A77 Maybole Bypass

Phase 1 habitat Survey

Final Report

CO2500182-ENV-PHS-001

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Document Control Sheet

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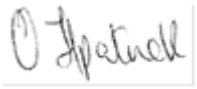
Final Version	Name: Melanie Roxburgh Signature:  Date: 14/11/2013	Name: Gavin Sams Signature:  Date: 14/11/2013	Name: O Fitzpatrick Signature:  Date: 14/11/2013
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1.1. Introduction

Aims

1.1.1. The Phase 1 habitat survey records vegetation present over large areas, which allows for effective classification of habitats.

1.1.2. The Phase 1 habitat survey will:

- Identify and map habitat types within the survey area.
- Evaluate the nature conservation importance of the noted habitats and the survey area as a whole.
- Record any species found and make recommendations for further surveys.

1.1.3. The information is mapped using a geographical information system to provide details of habitats, their location, extent and distribution within the survey area. The Phase 1 habitat survey report will then present the results of the survey in a concise form, summarising and interpreting them as well as adding additional information to facilitate decision making regarding the proposed scheme.

1.1.4. The Phase 1 habitat survey report aims to:

- Identify existing records of protected species and species of nature conservation importance that have been recorded within the survey area.
- Identify existing designated sites within 2km of the proposed scheme including sites of local, national and international importance.
- Identify and map habitat types within the survey area.
- Evaluate the nature conservation importance of the noted habitats and the survey area as a whole.
- Record any species found and make recommendations for further surveys.

1.1.5. The report aims to give an overview of the wildlife habitat resource of the survey area in terms of quantitative data, with interpretation and comment supported by a descriptive account of the resource.

1.2. Methodology

Desk Study

1.2.1. In accordance with the Joint Nature Conservation Committee's Handbook for Phase 1 Habitat Survey – A technique for environmental audit (1993) (revised print 2010) of existing information relevant to Phase 1 habitat survey was sought on designated sites, species records and maps and descriptions of local wildlife interest.

Designated Sites

1.2.2. The Multi-Agency Geographic Information for the Countryside (MAGIC, 2012) website brings together information on key environmental schemes and designations in one place. To ensure that requirements to conserve natural habitats and wild flora and fauna under the Conservation (Natural Habitats &c) Regulations 1994 (as amended) are considered, a search on MAGIC was undertaken to determine the presence of local, national and internationally designated sites within 2km of the proposed scheme. A search was also carried out for any Special Areas of Conservation (SAC), candidate SAC (cSAC) or provisional SAC (pSAC) sites within 30km with bats as a qualifying interest.

Protected Species

1.2.3. The National Biodiversity Network (NBN) Gateway website provides a collation of species records from a range of record centres and conservation organisations. A search was carried out on the NBN Gateway website to establish species likely to occur in the area. A search for species in the 10km grid squares of NS20, NS21, NS30 and NS31 was undertaken (NBN, 2012).

Information Sources

1.2.4. The following background documents and information sources were referred to for further information on protected species and habitat action plans:

- The UK Biodiversity Action Plan (1994)
    - The world-wide aim of conserving biodiversity began at the 'Earth Summit' in Rio de Janeiro in 1992 where the Convention on Biological Diversity was one of the initiatives. At the Rio summit, the UK was one of 150 governments to sign up to the convention. To achieve its commitment the UK government published the UK Biodiversity Action Plan (UKBAP) in 1994.
- The Scottish Biodiversity Strategy (2004)
    - In Scotland the Scottish Biodiversity Forum was set up to translate the UKBAP into specific action plans for Scotland. The forum has produced 'Scotland's Biodiversity – It's in Your Hands', a strategy for the conservation and enhancement of biodiversity in Scotland. The strategy maps out a 25 year framework for action to conserve and enhance biodiversity for the health, enjoyment and well-being of all the people of Scotland.
- The Scottish Biodiversity List (2005)
    - The Scottish Biodiversity List is a record of animals, plants and habitats that are considered to be of principal importance for biodiversity conservation in Scotland. The list was published in 2005 to satisfy the requirement under the Nature Conservation (Scotland) Act 2004.

- Ayrshire Biodiversity Action Plan (2007-2010)
    - The first Ayrshire Local Biodiversity Action Plan (LBAP) was completed in 2001 and covered an action plan for 2001-2005. The original Ayrshire LBAP included 26 Habitat Action Plans and11 Species Action Plans. Since the original Ayrshire LBAP, The Scottish Biodiversity Strategy and Scottish Biodiversity List implementation has seen the need for the Ayrshire Plan to undergo a revision. The Ayrshire Biodiversity Action Plan was completed in 2007.
- Atkins (2007), A77 Maybole Transport Study – DMRB Stage 2 Report

Field Survey

1.2.5. The aim of the Phase 1 survey is to provide a record of the semi-natural vegetation and wildlife habitat over large areas of the countryside.

1.2.6. The survey was carried out in accordance with the methodology detailed in the Joint Nature Conservation Committee's Handbook for Phase 1 habitat survey – A technique for environmental audit (1993) (revised print 2010). The surveys were carried out between 23rd July and 20th September 2012.

1.2.7. The surveys were undertaken by Amey Ecologists Gavin Boyd and Melanie Roxburgh.

1.2.8. The survey area is detailed in section 1.3.

1.2.9. During the Phase 1 habitat survey, the presence, or potential presence, of protected species was noted and further surveys recommended.

1.2.10. The vegetation and wildlife habitats surrounding the proposed scheme are shown on Drawing Nos. 25000182/PHS/001 - 005. Co-ordinates have been used in the report to show the location of the descriptive target notes that accompany the drawings.

Survey Constraints

1.2.11. Although the drawings which accompany this report have been produced with the intention of indicating and classifying the occurrence of semi-natural habitats, it is not to be regarded as a definitive representation of the conservation value or interest of any piece of land. In particular, the absence of any symbol such as colour code or target symbol should not be taken as denoting a lack of conservation value.

1.3. Study Area Context

1.3.1. The survey corridor extends 500m either side of the proposed scheme.

1.3.2. The proposed scheme is 5065m in length and passes to the north of Maybole, as shown on Drawing No. 25000182/PP/041.

1.3.3. For the purpose of this Phase 1 habitat survey report, the scheme has been divided into five sections; Broomknowes Farm to Culzean Road; Culzean Road to Gardenrose Path; Gardenrose Path to Alloway Road; Alloway Road to Netherculzean Farm; Netherculzean Farm to Brockloch Burn. These divisions were chosen for ease of dividing survey work, as the roads and farms provide good features to enable easy divisions. The five sections are described in further detail below.

