

Appendix A11.7: Impact Assessment

1 Introduction

1.1.1 This appendix describes the potential adverse impacts of the proposed scheme prior to mitigation on the attributes 'Hydrology and Flood Risk', 'Fluvial Geomorphology', 'Water Quality', 'Water Supply', 'Dilution and Removal of Waste Products' and 'Biodiversity for each of the identified water features. Proposed mitigation and a summary of the residual impact significance are provided.

2 Water Features Scoped Out

2.1.1 During the assessment a number of water features have been scoped out as they have been assessed as unlikely to be impacted by the construction or operation of the proposed scheme due to a lack hydraulic connectivity with the activities. Water features that are not likely to be impacted by the proposed scheme are listed below:

- WF180 (Edradour Burn);
- WF181 (Kinnaird Burn);
- WF182 (unnamed watercourse);
- WF183 (tributary of the Kinnaird Burn); and
- WF184 (Moulin Burn).

2.1.2 The proposed operational drainage layout will discharge to WF57, WF70, WF74, WF75 and WF77; therefore, water quality impacts are anticipated only on these water features during the operational phase.

3 Construction and Operational Activities

3.1.1 The construction and operational activities associated with each water feature, which have informed the impact assessment, are detailed in Table 1 below.

Table 1: Proposed construction and operational activities

Water Feature	Dualled Mainline (within 50m)	Side Road/Access Track (within 50m)	New Bridge/Bridge Extension	New Culvert/Culvert Extension	SuDS Feature/Outfall	Channel Regrading/Realignment	Additional Comments
WF57 (Altrory Burn)	-	-	-	-	✓	-	Drainage catchment A. Existing dualled location.
WF58	✓	-	-	-	-	-	Existing dualled location.
WF59	✓	✓	-	✓	-	-	-
WF60	✓	✓	-	✓	-	-	-
WF61	✓	✓	-	✓	-	-	-
WF191	-	-	-	-	✓	-	SuDS outfall D1/ D2
WF63	✓	✓	-	✓	-	✓	-
WF64	✓	-	-	✓	-	✓	-
WF65	✓	✓	-	✓	-	-	-
WF66	✓	-	-	✓	-	-	-
WF67	✓	-	-	✓	-	-	-
WF68	✓	-	-	✓	-	-	-
WF69	✓	✓	✓	✓	-	-	-
WF71	✓	✓	✓	✓	-	-	Adjacent to SuDS basin G

Water Feature	Dualled Mainline (within 50m)	Side Road/Access Track (within 50m)	New Bridge/Bridge Extension	New Culvert/Culvert Extension	SuDS Feature/Outfall	Channel Regrading/Realignment	Additional Comments
WF72	✓	✓	-	✓	-	-	-
WF73	-	✓	-	-	-	-	-
WF74	✓	-	-	✓	✓	✓	SuDS basin H
WF76 (Allt an Aghastair)	✓	-	-	✓	✓	✓	Drainage outfall H
WF77	-	-	-	-	✓	-	Drainage outfall I
WF78	-	✓	-	-	-	-	Existing dualled location
WF70 (River Tummel)	✓	✓	✓	-	✓ (2)	-	Drainage catchment B and outfall C New Tummel Underbridge with temporary piers in the floodplain and abutments on banks at ch900 to 1100. In-channel works on multiple tributaries.
WF75 (Loch Faskally)	✓	✓	✓	-	✓ (2)	-	Drainage outfalls E and F/ G. New Clunie underbridge with piers on banks. In-channel works on multiple tributaries.
WF100 (River Garry)	-	-	-	-	-	-	Works on lower reach of a tributary (WF77) of WF100

4 Impact Assessment

- 4.1.1 This section reports on the assessment of the specific impacts affecting water features during both the construction and operational phase of the proposed scheme. Where no impacts are anticipated across all attributes, these water features have been listed above in section 2 (Water Features Scoped Out) and are not included within this section. All of the impacts reported are adverse unless otherwise stated.
- 4.1.2 Standard mitigation will be applied to all water features affected by the proposed scheme. Specific mitigation measures have also been provided at certain water features in Table 2 and 3 below, and a full description of the standard and specific mitigation measures to be adopted is provided in Chapter 11 (Road Drainage and the Water Environment); Tables 11.18 to 11.20. Tables 2 and 3 are colour coded by impact significance, whereby:
- Neutral significance = Blue;
 - Slight significance = Yellow;
 - Moderate significance = Orange;
 - Large significance = Red; and
 - Very Large significance = Crimson.
- 4.1.3 Impacts with a beneficial significance are coloured Green.
- 4.1.4 Table 11.7 of Chapter 11 (Road Drainage and the Water Environment) allows for the use of professional judgement to assign a significance rating in certain circumstances. The selection of a particular significance from the two options available has been undertaken based on professional judgement.
- 4.1.5 It is noted that within Chapter 11 (Road Drainage and the Water Environment) and Appendix A11.1 (Baseline Conditions), a distinction has been made between the receptor 'Water Quality' and 'Water

