Woodland

Ancient Woodland Inventory

There are several areas of woodland listed on the AWI within 1 km of the Scottish Onshore Scheme, as shown on **Figure 7.3 Non-statutory Sites and Habitats Designated for Nature Conservation**. All are long-established woodlands of plantation origin (henceforth 'long-established plantation') apart from one ancient woodland of semi-natural origin (henceforth 'ancient semi-natural woodland') which is more than 100 m from the cable route and is separated from the Application Boundary by Tiel Burn.

Four long-established plantations are either crossed by the cable route or lie within 20 m of it. The largest, proposed to be crossed by the cable route using underground HDD, is an area of contiguous woodland referred to on OS maps as Target Wood / Lambswell Wood / Knockbathy Wood, north-east of Auchtertool. Two further parcels of long-established plantation are downstream of the Application Boundary and in that way hydrologically connected.

Detailed descriptions of woodlands listed on the AWI within the habitat survey area are provided below.

Broadleaved and Mixed Woodland

Broadleaved woodlands are scattered across the surveyed area north of the B9157 and comprise three types: w1d (wet woodland), w1f (lowland mixed deciduous woodland) and w1g (other broadleaved woodland). Where woodlands are mixed broadleaved and coniferous, these are in this case all w1h (other mixed woodland).

Wet woodlands recorded during field survey occur in proximity to watercourses, wetlands, and drainage ditches, or on flushed slopes, and are dominated by alder *Alnus glutinosa* and/or willow *Salix* spp. They most frequently approach NC type W7 (*Alnus glutinosa - Fraxinus excelsior - Lysimachia nemorum* woodland), where the ground flora includes neutral wetland species:

- In the far north adjacent to the existing Westfield Substation and north of the proposed Converter Station (Page 1 of 12) – a mix of willow, alder and poorly-grown planted pedunculate oak *Quercus robur*, over species such as common nettle, cleavers, rough meadow-grass *Poa trivialis* and reed canary-grass. This roughly aligns with NVC type W6 (*Alnus glutinosa - Urtica dioica* woodland), which is often naturally 'weedy', however it is a rather poor fit and atypical in the planted oak.
- North of Auchterderran at the very edge of the surveyed area (Page 2 of 12) – a small patch of extremely waterlogged grey willow *Salix cinerea*, in significant standing water at the time of survey and therefore not directly accessible. Where not open standing water, the vegetation most obviously included plentiful soft-rush *Juncus effusus*. There are signs of disturbance and the flora appears species-poor, and best fits NVC type W1 (*Salix cinerea - Galium palustre* woodland).
- South of Pitcairn Farm (Page 3 of 12) – substantially planted strips and patches along ditches and the River Ore. The largest patch includes scattered alder, willow and hawthorn over predominantly reed canary-grass with scattered meadowsweet and cow parsley *Anthriscus sylvestris* and, owing to this composition and great immaturity it does

not well-fit a published NVC woodland type. Although reed canary-grass is not typical of NVC type W7, the other strips in this area also include significant meadowsweet and occasional iris *Iris* sp. and approximate to W7, especially by the River Ore where alder is dominant.

- Near Brigghills Farm (Page 3 of 12) – a small area with a dense non-native canopy of common osier *Salix viminalis* on sloping ground beside the River Ore that could not be directly accessed, but evidently damp and approaching W7 in the ground flora.
- Near Little Gleniston (Page 6 of 12) – at the very edge of the surveyed area, thin strips of semi-natural woodland (also **long-established plantation**) beside a small watercourse, largely damp in nature with typical W7 species including meadowsweet, tufted hair-grass *Deschampsia cespitosa*, and locally marsh marigold *Caltha palustris* and opposite-leaved golden-saxifrage.
- On the eastern bank of Camilla Loch (Page 7 of 12) – at the very edge of the surveyed area, another patch of non-native common osier with a damp flora resembling W7.

All the above woodlands are considered to be priority wet woodland, but the majority are of only of moderate note as a result of immaturity, non-native canopy and/or atypical canopy species. The wet woodland of most note and the most natural is that near Little Gleniston, which is also **long-established plantation**. All wet woodland is also potential GWDTE (discussed further below).

Lowland mixed deciduous woodland (LMDW) is largely located outside the Application Boundary, or where within it then located where underground HDD will be used to avoid direct impacts. All examples are either W10 (*Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland; i.e. dry neutral woodland), or mosaics where W10 is at least co-dominant with acid W11 or basic W9. Most are historically planted and often include mature oak. These are described below:

- Near Brigghills Farm (Page 3 of 12) – small area of scrubby woodland on steeply sloping banks of the River Ore, dominated by mature / semi-mature, slightly diseased ash *Fraxinus excelsior* with abundant hawthorn *Crataegus monogyna*, and occasional rose *Rosa* sp. and gorse *Ulex europaeus*. The ground flora comprises neutral grasses (e.g. false oat-grass) with bramble, raspberry and, rarely, broad buckler fern and lady fern.
- Spittal Den (page 4 of 12) – though the part in the survey area is not listed on the AWI, LMDW is contiguous with Spittal Den Wood (**long-established plantation**) on the sloping banks of a tributary of the River Ore. It is dominated by mature silver birch (including very old and large individuals) with occasional semi-mature ash and sycamore. This woodland is the most semi-natural-appearing of all surveyed LMDW. The shrub layer comprises frequent rowan *Sorbus aucuparia* and hawthorn with occasional elder *Sambucus nigra*. The ground flora is half neutral with creeping soft-grass *Holcus mollis*, bramble *Rubus fruticosus* agg., raspberry *Rubus idaeus*, and broad buckler-fern *Dryopteris dilatate*, and half acidic with sweet vernal grass *Anthoxanthum odoratum*, tormentil *Potentilla erecta*, heath bedstraw *Galium saxatile* and frequent devil's-bit scabious *Succisa pratensis*, and thus a mix of dry neutral W10 and dry acid W11.

- Adjacent to Dundonald Muir Plantation (pages 4 and 5 of 12) – **long-established plantations** dominated by mature oak (likely more than 100 years old). The northern block is small and in addition to oak includes mature ash, silver birch *Betula pendula* and hornbeam *Carpinus betula*, with woodrush *Luzula* sp. dominant beneath accompanied by scattered large ferns and very locally bluebell *Hyacinthoides non-scripta*, corresponding best to NVC type W10. The southern block, just south of the A92, is mainly oak but also includes some birch, ash and beech – the northern part includes occasional sanicle *Sanicula europaea* and strawberry *Fragaria vesca* with wood avens *Geum* urbanum, but the majority is neutral with neutral grasses, raspberry *Rubus idaeus,* wood sorrel *Oxalis acetosella*, large ferns and dog-violet *Viola* riviniana. Thus this wood is about 70% neutral W10 and 30% basic W9. The part of the southern block within the Application Boundary has had many of the mature trees removed internally, although the flora is the same and there are still peripheral mature trees.
- North-east of Camilla Loch at Target Wood / Lambswell Wood / Knockbathy Wood (page 6 of 12) – three blocks of **long-established plantation**, only one of which is within the Application Boundary but will be crossed via underground HDD. These are variously dominated by mature beech, sycamore and pedunculate oak, with occasional diseased ash. They mostly correspond to W10 with prominent neutral grasses (for example cock's foot and red fescue), although some areas where beech dominates in Knockbathy Wood are poor with heavy leaf litter beneath. Although often partially or mostly non-native in the canopy, they include ground flora species indicative of antiquity: enchanter's nightshade *Circaea lutetiana* scattered in all three blocks and locally abundant, and rarely sanicle *Sanicula europaea*. The northern small corner of Knockbathy wood is mixed with co-dominant Scots pine *Pinus sylvestris* (not native to the region) and oak, and although this part is not LMDW it is still long-established, contains mature oak and matches W10.
- North of Newbigging (page 8 of 12) – scrubby woodland on a dismantled railway embankment resembles a poor form of this priority habitat. The canopy is mature silver birch and goat willow with some diseased ash. The shrub layer has frequent hawthorn and occasional elder whilst the ground flora comprises coarse neutral grasses, resembling NVC type MG1.
- East of Newbigging at Kinuny Plantation (page 8 of 12) – **long-established plantation** dominated by a mix of beech and sycamore with occasional sweet chestnut *Castanea sativa*. Despite the non-native canopy, and largely bare areas under some dense beech, there is a moderate diversity of herbs including lesser celandine *Ficaria verna*, neutral grasses, red campion *Silene dioica* and dog violet *Viola riviniana*. Herb-robert *Geranium robertianium* and wild strawberry *Fragaria vesca* are local, with bluebell (a possible indicator of antiquity) locally concentrated in the southern corner. Holly *Ilex aquifolium*, ash and sycamore seedlings are scattered throughout. This wood best fits W10 overall.
- North of Kilrie (Page 9 of 12) – centrally dominated by mature mixed broadleaves including oak, ash and sycamore, with elm in the shrub layer in places, mostly corresponding to W10 with neutral grasses but locally basic W9 including dog's-mercury (an indicator of antiquity and possibly indicating a small patch of ancient semi-natural

woodland). Invasive rhododendron and cherry laurel are highly localised. Becomes mature beech plantation with non-native bluebell towards the west.