Broomknowes Farm to Culzean Road

1.3.4. The southern extent of the survey corridor commences in the vicinity of Broomknowes Farm. As this is where the proposed scheme ties in with the current A77, the survey corridor extents to both sides of the existing carriageway. The proposed scheme travels north where it ties into a proposed roundabout at Culzean Road. Much of this survey area consists of farmland and residential areas.

1.3.5. The habitats surrounding this section are shown on Drawing No. 25000182/PHS/001.

Culzean Road to Gardenrose Path

1.3.6. From the roundabout at Culzean Road, to Gardenrose Path, the survey area consists of farmland.

1.3.7. The habitats surrounding this section are shown on Drawing No. 25000182/PHS/001.

Gardenrose Path to Alloway Road

1.3.8. From Gardenrose Path, the proposed scheme passes through grassland, with more grassland to the north and the residential area of Maybole town to the south.

1.3.9. The habitats surrounding this section are shown on Drawing No. 25000182/PHS/002.

Alloway Road to Netherculzean Farm

1.3.10. From Alloway Road, the proposed scheme passes through arable land north of the railway line then through semi-improved grassland where this section terminates north of Netherculzean Farm.

1.3.11. The habitats surrounding this section are shown on Drawing Nos.25000182/PHS/002 – 25000182/PHS/003.

Netherculzean Farm to Brockloch Burn

1.3.12. From Netherculzean Farm, the proposed scheme passes to the north of the railway line, through multiple fields of semi-improved grassland to where the scheme terminates in an area of marshy grassland and ties in with the current A77 Trunk Road.

1.3.13. The habitats surrounding this section are shown on drawings 25000182/PHS/003 – 25000182/PHS/004.

2. Results

2.1. Designated Sites

2.1.1. There are no statutory designated sites within 2km of the proposed scheme.

2.2. Broomknowes Farm to Culzean Road

Protected Species

2.2.1. The search on the NBN Gateway website for grid square NS20 showed that the following notable species have been recorded in the area around the Broomknowes Farm to Culzean Road area:

- Palmate newt *Lissotriton helveticus*
- Smooth newt *Lissotriton vulgaris*
- Adder *Vipera berus*
- Common lizard *Zootoca vivipara*
- Slow-worm *Anguis fragilis*
- Brown hare *Lepus europaeus*
- Brown long-eared bat *Plectus auritus*
- Common pipistrelle *Pipistrellus pipistrellus*
- Daubenton's bat *Myotis daubentonii*
- Badger *Meles meles*
- Red squirrel *Sciurus vulgaris*
- Otter *Lutra lutra*
- Water vole *Arvicola amphibious*
- Lesser noctule *Nyctalus leisleri*
- Nathusius's pipistrelle *Pipistrellus nathusii*
- Polecat *Musterla putorius*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- West European hedgehog *Erinaceus europaeus*
- Barn owl *Tyto alba*
- Black grouse *Tetrao tetrix*
- Common kestrel *Falco tinnunculus*
- Common kingfisher *Alcedo atthis*
- Hen harrier *Circus cyaneus*

- Linnet *Carduelis cannabina*
- Corn bunting *Emberiza calandra*
- Corncrake *Crex crex*
- Dunlin *Calidris alpine*
- Tree sparrow *Passer montanus*
- Nightjar *Caprimulgus europaeus*
- Lapwing *Vanellus vanellus*
- Redwing *Turdus iliacus*
- Skylark *Alauda arvensis*
- Song thrush *Turdus philomelos*
- Spotted flycatcher *Muscicapa striata*
- Wood warbler *Phylloscopus sibiratrix*

2.2.2. The Ayrshire Biodiversity Action Plan 2007-2010 has priority habitats and key Ayrshire species in place relevant to this survey section:

- Habitats
  - Rivers and streams
  - Cereal field margins
- Species
  - Skylark
  - Hen harrier
  - Linnet
  - Corncrake
  - Corn bunting
  - Tree sparrow
  - Song thrush
  - Spotted flycatcher
  - Black grouse
  - Nightjar
  - Common pipistrelle
  - Soprano pipistrelle
  - Brown hare

- Water vole
- Otter

Field Survey

2.2.3. The following habitat types were recorded in the Broomknowes Farm to Culzean Road section:

- Amenity grassland
- Arable land
- Buildings
- Caravan site
- Fence
- Improved grassland
- Mixed plantation woodland
- Running water
- Scattered trees
- Scrub
- Semi improved grassland
- Semi natural woodland
- Species poor hedge
- Tall ruderal

Amenity grassland

2.2.4. There is a small area of amenity grassland next to Carrick Academy, which is used by the school as playing fields.

Arable land

2.2.5. There are a few small areas of arable land which were seen to be growing barley.

Buildings

2.2.6. There are a small number of farms and associated outbuildings within this section. The east of this section is the southern remits of Maybole town. Carrick Academy is within this section of the scheme, adjacent to the A77 Trunk Road, which consists of school buildings, car parking and playing fields.

Caravan site

2.2.7. The Ranch Holiday Park is located to the south of Culzean Road. The Park has on-site amenities, maintained pitches for caravans as well as landscaped gardens.

Fence

2.2.8. Within this section, fences are present at field boundaries, separating them from other fields, roads and private properties.

Improved grassland

2.2.9. A large portion of the land in this section, to the north of the A77 consists of improved grassland. At the time of survey, the majority of these fields were used for grazing sheep and cattle.

Mixed plantation woodland

2.2.10. There are two small areas of mixed plantation woodland within this section. One area of woodland is located behind Carrick Academy, and the other is located to the south of Culzean Road, adjacent to the Ranch Holiday Park.

Running water

2.2.11. There are various areas of running water within this section. These tend to be located along field boundaries, between areas of fence or adjacent to hedgerows.

Scattered trees

2.2.12. A small patch of scattered trees are present within the area of semi-improved grassland at Carrick Academy. Species present include birch *Betula sp.* and oak *Quercus sp*..

Scrub

2.2.13. There are a number of patches of scrub that can be seen along various fences, watercourses and standing water.

Semi-improved grassland

2.2.14. A large area of semi-improved grassland is located in this section, to the east of the current A77 alignment. The majority of these fields were used for grazing sheep.

Semi-natural woodland

2.2.15. Two small areas of semi-natural woodland are located within this section, both are surrounded by semi-improved grassland. Dominant tee species present here include oak *Quercus sp*..

Species poor hedge

2.2.16. Hedgerows are common throughout much of this section, found mainly as field boundaries.

Standing water

2.2.17. There are two areas of standing water in this section; one is a small pond located behind Carrick Academy, the other a large permanent flooded area of field, used by waterfowl.

