

## **A10.5: Evaluation of Terrestrial and Freshwater Ecological Receptors**

### **1 Introduction**

- 1.1.1 This appendix provides evaluations for all receptors potentially affected by the proposed scheme. Evaluations take into consideration baseline data coupled with criteria set out in Table 10.1 of Chapter 10 (Ecology and Nature Conservation).
- 1.1.2 The evaluations have been informed by consideration of the following, further details of which are presented in Appendix A10.1 for each species, and are not restated here:
- legal protection;
  - conservation status or designation of the habitat (if any);
  - Local Biodiversity Action Plan (LBAP) or Local Habitat Action Plan (LHAP) status;
  - presence on the Scottish Biodiversity List (SBL); and
  - presence of rare or LBAP species.
- 1.1.3 As noted in Chapter 10, no evidence of water vole (*Arvicola amphibius*), freshwater pearl mussel (*Margaritifera margaritifera*), badger (*Meles meles*) or wildcat (*Felis silvestris*) was found during baseline assessment (surveys, desk-based review and consultation), and as such no evaluation for these species is provided in this appendix.
- 1.1.4 Deer were scoped out from ecological evaluation due to their lack of conservation status and so are not discussed further in this appendix. However, further information with regard to deer is provided in Chapter 10 of the ES, in the context of animal welfare and road safety due to crossing of the A9.

### **2 Terrestrial Habitats**

#### **Cairnleith Moss Special Site of Scientific Interest (SSSI)**

- 2.1.1 Cairnleith Moss SSSI is a complex mosaic of wet heath, swamp, open water, scrub and acid grassland communities, comprising lagg habitat of raised bog and spring fen. The site is assessed as being of national level ecological value.

#### **Mill Dam SSSI**

- 2.1.2 Mill Dam SSSI site consists of a small area of open water with fen and reed-swamp which contains uncommon, locally rare and nationally scarce species. The site is assessed as being of national level ecological value.

#### **Woodland**

- 2.1.3 The single area of ancient woodland (Byres Wood) retained some ground flora indicative of ancient woodland. However, some areas have been clear-felled and/or replanted with plantation woodland whilst bracken (*Pteridium aquilinum*) and rhododendron formed dense stands in some parts. The woodland was assessed as being of authority area ecological value.
- 2.1.4 The areas of long-established plantation woodland were mainly modern coniferous plantation woodland and included woodlands in the Muir of Thorn and Gelly Wood areas, Five-Mile Wood and woodland around Birnam Burn. These habitats are assessed as being of local level ecological value.
- 2.1.5 Three parts of Gelly Wood to the south of the Gelly steading were classified as semi-natural broad-leaved woodland. In general, these woodlands were species-poor but did contain some large

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mature trees and small areas of *Sphagnum* bog. However, overall the vegetation was species-poor or fragmented. These habitats are assessed as being of local level ecological value.

- 2.1.6 Small areas of semi-natural broadleaved and coniferous woodland were present elsewhere across the study area, including along watercourses and as pockets in plantation woodland. The broad-leaved woodlands were dominated by a mixture of native and non-native species (sycamore, *Acer pseudoplatanus*) and have been assessed as being of local level ecological value. The coniferous woodland was grazed and had a poorly developed understorey. It was also assessed as being of local level ecological value.

#### Marshy Grassland

- 2.1.7 Outside the SSSI areas, the marshy grassland tended to be of low species richness. There was evidence of previous improvement, including drainage patterns, grass species typical of improved grassland, and the presence of agricultural weeds. However, marshy grassland adjacent to the Cairnleith Moss SSSI, whilst showing evidence of improvement, did occasionally contain species of conservation interest, including the lesser butterfly-orchid (see below). These habitats are assessed as being of local level ecological value.

#### Heathland and Bog

- 2.1.8 The heathland areas (dry heath, wet heath and heath/grassland mosaic) were found within plantation woodland and ex-plantation woodland areas. These areas are likely to be (or have been) re-planted with trees and the habitats will change during the forestry cycle. Some species will be retained during the lifecycle of the plantations whilst others will re-germinate from the seedbank or adjacent seed sources. The vegetation was characteristic of heavily modified heathland containing common species of the type. These habitats are assessed as being of local level ecological value.

#### Agricultural Land

- 2.1.9 The majority of the study area is agricultural land, comprising fields of poor semi-improved and improved grassland. Due to their low species diversity with swards often dominated by grasses, these habitats are assessed as being of less than local level ecological value.

