n	Southbound ch326755-326925	Noise Barrier.	To assist in screening views and provide noise attenuation for Lochgreens Cottage.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L82n	Northbound ch326800-327500 Southbound ch326920-327750	Drystone walls.	To tie into existing walls and replace those lost to the route.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L83n	Lochgreens access overbridge	Easing of overbridge embankments.	To improve integration with surrounding landform.	Scheme design Construction	n/a	n/a
L84n	Northbound ch327500-327480 around 2 ponds	Riparian woodland planting.	To integrate with surroundings and promote biodiversity.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L85n	Northbound ch327800-328300	Scrub woodland planting.	To screen views of the Northern Leg from properties.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L86n	Southbound ch327950-328150	Scrub woodland planting.	To minimise the diagonal cut across the landscape.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Potterton Open Farmland (ch328200-A90 North junction)						
L87n	Northbound and southbound ch328200-328900	Scheme design Construction	To tie into existing walls and reflect landscape pattern.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L88n	Area around B999	Scheme design Construction	To minimise loss of existing mature trees.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L89n	Northbound ch330420 - 330595	Drystone wall.	To provide noise attenuation for Middleton Farm, Middleton East Steading and Middleton West Steading.	Scheme design Construction	n/a	n/a
L90n	Alongside realigned B999	Extra heavy standard tree planting.	To replace those lost to the route and strengthen landscape pattern.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L91n	B999 overbridge	Easing of embankments.	To improve integration within surrounding landform.	Scheme design Construction	n/a	n/a
L92n	Over Blackdog Burn northbound and southbound ch329850-328-330150	Easing of embankment and scrub planting.	To improve integration with surrounding landform.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L93n	Southbound ch329850-330080 around 2 ponds and Blackdog Burn	Riparian woodland planting.	To improve integration with surroundings and promote biodiversity.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L94n	Northbound ch330250-330700	Scrub woodland planting.	To screen views between traffic and Middleton Steadings.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L95n	Northbound alongside new access road to Middleton Steadings from A90 junction	Drystone walls.	To tie into existing walls and improve integration with surroundings.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L96n	West and south west of A90 roundabout junction	Ease embankments.	To improve integration with surroundings and allow a potential return to agriculture in the southwest.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L97n	Between A90 junction and Middleton Farm	Scrub woodland planting.	To screen views of traffic movement.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L98n	Around 2 ponds and access track northwest of the A90 roundabout junction	Riparian and scrub woodland planting.	To reflect landscape character and screen views between A90 and access road.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L99n	Within A90 roundabout junction	Sculpting of landform and seeding undertaken using coastal grass mixes.	To reflect coastal location.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Blackdog Open Farmland)						
L100n	Between A90 and new access to Tarbothill	Scrub woodland planting on cutting and around ponds.	To screen views.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L101n	Between Blackdog Croft and access road to Tarbothill	Scrub woodland planting around ponds.	To screen views between Blackdog Croft and access road to Tarbothill.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L102n	Southeast of the A90 roundabout junction between the Blackdog Industrial Estate access and slip road link to A90	False cutting and scrub woodland planting.	To reduce visual impact of elevated roundabout on Blackdog Industrial Estate and properties (The Gables and Blackdog Heights).	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L103n	Northeast of the A90 roundabout junction between A90 and Wester Hatton Cottages access road	False cutting and scrub woodland planting.	To screen views between roads.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L104n	Northwest of the A90 roundabout junction between A90 and Wester Hatton Farm access road	False cutting and scrub woodland planting.	To screen views between roads.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L105n	Northeast of the A90 roundabout junction	Drystone wall.	To provide noise attenuation for Wester Hatton Cottages.	Scheme design Construction	n/a	Liaison with Local land owners / stakeholders
L106n	Around the 2 ponds northeast of the A90 roundabout junction	Scrub woodland planting.	To reflect landscape character and screen views between main road and access roads.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
L107n	Around new access road to Blackdog settlement	Mixed woodland planting.	To strengthen severed edge of the existing community woodland and to provide a visual screen to properties.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