Supply', due to the potential for the magnitude of impact on these attributes to differ depending on the source location of the water supply. Where an impact on a water supply is of a greater significance than the impact on water quality, the assessment and significance of the impact is provided within brackets in the water quality (water supply) column of Table 2 and Table 3.

Table 2: Specific construction impacts.

Water Feature	Potential Construction Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF57	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery from site clearance, earthworks (i.e. bare earth surfaces) and construction of the carriageway.</p> <p>Water Quality: A temporary measurable decrease in water quality from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	high x negligible = Neutral	low x minor = Neutral	low x minor = Neutral	low x minor = Neutral	low x minor = Neutral	P04-W18 P04-W19 P04-W20 P04-W21	high x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral
WF58	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery from site clearance, earthworks (i.e. bare earth surfaces) and construction of the carriageway.</p> <p>Water Quality: A temporary measurable decrease in water quality from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	medium x negligible = Neutral	low x minor = Neutral	low x minor = Neutral	low x minor = Neutral	low x minor = Neutral	P04-W18 P04-W19 P04-W20 P04-W21	medium x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x minor = Neutral
WF59	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates. Construction of culvert extension may cause restriction of flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery from bare earth surfaces and works within the water feature. Potential for fine sediment to be transferred downstream to the River Tummel. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	very high x moderate = Large	low x minor = Neutral	medium x minor = Slight	low x minor = Neutral	medium x minor = Slight	P04-W18 P04-W19 P04-W20 P04-W21 P04-W22	very high x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF60	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and potential for fine sediment to be transferred downstream to the River Tummel. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	very high x moderate = Large	medium x minor = Slight	medium x minor = Slight	low x minor = Neutral	medium x minor = Slight	P04-W18 P04-W19 P04-W20 P04-W21 P04-W22	very high x negligible = Neutral	medium x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral

Water Feature	Potential Construction Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF61	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of new culvert/channel realignment may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and potential for fine sediment to be transferred downstream to the River Tummel. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality (including Environmental Quality Standards (EQS)) for less than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	very high x moderate = Large	low x minor = Neutral	low x moderate = Slight	low x minor = Neutral	low x moderate = Slight	P04-W18 P04-W19 P04-W20 P04-W21 P04-W22	very high x negligible = Neutral	low x negligible = Neutral	low x minor = Neutral	low x negligible = Neutral	low x minor = Neutral
WF191	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of replacement culvert may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces during construction. Consequently, potential for fine sediment to be transferred downstream to the River Tummel.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x moderate = Slight	low x moderate = Slight	low x moderate = Slight	low x negligible = Neutral	low x moderate = Slight	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x minor = Neutral	low x minor = Neutral	low x negligible = Neutral	low x minor = Neutral
WF63	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of replacement culvert/channel realignment may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and extensive works to excavate the existing culvert and divert. Consequently, potential for fine sediment to be transferred downstream to the River Tummel.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	medium x moderate = Moderate	low x moderate = Slight	low x major = Moderate	low x negligible = Neutral	low x major = Moderate	P04-W18 P04-W19 P04-W20 P04-W21 P04-W22	medium x negligible = Neutral	low x negligible = Neutral	low x minor = Neutral	low x negligible = Neutral	low x minor = Neutral

