



Fife Council

Leven Bridge




Preliminary Ecological Appraisal Report

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RSK GENERAL NOTES

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EXECUTIVE SUMMARY

1. This report presents the results of a preliminary ecological appraisal (PEA), comprising a background data search and a Phase 1 habitat survey, with assessment for protected species carried out on 26 October 2021. The survey was undertaken in connection with proposed works on Leven Railway Bridge and the adjoining Bawbee Bridge located in Fife (Ordnance Survey Grid Ref NO 37850 00445). The survey area included the land within the red-line boundary (the site), plus adjacent land up to 30 m which extended to 250 m upstream and downstream of the bridges for otter. The site and survey area are shown in *Figure 1*.
2. There are four statutory designated sites located within 2 km of the site, these are: Firth of Forth Ramsar, Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA) and the Outer firth of Forth and St Andrews Bay Complex SPA. Given the close proximity of internationally designated sites, a habitats regulation appraisal (HRA) screening report is required.
3. The main habitats found within the survey area include broadleaved woodland, scrub, ephemeral / short perennial, amenity grassland, running water and cobble / sand. None of the habitats recorded are considered locally notable or of significant botanical value.
4. Both Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*) were identified along the banks of the River Leven during the survey. It is expected that these plants can be avoided during the works given their locations and the small footprint of the proposed works. However, they should be fenced off with a 7 m buffer to ensure that they are not touched or accidentally spread as a result of the works, which is an offence.
5. Evidence of otter activity along the River Leven was recorded during the survey, however no holts, couches or places of rest were identified. As otters utilise the River Leven for foraging and commuting it is recommended that a preconstruction survey is undertaken no more than three months prior to the works.
6. No evidence of badger was recorded during the survey and no badger setts were identified. However, due to the presence of suitable habitat, a preconstruction survey is recommended no more than three months prior to the works.
7. Leven Railway Bridge and the adjoining Bawbee Bridge were assessed as having negligible potential to support roosting bats. The unnamed bridge attached to the car park was assessed as having low potential to support opportunistic individually roosting bats. As works are not scheduled to be undertaken on this bridge and the bridge is only classed as having low potential, it is considered that mitigation measures for will be sufficient to avoid any potential disturbance to roosting bats.
8. The River Leven provides suitable foraging and commuting habitat for bats and therefore night works should be avoided. If night work cannot realistically be avoided during construction, a sympathetic lighting approach should be implemented in order to prevent disturbance.
9. Habitat with the potential to support nesting birds was identified during the survey with a single nest identified. It is recommended that, any vegetation clearance should be avoided

during the main breeding bird season (March to August inclusive). If disturbance of areas of suitable nesting habitat is unavoidable in the bird breeding season, then checks for nesting birds should be undertaken prior to construction works. If nests are identified and deemed to be active, a temporary pause of works, or a watching brief to identify species and monitor for any signs of disturbance during works, may be required.

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1.0 INTRODUCTION

1.1 Purpose of this report

- 1.1.1 This report presents the results of a preliminary ecological appraisal (PEA), comprising a background data search and a Phase 1 habitat survey, with assessment for protected species carried out on 26 October 2021. The survey was undertaken in connection with proposed works on Leven Railway Bridge and the adjoining Bawbee Bridge located in Fife (Ordnance Survey Grid Ref NO 37850 00445).
- 1.1.2 An initial survey was undertaken by RSK Biocensus (RSK, 2018) however, no construction works have taken place and therefore there was a requirement for updated surveys to inform the planning application. The survey area included the land within the red-line boundary (the site), plus adjacent land up to 30 m from works areas which extended to 250 m upstream and downstream of the bridges for otter. The site and survey area are shown in Figure 1.
- 1.1.3 The report identifies ecological constraints relevant to the project and specifies any further survey or mitigation requirements. The appraisal was carried out on behalf of Fife Council.

1.2 Landscape context

- 1.2.1 The site is located in Leven, Fife to the east of Glenrothes. The site contains predominantly hard standing including Bawbee Bridge and Leven Railway Bridge and associated roundabouts in addition to small areas of scrub and broad-leaved woodland and bare ground. In the wider area the site is surrounded by urban infrastructure with industrial areas including the Banbeath industrial estate located to the north, farmland with residential housing also present.
- 1.2.2 The site lies on the coast close to the Firth of Forth which is afforded designation as a Ramsar, Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA). The River Leven intersects the site and flows west to east, ultimately flowing into the Firth of Forth.

1.3 Development proposals

- 1.3.1 The proposed development will include the replacement of the deck of Leven Railway Bridge and repair works to the adjoining Bawbee Bridge. A temporary bridge will be constructed to carry diverted traffic during the remedial works across the River Leven. It is not thought that bridge pillars or headers will be used during construction and therefore it is not considered that the new bridge will affect the integrity of the riverbanks or watercourse.

2.0 METHODS

2.1 Overview

- 2.1.1 The preliminary ecological appraisal (PEA) was undertaken in line with guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017), which includes:
- a desk study, (gathering information from national websites; local record centres, councils, local wildlife groups, published material, previous reports etc.) here called a background data search (BDS); and
 - a field survey with a scope that includes the mapping of habitats, an assessment of the possible presence of protected or priority species and the likely importance of habitat features, and notes including mapping of any incidental sightings of non-native invasive plant species and protected or priority mammal species.
- 2.1.2 The PEA report includes an ecological description of the site and information about species that may occur there. Notes and mapping of any incidental sightings of invasive non-native plant species and protected or priority fauna species are also provided.
- 2.1.3 The survey was carried out on 26 October 2021 by ecological consultants Katie Farmer and Julia Richards. Both are members of CIEEM and are experienced in carrying out preliminary ecological appraisals.

2.2 Desk Study Data Search

- 2.2.1 A search was made in October 2021 for reference materials relating to the ecology of the site, and a list of sources is given in Table 1. A full species list is provided in Appendix C.

Table 1: Data sources

Information Obtained	Available From
Protected and Noteworthy species-records	Fire Nature Records Centre
Designated site locations and citations	Nature Scot Site Link website
Designated site locations and citations	Fire Nature Records Centre
Designations and legal protection of noteworthy species	Joint Nature Conservation Committee (JNCC) website

- 2.2.2 A search was made for information on statutory designated sites (often internationally and nationally important sites for ecology) within 2 km of the site boundary and non-statutory designated sites (often important in a local context) within 1 km. The search was extended to 10 km for internationally designated sites. A search was also made for

records of noteworthy species within 1 km of the site boundary. Species included in the search parameters were:

- European protected species (listed on Schedule 2 and 4 of the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended);
- nationally protected species under Schedules 1, 5 and 8 of The Wildlife & Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011 and The Protection of Badgers Act 1992;
- species listed as critically endangered, endangered or vulnerable on the *IUCN Red List*;
- all species listed on the RSPB *Birds of Conservation Concern 4* as red or amber;
- species listed on The Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention);
- Nationally rare or nationally scarce species;
- Notable invertebrates; and
- species that have action plans under the Scottish Biodiversity List (SBL) or are priority species under the Local Biodiversity Action Plan.

2.3 Phase 1 Habitat Survey

2.3.1 The field survey was based on the Phase 1 Habitats survey methodology (JNCC, 2010) as extended for use in environmental impact assessments (Chartered Institute of Ecology and Environmental Management 2017) was undertaken. This involved the following elements.

- Habitat mapping using a set of standard colour codes to indicate habitat types on a Phase 1 habitat map.
- Description of features of possible ecological or nature conservation interest in notes relating to numbered locations on the phase 1 habitat map, called 'Target Notes'.

