Appendix A11.1: Baseline Conditions

1 Introduction

1.1.1 This Appendix provides a detailed description of the baseline conditions of the water features (WF) referred to in Chapter 11 (Road Drainage and the Water Environment) and as shown on Figures 11.1 and 11.2.

1.1.2 As described in Chapter 1 (Introduction), the southern section of the A9 dualling programme comprises of five projects (from the Pass of Birnam to Glen Garry). The majority of the identified water features within this southern section were referenced sequentially from south to north (with occasional late additions appearing out of sequence). The proposed scheme is in the centre of the southern section and as such the assessed water feature referencing starts at WF57.

1.1.3 Sensitivity has been assigned based on the sensitivity criteria provided in Table 11.5 of Chapter 11 (Road Drainage and the Water Environment). For Scottish Environment Protection Agency (SEPA) classified water features, this is based upon 2015 classification data available on the SEPA Water Environment Hub (SEPA, 2016). Where no information was available, professional judgement was used to assign sensitivity based on site observations and other sources of information as listed in Section 11.2 (Approach and Methods) of Chapter 11 (Road Drainage and the Water Environment).

1.1.4 The parameter 'Water supply' was only included where a surface water fed public or private water supply (PWS) has been identified within the 500m study area. Chapter 10 (Geology, Soils, Contaminated Land and Groundwater) provides a full list of PWS sensitivity, including those from springs and groundwater sources, within 850m of the proposed scheme. Accessibility for migratory fish has been determined by aquatic ecological walkover surveys; refer to Chapter 12 (Ecology and Nature Conservation).

1.1.5 Flood risk sensitivity has been determined using data sources provided in Section 11.2 (Approach and Methods) of Chapter 11 (Road Drainage and the Water Environment), and numerical hydraulic modelling for certain high risk watercourses (refer to Appendix A11.3: Flood Risk Assessment).

1.1.6 During the baseline review, a number of water features within the 500m Study Area have been scoped out as they have been assessed as having no hydraulic connectivity with the scheme. The following water features are therefore not included within this baseline:

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

Table 1: WF57 (Altory Burn)

Overview	
 **Photograph 1: WF57 (Altrory Burn) – View downstream towards A9 embankment and culvert**	Water feature type: Minor watercourse Catchment area: 0.78km^2 catchment Key hydraulic connections: Discharges to River Tummel via a network of culverts and land drains. Surrounding land use: Woodland, grassland / agricultural land and urban / residential

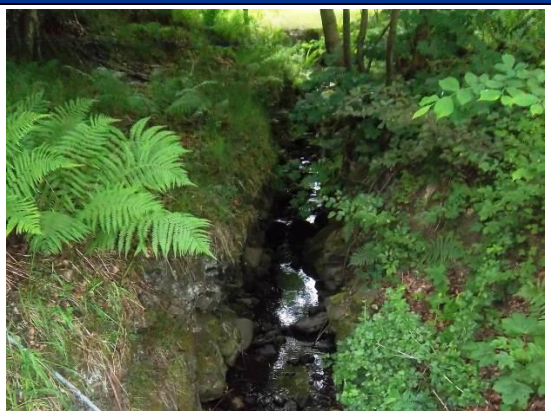
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF57 is a minor watercourse which is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. There are between 1 and 100 residential properties of the channel (several properties located within 40m) potentially at risk of fluvial flooding, particularly in combination with flooding from WF70 (River Tummel). See WF70 (River Tummel) for associated fluvial flood risk impacts. A culvert assessment has not been undertaken as the existing A9 is already dualled at this location.	high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. The channel appears to be unstable in the upper catchment and actively eroding, with a wide corridor roughly 50m across. It then flows towards the A9 adjacent to an unnamed road, under which the water feature is culverted several times. WF57 has a straight planform upstream of the existing A9, and is embanked with no natural vegetated riparian corridor. The channel is then culverted under the existing A9, the Highland Main Line Railway and local access route, and continues in a buried culvert under the fields downstream. Historical map analysis shows that there has been no significant change in the channel planform since 1867. Channel straightening of the lower reaches pre-dates the historical maps. The maps do show, however, that in 1978 and earlier maps the downstream end of the water feature appears to be culverted under the A9, emerging in an open channel until the confluence with the River Tummel.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment inputs from forestry and nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 the existing A9 – crosses watercourse); and • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses watercourse). Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: • diffuse discharge from septic tank soakaways from five domestic properties – within 50m of watercourse (NN 95929 56200, NN 95989 56268, NN 95960 56297, NN 96207 56360 and NN 96037 56235). As most discharges are of septic tank effluent to soakaways and not direct discharges, based on professional judgement this water feature is considered to be of a low sensitivity for this attribute.	low
Biodiversity	
SEPA overall ecological status: not classified. Anticipated to exhibit 'Poor' ecosystem quality; limited riparian habitat upstream of existing A9 and culverted downstream of existing A9. Designations: Flows into River Tay SAC but river habitat generally unsuitable for fish species.	low

Table 2: WF58

Overview	
 **Photograph 2: WF58 – View downstream away from existing A9 culvert**	Water feature type: Drainage channel Catchment area: 0.13km^2 Key hydraulic connections: Discharges to River Tummel via a network of culverts and land drains. Surrounding land use: Agricultural, grassland and urban / residential

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF58 is a minor watercourse which is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. There are between 1 and 100 residential properties in close proximity to this channel (including the East Haugh House Hotel located within 30m), however given its small catchment size is likely to only cause flood risk in combination with flooding from WF70 (River Tummel). See WF70 (River Tummel) for associated fluvial flood risk impacts. A culvert assessment has not been undertaken as the existing A9 is already dualled at this location.	medium
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF58 is a small drain originating approximately 300m upstream of the existing A9. At the upstream extent, the channel had a vegetated riparian corridor consisting of grass and shrubs, with a steep sloping grassy left bank and shallow sloping ground on the right. The water feature then flows towards the existing A9 where it is culverted under the road and the Highland Main Line Railway. Downstream of this, the water feature emerges from a culvert and had a trapezoidal channel with a straight planform. There was no natural vegetated riparian corridor observed. At the time of the site visit, the channel was dry. The channel eventually discharges to the River Tummel. The water feature is not visible on historical maps.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); and • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses watercourse). Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: none	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Bad' ecosystem quality due to poorly defined bed habitat and no riparian habitat. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	low