Water Feature	Potential Construction Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF64	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension/channel realignment may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works and potential for this to be transferred to the River Tummel. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p> <p>Disruption, pollution or severance of private water supply (PK-PWS04 Littleton of Fonab, Easter Ballinluig, Wester Ballinluig and Milton of Fonab).</p>	high x moderate = Moderate	medium x minor = Slight	medium x moderate = Moderate (high x major = Very Large)	low x negligible = Neutral	medium x moderate = Moderate	P04-W18 P04-W19 P04-W20 P04-W21	high x negligible = Neutral	medium x minor = Slight	medium x minor = Slight (high x negligible = Neutral)	low x negligible = Neutral	medium x minor = Slight
WF65	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of replacement culvert may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage. Excavation for the Rob Roy Way Underpass may be subject to pluvial (surface water) flooding and fluvial flooding (from existing culvert surcharging).</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	high x moderate = Moderate	medium x minor = Slight	medium x major = Large	low x negligible = Neutral	low x major = Moderate	P04-W18 P04-W19 P04-W20 P04-W21	high x negligible = Neutral	medium x negligible = Neutral	medium x minor = Slight	low x negligible = Neutral	low x minor = Neutral
WF66	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of replacement culvert may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works and potential for this to be transferred to the River Tummel. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x moderate = Slight	medium x minor = Slight	medium x major = Large	low x minor = Neutral	medium x major = Large	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	medium x negligible = Neutral	medium x minor = Slight	low x negligible = Neutral	medium x minor = Slight
WF67	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works and potential for this to be transferred to the Loch Faskally. Potential for fine sediment mobilisation during backfill of the existing deep channel a</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances migrating down gradient to water feature.</p>	low x moderate = Slight	low x moderate = Slight	low x moderate = Slight	low x negligible = Neutral	low x moderate = Slight	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x minor = Neutral	low x minor = Neutral	low x negligible = Neutral	low x minor = Neutral

Water Feature	Potential Construction Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF68	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works. Potential for sediment to be transferred to the Loch Faskally. Potential for disturbance of man-made materials in the channel bed and for these to en</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month and temporary impacts on designated species from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x moderate = Slight	high x minor = Slight	medium x moderate = Moderate	low x negligible = Neutral	medium x moderate = Moderate	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	high x minor = Slight	medium x minor = Slight	low x negligible = Neutral	medium x minor = Slight
WF69	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of replacement culvert and bridge on side road may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works and potential for this to be transferred to the Loch Faskally. Diversion/damming of flow during in-channel works to construct culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x moderate = Slight	medium x moderate = Moderate	medium x major = Large	low x negligible = Neutral	medium x major = Large	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	medium x minor = Slight	medium x minor = Slight	low x negligible = Neutral	medium x minor = Slight
WF71	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of replacement culvert may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces, extensive earthworks and in-channel works. Potential for sediment to be transferred to the Loch Faskally.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x moderate = Slight	low x minor = Neutral	low x major = Moderate	low x negligible = Neutral	low x major = Moderate	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x negligible = Neutral	low x minor = Neutral	low x negligible = Neutral	low x minor = Neutral
WF72	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month and temporary impacts on designated species from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x negligible = Neutral	low x negligible = Neutral	low x moderate = Slight	low x negligible = Neutral	low x moderate = Slight	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x negligible = Neutral	low x minor = Neutral	low x negligible = Neutral	low x minor = Neutral
WF73	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: A temporary measurable decrease in water quality from the generation of turbid runoff and/or accidental spillage of fuels, oils cementitious material or other polluting substances migrating to water feature.</p>	low x negligible = Neutral	low x negligible = Neutral	medium x minor = Slight	low x minor = Neutral	medium x minor = Slight	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral

Water Feature	Potential Construction Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF74	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension/channel realignment may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and extensive in-channel works disturbing channel bed and banks.</p> <p>Diversion/damming of flow during in-channel works to enable construction of culvert.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x moderate = Slight	medium x moderate = Moderate	medium x major = Large	low x major = Slight	medium x major = Large	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	medium x minor = Slight	medium x minor = Slight	low x minor = Neutral	medium x minor = Slight
WF76	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension/channel realignment may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and extensive in-channel works disturbing channel bed and banks</p> <p>Diversion/damming of flow during in-channel works to construct culvert and realignment.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	very high x moderate = Large	medium x moderate = Moderate	medium x major = Large	low x negligible = Neutral	medium x major = Large	P04-W18 P04-W19 P04-W20 P04-W21	very high x negligible = Neutral	medium x minor = Slight	medium x minor = Slight	low x negligible = Neutral	medium x minor = Slight
WF77	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of culvert extension for tier 3 access may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces and in-channel works disturbing channel bed and banks.</p> <p>Diversion/damming of flow during in-channel works to construct outfall.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	low x minor = Neutral	low x minor = Neutral	medium x moderate = Moderate	low x minor = Neutral	low x moderate = Slight	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x negligible = Neutral	medium x minor = Slight	low x negligible = Neutral	low x minor = Neutral
WF78	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery due to runoff from bare earth surfaces.</p> <p>Water Quality: A temporary measurable decrease in water quality from the generation of turbid runoff and/or accidental spillage of fuels, oils cementitious material or other polluting substances.</p>	low x negligible = Neutral	low x negligible = Neutral	medium x minor = Slight	low x negligible = Neutral	medium x minor = Slight	P04-W18 P04-W19 P04-W20 P04-W21	low x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral

Water Feature	Potential Construction Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF70	<p>Flood Risk: The proposed construction method for the Tummel Underbridge would require support systems which would be located within the main channel of the River Tummel, but would be positioned within the terrestrial (high-flow) area of the River Tummel</p> <p>Construction of the Tummel Underbridge (including temporary support systems in-channel) may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage.</p> <p>There is a potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse.</p> <p>Fluvial Geomorphology: The proposed construction method for the Tummel Underbridge would require support systems which would be located within the main channel of the River Tummel, but would be positioned within the terrestrial (high-flow) area of the River Tummel within the River Tay SAC boundary.</p> <p>This activity would lead to the removal of natural bed and banks to accommodate the temporary structure. There is the potential for increased risk of fine sediment delivery downstream during in-channel works which could smother bed substrate. Due to removal of natural features, there is potential for the movement of coarse material downstream. Works in the terrestrial channel may require a dry working area during higher flows leading to some form of dam being put in place within the channel, further disturbing the channel bed.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month and long term change to designated site from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	very high x moderate = Large	high x moderate = Moderate	high x major = Very Large	medium x minor = Slight	very high x major = Very Large	P04-W18 P04-W19 P04-W20 P04-W21 P04-W23	very high x minor = Moderate	high x minor = Slight	high x negligible = Neutral	medium x negligible = Neutral	very high x negligible = Neutral
WF75	<p>Flood Risk: Potential for increase in hardstanding area and/or soil compaction during construction resulting in temporary increases in runoff rates into the watercourse. Construction of bridge may cause restriction in flood flows, temporarily increasing flood risk locally, and construction works may be at risk from flood damage. Temporary loss of floodplain area.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery from works in close proximity to the water feature, along the loch margins and from works within the tributaries feeding in to the water feature. No in-channel working required due to clear span structure.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for greater than one month and long term change to designated site from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances.</p>	very high x minor = Moderate	medium x minor = Slight	very high x major = Very Large	medium x minor = Slight	very high x major = Very Large	P04-W18 P04-W19 P04-W20 P04-W21	very high x negligible = Neutral	medium x minor = Slight	very high x negligible = Neutral	medium x negligible = Neutral	very high x negligible = Neutral
WF100	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: Temporary increase in fine sediment delivery from construction of the mainline carriageway and new side road along tributaries feeding into the River Garry.</p> <p>Water Quality: A temporary measurable decrease in water quality (including EQS) for less than one month and temporary impacts on designated species from the generation of turbid runoff and/or accidental spillage of fuels, oils, cementitious material or other polluting substances (as a result of works on the tributaries of the River Garry).</p>	very high x negligible = Neutral	high x negligible = Neutral	very high x moderate = Large	low x negligible = Neutral	very high x moderate = Large	P04-W18, P04-W19, P04-W20, P04-W21	very high x negligible = Neutral	high x negligible = Neutral	very high x negligible = Neutral	low x negligible = Neutral	very high x negligible = Neutral