The remaining broadleaved woodlands are more recently planted and/or are highly disturbed by livestock and have therefore been classed as w1g Other broadleaved woodland. They contain similar tree species to those above with the addition of lime *Tilia x europaea*, cherry *Prunus* sp. and hazel *Corylus avellana*. Where the ground flora is not very sparse with leaf litter, it often comprises neutral grasses, sometimes with common herbs such as wood avens and woundwort *Stachys* sp.

Some surveyed woodland is w1h Other mixed woodland, with a mix of planted broadleaf and coniferous species including various of the tree species above together with substantial amounts of non-native conifers including Scots pine[5], Sitka spruce *Picea sitchensis*, and European larch *Larix decidua*. An exception is a small, private, ornamentally planted wood of yew *Taxus baccata* and cherry at Kilrie Garage House (Page 10 of 12).

None of the other broadleaved woodland or other mixed woodland are of particular ecological note, excepting the mixed patch with mature oak at Knockbathy Wood mentioned above. Although sections of other broadleaved woodland (as opposed to LMDW) at Spittal Wood (Page 4 of 12) and Haughbrae Wood and Lambswell Wood (Page 6 of 12) are listed on the AWI as **long-established plantation**, they remain of limited note since the ground flora has been intensely grazed and/or severely poached by livestock, or the woodland has been felled to accommodate an overhead line wayleave.

Coniferous Woodland

Locally within Moss Plantation near Pitcairn (Page 2 of 12) there is a coniferous plantation dominated by Scots pine (UKhab = w2b, Other Scots pine woodland) that is contiguous with a parcel of **long-established plantation**. This woodland is fairly open with a grassy ground flora. A pond is present at the northern edge which extends southwards into a damp open glade dominated by soft-rush.

All other coniferous woodlands are plantations of non-native species (UKHab = w2c, Other coniferous woodland), most often overwhelmingly dominated by Sitka spruce. Locally, they exhibit a more open canopy with a species-poor damp grassland flora, but are generally very poor in the ground flora and in all cases of negligible ecological value.

Scattered and Lines of Trees

Various mature scattered trees occur throughout the surveyed area, mainly planted sycamore and ash, occasionally other species. Large mature sycamores, and occasionally other mature trees, are sometimes found in rows as avenues lining access roads to private estates.

Shrubs

Dense Scrub

Dense scrub (UKHab = h3e, h3f, h3h, h3j) occurs within various parts of the Application Boundary as dense gorse, hawthorn, bramble and mixed scrub. Similar species locally occur as scattered scrub in some grasslands and along watercourses and field lines. Occasionally

[5] Although native to Scotland, Scots pine would not naturally occur in the central belt so is considered non-native in this context.

scrub comprises non-native species, regarding which see Invasive Non-native Species below.

Hedgerows

Hedgerows are common along field lines and track / road edges. They are almost-all species poor and are mostly dominated by hawthorn (UKHab = h2a6 Other native hedgerow) or occasionally beech (UKHab = h2b Non-native and ornamental hedgerow). Other less frequent woody species include rose, gorse, blackthorn, elm, willow, prunus spp., holly, and yew. In some instances, the hedges include mature trees, most often sycamores, occasionally other species. Rarely, hedgerows were found with more than three native species, which are of greater ecological value (UKHab = h2a5 Species rich native hedgerow). Some ornamental hedgerows contain non-native species such as snowberry and cotoneaster, regarding which see Invasive Non-native Species below.

Most recorded hedgerows are 80% or more native (UKHab = h2a) and therefore constitute Hedgerow SBL priority habitat. However, as noted most are species-poor (h2a6) as is commonly the case in Scotland, and whilst they still add to habitat diversity and connectivity, their low floristic diversity means their ecological value is more limited.

Grassland

Modified Grassland

Most of the surveyed grassland is agricultural livestock pasture, highly modified by sowing, enrichment and grazing, and both species poor and uniformly short. They comprise the usual species of such grassland such as perennial ryegrass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, common bent *Agrostis capillaris,* crested dog's-tail *Cynosurus cristatus* and a very limited range of common herbs, often 'weed' species. Damp patches often support scattered soft-rush. Other modified grasslands within the surveyed area are amenity grasslands associated with Auchterderran Golf Club and lawns.

Neutral Grassland

Neutral grassland is common, particularly along road / track verges, between fields, and around watercourses, but is insufficiently diverse to classify as a priority grassland type and often supports little more diversity than modified grassland. Such grassland (UKHab = g3c, Other neutral grassland), occurs in several forms:

- g3c5 (*Arrhenatherum* neutral grassland) - by far the most abundant type, often as thin strips along verges and largely dominated by false oat-grass *Arrhenatherum elatius*, with frequent Yorkshire-fog, cock's-foot *Dactylis glomerata*, and varying amounts of undesirable 'weed' species such as common nettle, creeping thistle, common hogweed *Heracleum sphondylium* and often rosebay willowherb *Chamaenerion angustifolium*. Slightly more notable forms with common knapweed *Centaurea nigra* were rarely recorded;
- g3c6 (*Lolium-Cynosurus* neutral grassland) – rarely recorded in one livestock field (Page 2 of 12) this habitat is slightly more diverse than modified grassland with additional species such as common mouse-ear *Cerastium fontanum*, redshank *Persicaria maculosa* and ribwort plantain, rarely purple dead nettle *Lamium purpureum*;

- g3c7 (*Deschampsia* neutral grassland) – a damp form recorded once in a wayleave in the northernmost part of the Application Boundary (Page 1 of 12), where tufted hair-grass is dominant alongside frequent ruderal species, and corresponding to NVC type MG9;
- g3c8 (*Holcus-Juncus* neutral grassland) – a damp form typically dominated by damp neutral grasses such as Yorkshire-fog with soft-rush with varying proportions of mainly ruderal herbs such as creeping buttercup, creeping thistle, and nettle. Herbs including angelica *Angelica sylvestris*, vetch *Vicia* sp., meadowsweet *Filipendula ulmaria*, and valerian *Valeriana officinalis* rarely occur. Mainly corresponds to NVC type MG10 or related more species-poor damp grassland; and
- Form dominated by reed canary grass *Phalaris arundinacea* (left as g3c) – too dry and lacking wetland species, and with some neutral grassland species, to classify as wetland. Occurs locally such as near the River Ore.

None of the neutral grasslands are of note and none are SBL Priority habitats or Annex I habitats. Although MG9 and MG10 grasslands are potential GWDTE (discussed further below), they are not floristically or otherwise of ecological note.

Bracken

Few patches of dense bracken were recorded, which is of limited ecological value and is not present within the Application Boundary itself.

Wetland

Wetland habitats occur very locally north of Auchtertool, and rarely (only as marginal vegetation) south of Auchtertool. These constitute lowland fens (UKHab = f2a), purple moor-grass and rush pasture (PMRP) (UKHab = f2b), aquatic marginal vegetation (UKHab = f2d) and other wetlands (UKHab = f2f).

Lowland fen SBL priority habitat occurs in three locations only:

- North end of the Application Boundary near the existing Westfield Substation (Page 1 of 12) – in an overhead line wayleave, comprising meadowsweet with scattered reed canary-grass, common nettle and creeping thistle, corresponding to a poor form of NVC type M27 *Filipendula ulmaria-Angelica sylvestris* mire; this is a poor-quality lowland fen example of limited value;
- Adjacent to Knockbathy Wood (Page 6 of 12) – an unmanaged patch outside the Application Boundary, partly co-dominant meadowsweet and soft-rush with localised marsh cinquefoil *Comarum palustre* and bottle sedge in the wettest areas (best considered NVC type M23b (*Juncus effusus* - *Galium palustre* rush-pasture), and partly drier tufted hair-grass and meadowsweet (best considered MG9). Since meadowsweet is abundant to co-dominant, and the wettest part includes marsh cinquefoil and bottle sedge, this patch has been classed as lowland fen, however it is not specially-diverse;
- South-east of Kinuny Plantation and north of Tiel Burn (Page 8 of 12) – a very wet patch centrally within a wider rushy habitat and outside of the Application Boundary, dominated by bottle sedge with abundant moss. Topographically it could be considered a basin mire and may indicate a former pond since the vegetation is quaking and best considered (given presence of moss and also species from the surrounding rush vegetation) a transition between S9 (*Carex rostrata* swamp) and M23 (*Juncus*

effusus/acutiflorus - *Galium palustre* rush-pasture). This is much more diverse and more notable than the above examples of lowland fen.