Table 3: WF59

Overview	
 **Photograph 3: WF59 – View upstream from General Wade's Military Road (runs parallel to the north east of the A9)**	Water feature type: Minor watercourse Catchment area: 0.39km^2 Key hydraulic connections: Discharges to River Tummel via a network of culverts and land drains. Surrounding land use: Woodland, grassland and urban/ residential

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF59 is a minor watercourse and is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. WF59, WF60 and WF61 have been included in the River Tummel hydraulic model as they contribute to the existing flooding problems within the Westhaugh of Dalshian area. Hydraulic modelling results indicate that during the 0.5% AEP (200-year) plus CC event, flow at the inlet of the WF59 culverts backs up, resulting in overtopping of the river bank. A culvert assessment further indicates that the existing A9 culverts are unable to convey the 0.5% AEP (200-year) plus CC flows without surcharging. The hydraulic modelling indicates that, when combined with flooding from the River Tummel (WF70), WF60 and WF61, properties in the Westhaugh of Dalshian area, the A924, General Wade's Military Road and the Highland Main Line railway underpass are at risk of flooding from the design event. There are between 1 and 100 residential properties located in close proximity to the watercourse upstream and downstream (four properties within approximately 20m) and therefore may be at risk during the design flood event.	very high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF59 originates approximately 1.1km upstream of the existing A9. In the upper catchment, the channel appears to be unmodified, with a sinuous planform. Downstream of Balnacree Farm, the channel passes through agricultural land and appears to be modified with a straight planform. The channel is then culverted under a residential area, and again under General Wade's Military Road, before flowing in an open channel towards the existing A9. Upstream of General Wade's Military Road some deposits were observed forming on the channel bed, which consisted of cobble and gravel. Immediately downstream of the road, the water feature runs parallel to the north east of the existing A9. The water feature is culverted under the existing A9 and the Highland Main Line railway, with a further culvert downstream under the adjacent fields, ultimately discharging into the River Tummel. Historical map analysis shows that there is no significant change in the channel planform upstream of the A9 since 1867, except some slight channel migration upstream of Balnacree Farm. The maps do show, however, that in 1978 and earlier the water feature flows in an open channel downstream of the A9, joining a small tributary to flow into the River Tummel.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment inputs from forestry and nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses watercourse); and • PK-C11 – Graveyard surrounded by 'earthworks' – within 30m of watercourse. Based on professional judgement, this attribute is considered to have a medium quality.	medium
Dilution and Removal of Waste Products	
CAR discharges: • Diffuse discharge from septic tank soakaways from three domestic properties – within 50m of watercourse (NN 96099 56999, NN 96170 56992 and NN 95980 56690). As most discharges are of septic tank effluent from residential properties to soakaways and not direct discharges, based on professional judgement this water feature is considered to be of a low sensitivity for this attribute.	low

Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to presence of a well-established bed and some riparian habitat. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 4: WF60

Overview	
 **Photograph 4: WF60 – Upstream view of reach parallel to General Wade's Military Road (runs parallel to the north east of the A9)**	Water feature type: Minor watercourse Catchment area: 0.29km^2 Key hydraulic connections: Discharges to River Tummel via a network of culverts and land drains. Surrounding land use: Woodland, grassland and urban/ residential

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF60 is a minor watercourse and is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. WF59, WF60 and WF61 have been included in the River Tummel hydraulic model as they contribute to the existing flooding problems within the Westhaugh of Dalshian area. Hydraulic modelling results indicate that during the 0.5% AEP (200-year) plus CC event, flow at the inlet of the WF60 culvert backs up, resulting in overtopping of the river bank. A culvert assessment further indicates that the existing A9 culvert is unable to convey the 0.5% AEP (200-year) plus CC flows without surcharging. The hydraulic modelling indicates that, when combined with flooding from the River Tummel (WF70), WF60 and WF61, properties in the Westhaugh of Dalshian area, the A924, General Wade's Military Road and the Highland Main Line railway underpass are at risk of flooding from the design event. There are between 1 and 100 residential properties located in close proximity to the watercourse (13 properties within approximately 30m) and therefore may be at risk during the design flood event.	very high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. The channel has a sinuous planform through the wooded area with a semi-continuous riparian buffer zone. The channel substrate is composed of gravels and cobbles with some depositional features. The channel is culverted under the existing A9 and the Highland Main Line Railway, and continues in culvert to discharge into the River Tummel. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment inputs from forestry and nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses watercourse); • PK-C43, PK-C48, PK-C52 Septic tanks within 10m, 40m, 15m from watercourse respectively; and • PK-C11 – Graveyard surrounded by 'earthworks'– within 15m of watercourse.	medium
Dilution and Removal of Waste Products	
CAR Discharges: • Diffuse discharge from septic tank soakaways from two domestic properties – within 25m of watercourse (NN 95529 56629 and NN 95708 56680) (license at NN 95529 56629 listed as Sewage Treatment Works – Final Effluent (STW/FE)). As the discharges are of septic tank effluent from residential properties to soakaways and not direct discharges, based on professional judgement this water feature is considered to be of a low sensitivity for this attribute.	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to presence of a well-established bed and some riparian habitat. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 5: WF61