2.3.2 Plant nomenclature in this report follows Stace (2019) for native and naturalised species of vascular plant with lower case used for common names, and mosses and liverworts follow Hill et al. (2008). Introduced species and garden varieties were identified using relevant Floras. Plant names in the text are given with common names with the scientific name (in italics) immediately following the first time it is mentioned.

2.4 Invasive non-native species (INNS)

2.4.1 Phase 1 habitat survey does not involve exhaustive surveying for individual plant species, and various invasive species may be little in evidence at various times of year (depending on the species). A survey seeking to identify habitat types cannot therefore be relied upon to provide firm information about the presence or extent of any INNS. However, any INNS that were encountered during the habitat survey were noted, including Japanese knotweed (*Reynoutria japonica*), giant hogweed (*Heracleum*

mantegazzianum) and Himalayan balsam (*Impatiens glandulifera*), as well as any invasive non-native animal species.

2.5 Protected and notable animals

General

- 2.5.1 The site was assessed for its suitability to support protected or otherwise notable animals that are likely to occur in the area. Taking into account the results of the desk study, the geographic location, lack of suitable habitat and pulling on the results of the initial PEA undertaken by RSK in July 2018, the presence of red squirrel, pine marten, water vole and great crested newt have been discounted from this assessment. Given that works will not be within the water course itself, fish surveys were not considered necessary.

Badger

- 2.5.2 An initial assessment was carried out to identify areas that might be used by badgers (*Meles meles*) for commuting, foraging or sett building within the site boundary (where access was possible). The area was searched for potential habitat to support badger. Badger field signs and include:
- setts (including main, subsidiary, annex and outlier setts);
 - foraging signs;
 - latrines (or dung pits);
 - footprints; and
 - guard hairs.
- 2.5.3 Any of the above signs can be taken as diagnostic evidence of the presence of badger (excluding foraging signs). Where setts were recorded, the levels of recent activity and status were also recorded.

Bats

- 2.5.4 Habitats were assessed for their suitability for foraging and commuting bats (*Chiroptera spp*), in line with guidance provided in Collins (2016). Areas of particular interest vary between species, but generally include sheltered areas and habitats with good numbers of insects, such as woodland, scrub, rivers and species-rich or rough grassland.
- 2.5.5 Trees and man-made structures were noted if they had potential suitability for roosting bats (Collins, 2016). This involved identifying features that roosting bats may favour (e.g. holes, cracks and cavities that might be used as bat access-points or roost sites).

Preliminary roost assessment (PRA) of built structures

- 2.5.6 All of the bridges were assessed externally to ascertain suitability for roosting bats, taking account of the following factors that influence the likelihood of bats roosting:
- Surrounding habitat: whether there are potential flight-lines and bat foraging areas nearby.

- Construction detail: the type and construction of architectural features that could be used by roosting bats. Some construction details and materials are more favourable to bat occupation than others.
- Bridge condition.
- Internal conditions: bats favour sheltered locations with a stable temperature regime, protection from the elements and little wind/light/rain penetration.
- Potential bat-access points: whether there is flight and crawl access.
- Potential roosting locations: descriptions of all bat-accessible voids, cracks and crevices.

2.5.7 The bridges' potential to support roosting bats was then categorised as defined in Table 2.

Table 2: Categorisation of the suitability of structures or trees for roosting bats (Collins 2016)

Category (Potential to support roosting bats)	Description
Negligible suitability	Negligible habitat features on site likely to be used by roosting bats.
Low suitability	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate suitability	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely for a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High suitability	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Confirmed roost	Bats or evidence of bats recorded during the initial inspection surveys or during dusk/dawn surveys. A confirmed record (supplied by records centre/local bat group) would also apply.

Ground-Level Tree Surveys

- 2.5.8 All trees within the site were surveyed from ground level. Features that might be used by roosting bats were described and categorised according to accepted guidelines (Collins, 2016). Each tree was given a category during the ground-level surveys (see Table 2) based on its potential for roosting bats.
- 2.5.9 Trees may also be categorised as having *unknown potential* if the surveyor's view of the tree is obscured. This can be caused by dense ivy (*Hedera helix*) covering the trunk and major limbs so as to conceal potential roosting features from view.

Nesting Birds

- 2.5.10 Birds nest, forage and roost in a wide variety of habitats including scrub, woodland, hedgerows and trees, wetland, arable and pastoral farmland and rough grassland. Some species also use open bare ground and man-made structures.
- 2.5.11 The site was assessed for its suitability to support protected species of breeding and non-breeding birds, with an emphasis on those species that are listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), the red and amber lists of the RSPB's Birds of Conservation Concern 4 (Eaton et al., 2015) and other notable species recorded in the desk study data search, including any species that are qualifying features of nearby designated sites. Consideration was given to the site's connectivity to landscape features that are likely to be of particular importance to birds, such as extensive areas of semi-natural woodland or wetlands.

Otters

- 2.5.12 An otter (*Lutra lutra*) survey was undertaken as part of the PEA given that the River Leven provides suitable habitat for this species. The survey area covered 250 m upstream and downstream of the development footprint, where accessible. The assessment was carried out to identify areas of the site that might be important for commuting, resting or feeding otters. Any signs of otter activity including dung (spraints), tracks (footprints) and feeding remains were recorded.

Reptiles

- 2.5.13 The site was assessed for its suitability for the three most widespread reptile species, with particular attention given to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, piles of rotting vegetation) and opportunities for foraging (e.g. rough grassland and scrub).
- 2.5.14 Specific habitat requirements differ between species. Common lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland. Slow-worms (*Anguis fragilis*) use similar habitats to common lizards, and are often found in rank grassland, gardens and derelict land. Adders (*Vipera berus*) prefer open habitats such as heathland, moorland, open woodland and sea cliffs, typically on free-draining soils such as chalk or sand.

Other species of Principal Importance

- 2.5.15 The UK countries of England, Wales, Scotland and Northern Ireland are obliged by their individual laws to maintain lists of species and habitats of principal importance for biodiversity conservation. In Scotland, this obligation derives from Section 2(4) of the Nature Conservation (Scotland) Act 2004, an assessment of the suitability and likelihood of the site supporting such species was made (for example, European hedgehog (*Erinaceus europaeus*)).

2.6 Constraints and limitations

- 2.6.1 This preliminary appraisal as to whether protected or otherwise notable species might occur on the site is based on the suitability of habitat, the known distribution of relevant

species in the local area (from online sources and desk study), and any signs of the relevant species. It does not constitute a full and definitive survey of any protected species group.

- 2.6.2 Field signs for protected and valuable species are often difficult to find or absent from a site. The survey conducted was not intended to be a comprehensive presence/absence survey for all species, but rather to provide an indication of the likely presence of such species based on the field signs found, and the nature of the habitats present.
- 2.6.3 Access was not made to the full 250 m buffer due to landownership, and residential gardens although the surveyors made every effort to survey these areas from public roads. Therefore, it remains possible that there is potential for otter to be present immediately adjacent to the site.
- 2.6.4 All recommendations made in this report are based on the proposed site layout plan provided by the client in October 2021. If the site plans change significantly, then an ecologist must be consulted, and further surveys may be required.
- 2.6.5 No other constraints were recorded which may affect the robustness of the data or the conclusions made.

3.0 RESULTS

3.1 Background Data Search

Designated Sites

Statutory Sites

- 3.1.1 There are four statutory designated sites within 2 km of the site boundary, of these, three are internationally designated sites. These are Firth of Forth SSSI, SPA and Ramsar site and Outer Firth of Forth and St Andrews Bay Complex SPA. These sites are listed in Table 3 in order of proximity to the site; short descriptions are given for the sites. Some of the sites share several designations. No further internationally designated sites were found within 10 km.