Tall ruderal

2.2.18. There are a few small patches of tall ruderal, some in an area adjacent to the carriageway, next to the land at Carrick Academy and between woodland and housing. Dominant species here include nettle *Urtica dioica* and rosebay willowherb *Chamenon angustifolium*.

Target Notes

Target Note 1 – Mature maple tree (Figure 1) Co-ordinates 228676; 608909

2.2.19. A mature field maple *Acer campestre* with bat roost potential.

Figure 1: Tree with bat roost potential

Target Note 2 – Possible dung pit (Figure 2) Co-ordinates 228735; 608950

2.2.20. A potential badger dung pit was found within close proximity to a badger sett (Target Note 3)

Figure 2: Dung heap

Target Note 3 – Possible badger sett (Figure 3) Co-ordinates 228751; 608954

2.2.21. A large hole was found with dug out ground surrounding and was in close proximity to a potential dung pit

Figure 3: Possible badger sett

Target Note 4 – Possible badger sett (Figure 4) Co-ordinates 228775; 608979

2.2.22. A second potential badger sett was found very close to the potential badger sett observed in Figure 3.

Figure 4: Possible badger sett surrounded by mud

Target Note 5 – Fox; Co-ordinates 228876; 608971

2.2.23. A fox *Vulpes vulpes* was seen foraging in the field.

Target Note 6 – Invertebrate habitat (Figure 5 and 6) Co-ordinates 2290022; 609606

2.2.24. This grassland adjacent to Carrick Academy playing fields has a variety of grasses and plants present, suitable for supporting a wide habitat for invertebrates, including species such as the small tortoiseshell *Aglais urticae*.

Figure 5: Invertebrate suitable grassland

Figure 6: Small tortoiseshell within the grassland

Target Note 7 – Mixed woodland and scrub (Figure 7) Co-ordinates 229164; 609766

2.2.25. The scrub and tree areas here are ideal for birds, especially thrush and tit species, with finch species observed.

Figure 7: Dense scrub with trees surrounding

Target Note 8 – Mammal track (Figure 8) Co-ordinates 228973; 609946

2.2.26. A mammal track can be seen through the tall grass and passes under the barbed-wire fence.

Figure 8: Mammal track under fence

Target Note 9 – Tall hedgerow (Figure 9) Co-ordinates 229069; 610115

2.2.27. The hedgerow present adjacent to Culzean Road is tall and contains species such as hawthorn *Crataegus monogyna*, and is suitable for birds to nest in.

Figure 9: Tall hedgerow adjacent to Culzean Road

2.3. Culzean Road to Gardenrose Path

Protected Species

2.3.1. The search on the NBN Gateway website for grid squares NS20 and NS21 showed that the following notable species have been recorded in the area from Culzean Road to Gardenrose Path:

- Palmate newt *Lissotriton helveticus*
- Smooth newt *Lissotriton vulgaris*
- Adder *Vipera berus*
- Common lizard *Zootoca vivipara*
- Slow-worm *Anguis fragilis*
- Brown hare *Lepus europaeus*
- Brown long-eared bat *Plectus auritus*
- Common pipistrelle *Pipistrellus pipistrellus*
- Daubenton's bat *Myotis daubentonii*
- Badger *Meles meles*
- Red squirrel *Sciurus vulgaris*
- Otter *Lutra lutra*
- Water vole *Arvicola amphibious*
- Lesser noctule *Nyctalus leisleri*
- Nathusius's pipistrelle *Pipistrellus nathusii*
- Polecat *Musterla putorius*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- West European hedgehog *Erinaceus europaeus*
- Bar-tailed godwit *Limosa lapponica*
- Barn owl *Tyto alba*
- Black grouse *Tetrao tetrix*
- Common kestrel *Falco tinnunculus*
- Common kingfisher *Alcedo atthis*
- Hen harrier *Circus cyaneus*
- Linnet *Carduelis cannabina*
- Corn bunting *Emberiza calandra*
- Corncrake *Crex crex*

- Dunlin *Calidris alpine*
- Tree sparrow *Passer montanus*
- Nightjar *Caprimulgus europaeus*
- Lapwing *Vanellus vanellus*
- Redwing *Turdus iliacus*
- Skylark *Alauda arvensis*
- Song thrush *Turdus philomelos*
- Spotted flycatcher *Muscicapa striata*
- Wigeon *Anas penelope*
- Wood warbler *Phylloscopus sibiratrix*
- Golden plover *Pluvialis apricaria*

2.3.2. The Ayrshire Biodiversity Action Plan 2007-2010 has priority habitats and key Ayrshire species in place relevant to this survey section:

- Habitats
  - Rivers and streams
  - Cereal field margins
- Species
  - Skylark
  - Hen harrier
  - Linnet
  - Corncrake
  - Corn bunting
  - Tree sparrow
  - Song thrush
  - Spotted flycatcher
  - Black grouse
  - Nightjar
  - Common pipistrelle
  - Soprano pipistrelle
  - Brown hare
  - Water vole
  - Otter

Field Survey

2.3.3. The following habitat types were recorded in the Culzean Road to Gardenrose Path section:

- Amenity grassland
- Arable land
- Broadleaved plantation woodland
- Buildings
- Fence
- Improved grassland
- Marshy grassland
- Mixed plantation woodland
- Running water
- Species poor hedge
- Species rich hedge

Amenity grassland

2.3.4. There is one area of amenity grassland located to the west of the housing off Gardenrose Path. There are amenities for children including swings and a see-saw, and within the larger grassland, rugby posts are in place. Dog walkers also utilise the area.

Arable land

2.3.5. One area of arable land is present within this section. Barley was in crop at the time of survey. This is surrounded by improved grassland and bounded on its east side by Gardenrose Path.

Buildings

2.3.6. There are multiple residential properties located in this section, between Culzean Road and Gardenrose Path. A farm and its associated outbuildings are also located within this section, surrounded by improved grassland.

Coniferous plantation woodland

2.3.7. There is an area of coniferous plantation woodland to the east of the scheme extents, a small section of which falls into this survey section. This woodland is named ‘Black Wood’.

Fence

2.3.8. Fences are present within this section as boundaries between roads, fields and watercourses.

Improved grassland

2.3.9. The large majority of the land within this section is improved grassland. Most of these fields were used for grazing sheep at time of the survey.

Marshy grassland

2.3.10. A small area of marshy grassland is located at the north west corner of the field of amenity grassland.

Mixed plantation woodland

2.3.11. Mixed plantation woodland is located at the western extent of this section, adjacent to Culzean Road.

Running water

2.3.12. There are various areas of running water within this section. These tend to be located along field boundaries, between areas of fence or adjacent to hedgerows.

