


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 is comprised 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).
- 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 2016 classification data available on the SEPA Water Environment Hub. 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 It should be noted that the attribute 'Water supply' has only been included where a public or private water supply (PWS) has been identified within the 500m study area.
- 1.1.5 Further details on the baseline flood risk conditions can be found in the Flood Risk Assessment in Appendix A11.3.
- 1.1.6 Further baseline information on the watercourse crossing structures is reported in Appendix A11.8 (Watercourse Crossings Report).

Table 1: WF6 River Tay (Reach: R Tummel to R Isla confluences)

Overview	
	Water feature type: Major watercourse
	Catchment area: 2,955km ²
	Key hydraulic connections: Principal watercourse within the study area. All water features within the study area form part of the River Tay catchment, with the majority being direct tributaries.
	Surrounding land use: Arable, rough pasture and commercial forestry.
	SEPA Overall Status: Good ecological potential (2016)
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	Sensitivity
<p>The River Tay flows in a generally southerly direction through the study area and has a catchment area of 2,955km² to the southern end of the proposed scheme. The River Tay does not cross the existing A9 in the study area. The River Tay passes in close proximity to a number of settlements including (north to south) Ballinluig, Kindallachan, Guay and Dowally. The River Tay itself is a SAC and the Shingle Islands are a SSSI and SAC.</p> <p>SEPA Flood Maps (2015) indicate fluvial flood risk from the 0.5% AEP (200-year) event to properties on the west bank of the Tay including: Easter Dalguise Farm; two properties off the B898 in Ballicock; and Burnside Cottage further north off National Route 77. To the north, the Mill of Logierait and a number of residential properties and the Logierait Hotel within Logierait are shown as 'at risk'. On the east bank of the Tay, Haugh of Kilmorich and commercial units in Dowally between the existing A9 and Dowally Burn are predicted to be at risk. The maps indicate that the majority of the existing A9 road between the Tay Crossing and Ballinluig is located just to the east of the predicted 0.5% AEP (200-year) flood extent. This is with the exception of short lengths between Dowally to Ballinluig, Dowally to Guay and Kindallachan to Ballinluig that run through the eastern functional floodplain (area with greater than 0.5% probability of flooding in any year) of the River Tay.</p> <p>Stage 3 baseline hydraulic modelling of the 0.5% AEP (200-year) flood event and the SEPA Flood Maps have similar flood extents in some areas, however there are areas where the flood extents differ:</p> <ul style="list-style-type: none"> • current scheme modelling predicts additional flooding close to Ballinluig junction, including overtopping of the A9; • modelling predicts additional flooding from the River Tay between the Highland Main Line railway and the A9 which passes under the Highland Main Line railway via drain culverts and underpasses; • the A9 is predicted to overtop approximately 200m north of A9 crossing over Kindallachan Burn; • the model predicts overtopping of the A9 over a longer length immediately north of Guay; • the model predicts a smaller area of overtopping of the A9 to the north of Dowally Burn, the modelling predicts the River Tay floodwaters overtop the A9; and • the model indicates that the A9 is not at risk of flooding from Dowally Burn, but that tailwaters from the River Tay backup into the lower section of the water feature leading to flooding of Dowally Farm & Farmhouse. <p>SEPA flood maps and Stage 3 modelled extents indicate a risk of flooding to the A9 itself, the B898 and the Highland Main Line railway in addition to local roads.</p> <p>South of WF36, downstream of the A9, Clachan More standing stones are a Scheduled Monument and Dalguise Viaduct is a Category A listed building which fall within the 0.5% AEP (200-year) modelled extents from the River Tay.</p> <p>The SEPA Surface Water (pluvial) Flood Map shows scattered areas identified as at risk of flooding in a 10% (10-year) flood event within the River Tay Floodplain. The majority of these areas are north of Kindallachan, in areas east of the Highland Main Line railway and west of the A9. There are also large areas east of the A9 north of Guay and between the Highland Main Line and the A9 north of Dowally. No properties are shown as being at risk, however flooding to the A9 is predicted near Haugh of Kilmorich and Westhaugh of Tulliemet.</p>	Very High

Description of Specific Baseline Conditions	Sensitivity
Fluvial Geomorphology	
<p>WFD hydromorphology status: River Tay (R Tummel to R Isla Confluences) Moderate (2016).</p> <p>The River Tay has a predominantly meandering planform with a single-thread channel, with some evidence of a previously wandering gravel-bed system due to the presence of palaeochannels and side-arms present within the floodplain and active erosion and deposition at several locations.</p> <p>Numerous large pebble/cobble deposits are present throughout the study area including point bars, side bars and mid-channel bars (both vegetated and unvegetated). The riparian corridor is composed of mainly agricultural fields (pasture and arable), with localised patches of scrub and forestry.</p> <p>Historical maps from 1867 indicate active channel change at the confluence with River Tummel (Richard's Island) (NN 977 511) and at Kindallachan (Lamb Island and Big Island) (NN 988 502). In addition, channel change in the vicinity of Dowally is also noted post 1867 with a southerly migration of the meander bend.</p> <p>Bank instability was noted along the River Tay: between ch1650 and ch1900; and ch3600 and ch3800. Between ch1650 and ch1900, undercutting of the bank toe was observed with an engineered reprofiled bank face with a steep gradient, which was resectioned during the construction of the existing A9. Bathymetric data revealed a deeply incised channel near to the outside of the meander bend, with a shallow shelf up to the eroded bank toe. Above the bank toe, the bank appeared to have some evidence of slip planes and was well vegetated with grasses, shrubs and trees. Slope failure is a risk due to the gradient, in particular if the material making up the engineered bank face becomes saturated. In addition, future potential fluvial erosion could cause additional undercutting, which could trigger bank instability, especially given the steep gradient of the resectioned bank face, which may compromise the integrity of the existing A9 and the proposed scheme.</p> <p>The bank instability between ch3600 and cxh3800 is likely to be due to tree fall, possibly caused by windthrow. Here, evidence of bank instability is localised around fallen trees, where the root ball has dislodged volumes of bank material. In addition, the banks are composed of sand and gravels, with cobbles, thus the banks are susceptible to soil erosion during tree fall. The fallen trees, however, provide localised natural bank protection from fluvial erosion at the bank toe. Despite localised pockets of bare earth due to these processes, the bank face is well vegetated with trees, grasses and shrubs; thus indicative of a low fluvial disturbance regime.</p>	High
Water Quality	
<p>SEPA physico-chem/specific pollutants status: High/Pass (2016).</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic Highland Main Line railway; diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; and former Guay Station (1867 to 1900) with potential contamination from hydrocarbons, polychlorinated biphenyls (PCBs) and other toxic chemicals – within 150m of the watercourse. 	Very High
Water Supply	
<p>Water supply abstractions:</p> <ul style="list-style-type: none"> agricultural abstraction from mobile irrigation plant within watercourse at approx. NO 00449 44434; and agricultural abstraction with fixed intake for irrigation within watercourse at approx. NO 00110 47135. 	High
Dilution and Removal of Waste Products	
<p>CAR discharges:</p> <ul style="list-style-type: none"> point source sewage discharge of septic tank effluent from Easter Dalguise Farm at approx. NN 99490 47963; point source sewage discharge of septic tank effluent from two fishing bothies at (NN 99453 47984 and NN 98750 50400); point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NN 98080 50690; and point source sewage discharge from Inch Caravan Site at approx. NO 00411 44171. <p>The River Tay is a major river with a high dilution capacity, therefore based on professional judgement this watercourse is assessed to be of a low sensitivity for this attribute.</p>	Low
Biodiversity	
<p>SEPA overall ecological status: Moderate (2016).</p> <p>River Tay SAC, Shingle Islands SAC and Single Islands SSSI are identified as having international importance in Chapter 12 (Ecology and Nature Conservation).</p> <p>Presence of freshwater pearl mussels, Atlantic salmon, trout and brook lamprey within downstream catchment, all of which have international importance as detailed in Chapter 12 (Ecology and Nature Conservation).</p>	Very High