L108n	Throughout Scheme	Mitigation planting and earthworks for indirectly affected areas.	To assist integration of the road corridor into surroundings.	Scheme design Construction	Monitoring of planting establishment during aftercare period	Local Authority and maintaining authority
Visual (Chapter 12)			*Note: landscape mitigation detailed above will also mitigate visual impacts*			
V1n	At all major road junctions including: N Kingswells Jct, South Kirkhill Jct, A947 Goval Jct, A90N Jct, A96 Jct. Minor roads throughout the scheme	Lighting designed to prevent night time glare and sky glow through use of high-pressure sodium, shallow bowl street lighting.	To minimize adverse visual impacts on nigh views to dark rural skies.	Scheme design Construction	n/a	Liaison with Local Authority and maintaining authority
V2n	Throughout the scheme	Passive lighting: Installation of reflective road markings and signage where possible.	To minimise adverse visual impacts on night views to dark rural skies.	Scheme design Construction	n/a	n/a
Cultural Heritage (Chapter 13)						
CH1n	% of CPO plus: Site 183, ch324550 Site 218, ch324240 Site 314, ch325830 Site 335, ch323300 Site 362, A90N Jct Site 367, ch322190	Fieldwalking, geophysical survey, intrusive trial trenching, possibly up to 10% of the area identified in the Compulsory Purchase Order (CPO) including the targeted areas, which may be of archaeological importance. • measurement of stone (Site 218) • inspection/assessment by paleoenvironmental scientist (site 314) • staged programme of archaeological evaluation (site 335) • strip and record pre-construction (site 367)	Identify unknown archaeological remains that may be affected by the scheme, allow significance of impacts to be fully assessed, identify scale and scope of mitigation works.	Pre-construction	Overseen and monitored by Historic Scotland	Designers Archaeological Consultant

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
CH2n	% of CPO plus: Site 120, ch316000 Site 123, ch316330 Site 137, ch320120 Site 138, ch320120 Site 139, ch320150 Site 170, ch323930 Site 201, ch329170 Site 208, A90 N Junction Site 279, ch321820 Site 362, A90 N Junction	Detailed photographic or topographic survey, archaeological excavation, strip and record operation on ten sites, and any further sites identified under CH1.	To record any remains that would be removed during construction.	Pre-construction	Overseen and monitored by Historic Scotland	Designers Archaeological Consultant
CH3n	Site 154c, ch322350	Building recording on Site 154c.	To preserve by record buildings on which the scheme would have a direct physical impact.	Pre-construction	Overseen and monitored by Historic Scotland	Designers Archaeological Consultant
CH4n	Site 136, ch319780 Site 296, ch322750 Site 345, ch317360 Site 348, ch322920	Watching brief or strip and record operation to identify any archaeological remains uncovered during construction. Assessment of the nature and significance of impacts, and any requirement for a further mitigation strategy.	Identify and record previously unidentified archaeological remains.	Construction (top soil stripping)	Overseen and monitored by Historic Scotland	Designers Archaeological Consultant
CH5n	All sites and areas	Make location of identified site known to contractor, secure known sites within CPO. Adherence to Best Practice Guidance and Historic Scotland Special Requirements.	To minimise accidental impact on known archaeological sites.	All stages	Overseen and monitored by Historic Scotland	Designers Archaeological Consultant
CH6n	Site 134, ch319820 Site 283, ch315700 Site 284, ch315720 Site 159, ch322500	Introduce a combination of broadleaved woodland, mixed woodland and shrub planting (Site 134, 283, 284). Grading of embankments and easing cuttings, use of appropriate design and material (Site 159).	To minimise visual impact on setting of known sites of cultural heritage significance. Refer to landscape mitigation.	Construction Operation	n/a	Designers Landscape Architect
Air Quality (Chapter 14)						
No mitigation required						

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
Traffic Noise and Vibration (Chapter 15)						
N1n	- ch316300 - ch317300 - ch317600 - ch318950 - ch322200 - ch323500 - Goval Junction (ch324700 & ch325200) - ch326900 - A90 North Junction at Blackdog	False cuttings (Craibstone, Newton, Tyrebagger Hill/Kirkhill, Lower Goval Goval Perwinnes) – for further information refer to Landscape Mitigation Items.	Attenuate noise generated by traffic on the proposed scheme in these areas.	Scheme design	n/a	n/a
N2n	All road sections	Use of lower noise road surfacing.	Reduction in noise generated by traffic travelling on the proposed scheme.	Scheme design	n/a	n/a