Overview	
 **Photograph 5: WF61 – View upstream towards A9 (farm culvert visible)**	Water feature type: Drainage channel Catchment area: 0.23km^2 Key hydraulic connections: Discharges to River Tummel via a network of culverts and land drains. Surrounding land use: Urban/ residential, agriculture, grassland and woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF61 is a minor watercourse and is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2 WF59, WF60 and WF61 have been included in the River Tummel hydraulic model as they contribute to the existing flooding problems within the Westhaugh of Dalshian area. Hydraulic modelling results indicate that during the 0.5% AEP (200-year) plus CC event, flow at the inlet of the WF61 culvert backs up, resulting in overtopping of the river bank. A culvert assessment further indicates that the existing A9 culvert is unable to convey the 0.5% AEP (200-year) plus CC flows without surcharging. The hydraulic modelling indicates that, when combined with flooding from the River Tummel (WF70), WF60 and WF61, properties in the Westhaugh of Dalshian area, the A924, General Wade's Military Road and the Highland Main Line railway underpass are at risk of flooding from the design event. There are between 1 and 100 residential properties located in close proximity to the watercourse (six properties within approximately 2m to 30m) and therefore may be at risk during the design flood event.	very high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. At the upstream extent, WF61 runs in open channel for a short distance before it reaches a small pond. The channel is culverted several times before reaching General Wade's Military Road. The channel appears to have a straightened planform, modified to follow the field boundaries in several places. At the wooded area immediately upstream of General Wade's Military Road, the channel appeared to be more natural, with a bed consisting of cobbles. Downstream of General Wade's Military Road, the channel appears to continue to be straightened before going into culvert under the existing A9 and the Highland Main Line Railway. Downstream of this culverted length, the channel continues to have a straightened planform with no vegetated riparian corridor. The substrate was observed to consist of silt. The water feature was then culverted under the fields to eventually discharge into the River Tummel. Historical map analysis shows that there is no significant change in the channel planform upstream of the A9 since 1867. The maps do show, however, that in 1978 and maps pre-dating this, the water feature flowed in an open channel downstream of the A9 which converges with WF60 before the confluence with the River Tummel.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); and • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses watercourse). Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: • Diffuse discharge from septic tank soakaways from five domestic properties – within 50m of watercourse (NN 95510 56666, NN 95529 56629, NN 95448 56689, NN 95450 56710 and NN 95827 57261) (licenses at NN 95529 56629 and NN 95450 56710 listed as Sewage Treatment Works – Final Effluent (STW/FE)). As most discharges are of septic tank effluent from residential properties to soakaways and not direct discharges, based on professional judgement this water feature is considered to be low sensitivity for this attribute.	low
Biodiversity	

SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to well-established bed in some areas but culverted in sections and minimal riparian habitat. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	low

Table 6: WF191

Overview	
 **Photograph 6: WF191 – View upstream toward culvert outlet at farm access.**	Water feature type: Drainage channel Catchment area: 1.02km^2 Key hydraulic connections: Open water feature becomes culverted adjacent to Foss Road before running to it. It is daylighted and met by a smaller channel at NN 61556 23120. The combined channels then flow for approximately 100m before discharging into the River Tummel. Surrounding land use: Agricultural and woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF191 is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. WF191 is culverted along the edge of the River Tummel (WF70) floodplain. See WF70 (River Tummel) for associated fluvial flood risk impacts. A culvert assessment has not been undertaken as the watercourse does not cross the existing A9. There is one property within 50m of the watercourse, however it is significantly higher in elevation and is not considered to be at risk of flooding from WF191.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF191 originates approximately 50m upstream of Foss Road. The watercourse flows through a steep agricultural field and is culverted under Foss Road. Through the field, the channel had an artificially straightened planform with a width of approximately 0.3m (bankfull). The substrate was observed to be artificial upstream of the culvert inlet. The channel is culverted under Foss Road and then remains culverted between Foss Road and the adjacent field boundary for approximately 240m. The watercourse then enters an open channel, where it is met by a smaller channel (also culverted under Foss Road). The open channel is artificially straightened and overdeep, continuing for approximately 100m before discharging to the River Tummel. The substrate in this section of channel was observed to consist of silt and the channel was choked with vegetation. Historical map analysis shows that in maps from 1989 and those that pre-date this, the watercourse appears to have been an open channel between Foss Road and the adjacent field boundary, current OS mapping also shows this. Aside from this, there has been no significant change in the channel planform since 1867.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and nutrients from grazing livestock and manure stockpiling; and • diffuse runoff of road drainage with contaminants associated with Foss Road. Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality as almost entirely culverted. Flows into River Tay SAC but does not provide suitable fish habitat.	low

Table 7: WF63

Overview	
 **Photograph 7: WF63 – View upstream of at entrance to Dunfallandy House Hotel**	Water feature type: Drainage channel Catchment area: 0.32km^2 Key hydraulic connections: Open water feature becomes culverted under Foss Road and discharges into the River Tummel. Surrounding land use: Woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF63 is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. WF63 is culverted through the River Tummel (WF70) floodplain where it runs adjacent to the existing A9. See WF70 (River Tummel) for associated fluvial flood risk impacts. An assessment of the existing culvert indicates that it is unable to convey the 0.5% AEP (200-year) plus CC event. The existing culvert surcharges and overtops during the design flood event potentially leading to overtopping of the C452 side road. However, this watercourse poses no flood risk to the A9 in the design flood event and the nearest residential property (Dunfallandy House Hotel) is located approximately 80m from the channel, therefore is not at risk from flooding during the design flood event.	medium
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF63 originates approximately 200m upstream of the existing A9. The water feature flows through a wooded area and is culverted under a local access route upstream of the existing A9. The channel has an artificially straightened planform, with a width of approximately 0.4m (bankfull). The substrate was observed to be predominantly silt with some gravels. The channel is culverted along the southern side of the existing A9 embankment for approximately 460m before discharging to the River Tummel. Historical map analysis shows that in maps from 1978 and those that pre-date this, the water feature appears to have originated approximately 50m further upstream before being culverted under the road at Dunfallandy House Hotel, then flowing north-east in an open channel along a field boundary for approximately 560m before discharging to the River Tummel. The planform appears to have been modified to its present alignment during the construction of the existing A9 embankment.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and nutrients from grazing livestock and manure stockpiling; and • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – less than 20m from watercourse). Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Bad' ecosystem quality as almost entirely culverted. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but does not provide suitable fish habitat.	low

Table 8: WF64

Overview	
 **Photograph 8: WF64 – View upstream of A9 culvert (note bank reinforcement)**	Water feature type: Minor watercourse Catchment area: 2.32km^2 Key hydraulic connections: Discharges into the River Tummel downstream of the existing A9. Associated tributary near Littleton of Fonab feeds into water feature upstream of the existing A9 Surrounding land use: Agricultural /grassland, woodland, caravan park.