#### Orchid Species

- 2.1.10 The lesser and greater butterfly-orchids (*Platanthera biofolia*, *P. chlorantha*) are on the Scottish Biodiversity List (SBL). The former is known to be present in the area in the Cairnleith Moss SSSI but the greater butterfly-orchid has not been previously recorded in the area. The species are classed as “vulnerable” and “near-threatened” respectively. The two species have therefore been assessed as being of national ecological value.
- 2.1.11 The northern marsh orchid is frequent across the study area and was recorded in locations that have been identified previously. It has no conservation status. This species is assessed as being of local level ecological value.
- 2.1.12 The fragrant orchid has also been previously recorded from Cairnleith Moss SSSI. It has declined due to habitat loss. It has no conservation status. This species is assessed as being of local level ecological value.

## 3 Terrestrial Invertebrates

- 3.1.1 Land parcels were evaluated as indicated in Table 1. Two parcels, Cairnleith Moss SSSI and Gelly Woods, with moderate habitat potential and records of one SBL species (small pearl-bordered fritillary, *Boloria selene*) were assessed as having national ecological value.
- 3.1.2 The Shochie Burn, Muir of Thorn (south) and Mill Dam SSSI parcels had moderate habitat potential and records of LBAP species. These areas were assessed as having authority area ecological

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value. All other land parcels with moderate habitat potential were assessed as having local ecological value.

- 3.1.3 Parcel 4 (Five Mile Wood) and all cultivated land areas were assessed as having less than local ecological value.

**Table 1: Evaluation of Land Parcels**

Land Parcel	Invertebrate Habitat Potential	Species Recorded	Evaluation
1 Shochie Burn	Moderate	3 x LBAP species	Authority area
2 Lower Ordie Burn	Moderate	-	Local
3 Upper Ordie Burn	Moderate	-	Local
4 Five Mile Wood	Low	-	Less than Local
5 Garry Burn	Moderate	-	Local
6 Cairnleith Moss SSSI	Moderate	1 x SBL species	National
7 Semi-natural broad-leaved woodland by the A9	Moderate	-	Local
8 Muir of Thorn (south)	Moderate	1 x LBAP species	Authority area
9 Gelly Woods	Moderate	1 x SBL species 1 x LBAP species	National
10 Muir of Thorn (north)	Moderate	-	Local
11 Mill Dam SSSI	Moderate	1 x LBAP species	Authority area
12 Byres Wood	Moderate	-	Local
Cultivated land (arable and grazing)	Low	-	Less than Local

## 4 Bats

- 4.1.1 Bats were recorded throughout the study area (Figure 10.5) as outlined in the Section 10.3 of the ES chapter, and in Appendix A10.3. Along with the conservation status of the bat species utilising the areas detailed, the habitats have been evaluated according to level of use for roosting (R), foraging (F) and commuting (C). In addition, relative abundance and suitability of areas of similar habitat in the wider area have been considered. A habitat's suitability to support and sustain populations of bats has been assessed using potential activity, (i.e. the activity that a habitat is considered to be able to support), and actual activity (i.e. bat activity actually recorded when carrying out baseline surveys).
- 4.1.2 Each area of bat habitat has been evaluated separately, however some areas overlap with others (Table 2). Where this is the case it is noted within all areas affected.
- 4.1.3 Bats are a highly mobile species and are known to travel many kilometres between day/night roosts and areas of suitable foraging habitat. Some species have been known to travel greater distances to find suitable summer roosting sites and/ or hibernating sites. Therefore, it should be noted that various bats species will overlap geographically.
- 4.1.4 Nathusius' pipistrelle (*Pipistrellus nathusii*) is a bat species of regional ecological value due the current lack of information on the species' within the area. This has resulted in four areas of bat habitat within the study area being assessed as being of Regional ecological value. Three of the areas, Coltrannie/Cairnleith Crossing, Gelly Wood and Bankfoot, comprise suitable habitat and features to support roosting and foraging, and the records reflect this. The remaining area, Murthly Estate (north), has little in the way of roosting features but offers suitable foraging and commuting habitat.
- 4.1.5 Daubenton's bats (*Myotis daubentonii*) were also recorded in the areas mentioned above. Daubenton's bats are also present in a further four areas. These areas are considered to have features to support roosting and hibernating bats and this has resulted in the areas of Shochie

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Burn, Ordie Burn and Westwood being assessed as having Authority area ecological value within the study area.