Table 3: Specific operational impacts and impact Significance

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF57	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: Highways Agency's Risk Assessment Tool (HAWRAT) 'Fail' for both soluble and sediment-bound pollutants during operation at both Tier 1 and Tier 2. Risk of pollution from spillage <0.5% during operation.</p>	high x negligible = Neutral	low x negligible = Neutral	low x moderate = Slight	low x moderate = Slight	low x moderate = Slight	P04-W35	high x negligible = Neutral	low x negligible = Neutral	low x moderate = Slight	low x moderate = Slight	low x moderate = Slight
WF58	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: No impacts anticipated.</p>	medium x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral		medium x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral
WF59	<p>Flood Risk: The proposed scheme results in a loss of floodplain storage due to the requirement for new infrastructure (widened carriageway, Sustainable Drainage Systems (SuDS) basin and junction) within the River Tummel floodplain (i.e. the 0.5% Annual Exceedance Probability (AEP) (200-year) plus Climate Change (CC) event flood extent). This causes an increase in fluvial flood depth from the River Tummel (WF70).</p> <p>During the design flood event, the modelled flows from WF59 coincide with flows from the River Tummel which overtop on the left bank upstream of the Tummel Underbridge and pass under the railway underpass towards Dalshian. The River Tummel also overtops on the left bank downstream of the Tummel Underbridge to restrict the outflows from WF59, thereby causing backflow through the extended culvert and exacerbating the flood risk in the Dalshian area.</p> <p>The proposed scheme results in an increase in fluvial flood depth from WF59 by >10mm and <50mm during the 0.5% AEP (200-year) plus CC event when considered in conjunction with increased flooding from the River Tummel (WF70). This includes a <10mm increase in peak flood levels to the Dalshian Chalets and East Haugh Hotel. The areas of increased flood depth >10mm are on agricultural land not considered to be sensitive to minor changes in flood levels.</p> <p>Fluvial Geomorphology: The culvert extension could alter lateral connectivity and remove a length of bed and bank. However, the channel is modified and is a small part of day lighted channel prior to a long culvert under agricultural land to the south of the existing A9. It is assumed that the water feature would be diverted downstream of the existing A9 via an open channel to the River Tummel and, therefore, there will be a slight improvement over the existing conditions.</p> <p>Water Quality: No impacts anticipated.</p>	very high x minor = Large	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W24	very high x minor adverse to moderate beneficial = Moderate (adverse) to Large (beneficial)	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF60	<p>Flood Risk: The proposed scheme results in a loss of floodplain storage due to the requirement for new infrastructure (widened carriageway, SuDS basin and junction) within the River Tummel floodplain (i.e. the 0.5% AEP (200-year) plus CC event flood extent). This causes an increase in fluvial flood depth from the River Tummel (WF70).</p> <p>During the design flood event, the modelled flows from WF60 coincide with flows from the River Tummel which overtop on the left bank upstream of the Tummel Underbridge and pass under the railway underpass towards Dalshian. The River Tummel also overtops on the left bank downstream of the Tummel Underbridge to restrict the outflows from WF60, thereby causing backflow through the extended culvert and exacerbating the flood risk in the Dalshian area.</p> <p>The proposed scheme results in an increase in fluvial flood depth from WF60 by >10mm and <50mm during the 0.5% AEP (200-year) plus CC event when considered in conjunction with increased flooding from the River Tummel (WF70). This includes a <10mm increase in peak flood levels to the Dalshian Chalets and East Haugh Hotel. The areas of increased flood depth >10mm are on agricultural land not considered to be sensitive to minor changes in flood levels.</p> <p>Fluvial Geomorphology: Culvert extension removing earth bed and banks. However, the channel being removed is modified and is a small length of day lighted channel prior to a long culvert under agricultural land to the south of the existing A9. It is assumed that the water feature would be diverted downstream of the existing A9 via an open channel to the River Tummel and, therefore, there will be a slight improvement over the existing conditions.</p> <p>Water Quality: No impacts anticipated.</p>	very high x minor = Large	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W24	very high x minor adverse to moderate beneficial = Moderate (adverse) to Large (beneficial)	medium x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF61	<p>Flood Risk: The proposed scheme results in a loss of floodplain storage due to the requirement for new infrastructure (widened carriageway, SuDS basin and junction) within the River Tummel floodplain (i.e. the 0.5% AEP (200-year) plus CC event flood extent). This causes an increase in fluvial flood depth from the River Tummel (WF70).</p> <p>During the design flood event, the modelled flows from WF61 coincide with flows from the River Tummel which overtop on the left bank upstream of the Tummel Underbridge and pass under the railway underpass towards Dalshian. The River Tummel also overtops on the left bank downstream of the Tummel Underbridge to restrict the outflows from WF59, thereby causing backflow through the extended culvert and exacerbating the flood risk in the Dalshian area.