Table 3: Statutory sites within 2 km

Site Name	Designation	Approximate Distance (m)
Firth of Forth	Ramsar	10
Designated features: <ul style="list-style-type: none"> • Bar-tailed godwit – non-breeding • Common scoter – non-breeding • Cormorant – non-breeding • Curlew – non-breeding • Dunlin – non-breeding • Eider – non-breeding • Golden plover – non-breeding • Goldeneye – non-breeding • Great crested grebe – non-breeding • Grey plover – non-breeding • Knot – non-breeding • Lapwing – non-breeding • Long-tailed duck – non-breeding • Mallard – non-breeding • Oystercatcher – non-breeding • Pink-footed goose – non-breeding • Red-breasted merganser – non-breeding • Red-throated diver – non-breeding • Redshank – non-breeding • Ringed plover – non-breeding • Sandwich tern – passage • Scaup – non-breeding • Shelduck – non-breeding • Slavonian grebe – non-breeding • Turnstone – non-breeding • Velvet scoter – non-breeding • Waterfowl assemblage – non-breeding • Wigeon – non-breeding 		
Firth of Forth	SSSI	15
The Firth of Forth SSSI comprises an extensive mosaic of intertidal and coastal habitats. Extensive mudflats make up much of the intertidal zone with areas of sand, shingle, rock and		

Site Name	Designation	Approximate Distance (m)
boulders. Associated coastal habitats include saltmarsh, grassland and sand dunes. Important species include northern brown argus, wintering and breeding birds and assemblage of beetles.		
Firth of Forth	SPA	15
Designated features: <ul style="list-style-type: none"> • Bar-tailed godwit – non-breeding • Common scoter – non-breeding • Cormorant – non-breeding • Curlew – non-breeding • Dunlin – non-breeding • Eider – non-breeding • Golden plover – non-breeding • Goldeneye – non-breeding • Great crested grebe – non-breeding • Grey plover – non-breeding • Knot – non-breeding • Lapwing – non-breeding • Long-tailed duck – non-breeding • Mallard – non-breeding • Oystercatcher – non-breeding • Pink-footed goose – non-breeding • Red-breasted merganser – non-breeding • Red-throated diver – non-breeding • Redshank – non-breeding • Ringed plover – non-breeding • Sandwich tern – passage • Scaup – non-breeding • Shelduck – non-breeding • Slavonian grebe – non-breeding • Turnstone – non-breeding • Velvet scoter – non-breeding • Waterfowl assemblage – non-breeding Wigeon – non-breeding		
Outer Firth of Forth and St Andrews Bay Complex	SPA	380
Designated features: <ul style="list-style-type: none"> • Artic tern – breeding • Black-headed gul – non-breeding • Common gull – non-breeding • Common scoter – non-breeding • Common tern – breeding • Eider – non-breeding • Gannet – breeding • Goldeneye – non-breeding • Guillemot – breeding • Guillemot – non-breeding • Herring gull – breeding • Herring gull – non-breeding • Kittiwake – breeding • Kittiwake – non-breeding • Little gull – non-breeding • Long-tailed duck – non-breeding • Manx shearwater – breeding • Puffin – breeding • Razorbill – non-breeding • Red-breasted merganser – non-breeding • Red-throated diver – non-breeding • Seabird assemblage – breeding 		

Site Name	Designation	Approximate Distance (m)
<ul style="list-style-type: none"> • Seabird assemblage – non-breeding • Shag – breeding • Shag – non-breeding • Slavonian grebe – non-breeding • Velvet scoter – non-breeding • Waterfowl – non-breeding 		

Non-statutory Sites

- 3.1.2 There are no non-statutory designated sites within 1 km of the site boundary.

Other Notable Sites

- 3.1.3 There are no areas of ancient woodland within 1 km of the site boundary.

Protected and Noteworthy Species

- 3.1.4 At least 121 noteworthy species are recorded within 1 km of the site boundary. Of these 100 are birds, 3 are fish, 5 are invertebrates, 3 are plants and at least 10 are mammals. Species that are protected by law under Schedules 2 and 4 of The Conservation (Natural Habitats, & c.) Regulations 1994 (as amended); Schedules 2, 5 and 8 of The Wildlife and Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011 or The Protection of Badgers Act 1992 and have been recorded in the area can be found in Appendix B along with a full species list in Appendix C.

3.2 Plants and habitats

Phase 1 Habitat Survey

- 3.2.1 The habitats within the site and to a buffer of 30 m are described below with reference to target notes presented in full within Appendix D Target Notes (TN) and mapped in **Error! Reference source not found.** with a full species list provided in Appendix E. Site photographs are presented in Appendix E. The main habitats recorded on site, along with the area they cover are provided in **Error! Reference source not found.**. The individual habitat types are provided in more detail below.

A1.1.1 - Broadleaved semi-natural woodland

- 3.2.2 Broadleaved woodland lines the west bank of the River Leven with some smaller areas on the west bank (TN 1 and Photo 01). Species present include sycamore (*Acer pseudoplatanus*), alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), rowan (*Sorbus acuparia*), Prunus (*Prunus* sp), elder (*Sambucus nigra*), buddleia (*Buddleja* sp), silver birch (*Betula pendula*), goat willow (*Salix caprea*), crack willow (*Salix fragilis*), and white poplar (*Populus alba*).

A1.3.1 – Mixed Semi-Natural Woodland

- 3.2.3 A single area of mixed semi-natural woodland is located to the east of the railway line directly north of the River Leven (TN 2 and Photo 02). The composition of species is similar to the habitats present along the west bank of the River Leven within the broadleaved semi-natural woodland with the addition of Scots pine (*Pinus sylvestris*).

A2.1 - Dense/ Continuous Scrub

- 3.2.4 Successional growth has overtaken some of the old areas of hard standing particularly in the east of the survey area (TN 3 and Photo 03). The areas comprise bramble (*Rubus fruticosus* agg), immature rowan, holly (*Ilex aquifolium*), broom (*Cytisus scoparius*), gorse (*Ulex europaeus*), hawthorn (*Crataegus monogyna*), Rosebay willowherb (*Chamaenerion angustifolium*), common hogweed (*Heracleum sphondylium*), dog rose (*Rosa canina*), buddleia sp, sycamore (*Acer pseudoplatanus*) saplings and silver birch saplings.

A2.2 – Scattered Scrub

- 3.2.5 There are also smaller areas of scattered scrub within the survey area (TN 4). The species composition is much the same as the continuous scrub with buddleia as the dominant species.

J2 – Amenity Grassland

- 3.2.6 Within the survey area there are areas of amenity grassland (TN 5 and Photo 04). The areas comprise mainly short sward grasses with limited species diversity. Perennial ryegrass (*Lilium perenne*) is the dominant species and covers the area directly west and north of the carpark in addition to areas along South Street.

J1.3 - Ephemeral / Short Perennial

- 3.2.7 There are areas of ephemeral / short perennial habitats within the survey area (TN 6 and Photo 05). These are mainly confined to the north of the railway line under Leven Railway Bridge and also in the south-east of the survey area. In the south-east there is successional growth over hard standing which at the outer extent is surrounded by scattered scrub. Species composition is dominated by ribwort plantain (*Plantago lanceolata*), common nettle (*Urtica dioica*), ragwort (*Jacobaea vulgaris*), yarrow (*Achillea millefolium*), red clover (*Trifolium pratense*), common hogweed, cleavers (*Galium aparine*), broad-leaved dock (*Rumex obtusifolius*) and cotoneaster sp.