Table 2: WF16


Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.29km ²
	Key hydraulic connections: Issues within forestry upstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Forestry
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map.</p> <p>The culvert capacity assessment indicates that the watercourse is out of bank upstream of the A9 in the design 0.5% AEP (200-year) plus climate change (CC) event, however the A9 culvert capacity is greater than the 0.5% AEP (200-year) plus CC peak flow and there is 600mm freeboard to the A9 and therefore the flood risk is considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The water feature has a sinuous planform and is culverted beneath existing A9 and General Wade's Military Road.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry operations. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to water feature length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 3: WF18


Overview	
 <p>Photograph 3: WF18 – view downstream of existing A9 culvert.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.17km ²
	Key hydraulic connections: Issues in upland forestry upstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Forestry
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. Stage 3 analysis of the existing A9 culvert indicates that the water feature is in bank at the culvert in the 0.5% AEP (200-year) plus CC event, although the culvert is surcharged.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the existing A9 is flooded on the downstream (western) side of the road due to flooding from the River Tay. Hydraulic modelling of the watercourse indicates that the watercourse is in bank in the 0.5% AEP (200-year) plus CC event and flood risk to the A9 is considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse has a sinuous planform and is culverted beneath existing A9 and General Wade's Military Road. The channel has gravel and pebble substrate; channel width is approximately 0.8m with step-pool sequences.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 4: WF19


Overview	
 <p>Photograph 4: WF19 – view downstream of existing A9 culvert towards the River Tay.</p>	Water feature type: Drainage channel
	Catchment Area: 0.19km ²
	Key hydraulic connections: Drains agricultural land/rough pasture downstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Forestry
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. There is one property located within 70m of the watercourse, upstream of the A9.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the watercourse culvert under the A9 is outside the modelled flood extents from the River Tay.</p> <p>Stage 3 analysis of the existing A9 culvert indicates there is a risk of flooding to the A9 from this watercourse because it is out of bank at the A9 culvert in the 0.5% AEP (200-year) plus CC event. The minimum freeboard to the A9 during such an event is 0.15m. The existing headwall to the culvert increases this freeboard level immediately adjacent to the watercourse to 0.76m, however equivalent water levels north or south of the headwall could have reduced freeboard to the A9.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland.</p>	Very High
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is an ephemeral channel beginning at an altitude of 100m above ordnance datum (AOD) and is culverted beneath the existing A9 flowing to the River Tay.</p> <p>Downstream of the existing A9, the channel has a silt bed, with reinforced banks present.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 5: WF20


Overview	
	Water feature type: Drainage channel
	Catchment Area: 0.31km ²
	Key hydraulic connections: Drains agricultural land/rough pasture downstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Agriculture/rough pasture.
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. Two properties are located within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the watercourse culvert under the A9 is outside the modelled flood extents.</p> <p>Stage 3 assessment of the A9 culvert indicates that the watercourse is in bank in the 0.5% AEP (200-year) plus CC event with a freeboard of 0.51m to the existing A9 road level.</p>	Very High
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is an ephemeral channel flowing into the River Tay and is culverted beneath the existing A9.</p> <p>The channel has gravel and pebble substrate, channel width is approximately 0.2-0.3m with a straight planform, and a step-pool section (7m in length) immediately upstream of the River Tay.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 6: WF21


Overview	
	Water feature type: Drainage channel
	Catchment Area: 0.16km ²
	Key hydraulic connections: Drains agricultural land/rough pasture downstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Agriculture/rough pasture
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent does not include WF21.</p> <p>The watercourse connects into a manhole and is understood to then connect into existing road drainage.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>Above the existing A9, the watercourse is a shallow channel through agricultural fields. The substrate is predominantly silt with some gravels. Poaching of the banks is evident along the entire length of the channel. The watercourse flows into a manhole south of the existing A9.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 7: WF22


Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.07km ²
	Key hydraulic connections: Drains agricultural land/rough pasture downstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Agriculture/rough pasture
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. One property is located within 90m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent does not include WF22.</p> <p>The watercourse is considered to provide field drainage and is believed to connect into road drainage. The very small catchment area means risk of flooding from this watercourse to receptors is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse has a shallow channel with a straight planform flowing through an agricultural field. The predominant substrate is silt, and poaching of the banks is present along the length of channel. The watercourse flows into a manhole south of the existing A9.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic (TB-C1 Existing A9 within 20m of watercourse); and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the very small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Flows into River Tay SAC but the habitat is unsuitable for fish species as the watercourse connects with pre-earthwork drainage associated with the existing A9.</p>	Low

Table 8: WF23


Overview	
 <p>Photograph 8: WF23 – view of cascades in woodland upstream of existing A9.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.60km ²
	Key hydraulic connections: Issues in forestry upstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Uplands/forestry
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. Warren Lodge is within 100m of the watercourse. General Wade's Military Road crosses the watercourse but is not shown to be at risk, however the SEPA flood extents do not take account minor watercourses with a catchment area <3km² and therefore could be under-predicting fluvial flood risk.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent associated with the River Tay indicates that the culvert under the A9 is flooded to upstream of the road from the River Tay. Stage 3 hydraulic modelling and culvert assessment of the minor watercourse indicates that the road and other sensitive receptors are outside of flood extents in the design event and therefore flood risk is considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The source of the watercourse is in Rotmell Wood and flows into River Tay. The channel has step-pool sequences with some large rock cascade features. The channel is approximately 1.2m wide with pebble and cobble substrate.</p> <p>The channel flows through a bridge beneath General Wade's Military Road and is culvert beneath the existing A9 and forestry/farm tracks.</p> <p>The planform is relatively straight and largely unchanged since 1867.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. 	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.	Medium

Table 9: WF24


Overview	
 <p>Photograph 9: WF24 – view downstream of bridge under General Wade’s Military Road.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.16km ²
	Key hydraulic connections: Issues in upland agriculture land/rough pasture upstream of General Wade’s Military Road and discharges into the River Tay
	Surrounding land use: Agriculture/rough pasture, forestry
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the River Tay 0.5% AEP (200-year) plus CC flood extent indicates that the culvert under the A9 is flooded upstream (west) of the road. Hydraulic modelling and culvert assessment both indicate that the watercourse is in bank in the design event. Flood risk to the A9 or other receptors is therefore considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourses source is in a clearing of Rotmell Wood and flows into the River Tay. A step-pool sequence is present; the channel has predominantly cobble and sand substrate, an incised channel, and is culverted under the existing A9 and forestry/farm tracks. A bridge crossing is present for General Wade’s Military Road.</p> <p>The planform is largely unchanged since 1867.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. 	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.	Medium

Table 10: WF25


Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.14km ²
	Key hydraulic connections: Issues in upland forestry upstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Forestry
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map.</p> <p>Stage 3 baseline modelling of the River Tay 0.5% AEP (200-year) plus CC flood event indicates that the culvert under the A9 is flooded to upstream of the road. Stage 3 analysis of the A9 culvert and hydraulic modelling indicate that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event. Flood risk to the A9 or other receptors is therefore considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse has its source in Rotmell Wood (180m AOD) and flows into the River Tay.</p> <p>It has a straight planform, with predominantly step-pool sequences, incised channel with a cobble substrate. The channel is culverted beneath the existing A9 and General Wade's Military Road.</p> <p>The planform is largely unchanged since 1867.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. 	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.	Medium

Table 11: WF28


Overview	
 <p>Photograph 11: WF28 – view downstream towards existing A9 culvert, flow discharges from culvert outlet shown in left centre of photograph.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.06km ²
	Key hydraulic connections: Issues in forestry upstream of General Wade's Military Road. Discharges into an artificial channel (lower section of WF31) which connects WF28, WF29, WF30 and WF31 to the River Tay.
	Surrounding land use: Forestry
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the River Tay 0.5% AEP (200-year) plus CC flood event indicates that the culvert under the A9 is flooded to upstream of the road but does not indicate flood risk to the A9.</p> <p>Stage 3 analysis of the A9 culvert indicates that the watercourse is out of bank upstream of the culvert in the 0.5% AEP (200-year) plus CC event, however, hydraulic modelling of the watercourse indicates low flood risk to the A9 or other sensitive receptors.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is culverted beneath the existing A9 and General Wade's Military Road. It has step-pool sequences, cobble substrate and large woody material present upstream of the Military Road. Very steep artificial rock aggregate banks, held in place by netting, conveys flow between Military Road and existing A9 culverts.</p> <p>The planform is largely unchanged since 1867; however, the historical channel course was direct to the River Tay and is now diverted to the downstream reach of WF31 (historical secondary channel of the River Tay).</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the very small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat, extensive culverting relative to watercourse length, undefined channel upstream of existing A9 and hydraulic connectivity to downstream reach of WF31 (straight road drainage ditch).</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 12: WF29