</p> <p>The proposed scheme results in an increase in fluvial flood depth from WF61 by >10mm and <50mm during the 0.5% AEP (200-year) plus CC event when considered in conjunction with increased flooding from the River Tummel (WF70). This includes a <10mm increase in peak flood levels to the Dalshian Chalets and East Haugh Hotel. The areas of increased flood depth >10mm are on agricultural land not considered to be sensitive to minor changes in flood levels.</p> <p>Fluvial Geomorphology: Removal of earth bed and banks and lateral connectivity due to culvert extension. However, the channel being removed is straightened and modified.</p> <p>It is assumed that the water feature would be diverted downstream of the existing A9 via an open channel to the River Tummel and, therefore, there will be a slight improvement over the existing conditions.</p> <p>Water Quality: No impacts anticipated.</p>	very high x minor = Large	low x minor = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	P04-W24	very high x minor adverse to moderate beneficial = Moderate (adverse) to Large (beneficial)	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF191	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. The watercourse will incorporate flows from WF63 after the adoption of mitigation.</p> <p>Fluvial Geomorphology: The additional discharge into the watercourse would impact on flows and sediment conditions. However, due to the small size of the drainage ditch catchment, impacts are anticipated to be insignificant.</p> <p>Water Quality: HAWRAT 'Fail' for both soluble and sediment-bound pollutants during operation at both Tier 1 and Tier 2. Exceedance of AA-EQS for dissolved copper. Risk of pollution from spillage <0.5% during operation.</p>	low x negligible = Neutral	low x minor = Neutral	low x major = Slight	low x major = Slight	low x major = Slight		low x negligible = Neutral	low x negligible = Neutral	low x major = Slight	low x major = Slight	low x major = Slight
WF63	<p>Flood Risk: WF63 is currently culverted across the River Tummel (WF70) floodplain but does not cross the proposed scheme, and it is assumed this arrangement would remain without mitigation. During the 0.5% AEP (200-year) plus CC event, the culvert surcharges, resulting in overland flow downslope across Foss Road, into the field that borders the A9 embankment (including proposed SuDS basin D), and then overland eastwards into the River Tummel.</p> <p>Fluvial Geomorphology: The new culvert and realignment along Foss Road would increase the length of the channel by approximately 50m which could potentially impact flow and sediment patterns within the system. However, due to the small size of the catchment and lack of sediment sources within the system, this is unlikely to be a significant impact.</p> <p>Water Quality: No impacts anticipated.</p>	medium x minor = Slight	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	P04-W25	medium x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral
WF64	<p>Flood Risk: No change in passed forward flows and no increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: Due to the extended culvert on the mainline, there would be removal of a length of natural bed along a length that currently has reinforced banks.</p> <p>The culvert extension requires realignment of the main channel upstream and downstream of the carriageway. This would have a particular impact upstream where a natural boulder cascade would be removed. Realignment would remove existing dense riparian vegetation, including continuous lining of trees. Potential for channel adjustment upstream and downstream as a direct consequence of new culvert/realignment.</p> <p>Realignment of pre-earthworks drainage adjacent to the existing A9 (east and west). Potential for change in flow and sediment processes.</p> <p>Water Quality: No impacts anticipated.</p>	high x negligible = Neutral	medium x moderate = Moderate	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W26 P04-W37	high x negligible = Neutral	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF65	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Existing culvert will be throttled and passed forward flows will be reduced by ~4.5% to prevent any increased flood risk to properties downstream of the A9. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: The western branch of the water feature is a drainage channel that was dry at the time of the survey. The extended culvert would lead to the removal of riparian vegetation and alter lateral connectivity with the floodplain and the other branch of the drain.</p> <p>The new culvert on the eastern branch of the water feature would require a new inlet, removing a length of modified channel. The channel gradient would be further slackened downstream, where the channel is heavily modified and artificial.</p> <p>Water Quality: No impacts anticipated.</p>	high x minor = Slight	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	P04-W37	high x negligible = Neutral	medium x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF66	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: Channel is modified and man-made where the culvert inlet would be lowered; therefore works are likely to have an insignificant impact. However regrading upstream would remove a length of natural step-pool sequence and natural riparian vegetation. Minimal change to culvert gradient and channel at the downstream extent of culvert replacement.