PMRP SBL priority habitat occurs in four locations, twice within the Application Boundary (in the far north-west adjacent to Westfield Substation and in a livestock pasture on low ground south of Pitcairn Farm; Pages 1 and 3 of 12), and twice outside of the Application Boundary (at the corner of a livestock pasture and north of Tiel Burn immediately adjacent to the Application Boundary; Pages 6 and 8 of 12). These habitats generally best fit NVC type M23b, being dominated by soft-rush with varying types and amounts of wetland herbs.

The northernmost occurrence by the existing Westfield Substation is a poor example since although meadowsweet is abundant, other herbs comprise species such as broad-leaved dock and creeping buttercup which suggest a degree of transition to poorer MG10. The other three instances of PMRP exhibit greater diversity of wetland species including great reedmace, cuckoo flower *Cardamine pratensis*, marsh thistle and angelica, as well as bottle sedge and marsh marigold *Caltha palustris* in the wettest ground at Pitcairn; north of the Tiel Burn the M23b locally also gives way to fairly diverse vegetation rich in small sedges and moss, neutral in character but lacking rushes and regarded as MX neutral sedge mire[6].

Aquatic marginal vegetation (f2d) beside surface waters supports common species like reed canary-grass, great reedmace, brooklime *Veronica beccabunga,* meadowsweet and locally (by the River Ore and around private lakes near Kilrie; Pages 3 and 10 of 12) reed sweet-grass *Glyceria maxima*.

Other wetlands (f2f) here comprise swamps that do not correspond to priority wetland types, all in the northern half of the surveyed area. Two roughly circular examples within the Application Boundary in clearings amongst coniferous plantation north of the A92 (Page 4 of 12) and a large area of swamp north of the River Ore and east of the Application Boundary (Page 3 of 12) include substantial amounts of NVC type S9 (*Carex rostrata* swamp *Caricetum rostratae*).

Another swamp habitat in a topographical depression north of the River Ore and west of the Application Boundary (Page 3 of 12) is dominated by amphibious bistort *Persicaria amphibia* with frequent iris and great reedmace. Although these swamps are mostly species-poor and contained no visible water at the time of survey, they are still of some note given the scarcity of this habitat type in the local landscape. The few other limited recorded examples of other wetlands are species-poor swamps of reed canary-grass and reed sweet-grass.

Cropland

The great majority of land within the Application Boundary comprises arable fields, as is typical of the Eastern Lowlands, mostly cereal crops but occasionally other crops and locally arable field margins. Most cropland is of negligible ecological value; however, where the field margins appear to be locally managed around Kilrie Farm (Pages 9 and 11 of 12) to provide benefits to wildlife (by sowing wildflowers of beneficial to nectar-feeding insects), they constitute arable field margin SBL priority habitat. However, such field margins will be of

[6] This vegetation type is not covered in the published NVC volumes, but covers wetland vegetation that is neutral and closely related to M23 but lacking the rushes present in M23. It is mentioned, for example, in: Averis A., Averis B., Birks J., Horsfield, D., Thompson, D. and Yeo, M. (2004), *An Illustrated Guide to British Upland Vegetation*, JNCC, Peterborough.

recent origin, are often temporary and liable to be ploughed at a future point, and are easily resown, and as such they are not of high ecological importance.

Rivers and Lakes

Watercourses

The route crosses several watercourses. The current status of those significant enough to have been assessed by SEPA is as follows (note that in this system, 'High' is better than 'Good'):

- River Ore (Loch Ore to Cardenden) (Page 3 of 12) – POOR overall; access for fish migration Poor; aquatic plants and invertebrates Good;
- Den Burn (Page 5 of 12) – POOR overall; access for fish migration Poor; invertebrates Moderate;
- Dronachy Burn (Page 7 of 12) – MODERATE overall; access for fish migration and aquatic plants Moderate; invertebrates High; and
- Tiel Burn (Page 8 of 12) – MODERATE overall; access for fish migration High; invertebrates and aquatic plants Good.

The above watercourses may qualify as Rivers SBL priority habitat – whilst most of the criteria in the SBL habitat description would not be met, the criterion for supporting six or more species (those less dependent on water quality and listed on Annex I of the UK BAP priority habitat description for rivers) could be met. European eel *Anguilla anguilla*, Atlantic salmon, brown / sea trout, brook lamprey, river lamprey, sea lamprey, otter, and soprano pipistrelle *Pipistrellus pygmaeus* are known to occur in the Firth of Forth catchment, therefore sufficient appropriate species could well be present to classify these watercourses as priority Rivers. Further information would be required for confirmation, but on a precautionary basis these watercourses are taken to be Rivers SBL priority habitat (UKHab = r2a Rivers (priority habitat)) rather than non-priority rivers.

The vast majority of other watercourses within the survey area are field drains, ditches or small burns, and streams which are unlikely to qualify as priority habitat and have been classed as non-priority rivers (UKHab = r2b, Other rivers and streams). Locally, they support small amounts of emergent vegetation including water sweet grass *Glyceria*, brooklime, and watercress.

Standing Water

Standing waters consist of three large, enriched lakes (UKHab = r1a6 Other eutrophic standing waters) associated with private estates, three ponds (UKHab = r1g Other standing water), and one temporary muddy pool at the gate of a livestock field (this is the only standing water within the Application Boundary; Page 7 of 12). A further nineteen standing waters were identified between 100m and 250 m of the Application Boundary as it was understood at the time of survey, beyond the habitat survey area – these were potentially relevant to great crested newt and are discussed under **Great Crested Newt** below and in **Appendix 7.4: Great Crested Newts (Volume 4 Appendices)**. For this reason, standing waters have been assigned references EGL01 to EGL20, but only detailed habitat information for those within the habitat survey area is described below:

- EGL02 (Page 2 of 12) – moderately-sized pond (~250 m^2) in a clearing of Scots pine woodland and adjacent to cattle pasture. The northern bank has clear damage from poaching but access from the adjacent field has been blocked by fencing. During initial habitat surveys, pondweed, bur-reed and water horsetail were present across the pond and soft-rush around the banks. When revisited during eDNA collection, apparent contamination had resulted in much of the vegetation in and around the pond dying off, with an oily film across the pond surface;
- EGL13 (a-c; Page 7 of 12) – small and highly disturbed pools of water within two adjacent livestock pastures. Emergent vegetation including brooklime and floating sweet-grass are locally abundant towards the east of the central and northern pools. The southern-most is very small and ephemeral, and very muddy with no emergent vegetation;
- EGL15 (Page 9 of 12) – a large artificial and enriched waterbody (~3 ha) within the grounds of a private estate. There is a small island and large boulders centrally. Some emergent vegetation was recorded around the periphery and ~40% of the surface was covered with algae. This waterbody supports numerous waterfowl;
- EGL16 (Page 9 of 12) – not accessed owing to location within the grounds of private residence. From a distance it appeared enriched and was surrounded by ornamental shrubs and trees;
- EGL18 (Page 10 of 12) – a large artificial and enriched waterbody (~3 ha) within pasture and adjacent to a mature mixed woodland. There is marginal vegetation around the periphery, often of reed canary-grass with locally abundant great sweet-grass, common reed and reedmace. This waterbody supports numerous waterfowl.

Coastal Habitats

The vegetation either side of the Fife Coastal Path where it runs closest to the shore, particularly on the south side but occasionally on the north side as well, includes species-rich coastal grassland on often-rocky ground, with species such as red fescue, sea plantain, birds-foot trefoil, bloody cranesbill *Geranium sanguineum*, sea thrift *Armeria maritima*, and most notably but very locally purple milk-vetch *Astragalus danicus*.

This type of vegetation often corresponds best to NVC type MC8, however there is also coarser grassland with less maritime composition that correspond to MG1 neutral grassland. The latter is in places still relatively species-rich and sometimes includes notable species such as bloody cranesbill. Closest to the sea the vegetation naturally becomes shorter and less rich, developing into sea plantain-dominated vegetation increasingly scattered on bedrock. As well as beside the footpath, much of the coastal grassland extends onto bedrock exposures that are within the tidal area but above mean high tide. Locally there are damp patches of vegetation with common sedge. No saltmarsh or dune vegetation was noted but there is extensive seaweed between the raised vegetated rock areas on the shore. Species include spiral wrack, serrated wrack and knotted wrack.