Species poor hedge

2.3.13. Hedgerows are common throughout much of this section, found mainly as field boundaries.

Species rich hedge

2.3.14. There is one length of species rich hedge within this section, used as a field boundary between improved grassland.

Target Notes

Target Note 10 – Species rich hedges (Figure 10) Co-ordinates 229046; 610322

2.3.15. Species rich hedges are present in this area as a boundary between numerous fields. These hedges provide excellent foraging and nesting opportunities for a variety of bird species.

Figure 10: Species rich hedgerows

Target Note 11 – Hawthorn hedge (Figure 11) Co-ordinates 229134; 610319

2.3.16. This field boundary is a length of hawthorn hedge which provides a great bird nesting habitat. There is also potential this could be used by bats as a commuting and foraging flight path.

Figure 11: Hawthorn hedge with bird and bat habitat potential

Target Note 12 – Hedge with habitat potential (Figure 12) Co-ordinates 229193; 610435

2.3.17. A hedge with a variety of species present, including hawthorn, is a great habitat to provide nesting and feeding opportunities for a variety of bird species. This may also be used as a flight path for bats and an invertebrate presence may also encourage feeding.

Figure 12: Hedgerow with bat and bird habitat potential

Target Note 13 – Mammal path – (Figure 13) Co-ordinates 229284; 610435

2.3.18. A mammal track was identified passing through the long grass at the edge of the field and was seen to pass through the fence and into the adjacent field.

Figure 13: Mammal track in long grass

Target Note 14 – Mature tree (Figure 14) Co-ordinates 228899; 610438

2.3.19. A mature beech tree *Fagus sylvatica* is situated on the boundary of a field next to a farm. This tree has bat roost suitability, and as hedgerows are present in the surrounding area, there are also foraging and flight paths present.

Figure 14: Mature beech with bat roost potential

Target Note 15 – Mixed woodland (Figure 15) Co-ordinates 228331; 610460

2.3.20. Mixed woodland with dominant species, silver birch *Betula pendula.* This is an ideal foraging habitat for badger.

Figure 15: Mixed woodland plantation

Target Note 16 – Mammal pathway (Figure 16) Co-ordinates 228361; 610482

2.3.21. A mammal pathway can be seen in the tall grass, running adjacent to the field boundary.

Figure 16: Mammal pathway adjacent to field boundary

Target Note 17 – Deer tracks (Figure 17) Co-ordinates 228370; 610477

2.3.22. Roe deer *Capreolus capreolus* tracks were seen throughout the area of mixed woodland. It is thought they forage within this area, as the young trees and forest floor bulbs would provide excellent food sources.

Figure 17: Roe deer tracks

2.4. Gardenrose Path to Alloway Road

Protected Species

2.4.1. The search on the NBN Gateway website for grid squares NS21 and NS31 showed that the following notable species have been recorded in the area around Gardenrose Path to Alloway Road:

- Palmate newt *Lissotriton helveticus*
- Smooth newt *Lissotriton vulgaris*
- Adder *Vipera berus*
- Slow-worm *Anguis fragillis*
- Common pipistrelle *Pipistrellus pipistrellus*
- Badger *Meles meles*
- Red Squirrel *Sciurus vulgaris*
- Otter *Lutra lutra*
- Hedgehog *Erinaceus europaeus*
- Brown hare *Lepus europaeus*
- Brown long eared bat *Plecotus auritus*
- Water vole *Arvicola amphibious*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Whiskered bat *Myotis mystacinus*
- Bar-tailed godwit *Limosa lapponica*
- Barn owl *Tyto alba*
- Black grouse *Tetrao tetrix*
- Barn swallow *Hirundo rustica*
- Blackcap *Sylvia atricapilla*
- Bullfinch *Pyrrhula pyrrhula*
- Buzzard *Buteo buteo*
- Cuckcoo *Cuculus canorus*
- Eider *Somateria mollissima*
- Goldeneye *Bucephala clangula*
- Grasshopper warbler *Locustella naevia*
- Kestrel *Falco tinnunculus*
- Kingfisher *Alcedo atthis*

- Kittiwake *Rissa tridactyla*
- Linnet *Carduelis cannabina*
- Redshank *Tringa totanus*
- Shelduck *Tadorna tadorna*
- Snipe *Gallinago gallinago*
- Swift *Apus apus*
- Dunlin *Calidris alpine*
- Curlew *Numenius arquata*
- Oystercatcher *Haematopus ostralegus*
- Teal *Anas crecca*
- Tree sparrow *Passer montanus*
- Wigeon *Anas penelope*
- Woodcock *Scolopax rusticola*
- Golden plover *Pluvialis apricaria*
- Pochard *Aythya Ferina*

2.4.2. The Ayrshire Biodiversity Action Plan 2007-2010 has priority habitats and key Ayrshire species in place relevant to this survey section:

- Habitats
  - Rivers and streams
  - Cereal field margins
- Species
  - Skylark
  - Hen harrier
  - Linnet
  - Corncrake
  - Corn bunting
  - Tree sparrow
  - Song thrush
  - Spotted flycatcher
  - Black grouse
  - Nightjar
  - Common pipistrelle

- Soprano pipistrelle
- Brown hare
- Water vole
- Otter

Field Survey

2.4.3. The following habitat types were recorded in the Gardenrose Path to Alloway Road section:

- Amenity grassland
- Broadleaved scattered trees
- Buildings
- Dense scrub
- Fence
- Improved grassland
- Marshy grassland
- Mixed plantation woodland
- Quarry
- Running water
- Semi-natural broadleaved woodland
- Species poor hedge
- Standing water
- Tall ruderal
- Walls

Amenity grassland

2.4.4. A small area of amenity grassland is located amongst the housing adjacent to Gardenrose path.

Broadleaved scattered trees

2.4.5. There are two areas of broadleaved scattered trees within this section. One is located solely alongside a watercourse, and the other along a watercourse and field boundary. As these are located along linear features, they are ideal roosting and foraging paths for bats.

Buildings

2.4.6. Two farms and their associated outbuildings are located within this section, amongst the improved grassland. To the south, the outskirts of Maybole town are also located within this section.

Dense scrub

2.4.7. Areas of dense scrub can be found along field boundaries and on the margins of an area of semi-natural broadleaved woodland.

Fence

2.4.8. Fences are present throughout this section, as boundaries between fields.

Improved grassland

2.4.9. Improved grassland is the dominant land present within this section. It is mainly utilised by grazing sheep.

Marshy grassland

2.4.10. There is a small area of marshy grassland present within this section, this is located adjacent to an area of running water.

