18 Schedule of Environmental Commitments

18.1 Introduction

18.1.1 The assessment of the Proposed Scheme has identified a number of potentially significant impacts that would arise as a result of the construction and future use of the scheme. Mitigation measures have been identified with a view to reducing these potentially significant impacts.

18.1.2 The key environmental design and mitigation measures identified and reported in this ES are scheduled below (Table 18.1). It should be noted that this is a summary of measures and more comprehensive descriptions are provided in the preceding chapters of the ES.

18.1.3 The Schedule of Environmental Commitments will be incorporated into the works construction contract documents and the appointed Contractor will be obliged to adhere to these requirements throughout the contract period. The construction commitments will be addressed through the Construction Environmental Management Plan (CEMP). The requirement for the CEMP is outlined in Chapter 4.

18.1.4 The Schedule of Environmental Commitments table includes the following information:

- Description of the mitigation measure.
- Mitigation objective.
- Location and timing of mitigation.
- Monitoring requirements (if required).
- Any additional comments.

Table 18.1 Schedule of Environmental Commitments

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
Air Quality (Chapter 7)				
Standard good site working practices. Phased approach to Construction. Cessation of earthworks during high winds. Minimise area of earthworks. Careful soil stripping and stockpiling away from sensitive receptors. Lorries containing fine materials to be covered. Dust suppression techniques to be used where necessary. Enforcement of speed limit for construction vehicles on site. Use of water assisted dust sweeper on local roads if required. Refer to Appendix 7.6.	To minimise release of dust and particulates from construction activities and plant.	Entire working area during construction. Especially in areas where earth embankments are to be constructed.	Monitored on site during construction period by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP.	N/A
Preparation of a dust management plan.	To set out procedures for controlling construction related dust.	Entire working area prepared prior to construction and implemented during construction. Especially in areas where earth embankments are to be constructed.		
Cultural Heritage (Chapter 8)				
Archaeological evaluation trenches to be dug where the Dalry parish church and associated burial ground (Reference 9) and the site of former stables (Reference 20) are situated.	To minimise the risk of disturbing or damaging potential buried remains.	Southern end and central part of scheme, prior to the commencement of construction.	Monitored during construction by qualified archaeologist under a watching brief. Details to be included in Written Scheme of Investigation.	Agree with Historic Scotland and West of Scotland Archaeology Service.
Recording of mineral railway (Reference 19), spoil heap (suspected lime kilns) (Reference 21), limekilns (Reference 30) and Kersland Colliery (Reference 31) through topographic survey and or photographic survey.	To record features prior to disturbance.	At specific locations, prior to the commencement of construction.	Monitored during construction by qualified archaeologist. Details to be included in CEMP.	To be undertaken by qualified archaeologist.

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Further investigate the spoil heap (Reference 21) through evaluation trial trenching during the above survey.	To confirm that it is a spoil heap and not a limekiln.	Spoil heap, prior to the commencement of the construction.	Monitored during construction by qualified archaeologist. Details to be included in CEMP.	To be undertaken by qualified archaeologist.
Trial pit to be dug over the mineral railway.	To record any buried evidence of this feature.	Line of mineral railway, prior to the commencement of the construction.	Monitored during construction by qualified archaeologist under a watching brief. Details to be included in Written Scheme of Investigation.	
Level 2 historic building survey to be undertaken on the railway hut (Reference 11); wall (Reference 15) and Kilcush (Reference 13).	To record their character, appearance and setting prior to works commencing.	At specific locations, prior to the commencement of the construction.	Monitored during construction by qualified archaeologist. Details to be included in CEMP.	
Level 1 photographic survey of Hillside Cottages (Reference 3 to 7); Hillend (Reference 10); Creepies or, Blairland (Reference 16), Stoopshill (Reference 18), Coalheughglen (Reference 27) Littleacres (Reference 28); Highfield (Reference 32), Southfield (Reference 33) and Easter Highfield (Reference 39).	To record the current setting and context of the built heritage assets prior to works commencing.	At specific locations, prior to the commencement of the construction.		
Take a series of photographs of the general landscape.	To record the character of the historic landscape prior to the works being undertaken.	Across the scheme area, prior to the commencement of the construction.	Details to be included in CEMP.	
Contractor to be made aware of the potential for discovery of unrecorded sites and consequently the need to adopt careful construction techniques.	To minimise the risk of disturbing or damaging previously unrecorded archaeological sites.	Entire site during construction period.		Contractor to cease work immediately on making any archaeological discovery. Qualified archaeologist to be consulted.