The notable coastal grassland ceases east of the point that the coastal path turns inland to rise to a higher level closer to the railway. The vegetation on slopes eastward beyond this point, and on more gently sloping ground beside the railway, is often coarse neutral grassland conforming to MG1, however this is not without interest, with frequent bluebell, although parts are of less note with much bramble and sometimes rosebay willowherb.

Scattered scrub and in places dense scrub is common on these slopes, including blackthorn and hawthorn. Very locally to the east near the edge of the survey area there are moderately-sized mature trees with somewhat 'weedy' but slightly basic vegetation beneath most similar to NVC type W8, although barely large enough to consider woodland. The high coastal path in this area has locally extensive winter heliotrope *Petasites pyrenaicus* beside it, and at one location sea buckthorn, both non-native species.

Urban Habitats

The Scottish Onshore Scheme crosses rural Fife, where the most frequently encountered urban land comprises roads and farm tracks. Farmyards and private residences with associated gardens were very sparsely recorded.

Ground Water Dependent Terrestrial Ecosystems

The following NVC types recorded during habitat surveys are potentially groundwater dependent according to SEPA (2017):

- Potential for high ground water dependency:
  - M23
  - W7
- Potential for moderate ground water dependency:
  - M27
  - MG10
  - MG9
  - W1
  - W6

The locations of potential GWDTE recorded in the surveyed area are shown on **Figure 7.5 Important / Notable Habitats**. Potential GWDTE that occur within the Application Boundary are predominantly MG10 with localised M23, W7, and W6 in the north (Pages 1 and 3 of 12). NVC types M23, M27, W1, W6, and W7 are notable as SBL Priority Habitat (described above) whilst MG9 and MG10 are not of any particular ecological note, floristically or otherwise.

Species

Bats

Full details of the desk study and field survey results relating to bats are available within **Appendix 7.2 Bats (Volume 4 Appendices)** and a summary of results is provided below.

Fife Nature Records Centre provided eight recent records of bats; one of noctule *Nyctalus noctule*, five of soprano pipistrelle, and an additional two records of pipistrelle bats (of undetermined species). Location information for these records is available to 1 km^2 resolution so their relationship to the Scottish Onshore Scheme is unclear; however, records were in the general vicinities of Lochore, Auchtertool (including the sole noctule record), Kirkcaldy Golf Club, and Kinghorn.

In total 34 trees were identified during field surveys with potential bat roost features. Locations of these trees are shown on **Figure 7.6 Ground Level Tree Assessment (GLTA)**

Results. Two additional groups of trees on the periphery of the Application Boundary, as it was understood at the time of survey, were highlighted as likely containing trees with potential roost features, but no comprehensive survey was carried out. Most trees with potential to support roosting bats are associated with Knockbathy Wood which is crossed by the cable route via trenchless HDD, so no tree felling is required. Other trees identified during field surveys are largely located around the periphery or outside of the Application Boundary so will not be directly impacted; except T27 (PRF-M) and T28 (PRF-I) which stand centrally within the indicative cable route corridor and may need to be felled during cable installation.

Emergence surveys of T27 did not record any bats roosting in the tree; however, as discussed under Limitations and Assumptions above, emergence surveys are not sufficient to confirm absence of a roost at other times of the year owing to the tendency for tree-roosting bats to switch roosts throughout the season. Bat activity recorded during emergence surveys was almost exclusively of soprano pipistrelles.

Overall, habitats throughout the Application Boundary are of moderate suitability for foraging and roosting bats. The agricultural fields which dominate the landscape are of poor quality for foraging bats; however, better quality habitats including woodlands, scrub, and wetlands are scattered throughout the Application Boundary with some level of connectivity via linear features such as watercourses and hedgerows. Habitats are notably poorer south of the B9157 where there are large expanses of arable fields and few connecting linear features.

Otter

Full details of the desk study and field survey results relating to otter are available within **Confidential Appendix 7.1 Mammals (Volume 4 Appendices)** and a summary of results is provided below.

Fife Nature Records Centre provided eight recent records of otter; however, location information for these records is only available to 1 km^2 resolution so their exact relationship to the Scottish Onshore Scheme is unclear. Nonetheless, records are concentrated centrally along the route, between Auchtertool and Lochgelly, and in the south-east, near Kinghorn.

Evidence of otter was recorded primarily south of the A92 during field surveys, with only very old spraints recorded in one location on the River Ore north of this. Within the surveyed area, two holts and three layups were identified, and recent otter activity was recorded along Dronachy Burn, Tiel Burn (and a tributary thereof), and Tyrie Burn, all of which are crossed by the Scottish Onshore Scheme. A summary of identified refuges in relation to the Scottish Onshore Scheme is given in **Table 7-7 Otter refuges recorded during field survey** and their locations (along with other signs of otter activity) are displayed in **Confidential Figure 7.1 Otter Survey Results and Other Incidental Records** (**Volume 5**) (note that due to the vulnerability of some protected species to persecution, this figure is confidential).

Table 7-7. Otter refuges recorded during field survey

Reference	Feature	Approximate distance from the Application Boundary, indicative cable route[7], and indicative infrastructure layout[8]
OH01	Holt	10 m east of Application Boundary. 30 m east of cable route.
OH02	Non-breeding holt	120 m north of Application Boundary. 160 m north of cable route. 140 m north of attenuation basin.
OL01	Layup	Within Application Boundary. 25 m north of cable route. 10 m north of attenuation basin.
OL02	Layup	150 m northeast of Application Boundary. 220 m north of cable route. 160 m north of gravity pipe / outflow.
OL03	Layup	Within Application Boundary. 15 m north of cable route. 10 m north of gravity pipe / outflow.

Beaver

The desk study did not identify any records of beaver within 1 km of the Scottish Onshore Scheme. Beaver distribution has spread into the River Forth catchment; however, they are only known to occur upstream, from Clackmannanshire westward. The only known beaver territories in Fife are in the far north, in the Tay sub-basin catchment and more than 10 km from the Application Boundary (Campbell-Palmer *et al.*, 2021).

No evidence of beaver activity was recorded during field surveys, and they are considered absent from the Application Boundary.

Water Vole

No records of water vole were returned by the desk study within 1 km of the Application Boundary. The nearest OS grid square within which water vole were recorded during the NWVMP is NO20, the edge of which is more than 2.5 km north of the Application Boundary.

No evidence of water vole was recorded during the single-visit field survey. As discussed under **Limitations and Assumptions** in **Section 7.4: Methodology**, it is generally recommended that a second survey for water vole is completed to account for seasonal changes in distribution (Strachan *et al.*, 2011). However, considering the lack of water vole evidence across the large surveyed area, and that American mink[9] are present in the area

[7] The distance from the closest edge of the construction corridor associated with the cable route.
[8] If the cable route construction corridor is not closest.
[9] American mink is an invasive non-native species which was introduced to the UK when individuals escaped from historic fur farms. Their presence is thought to be one of the leading causes of decline faced by water vole which have not evolved effective defence mechanisms against this mustelid predator.

(see **Invasive Non-native Species** below), it is considered highly likely water vole are absent from the Application Boundary.

Pine Marten

No records of pine marten were returned by the desk study within 1 km of the Application Boundary but pine marten are understood to be sparsely distributed in Fife (Croose *et al.*, 2013).

No evidence of pine marten was incidentally recorded during field surveys. Pine marten are highly unlikely to use open agricultural fields which occupy most of the Application Boundary (Stringer *et al.*, 2015) and would certainly not take refuge within these habitats. Therefore, pine marten are considered mostly absent from the Application Boundary. However, it is possible few individuals utilise blocks of woodland scattered across the Application Boundary.

Red Squirrel

Fife Nature Records Centre provided five recent records of red squirrel from around Lochgelly, Tullylumb Plantation, and Kinghorn Loch. Numerous recent sightings of red squirrel are also available via Saving Scotland's Red Squirrels within 1 km of the Application Boundary. Nearby sightings are mostly concentrated around Cardenden, and no records of red squirrel were identified within the Application Boundary.

One red squirrel was incidentally recorded at the edge of a public footpath through woodland associated with Hare Law east of the Application Boundary in the north. The location of this sighting is shown on **Figure 7.6 Ground Level Tree Assessment (GLTA) Results**. Red squirrel are considered absent from most of the land within the Application Boundary since the open agricultural fields which occur are unsuitable. If present, red squirrel will be highly localised within woodland blocks and tree lines which sparsely occur throughout the Application Boundary.