- 4.1.6 Other areas assessed as being of Authority area ecological value include Newmill, Luncarty, and Muir of Thorn woodland. Newmill supports a small population of brown long-eared bats. Brown long-eared bats have very specific roost requirements with regards to temperature and space to fly before emerging, and use carefully chosen 'feeding perches' within barns. Although not threatened, this species is only found in small numbers in the area which has resulted in the evaluation of Authority area importance.
- 4.1.7 Luncarty supports a number of small populations of common and soprano pipistrelles, and contains important commuting routes along both the existing A9 and the railway line. Viaducts and bridges along both road and railway line present features suitable for both roosting and hibernating, although only bridges over the Shochie Burn and Ordie Burn were identified as supporting roosting bats. Although both pipistrelle bat species are locally common, the ecological value of a habitat area will depend on the number of roosts identified, the presence and number of important foraging and commuting features, and the local habitat type.
- 4.1.8 Confirmed tree roosts were recorded in the Byres of Murthly/Mill Dam SSSI area. These are likely to support common or soprano pipistrelle species, although it was not possible to confirm this either through emergence/re-entry surveys or by analysis of droppings. The trees form part of a line along a track connecting areas of woodland and wetland which offer high potential for commuting and roosting. The area has been classed as being of Authority area ecological value.

**Table 2: Evaluation of Bat Habitats**

Habitat Area	Actual Activity	Potential Activity	Comments	Evaluation
<b>Table Note: R = Roost, C = Commuting, F = Foraging</b>				
Luncarty	R, C, F	R, C, F	The community of Luncarty and its associated habitats provide roosting, foraging and commuting areas for locally important common and soprano pipistrelle bats. The railway line runs through the Luncarty community and provides an important commuting corridor between foraging habitats throughout the wider area for all bat species.	Authority area
Shochie Burn	R, C, F	R, C, F	The Shochie Burn features an area of standing water which offers foraging for Daubenton's and pipistrelle bats. The burn is tree-lined offering sheltered commuting routes for all local bat species. A population of <i>Myotis</i> bats were identified roosting within the Shochie Viaduct. The area was identified as an important foraging and commuting site for <i>Myotis</i> and pipistrelle bats. Daubentons bats are an authority important species.	Authority area
Ordie Burn	R, C, F	R, C, F	An important foraging and roosting site for Daubenton's and both pipistrelle species. A <i>Myotis</i> roost was identified within the Ordie viaduct, and pipistrelle roosts were identified in the four sets of buildings surveyed. Transect surveys also revealed the burn to be a commuting route for <i>Myotis</i> spp. and pipistrelles, between areas of arable land and amenity grassland in the surrounding area. Oak ( <i>Quercus</i> sp.) trees to the east of the burn have been assessed to be of high potential to support roosting bats.	Authority area
Newmill	R, C, F	R, C, F	Newmill Farm and barns support roosts of pipistrelle and a small number of brown long-eared bats. A brown long-eared bat feeding perch was also identified within one of the barns. The area is surrounded by mature oak and sycamore trees which have the potential to support roosting bats. The nearby Ordie Burn and its tributaries provide foraging and commuting within the wider area.	Authority area
Westwood	C, F	R, C, F	The area provides potential roosting features for Daubenton's bats in the form of a quarry and nearby mature ash ( <i>Fraxinus excelsior</i> ) trees. Daubenton's bats are an important authority species. The tree-lined western edge of the A9 provides foraging and commuting opportunities for all bat species. The quarry also offers suitable hibernation features for all crevice dwelling bats.	Authority area
Garry Burn	R, C, F	R, C, F	Along with the burn itself, there is a line of oak trees on the eastern bank which boost the foraging and commuting available in the area.	Authority