</p> <p>Use of existing crossing for new side road. Permanent removal of natural bed and banks where crossing is widened.</p> <p>Potential for channel adjustment upstream and downstream as a direct consequence of the new structures within the water feature, particularly due to the step-pool nature of the water feature.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	medium x moderate = Moderate	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W27	low x negligible = Neutral	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF67	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: The majority of the culvert extension would cross a length of the water feature that is straightened and modified. The embankment to support the road would remove a length of more nature channel and a dense area of riparian vegetation. Lateral connectivity with the floodplain would be altered as a result. Potential for channel adjustment downstream as a direct consequence of a new structure within the water feature.</p> <p>Water Quality: No impacts anticipated.</p>	low x moderate = Slight	low x moderate = Slight	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral		low x moderate = Slight	low x minor = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral
WF68	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: The culvert extension for the mainline widening crosses the water feature where it is currently modified with man-made bed and banks. There is no substantial riparian vegetation, with the area grassed and maintained.</p> <p>The extended culvert would be close to an existing knickpoint (area of instability) located downstream where the man-made reinforcement stops. Potential for channel adjustment as a direct consequence of the new structure within the water feature.</p> <p>Culvert extension upstream would replace an existing track crossing making it wider. Removal of natural bed and banks and step/pool sequence. Potential for channel adjustment downstream as a direct consequence of the new structure.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	high x minor = Moderate	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W28	low x negligible = Neutral	high x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF69	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: The culvert is to be extended between the existing culvert and the local access road bridge. This would remove a length of steeper channel with a step-pool sequence. Removal of natural bed and banks and vegetated riparian corridor. The extension would also reduce the existing channel gradient and lead to potential channel adjustment downstream as a result.</p> <p>The new side road is likely to remove the vegetated riparian corridor west of the existing A9.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	medium x moderate = Moderate	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W29	low x negligible = Neutral	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF71	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: The culvert extension would be over lengths of water feature that are already modified (considered to be man-made) with reinforced bed and banks. Removal of surrounding riparian vegetation including trees and scrub.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	low x moderate = Slight	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	P04-W30	low x negligible = Neutral	low x minor = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral
WF72	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral		low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral	low x negligible = Neutral
WF73	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral		low x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF74	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses. Permanent changes to site runoff rates from the increase in impermeable area.</p> <p>Fluvial Geomorphology: Complete removal of the majority of the water feature upstream of the existing A9. The northern branch of the water feature has been straightened and modified and would be partially retained. However, the eastern branch has a more natural planform and step-pool sequence and would be completely removed by the mainline widening and associated culvert. The new culvert would also lead to removal of an extensive area of riparian vegetation including trees.</p> <p>Water Quality: HAWRAT 'Fail' for both soluble and sediment-bound pollutants during operation at Tier 1. HAWRAT 'Pass' for sediment-bound pollutants during operation at Tier 2. Risk of pollution from spillage <0.5% during operation.</p>	low x minor = Neutral	medium x major = Large	medium x minor = Slight	low x minor = Neutral	medium x minor = Slight	P04-W31 P04-W37	low x negligible = Neutral	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF76	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses.</p> <p>Fluvial Geomorphology: Extensive removal of natural channel under the mainline widening and the new side road. Permanent removal of natural bed and banks and natural step-pool sequence. Lateral connectivity removed as a result of the new culvert; although the natural valley is steep. Extensive removal of riparian vegetation. Change in the gradient of the water feature by straightening through a culvert, potentially altering flow processes downstream of the existing A9. Change to channel morphology and the sediment and flow processes due to channel realignment in small tributary of main channel.</p> <p>Water Quality: No impacts anticipated.