A9.4: Residual Impact Tables (Road Drainage & Water Environment)

1 Introduction

1.1.1 This appendix details all the residual impacts of the proposed scheme in relation to the assessment reported in ES Chapter 9 (Road Drainage and the Water Environment).

1.1.2 Residual impacts during both the construction and operational phases are summarised for each attribute of the waterbody in Table 1 and Table 2 respectively. Those with a residual impact significance greater than Neutral are discussed further in Chapter 9.

Table 1: Summary of Residual Impacts on Water Bodies (Construction)

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
River Tay	Changes to hydrology and flood risk			High	The SEPA Indicative Flood Map shows large over-bank flooding extent at the confluence of the Shochie Burn and the Tay River. Limiting uncontrolled surface runoff into the Ordie and Shochie Burn would mitigate potential impacts on flood risk.	Negligible	Neutral
	Temporary increase in sediment.	Geomorphology		High	Impacts arise from works along Shochie Burn and Ordie Burn. Therefore there is a need to implement mitigation measures for these watercourses to reduce the potential impacts on the River Tay.	Negligible	Neutral
	Water Quality	Water quality	WFD chemical status Pass.	Very High	Refer to individual mitigation proposals for each tributary.	Negligible	Neutral
		Dilution and Removal of Waste Products	High pollutant dilution/ dispersal capacity. Existing pressures include sewage disposal.	High		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Moderate.	Very High		Negligible	Neutral
		Water supply	Designated DWPZ.	Very High		Negligible	Neutral
Shochie Burn	Changes to hydrology and flood risk	Conveyance of flow		Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils. Installation of temporary attenuation facilities to be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance.	Minor adverse	Neutral
	Temporary increase in fine sediment transported downstream from Shochie Burn and Ordie Burn from road widening, earthworks, culvert extensions and outfall installations.	Geomorphology		High	In-channel works: follow SEPA approved method statement as outlined in generic construction mitigation. In-channel works and installation of outfall: Conduct in-channel works during low flow and limit the extent of disturbance. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Slight/ Moderate adverse

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Shochie Burn *continued*	Water Quality	Water quality	WFD chemical status Pass.	Very High	Contractor to prepare a CEMP and method statements to be approved by SEPA prior to commencement of works. Follow CIRIA and SEPA best practice guidance including PPGs, such as careful siting of material stockpiles, fuel, oil and chemical stores in secure areas and avoid works during periods of heavy rainfall. Oil/fuel containers to be stored on an impermeable base with adequate bunding. Stationary plant to be fitted with drip trays and spill kits to be stored in key locations and regularly checked. Refuelling of plant to be undertaken off site where practicable. Installation of temporary treatment facilities, in agreement with SEPA and CIRIA C697 guidance. Untreated sewage to be collected and disposed of appropriately in consultation with SEPA and CAR. Monitoring of water quality to be agreed with SEPA.	Negligible	Neutral
		Dilution and Removal of Waste Products	Medium pollutant dilution/ dispersal capacity. Receives road runoff from A9 and likely other sources.	Medium		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Good.	Very High		Negligible	Neutral
		Water Supply	No abstractions identified.	Low		Negligible	Neutral
Ordie Burn	Changes to hydrology and flood risk			Medium	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils. Installation of temporary attenuation facilities to be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance.	Minor adverse	Slight adverse
	Temporary increase in fine sediment from road widening, earthworks, culvert extension and outfall installation Diversion of flow during in-channel works to extend culvert. Change to channel morphology through increase of artificial bank material.	Geomorphology		High	In-channel works: follow SEPA approved method state as outlined in generic construction mitigation. In-channel works and installation of outfall: Conduct in-channel works during low flow and limit the extent of disturbance. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Slight/ Moderate adverse

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Ordie Burn *continued*	Water Quality	Water Quality	WFD chemical status Pass.	Very High	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Medium pollutant dilution/ dispersal capacity. Receives road runoff from A9 and likely other sources. 4 discharge consents identified (Bankfoot STW).	Medium		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Good.	Very High		Negligible	Neutral
		Water Supply	No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 3 of Ordie Burn	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils	Minor Adverse	Neutral
Un-named tributary 4 of Ordie Burn	Changes to hydrology and flood risk			Medium	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Minor Adverse	Slight adverse
	Temporary increase in fine sediment from road widening, earthworks, channel realignments, culvert extension, installation of 2 new pipe culverts and replacement of an existing pipe culvert Diversion of flow during in-channel works to realign channel and extend culvert. Change to channel morphology through realignment and increase of artificial bed and bank material.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in generic construction mitigation. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Moderate adverse	Slight adverse