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Habitat Area	Actual Activity	Potential Activity	Comments	Evaluation
			A common pipistrelle roost was identified in a building close to the burn. The trees in the area have been assessed as having features with the potential to support roosting bats.	area
Bankfoot	R, C, F	R, C, F	The modern urban community of Bankfoot is located on the western edge of the existing A9 and features potential roosting features for bats in the form of farm and church buildings between the village and the main road. Common and soprano pipistrelles were recorded roosting and foraging in the area. A commuting record for Nathusius' pipistrelle was identified. The range of the Nathusius' pipistrelle in the region is currently unknown and this is a notable record. In addition to pipistrelles, brown long-eared and <i>Myotis</i> species were recorded, both of which are important at authority level.	Regional
Coltrannie/ Cairnleith Crossing	C, F	R, C, F	The main features for bats are the areas of mixed woodland which straddle the existing A9 in this area. <i>Myotis</i> , brown long-eared, common and soprano pipistrelles and Nathusius' pipistrelle were all recorded in the area. Oak and birch ( <i>Betula</i> sp.) trees are present to the north of the area. The trees are mature and have the potential to support roosting bats.	Regional
Muir of Thorn woodland	C, F	C	The area consists mainly of plantation conifers which are low in potential to support roosting and foraging bats. However, along with common and soprano pipistrelles, a Nathusius' pipistrelle was recorded commuting in the area. Brown long-eared and <i>Myotis</i> bats were also recorded commuting through the area. Although a low potential exists for roosting and foraging, the area has regional importance due to the recording of a Nathusius' pipistrelle, as the extent of its range in this area has yet to be determined.	Authority area
Gelly Wood	C, F	R, C, F	The semi-natural coniferous woodland offers moderate potential to support bats. A number of trees were identified as having features with high potential to support a roost and common, soprano and Nathusius' pipistrelles were recorded commuting and foraging in the area. The extent of Nathusius' pipistrelle's northern range is of regional importance. In addition, brown long eared and <i>Myotis</i> bats were recorded foraging and commuting.	Regional
Murthly Estate (north)	C, F	C, F	Plantation woodland with areas of clear fell and scrub offer foraging habitat for all species of bats. Common, soprano and Nathusius' pipistrelle, and brown long-eared and <i>Myotis</i> species were all recorded foraging and/or commuting. A mixture of oak, beech ( <i>Fagus sylvatica</i> ), birch, ash and Scots pine ( <i>Pinus sylvestris</i> ) offer features suitable to support roosting bats.	Regional
Byres of Murthly/Mill Dam SSSI	R	R, C, F	Agricultural land with lines of trees connecting up areas of woodland and wetland. The area offers high potential for roosting and foraging. Three tree roosts were found in the area and are most likely to support common or soprano pipistrelle.	Authority area

## 5 Breeding Birds

5.1.1 The importance of a survey quadrats' breeding bird assemblage was determined primarily upon the consultation of international, national and locally produced lists of birds of conservation concern. Credence was also given to the diversity and quantity of species/individuals that constituted breeding bird assemblages, regardless of the presence of species of conservation concern.

### Survey Quadrat 1

5.1.2 Quadrat 1 is comprised of an area of mature open mixed woodland surrounded by arable fields and grassland with well developed hedgerows and scattered trees. A number of residential properties are also present.

5.1.3 A total of 29 bird species were recorded including:

- four JNCC red list species (skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), tree sparrow (*Passer montanus*) and yellowhammer (*Emberiza citrinella*));

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- six amber list species (common whitethroat (*Sylvia communis*), dunnock (*Prunella modularis*), oystercatcher (*Haematopus ostralegus*), reed bunting (*Emberiza schoeniclus*), swallow (*Sturnus vulgaris*) and willow warbler (*Phylloscopus trochilus*));
- seven SBL species (dunnock, reed bunting, siskin (*Carduelis spinus*), skylark, song thrush, tree sparrow and yellowhammer); and
- sixteen species listed on the Tayside LBAP (blackbird (*Turdus merula*), blue tit (*Cyanistes caeruleus*), chaffinch (*Fringilla coelebs*), dunnock, goldfinch (*Carduelis carduelis*), great spotted woodpecker (*Dendrocopus major*), great tit (*Parus major*), reed bunting, robin (*Erithacus rubecula*), skylark, song thrush, swallow, tawny owl (*Strix aluco*), tree sparrow, wren (*Troglodytes troglodytes*) and yellowhammer).

5.1.4 This breeding bird assemblage was assessed as being of local level ecological importance.

#### Survey Quadrat 2

5.1.5 Quadrat 2 contains a section of Cairnleith Moss SSSI to the north with a patch of open mature mixed woodland adjacent. The southern section includes areas of arable land with scattered farm buildings.