Overview	
 <p>Photograph 12: WF29 – view of culvert under General Wade’s Military Road. Downstream reach similar to WF28 above.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.17km ²
	Key hydraulic connections: Issues in upland forestry upstream of General Wade’s Military Road. Discharges into an artificial channel (lower section of WF31) which connects WF28, WF29, WF30 and WF31 to the River Tay.
	Surrounding land use: Forestry
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse. The existing A9 crosses the watercourse but is not shown to be at risk.</p> <p>Stage 3 baseline modelling of the River Tay 0.5% AEP (200-year) plus CC event from the River Tay indicates that the culvert under the A9 is flooded to upstream of the road but that there is no risk to the A9.</p> <p>Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event and flood risk to the A9 or other sensitive receptors is therefore considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is culverted beneath the existing A9 and General Wade’s Military Road. It has a step-pool sequence, cobble substrate and large woody material present upstream of the Military Road. Very steep artificial rock aggregate banks, held in place by netting, conveys flow between the Military Road and existing A9 culverts.</p> <p>The planform is largely unchanged since 1867; however, the historical channel was direct to the River Tay and is now diverted to WF31 (historical secondary channel).</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit ‘Poor’ ecosystem quality due to an absence of suitable bed and riparian habitat, extensive culverting and hydraulic connectivity to WF31.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 13: WF30


Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.14km ²
	Key hydraulic connections: Issues in agricultural land/rough pasture upstream of General Wade’s Military Road. Discharges into an artificial channel (lower section of WF31) which connects WF28, WF29, WF30 and WF31 to the River Tay.
	Surrounding land use: Forestry and agriculture (rough pasture)
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the River Tay 0.5% AEP (200-year) plus CC event indicates that the culvert under the A9 is flooded upstream of the road, but that there is no flood risk to the A9.</p> <p>Stage 3 analysis of the A9 culvert and hydraulic modelling of the watercourse indicate that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event and therefore flood risk to the A9 or sensitive receptors is considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is culverted beneath the existing A9 and General Wade’s Military Road. It is characterised by a step-pool sequence, predominantly fine gravel and silt substrate, and is approximately 0.6m wide. Large gabion mattresses which span the entire channel (approximately 8m wide and 3m high) are present immediately downstream of General Wade’s Military Road culvert.</p> <p>The planform largely unchanged since 1867; however, the historical channel course was direct to River Tay, the current flow is diverted to WF31 (historical secondary channel of the River Tay).</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit ‘Poor’ ecosystem quality due to an absence of suitable bed and riparian habitat, extensive culverting relative to watercourse length and hydraulic connectivity to WF31.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 14: WF31


Overview	
	Water feature type: Minor watercourse
	Catchment Area: 1.16km ²
	Key hydraulic connections: Issues in forestry upstream of General Wade's Military Road, culverted under existing A9, flows parallel downstream to existing A9 within an artificial channel which receives flows from WF28, WF29 and WF30 before discharging into the River Tay.
	Surrounding land use: Agriculture (rough pasture) and forestry
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood event for the River Tay indicates that the culvert under the A9 is flooded downstream of the road. Hydraulic modelling indicates that there is a risk of flooding to the foot of the A9 embankment from a 0.5% AEP (200-year) plus CC flood event for the minor watercourse, but flood risk to the road itself is considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The source of the watercourse is in Rotmell Wood. The watercourse is culverted beneath the existing A9, General Wade's Military Road and forestry/farm tracks. The channel is highly incised with a slightly meandering planform. It has step-pool sequences with predominantly cobble and gravel substrate.</p> <p>After being culverted, the channel then becomes a straight road drainage ditch flowing south along the existing A9 to the River Tay, the planform of which is within a historical secondary channel of the River Tay (historically very active). It is characterised by a uniform channel, silt bed, and low energy flow types. The channel is approximately 1m wide. Several areas are choked with terrestrial vegetation.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. 	Medium
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality despite the presence of an established bed and riparian habitat upstream, due to extensive culverting in the downstream reach and channel modification adjacent to existing A9.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 15: WF32


Overview	
 <p>Photograph 15: WF32 – view upstream of existing A9 parallel to Rotmell Farm.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.37km ²
	Key hydraulic connections: Issues in forestry upstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Forestry, agriculture improved grassland/rough pasture
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. Three buildings fall within 50m of the watercourse, namely Cottage No 1. Rotmell Farm, Cottage No 2. Rotmell Farm and Rotmell Farm & Farmhouse. The building at Cottage No 1. Rotmell Farm is a Category B listed building.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is flooded downstream of the road. Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event on WF32 and therefore the risk of flooding to the A9 or other sensitive receptors is considered low.</p> <p>The watercourse lies partially within native woodland which is a conservation area. Although the watercourse flows directly into the River Tay SAC, it is considered to have minimal influence on these receptors and therefore the sensitivity is low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse source is in Rotmell Wood. It has a relatively straight planform in the upper catchment; upstream of Cottage No 1. Rotmell Farm and Cottage No 2. Rotmell Farm, erosion and deposition processes were observed along with some channel incision. The channel has a straight planform and extensive culverting in vicinity of Rotmell Farm & Farmhouse. Sluice gates are present along with culverting under existing A9 and General Wade's military Road.</p> <p>The channel is characterised by step-pool sequences with cobble and gravel substrate. Depositional features are present adjacent to the existing A9. The planform is largely unchanged since 1867.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. 	Medium
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat, extensive culverting and man-made flow control structures at Rotmell Farm & Farmhouse.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 16: WF33


Overview	
 <p>Photograph 16: WF33 – view upstream in forestry upslope of existing A9.</p>	Water feature type: Drainage channel
	Catchment Area: 0.12km ²
	Key hydraulic connections: Issues in improved grassland upstream of General Wade's Military Road and discharges into the River Tay
	Surrounding land use: Agriculture (improved grassland) and forestry
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is flooded downstream of the road. Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event and therefore the risk of flooding to the A9 or other sensitive receptors is considered low.</p> <p>The watercourse lies partially within native woodland which is a conservation area, however the watercourse is considered to have minimal influence on the woodland and the sensitivity is therefore considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is a straight ditch approximately 180m long and flows into the River Tay.</p> <p>The channel is highly incised, likely due to the steep gradient and downward angled culvert under the existing A9. The channel is narrow channel (0.5m) comprising step-pool sequences. Channel substrate is predominantly earth and clay.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 17: WF34


Overview	
 <p>Photograph 17: WF34 – view upstream of existing A9 culvert.</p>	Water feature type: Drainage channel
	Catchment Area: 0.25km ²
	Key hydraulic connections: Issues in forestry upstream of existing A9 and discharges into the River Tay
	Surrounding land use: Agriculture (improved grassland) and forestry
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is not flooded by the River Tay. Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event and therefore the risk of flooding to the A9 or other sensitive receptors is considered low.</p> <p>The watercourse lies partially within native woodland which is a conservation area, however the watercourse is considered to have minimal influence on the woodland and the sensitivity is therefore considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is a straight ditch approximately 120m long and flows into the River Tay.</p> <p>The channel is highly incised, likely due to steep gradient and downward angled culvert under the existing A9. It has a narrow channel (0.5m) comprising step-pool sequences. Channel substrate is predominantly earth and clay.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 18: WF35



Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.26km ²
	Key hydraulic connections: Issues in forestry upstream of existing A9 and discharges into the River Tay
	Surrounding land use: Rough pasture and forestry
Description of Specific Baseline Conditions	
Sensitivity	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is not flooded. Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event and flood risk is therefore considered low.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland and therefore the sensitivity is considered low.</p>	Low
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse has a relatively straight planform, is highly incised with a narrow channel (0.5m), and comprising a step-pool sequences with predominantly gravel and pebble substrate.</p> <p>The channel is culverted beneath the existing A9.</p> <p>The planform is largely unchanged since 1867.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 19: WF36 Dowally Burn

Overview	
 <p>Photograph 19: WF36 (Dowally Burn) – view upstream of Dowally.</p>	Water feature type: Medium watercourse
	Catchment Area: 17.14km ²
	Key hydraulic connections: Issues from Loch Ordie, receives multiple inputs from small drains on its course downstream, and discharges into the River Tay downstream of the Dowally and existing A9.
	Surrounding land use: Uplands, agriculture rough pasture, forestry
	SEPA overall status: Moderate (2016).
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>SEPA Flood Maps indicate seven properties at fluvial flood risk in the 0.5% AEP (200-year) event from overtopping along Dowally Burn including one non-residential property downstream of the existing A9 and Dowally Craft Centre and residential properties upstream of the existing A9. The SEPA extents do not take account of engineering structures; therefore, the indicative flood risk is likely to be conservative (over-estimated). The mapping shows a small area of flood risk to the A9 at its crossing of the Dowally Burn.</p> <p>The SEPA mapping suggests that overtopping of the A9 upstream (near WF38) spreads southward filling up a topographic depression bounded by the A9 embankment to the west and higher ground east of the access road to the Dowally Craft Centre.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) event plus CC confirms that the A9 is at low risk from Dowally Burn. However, the River Tay flows back up into the lower section of the watercourse leading to the flooding of Dowally Farm located on the left bank of Dowally Burn. The hydraulic model suggests that the flooding to the east of the A9 does not reach as far south as Dowally as indicated by the SEPA mapping.</p> <p>A9 Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the culvert under the A9 is flooded to upstream of the road, but that there is low flood risk to the road or to property upstream of the A9 as these are outside of the modelled flood events.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 that is considered to have minimal hydrological importance to the woodland. SEPA Surface Water (pluvial) Flood Maps indicate a small area at risk of surface water flooding in a 10% AEP (10-year) event immediately upstream of the A9. However, no properties are shown to be at risk of flooding and the A9 and local access roads are shown not to be affected.</p>	High
Fluvial Geomorphology	
<p>WFD hydromorphology status: Moderate (2016).</p> <p>The watercourse flows from Lochan Oisinneach Beag (approx. NGR NO 038 557) for 0.9km to Lochan Oisinneach Mor. It continues south for 5km to Loch Ordie then south-east for 5km (drop in elevation of 230m) to the River Tay.</p> <p>The watercourse has an irregular meandering planform to Dowally; with the upstream section (upstream of residential buildings) comprising of large step-pool sequences and bedrock cascades. The channel gradient decreases through Dowally, where the channel becomes more uniform with riffle-pool sequences. Channel substrate is predominantly cobble and pebble. The channel is approximately 3m wide with high embankments (approximately 1.5m) either side of the channel downstream of the existing A9. The channel has been historically straightened through Dowally; planform is otherwise unchanged since 1867.</p> <p>The burn is culverted beneath the existing A9 and several access tracks.</p> <p>Historical map shows channel modification from wandering gravel-bed to a straight channel between 1900 and 1977 immediately upstream of River Tay. This alteration is likely to be the result of the southerly migration of the meander bend on the River Tay during this period and maintaining hydraulic connectivity of Dowally Burn with the River Tay.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: High/no data (2016).</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; • haulage firm/light industrial use on northbound side; and • diffuse source pollution from adjacent properties and from sewage discharges. 	High

Description of Specific Baseline Conditions	Sensitivity
Dilution and Removal of Waste Products	
CAR discharges: <ul style="list-style-type: none"> • point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NO 00186 48055; • point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NO 00130 48110; and • point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NN 99977 48058. 	Medium
Biodiversity	
SEPA overall ecological status: Moderate (2016). Forms part of the River Tay SAC up to approx. 700m upstream of the existing A9. Presence of trout and brook lamprey which have international importance, as detailed in Chapter 12 (Ecology and Nature Conservation).	Very High

Table 20: WF37




Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.30km ²
	Key hydraulic connections: Issues in forestry upstream of existing A9 and discharges into the River Tay (WF06) via WF38 and WF36.
	Surrounding land use: Arable agriculture, rough pasture/improved pasture and forestry.
Photograph 20: WF37 – view upstream of Dowally side road.	
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse. However, the SEPA mapping suggests that overtopping of the A9 upstream near WF38 spreads southward filling up a topographic depression bounded by the A9 embankment to the west and higher ground to the east of the access road to the Dowally Craft Centre which WF37 passes underneath. Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is flooded to upstream of the road. Flood extents to the east of the A9 near WF38 are not as extensive as indicated by the SEPA mapping but do extend as far as WF37. The Stage 3 modelling indicates that this is due to flooding from the River Tay through the culverts in the area rather than overtopping of the A9. Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event on WF37.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland. . Hydraulic modelling indicates flooding from WF37 to fields downstream of the A9 in the AEP (200-year) plus CC event.</p>	Medium
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse is a small meandering channel flowing for 750m before being culverted under General Wade's Military Road and the existing A9. Upstream of the existing A9, the channel consists of step-pool sequences with sand and cobble substrate. The channel is largely incised at this section.</p> <p>Downstream of the existing A9, the channel is straightened with silt and fine gravel substrate and is approximately 0.4m wide. The channel ends within the arable field in a soakaway drain.</p> <p>The planform is largely unchanged since 1867.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Observed to infiltrate into groundwater during low flows when reaching the River Tay floodplain (i.e. ephemeral), therefore presenting a barrier to fish utilisation. Considered to exhibit 'Poor' ecosystem quality due to an absence of suitable bed and riparian habitat and extensive culverting relative to watercourse length.</p> <p>Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.</p>	Low

Table 21: WF38

Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.68km ²
	Key hydraulic connections: Issues in agricultural land upstream of the existing A9 and discharges into WF36 and subsequently the River Tay (WF6)
	Surrounding land use: Arable agriculture and rough pasture
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse. However, the mapping shows the existing A9 to be at risk, suggesting that overtopping of the A9 upstream near WF38 spreads southward filling up a topographic depression bounded by the A9 embankment to the west and higher ground to the east of the access road to the Dowally Craft Centre (WF36).</p> <p>The SEPA extents however do not take account of minor watercourses (WF37 and WF38) with a catchment area <3km² which therefore could be under-predicting fluvial flood risk levels.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is flooded to upstream of the road.</p> <p>Stage 3 analysis of the A9 culvert indicates that the watercourse is out of bank at the culvert in the 0.5% AEP (200-year) plus CC event, indicating a degree of flood risk from the watercourse, although hydraulic modelling indicates that there is no risk of flooding to the A9 despite flood depths of approximately 1m in places. Flooding is however predicted to the Dowally side road, with depths of over 0.5m in places and to arable land downstream of the A9.</p> <p>The watercourse flows through an area of ancient woodland upstream of the A9 and is considered to have minimal hydrological importance to the woodland. The watercourse flows through agricultural fields downstream of the A9.</p>	Medium
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>The watercourse has four sources: three sinuous burns with uniform geomorphological features; one straight uniform drainage channel (historically modified).</p> <p>The watercourses converge and are culverted under General Wade's Military Road and the existing A9. The watercourse is straightened through fields west of existing A9 and terminated approximately 220m to the east of the River Tay, entering a soakaway drain.</p> <p>The channel is approximately 0.8m wide upstream of the existing A9, with step-pool sequences with cobble and pebble substrate.</p> <p>The channel downstream of the existing A9 is straightened and uniform with fine gravel substrate. Embankments (0.3m high) are present on both banks.</p> <p>The watercourse is shown on historical mapping in the 1900s with the same planform as the present day. The channel appears to be non-natural for drainage purposes.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic and railway use (TB-C2 Highland Main Line railway – crosses watercourse); and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Considered to exhibit low quality on a local scale for this attribute due to ephemeral nature and loss of flows to groundwater.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low