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Un-named tributary 4 of Ordie Burn *continued*	Water Quality	Water Quality	No classification data available. Considered likely to receive runoff from road and agriculture.	Low	Refer to mitigation outlined for the Shochie Burn. Detailed method statement for channel realignment and culverting to be approved by SEPA prior to commencement of works.	Minor adverse	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Minor adverse	Neutral
		Water Supply	Private surface water abstraction at Newmill Farm.	Medium		Minor adverse	Slight
Garry Burn	Changes to hydrology and flood risk			Medium	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils. Installation of temporary attenuation facilities to be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance.	Negligible	Neutral
	Temporary increase in fine sediment from road widening, earthworks and outfall installation Slight change to channel morphology through installation of outfall.	Geomorphology		Medium	Installation of outfall: Conduct in-channel works during low flow and limit the extent of disturbance. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Negligible	Neutral
	Water Quality	Water Quality	WFD chemical status Pass.	Very High	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low/medium pollutant dilution/ dispersal capacity. Receives road runoff from A9 and likely other sources. 1 discharge consent identified at Loakmill.	Medium		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Good.	Very High		Negligible	Neutral
		Water Supply	No abstractions identified.	Low		Negligible	Neutral

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Ardonachie Burn	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Minor adverse	Neutral
Ardonachie Burn *continued*	Temporary increase in fine sediment from road widening, earthworks and culvert extension.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in generic construction mitigation. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to receive runoff from agriculture.	Medium	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 1 of Gelly Burn (north)	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Negligible	Neutral
	Temporary increase in fine sediment from road. widening, earthworks and culvert extension. Diversion of flow during in-channel works to extend culvert. Change to channel morphology through increase of artificial bank material.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in generic construction mitigation. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Neutral

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Low	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
Un-named tributary 1 of Gelly Burn (north) *continued*		Dilution and Removal of Waste Products	Very low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 2 of Gelly Burn (north)	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Negligible	Neutral
	Temporary increase in fine sediment from road widening, earthworks and culvert extension. Diversion of flow during in-channel works to install culvert. Change to channel morphology through realignment and increase of artificial bed and bank material.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in generic construction mitigation. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Low	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Very low pollutant dilution/ dispersal capacity. Receives road runoff from A9.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions.	Low		Negligible	Neutral

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Un-named tributary 3 of Gelly Burn (north)	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Negligible	Neutral
	Temporary increase in fine sediment from road widening, earthworks, embankment construction, realignment and culvert extension. Diversion of flow during in-channel works to install culvert. Change to channel morphology through realignment and increase of artificial bed and bank material.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in the generic construction mitigation. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation. Realignment: construction of realignment should occur before the construction of embankment to reduce sediment release from earthworks.	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Low	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Very low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Gelly Burn (north)	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Negligible	Neutral

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Gelly Burn (north) *Continued*	Temporary increase in fine sediment from road widening, earthworks, culvert extension and outfall installation. Diversion of flow during in-channel works to install culvert.Change to channel morphology through realignment and increase of artificial bed and bank material.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in the generic construction mitigation. In-channel works and installation of outfall: Conduct in-channel works during low flow and limit the extent of disturbance. Sedimentation: Implement appropriate control measures for site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Neutral
	Water Quality	Water Quality	Designated salmonid waters. No classification data available. Considered likely to have enriched nutrient content.	Low	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	Designated salmonid waters.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Broomhill Burn	Changes to hydrology and flood risk			Low	Limit exposure of bare surfaces and uncontrolled runoff from hardstanding areas. Limit vegetation removal and compaction of soils.	Minor adverse	Neutral
	Temporary increase in fine sediment from road widening, earthworks and culvert extension. Diversion of flow during in-channel works to install culvert. Change to channel morphology through realignment and increase of artificial bed and bank material.	Geomorphology		Low	In-channel works: follow SEPA approved method statement as outlined in the generic construction mitigation. Sedimentation: Implement appropriate control measures for construction site runoff and sedimentation as outlined in the generic construction mitigation.	Minor adverse	Neutral

Water Body (Feature)	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Broomhill Burn *continued*	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Medium	Refer to mitigation outlined for the Shochie Burn. Detailed method statement for channel realignment and culverting to be approved by SEPA prior to commencement of works.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral

Table 2: Summary of Residual Impacts on Water Bodies (Operation)