5.1.6 A total of 32 bird species were recorded including:

- six JNCC red list species (linnet (*Carduelis cannabina*), skylark, spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), tree sparrow and yellowhammer);
- eight amber list species (common whitethroat, curlew (*Numenius arquata*), dunnock, meadow pipit (*Anthus pratensis*), mistle thrush (*Turdus vicivorus*), reed bunting, swallow and willow warbler);
- nine SBL species (curlew, dunnock, linnet, reed bunting, skylark, spotted flycatcher, starling, tree sparrow and yellowhammer); and
- seventeen species listed on the Tayside LBAP (blackbird, blue tit, chaffinch, curlew, dunnock, goldfinch, great tit, linnet, reed bunting, robin, skylark, spotted flycatcher, starling, swallow, tree sparrow, wren and yellowhammer).

5.1.7 In addition, there have been reports of barn owl (*Tyto alba*) (WCA1i, JNCC amber listed, SBL and LBAP) roosting in this area in recent years and a barn owl was observed flying across the carriageway approximately 5km south of quadrat 5. This breeding bird assemblage was assessed as being of authority area level ecological importance.

#### Survey Quadrat 3

5.1.8 Quadrat 3 is comprised of an area of open mature coniferous plantation and pasture land to the north. The southern section comprises dense coniferous plantation with an area of birch woodland and blanket bog leading south towards Cairnleith Moss SSSI.

5.1.9 A total of 23 bird species were recorded including:

- two JNCC red list species (song thrush and yellowhammer);
- four amber list species (dunnock, meadow pipit, whinchat (*Saxicola rubetra*) and willow warbler);
- four SBL species (dunnock, siskin, song thrush and yellowhammer); and
- ten species listed on the Tayside LBAP (blackbird, blue tit, chaffinch, dunnock, great tit, robin, song thrush, whinchat, wren and yellowhammer).

5.1.10 In addition, barn owl feeding signs were found in woodland to the north of Cairnleith Moss SSSI and an osprey (*Pandion haliaetus*) (IUCN species of least concern, Annex 1 The Birds Directive,

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WCA1i, JNCC amber listed, SBL and LBAP) nest was confirmed to the east of the survey quadrat (within the 500m survey buffer zone). This breeding bird assemblage (including the osprey) was assessed as being of national level ecological importance.

#### Survey Quadrat 4

5.1.11 Quadrat 4 contains an area of coniferous plantation woodland to the north with adjacent areas of heather moorland, wet grassland and pasture. The southern section contains an area of mixed deciduous woodland and arable fields.

5.1.12 A total of 27 bird species were recorded including:

- two JNCC red list species (song thrush and yellowhammer);
- five amber list species (common whitethroat, dunnock, meadow pipit, mistle thrush and swallow);
- four SBL species (dunnock, siskin, song thrush and yellowhammer); and
- eleven species listed on the Tayside LBAP (blackbird, blue tit, chaffinch, dunnock, goldfinch, great tit, robin, song thrush, swallow, wren and yellowhammer).

5.1.13 This breeding bird assemblage was assessed as being of local level ecological importance.

#### Survey Quadrat 5

5.1.14 Quadrat 5 primarily consists of conifer plantation with areas of clear fell interspersed throughout. The northern section has areas of pasture and wet grassland with fringing mixed deciduous woodland and scattered dwellings.

5.1.15 A total of 29 bird species were recorded including:

- three JNCC red list species (house sparrow (*Passer domesticus*), song thrush and yellowhammer);
- six amber list species (dunnock, house martin (*Delichon urbica*), oystercatcher, reed bunting, swallow and willow warbler);
- six SBL species (dunnock, house martin, reed bunting, siskin, song thrush and yellowhammer); and
- sixteen species listed on the Tayside LBAP (blackbird, blue tit, chaffinch, dunnock, goldfinch, great tit, greenfinch (*Carduelis chloris*), house martin, house sparrow, reed bunting, robin, song thrush, sparrowhawk (*Accipiter nisus*), swallow, wren and yellowhammer).

5.1.16 This breeding bird assemblage was assessed as being of local level ecological importance.

#### Survey Quadrat 6

5.1.17 Quadrat 6 is comprised of an area of heather moorland with areas of bog and mixed scattered trees to the south. The central section contains open mature coniferous plantation woodland and an area of young dense coniferous plantation. The northern area of the quadrat has recently been clearfelled.

5.1.18 A total of 24 bird species were recorded including:

- two JNCC red list species (song thrush and yellowhammer);
- four amber listed species (bullfinch (*Pyrrhula pyrrhula*), dunnock, meadow pipit and willow warbler);
- five SBL species (bullfinch, dunnock, siskin, song thrush and yellowhammer); and

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- twelve species listed on the Tayside LBAP (blackbird, blue tit, bullfinch, chaffinch, dunnoek, goldfinch, great spotted woodpecker, robin, song thrush, wren and yellowhammer).