Badger

Full details of the desk study and field survey results relating to badger are available within **Confidential Appendix 7.1 Mammals (Volume 4 Appendices)** and a summary of results is provided below.

The desk study returned two recent records of badger within 1 km of the Scottish Onshore Scheme, provided by Fife Nature Records Centre, from the southern end of the Application Boundary, south of the B9157. Location information for the records is available to 1 km^2 resolution so their exact relationship to the Scottish Onshore Scheme is unclear but both records are situated towards the southern half of the Application Boundary.

During field surveys, most evidence of badger was recorded approximately between Cardenden and the B9157; however, access constraints mean that presence within the Application Boundary south of here cannot be discounted. Within the surveyed area, thirteen setts were identified; four main setts, two annexe setts, four subsidiary setts (one of which was disused), and three outlier setts (two of which were disused). A summary of these features in relation to the Scottish Onshore Scheme is given in

Table 7-8 **Badger setts recorded during field survey** and their locations (along with other signs of badger activity) are displayed in **Confidential Figure 7.2** (**Volume 5**) (note that due to the risk of persecution, this figure is confidential).

Table 7-8. Badger setts recorded during field survey

Reference	Sett type and status	Approximate distance from the Application Boundary, indicative cable route[10], and indicative infrastructure layout[11]
BS01	Active main sett	85 m west of Application Boundary. 120 m west of cable route (HDD[12]). 195 m west of attenuation basin.
BS02	Partially used annexe sett	45 m west of Application Boundary. 80 m west of cable route (HDD).
BS03	Disused subsidiary sett	15 m west of Application Boundary. 50 m west of cable route (HDD).
BS04	Partially used subsidiary sett	Immediately adjacent to Application Boundary. 40 m west of cable route (HDD). 15 m from a satellite compound.
BS05	Active subsidiary sett	65 m east of Application Boundary. 170 m east of cable route. 110 m east of gravity pipe.
BS06	Active outlier sett	110 m east of Application Boundary. 225 m east of cable route (HDD). 160 m east of gravity pipe.
BS07	Active main sett	More than 300 m east of Application Boundary, indicative cable route, and indicative infrastructure layout.
BS08	Active main sett	Within Application Boundary. 5 m west of cable route (HDD).
BS09	Active annexe sett	Within Application Boundary. Within cable route (HDD).
BS10	Active main sett	Within Application Boundary. Within cable route.
BS11	Disused outlier sett	25 m east of Application Boundary. 40 m east of cable route.

[10] The distance from the closest edge of the construction corridor associated with the cable route.
[11] If the cable route corridor is not closest.
[12] Trenchless Horizontal Directional Drilling (HDD) will be used to install the cable in the nearest section to this feature.

Reference	Sett type and status	Approximate distance from the Application Boundary, indicative cable route[10], and indicative infrastructure layout[11]
BS12	Active subsidiary sett	50 m southeast of Application Boundary. 65 m southeast of cable route.
BS13	Disused outlier sett	10 m north of Application Boundary. 35 m north of cable route.

Other Important Mammals

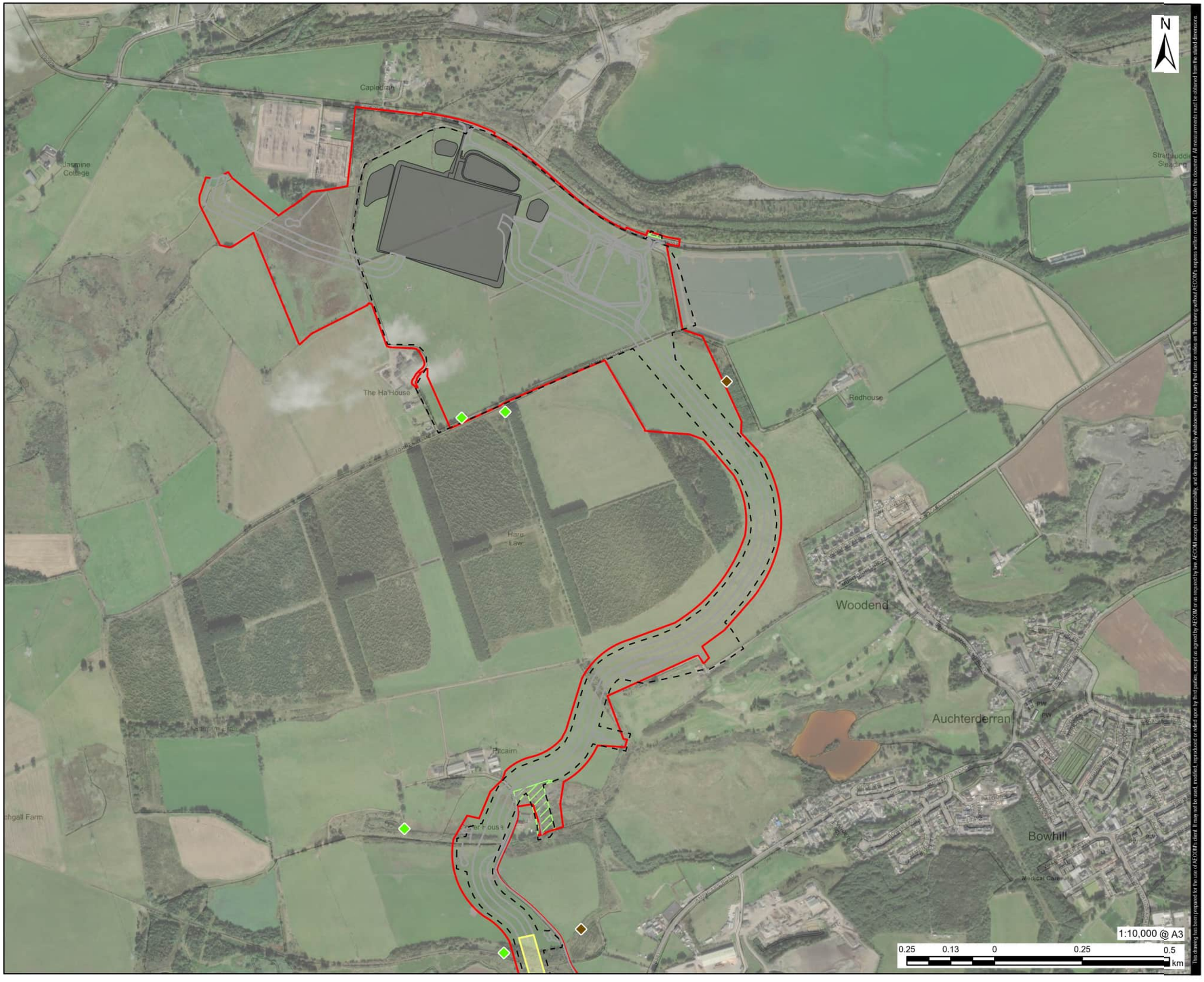
Fife Nature Records Centre provided eight recent records of brown hare within 1 km of the Scottish Onshore Scheme. These records are all associated with fields south of Tiel Burn, including one record within the Application Boundary. Incidental sightings of brown hare were made in woodland and agricultural fields across the Application Boundary during other field surveys, as portrayed in **Figure 7.6 Ground Level Tree Assessment (GLTA) Results**.

Fife Nature Records Centre provided 21 recent records of hedgehog within 1 km of the Scottish Onshore Scheme. Most records are outside of the Application Boundary, associated with the towns of Kinghorn, Cardenden, and Lochgelly. The closest record was of a dead individual 25 m east of the Application Boundary on the B981. No incidental records were made of hedgehog during other field surveys. Hedgehogs are likely absent from most of the land within the Application Boundary as the open agricultural fields which occur are unsuitable. They may, however, be present within field margins, along hedgerows and within woodland which are scattered across the Application Boundary.

There is no habitat suitable for mountain hare or wildcat within the Application Boundary which also lies outside the recognised distribution range of these species in Scotland (JNCC, 2019; Wetherhill *et al.*, 2022). Mountain hare and wildcat are, therefore, considered absent from within the Application Boundary.

Fife Nature Records Centre provided 11 recent records of grey seal *Halichoerus grypus*, three of harbour seal *Phoca vitulina*, and one of humpback whale *Megaptera novaeangliae* within 1 km of the Scottish Onshore Scheme. All records are associated with the coast and Firth of Forth in the far southeast of the Application Boundary. The Application Boundary extends as far as Mean Low Water Springs (MLWS) and the marine environment beyond this is considered as part of the Marine Scheme of the Project. Subsequently, there is no habitat suitable for most marine mammals within the Application Boundary; however, semiaquatic species such as grey seal and harbour seal may be found resting along the coast above MLWS.