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Landscape (Chapter 9)				
Undertake landscaping proposals as described in Section 9.6 and shown on Figures 9.36a to 9.36e – Environmental Mitigation. To include the use of earthwork screens, woodland and hedgerow planting to tie in with the existing landscape character and screen infrastructure elements.	To address affects on landscape character and views from sensitive receptors.	At locations shown on Figures 9.36a to 9.36e, during construction period and post-construction.	Monitored on site during construction period by the Environmental Clerk of Works. Upon scheme completion, contractor to monitor successful establishment and to implement corrective action if necessary. Details to be included in Method Statements and CEMP.	Landscape Contractor to be employed.
Sensitive gradients of new earthworks to tie into the surrounding landscape - 1:3 slope, reduced to 1:2.5 in areas where existing watercourses are to be culverted under the road.	To assist the environmental 'fit' of the road into the landscape and reduce the extent of culvert.	At earthworks locations, during construction period and post-construction.		
Re-use of stripped topsoils and/or selected existing vegetation (grassland/wetland) where this is to be cleared (for example on embankments around SuDs detention basins).	To help conserve biodiversity and perpetuate existing seed banks.			
Stripped soils to be stored for as short a time as possible in separate locations.	To maintain the viability of the soil and to assist in replicating particular habitats where required.			
Vegetation to be established on newly created cutting or embankment slopes primarily by means of wild flower and grass seed application.	To mitigate visual effects of the slopes of cuttings.			
Nature Conservation (Chapter 10)				
Pre-construction wildlife surveys for otter, badger and bats.	To establish if there may be issues with protected species that may have moved into the site.	Entire scheme, prior to site clearance/construction.	Entire scheme, during detailed design and pre-construction.	To be undertaken by specialist/qualified ecologist.

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
Watching brief to oversee any intrusive works taking place within close proximity of the River Garnock.	To identify and highlight any new otter field signs which may subsequently be detected.	River Garnock, during the construction.	Monitored on site by the Environmental Clerk of Works and appropriate course of action to be implemented if new evidence identified.	To be undertaken by specialist/qualified ecologist/ecological clerk of works.
Mammal passage (for otter) (tunnels or ledges and otter proof fencing) to be included where culverts are installed on the Coalheughglen Burn. *N.B. this is not mitigation but a recommended enhancement.*	To allow for future safe use of watercourse by otter, reducing the risk of road casualty.	Coalheughglen Burn, during watercourse diversion and culvert works.	Monitored on site during construction period and post construction by the Environmental Clerk of Works.	Discussion with ecological specialist required. Tunnels/ledges and fencing designed and constructed in line with current specifications and standards (refer to DMRB Volume 10).
Good site working practices to protect wildlife, including closing off open excavations at night, avoid night time working, minimise use or artificial lighting (especially near watercourses), careful bunding/storage of construction materials, etc.	To reduce the risk of injury to wildlife.	Entire scheme, during construction.		Reference to good practice guidelines.
If a holt, couch or sprainted lay-up is found during the construction phase, an immediate halt would be brought to works and ecological advice sought.	To protect breeding otter.			Discussion with ecological specialist, if required.
If a badger sett or recent excavations are found during construction, work would cease immediately and ecological advice sought.	To protect badger.			
Creation of 'hop-overs' across the scheme linking to remaining hedgerows and newly planted hedges to create new habitat corridors. Artificial 'trees' to be used initially to maintain commuting	To encourage continued use of habitat corridors where they will be severed by the proposed works.	At specific locations, as part of landscaping works.	Monitored on site during construction period and post construction by the Environmental Clerk of Works. Bat survey monitoring to be	Consult with qualified ecologist.