5.1.19 This breeding bird assemblage was assessed as being of local level ecological importance.

5.1.20 Full details of the habitats recorded within the study area can be found within the Terrestrial Habitats section of the Appendix A10.3 (Section 3) and Figure 10.2.

## 6 Reptiles

6.1.1 Slow worm (*Anguis fragilis*) and adder (*Vipera berus*) were not found to be present within the survey corridor and hence will not be further considered. Common lizards were recorded within four of the six habitats identified as being suitable for reptiles.

6.1.2 A summary of the ecology and nature conservation value of sites surveyed for reptiles can be found in below (Table 3).

**Table 3: Evaluation of Reptile Habitat.**

Location Name	Grid Ref.	Species Assemblage	Evaluation
Woodland East	NO 0707 3624	Likely absent	Less than Local
Woodland West	NO 06913 36486	Likely absent	Less than Local
Cairnleith Moss SSSI	NO 0708 3676	Common lizard	Less than Local
Gelly Muir	NO 0629 3751	Common lizard	Local
Area of Clearfell	NO 0667 3770	Common lizard	Less than Local
Murthly Muir	NO 0679 3772	Common lizard	Less than Local

## 7 Pine Marten

7.1.1 Although no confirmed sightings of pine marten (*Martes martes*) or pine marten shelters were recorded, it is assumed pine marten are present based on the number of suspected pine marten scats found within Gelly Wood. None of these scats could be confirmed as pine marten through DNA testing, however, based on morphology and location the scats have been assumed to be pine marten.

7.1.2 Muir of Thorn and Gelly Wood are the only area within the survey corridor to be considered suitable for pine marten. The ecology and nature conservation value of these areas in relation to pine marten is considered to be of authority area value given the lack of suitable habitat along the rest of the proposed scheme.

## 8 Red Squirrel

8.1.1 Table 4 provides a summary of the ecology and nature conservation value of the three woodland areas which were identified as being suitable for red squirrel (*Sciurus vulgaris*).

**Table 4: Evaluation of Woodlands Suitable for Red Squirrel.**

Woodland	Habitat Quality	Red Squirrel Recorded	Grey Squirrel Recorded	Evaluation
Muir of Thorn	Medium-High	Yes	No	National
Gelly Wood	Medium-High	Yes	No	National
Five Mile Wood	Medium	Yes	Yes	Regional



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## 9 Otter

9.1.1 Given that otters (*Lutra lutra*) are likely to be at low densities even in the most favourable habitats (Kruuk, 2006) and that it is not possible to evaluate the size of the otter population based on the number of signs, the evaluation is based on the size and quality of the habitat for otter on each watercourse. For minor watercourses that are not part of the River Tay SAC and not specifically mentioned in the evaluation below, for example Ordie Burn Ditch, their function as supporting habitat for otter is taken into account and included within the relevant watercourse evaluation.

9.1.2 The evaluation of otter habitats within the study area is shown in Table 5.

**Table 5: Evaluation of Watercourses for Otter**

Watercourse	Habitat Quality	Use by Otters	Reason for Valuation	Evaluation
Shochie Burn	High	Foraging, commuting and shelter	River Tay SAC for which otter are a qualifying feature. Three otter shelters recorded. Spraints and prints indicate use by otter.	International
Shochie Burn Loch	High	Foraging, commuting and shelter	River Tay SAC for which otter are a qualifying feature. Two otter shelters recorded. Spraints and prints indicate use by otter.	International
Benchil Burn	Medium	Commuting	Spraints indicate use by otter. Burn extends foraging and shelter habitat of Ordie Burn.	Authority area
Ordie Burn	High	Foraging, commuting and shelter	River Tay SAC for which otter are a qualifying feature. Three otter shelters including two holts. Spraints and prints indicate use by otter.	International
Gelly Burn (south)	Medium	Commuting	Spraints indicate use by otter. Burn extends foraging and shelter habitat of Ordie Burn.	Authority area
Garry Burn	High	Foraging and commuting	River Tay SAC for which otter are a qualifying feature. Spraints and prints indicate use by otter.	International
Ardonachie Burn	Low – medium	Commuting	Spraints indicate use by otter. Burn had little flow.	Local
Corral Burn	Low – medium	Commuting	Spraint and print indicate use by otter.	Local
Gelly Burn (north)	Low – medium	Commuting	Spraints indicate use by otter. Burn had little flow.	Local
Broomhill Burn	Low – medium	Commuting	Spraints and prints indicate use by otter. Burn had little flow.	Local
Birnam Burn	Low – medium	Commuting	Spraint indicates use by otter	Local

## 10 Amphibians

10.1.1 Table 6 provides a summary of the ecology and nature conservation value of waterbodies surveyed for amphibians. The location of waterbodies is shown on Figure 10.7. As access to waterbody P8 could not be obtained, it has been given the same evaluation as the nearby similar SUDS pond P9.