Description of Specific Baseline Conditions	Sensitivity
Biodiversity	
SEPA overall ecological status: not classified. Observed to infiltrate into groundwater during low flows when reaching the River Tay floodplain (i.e. ephemeral), therefore presenting a barrier to fish utilisation. Located within River Tay SAC catchment but the river habitat is generally unsuitable for aquatic ecology.	Low

Table 22: WF39 Sloggan Burn

Overview	
	Water feature type: Medium watercourse
	Catchment Area: 2.12km ²
	Key hydraulic connections: Issues in the uplands and discharges into the River Tay downstream of Guay and the existing A9
	Surrounding land use: Uplands, agriculture - rough pasture, mixed forestry, residential
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. There are a number of residential properties in Guay located in close proximity to Sloggan Burn.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that the culvert under the A9 is flooded to upstream of the road. The model predicts that the A9 will be overtopped over an approximately 50m length just south of the watercourse, with a more extensive area of overtopping approximately 200m long just to the north. The model indicates that Guay Farmhouse. The Highland Mainline Railway and agricultural land downstream of the A9 are at risk of flooding in the 0.5% AEP (200-year) plus CC flood on the watercourse. The watercourse lies partially within ancient woodland upstream of the A9. Guay Farmhouse is listed as a Category B listed building.</p>	Very High
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>The source of the watercourse is in the Forest of Clunie. It has a sinuous planform upstream of the existing A9, step-pool sequences, cobble and gravel substrate, and the channel is approximately 0.7m wide. It is culverted under the existing A9, Highland Main Line railway and under an agricultural field before discharging into the River Tay. Historical mapping from 1867 shows a slightly more sinuous planform near Guay. Straightening of the lower reach is possibly due to construction of the Highland Main Line railway.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic and Highland Main Line railway; • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; • TB-C5 former Guay Station (1867 to 1900) with potential contamination from hydrocarbons, polychlorinated biphenyls (PCBs) and other toxic chemicals –within 100m of the watercourse; • TB-C4 disused sand pit (1978). It is unknown whether this has been subsequently infilled - potential for contaminants associated with infill material; • TB-C6 disused sand and gravel opencast mine. It is unknown if the opencast mine has been subsequently infilled - potential for contaminants associated with infill material; and • TB-C7 former Smithy at Guay (1867 to 1900) with potential contamination from metals and polyaromatic hydrocarbons. 	Medium
Water Supply	
<p>Water supply abstractions:</p> <ul style="list-style-type: none"> • TB-PWS5 – Ballintuim Farm Bungalow supply. Gravity fed spring/surface water supply to domestic property. According to anecdotal evidence (no records) the water quality shows very high levels of lead at approx. NO 00179 49086. 	High
Dilution and Removal of Waste Products	
<p>CAR discharges:</p> <ul style="list-style-type: none"> • point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NN 99911 49188; • point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NN 99906 49191; and • point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NN 99789 49163. <p>As most discharges are of septic tank effluent to soakaways and not direct discharges, based on professional judgement this watercourse is considered to be of a low sensitivity for this attribute.</p>	Low

Description of Specific Baseline Conditions	Sensitivity
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Moderate' ecosystem quality due to the presence of bed and riparian habitat particularly upstream of Guay; however, channel modification observed as the watercourse flows through the settlement of Guay.</p> <p>Flows into River Tay SAC. Presence of suitable habitat for designated species but access is likely to be limited due to a 100m long pipe culvert between the habitat and River Tay.</p>	Medium

Table 23: WF40 Kindallachan Burn (WFD water body name: Tulliemet Burn)

Overview	
 <p>Photograph 23: WF40 (Kindallachan Burn) – view downstream from existing A9 bridge crossing.</p>	Water feature type: Medium watercourse
	Catchment Area: 19.2km ²
	Key hydraulic connections: Issues in the uplands and discharges into the River Tay downstream of Kindallachan and the existing A9
	Surrounding land use: Arable agriculture, rough pasture and improved grassland, residential and mixed forestry
	SEPA overall status: Good (2016).
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>SEPA Flood Maps indicate that there are 12 residential properties at fluvial flood risk in Kindallachan in a 0.5% AEP (1 in 200) event. The existing A9 crosses the watercourse but is not shown to be at risk. However, the SEPA extents do not take account of engineering structures; therefore, the indicative flood risk is likely to be conservative (over-estimated). General Wade's Military Road crosses the watercourse and is shown to be at risk.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent from the River Tay indicates that there is flooding of the A9 over approximately 50m lengths both north and south of the watercourse. Flooding on both banks is also indicated between the A9 and General Wade's Military Road. The model indicates reduced flood extents on the watercourse through Kindallachan, with no properties predicted to be at risk. The watercourse lies partially within native woodland which is a conservation area.</p> <p>Hydraulic modelling of a 0.5% AEP (200-year) plus CC event on WF40 indicates approximately a 20m length of the A9 would be flooded in a 0.5% AEP (200-year) plus CC event. There would also be flooding to farmland downstream of the A9 and to the Highland Mainline Railway embankment. Kindallachan Standing Stone and Kindallachan Cairn Scheduled Monuments are both within 100m of the channel but are not located in the 0.5% AEP (200-year) plus CC flood extent.</p>	Very High
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: Good (2016).</p> <p>The watercourse source is in hills north of Ballinluig.</p> <p>The upstream section is sinuous with areas of deposition and erosion suggesting the burn is geomorphologically active.</p> <p>The middle section is more built-up and straightened and flows through Kindallachan to the River Tay. A number of waterfalls are present in this location suggesting it is bedrock controlled with a steep gradient and high stream power. The watercourse has predominantly cobble, pebble and gravel substrate.</p> <p>The gradient decreases towards the existing A9 and forms a riffle-pool sequence with some cobble side bars present. An embankment is present on the right bank measuring up to 0.5m high. The downstream section (west of a pooled area) is straightened and uniform with reinforced banks; the channel approximately 3.5m wide.</p> <p>The watercourse has a bridge over the existing A9 and General Wade's Military Road and culvert beneath access tracks.</p> <p>The planform has remained relatively consistent since 1867. The burn flowed into a secondary channel of the River Tay until 1980; it currently flows into a lake feature that drains via a straightened channel to the River Tay.</p>	High
Water Quality	
<p>SEPA physico-chem/specific pollutants status: High/no data (2016).</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic and railway use (TB-C2 Highland Main Line railway – crosses watercourse); • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; • TB-C8 site of former saw mill (1867 only) in Kindallachan; and • TB-C9 site of former Farina Works (1867-1900) in Kindallachan. 	High
Dilution and Removal of Waste Products	
<p>CAR discharges:</p> <ul style="list-style-type: none"> • point source sewage discharge from septic tank effluent to burn at approx. NN 99451 49858; and • point source sewage discharge from septic tank effluent to soakaway within 25m of watercourse at approx. NN 99517 50040. 	Medium

Description of Specific Baseline Conditions	Sensitivity
Biodiversity	
SEPA overall ecological status: Good (2016). Downstream of the railway and existing A9 crossings, this watercourse forms part of the River Tay SAC. Upstream of the A9 suitable salmonid parr habitat is available and small areas of spawning and juvenile lamprey habitat have been identified.	Very High