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF64 is not included in the SEPA Flood Map (fluvial) as it has a catchment area of less than 3km^2. There are between 1 and 100 residential properties (approximately 5 properties) located within 20m of the channel. The WF also flows through a Caravan Park downstream of the existing A9 before it's confluence with the River Tummel (WF70). See WF70 (River Tummel) for associated fluvial flood risk impacts downstream of Foss Road. The assessment of the existing A9 culvert has predicted that it will be able to convey the 0.5% AEP (200-year) plus CC flow without surcharging and the channel upstream of the existing A9 has been assessed as being able to hold the 0.5% AEP (200-year) plus CC flow. The headwater level of the culvert during the 0.5% AEP (200-year) plus CC event is lower than the existing A9 road level, so the risk to the existing A9 form this watercourse is considered low.	high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF64 has a naturally sinuous planform upstream of the existing A9, with a step/pool sequence and boulder, cobble and gravel substrate. Downstream of the existing A9, the channel planform is straighter with some modification, particularly on the left bank. The channel has a semi-continuous vegetated riparian buffer. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant Sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • PK-C4 – Gravel Pit potentially infilled with made ground of unknown composition with associated sources of potential contamination – within 50m of watercourse; • PK-C22 – Mill Dam - Likely to have been subsequently infilled with material of unknown composition, potential for contaminants associated with infill material – located on watercourse; • PK-C24 – Old Limekiln with potential for contaminants associated with historic activity – within 20m of watercourse; • PK-C30 – Septic Tank at Littleton of Fonab. Exact location of tank is unknown; approx. 5-50m from the watercourse; • PK-C31 - Septic Tank at Milton of Fonab Caravan Park. Exact location of tank is unknown; approx. 5-50m from the watercourse; • PK-C42 – Septic Tank at Ballintuim - within 50m of watercourse (NN 94236 56815); and • PK-C45 - Septic Tank at Milton of Fonab - within 35m of watercourse (NN 94443 57072).	medium
Water Supply	
• PK-PWS04 supplying four properties (Littleton of Fonab, Easter Ballinluig, Wester Ballinluig) and Milton of Fonab for domestic and agricultural use – approx. NN 93974 56886 – gravity fed. • PK-PWS10 supplying one property (Ballintuim Farm) for domestic use – approx. NN 93902 56735 - gravity fed surface water spring.	high
Dilution and Removal of Waste Products	
CAR Discharges: None	low

Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to a well-established bed and riparian habitat present both upstream and downstream of the existing A9. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but provides limited fish habitat.	medium

Table 9: WF65

Overview	
 **Photograph 9: WF65 – downstream view towards A9 (stepped profile)**	Water feature type: Minor watercourse
	Catchment area: 0.59km^2
	Key hydraulic connections: Culverted under the existing A9 and discharges into the River Tummel
	Surrounding land use: Agricultural/ grassland and woodland

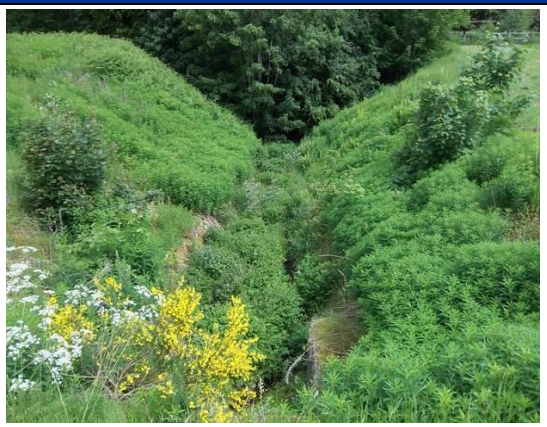
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF65 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. There are between 1 and 100 residential properties (approximately 6 properties) located within 50m of the channel. The existing A9 culvert has been assessed as being unable to convey the 0.5% AEP (200-year) plus CC flow without surcharging. It is predicted that flow will overtop the culvert soffit level and flow into the large grassland depression between the culvert and the existing A9 road. The existing A9 is simulated to be approximately 4.72m higher than the peak headwater level and is therefore assessed as unlikely to be at flood risk during the 0.5% AEP (200-year) plus CC event.	high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. Upstream of the existing A9, the channel form is within a deep 'natural' v-shaped valley with continuous vegetated riparian zone. The channel has a sinuous planform with cobble and gravel substrate present. Large woody material was also observed. Downstream of the existing A9, the channel is modified with an artificially straightened planform with some artificial bank and bed material observed. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • Diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; and • Diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse).	medium
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality - well-established bed and some riparian habitat however multiple culverted sections. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	low

Table 10: WF66

Overview	
 **Photograph 10: WF66 – view upstream away from A9 culvert**	Water feature type: Minor watercourse Catchment area: 0.63km^2 Key hydraulic connections: Culverted under the existing A9 and discharges into River Tummel Surrounding land use: Plantation, woodland and grassland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF66 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been assessed as being able to convey the 0.5% AEP (200-year) plus CC flow without surcharging. The headwater level of the culvert during the 0.5% AEP (200-year) plus CC event is simulated to be lower than the existing A9 road level. This therefore indicates the design flood event is unlikely to result in flooding to the existing A9 road. There are no residential properties at risk from flooding during the design flood event.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF66 has a natural sinuous planform observed through a wooded v-shaped valley. The channel has a step/pool sequence with cobble and gravel substrate present. Large woody material was observed within the channel. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • Diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; and • Diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse).	medium
Dilution and Removal of Waste Products	
CAR Discharges: • Diffuse discharge from septic tank soakaway associated with Explorer's Garden Toilet Facilities (license listed as Sewage Treatment Works – Final/Treated Effluent (STW/FE)) - within 30m of watercourse (NN 93659 57590). As this discharge is of septic tank effluent to a soakaway and not a direct discharge, based on professional judgement this water feature is considered to be low sensitivity for this attribute.	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to presence of a well-established bed and riparian habitat, pools/ponds also present upstream of existing A9 and access track. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 11: WF67

Overview	
 **Photograph 11: WF67 – view downstream away from A9 culvert**	Water feature type: Drainage channel Catchment area: 0.03km^2 Key hydraulic connections: Culverted under the existing A9 and discharges into Loch Faskally Surrounding land use: Woodland/ plantation