10.1.2 As formal surveys at ponds P16, P17 and P18 were not undertaken, it was assumed for the purposes of evaluation that they would hold an assemblage of common amphibian species (frogs and newts). In addition, close access to P18 could not be undertaken and the aquatic water quality could therefore not be determined.

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**Table 6: Evaluation of Amphibian Waterbodies**

Waterbody ID	HSI	Terrestrial Habitat Quality	Aquatic Habitat Quality	Species Assemblage	Evaluation
P2	0.78	Moderate	Moderate	Common frog	Local
P4	0.70	Poor	Moderate	Efts (smooth or palmate newt) Common frog	Local
P8	0.82	Moderate	Moderate	n/a	Local
P9	0.57	Moderate	Moderate	Common frog	Local
P10	0.91	Moderate	High	None	Less than Local
P13	0.70	Moderate	High	Palmate newt Common frog	Local
P15	0.52	Moderate	High	Palmate newt Efts (smooth or palmate newt) Common frog	Local
P16	0.64	Moderate	High	-	Local
P17	0.58	High	High	-	Local
P18	0.60	Moderate	-	-	Local

## 11 Aquatic / River Habitat

- 11.1.1 A summary of the ecology and nature conservation value of waterbodies surveyed for aquatic habitat is provided in Table 7. The evaluation involves professional judgement and consideration of Habitat Modification Score and the SEPA and WFD classification. The physical habitat structure of a watercourse forms a component of water body status as prescribed in the Water Framework Directive (European Directive 2000/60/EC). Additionally, the Water Framework Directive requires the degree of modification and physical habitat quality of a waterbody to be determined, contributing to the assessment of Good Ecological Status.
- 11.1.2 Those watercourses that are part of or are connected to the River Tay SAC could be recognised as being of International value due to connectivity to the SAC despite being of limited supporting ecological functionality for the SAC. Therefore, to understand the implications for receptors that might be affected by the proposed scheme and as part of the EIA process the evaluation of receptors potentially affected has been undertaken by collecting baseline survey data of habitats and species. These data have then been used to inform the implications of the proposed scheme for habitat or species and used to design specific and appropriate mitigation for these potential impacts.
- 11.1.3 Non designated watercourses (named burns, unnamed tributaries and drainage ditches) present within the study area but unsuitable for classification using RHS have been identified as supporting low to medium aquatic habitat quality, typified by moderate to poor; flow, substrate and riparian habitat diversity. These have been assessed using expert judgement from site visits for other ecological receptors to evaluate habitat quality. Where appropriate cognisance has also been taken of water quality classifications reported in Chapter 9 (Road Drainage and the Water Environment).

**Table 7: Evaluation of Watercourses for Aquatic Habitat**

Watercourse	Reason for Valuation	Evaluation
Shochie Burn	Habitat Modification Score indicating Obviously Modified	Regional
Ordie Burn (upper)	Habitat Modification Score indicating Obviously Modified	Regional
Ordie Burn (lower)	Habitat Modification Score indicating Significantly Modified	Authority area
Garry Burn	Habitat Modification Score indicating Significantly Modified	Authority area
Named burns	Non-designated, low to medium quality habitat. Low to moderate flow and remaining wet throughout the year. Medium to high water quality (Chapter 9: Road Drainage and the Water Environment).	Authority area
Unnamed tributaries & drains	Non-designated, low quality habitat. Low to medium water quality (Chapter 9: Road Drainage and the Water Environment) and ephemeral.	Less than Local

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### Appendix A10.5: Evaluation of Terrestrial and Freshwater Ecological Receptors

## 12 Freshwater Invertebrates

12.1.1 Table 8 provides a summary of the ecology and nature conservation value of waterbodies surveyed for freshwater invertebrates.