Table 24: WF41


Overview	
 <p>Photograph 24: WF41 – view across water feature (note: wide channel).</p>	Water feature type: Palaeochannel
	Catchment Area: 0.77km ²
	Key hydraulic connections: WF41 and WF42 represent the same interconnected palaeochannel feature. WF42 receives flows from WF45, WF46, WF47 and WF49 before discharging into WF41 after crossing the existing A9. WF41 discharges into WF40 prior to reaching the River Tay
	Surrounding land use: Arable agriculture, rough pasture and improved grassland
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>WF41 to WF49 are intrinsically linked and located in an area of boggy marshland. WF47 and WF49 cross the existing A9 and flow towards WF41 on the west side of the A9. WF45 and WF46 converge into WF42 on the east side of the existing A9. Culverts exist at WF42 and WF41 to pass any flows under the existing A9 into the wide channel at WF41. SEPA Flood Maps indicate that there are no properties at fluvial flood risk. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the A9 is overtopped in this location by flooding from the River Tay over approximately a 300m length, resulting in the watercourse being flooded between the A9 and General Wade’s Military Road. However, hydraulic modelling of a 0.5% AEP (200-year) plus CC flood event on the watercourse indicates low flood risk to the A9 or other sensitive receptors, with small areas of flooding to farmland downstream of the A9 and in the wetland areas upstream of the a9.</p> <p>The watercourse lies partially within native woodland. Flows from the watercourses in this area discharge into the Kindallachan Burn upstream of the confluence with the River Tay.</p>	Medium
Fluvial Geomorphology	
The water feature is a historical secondary channel (palaeochannel) to the River Tay which has remained with a wide channel, approximately 15m, located within forestry. The water feature now has standing water.	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse runoff including contaminants associated with A9 traffic and Highland Main Line railway; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit ‘Poor’ ecosystem quality due to accessibility and pollutant sources.</p> <p>Access for fish to the series of ponds is constrained by multiple culverts and shallow water depths connecting the ponds.</p>	Low

Table 25: WF42


Overview	
 <p>Photograph 25: WF42 – view across water feature towards existing A9.</p>	Water feature type: Palaeochannel
	Catchment Area: 0.77km ²
	Key hydraulic connections: WF41 and WF42 represent the same interconnected palaeochannel feature. WF42 receives flows from WF45, WF46, WF47 and WF49 before discharging into WF41 after crossing the existing A9. WF41 discharges into WF40 prior to reaching the River Tay
	Surrounding land use: Arable agriculture, rough pasture and improved grassland
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>WF41 to WF49 are intrinsically linked and located in an area of boggy marshland. WF47 and WF49 cross the existing A9 and flow towards WF41 on the west side of the A9. WF45 and WF46 converge into WF42 on the east side of the existing A9. Culverts exist at WF42 and WF41 to pass any flows under the existing A9 into the wide channel at WF41.</p> <p>SEPA Flood Maps indicate that there are no properties at fluvial flood risk. No properties fall within 100m of the water feature.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the A9 is overtopped in this location by flooding from the River Tay over approximately a 300m length, resulting in the water feature being flooded between the A9 and General Wade’s Military Road. However, hydraulic modelling of a 0.5% AEP (200-year) plus CC flood event on the watercourse indicates low flood risk to the A9 or other sensitive receptors, with small areas of flooding to farmland downstream of the A9 and in the wetland areas upstream of the A9.</p> <p>The water feature lies partially within native woodland. Flows from the water features in this area discharge through agricultural land into the Kindallachan Burn upstream of the confluence with the River Tay.</p>	Medium
Fluvial Geomorphology	
<p>The standing water feature is approximately 13m wide. It has a silt substrate and no perceptible flow. Reeds present within the pool and it is surrounded by trees.</p> <p>The water feature appears historically as a secondary channel to the River Tay.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic and railway use (TB-C2 Highland Main Line railway – crosses watercourse); and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
<p>CAR discharges:</p> <ul style="list-style-type: none"> point source sewage discharge from septic tank effluent to soakaway at approx. NGR NN 99330 50140. <p>As the identified 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.</p>	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit ‘Poor’ ecosystem quality due to accessibility and pollutant sources.</p> <p>Access for fish to the series of ponds is constrained by multiple culverts and shallow water depths connecting the ponds.</p>	Low

Table 26: WF45/WF46


Overview	
 <p>Photograph 26: WF45 – view downstream prior to discharge to WF42.</p>	Water feature type: Small watercourses
	Catchment Area: 0.194km ²
	Key hydraulic connections: WF45 and WF46 are minor watercourses which discharge into the WF41/WF42 palaeochannel feature
	Surrounding land use: Deciduous woodland and agriculture - rough pasture
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>WF41 to WF49 are intrinsically linked and located in an area of boggy marshland. WF47 and WF49 cross the existing A9 and flow towards WF41 on the west side of the A9. WF45 and WF46 converge into WF42 on the east side of the existing A9. Culverts exist at WF42 and WF41 to pass any flows under the existing A9 into the wide channel at WF41.</p> <p>SEPA Flood Maps indicate that there are no properties at fluvial flood risk.</p> <p>SEPA Flood Maps indicate that there are no properties at fluvial flood risk. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the A9 is overtopped in this location by flooding from the River Tay over approximately a 300m length, resulting in the watercourse being flooded between the A9 and General Wade's Military Road. However, hydraulic modelling of a 0.5% AEP (200-year) plus CC flood event on the watercourse indicates that the A9 or other sensitive receptors are outside of the flood extents and therefore flood risk is considered low.</p> <p>The watercourse lies within native woodland, however this is upstream of the A9 and the hydrological importance of the watercourse to the woodland is considered low. Flows from the water features in this area flow through agricultural land into the Kindallachan Burn upstream of the confluence with the River Tay.</p>	Low
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>WF45 flows from the wooded area east of the existing A9. The channel consists of step-pool sequences with predominantly cobble and gravel substrate; it is approximately 0.7m wide and the channel spreads before entering WF42.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic and Highland Main Line railway; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	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 steep gradients and extensive culverting relative to watercourse length.	Low

Table 27: WF47


Overview	
 <p>Photograph 27: WF47 – view upstream of existing A9 culvert.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.16km ²
	Key hydraulic connections: Issues upstream of existing A9, is culverted beneath existing A9 and discharges into WF49, then subsequently WF42, WF41, WF40 and the River Tay.
	Surrounding land use: Agriculture - rough pasture and forestry
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse. The A9 crosses the watercourse but is not shown to be at risk.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the A9 culvert is flooded downstream of the road.</p> <p>Stage 3 analysis of the A9 culvert indicates that the watercourse is out of bank immediately upstream of the A9 culvert in the 0.5% AEP (200-year) plus CC event, however the head water level is only 1mm above bank level and given the 1m freeboard to the A9 in this location, the flood risk is considered low.</p> <p>The watercourse lies partially within ancient woodland upstream of the A9, however the hydrological importance of the watercourse to the woodland is considered low. The watercourse flows into WF49 upstream of its confluence with the River Tay.</p>	Low
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>WF47 flows from the wooded area to the east of the existing A9. Flows under the existing A9 in a culvert to join WF49.</p> <p>Upstream of the existing A9, the channel is highly incised (up to 3m deep in some locations) with several areas of mass failure and undercutting along the banks. The watercourse has predominantly step-pool sequences with gravel and pebble substrate. It flows through a culvert under the existing A9 into WF49.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; and • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	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 an absence of suitable bed and riparian habitat, gradient and short length of watercourse.	Low

Table 28: WF49


Overview	
 <p>Photograph 28: WF49 – view upstream running parallel with existing A9 northbound carriageway embankment.</p>	Water feature type: Minor watercourse
	Catchment Area: 0.22km ²
	Key hydraulic connections: Issues upstream, is culverted under the existing A9, and runs parallel to the existing A9 within an artificial ditch before discharging into WF41 (subsequently WF40 and the River Tay).
	Surrounding land use: Agriculture - rough pasture and forestry
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. One residential property falls within approximately 10m of the watercourse but is outside of modelled 0.5% AEP (200-year) plus CC event flood extents.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent on the River Tay includes the majority of the watercourse on the downstream side of the A9; however, does not extend as far as the culvert outlet under the A9. Stage 3 analysis of the A9 culvert indicates that the watercourse is in bank at the culvert in the 0.5% AEP (200-year) plus CC event and flood risk to the A9 is therefore considered low.</p> <p>The watercourse lies partially within ancient woodland upstream of the A9. The watercourse flows alongside agricultural land into WF41 prior to its confluence with the Kindallachan Burn.</p>	Medium
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>WF49 flows from the wooded area to the east of the existing A9. Upstream of the existing A9, the channel consists mainly of step-pool sequences with some areas of riffles with increasing distance upstream. Channel substrate is predominantly gravel and cobble substrate with several sand bars along the course of the channel. The watercourse is overgrown with terrestrial vegetation in the upstream section. Downstream of the existing A9, the channel is straight and uniform with reinforced bed and banks. The channel is approximately 0.7m wide and is culverted beneath the existing A9. Historical maps (1900s-1987) only show WF49 to be present in an open corridor with no woodland cover. The burn appears to be man-made for land drainage purposes.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic; • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; • TB-C18 potential contaminants from septic tank at Haugh of Kilmorich; • TB-C10 site of former Gravel Pit (1900). It is unknown if the gravel pit has been subsequently infilled potential for contaminants associated with infill material; and • TB-C11 disused sand and gravel opencast mine. It is unknown if the opencast mine has been subsequently infilled. The ground investigation (2015/16) did not record any soil chemistry exceedance values. <p>Due to the small catchment size, low and likely intermittent flow regime, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	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 an absence of suitable bed and riparian habitat, and steep gradient upstream of existing A9, and extensive modification and loss of flows to groundwater downstream of the existing A9.	Low