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
corridors and will later be planted with suitable native species. Location of bat 'hop-overs' are shown on Figures 9.36a-9.63e.			undertaken by qualified ecologists in accordance with duration and frequency set out in Chapter 10.	
Artificial trees or other eco-location focal points to be used provide a temporary 'bridge' across the de-vegetated area under the viaduct.	To encourage its continued use by bats and maintain the bat commuting route.	Where the new viaduct (road-bridge) passes over the existing treeline along the railway line, during construction.	Monitored on site during construction period by the Environmental Clerk of Works. Bat survey monitoring to be undertaken by qualified ecologists in accordance with duration and frequency set out in Chapter 10.	Consult with qualified ecologist.
Incorporation of bat bricks (appropriate to the species recorded) into the viaduct structure.	To provide bat roosting habitat and encouraging passage beneath the road.	At the new viaduct, as part of construction.	Monitored on site during construction period by the Environmental Clerk of Works.	
Undertaken detailed inspection of any trees that are to be removed that are deemed to have bat-roost potential.	To avoid disturbance to bat roosting bats.	Where any trees with bat potential are to be removed, undertake prior to removal.	Undertaken by qualified and appropriately licensed ecologists.	
Vegetation clearance to be undertaken between August and March (i.e. outwith the bird breeding season). All areas of vegetation to be checked for the presence of bird nests prior to removal.	To avoid disturbance to nesting birds.	Entire scheme, prior to site clearance.	Monitored on site by the Environmental Clerk of Works during site clearance and construction activities. Details to be included in Method Statements and CEMP.	Discussion with ecological specialist required.
Deer warning road signs to be erected at both ends of the new bypass.	To warn drivers of the presence of deer in the local area.	At both ends of the new bypass, as part of signing strategy.	-	Reference to good practice guidelines.
Containment and treatment of construction site surface water run-off prior to discharge to any watercourse.	To reduce risk of pollution and ensure water quality/habitats and species not detrimentally affected.	Entire scheme, during construction.	Regular monitoring of watercourses. Details to be included in Method Statements and CEMP.	Consultation with SEPA.

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Adequate pollution prevention measures will be required to be put in place in close consultation with SEPA. Locate material storage compounds away from watercourses. Containment and treatment of surface water run-off high in suspended solids prior to discharge to any watercourse. Sediment control barriers in vicinity of the River Garnock.	To ensure water quality is maintained, reduce risk of pollution.	Along scheme length, at key locations, during construction. Particular focus on River Garnock.	Regular monitoring of watercourses during construction. Periodic checking and cleaning or replacement of measures. Details to be included in Method Statements and CEMP.	Reference to SEPA Pollution Prevention Guidelines and other best practice.
Reduce noise and vibration emissions through use of sensitive construction techniques. Refer to Chapter 13 (section 13.9).	To reduce any impact on wildlife and habitats.	Entire scheme, during detailed design and construction.	Monitored on site during construction. Details to be included in Method Statements and CEMP.	N/A
Replace any hedgerows that are removed with similar lengths of new hedgerow. For species information refer to Landscape Mitigation (Chapter 9).	To compensate for losses and provide habitat enhancement, maintain bat commuting routes and provide bird nesting opportunities.	Across site as required, as part of landscaping works. Refer to Figures 9.36a-9.36e.	Monitored on site during construction. Details to be included in Method Statements and CEMP. Upon scheme completion, contractor to monitor successful establishment and to implement corrective action if necessary.	Discussion with ecological specialist required.
Plant new trees for those lost to create new woodland areas in the long term and enhance existing areas of woodland. Use native species. Refer to Landscape Mitigation (Chapter 9) for species information.	To compensate for losses and provide habitat enhancement, maintain bat commuting routes and provide bird nesting opportunities.	Across site as required, as part of landscaping works. Refer to Figures 9.36a-9.36e.		
SuDS detention basins to be enhanced with suitable planting where appropriate to create new areas of wetland. Refer to Landscape Mitigation (Chapter 9) and Chapter 10 for species information.	To mitigate for loss of areas of marshy grassland, provide habitat enhancement and increase biodiversity.	At detention basin locations as required, as part of landscaping works. Refer to Figures 9.36a-9.36e.		
Wildflower seed mixes to be planted on road verges, where appropriate.	To compensate for land take and increase biodiversity.	Refer to Figures 9.36a-9.36e, as part of landscaping works.		