Mixed plantation woodland

2.4.11. A small area of mixed plantation woodland is present in the north west of this section, adjacent to Gardenrose Path.

Quarry

2.4.12. A disused quarry is located in the north of this section, adjacent to Alloway Road.

Running water

2.4.13. There are various areas of running water within this section. These tend to be located along field boundaries, along fence lines or adjacent to hedgerows.

Semi-natural broadleaved woodland

2.4.14. An area of semi-natural broadleaved woodland is located to the north of this section. This is bounded by dense scrub and on one side by a minor road.

Species poor hedge

2.4.15. Hedgerows are common throughout much of this section, found mainly as field boundaries.

Standing water

2.4.16. There are two areas of standing water located within this section; one is in the north west, located adjacent to Gardenrose Path, the other located next to an area of running water.

Tall ruderal

2.4.17. There is one area of tall ruderal within this section. This is located in the south east area, adjacent to Alloway Road.

Walls

2.4.18. Walls are present as field boundaries in much of the eastern part of this section.

Target Notes

Target Note 18 – Dead tree (Figure 18) Co-ordinates 229500; 610459

2.4.19. A dead tree is located along the hedgerow. The tree has areas of flaking bark, and potentially some holes, which would provide ideal locations for bat roosts. As it is located along a hedgerow with a few other trees also present, bats could utilise this for flight paths.

Figure 18: Dead tree with bat roost potential

Target Note 19 – Beech tree (Figure 19) Co-ordinates 229454; 610492

2.4.20. This beech tree is mature, with potential holes present and bat roost suitability.

Figure 19: Beech tree with bat roost suitability

Target Note 20 – Beech tree with bat suitability (Figure 20) Co-ordinates 229413; 610524

2.4.21. Present here are two beech trees with some flaking bark, indicating suitability for bats to be roosting.

Figure 20: Beech trees with bat roost suitability

Target Note 21 – Dead ash tree (Figure 21) Co-ordinates 229216; 610747

2.4.22. A dead ash tree *Fraxinus excelsior* with areas of flaking bark and potential holes provide perfect opportunities for bats to roost within.

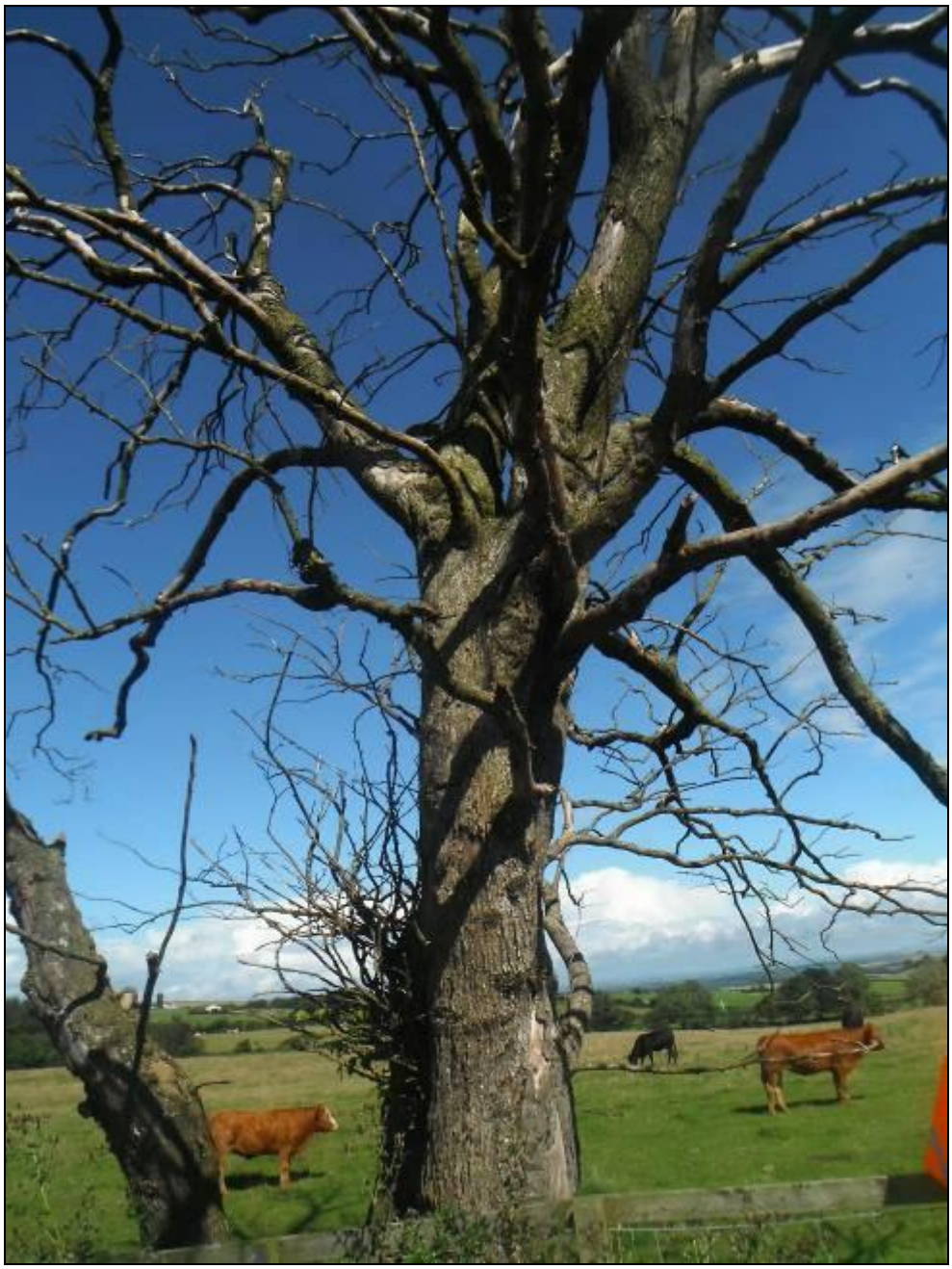

Figure 21: Dead ash tree

Target Note 22 – Mature beech tree (Figure 22) Co-ordinates 229124; 610845

2.4.23. A mature beech tree is present, which has bat roost suitability due to its size, numerous limbs and potential cracks and crevices.

Figure 22: Mature beech with bat roost suitability

Target Note 23 – Dead tree (Figure 23) Co-ordinates 229332; 610974

2.4.24. The remains of a dead tree is located adjacent to a fence line. There are holes present where limbs of the tree have fallen off, which are suitable for bat roosts.