</p>	very high x negligible = Neutral	medium x major = Large	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W32 P04-W34	very high x negligible = Neutral	medium x minor = Slight	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF77	<p>Flood Risk: No increased fluvial flood depth on properties or the proposed scheme identified from the 0.5% AEP (200-year) plus CC event. Refer to Appendix A11.3 (Flood Risk Assessment) for a detailed assessment of minor watercourses. Permanent changes to site runoff rates from the increase in impermeable area.</p> <p>Fluvial Geomorphology: Modification of the channel banks and bed, removing a short length of lateral connectivity. Introduction of flow to a channel, which could alter flow processes downstream of culvert.</p> <p>Water Quality: HAWRAT 'Fail' for soluble pollutants during operation. Exceedance of AA-EQS for dissolved copper. Risk of pollution from spillage <0.5% during operation..</p>	low x minor = Neutral	low x minor = Neutral	medium x major = Large	low x major = Slight	low x major = Moderate	P04-W36	low x minor = Neutral	low x negligible = Neutral	medium x minor = Slight	low x minor = Neutral	low x minor = Neutral
WF78	<p>Flood Risk: No impacts anticipated.</p> <p>Fluvial Geomorphology: No impacts anticipated.</p> <p>Water Quality: No impacts anticipated.</p>	low x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	P04-W37	low x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral	low x negligible = Neutral	medium x negligible = Neutral
WF70	<p>Flood Risk: The proposed scheme results in a loss of floodplain storage of approximately 18,199m³ due to the requirement for new infrastructure (widened carriageway, SuDS basin and junction) within the River Tummel floodplain (i.e. the 0.5% AEP (200-year) plus CC event flood extent).</p> <p>The proposed scheme results in increased fluvial flood depths ranging from <10mm to >50mm from the River Tummel (WF70) during the 0.5% AEP (200-year) plus CC event. This includes a <10mm increase in peak flood levels to the Dalshian Chalets and East Haugh Hotel when considered in conjunction with flooding from WF59/WF60/WF61. The areas of increased flood depth >10mm are on agricultural land not considered to be sensitive to minor changes in flood levels.</p> <p>Permanent changes to site runoff rates would also arise from the increase in impermeable area within the catchment.</p> <p>Fluvial Geomorphology: The Tummel Underbridge abutments are set back in the floodplain, with some potential very minor alterations to lateral connectivity.</p> <p>Outfall from SuDS basin C located downstream of Tummel Underbridge. This length of the River Tummel has large bars that have adjusted over time. This could potentially mean that the outfall discharge is not always directly connected to the Tummel, but instead flows over a depositional feature. Potential to exacerbate erosion or cause more undermining, Likely to require some erosion control works or works along existing bank.</p> <p>The diversion of three water features into and open channel to the Tummel will increase flow into the river at this location. However, this reach of the Tummel is stable and no significant impacts are anticipated.</p> <p>Water Quality: No risk identified by HAWRAT (Pass both soluble and sediment bound pollutants) during operation. Risk of pollution from spillage <0.5% during operation.</p>	very high x moderate = Very Large	high x moderate = Moderate	high x negligible = Neutral	medium x negligible = Neutral	very high x negligible = Neutral	P04-W24 P04-W33 P04-W34 P04-W35 P04-W36	very high x minor adverse to moderate beneficial = Moderate (Adverse) to Large (Beneficial)	high x minor = Slight	high x negligible = Neutral	medium x negligible = Neutral	very high x negligible = Neutral
WF75	<p>Flood Risk: Permanent changes to site runoff rates from the increase in impermeable area.</p> <p>Fluvial Geomorphology: Proposed piers to be set back into Loch Faskallymargins, meaning no modification is needed to the loch bed. However, a length of the dense established riparian corridor would need to be permanently removed.</p> <p>Permanent removal of lengths of the natural bank and bed for the new outfalls. Localised changes to flow processes with potential for alterations in sediment movement through interrupting longshore processes.</p> <p>Water Quality: No risk identified by HAWRAT (Pass both soluble and sediment bound pollutants) during operation. Risk of pollution from spillage <0.5% during operation.</p>	very high x minor = Moderate	medium x minor = Slight	very high x negligible = Neutral	medium x negligible = Neutral	very high x negligible = Neutral	P04-W34 P04-W35	very high x negligible = Neutral	medium x minor = Slight	very high x negligible = Neutral	medium x negligible = Neutral	very high x negligible = Neutral

Water Feature	Potential Operational Impacts	Significance Pre Mitigation					Specific Mitigation	Significance Post Mitigation				
		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity		Flood Risk & Hydrology	Fluvial Geomorphology	Water Quality (Water Supply)	Dilution & Removal of Waste Products	Biodiversity
WF100	<p>Flood Risk: Permanent changes to site runoff rates from the increase in impermeable area.</p> <p>Fluvial Geomorphology: None anticipated.</p> <p>Water Quality: No impacts anticipated.</p>	very high x negligible = Neutral	high x negligible = Neutral	very high x negligible = Neutral	low x negligible = Neutral	very high x negligible = Neutral		very high x negligible = Neutral	high x negligible = Neutral	very high x negligible = Neutral	low x negligible = Neutral	very high x negligible = Neutral