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
Geology and Soils (Chapter 11)				
Limit extent of working and storage areas. Erosion and sediment controls. Correct handling and storage of spoil. Restoration of disturbed areas. Tracked vehicles to be used where possible. Pollution prevention measures to be put in place to prevent accidental spillage.	To minimise soil degradation and contamination and to return areas to existing use where possible.	Entire site during construction and restoration.	Monitored on site during construction period by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP.	N/A
Appropriate disposal or re-use of surplus material. Recycling of soils on site for embankment construction and landscaping. Determination of receptor site for surplus material.	To maximise re-use of soil on site and where this is not possible an appropriate receptor site to be identified.	Entire site during construction and site restoration.		N/A
Consolidation of mine workings by grouting, where required.	Stage 3 ground investigation is targeted at obtaining further information to determine where grouting of worked seams is necessary.	Specific locations during construction.		N/A
Programme of remediation for any on-site contamination.	To deal with any contaminants that could pose a risk to the proposed scheme, the workforce or whether construction works would pose a risk to wider environmental receptors.	Specific locations prior to/ during construction.		Contract to consider / investigate further.
Noise and Vibration (Chapter 13)				
Construction noise thresholds to be set by NAC. Use of well-maintained plant. Maintenance of silencers and moving parts where necessary. Noise screening if necessary. Switching off of equipment when not in use and noise generating activities to be conducted during normal working hours. Vibration levels to be	To minimise generated noise/vibration levels that could result in nuisance to sensitive receptors or damage to buildings.	Entire site prior to and during construction period.	Monitored on site during construction period by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP.	Liaison with NAC Environmental Health.

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restricted at all sensitive receptors. Structural assessment/monitoring of buildings in close proximity to piling works. Refer to Chapter 13.				
Low noise road surfacing is proposed throughout the scheme.	To reduce road traffic noise.	Along the entire scheme road surface, road during operation.	-	-
Potential erection of acoustic barriers.	To reduce noise perception and specific noise sensitive locations.	Specific locations, during construction and/or operation.	-	Liaison with NAC Environmental Health.
Effects on All Travellers (Chapter 14)				
New cycle crossing for the NCN route at Highfield.	To maintain access for users of the route and provide a safe crossing point through the scheme.	At Highfield, scheme operation.	-	Detailed design in accordance with 'Cycling by Design'.
Safe diversions to be implemented where designated paths are disturbed; including clear signage.	To maintain safe access for users and ensure disruption is kept to a minimum.	Where applicable, prior to and during construction.	Monitored on site during construction period by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP.	Consultation with North Ayrshire Council Access Officer.
Suitable diversions and/or traffic management to be implemented where roads are disrupted, i.e. the A737 at Highfield and Hillend, B707, C93 and Auchengree Road at Highfield and Blair Road.				
Community and Private Assets (Chapter 15)				
Minimisation of land-take where possible, especially in areas of higher quality agricultural land.	To ensure that disturbance/damage/loss is minimised.	Entire site, during construction.	Monitored on site during construction period by the Environmental Clerk of Works.	-
Minimisation of scrub/woodland habitat land-take, in particular native species.				
Demarcation of the working corridor once defined.	To prevent disturbance to adjacent areas.			