Figure 23: Dead tree with bat roost potential

Target Note 24 – Memorial (Figure 24) Co-ordinates 229500; 611032

2.4.25. A Covenanters Memorial, dating back to 1679 is located adjacent to the road.

Figure 24: Covenanters Memorial

Target Note 25 – Milestone (Figure 25) Co-ordinates 229893; 611210

2.4.26. A milestone is located in the verge adjacent to the road. It states: 13 to Girvan; 8 to Ayr.

Figure 25: Milestone in verge

Target Note 26 – Ruined building (Figure 26) Co-ordinates 229899; 610639

2.4.27. An old ruin is present surrounded by improved grassland. There is potential that areas in the masonry are suitable for bat roosts.

Figure 26: Ruin with bat roost potential

Target Note 27 – Clay pigeon shooting (Figure 27) Co-ordinates 230466; 611336

2.4.28. A clay pigeon facility is present within the area of the old quarry.

Figure 27: Clay pigeon shooting

Target Note 28 – Trees with bat roost potential (Figure 28) Co-ordinates 230040; 611038

2.4.29. A line of mature trees are present, providing both bat roost opportunities and foraging/flight lines for bats to commute.

Figure 28: Line of trees with bat suitability

Target Note 29 – Specimen tree (Figure 29) Co-ordinates 230453; 610862

2.4.30. This is a large, predominant oak tree, a notable feature adjacent to Alloway Road.

Figure 29: Specimen oak tree

2.5. Alloway Road to Netherculzean Farm

Protected Species

2.5.1. The search on the NBN Gateway website for grid square NS31 showed that the following notable species have been recorded in the area around Alloway Road to Netherculzean Farm:

- Brown hare *Lepus europaeus*
- Brown long eared bat *Plecotus auritus*
- Common pipistrelle *Pipistrellus pipistrellus*
- Badger *Meles meles*
- Red squirrel *Sciurus vulgaris*
- Otter *Lutra lutra*
- Water vole *Arvicola amphibious*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Hedgehog *Erinaceus europaeus*
- Whiskered bat *Myotis mystacinus*
- Bar-tailed godwit *Limosa lapponica*
- Barn owl *Tyto alba*
- Barn swallow *Hirundo rustica*
- Kittiwake *Rissa tridactyla*
- Buzzard *Buteo buteo*
- Cuckoo *Cuculus canorus*
- Eider *Somateria mollissima*
- Goldeneye *Bucephala clangula*
- Grasshopper warbler *Locustella naevia*
- Kingfisher *Alcedo atthis*
- Kestrel *Falco tinnunculus*
- Linnet *Carduelis cannabina*
- Pochard *Aythya Ferina*
- Redshank *Tringa totanus*
- Snipe *Gallinago gallinago*
- Swift *Apus apus*
- Dunlin *Calidris alpine*

- Curlew *Numenius arquata*
- Black grouse *Tetrao tetrix*
- Adder *Vipera berus*
- Slow-worm *Anguis fragillis*

2.5.2. The Ayrshire Biodiversity Action Plan 2007-2010 has priority habitats and key Ayrshire species in place relevant to this survey section:

- Habitats
  - Rivers and streams
  - Cereal field margins
- Species
  - Skylark
  - Hen harrier
  - Linnet
  - Corncrake
  - Corn bunting
  - Tree sparrow
  - Song thrush
  - Spotted flycatcher
  - Black grouse
  - Nightjar
  - Common pipistrelle
  - Soprano pipistrelle
  - Brown hare
  - Water vole
  - Otter

Field Survey

2.5.3. The following habitat types were recorded in the Alloway Road to Netherculzean Farm section:

- Amenity grassland
- Arable land
- Bare ground
- Broadleaved plantation woodland
- Buildings

- Fence
- Improved grassland
- Marshy grassland
- Poor semi-improved grassland
- Running water
- Scrub
- Semi-improved grassland
- Semi natural broadleaved woodland
- Species poor hedge
- Tall ruderal
- Wall

Amenity grassland

2.5.4. There are various areas of amenity grassland located along the roadside verges.

Arable land

2.5.5. There are a few fields of arable land present within this section. Barley was in crop at the time of survey.

Bare ground

2.5.6. There is an area of bare ground located adjacent to Alloway Road. A building once stood on this site which has now been demolished with piles of rubble still visible.

Broadleaved plantation woodland

2.5.7. A small patch of broadleaved plantation woodland is located adjacent to the southbound verge of the A77 Trunk Road.

Buildings

2.5.8. There are a small number of buildings located along the current A77 Trunk Road and one farm, Netherculzean Farm, located within this section.

Fence

2.5.9. Fences are present throughout this section as boundaries between fields, along the railway line and as the Trunk Road boundary.

Improved grassland

2.5.10. There are a few fields of improved grassland within this area. These are mainly used for grazing cattle.

Marshy grassland

2.5.11. There is one small field which is considered to be marshy grassland within this section.

Poor semi-improved grassland

2.5.12. The area located off Alloway Road, next to the bare ground and demolished building is assigned poor semi-improved grassland status.

Running water

2.5.13. There are various areas of running water within this section. These tend to be located along field boundaries, between areas of fence or adjacent to hedgerows.

Scrub

2.5.14. Scrub is mainly present along the railway verges, field boundaries and alongside running water. Dominant scrub species include gorse *Ulex sp*..

Semi-improved grassland

2.5.15. A number of fields in this section are designated as semi-improved grassland, and are used for grazing sheep.

Semi natural broadleaved woodland

2.5.16. There are three areas of semi natural broadleaved woodland within this section. One is located adjacent to Alloway Road, one surrounding a watercourse and the other behind Netherculzean Farm.

Species poor hedge

2.5.17. Hedgerows are common throughout much of this section, found mainly as field boundaries.

Tall ruderal

2.5.18. There are a couple of small areas of tall ruderal within this section, comprising of vegetation such as nettles *Urtica dioica* as rosebay willowherb *Chamerion angustifolium*.

Wall

2.5.19. Some walls are present as field boundaries in the west of this section.

Target Notes

Target Note 30 – Mature tree (Figure 30) Co-ordinates 230529; 610768

2.5.20. A mature beech tree is located within a field adjacent to Alloway Road. This tree has the potential for bats to be roosting within it.