Table 29: WF50


Overview	
 <p>Photograph 29: WF50 – view within forestry upstream of existing A9</p>	Water feature type: Minor watercourse
	Catchment Area: 0.21km ²
	Key hydraulic connections: Issues upstream of existing A9, is culverted beneath the road and completely infiltrates to groundwater (i.e. no watercourse channel downstream) within a wooded area 100m south west of the A9.
	Surrounding land use: Forestry, arable agricultural land, rough pasture and improved pasture
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that flooding from the River Tay is likely to affect the downstream end of the watercourse, but does not extend to the culvert outlet from the A9. Stage 3 hydraulic modelling indicates a risk of flooding to the A9 from this watercourse, with overtopping predicted over a 50m length of the road in the 0.5% AEP (200-year) plus CC flood event. Flooding is also predicted to agricultural land downstream of the A9 and against the Highland Mainline Railway embankment.</p> <p>The watercourse lies partially within ancient woodland which is a conservation area.</p>	Very High
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>The watercourse is an irregularly meandering channel until it meets the existing A9, where the channel is shown to 'sink'. Upstream of the existing A9, the channel is incised and consists of step-pool sequences with predominantly cobble and pebble substrate. The channel is approximately 0.8m wide, relatively active with areas of erosion (mass failure and undercutting) and deposition (cobble bars). The channel downstream of the existing A9 is straightened and runs parallel to the existing A9. Channel substrate consists of fine gravel and silt. The watercourse spreads and sinks approximately 100m west of the existing A9.</p> <p>This watercourse is only present in historical maps after 1977; with the same planform as presently shown on OS map.</p>	Medium
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic and railway use (TB-C2 Highland Main Line railway – crosses watercourse); and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the infiltration of flows to groundwater upon reaching the River Tay floodplain, the small catchment size, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to steep gradient upstream of the existing A9 and loss of flows by infiltration to groundwater downstream of the existing A9.</p> <p>The watercourse is inaccessible for fish due to the infiltration to groundwater when reaching the River Tay floodplain.</p>	Low

Table 30: WF52


Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.30km ²
	Key hydraulic connections: Issues as two tributaries in forestry upslope of A9. The tributaries merge in a single channel running upstream and parallel to existing A9. The single channel is culverted beneath the A9 and railway line, and infiltrates completely to groundwater approximately 400m to the south west of the A9.
	Surrounding land use: Arable agricultural land, rough pasture, improved grassland and mixed forestry
Photograph 30: WF52 – view upstream of existing A9 culvert.	
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. No properties fall within 100m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the downstream end of the watercourse is within the River Tay flood extents, but the culvert under the A9 is further upstream. Stage 3 analysis of the A9 culvert indicates that the watercourse is out of bank at the culvert during the 0.5% AEP (200-year) plus CC event, indicating a degree of flood from this watercourse, although the freeboard to the A9 is over 1.2m so flood risk to the A9 is considered low. Flooding is predicted to local access roads. Downstream of the A9 there is flooding to agricultural land and at the base of the Highland Mainline Railway embankment. Upstream of the A9 the watercourse flows through ancient woodland.</p> <p>The watercourse flows through agricultural land downstream of the A9.</p>	Medium
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>The watercourse has two sources that join and are culverted under the existing A9, then straightened to form a boundary between two fields. Upstream of the existing A9, both channels are highly incised and consist of step-pool sequences with cobble and gravel substrate. Channels are approximately 0.8m wide and have areas of erosion and deposition.</p> <p>The watercourse sinks in a field south of the Highland Main Line railway. The channel at this location is straightened and uniform and was dry at time of survey. The channel is not present on historical maps until the 1900s; the planform is the same as the present day and appears to be man-made for land drainage purposes.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic and railway use (TB-C2 Highland Main Line railway – crosses watercourse); and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the infiltration of flows to groundwater upon reaching the River Tay floodplain, the small catchment size, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
CAR discharges: none	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to steep gradient upstream of the existing A9 and loss of flows by infiltration to groundwater downstream of the existing A9.</p> <p>The watercourse is inaccessible for fish due to the infiltration to groundwater when reaching the River Tay floodplain.</p>	Low

Table 31: WF53




Overview	
	Water feature type: Minor watercourse
	Catchment Area: 0.20km ²
	Key hydraulic connections: Issues within forestry upslope of existing A9 and infiltrates into groundwater downstream of existing A9. Potential connectivity with WF52 via existing road drainage (pre-earthwork drains).
	Surrounding land use: Arable agricultural land, rough pasture, improved grassland and mixed forestry
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. One property (Inch Cottage) falls within approximately 10m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent indicates that the flood extents from the River Tay and River Tummel extend under the Highland Main Line railway via culverts and back up the watercourse. The culvert under the A9 is flooded on the upstream side. The floodwaters associated with the hydraulic modelling from the River Tay extend under the Highland Main Line railway via drain culverts and underpasses towards the A9. The Highland Main Line railway and the A9 are not shown to be at fluvial flood risk in this location.</p> <p>Stage 3 analysis of the A9 culvert indicates some flooding on either side of the A9 culvert in the 0.5% AEP (200-year) plus CC event on WF53, but that the A9 and other sensitive receptors are outside of the predicted flood extents and therefore are considered to be at low risk. Agricultural land and the foot of the Highland Mainline Railway embankment are at risk of flooding in this event.</p> <p>The watercourse lies partially within ancient woodland upstream of the A9 and passes through agricultural land downstream of the A9.</p>	Medium
Fluvial Geomorphology	
<p>WFD hydromorphology status: not classified.</p> <p>The watercourse source in a wooded area to north-east of existing A9 and is culverted under an access track to Inch Cottage. The channel is a straight, uniform drainage channel with cobble substrate and was dry at the time of survey. Historically, it was a sinuous channel up to the Highland Main Line railway and a straightened channel downstream to the River Tummel. Between 1980 and the latest OS maps, the burn has been culverted or disconnected and is shown to end at the existing A9.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic; and diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock. <p>Due to the infiltration of flows to groundwater upon reaching the River Tay floodplain, the small catchment size, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
<p>CAR discharges:</p> <ul style="list-style-type: none"> point source sewage discharge from septic tank effluent to soakaway within 50m of watercourse at approx. NN 98291 51810. <p>As the identified discharges are of septic tank effluent from residential properties to soakaways and not direct discharges, based on professional judgement WF53 is considered to be of a low sensitivity for this attribute.</p>	Low
Biodiversity	
<p>SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to steep gradient upstream of the existing A9 and loss of flows by infiltration to groundwater downstream of the existing A9.</p> <p>The watercourse is inaccessible for fish due to the infiltration to groundwater.</p>	Low