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF67 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been simulated as having sufficient capacity to convey the 0.5% AEP (200-year) plus CC event without surcharging. However, water levels are predicted to exceed bank levels upstream of the culvert. The headwater level of the culvert during the design flood event is predicted to be lower than the existing road level, which indicates flooding is unlikely to occur to the existing A9 road. The risk of flooding to the existing A9 road is therefore considered low. There are also no residential properties at risk from flooding during the design flood event.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF67 appears to be a drain that originates approximately 60m upstream of the existing A9. This reach is sinuous with a gravel and cobble substrate. The channel has limited geomorphological features, with the channel banks being undefined in places and water flowing across a wider corridor. Upstream of the culvert under the existing A9, the channel was artificial, composed of reinforced bed and banks. Downstream of the existing A9, the channel has a predominantly artificially straightened planform, with sections of modified channel upstream and downstream of the A9 culvert. The riparian buffer was vegetated along both banks. The channel discharges into Loch Faskally. The water feature is not visible on historical maps.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; and • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse). Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality - some riparian habitat and established bed in lower reach; however extensive culverting relative to water feature length; undefined channel in upper reach. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but generally unsuitable for fish species.	low

Table 12: WF68

Overview	
 **Photograph 12: WF68 – view upstream towards A9 culvert**	Water feature type: Minor watercourse Catchment area: 0.70km^2 Key hydraulic connections: Culverted under the existing A9 and discharges into Loch Faskally Surrounding land use: Upland, plantation/ woodland, grassland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF68 is not included on the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been simulated as having sufficient capacity to convey the 0.5% AEP (200-year) plus CC event without surcharging. The headwater level of the culvert during the 0.5% AEP (200-year) plus CC event is simulated to be lower than the existing road level, indicating a low risk of flooding to the existing A9 road. There are also no residential properties located within the vicinity of this watercourse and so are not at risk of flooding.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. Upstream of the existing A9, the channel is natural with a sinuous planform, a step/pool sequence and boulder, cobble and gravel substrate was observed. The channel is situated within a deep v-shaped valley with substantial morphological diversity. Downstream of the existing A9, the channel is modified with a uniform cross- section. A knickpoint was observed, located near to the confluence with Loch Faskally; here concrete reinforcement was observed to be undermined. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	high
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; and • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse).	medium
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to well-established bed and riparian habitat upstream of existing A9. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 13: WF69

Overview	
 **Photograph 13: WF69 –upstream view away from A9 and confluence with additional channels**	Water feature type: Minor watercourse Catchment area: 0.89km^2 Key hydraulic connections: Culverted under the existing A9 and discharges into Loch Faskally. Several tributaries join the water feature immediately upstream of the existing A9. Surrounding land use: Upland, plantation/ woodland, grassland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF69 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been simulated as having sufficient capacity to convey the 0.5% AEP (200-year) plus CC flow without surcharging. The headwater level of the culvert during the 0.5% AEP (200-year) plus CC event is also simulated to be lower than the existing A9 road level and therefore the risk to the existing A9 is considered low. There is one residential property located approximately 45m from the watercourse, however due to the small size of the catchment area is not at risk from flooding during the design flood event.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. The channel is divided into two branches, one which was artificially straightened and the second which has a sinuous planform with some step/pool sequences. The channel substrate was observed to consist of cobble and gravels. Erosion and deposition were evident; however, the channel primarily functioned as a sediment store (i.e. more deposition occurring). Upstream of the culvert under the existing A9, the channel is artificial, composed of reinforced bed and banks. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); and • PK-C12 Mill Dam. Potential for contaminants associated with fill material to be present within 10m of watercourse.	medium
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to well-established bed and riparian habitat upstream of existing A9. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 14: WF71

Overview	
 **Photograph 14: WF71 – upstream view away from A9 culvert**	Water feature type: Drainage channel Catchment area: 0.24km^2 Key hydraulic connections: Culverted under the existing A9, the Highland Main Line railway and A924, discharges into Loch Faskally Surrounding land use: Woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF71 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been simulated as being unable to convey the 0.5% AEP (200-year) plus CC flow without surcharging and flow is predicted to exceed channel capacity upstream of the culvert. However, the existing A9 is approximately 6.7m higher than the design flood event peak headwater level and is therefore assessed as not likely to be at flood risk during the design flood event. There are no residential properties located within the vicinity of this channel.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF71 originates upstream of the Highland Main Line railway, where it is piped beneath the railway line. The channel is a man-made ditch which is culverted under the existing A9 and A924 before discharging into the River Tummel. The channel flows through woodland and has a trapezoidal, concrete lined cross-section. There was no perceptible flow in the channel and silt deposition was observed. Historical map analysis shows that there is no significant change in the channel planform throughout the length of the water feature since 1867, although the majority of the watercourse has been culverted beneath the existing A9.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – within 50m of watercourse); and • PK-C37 - Septic Tanks with potential for contaminants. Exact Location unknown but is approx. 5-100m from watercourse. Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: none	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Bad' ecosystem quality due to extensive culverting, extensive siltation and artificial bed therefore minimal habitat. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	low

Table 15: WF72

Overview	
 **Photograph 15: WF72 – view across pond towards B8019**	Water feature type: Pond and drainage channel Catchment area: 0.08km^2 Key hydraulic connections: Culverted under existing A9 near Craiglunie and into ponded water (formerly a curling pond). It is then assumed to flow into WF71 via a culvert which eventually discharges into the Loch Faskally. Surrounding land use: Plantation, woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF72 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The water feature is predominantly located in an area of forest and includes a pond and a drainage channel. The existing A9 culvert has been simulated to convey the 0.5% AEP (200-year) plus CC event with free flow conditions being predicted to occur within the culvert and upstream flows remaining within bank. Sufficient freeboard is also simulated between the peak headwater level and the inlet soffit level. There are no residential properties located within the vicinity of this channel.	Low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF72 is culverted under the existing A9 near Craiglunie, and emerges into a pond downstream of the existing A9 and B8019. It is assumed that flows have been diverted from WF74 into WF 72 and then into WF71 via a culvert before discharging into the River Tummel. A mix of woodland and plantation surrounds the water feature. Within the pond, there is evidence of extensive reed growth and some siltation. Historical map analysis shows that the pond area has reduced in size since maps from 1867.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • Diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • Diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • Diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway - crosses watercourse); and • PK-C19 Curling Pond – Potential for contaminants associated with historic activity and fill material if present. Based on professional judgement, this attribute is considered to have a low quality on a local scale.	low
Dilution and Removal of Waste Products	
CAR Discharges: none	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to extensive culverting and siltation. Watercourse considered inaccessible for migratory fish due to downstream barriers. Tayside BAP (Authority Area): Flows into River Tay SAC but provide no suitable habitat.	low