Figure 30: Mature beech tree with bat roost potential

Target Note 31 – Mammal tracks (Figure 31) Co-ordinates 230551; 610684

2.5.21. Multiple mammal tracks were located throughout an area of grassland.

Figure 31: Mammal tracks in grass

Target Note 32 – Owl box (Figure 32) Co-ordinates 230570; 610626

2.5.22. An owl nest box attached to a large beech tree is located on the edge of a small wooded area. The nest box was seen to have bedding material at the entrance, indicating the box was either in use or had recently been used.

Figure 32: Owl nest box on beech tree

Target Note 33 – Two mature hazel trees (Figure 33) Co-ordinates 230475; 610817

2.5.23. Two mature, ivy *Hedera helix* covered, hazel *Corylus avellana* trees which potentially have holes, cracks or crevices suitable for roosting bats.

Figure 33: Hazel trees with bat roost potential

Target Note 34 – Rough grassland (Figure 34) Co-ordinates 230548; 610567

2.5.24. This area of poor semi-improved grassland is excellent habitat for invertebrates. This in turn will also provide suitable foraging for other animals, such as birds and bats.

Figure 34: Rough grassland with intervebrate potential

Target Note 35 – Mature sycamore (Figure 35) Co-ordinates 230664; 610550

2.5.25. A mature sycamore *Acer pseudoplatanus* is present adjacent to the railway line. This has a large amount of ivy growing up the trunk and has the potential for bat roosts.

Figure 35: Mature sycamore with bat roost potential

Target Note 36 – Owl nest box (Figure 36) Co-ordinates 230643; 610587

2.5.26. An owl nest box is attached to a mature beech tree in the vicinity of Lover's Lane.

Figure 36: Owl nest box on Lover's Lane

Target Note 37 – Mammal path (Figure 37) Co-ordinates 231301; 611030

2.5.27. A mammal path was found through an arable field, leading up to and under the boundary fence.

Figure 37: Mammal path through crops

Target Note 38 – Trees with bat roost potential (Figure 38) Co-ordinates 231302; 611061

2.5.28. A couple of mature trees located on the edge of an arable field have bat roost potential.

Figure 38: Trees with bat roost potential

Target Note 39 – Scrub (Figure 39) Co-ordinates 231327; 611323

2.5.29. Scrub is present at the field boundary, providing ideal nesting and foraging habitat for birds. Bats may also utilise these areas for foraging above and as flight paths.

Figure 39: Scrub habitat

Target Note 40 – Mammal pathway (Figure 40) Co-ordinates 231272; 611306

2.5.30. A mammal pathway can be clearly seen through the field of crops.

Figure 40: Mammal track through crops

Target Note 41 – Mature ash (Figure 41) Co-ordinates 231160; 611127

2.5.31. A mature ash tree located alongside a fence and watercourse is suitable for roosting bats to be present.

Figure 41: Ash tree with bat roost potential

Target Note 42 – Bird nest in tree (Figure 42) Co-ordinates 230730; 611045

2.5.32. A birds nest can be seen in a hawthorn tree in a small area of land between a wall and a watercourse.

Figure 42: Nest in hawthorn tree

Target Note 43 – Mature beech Co-ordinates 231079; 610607

2.5.33. A mature beech tree is located within an area of amenity grassland adjacent to the A77 Trunk Road. This tree has bat roost potential.

Target Note 44 – Mammal tracks Co-ordinates 231674; 611569

2.5.34. Mammal tracks are located though an area of woodland behind Netherculzean Farm.

2.6. Netherculzean Farm to Brockloch Burn

Protected Species

2.6.1. The search on the NBN Gateway website for grid square NS31 showed that the following notable species have been recorded in the area around Netherculzean Farm to Brockloch Burn:

- Brown hare *Lepus europaeus*
- Brown long eared bat *Plecotus auritus*
- Common pipistrelle *Pipistrellus pipistrellus*
- Badger *Meles meles*
- Red squirrel *Sciurus vulgaris*
- Otter *Lutra lutra*
- Water vole *Arvicola amphibious*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Hedgehog *Erinaceus europaeus*
- Whiskered bat *Myotis mystacinus*
- Bar-tailed godwit *Limosa lapponica*
- Barn owl *Tyto alba*
- Barn swallow *Hirundo rustica*
- Kittiwake *Rissa tridactyla*
- Buzzard *Buteo buteo*
- Cuckoo *Cuculus canorus*
- Eider *Somateria mollissima*
- Goldeneye *Bucephala clangula*
- Grasshopper warbler *Locustella naevia*
- Kingfisher *Alcedo atthis*
- Kestrel *Falco tinnunculus*
- Linnet *Carduelis cannabina*
- Pochard *Aythya Ferina*
- Redshank *Tringa totanus*
- Snipe *Gallinago gallinago*
- Swift *Apus apus*
- Dunlin *Calidris alpine*

- Curlew *Numenius arquata*
- Black grouse *Tetrao tetrix*
- Adder *Vipera berus*
- Slow-worm *Anguis fragillis*

2.6.2. The Ayrshire Biodiversity Action Plan 2007-2010 has priority habitats and key Ayrshire species in place relevant to this survey section:

- Habitats
  - Rivers and streams
  - Cereal field margins
- Species
  - Skylark
  - Hen harrier
  - Linnet
  - Corncrake
  - Corn bunting
  - Tree sparrow
  - Song thrush
  - Spotted flycatcher
  - Black grouse
  - Nightjar
  - Common pipistrelle
  - Soprano pipistrelle
  - Brown hare
  - Water vole
  - Otter

Field Survey

2.6.3. The following habitat types were recorded in the Netherculzean Farm to Brockloch Burn section:

- Amenity grassland
- Arable land
- Broadleaved plantation woodland

- Buildings
- Coniferous plantation woodland
- Defunct species poor hedge
- Dry ditch
- Fence
- Improved grassland
- Marshy grassland
- Poor semi-improved grassland
- Running water
- Scrub
- Semi-improved grassland
- Semi natural broadleaved woodland
- Species poor hedge
- Standing water
- Tall ruderal
- Wall

Amenity grassland

2.6.4. Small patches of amenity grassland are present along the A77 Trunk Road verges.

Arable land

2.6.5. There are a few fields of arable land present within this section. Barley was in crop at the time of survey.

Broadleaved plantation woodland

2.6.6. There are two areas of broadleaved plantation woodland within this section. One is located adjacent to the current A77 Trunk Road, and the other at the northern scheme extent, as a narrow strip. Dominant species include silver birch *Betula pendula*.