Table 32: WF55

Overview	
	Water feature type: Minor watercourse/palaeochannel
	Catchment Area: 0.38km ²
	Key hydraulic connections: Issues as three tributaries upstream of the A9. The tributaries merge into a single channel that is culverted beneath the A9. Downstream of the A9 it becomes ephemeral/infiltrates to groundwater as it crosses the floodplain, feeds into a palaeochannel and collects upstream of an impoundment.
	Surrounding land use: Arable agricultural land, rough pasture, improved grassland and mixed forestry.
Description of Specific Baseline Conditions	
Hydrology and Flood Risk	
<p>This watercourse has a catchment area less than 3km² so is not included in the SEPA Flood Map. Station Cottages and Inch Farm fall within 80m of the watercourse.</p> <p>Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood event indicates that downstream of the A9 culvert the watercourse is within the flood extents of the River Tummel. The floodwaters from the River Tummel extend under the Highland Main Line railway via drain culverts and underpasses towards the A9 and show Station Cottages and Inch Farm (House of Bruar) to be at risk. Flooding is also shown on the upstream side of the A9, due to floodwater overtopping the A9 north of the Ballinluig junction and flowing south towards the watercourse. However, there is no flood risk predicted to the A9, the railway or to the buildings due to a flood event from the watercourse. Upstream of the A9 the watercourse flows partially through ancient woodland however the hydrological influence is considered low. Downstream of the A9 the watercourse flows through agricultural land. Stage 3 culvert analysis indicates that flows are in bank and therefore flood risk from WF55 is considered low.</p>	Medium
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: not classified.</p> <p>The watercourse had three sources, east of Port of Tummel Farm, which join to flow under the existing A9 in a culvert. It reappears as a straightened channel to the west of the existing A9.</p> <p>Upstream of the existing A9, the channels consist of step-pool sequences with gravel and cobble substrate. As they flow into the drainage ditches, the channels are uniform, straight and consist of silt substrate. The channel is culverted under the land between the existing A9 and the Highland Main Line railway. Downstream of the Highland Main Line railway, the channel is over-wide, embanked and lacks any geomorphological features.</p>	Low
Water Quality	
<p>SEPA physico-chem/specific pollutants status: not classified.</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> diffuse run-off of contaminants associated with A9 traffic and railway use (TB-C2 Highland Main Line railway – crosses watercourse); diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; and point source sewage discharge from septic tank effluent to soakaway at 1-4 Station Cottages. <p>Due to the infiltration of flows to groundwater upon reaching the River Tay floodplain, the small catchment size, limited contribution in terms of flows and habitat to the downstream SAC, and lack of intrinsically linked receptors such as water supplies or aquatic ecology, this watercourse is considered to exhibit a low quality on a local scale. In line with DMRB HD45/09, it is therefore assigned a low sensitivity for this attribute.</p>	Low
Dilution and Removal of Waste Products	
<p>CAR discharges:</p> <ul style="list-style-type: none"> point source sewage discharge from septic tank effluent to soakaway within 25m of watercourse at approx. NN 98000 51870; and point source sewage discharge from septic tank effluent to soakaway within 25m of watercourse at approx. NN 98000 52230. <p>Considering the discharges are of septic tank effluent from residential properties to soakaways and not direct discharges; WF55 is assessed as having a medium sensitivity for this attribute.</p>	Medium

Description of Specific Baseline Conditions	Sensitivity
Biodiversity	
SEPA overall ecological status: not classified. Considered to exhibit 'Poor' ecosystem quality due to steep gradient upstream of the existing A9 and loss of flows by infiltration to groundwater downstream of the existing A9. The watercourse is inaccessible for fish due to the infiltration to groundwater.	Low

Table 33: WF70 River Tummel (Reach Loch Faskally to River Tay confluence)

Overview	
 <p>Photograph 33: River Tummel looking downstream towards confluence with River Tay</p>	Water feature type: Major watercourse
	Catchment Area: 1,715km ²
	Key hydraulic connections: Major tributary of the River Tay, which converge within the study site and to the east of the existing A9.
	Surrounding land use: Arable agricultural land, rough pasture, improved grassland, mixed forestry, and urban (immediately downstream of Loch Faskally)
	SEPA overall status: Good ecological potential (2016).
Description of Specific Baseline Conditions	Sensitivity
Hydrology and Flood Risk	
<p>The confluence between the River Tay and the River Tummel is located at the upstream extent of the study area. The River Tummel flows in a southerly direction with a catchment area of 1,715km² and does not cross the existing A9 within the study area. The River Tummel passes in close proximity to a number of settlements including Ballinluig and Dalnabo. The River Tummel itself is part of the River Tay SAC and the Shingle Islands within the river are an SSSI and SAC.</p> <p>SEPA Flood Maps indicate no flood risk to properties, the Highland Main Line railway or the A9 within the study area. Stage 3 baseline modelling of the 0.5% AEP (200-year) plus CC flood extent predicts the floodwaters from the River Tummel impact the A9 immediately upstream of the A827. The flows then extend southwards along a path towards WF56. There are two properties predicted to be at risk in Ballinluig, as well as Station Cottages on the flood plain west of the A9 and the House of Bruar Warehouse complex between the Highland Main Line railway and the A9.</p> <p>SEPA Surface Water (pluvial) Flood Maps indicate that there are small areas of surface water flood risk in the River Tummel floodplain, however none of these impact on property.</p>	Very High
Fluvial Geomorphology	
<p>WFD overall hydromorphology status: Moderate (2016).</p> <p>The River Tummel has a wandering gravel-bed river planform, with a multi-thread planform at the confluence with the River Tay. Large cobble/pebble depositional features are characteristic of the River Tummel in the form of point bars, side bars and mid-channel bars. Both un-vegetated and vegetated depositional features are present; the latter providing an indicator of recent stability, albeit still prone to future channel adjustment. A riparian zone consisting of established trees and shrubs is present on both banks. The channel is approximately 50m wide, with variety of geomorphological features, including large riffle sequences, side-arms, secondary channels and palaeochannels.</p> <p>The River Tummel has a long history of channel change over the past 275 years. Historical maps show evidence of a braided river system with six to seven channel threads and several large mid-channel bars at confluence with River Tay. The River Tummel maintains a wandering gravel-bed river planform downstream of Pitlochry dam at Loch Faskally, with notable channel change, in particular around Tomdachoille Island, Ballinluig Island and Richard's Island (at the confluence with the River Tay) during the 20th Century since the abandonment of embankment maintenance in 1903.</p> <p>Existing pressures: river regulation, in particular the impacts of the Pitlochry dam at Loch Faskally. Impacts include modification to the natural flow regime, including reduced flow variation, peak flows and a less flashy regime. The Pitlochry dam structure also inhibits the downstream movement of sediment; thus the river is impacted by sediment depletion. The existing sediment is now re-worked during high flow events, along with some zones of channel incision being present. This, in combination with regulated flow, has impacted upon the morphological dynamics of the River Tummel. This has resulted in a more stable regime where channel change, including channel avulsion, is less frequent. Prior to the construction of the Pitlochry dam, the shingle islands were typically mobile and provided the habitat template for the species rich communities that are designated under the Shingle Islands SSSIs. The reduced fluvial disturbance regime has enabled vegetation colonisation of the shingle islands, including dense scrub and wet woodlands. Morphological change on the River Tummel is now more likely to occur only during high magnitude flood events.</p>	High
Water Quality	
<p>SEPA physico-chem/specific pollutants status: Good / Pass (2016).</p> <p>Potential pollutant sources:</p> <ul style="list-style-type: none"> • diffuse run-off of contaminants associated with A9 traffic and Highland Main Line railway; • diffuse rural sources including suspended sediment from forestry and biological pollutants from grazing livestock; and • point source discharges up-catchment and outwith the study area. 	High
Dilution and Removal of Waste Products	
CAR discharges: None within study area.	Low

Description of Specific Baseline Conditions	Sensitivity
Biodiversity	
<p>SEPA overall ecological status: Moderate (2016). River Tay SAC, Shingle Islands SAC and Single Islands SSSI are identified as having international importance in Chapter 12 (Ecology and Nature Conservation). Presence of freshwater pearl mussels, Atlantic salmon, trout and brook lamprey, all of which have international importance in Chapter 12 (Ecology and Nature Conservation).</p>	<p>Very High</p>