N3n	Millview, Chapel of Stoneywood. Mill of Craibstone Cottage, Bucksburn	Noise barrier installation. Barrier height of 1.0m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N4n	Greenacres, Chapel of Stoneywood 1-4 Walton View	Noise barrier installation. Three barriers (2.8m, 1.2m & 2.0m height) proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N5n	2 Bogenjoss, Dyce	Noise barrier installation. Barrier height of 2.5m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N6n	Upper Kirkton, Dyce	Noise barrier installation. Two barriers (1.6m & 1.0m height) proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N7n	Lyndmoor and Tillybrig, Pitmedden Road, Dyce	Noise barrier installation. Fours barriers (1.2m, 1.2m, 1.2m & 1.5m) proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N8n	Nether Kirkton, Dyce	Noise barrier installation. Two barriers (1.0m, 1.0m) proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N9n	Parkhill Cottage, Pumping Station	Noise barrier installation. Barrier height of 0.5m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N10n	Bungalow, Parkhill, Dyce	Noise barrier installation. Barrier height of 1.8m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
N11n	Kinnaird,Parkhill ,Dyce	Noise barrier installation. Barrier height of 0.5m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N12n	Corsehill House, Goval	Noise barrier installation. Barrier height of 1.0m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N13n	2 Lochgreens Cottages, Dyce	Noise barrier installation. Barrier height of 1.6m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N14n	Middleton Farm, Bridge Of Don	Noise barrier installation. Barrier height of 1.0m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
N15n	1-2 Wester Hatton Cottages, Balmedie	Noise barrier installation. Barrier height of 1.0m proposed based on current design.	To reduce noise levels to achieve 59.5dB threshold.	Construction	None	None
Pedestrians, Equestrians, Cyclists and Community Effect (Chapter 16)						
P1n	ch315000-315250 (C14) ch316000-316400 ch316400-316700 (C15) ch316800-316950 (C15/16) ch318800-319150 (C18) ch321550-321800 (C21) ch324800 (C24)	Provision of diversion via new verge/track to maintain access.	Avoidance of severance and maintain pedestrian and others access to community facilities.	Scheme design Construction	n/a	n/a
P2n	ch315000 (C13/C14) ch316000 ch317050 (C16) ch317800 (C17) ch320200 (C19/C20) ch324800 ch325900 (C24) A90 junction (C25)	Provision of diversion via vehicular underpass/overbridge.	Avoidance of severance and maintain pedestrian and others access to community facilities.	Scheme design Construction	n/a	n/a
P3n	ch324600 (C22/C23)	Provision of diversion via NMU specific underpass.	Avoidance of severance and maintain pedestrian and others access to community facilities.	Scheme design Construction	n/a	n/a
P4n	ch321800 (C21)	Provision of diversion via farm accommodation underpass/overbridge.	Avoidance of severance and maintain pedestrian and others access to community facilities.	Scheme design Construction	n/a	n/a
P5n	ch318900 (C18)	Provision of diversion via pipeline structure.	Avoidance of severance and maintain pedestrian and others access to community facilities.	Scheme design Construction	n/a	n/a

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
P6n	All	Safety provisions e.g. lighting of underpasses, equestrian parapets, slip resistant surfacing, solid infill panels.	Avoidance of severance and maintain pedestrian and others access to community facilities.	Scheme design Construction	n/a	n/a
P7n	All areas subject to replanting.	Refer to relevant landscape commitments L6-L92 for amenity mitigation measures.	Improve amenity value of journeys.	Scheme design Construction	n/a	n/a
Vehicle Travellers (Chapter 17)						
VT1n	All road sections as appropriate	See landscape and visual (L1-L92; V1-V2) mitigation measures for details which include: • protection of established trees, woodland and drystone walls to maintain landscape character; • use of different planting types to create species diversity along route; • planting on earthwork areas to minimise sense of enclosure; • new drystone walls on realigned field boundaries to fit with landscape character; • grass seeding on verges and rock cuts to improve visual amenity; • riparian planting around detention basins to create new habitats and visual interest; and • regrading of some earthworks to allow for potential return to agricultural use.	Mitigation planting will help to soften harsh embankments and cuttings and integrate the road into the surrounding areas. Many of the views will become more enclosed as planting matures, while others will become framed by woodland, allowing a sequence of attractive views for travellers.	Operation	n/a	n/a
VT2n	All components of scheme	Adherence to appropriate roads design standards including the DMRB where reasonably practicable.	Reduction of driver stress where possible.	Scheme design	n/a	n/a
Disruption due to Construction (Chapter 18)						
D1n	All agricultural land	• Restrict construction works and activities to a defined working corridor. • Careful siting of site compounds and design of access/egress routes. • Adherence to best practice to control dust generation and dispersal.	Avoidance of damage to agricultural capability of land, and prevention, where possible, of disruption to farming practices.	Pre-construction Construction	n/a	Farmer / landowner
D2n	All agricultural land	Provision of temporary access/egress and clear signage.	Maintenance of access to/from farms and to agricultural land suitable for agricultural vehicles, deliveries etc.	Pre-construction Construction	n/a	Farmer / landowner

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