G2 – Running Water

- 3.2.8 The River Leven is a large watercourse which flows west to east through the site (TN 7 and Photo 06). Stone walls comprise the majority of the banks with areas of cobble, sand and mud also present. The River Leven ultimately flows into Largo Bay c.200 m east of the site and into the Firth of Forth Estuary. The marginal vegetation comprises predominantly common reed (*Phragmites australis*) and reed canary-grass (*Phalaris arundinacea*) with occasional mature trees including sycamore (*Acer pseudoplatanus*).

H1.2 Intertidal Shingles / Cobble

- 3.2.9 Cobble is present along both banks of the River Leven and is more prevalent along the south bank (TN 8 and Photo 07). The habitat stretches east of Bawbee Bridge for the extent of the survey boundary. There is a large expanse of gravelly sand which becomes finer and less coarse the further from the shore. No vegetation was observed apart from some macro-algae on the cobbles east of the unnamed bridge associated with the car park which has been transported inland.

J2.5 – Wall

- 3.2.10 Along the north and south banks of the River Leven are areas of wall. In some areas, namely under Bawbee Bridge and to the west of the Railway Bridge, the walls create the banks to the river. There is a small stream which runs into the river from the north which is culverted and walled either side (TN 9 and Photo 08).

J5 Other habitat

- 3.2.11 Hard standing is present on the site, some areas have successional growth however hard standing areas are present specifically around the perimeters of the site (TN 10). Buddleia, rosebay willowherb (*Chamerion angustifolium*) and greater plantain (*Plantago major*) are the species present.

Invasive Non-native Species

- 3.2.12 During the initial PEA survey undertaken in July 2018, numerous stands of giant hogweed (*Heracleum mantegazzianum*) were recorded along the north and south bank of the River Leven. In addition, the initial survey identified stands of Himalayan balsam (*Impatiens glandulifera*) along the south bank.
- 3.2.13 During the current survey several stands of Himalayan balsam and giant hogweed were recorded. These were located along the south bank of the River Leven. A stand of giant hogweed covered an area of c.2 m² and was located at NO 37934 00350 the area also had Himalayan balsam present (TN 18 and 19 and Photo 09). In addition, a second stand of Himalayan balsam was present along the banks of Leven River east of Leven Railway at NO 37964 00362 (TN 17 and Photo 10).

3.3 Protected and notable animals

- 3.3.1 Figure 3 shows the location of the protected species Target Notes referred to in the text below. A full description for each of the Target Notes is given in Table 7 **Error! Reference source not found.**, Appendix D.
- 3.3.2 Habitats with the potential to support badgers, bats, otter, nesting birds and reptiles were recorded during the survey. The following section outlines the recommendations for further surveys for each species in turn in order to support the planning application.

Badgers

- 3.3.3 [REDACTED]
- [REDACTED]

- 3.3.4 No badger setts were recorded during either the initial PEA undertaken in July 2018, or the survey undertaken in October 2021. In addition, no evidence of badger was recorded across the survey area.

Bats

- 3.3.5 The desk study data search returned several records of bats within 1 km of the site. These included soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's bat (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*) and *Pipistrellus* species.
- 3.3.6 Of the three bridges assessed during the initial survey undertaken in July 2018, only Leven Railway Bridge was assessed as having features which could be used by roosting bats and was assessed as having moderate potential to support populations of roosting bats. Following the initial survey, the bridge was surveyed for roosting bats by undertaking emergence and re-entry surveys. No bats were found to be roosting and the gaps present were filled in under the watching brief of a licensed bat ecologist. Following filling of the gaps, the bridge was reassessed as negligible to support roosting bats.
- 3.3.7 During the current survey, Leven Railway Bridge was reassessed as having negligible potential to support roosting bats with the filler material still present (TN 12 and Photo 11). The adjoining Bawbee Bridge was assessed as having negligible potential to support roosting bats due to the lack of potential roosting features. The unnamed bridge attached to the car park is of a similar construction to Leven Railway Bridge and contains features such as crevices in the concrete. The bridge was therefore assessed as having low bat roost potential (TN 13 and Photo 12).
- 3.3.8 Trees across the survey area were assessed as generally semi-mature and did not contain potential roosting features (PRF).
- 3.3.9 The River Leven provides suitable foraging and commuting habitat for bats. In addition, the small areas of woodland located on site is considered to offer suitable foraging and commuting habitat for bats.

Nesting Birds

- 3.3.10 The desk study data search returned records of 100 priority bird species from the 1 km radius around the site, with many of these being associated with the neighboring SPA's.
- 3.3.11 A single nest was recorded at NO 37931 00397 (TN 11). The nest appeared to be a corvid nest and due to the time of year was assessed as inactive.
- 3.3.12 During the survey a number of bird species were recorded including kingfisher (*Alcedo atthis*) (Annex 1), grey wagtail (*Motacilla cinerea*), ringed plover (*Charadrius hiaticula*), mallard (*Anas platyrhynchos*), mute swan (*Cygnus olor*), common gull (*Larus canus*), blackbird (*Turdus merula*), robin (*Erithacus rubecula*), wood pigeon (*Columba palumbus*), and tree sparrow (*Passer montanus*). A number of these species, including ringed plover and mallard, are qualifying features of the neighboring SPA's.
- 3.3.13 Suitable habitat for nesting birds was recorded within the site. The woodland and scrub provide opportunities for nesting birds with some opportunities for ground-nesting on the tall ruderal habitat.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Reptiles

- 3.3.17 There were no historical records of reptiles returned from the desk study data search within 1 km of the site.
- 3.3.18 Areas of suitable habitat for reptiles were identified within the site. Generally, reptiles require areas of dense vegetation such as grassland, scrub and woodland edges for foraging and shelter as well as more open, south facing areas in which to bask. They also require suitable refugia habitat such as rock and wood piles in which to shelter and hibernate.
- 3.3.19 The survey area contains areas of scrub and woodland with some areas of bare ground which is considered suitable habitat to support reptiles such as common lizard and slow worm. A review of aerial photographs and mapping indicates that the site is relatively isolated from other suitable habitats within the landscape, being immediately surrounded by roads, industrial areas and residential buildings. The site is therefore seen as having low suitability for reptiles.

Other species

- 3.3.20 The field survey did not record the presence of any other animals of nature conservation importance and the habitats present were not considered suitable for hedgehog.

4.0 RECOMMENDATIONS AND CONCLUSIONS

4.1 Designated Sites

- 4.1.1 The background data search returned four statutory designated sites within 2 km of the site, these are: Firth of Forth Ramsar, Site of Special Scientific Interest (SSSI), and Special Protection Area (SPA) and the Outer firth of Forth and St Andrews Bay Complex SPA. Their qualifying features include the assemblage of nationally and internationally important species of birds in addition to wintering populations of waders and waterfowl. It is considered that there is suitable habitat adjacent to the site, namely along the tidal banks of the River Leven to support these species however the site itself provides sub-optimal habitat for the qualifying species.
- 4.1.2 The Firth of Forth SSSI is designated with an extensive mosaic of intertidal and coastal habitats. Extensive mudflats make up much of the intertidal zone with areas of sand, shingle, rock and boulders. This habitat continues into the site. It is not thought that these habitats will be affected by the works due to the mitigation which will be implemented during construction. This includes sediment control, and the structure of the temporary bridge is such that it will not affect integrity of the banks. Therefore, it is considered that the main constraint to the works would be disturbance of foraging waterfowl associated with the SPA's and Ramsar. A habitats regulation appraisal (HRA) will be required given that the internationally designated sites are in close proximity to the proposed works.
- 4.1.3 There are no non-statutory designated sites or other notable sites located within 1 km of the site.