Revision: 1 Drawn: ER Checked: LC Approved: DR Date: 2025-12-01



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LEGEND

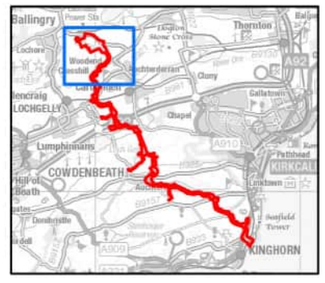
- Planning Application Boundary
- Area Not Accessed
- GLTA Survey Area (site boundary as it was understood at the time of survey)

Indicative Infrastructure Layout

- Permanent Infrastructure
- Temporary Infrastructure
- Horizontal Direction Drilling (HDD) Section

Other Indicental Records

- Brown hare sighting
- Herptile hibernacula potential



NOTES

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ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

60707131

FIGURE TITLE

Ground Level Tree Assessment (GLTA) Results

FIGURE NUMBER

Figure 7.6 (Sheet 1 of 5)

Filename: C:\Users\lemonsmithm\Documents\SPEN OTNR\02_Maps\Eastern Link 4\EIA Report\EGL4_EIA_Ch7_Ecology.aprx

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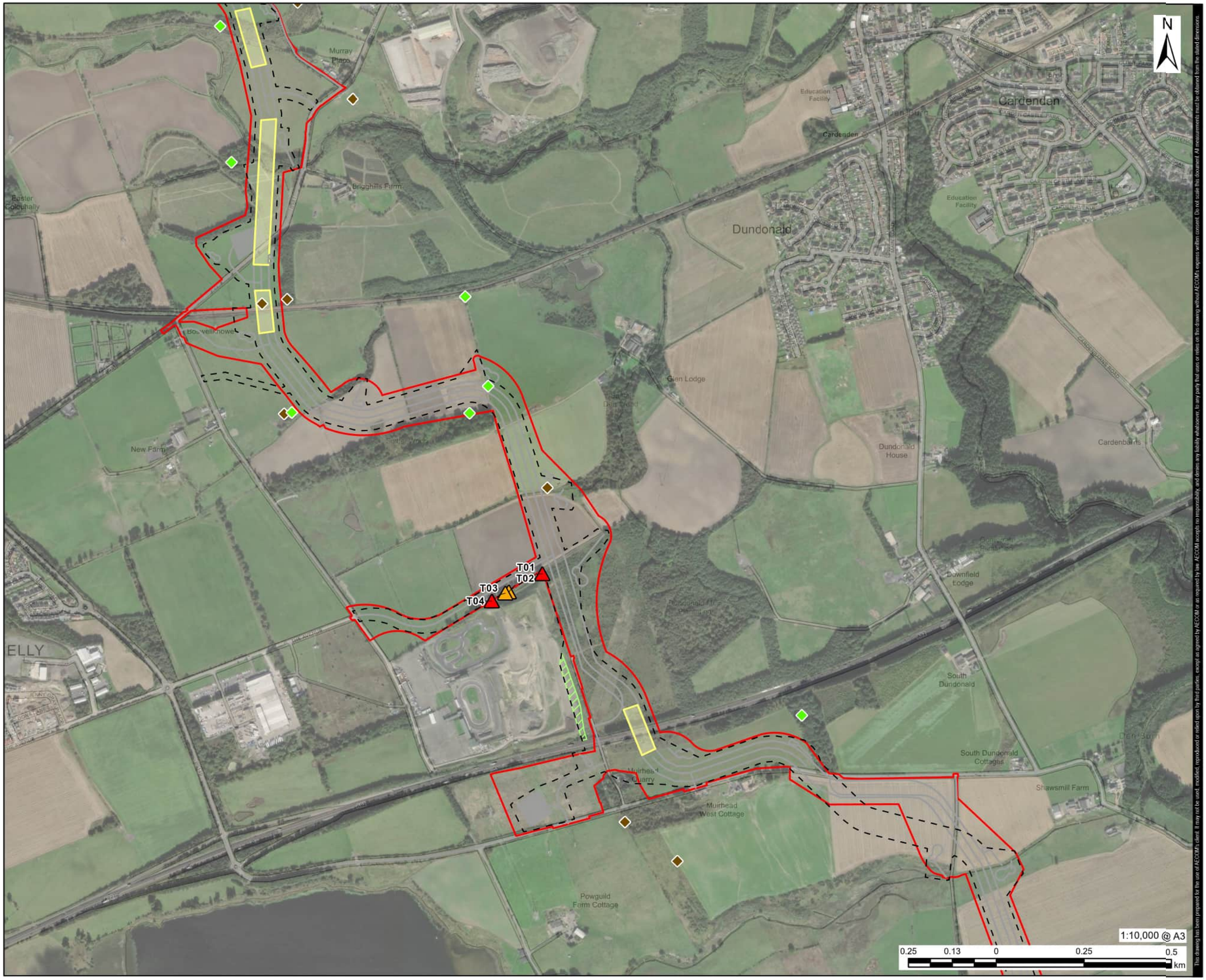

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LEGEND

- Planning Application Boundary
- Area Not Accessed
- GLTA Survey Area (site boundary as it was understood at the time of survey)

Indicative Infrastructure Layout

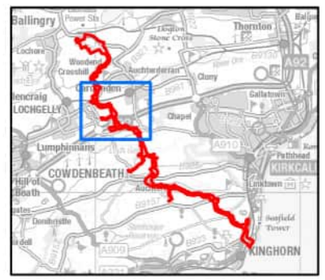
- Temporary Infrastructure
- Horizontal Direction Drilling (HDD) Section

GLTA Categorisation

- PRF-I
- PRF-M

Other Indicental Records

- Brown hare sighting
- Herptile hibernacula potential



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ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

60707131

FIGURE TITLE

Ground Level Tree Assessment (GLTA) Results

FIGURE NUMBER

Figure 7.6 (Sheet 2 of 5)

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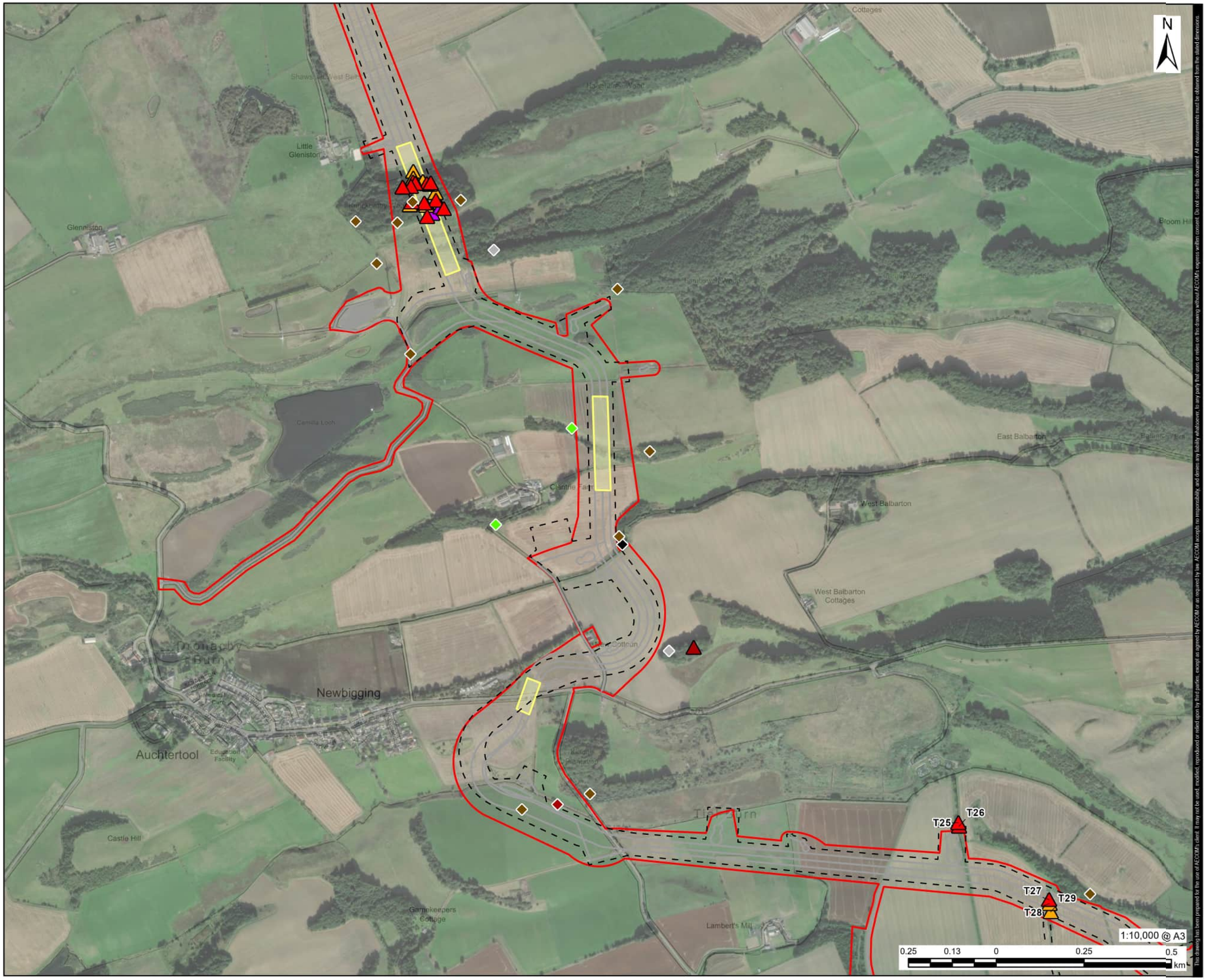