Table 16: WF73 (including Loch Dunmore)

Overview	
 **Photograph 16: WF73 – view across Loch Dunmore from footbridge**	Water feature type: Drainage channels and loch Catchment area: 0.10km^2 Key hydraulic connections: Feeder channel from headwaters culverted under the B8019 road and discharges into Loch Dunmore. Surrounding land use: Woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF73 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. OS mapping indicates this water feature consists of drainage channels through an area of forest which discharges into Loch Dunmore. There is a boat house on the shore of the loch. No properties are located in close proximity to this water feature.	low
Fluvial Geomorphology	
WF73 is fed by WF74, which originates approximately 150m upstream of the existing A9. Downstream of the A9 and B8019 culverts, the water feature flows through wet woodland into Loch Dunmore. The channel was a narrow drain with a sinuous planform with a substrate observed to be consisted of silt. Downstream of a large ponded area, the channel was observed to be dry. Historical map analysis shows that the channel planform has remained largely consistent since 1875. There is, however, a change in the location of the confluence with the River Tummel, which shifted upstream when Loch Faskally was formed.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • Diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – less than 50m from watercourse); • Diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway - less than 50m from watercourse); and • PK-C38 – Potential contamination from Septic Tank - Exactly location unknown; approx. 20m from watercourse.	medium
Dilution and Removal of Waste Products	
CAR Discharges: • diffuse discharge from septic tank soakaway from a domestic property – within 25m of watercourse (NN 92192 59227); and • diffuse discharge from septic tank soakaway associated with Faskally Forest Toilet - within 50m of watercourse (NN 92189 59090). As most discharges are of septic tank effluent to soakaways and not direct discharges, based on professional judgement this water feature is considered to be of a low sensitivity for this attribute.	low
Biodiversity	
SEPA overall ecological status: not classified. Well established habitats surrounding loch and feeder channels, considered to exhibit 'Moderate' ecosystem quality. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC - Loch used for coarse fishing.	medium

Table 17: WF74

Overview	
 **Photograph 17: WF74 – View upstream of A9 and modified section**	Water feature type: Minor watercourse Catchment area: 0.10km^2 Key hydraulic connections: WF76 (Allt an Aghastair) flows along the east side of the existing A9 and into WF74, which in turn discharges into Loch Faskally. Surrounding land use: Woodland, plantation

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF74 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been simulated as having sufficient capacity to convey the 0.5% AEP (200-year) plus CC flow without surcharging. However, flows have been simulated to exceed channel capacity upstream of the culvert. The culvert is also predicted to have insufficient freeboard between peak headwater levels and the inlet soffit level. The existing A9 is approximately 6.24m higher than the peak headwater level at this location and is therefore assessed as not likely to be at flood risk for the design flood event. There is no risk of flooding to residential properties in this area.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. Upstream of the existing A9 (northern branch), the channel is modified with a uniform cross-section and a straight planform. The channel substrate is composed of silt, and large woody material was observed. Upstream of the existing A9 (eastern branch) and downstream of the existing A9, the channel is sinuous with a step/pool sequence and cobble and gravel substrate. Channel incision was noted and the reach is operating as a sediment exchange zone. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); and • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – within 50m of watercourse).	medium
Dilution and Removal of Waste Products	
CAR Discharges: none	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to extensive modification in upper reach with multiple culverts, however downstream section has established bed and riparian corridor. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 18: WF76 (Allt an Aghastair)

Overview	
 **Photograph 18: WF76 (Allt an Aghastair) – View downstream towards A9 culvert**	Water feature type: Minor watercourse and two drainage channels. Catchment area: 1.04km^2 Key hydraulic connections: WF76 is diverted into WF74 through a series of artificial channels upstream of the existing A9, which then discharges into Loch Faskally. Two additional channels flow into WF76. The first flows parallel to WF76 down the hillside of Creag na Ciche and is then diverted into an artificial channel parallel to the existing A9, and the second channel enters WF76 approximately 60m north of the confluence between WF74 and WF76. Surrounding land use: Upland, woodland

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF76 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The existing A9 culvert has been simulated as being unable to convey the 0.5% AEP (200-year) plus CC flow without surcharging. Flows upstream of the culvert have also been simulated to exceed channel capacity during the design flood event. There is insufficient freeboard between the existing A9 and the peak headwater level during the 0.5% AEP (200-year) plus CC simulation. Flow has been predicted to overtop the existing A9 during the design flood event and inundate the carriageway, with also the potential to flood the Highland Main Line railway. There are also between 1 and 100 residential properties in the vicinity of the watercourse (one residential property (Tigh na Beithe) within 13m), which may be at risk from flooding during the design flood event.	very high
Fluvial Geomorphology	
WFD hydromorphology status: not classified. The channel is a natural bedrock cascade with some silt substrate observed. Low flow was observed, with moss growth on rocks in the channel, indicating stability. The riparian corridor was observed to be continuous on both banks. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – less than 5m from watercourse at points); • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – within 50m of water feature); • PK-C26 – Old Saw Mill (tank) - exact location unknown; and • PK-C46 – Septic tank at Tigh na Beithe between 5m and 15m from water feature (approx. NN 92182 59650).	medium
Dilution and Removal of Waste Products	
CAR Discharges: None	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to well-established bed and riparian habitat in upper reach. Watercourse considered inaccessible for migratory fish due to downstream barriers. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 19: WF77

Overview	
 **Photograph 19: WF77 – View looking downstream of the B8079**	Water feature type: Minor watercourse Catchment area: 0.72km^2 Key hydraulic connections: Culverted under dualled section of the existing A9, discharging into the River Garry. Surrounding land use: Plantation, woodland, grassland.