D3n	Operational business premises	Provision of temporary access/egress and clear signage.	Maintenance of access to/from business premises for staff, deliveries and customers.	Pre-construction Construction	n/a	Farmer / Business Proprietor
D4n	All areas	• Sensitive siting of site compounds, parking/storage areas. • Keeping construction site tidy. • Minimise periods of night-time working and use directional lighting to minimise glare. • Using existing or temporary screening where appropriate.	To minimise the visual impact of the construction works.	Construction	Ongoing monitoring during construction to ensure effectiveness of measures. Supervision by engineer.	SEPA SNH
D5n	All areas	• Avoiding unnecessary stockpiling of bulk materials likely to be subject to wind-blow; • Placing stockpiled materials away from potentially sensitive receptors; • maintaining site and public roads to minimise the accumulation of mud on road surfaces; • Minimising drop heights during the handling of bulk materials; • Undertaking regular vehicle maintenance to ensure that emissions of soot and other pollutants in vehicle exhausts are minimised; • Switching off machinery and vehicles not in use, particularly in areas close to properties; • watering exposed soil surfaces (during drying conditions); • Covering trucks transporting dust-producing material leaving or entering construction site; • Reducing construction vehicle travel speeds on unpaved surfaces; • Maintaining equipment as per manufacturers' specifications, this will be specified in the Contract Documents to reduce emissions during construction; and • Conform to all relevant local authority requirements or restrictions for dust generation during construction.	To minimise the generation of dust / emissions during construction.	Pre-construction Construction	Ongoing monitoring during construction to ensure effectiveness of measures.	Local Authorities

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
D6n	All areas	• The Contractor will be required to keep a record of any concerns from residents about air quality during construction and the actions taken.	Advise the local community of proposed works and activities that could give rise to dust and provide local residents with a named contact to respond to any air pollution concerns or nuisance.	Construction	None	Local Authorities Local Residents
D7n	All areas	• Use of noise barriers to reduce noise levels (from machinery) at receptor locations; • Ensure that piling works are kept to a practicable minimum; • Ensuring that all equipment is maintained according to manufacturers' specification; • Suitable distancing of any noisy plant from sensitive locations; • Switching off machinery and vehicles not in use, particularly close to properties; • Noise monitoring, with recorded data made available to local Council Environmental Health Departments; • Compliance with BS 5228:1997 Part 1, Code of Practice for basic information and procedures for noise control, so that best practicable means for minimising noise and vibration at the site are employed. • Threshold limits for noise and vibration, to be agreed with Fife, Falkirk Clackmannanshire Councils, will be stated within the contract documents; • Vibration monitoring; and • Undertaking dilapidation surveys of selected properties; • advise the local community of proposed works and activities that could give rise to noise nuisance; and • Provide local residents with a named contact to respond to any noise/vibration concerns or nuisance. The Contractor will be required to keep a record of any concerns and the remedial actions taken.	To minimise the noise and vibration nuisance during construction work.	Construction	Noise monitoring to ensure noise level limits are achieved.	On receiving detailed construction methodology, more accurate noise predictions can be made

Item No.	Approximate chainage/ location	Mitigation Measure	Effect of Mitigation on Impact	Timing of Mitigation Measure	Monitoring Requirements	Additional Consultation Required
D8n	All routes used by pedestrians and others in vicinity of proposed road scheme	• Existing routes to be maintained or re-routed as far as possible during construction of the new road. Such provision would be subject to normal site safety constraints. • Exact details of such provision will be agreed between the Contractor and the Scottish Executive as part of the contract process.	To avoid obstruction of routes used by pedestrians and others due to construction activities.	Pre-construction Construction	Ongoing monitoring during construction to ensure effectiveness of measures.	Scottish Executive Local Councils
D9n	All areas	• Avoidance of road closures where possible. • Road diversions to be clearly indicated with signs and road markings, and any night-time diversions/changes should be lit. • Timing of works vehicles to avoid peak traffic periods.	To minimise increases to driver stress.	Construction	None	Scottish Executive
D10n	All locations where proposed route ties in with existing routes	Lane closures will not be permitted during peak hours except in exceptional circumstances.	To minimise increases to driver stress.	Construction	None	Scottish Executive
Policies and Plans (Chapter 19)						
No specific policy/planning mitigation items. Refer to Chapter 19 of Environmental Statement.						