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
Careful soil removal and handling procedures during site clearance and restoration. Re-use of excavated agricultural soils in earth mounding and landscape mitigation (refer to Chapter 9, Landscape Effects).	To ensure that disturbance/damage/loss is minimised.	Entire site, during construction.	Monitored on site during construction period by the Environmental Clerk of Works. Details to be included in Method Statements and EMP.	-
Restoration of disturbed areas and reinstatement of any field boundaries/stone walls removed/disturbed during construction.	To ensure that disturbance/damage/loss is minimised.	Entire site, during construction and restoration.	Monitored on site during construction period by the Environmental Clerk of Works.	Consult with landowners.
Compensate landowners for temporary and permanent loss of land.	To provide compensation.	Post-construction.	-	
Access to farmland to be co-ordinated. This will include appropriate traffic management and careful provision of alternative access. For the permanent operational phase, provision of access to farmland will require careful co-ordination with landowners and occupier.	To ensure that disturbance is minimised.	Entire site, pre-construction and during the construction phase	-	
Road Drainage and the Water Environment (Chapter 16)				
Two SUDS treatment levels will be provided for road drainage - filter drains/swales and detention basins. Refer to Chapter 16 and Figures 16.4 and 16.4b for details.	To treat road run-off prior to discharge to local watercourses.	Road side and basins at specific locations as shown on Figure 16.4a and 16.4b, during construction period and operation.	Monitored on site during construction/operation by Environmental Clerk of Works. Details included in Method Statements and CEMP.	Consult with SEPA.
Design of the viaduct piers in the floodplain should not impact flood levels.	To avoid increasing the risk of flooding.	At viaduct locations/floodplain, during detailed design and construction.	Details to be included in Method Statements and CEMP.	-
Temporary works or other activities in the vicinity of the River Garnock or other watercourses which could increase flood risk to be avoided or mitigated.		At watercourses, during construction.		-

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
Compensatory flood storage to be provided by reprofiling the existing ground levels at the western end of the proposed viaduct. Location of the proposed flood compensatory storage is shown on Figure 16.3a.	To mitigate against floodplain storage loss due to the maintenance access track.	At location shown on Figure 16.3a, during detailed design and construction.	Monitored on site during construction / operation by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP.	Consult with SEPA.
Adoption of appropriate pollution control procedures, in accordance with SEPA guidance. Specific control measures during concreting works. Stockpile any construction materials away from watercourses.	To reduce the risk of sediment laden surface water / concrete being released to local watercourses and ground water.	In working areas and site compounds at all times during construction.	Monitored on site during construction by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP	Reference to SEPA Pollution Prevention Guidelines.
Adoption of measures to deal with fuel and oil transport and storage, such as the inclusion of appropriately bunded areas and spillage trays.	To capture potentially polluted run-off before it enters local watercourses.	Installed on construction sites prior to the commencement of works until works are completed.	Ensure rainfall is collected in the drain by checking settling tanks after storm events. Monitored on site during construction by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP	N/A
Install cut-off drains				
Dewatering of groundwater in excavations.	To protect groundwater from pollution from the construction site.	At working sites where excavation is required from start of excavation until completion of works.	Monitor groundwater levels using suitable monitoring wells. Details to be included in Method Statements and CEMP	
Scheduling of earthworks to minimise soil exposure.	To prevent surface water run off washing sediment into watercourses and protect the river banks.	Across all working areas for the duration of construction.	Monitored on site during construction by the Environmental Clerk of Works. Details to be included in Method Statements and CEMP	
Sustainable re-use of materials and best practice with regard to waste management.	To fulfil material/waste management requirements.			

Mitigation Measure Description	Mitigation Objective	Location and Timing of Mitigation	Monitoring Requirements	Additional Comments
Preparation of a detailed bank/watercourse restoration strategy. Chapter 16 (section 16.6.13) mitigation measures regarding fluvial geomorphology to be implemented.	To reinstate riparian corridor.	At affected watercourses, during construction/post-construction.	Post-construction under landscape maintenance contract. Details to be included in Method Statements and CEMP.	Developed in discussion with relevant statutory organisations, such as SNH, and in conjunction with the adjacent landowners.