4.2 Invasive non-native Species

- 4.2.1 Giant hogweed and Himalayan balsam were identified within the survey area. It is expected that these plants can be avoided during the works given their locations and the small footprint of the proposed works. However, they should be fenced off with a 7 m buffer, to ensure that they are not touched or accidentally spread as a result of the works, which is an offence.
- 4.2.2 Site workers and construction staff should especially take care not to touch giant hogweed as the sap of this plant can cause phytophotodermatitis in humans, making skin very sensitive to sunlight causing blisters and scars.

4.3 Assessment for Protected Species

Badgers

- 4.3.1 No evidence of badger activity was recorded within the site or the 30 m buffer during the survey and no setts were identified. There is limited suitable habitat on site considered suitable for badger foraging and sett building across the site however [REDACTED]

Therefore, it is recommended that a pre-construction survey for this species should be carried out within three months of planned works.

- 4.3.2 Any trenches and excavations created during the works should also be fenced or covered at night to prevent any animals becoming trapped. If this is not possible an adequate means of escape should be provided (i.e. a gently graded side wall or provision of gently sloped wooden plank or equivalent) in order to allow escape.

Bats

- 4.3.3 No evidence of bats was found during the survey. Leven Railway Bridge still had the filler present which was put in place in September 2018. Therefore, this bridge was reassessed as having negligible potential to support roosting bats, as was the adjoining Bawbee Bridge.
- 4.3.4 The unnamed bridge attached to the car park is of a similar construction to Leven Railway Bridge and has features which could support opportunistic individually roosting bats and was therefore assessed as having low roosting potential. At present no works are due to commence on the unnamed bridge and therefore this is not considered a constraint as it is unlikely that significant disturbance to bats will be caused during the works. However, the lighting mitigation presented below in relation to foraging and commuting bats should be adopted with any lighting directed away from this bridge.
- 4.3.5 The trees found on site were assessed as generally semi-mature with negligible potential to support roosting bats due to their age and lack of potential roosting features. Therefore, the trees within the survey area are not considered a constraint to the works and no further surveys are required.
- 4.3.6 Linear features such as the woodland and vegetation along roadsides in addition to the Leven River are suitable for commuting bats, whilst the rough grassland, woodland, scrub and the single pond are suitable for foraging bats.
- 4.3.7 The site was assessed as having 'moderate potential' for foraging and commuting bats particularly along the River Leven. Therefore, it is recommended that night works be avoided during construction in order to prevent disturbance to foraging bats. If night work cannot be avoided during construction, then sympathetic lighting should be implemented.

Nesting birds

- 4.3.8 Suitable habitat to support nesting birds was recorded on site. Therefore, it is recommended that if any vegetation clearance is necessary for the works to proceed, that this be cleared outside of the nesting season, (which lasts between March and August inclusive). Should site clearance not be possible during this time then vegetation should be checked by an ecologist no more than 48 hours prior to works. If nests are identified within the site which are deemed to be active, a temporary pause of works may be required in order to identify species and monitor for any signs of disturbance.

Otter

4.3.9 Otters are known to be present within the River Leven historically with records returned from the desk study and evidence of otter found in the initial survey.

4.3.10 No holts or places of rest were recorded during the surveys [REDACTED]

[REDACTED]
[REDACTED] A pre-construction survey for otter should therefore be carried out within three months of planned works.

Reptiles

4.3.11 Reptiles are protected under the Wildlife and Countryside Act 1981 (as amended) (see Appendix A). There were no historical records of reptiles returned from the desk study data search within 1 km of the site. The area consists of rough grassland, scrub and a small patch of woodland to the southwest with some areas of bare ground which is considered to be suitable habitat for reptiles. The site is isolated from other more suitable habitats for reptiles being immediately surround by roads and commercial and residential properties. The site is therefore seen to have low suitability for reptiles due to its ecological isolation and no further surveys are recommended.

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FIGURES

Figure 1 Site Location Plan

Figure 2 Phase 1 Habitat Survey

Figure 3 Protected Species

APPENDIX A – NATURE CONSERVATION LEGISLATION AND POLICY

International Legislation

The following international conventions and directives apply to biodiversity protection in the UK. Post-‘Brexit’, even though European Union (EU) directives no longer directly apply to the UK, the provisions therein are enshrined in both domestic legislation and international agreements. Legislation has been enacted to ensure the regulations derived from these remain in force¹.

The Convention on Biological Diversity 1992 *et seq.*

This multilateral treaty (<https://www.cbd.int/doc/legal/cbd-en.pdf>), signed by 150 government leaders at the 1992 Rio Earth Summit, has three main goals, of which one is the conservation of biological diversity. Article 6 requires countries to develop national biodiversity strategies, plans or programmes. In response, the UK developed the UK Biodiversity Action Plan (BAP) 1994 (<https://jncc.gov.uk/our-work/uk-bap/>) as well as county-specific BAPs. Subsequent to this, parties of the convention agreed the supplementary Nagoya Protocol 2010 (available at <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>), adopting the Strategic Plan for Biodiversity 2011-2020. The purpose of this Strategic Plan was to provide a framework for establishing national and regional biodiversity targets (<https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>).

Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (Birds Directive) 2009

<https://www.legislation.gov.uk/eudr/2009/147>

The Birds Directive 2009 relates to the conservation of all species of naturally occurring birds in their wild state in the territory of the EU Member States (MSs) to which the treaty applies. Under the Birds Directive, the most suitable areas of conservation of the Annex I species are to be designated as Special Protection Areas (SPAs), as part of the European Natura 2000 network. Post Brexit, SPAs are no longer considered part of Natura 2000 and are instead components of the UK’s ‘national site network’, but their highly protected status is unchanged. Maintaining a coherent network of protected sites with overarching conservation objectives is still required in order to fulfil the commitment made by government to maintain environmental protections and continue to meet the UK’s international legal obligations.

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) 1992

<https://www.legislation.gov.uk/eudr/1992/43>

The Habitats Directive 1992 requires EU MSs to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of community interest, which are listed under Annex I, II, IV and/or V. Species listed under Annex IV are known as ‘European Protected Species’ (EPS), and have retained their protected status in UK domestic legislation post-Brexit.

Under the Habitats Directive, EU Member States are required to contribute to the Natura 2000 network through the designation of Special Areas of Conservation (SACs) for natural habitat types listed in Annex I and habitats of species listed in Annex II. Post Brexit, SACs are no longer considered part of the European Natura 2000 network and are instead components of the UK's 'national site network', but their highly protected status is unchanged.

Habitats Regulations Assessment (HRA): a note

There is a requirement under the EU nature directives, and enshrined in country-specific domestic legislation² (see below), to undertake a screening exercise to determine whether any sites that form part of the 'national site network' (formerly Natura 2000) are likely to be significantly affected by any proposal (project or plan). The assessment must consider the proposals alone and also in combination with other plans and projects, if they result from activities that are not directly connected with, or necessary to, the management of the designated sites. If significant effects are likely, an Appropriate Assessment (AA) will need to be carried out. The screening, any AA, and any subsequent assessment, are collectively known as a Habitats Regulations Assessment (HRA). The HRA needs to take into account each of the 'Qualifying Features' (habitats or species) that justified the site being designated. Ramsar sites are treated in the same way as SACs and SPAs in HRAs, as are sites which have not been fully adopted i.e. candidate SACs (cSACs) and potential SPAs (pSPAs).