Buildings

2.6.7. A few buildings are located within this section and include both residential and farm buildings.

Coniferous plantation woodland

2.6.8. A small circle of coniferous plantation woodland is located in the north eastern scheme extent.

Defunct species poor hedge

2.6.9. Along several field boundaries within this section are species poor hedges with large gaps present within them.

Dry ditch

2.6.10. A dry ditch is present along the boundary of an area of semi-improved grassland and the Trunk Road.

Fence

2.6.11. Fences are present throughout this section, present as boundaries between fields and between fields and roads.

Improved grassland

2.6.12. Much of the land to the south of the existing A77 Trunk Road and the railway line comprises of improved grassland. Much of this land is used for grazing sheep and cattle.

Marshy grassland

2.6.13. There are several areas of marshy grassland present within this section. These tend to be located amongst semi-improved grassland, within the vicinity of running water and at low points in the topography.

Poor semi-improved grassland

2.6.14. There are two areas of poor semi-improved grassland located within this section, both adjacent to the A77 Trunk Road.

Running water

2.6.15. There are numerous areas of running water located within this section. Many are located along field boundaries, between areas of fence or adjacent to hedgerows. The larger Chapleton Burn also flows through this section.

Scrub

2.6.16. Scrub is mainly present along the railway verges, field boundaries and alongside running water. Dominant scrub species include gorse *Ulex sp*..

Semi-improved grassland

2.6.17. A large number of fields in this section are designated as semi-improved grassland, and are used for grazing sheep.

Semi natural broadleaved woodland

2.6.18. There are two main areas of broadleaved plantation woodland within this section. One in the east along a stretch of watercourse and a larger area in the north west.

Species poor hedge

2.6.19. Hedgerows are common throughout much of this section, found mainly as field boundaries.

Standing water

2.6.20. There are several small bodies of standing water, located within fields of semi-improved grassland within this section. Running water does not flow into these, however they are present due to the surrounding topography.

Tall ruderal

2.6.21. There are a couple of small areas of tall ruderal within this section, comprising of vegetation such as nettles *Urtica dioica* and rosebay willowherb *Chamerion angustifolium*.

Wall

2.6.22. Some walls are present as field boundaries within this section.

Target Notes

Target Note 45 – Mammal path (Figure 43) Co-ordinates 231597; 612140

2.6.23. Mammal paths were clearly visible through the barley in one field. The tracks were seen passing under the boundary fence and into the next field.

Figure 43: Mammal path in barley

Target Note 46 – Milepost Co-ordinates 232582; 613361

2.6.24. A milepost is located on the verge of the A77 Trunk Road, where the B7045 meets the A77.

Target Note 47 – Mature beech tree Co-ordinates 232174; 611827

2.6.25. A mature beech tree, located at the boundary between two fields of improved grassland and adjacent to the A77 Trunk Road.

Target Note 48 – Large mast Co-ordinates 232341; 612677

2.6.26. A large mast is located at the intersection of three fields of semi-improved grassland. This mast has numerous bird boxes attached to it, and show signs of use such as bedding material and droppings.

2.7. Recommendations

Designated sites

2.7.1. There are no designated sites located within 2km of the proposed scheme and no SAC's, cSAC's or pSAC's located within 30km with bats as a qualifying interest, therefore no impacts are predicted and mitigation is not required.

Habitats and protected species

2.7.2. The route of the proposed scheme passes through a large amount of land and a variety of habitats. The main habitat types which will be impacted upon are improved grassland, arable land and semi-improved grassland. The improved and semi-improved grassland is mainly used for grazing sheep, with some also being used for grazing cattle. Although the scheme passes through a large amount of fields, generally, the whole field will not be lost, in many cases the route passes alongside boundaries. Where possible to preserve agricultural lane, the route should stay close to boundaries so the viability of the field is not lost.

2.7.3. Arable land is excellent for foraging badgers, as they eat a variety of food including crops. It is recommended badger surveys be carried out to record the activity in the area.

2.7.4. A large amount of hedgerows will be lost as a result of the scheme. Hedgerows are very important habitats for a variety of species, mainly birds which will nest, forage and use them for protection. Bats often use hedges as flight paths rather than flying over large areas of open land. The removal of a large number of hedgerows could have a detrimental effect on species which depend greatly on them. Where possible, hedgerows should be retained, and if removal is necessary, compensatory planting should be undertaken.

2.7.5. It is recommended that bird surveys along the hedgerows be carried out to assess the importance of them and provide any further, specific recommendations and mitigation. Bat surveys should also be undertaken along certain parts of the hedgerows, especially near to areas which have the potential to support roosting bats.

2.7.6. The proposed scheme crosses a number of small watercourses. Watercourses are an extremely important habitat for a variety of species, including otter and water vole. Both these species were found within the National Biodiversity Network (NBN) gateway record and are within the Ayrshire Biodiversity Action Plan, therefore it is likely that these may be utilising the watercourses along the route. It is recommended that protected species surveys for otter and water vole be carried out to determine their presence.

2.7.7. Due to the potential for nesting birds, measures should be taken to minimise disturbance near areas of mature woodland, as this could have a detrimental impact on nesting birds.

2.7.8. Due to the potential for nesting birds throughout the scheme, a territory mapping breeding bird survey is recommended. Territory mapping methods based on the Common Bird Census as detailed in Bird Census Techniques (Bibby et al, 2000) would be used to survey the site for breeding birds. This will involve early visits to record birds in March and follow up visits in mid-late May to ensure both early and late migrant breeding species are incorporated.

2.7.9. Due to the potential for roosting bats in the mature trees along the route, bat activity and emergence surveys will be undertaken commencing in May 2013 in accordance with Bat Conservation Trust – Bat Surveys Good Practice Guidelines (2007).

2.8. References

- Atkins (2007), A77 Maybole Transport Study – DMRB Stage 2 Report
- Ayrshire Biodiversity Action Plan (2007-2010)
- Joint Nature Conservation Committee (1993), Revised Reprint 2010, Handbook for Phase 1 habitat survey – a technique for environmental audit
- The National Biodiversity Network Gateway (NBN) (2013) Species groups recorded in the 10km grid squares NS20, NS21 and NS31, available from: http://data.nbn.org.uk/gridSquares/tenKmSelector.jsp?map.x=128&map.y=174
    - Additional NBN Data Sources: Biological Records Centre; Glasgow Museums BRC; Highland Biological Recording; Joint Nature Conservation Committee; Scottish Natural Heritage; Scottish Wildlife Trust; British Trust for Ornithology; Royal Society for the Protection of Birds; Central Scotland Black Grouse and Capercaillie Study Group; Scottish Environment Protection Agency; The Scottish Ornithologists' Club; Tullie House Museum and Amphibian and Reptile Conservation.
- The Scottish Biodiversity List (2005)
- The Scottish Biodiversity Strategy (2004)
- The UK Biodiversity Action Plan (1994)