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF77 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. The water feature is culverted under the existing A9 and the Highland Main Line railway. The existing A9 culvert has been simulated as having sufficient capacity to convey the 0.5% AEP (200-year) plus CC event flow without surcharging. The headwater level of the culvert during the 0.5% AEP (200-year) plus CC event is predicted to be lower than the existing road level and therefore flood risk to the existing A9 has been assessed as low. There are two residential properties between 30 - 40m from the watercourse, however these are not thought to be at risk from flooding given that the channel is incised in these locations and their distance from the watercourse.	low
Fluvial Geomorphology	
WFD hydromorphology status: not classified. WF77 originates approximately 1.2km upstream of the existing A9. The channel flows through woodland, grassland and plantation with a sinuous planform, until it is culverted below the existing A9 and General Wade's Military Road. There was a vegetated riparian corridor with a single line of trees recorded on both banks. Downstream of General Wade's Military Road, the water feature appears to have a straightened planform for some distance before becoming sinuous, discharging into the River Garry. Historical map analysis shows that upstream of the A9, there are some reaches in the upper catchment that had an irregular meandering planform which seems to migrate slightly between 1867 and 1900. From 1977 and later, the channel appears more sinuous with little evidence of the previously meandering planform. There has been no significant change in channel planform between 1977 and present day.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • Diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; and • Diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses water feature) and • Diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses water feature).	medium
Dilution and Removal of Waste Products	
CAR Discharges: • Diffuse discharges from septic tank soakaways from three domestic properties – within 30m of watercourse (NN 91570 60545 and NN 91510 60510 (2)). As most discharges are of septic tank effluent from residential properties to soakaways and not direct discharges, based on professional judgement this water feature is considered to be of a low sensitivity for this attribute.	low
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to some riparian habitat in reach downstream of B8019, however no defined channel and minimal riparian habitat upstream of existing A9. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	low

Table 20: WF78

Overview	
No photograph (not accessed)	Water feature type: Minor watercourse
	Catchment area: 1.16km^2
	Key hydraulic connections: Culverted under dualled section of the existing A9, discharging into the River Garry
	Surrounding land use: Plantation, woodland, grassland.

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
WF78 is not included in the SEPA Flood Map (fluvial) as it has a catchment area less than 3km^2. This water feature is currently culverted under the existing A9 (which is dualled at this location) and the Highland Main Line railway. There are between 1 and 100 residential properties in relatively close proximity to the water feature upstream of the existing A9 (one property and kennels within approximately 35m), however these are significantly raised above the watercourse and are therefore not likely to be at risk of flooding during the 0.5% AEP (200-year) plus CC event.	low
Fluvial Geomorphology	
SEPA hydromorphology status: not classified. Riparian corridor: woodland on both banks. Sinuous planform falling over a steep valley side.	low
Water Quality	
SEPA water quality status: not classified. Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); and • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – crosses watercourse).	medium
Dilution and Removal of Waste Products	
CAR Discharges: none	low
Biodiversity	
SEPA overall ecological status: not classified. No survey data, anticipated to exhibit 'Moderate' ecosystem quality using the precautionary approach. Flows into River Tay SAC but river habitat generally unsuitable for fish species.	medium

Table 21: WF70 River Tummel - Loch Faskally to River Tay

Overview	
 **Photograph 20: WF70 (River Tummel) – Downstream view of River Tummel towards Tummel underbridge**	Water feature type: Major watercourse Catchment area: 835km^2 Key hydraulic connections: Loch Faskally is part of the River Tummel and smaller features 57-61 and 63-66 flow into River Tummel Surrounding land use: Woodland, plantation, grassland, agriculture, development SEPA overall status: Good Ecological Potential

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
Hydraulic modelling has been undertaken approximately 350m downstream of Pitlochry Dam and the downstream extent of the study area (ch0000 to ch2500) in order to assess the baseline flood risk from the 0.5% AEP (200-year) event plus CC. Hydraulic modelling simulates the main flood risk to residential properties (Dalshian area) for the design flood event lies to the north of the existing A9 between WF57 and WF61, upstream of Aldour Bridge and along Fonab Crescent, and downstream of Aldour Bridge including impacts on a wastewater treatment works and properties along Aldour Gardens. The A924 immediately upstream of the Tummel Underbridge is also simulated by the hydraulic modelling to be at flood risk during the design flood event. The existing A9 and the Highland Main Line railway are however not simulated as being at direct flood risk during the design flood event. The SEPA Flood Map (fluvial) further indicates residential properties between the Pitlochry Suspension Bridge and the Pitlochry Dam to be at risk of flooding from the 0.5% AEP (200-year) flood extent. No modelling has been undertaken in this area. This water feature is also within the River Tay SAC and therefore has hydrological importance to sensitive and protected ecosystems of international status.	very high
Fluvial Geomorphology	
SEPA hydromorphology status: Moderate. Overall, the River Tummel has a wandering gravel bed river planform. The river is straightened immediately downstream of the Pitlochry Dam to the Tummel Crossing, with some localised bank reinforcement. Reinforcement included riprap, concrete and wooden boards. Downstream of the existing A9 Tummel Underbridge at Tomdachoille, the River Tummel is an active and dynamic channel. As a result, Tomdachoille Island is designated as a SSSI. This reach of the river, at the downstream extent of the study area, is sensitive to changes in the fluvial conditions and processes operating within the channel. The channel is wide and observed to be up to approximately 40m wide in places. The river has a semi-continuous vegetated riparian corridor. The channel has morphological diversity with varied, high energy flow types, a pool/riffle sequence and coarse substrate, including large cobble and gravels. There are extensive deposits of cobbles and coarse gravels, forming the Shingle Islands SSSIs; depositional bars are characteristic of this river. Some localised bank erosion was observed around the existing A9 road bridge. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	high
Water Quality	
SEPA water quality status: Good Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – within 50m of watercourse); • PK-C13 - hydroelectric power station (Pitlochry Dam) with potential for contaminants associated with current use – located on watercourse; • PK-C25 – Potential Pollution from Fonab Cemetery via surface water drainage network; and • PK-C32, PK-C33 and PK-C34 – Potential contamination from Septic Tanks located along west bank of River Tummel.	high
Water Supply	
Water Supply Abstractions: CAR/L/1011363 – Water Resources Abstraction for commercial use at Blair Atholl Distillery - NN 94459 57495.	high