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979

Accessible via: <https://jncc.gov.uk/our-work/the-convention-on-the-conservation-of-migratory-species-of-wild-animals/#convention-summary>

The Bonn Convention was adopted in 1979 and came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research activities. The UK Government ratified the Bonn Convention in 1985. The current legally-binding Agreements under the Convention include EUROBATS³.

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1979

<https://www.coe.int/en/web/bern-convention>

The principal aims of the Bern Convention 1979 are to ensure the conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix III. To this end, the Bern Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species. The UK Government ratified the Bern Convention in 1982.

National Legislation

The following pieces of domestic legislation apply to biodiversity protection in the UK.

The Wildlife and Countryside Act (WCA) 1981

<https://www.legislation.gov.uk/ukpga/1981/69>

The Wildlife and Countryside Act 1981 (as amended) is the primary piece of legislation relating to nature conservation in the UK, though it has been adapted in different ways in the devolved administrations. It was initially enacted to implement the Bern Convention, Bonn Convention and the Birds Directive (described above).

The act is supplemented by provisions in the Countryside and Rights of Way (CROW) Act 2000 and the Natural Environment and Rural Communities (NERC) Act 2006, and extended in Scotland by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011). Its equivalent in Northern Ireland is the Wildlife (Northern Ireland) Order 1985 (as amended and similarly extended). In addition to the Habitat Regulations (described below), the WCA provides protection for species listed in Schedules 1 (birds), 5 (other animals) and 8 (plants) of the Act. It provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs) in England and Wales⁴. It also sets out, in other schedules, important and invasive species which are legally protected or require management.

All species of bird are protected under the WCA. The legislation makes it an offence to intentionally:

- a) kill, injure or take any wild bird;
- b) take, damage, or destroy the nest of any wild bird while that nest is in use or being built; or
- c) take or destroy an egg of any wild bird.

Those species of birds listed on Schedule 1 of the WCA are afforded additional protection, which deems it an offence to intentionally or recklessly:

- a) disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
- b) disturb dependent young of such a bird.

Under Section 9 of the WCA, for animals listed on Schedule 5, it is an offence in England and Wales to intentionally or recklessly:

- kill, injure or take any wild animal listed on Schedule 5;
- possess or control any live or dead those wild animals or anything derived from it;
- damage or destroy any structure or place which wild animals listed on Schedule 5 uses for shelter or protection;
- disturb any such animal while it is occupying a structure or place of shelter or protection;
- obstruct access to any structure or place used by any such animal for shelter or protection; and

⁴ Duty replaced by the Nature Conservation (Scotland) Act 2004 (as amended) and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (as amended) in those countries.

- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead wild animal listed on Schedule 5 or any part of, or anything derived from such an animal.

As noted above, there are minor differences between the offences in England and Wales outlined above, and those in Scotland / Northern Ireland. In addition, the Wildlife and Countryside Act 1981 is no longer relevant to EPS in Scotland or Northern Ireland, which instead are afforded full protection by the 'Habitats Regulations' (see below).

In addition to EPS, species commonly found on development sites include water voles (*Arvicola amphibius*) and widespread species of reptiles: common lizard (*Zootoca vivipara*); slow-worm (*Anguis fragilis*); grass snake (*Natrix helvetica*); and adder (*Vipera berus*). These four reptile species receive partial protection, which prevents the intentional or deliberate killing and injuring of reptiles or offering them for sale.

Section 14(2)⁵ states that it is an offence to plant or otherwise cause to grow any plant in the wild at a place outside its native range.

There is no provision within the Act for derogation licences to be issued for the purposes of development, although Section 10 provides a defence in cases that may be considered to be: *"the incidental result of a lawful operation and could not reasonably have been avoided"* if certain conditions are met.

Section 16(i) of the Act does make provision for derogation licences to be issued *"for the purposes of preserving public health or public ... safety"*. For confirmation of this, it would be appropriate to consult the relevant statutory nature conservation body (SNCB)⁶.

The Nature Conservation (Scotland) Act 2004

<https://www.legislation.gov.uk/asp/2004/6>

The Nature Conservation (Scotland) Act 2004 sets out a series of measures which are designed to conserve biodiversity and to protect and enhance the biological natural heritage of Scotland. It provides the principal legislative components for nature conservation within Scotland and places a duty on public bodies to further the conservation of biodiversity. Part 2 of the Act sets out a system for conserving and enhancing particular areas of Scotland, which are considered to be of particularly high quality in terms of their natural heritage. The provisions within this Part are based upon, but extend and develop further, the provisions of the Wildlife and Countryside Act 1981 regarding the establishment of SSSIs. Part 3 of the Act includes amendments to the provisions of Part I of the Wildlife and Countryside Act 1981, relating to the protection of birds, animals and plants. Section 2(4) of the Act requires the establishment of a list of habitats and species which are of principal importance for the purpose of maintaining and enhancing biodiversity (the list can be found here: <https://www.nature.scot/scottish-biodiversity-list>).

Wildlife and Natural Environment (Scotland) Act 2011

<https://www.legislation.gov.uk/asp/2011/6>

The Wildlife and Natural Environment (Scotland) Act 2011 introduces in Scotland amendments to the Wildlife and Countryside Act 1981. The Act introduces a new offence of intentionally or

⁵ In Scotland, as amended by Section 14 of the Wildlife and Natural Environment (Scotland) Act 2011.

⁶ SNCBs are - in England: Natural England; in Wales: Natural Resources Wales; in Scotland: NatureScot; in Northern Ireland: Department of Agriculture, Environment and Rural Affairs (DAERA).

recklessly killing, injuring or taking wild and brown hares in their close season. It also permits the granting of licences to undertake activities for social or economic purposes which would otherwise be an offence under particular provisions of the Wildlife and Countryside Act 1981. However, the activity authorised must give rise to, or contribute towards the achievement of, a significant social, economic or environmental benefit and there must be no other satisfactory solution.

Protection of Badgers Act 1992

<https://www.legislation.gov.uk/ukpga/1992/51>

Badgers and their setts are protected under the Protection of Badgers Act 1992 (England, Wales and Scotland). The key part of this legislation in relation to the proposed development are in Section 3, which deems it an offence to:

- a) damage a badger sett or any part of it;
- b) destroy a badger sett;
- c) obstruct access to, or any entrance of, a badger sett;
- d) disturb a badger when it is occupying a badger sett,
- e) intend to do any of those things or be reckless as to whether those actions would have any of the consequences listed above.

Derogation licences may be obtained from the relevant SNCB⁶ under Section 10 of the Act for the purpose of development, to permit activities which would otherwise be unlawful.

Note: there are additional provisions relating to badgers under the WCA Section 11 (Prohibition of certain methods of killing or taking wild animals).

APPENDIX B – NOTEWORTHY SPECIES RECORDS

Table 4 displays noteworthy species records that are located within 1 km of the site boundary. These species records were obtained from The Wildlife Information Centre (TWIC). The scientific and common names for species are given as well as their level of designation. A glossary defining abbreviations used in the table is given in Table 8 and Appendix F. If a species is not included in the table below it does not necessarily mean the species is absent from the search area, but that data-holding organizations do not have records of it in these locations.

Table 5 displays all noteworthy species that were returned within the search area. If a species is not included in the tables below it does not necessarily mean the species is absent from the search area, but rather that data-holding organizations do not have records of it in these locations.