**Table 8: Evaluation of Watercourses for Freshwater Invertebrates**

Watercourse	Reason for Valuation	Evaluation
Shochie Burn	SEPA WFD classification of high status. 2013 samples: high ecological status, CCI of fairly high conservation value. One regionally notable species, <i>Protonemura meyeri</i> , was recorded from the 2013 summer sample.	Authority area
Ordie Burn	SEPA WFD classification of high status. 2013 samples: good status in spring, high status in summer, CCI of fairly high conservation value in spring and moderate in summer. No species of conservation or legislative interest recorded.	Authority area
Garry Burn	SEPA WFD classification of high status. 2013 samples: high status, CCI of fairly high conservation value in spring and moderate in summer. No species of conservation or legislative interest recorded.	Authority area
Ardonachie Burn	SEPA WFD classification of high status. 2013 samples: high status, CCI of moderate conservation value. No species of conservation or legislative interest recorded.	Authority area
Gelly Burn	Not a SEPA WFD waterbody. 2013 samples: moderate status in spring, high in summer, CCI of moderate conservation value. No species of conservation or legislative interest recorded.	Local

## 13 Macrophytes

13.1.1 Table 9 provides a summary of the ecology and nature conservation value of waterbodies surveyed for macrophytes.

**Table 9: Evaluation of Watercourses for Macrophytes**

Watercourse	Reason for Valuation	Evaluation
Shochie Burn	LEAFPACS score indicating high habitat value (0.97). No species of conservation or legislative interest recorded.	Regional
Ordie Burn (lower)	LEAFPACS score indicating high habitat value (0.89). No species of conservation or legislative interest recorded.	Regional
Ordie Burn (upper)	LEAFPACS score indicating good habitat value (0.72). No species of conservation or legislative interest recorded.	Authority area
Garry Burn	LEAFPACS score indicating moderate habitat value (0.51). No species of conservation or legislative interest recorded.	Less than Local

## 14 Ponds

14.1.1 Ponds habitats within the study area have been evaluated based on the criteria set out in Chapter 10, Table 10.1. Table 10 below provides a summary of the pond evaluations.

**Table 10: Evaluation of Ponds**

Pond	Reason for valuation (Highest valuation taken)	Evaluation
4	Ponds listed in the LBAP (Authority area), PSYM category - poor (< Local), one species of local conservation importance (Local), considered to appreciably enrich the habitat resource of the area (Local).	Authority area
8	PSYM category – poor (< Local), considered to appreciably enrich the habitat resource of the area (Local), no species of conservation interest (< Local), although ponds are listed in the LBAP this pond is a sudds pond and is not considered a viable LBAP habitat.	Local
9	PSYM category – poor (< Local), considered to appreciably enrich the habitat resource of the area (Local), one species of local conservation importance (Local), considered to appreciably enrich the habitat resource of the area (Local).	Local
15	Ponds listed in the LBAP (Authority area), PSYM category - poor (< Local), no species of local conservation importance (< Local), considered to appreciably enrich the habitat resource of the area (Local).	Authority area

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### Appendix A10.5: Evaluation of Terrestrial and Freshwater Ecological Receptors

## 15 Freshwater Fish

- 15.1.1 Atlantic salmon (*Salmo salar*) and all three species of lamprey are species of UK Conservation Concern and are also qualifying features of the River Tay SAC. European eel (*Anguilla anguilla*), Atlantic salmon, all lamprey and sea trout (*Salmo trutta*) are listed on the SBL.
- 15.1.2 Table 11 provides a summary of the ecology and nature conservation value of waterbodies surveyed for freshwater fish.

**Table 11: Evaluation of Watercourses for Freshwater Fish**

Watercourse	Reason for Valuation	Evaluation
Shochie Burn	Eel, a species identified as a priority species listed in the UKBAP. Lamprey sp., a qualifying feature species of the River Tay SAC. Salmon, sea trout, eel and river lamprey are species listed on the SBL.	International
Ordie Burn (lower and upper)	Eel, a species identified as a priority species listed in the UKBAP. Lamprey sp., a qualifying feature species of the River Tay SAC. Salmon, sea trout, eel and river lamprey are species listed on the SBL.	International
Garry Burn	Lamprey sp., a qualifying feature species of the River Tay SAC. Salmon, sea trout, eel and river lamprey are species listed on the SBL.	International

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### **Appendix A10.5: Evaluation of Terrestrial and Freshwater Ecological Receptors**

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