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
River Tay	Changes to hydrology and flood risk			High	The attenuation facilities provided along the scheme would be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance, in order to prevent any increased surface runoff discharge to the Shochie, Ordie and Garry Burns which ultimately join the Tay.	Negligible	Neutral
	Changes to geomorphology	Geomorphology		High	Impacts arise from works along the Shochie and Ordie Burns. Therefore implement mitigation measures for these watercourses to reduce the potential impacts on the River Tay.	Negligible	Neutral
	Water Quality	Water quality	WFD chemical status Pass.	Very High	Refer to individual mitigation proposals for each tributary.	Negligible	Neutral
		Dilution and Removal of Waste Products	High pollutant dilution/ dispersal capacity. Existing pressures include sewage disposal.	High		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Moderate.	Very High		Negligible	Neutral
		Water supply	Designated DWPZ.	Very High		Negligible	Neutral
Shochie Burn	Changes to hydrology and flood risk			Low	The attenuation facilities along the Shochie Burn shall be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance, in order to prevent any increased surface runoff discharge to this river.	Negligible	Neutral

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	**Significance**
	Adverse impact on watercourse morphology through artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert. Potential scour around outfall structure.	Geomorphology		High	Outfall: The location and design of the outfall would lead to no significant alteration of flow. That is, the outfall would not project out into the channel and not be located where flow converges with river banks. Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Slight/ Moderate adverse
	Change in water quality; increase in future traffic volumes resulting in increased volume of contaminated runoff and risk of accidental spillages as a result of vehicular collision. Improved scheme drainage design.	Water quality	WFD chemical status Pass.	Very High	Follow CIRIA and SEPA best practice culvert, outfall and drainage design guidance including C689, C609, C697, C698, SEPA WAT-SG-25 and WAT-SG-28. Provision of two levels of SUDS including filter drains and dry detention basin. SUDS will be lined to prevent infiltration to groundwater.	Negligible	Neutral
		Dilution and Removal of Waste Products	Medium pollutant dilution/dispersal capacity. Receives road runoff from A9 and likely other sources.	Medium		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Good.	Very High		Negligible	Neutral
		Water Supply	No abstractions identified.	Low		Negligible	Neutral
Ordie Burn	Changes to hydrology and flood risk	Conveyance of flow		Medium	The attenuation facilities along the Ordie Burn shall be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance, in order to prevent any increased surface runoff discharge to this river.	Minor adverse	Slight adverse

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	**Significance**
	Adverse impact on watercourse morphology through artificial banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert. Potential scour around outfall structure.	Geomorphology		High	Outfall: The location and design of the outfall would lead to no significant alteration of flow. That is, the outfall would not project out into the channel and will not be located where flow converges with river banks. Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Slight/ Moderate adverse
	Water Quality	Water Quality	WFD chemical status Pass.	Very High	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Medium pollutant dilution/ dispersal capacity. Receives road runoff from A9 and likely other sources. Four discharge consents identified (Bankfoot STW).	Medium		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Good.	Very High		Negligible	Neutral
		Water Supply	No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 3 of Ordie Burn	Changes to hydrology and flood risk			Low	None	Minor adverse	Neural
Un-named tributary 4 of	Changes to hydrology and flood risk			Medium	Mitigation in design includes maintaining pre-development flow through culverts.	Minor adverse	Slight adverse

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Ordie Burn	Adverse impact on watercourse morphology through channel realignments, culvert extension and three pipe culverts, increasing the length of artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert.	Geomorphology		Low	Channel realignment: Hold workshop at design phase to incorporate appropriate mitigation measures and identify where possible improvements to watercourse morphology and habitats. Look to: minimise length of realignment, maintain gradient of watercourse and increase sinuosity of channel. Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed). Culvert installation: minimise length of culvert, ensure correct gradient to allow transfer of sediment through the culvert whilst not generating excessive scour at culvert outlet.	Moderate adverse	Slight adverse
	Water Quality	Water Quality	No classification data available. Considered likely to receive runoff from road and agriculture.	Low	Follow CIRIA and SEPA best practice culvert and channel realignment design guidance including SEPA WAT-SG-25. Regular maintenance of the road network including culverts.	Minor adverse	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Minor adverse	Neutral
		Water Supply	Private surface water abstraction at Newmill Farm.	Medium		Minor adverse	Slight