Table 4: Protected species records within 1 km of the site boundary

Latin Name	Common Name	Designation	Most Recent
Birds			
<i>Alcedo atthis</i>	kingfisher	WCA1.1, SBL, Amber	2018
<i>Anas acuta</i>	pintail	WCA1.1, Amber, GB RDB(CR)	2003
<i>Anser anser</i>	greylag goose	WCA1.1, Amber	2018
<i>Aythya marila</i>	scaup	WCA1.1, SBL, Red, GB RDB(EN)	2014
<i>Bucephala clangula</i>	goldeneye	WCA1.1, Amber, GB RDB(VU)	2018
<i>Calcarius lapponicus</i>	Lapland bunting	WCA1.1, Amber, GB RDB(VU)	1982
<i>Calidris maritima</i>	purple sandpiper	WCA1.1, SBL, Amber, GB RDB(CR)	2005
<i>Chlidonias niger</i>	black tern	WCA1.1	1999
<i>Clangula hyemalis</i>	long-tailed duck	WCA1.1, Red	2019
<i>Falco peregrinus</i>	peregrine	WCA1.1, SBL	2012
<i>Fringilla montifringilla</i>	brambling	WCA1.1, SBL	1982
<i>Gavia arctica</i>	black-throated loon	WCA1.1, SBL, Amber, GB RDB(VU)	2016
<i>Gavia immer</i>	common loon	WCA1.1, SBL, Amber	2008
<i>Gavia stellata</i>	red-throated loon	WCA1.1, SBL	2019
<i>Hydrocoloeus minutus</i>	little gull	WCA1.1	2018
<i>Melanitta fusca</i>	velvet scoter	WCA1.1, Red, GB RDB(VU)	2019
<i>Melanitta nigra</i>	common scoter	WCA1.1, SBL, Red, GB RDB(CR)	2018
<i>Milvus milvus</i>	red kite	WCA1.1, SBL	2011
<i>Plectrophenax nivalis</i>	snow bunting	WCA1.1, SBL, Amber, GB RDB(EN)	1982
<i>Podiceps auritus</i>	Slavonian grebe	WCA1.1, SBL, Red, GB RDB(CR)	2012

Latin Name	Common Name	Designation	Most Recent
<i>Tringa nebularia</i>	greenshank	WCA1.1, Amber	2020
<i>Turdus iliacus</i>	redwing	WCA1.1, SBL, Red, GB RDB(CR)	2013
<i>Turdus pilaris</i>	fieldfare	WCA1.1, Red, GB RDB(CR)	2013
<i>Tyto alba</i>	western barn owl	WCA1.1, SBL	2017
Mammals			
<i>Phocoena phocoena</i>	common porpoise	HR-1994(Sch 2), SBL, OSPAR	2003
<i>Arvicola amphibius</i>	European water vole	WCA5, SBL, GB RDB(EN)	2005
<i>Chiroptera</i>	bats	HR-1994(Sch 2)	2007
<i>Lutra lutra</i>	European otter	HR-1994(Sch 2), SBL	2014
<i>Myotis daubentonii</i>	Daubenton's bat	HR-1994(Sch 2), SBL	1999
<i>Myotis mystacinus</i>	whiskered bat	HR-1994(Sch 2), SBL	1986
<i>Pipistrellus</i>	pipistrelle bat species	HR-1994(Sch 2), SBL	2017
<i>Pipistrellus pygmaeus</i>	soprano pipistrelle	HR-1994(Sch 2), SBL	2015
<i>Sciurus vulgaris</i>	Eurasian red squirrel	WCA5, SBL, GB RDB(EN)	2014

Table 5: Noteworthy species records within 1 km of the site boundary

Latin Name	Common Name	Designation
Birds		
<i>Acanthis cabaret</i>	lesser redpoll	SBL, Red
<i>Actitis hypoleucos</i>	common sandpiper	Amber, GB RDB(VU)
<i>Alauda arvensis</i>	Eurasian skylark	SBL, Red
<i>Alca torda</i>	razorbill	Amber
<i>Anas crecca</i>	teal	Amber
<i>Anas platyrhynchos</i>	mallard	Amber
<i>Anser brachyrhynchus</i>	pink-footed goose	Amber
<i>Anthus pratensis</i>	meadow pipit	Amber
<i>Apus apus</i>	swift	SBL, Amber, GB RDB(EN)
<i>Arenaria interpres</i>	turnstone	Amber, GB RDB(VU)
<i>Asio flammeus</i>	short-eared owl	SBL, Amber, GB RDB(EN)
<i>Aythya ferina</i>	pochard	SBL, Red, GB RDB(EN)
<i>Branta bernicla</i>	brant goose	Amber
<i>Calidris alba</i>	sanderling	Amber
<i>Calidris alpina</i>	dunlin	SBL, Amber, GB RDB(EN)
<i>Calidris canutus</i>	knot	Amber
<i>Cephus grylle</i>	black guillemot	Amber
<i>Charadrius hiaticula</i>	common ringed plover	Red, GB RDB(VU)
<i>Chloris chloris</i>	greenfinch	GB RDB(EN)
<i>Chroicocephalus ridibundus</i>	black-headed gull	SBL, Amber, GB RDB(VU)
<i>Cinclus cinclus</i>	dipper	Amber

Latin Name	Common Name	Designation
<i>Columba oenas</i>	stock dove	Amber
<i>Cuculus canorus</i>	cuckoo	SBL, Red, GB RDB(VU)
<i>Cygnus olor</i>	mute swan	Amber
<i>Delichon urbicum</i>	common house martin	Amber, GB RDB(VU)
<i>Emberiza citrinella</i>	yellowhammer	SBL, Red
<i>Emberiza schoeniclus</i>	common reed bunting	SBL, Amber
<i>Falco tinnunculus</i>	kestrel	SBL, Amber, GB RDB(VU)
<i>Fratercula arctica</i>	puffin	Red
<i>Fulmarus glacialis</i>	fulmar	Amber
<i>Gallinula chloropus</i>	moorhen	GB RDB(VU)
<i>Haematopus ostralegus</i>	oystercatcher	Amber
<i>Larus argentatus</i>	European herring gull	SBL, Red, GB RDB(EN)
<i>Larus cachinnans</i>	Caspian gull	Amber, GB RDB(VU)
<i>Larus canus</i>	common gull	Amber
<i>Larus fuscus</i>	lesser black-backed gull	Amber
<i>Larus glaucoides</i>	Iceland gull	Amber, GB RDB(VU)
<i>Larus hyperboreus</i>	glaucous gull	Amber, GB RDB(VU)
<i>Larus marinus</i>	great black-backed gull	Amber, GB RDB(EN)
<i>Limosa lapponica</i>	bar-tailed godwit	SBL, Amber
<i>Linaria cannabina</i>	linnet	SBL, Red
<i>Linaria flavirostris</i>	twite	SBL, Red, GB RDB(VU)
<i>Mareca penelope</i>	wigeon	Amber
<i>Mergus serrator</i>	red-breasted merganser	GB RDB(VU)
<i>Morus bassanus</i>	gannet	Amber
<i>Motacilla cinerea</i>	grey wagtail	Red
<i>Motacilla flava</i>	western yellow wagtail	SBL, Red
<i>Numenius arquata</i>	curlew	SBL, Red, GB RDB(EN)
<i>Passer domesticus</i>	house sparrow	SBL, Red
<i>Passer montanus</i>	tree sparrow	SBL, Red, GB RDB(VU)
<i>Perdix perdix</i>	grey partridge	SBL, Red, GB RDB(VU)
<i>Phalacrocorax aristotelis</i>	shag	Red, GB RDB(EN)
<i>Phylloscopus trochilus</i>	willow warbler	Amber
<i>Pluvialis apricaria</i>	golden plover	SBL
<i>Pluvialis squatarola</i>	grey plover	Amber, GB RDB(VU)
<i>Podiceps cristatus</i>	great crested grebe	GB RDB(VU)
<i>Podiceps grisegena</i>	red-necked grebe	SBL, Red, GB RDB(CR)
<i>Prunella modularis</i>	dunnock	SBL, Amber
<i>Puffinus puffinus</i>	Manx shearwater	SBL, Amber
<i>Pyrrhula pyrrhula</i>	Eurasian bullfinch	SBL, Amber
<i>Rissa tridactyla</i>	kittiwake	Red, GB RDB(CR), OSPAR
<i>Scolopax rusticola</i>	woodcock	SBL, Red, GB RDB(VU)
<i>Somateria mollissima</i>	eider	Amber, GB RDB(VU)
<i>Spinus spinus</i>	siskin	SBL
<i>Stercorarius parasiticus</i>	parasitic jaeger	SBL, Red, GB RDB(CR)
<i>Stercorarius skua</i>	great skua	Amber