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LEGEND

- Planning Application Boundary
- Area Not Accessed
- GLTA Survey Area (site boundary as it was understood at the time of survey)

Indicative Infrastructure Layout

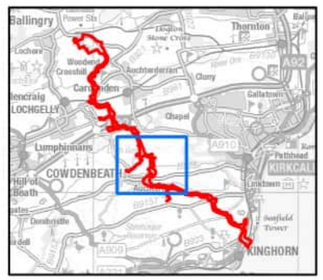
- Temporary Infrastructure
- Horizontal Direction Drilling (HDD) Section

GLTA Categorisation

- FAR
- PRF-I
- PRF-M
- Group of trees with likely PRF

Other Indicental Records

- American mink scat/burrow
- Brown hare sighting
- Grey squirrel sighting
- Herptile hibernacula potential
- Rat burrows



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PROJECT NUMBER

60707131

FIGURE TITLE

Ground Level Tree Assessment (GLTA) Results

FIGURE NUMBER

Figure 7.6 (Sheet 3 of 5)

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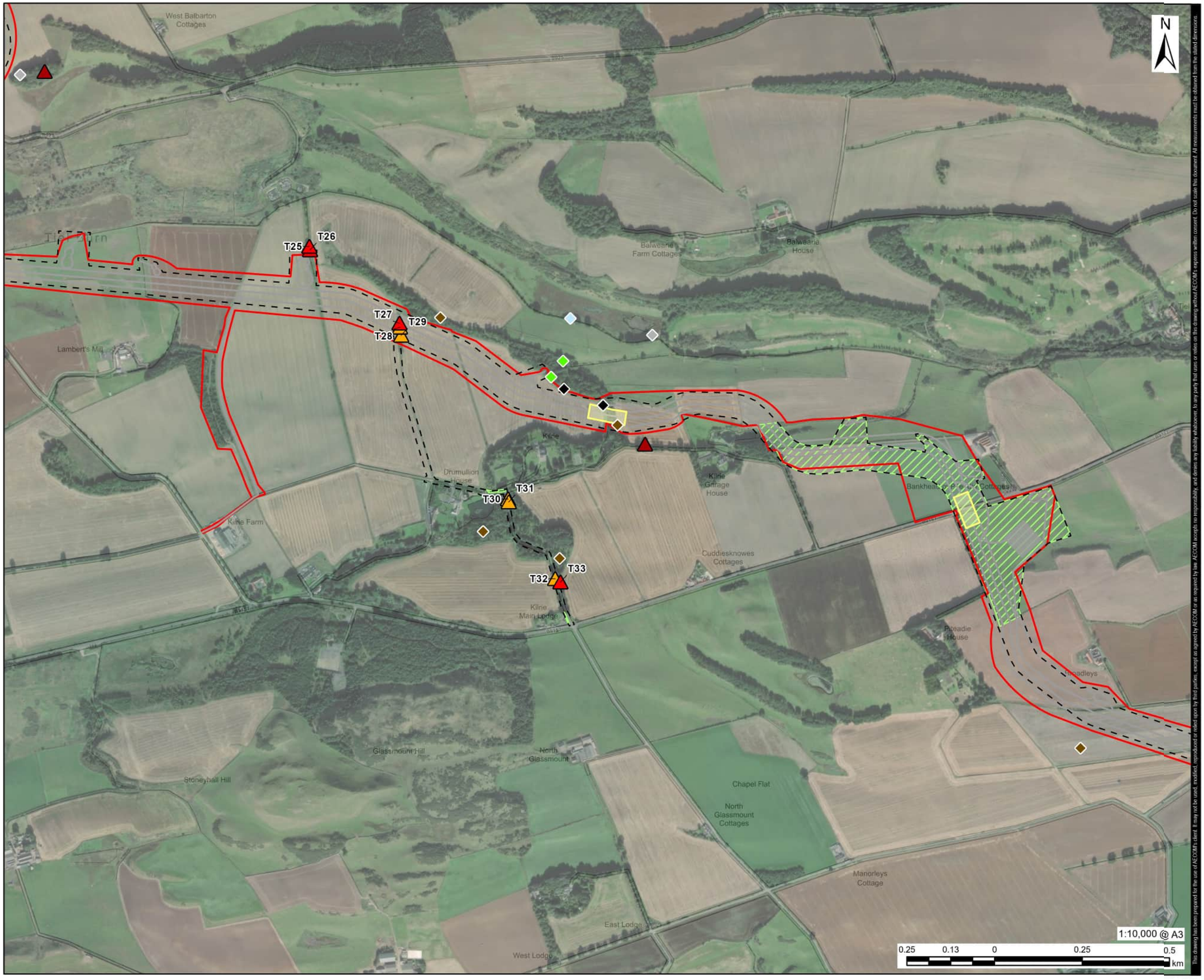

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LEGEND

- Planning Application Boundary
- Area Not Accessed
- GLTA Survey Area (site boundary as it was understood at the time of survey)

Indicative Infrastructure Layout

- Temporary Infrastructure
- Horizontal Direction Drilling (HDD) Section

GLTA Categorisation

- PRF-I
- PRF-M
- Group of trees with likely PRF

Other Indicental Records

- American mink scat/burrow
- Brown hare sighting
- Signal crayfish sighting
- Grey squirrel sighting
- Herptile hibernacula potential

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ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

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FIGURE TITLE

Ground Level Tree Assessment (GLTA) Results

FIGURE NUMBER

Figure 7.6 (Sheet 4 of 5)

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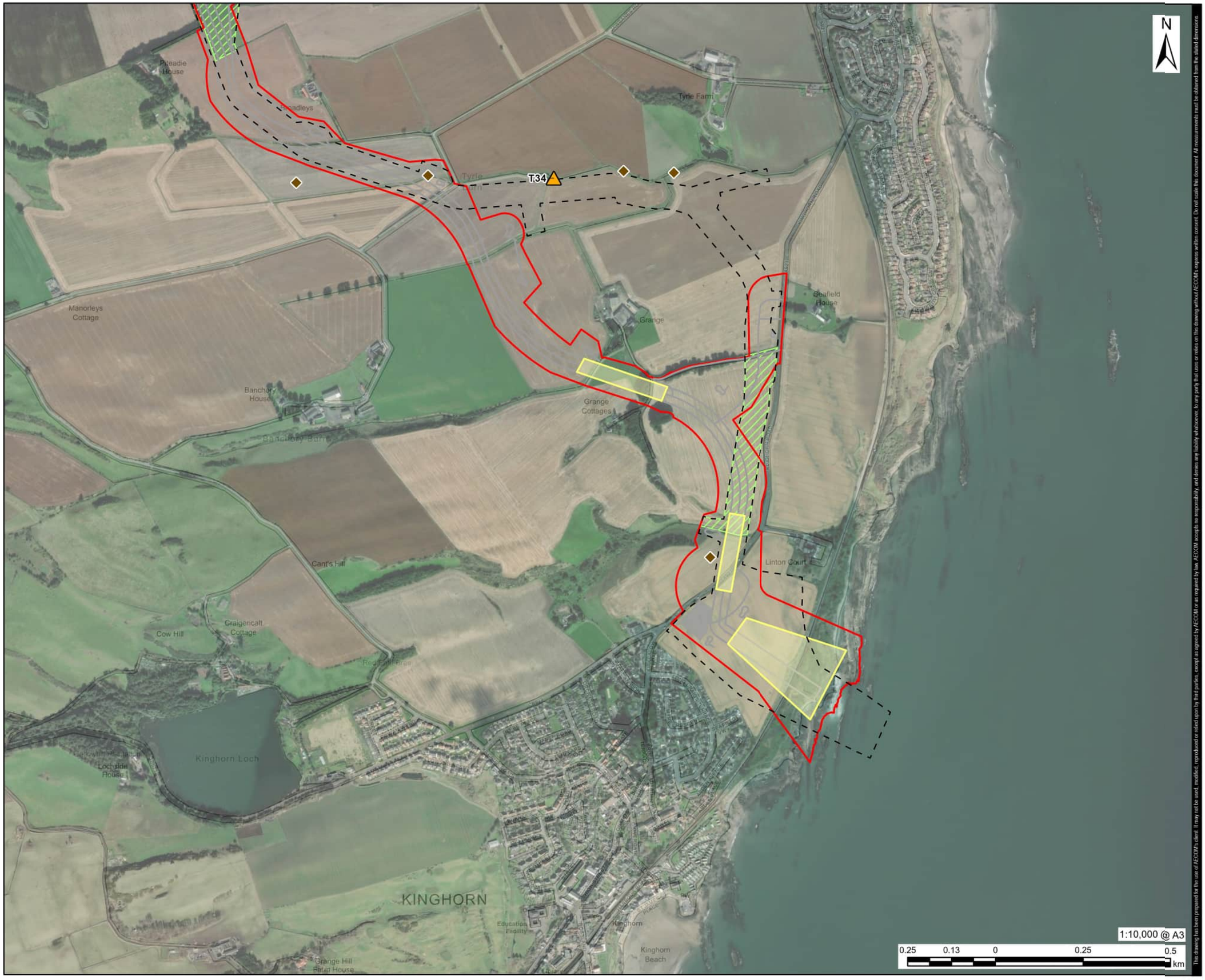