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Garry Burn	Changes to hydrology and flood risk			Medium	The attenuation facilities along the Garry Burn shall be regularly inspected and maintained, in agreement with SEPA and CIRIA C697 guidance, in order to prevent any increased surface runoff discharge to the this river	Negligible	Neutral
	Adverse impact on watercourse morphology through artificial banks. Potential scour around outfall structure.	Geomorphology		Medium	Outfall: The location and design of the outfall would lead to no significant alteration of flow. That is, the outfall would not project out into the channel and not be located where flow converges with river banks.	Negligible	Neutral
	Water Quality	Water Quality	WFD chemical status Pass.	Very High	Refer to mitigation outlined for the Shochie Burn.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low/medium pollutant dilution/ dispersal capacity. Receives road runoff from A9 and likely other sources. 1 discharge consent identified at Loakmill.	Medium		Negligible	Neutral
		Biodiversity	Designated SAC and salmonid waters. WFD ecological status Good.	Very High		Negligible	Neutral
		Water Supply	No abstractions identified.	Low		Negligible	Neutral
Ardonachie Burn	Changes to hydrology and flood risk			Low	None	Minor adverse	Neutral
	Adverse impact on watercourse morphology through artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert.	Geomorphology		Low	Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to receive runoff from agriculture.	Medium	Follow CIRIA and SEPA best practice culvert design guidance including SEPA WAT-SG-25.	Negligible	Neutral

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	**Significance**
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low	Regular maintenance of the road network including culverts.	Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 1 of Gelly Burn (north)	Changes to hydrology and flood risk			Low	None	Negligible	Neutral
	Adverse impact on watercourse morphology through channel realignment and increase in length of artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert.	Geomorphology		Low	Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Low	Follow CIRIA and SEPA best practice culvert design guidance including SEPA WAT-SG-25. Regular maintenance of the road network including culverts.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 2 of	Changes to hydrology and flood risk			Low	None	Negligible	Neutral

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Gelly Burn (north)	Adverse impact on watercourse morphology through artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert.	Geomorphology		Low	Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Low	Follow CIRIA and SEPA best practice culvert design guidance including SEPA WAT-SG-25. Regular maintenance of the road network including culverts.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. Receives road runoff from A9.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Un-named tributary 3 of	Changes to hydrology and flood risk			Low	None	Negligible	Neutral

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
Gelly Burn (north)	Adverse impact on watercourse morphology through realignment and artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert.	Geomorphology		Low	Channel realignment: Hold workshop at design phase to incorporate appropriate mitigation measures and identify where possible improvements to watercourse morphology and habitats. Look to: minimise length of realignment, maintain gradient of watercourse and increase sinuosity of channel. Realignment should be constructed at least 2m away from the base of the access track embankment to reduce changes to the sediment and flow regime of the burn. Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Low	Follow CIRIA and SEPA best practice culvert and channel realignment design guidance including SEPA WAT-SG-25. Regular maintenance of the road network including culverts.	Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. Receives road runoff from A9.	Low		Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater dependent species.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Gelly Burn (north)	Changes to hydrology and flood risk			Low	None	Negligible	Neutral

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	Significance
	Adverse impact on watercourse morphology through artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert. Potential scour around outfall structure.	Geomorphology		Low	Outfall: The location and design of the outfall would lead to no significant alteration of flow. That is, the outfall would not project out into the channel and not be located where flow converges with river banks. Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Neutral
	Water Quality	Water Quality	Designated salmonid waters. No classification data available. Considered likely to have enriched nutrient content.	Low	Refer to mitigation outlined for the Shochie Burn.	Major adverse	Slight/ Moderate adverse (this is a result of the HAWRAT fail; as outlined in the text, the tool is not applicable for this particular site and mitigation measures have been agreed with SEPA)
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Biodiversity	Designated salmonid waters.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral
Broomhill Burn	Changes to hydrology and flood risk			Low	None	Negligible	Neutral

Feature	Potential Impact	Attribute	Quality	Importance	Mitigation	Residual Impact	
						Magnitude	**Significance**
	Adverse impact on watercourse morphology through artificial bed and banks. Change to fluvial processes potentially causing scour or deposition upstream, downstream or through the culvert.	Geomorphology		Low	Culvert extension: minimise culvert extension and length of associated bank protection at inlet and/or outlet of culvert. Detailed design should include input from range of appropriate specialists to incorporate mitigation measures (i.e. identify correct gradient and width of culvert to prevent siltation through culvert or scour around structure; and create or maintain a natural bed).	Minor adverse	Neutral
	Water Quality	Water Quality	No classification data available. Considered likely to have enriched nutrient content.	Medium	Follow CIRIA and SEPA best practice culvert design guidance including SEPA WAT-SG-25. Regular maintenance of the road network including culverts.	Negligible	Neutral
		Biodiversity	No classification data available. No known freshwater-dependent species.	Low		Negligible	Neutral
		Dilution and Removal of Waste Products	Low pollutant dilution/ dispersal capacity. No discharges identified.	Low		Negligible	Neutral
		Water Supply	Low flow. No abstractions identified.	Low		Negligible	Neutral