Dilution and Removal of Waste Products	
CAR Discharges: • point source discharge from combined sewer overflow (NN 64564 57456), emergency overflow (NN 94597 57445) and two storm sewage overflows (both at NN 94568 57453) from Pitlochry Sewage Treatment Works, combined sewer overflow from Ferryman's Cottage (NN 93121 58157), combined sewer overflow from Fonab Crescent (NN 94326 57534), emergency overflow from Port na Craig Waste Water Pumping Station (NN 94002 57663) and Bridge Road Waste Water Pumping Station (NN 94002 57663); • point source discharge of final effluent (spot and combined sampled) from Pitlochry Sewage Treatment Works - NN 94597 57445; • point source discharge of distilling effluent from Blair Atholl Distillery - NN 94627 57436; • point source discharge of septic tank effluent from Tomdachoille Distillery - NN 95491 55757; and • water resources impoundment (NN 93510 57740) and abstraction recharge (NN 93549 57740) from Tummel Hydro Station to River Tummel. There are a multiple discharges to this water feature, however considering its high dilution capacity, this watercourse is considered to be medium sensitivity for this attribute.	medium
Biodiversity	
SEPA overall ecological status: Moderate Presence of Atlantic salmon, brown/sea trout, lamprey (sea, river and brook), European eel and Freshwater pearl mussels (eel and sea/river lamprey not found near the Pitlochry Dam). Designations: River Tay SAC.	very high

Table 22: WF75 (Loch Faskally)

Overview	
 **Photograph 21: WF75 (Loch Faskally) – view downstream from Clunie footbridge**	Water feature type: Loch Catchment area: 1,650km^2 Key hydraulic connections: Loch Faskally is part of the River Tummel and is controlled by Pitlochry Dam. Downstream of the dam and upstream of the loch it is named River Tummel. The River Garry joins the River Tummel upstream of Loch Faskally. Surrounding land use: Plantation, woodland, grassland, development SEPA overall status: Good Ecological Potential

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
The SEPA Flood Map (fluvial) shows between 1 and 100 residential properties at risk from flooding for the 0.5% AEP (200-year) event, including properties to the east of Faskally House and the Clunie Hydroelectric Power Station. As water levels in Loch Faskally are controlled by the Pitlochry Dam, the risk of flooding is generally considered to be low. However, this Loch is within the River Tay SAC and therefore has hydrological importance to sensitive and protected ecosystems of international status.	very high
Fluvial Geomorphology	
SEPA hydromorphology status: Moderate Potential. WF75 is an online loch of the River Tummel, with over 50m wide riparian corridor on both banks. Along the shores of the loch, there are cobble beaches mixed with some sand. The substrate at the margins of the loch was observed to consist of cobble, sand and silt. Bank modification is present in some locations. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	medium
Water Quality	
SEPA water quality status: High Potential pollutant sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses watercourse); • PK-C6 –Old Limekiln with potential for contaminants associated with historic activity - within 50m of watercourse; • PK-C13 –hydroelectric power station (Pitlochry Dam) with potential for contaminants associated with current use – located on watercourse; • PK-C14 –Electric sub-station at Port na Craig House with potential for contaminants associated with current use; and • PK-C36 – Potential contamination from a septic tank located approx. 10-50m from the watercourse. (Exact location of the septic tank is unknown).	very high
Dilution and Removal of Waste Products	
High flow, Q95 is approx. 19.3m^3/s (refer to Appendix A11.2 (Surface Water Hydrology Report)). CAR Discharges: • diffuse discharge from septic tank soakaways from four domestic properties – within 50m of water feature (NN 93023 58682, NN 93032 58629, NN 93069 58589 and NN 93109 58589); and • point source discharge from combined sewer overflow (NN 93121 58157) and emergency overflow (NN 93121 58157) from Corbie Lynn/Dysart Brae Waste Water Pumping Station and combined sewer overflow (NN 93524 58083) and emergency overflow (NN 93524 58083) from Rie/Achan Road Waste Water Pumping Station). There are multiple discharges to this water feature, however considering its high dilution capacity, this water feature is considered to be medium sensitivity for this attribute.	medium
Biodiversity	
SEPA overall ecological status: Moderate Presence of Atlantic salmon and lamprey. Designations: River Tay SAC.	very high

Table 23: WF100 (River Garry) - Errochty Water Confluence to Loch Faskally

Overview	
 **Photograph 22: WF100 (River Garry) at Killiecrankie**	Water feature type: Major watercourse Catchment area: 1,275km^2 Key hydraulic connections: River Garry converges with River Tummel at approx. NN 91399 60531. Surrounding land use: Woodland, plantation, grassland SEPA overall status: Good Ecological Potential

Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
Flood risk is identified on the SEPA Flood Map (fluvial) for the 0.5% AEP (200-year) event at the confluence of the River Garry and the River Tummel. There are between 1 and 100 properties and infrastructure such as the Highland Main Line railway upstream of the study area and in close proximity to the SEPA flood map extent, which may be at potential risk of flooding from the 0.5% AEP (200-year) event. This water feature is also within the River Tay SAC and therefore has hydrological importance to sensitive and protected ecosystems of international status.	very high
Fluvial Geomorphology	
WFD hydromorphology status for "Errochty Water confluence to Loch Faskally": Moderate (2013). WF100 is a naturally active meandering, single thread gravel and cobble bed river with river terraces observed to in the floodplain. The channel has steep valley sides and large depositional features that are characteristic of this river within a defined low flow channel. For a more detailed description of the water feature, please refer to Appendix A11.5 (Fluvial Geomorphology).	high
Water Quality	
SEPA water quality status: High Potential Pollution Sources: • diffuse rural sources including suspended sediment from forestry and biological pollutants from nutrients from grazing livestock; • diffuse runoff of road drainage with contaminants associated with existing A9 Traffic (PK-C1 Existing A9 – crosses multiple tributaries); and • diffuse runoff of contaminants associated with railway use (PK-C2 Highland Main Line railway – within 50m of watercourse).	very high
Dilution and Removal of Waste Products	
CAR Discharges: None within study area.	low
Biodiversity	
SEPA overall ecological status: Moderate. Presence of Atlantic salmon, trout and brook lamprey (International importance in Chapter 12 (Ecology and Nature Conservation). Within River Tay SAC.	very high