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LEGEND

- Planning Application Boundary
- Area Not Accessed
- GLTA Survey Area (site boundary as it was understood at the time of survey)

Indicative Infrastructure Layout

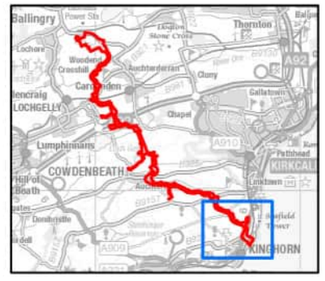
- Temporary Infrastructure
- Horizontal Direction Drilling (HDD) Section

GLTA Categorisation

- PRF-I

Other Indicental Records

- Brown hare sighting



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PROJECT NUMBER

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FIGURE TITLE

Ground Level Tree Assessment (GLTA) Results

FIGURE NUMBER

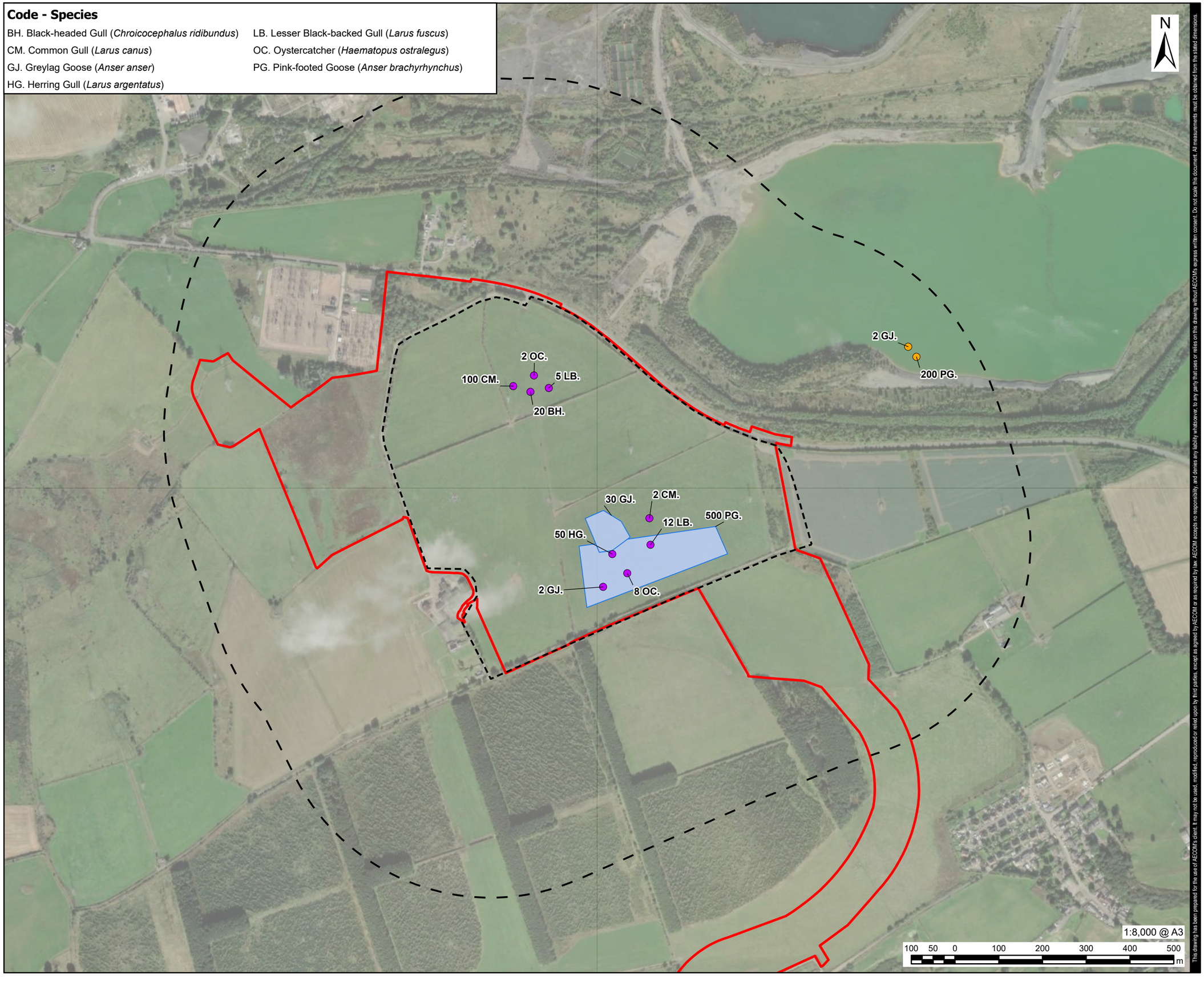
Figure 7.6 (Sheet 5 of 5)

Revision: 1 Drawn: ER Checked: LC Approved: SJ Date: 2025-09-18

Filename: C:\Users\lemonsmithm\Documents\SPEN OTNR\02_Maps\Eastern Link 4\EIA Report\EGL4_EIA_Ch7_Ornithology.aprx

Code - Species

BH. Black-headed Gull (*Chroicocephalus ridibundus*)
CM. Common Gull (*Larus canus*)
GJ. Greylag Goose (*Anser anser*)
HG. Herring Gull (*Larus argentatus*)
LB. Lesser Black-backed Gull (*Larus fuscus*)
OC. Oystercatcher (*Haematopus ostralegus*)
PG. Pink-footed Goose (*Anser brachyrhynchus*)



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LEGEND
- Planning Application Boundary
- Converter Station Site Boundary
- 500m Survey Area from Converter Station Boundary

Bird Location
- October 2024
- February 2025
- January 2025

January records recorded as polygons covering approximate area encompassed by flock

NOTES
Maxar, Microsoft

ISSUE PURPOSE
EIA REPORT

PROJECT NUMBER
60707131

FIGURE TITLE
Convertor Station Inland Wintering Bird Survey Results

FIGURE NUMBER
Figure 7.7

Revision: 2 Drawn: ER Checked: MLS Approved: SJ Date: 2025-09-18

Code - Species

BH. Black-headed Gull (*Chroicocephalus ridibundus*)
CM. Common Gull (*Larus canus*)
CU. Curlew (*Numenius arquata*)
GJ. Greylag Goose (*Anser anser*)
HG. Herring Gull (*Larus argentatus*)
OC. Oystercatcher (*Haematopus ostralegus*)
UO. Unidentified Goose (*Anser sp.*)

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LEGEND
Planning Application Boundary
1km Survey Area
Bird Location
January 2025
February 2025
March 2025

NOTES
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ISSUE PURPOSE
EIA REPORT

PROJECT NUMBER
60707131

FIGURE TITLE
Landfall Site Inland Wintering Bird Survey Results

FIGURE NUMBER
Figure 7.8

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