Latin Name	Common Name	Designation
<i>Sterna hirundo</i>	common tern	SBL, Amber
<i>Sterna paradisaea</i>	arctic tern	SBL, Amber, GB RDB(VU)
<i>Sturnus vulgaris</i>	starling	Red, GB RDB(VU)
<i>Tadorna tadorna</i>	shelduck	Amber, GB RDB(EN)
<i>Thalasseus sandvicensis</i>	sandwich tern	SBL, Amber
<i>Tringa totanus</i>	redshank	Amber, GB RDB(VU)
<i>Turdus philomelos</i>	song thrush	SBL, Red
<i>Turdus viscivorus</i>	mistle thrush	Red, GB RDB(VU)
<i>Uria aalge</i>	common murre	Amber
<i>Vanellus vanellus</i>	lapwing	SBL, Red, GB RDB(EN)
Fish		
<i>Anguilla anguilla</i>	European eel	SBL, OSPAR
<i>Salmo salar</i>	Atlantic salmon	SBL, OSPAR
<i>Salmo trutta</i>	brown/sea trout	SBL
Invertebrate		
<i>Acronicta psi</i>	grey dagger	SBL
<i>Anoscopus albifrons</i>	N/A	Notable:B
<i>Omphiscola glabra</i>	mud snail	SBL, NS
<i>Robertus neglectus</i>	N/A	NS
<i>Tyria jacobaeae</i>	cinnabar	SBL
Mammals		
<i>Erinaceus europaeus</i>	west European hedgehog	SBL, GB RDB(VU)
Plants		
<i>Botrychium lunaria</i>	moonwort	GB RDB(VU)
<i>Coeloglossum viride</i>	frog orchid	SBL, GB RDB(VU)
<i>Ligusticum scoticum</i>	Scots lovage	GB RDB(EN)

APPENDIX C - PHASE 1 SPECIES LIST

Table 6: Phase 1 Species List

Common name	Latin name
Sycamore	<i>Acer pseudoplatanus</i>
Alder	<i>Alnus glutinosa</i>
Ash	<i>Fraxinus excelsior</i>
Rowan	<i>Sorbus acuparia</i>
Elder	<i>Sambucus nigra</i>
Buddleia	<i>Buddleia sp</i>
Silver birch	<i>Betula pendula</i>
Goat Willow	<i>Salix caprea</i>
White poplar	<i>Salix fragilis</i>
Scots pine	<i>Populus alba</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Nettle	<i>Urtica dioica</i>
Ragwort	<i>Jacobaea vulgaris</i>
Yarrow	<i>Achillea millefolium</i>
Red clover	<i>Trifolium pratense</i>
Common hogweed	<i>Heracleum sphondylium</i>
Cleavers	<i>Galium aparine</i>
Broad-leaved dock	<i>Rumex obtusifolius</i>
Cotoneaster sp.	<i>Cotoneaster sp</i>
Prunus sp	<i>Prunus sp</i>
Bramble	<i>Rubus fruticosus agg</i>
Holly	<i>Ilex aquifolium</i>
Broom	<i>Cytisus scoparius</i>
Gorse	<i>Ulex europaeus</i>
Hawthorn	<i>Crataegus monogyna</i>
Rosebay willowherb	<i>Chamaenerion angustifolium</i>
Common hogweed	<i>Heracleum sphondylium</i>
Dog rose	<i>Rosa canina</i>
Common ryegrass	<i>Lolium perenne</i>

APPENDIX D – TARGET NOTES

Table 7: Target Notes recorded during the PEA survey.

TN	Feature	Grid reference	Notes
TN 1	Broadleaved semi-natural woodland	NO 37940 00467	Broadleaved woodland lines the west bank of the River Leven with some smaller areas on the west bank. Species present include sycamore, alder, ash, rowan, elder, Buddleia, silver birch, goat willow, crack willow and white poplar
TN 2	Mixed Semi-Natural Woodland	NO 37917 00428	A single area of mixed semi-natural woodland is located to the east of the railway line directly north of the River Leven. The composition of species is similar to the habitats present along the west bank of the River Leven within the broadleaved semi-natural woodland with the addition of Scots pine
TN 3	Dense/ Continuous Scrub	NO 37972 00340	Successional growth has overtaken some of the old areas of hard standing particularly in the east of the survey area. The areas comprise bramble, immature rowan, holly, broom, gorse, hawthorn, Rosebay willowherb, common hogweed, dog rose, buddleia, sycamore saplings and silver birch saplings.
TN 4	Scattered Scrub	NO 37894 00435	The species composition is much the same as the continuous scrub with buddleia as the dominant species.
TN 5	Amenity Grassland	NO 37927 00442	Within the survey area there are areas of amenity grassland. The areas comprise mainly short sward grasses with limited species diversity. Perennial ryegrass is the dominant species and covers the area directly west and north of the carpark in addition to areas along South Street.
TN 6	Ephemeral / Short Perennial	NO 38007 00325	There are areas of ephemeral / short perennial habitats within the survey area. These are mainly confined to the north of the railway line under Leven Railway Bridge and also in the south-east of the survey area. In the south-east there is successional growth over hard standing which at the outer extent is surrounded by scattered scrub. Species composition is dominated by ribwort plantain, common nettle, ragwort, yarrow, red clover, common hogweed, cleavers, broad-leaved dock and cotoneaster sp.
TN 7	Running Water	NO 37815 00481	The River Leven is a large watercourse which flows west to east through the site. Stone walls comprise the majority of the banks with areas of cobble, sand and mud also present. The River Leven ultimately flows into Largo Bay c.200 m east of the site and into the Firth of Forth Estuary. The marginal vegetation comprises predominantly common reed and Reed Canary-grass with occasional mature trees including sycamore.
TN 8	Intertidal Shingles / Cobble	NO 37846 00411	Cobble is present along both banks of the River Leven and is more prevalent along the south bank. The habitat stretches east of Bawbee Bridge for the extent of the survey boundary. There is a large expanse of gravelly sand which becomes finer and less coarse the further from the shore. No vegetation was observed apart from some macro-algae on the cobbles east of the unnamed bridge associated with the car park which has been transported inland.
TN 9	Wall	NO 37813 00443	Along the north and south banks of the River Leven are areas of wall. In some areas, namely under Bawbee Bridge and to the west of the Railway Bridge, the walls create the

TN	Feature	Grid reference	Notes
			banks to the river. There is a small stream which runs into the river from the north which is culverted and walled either side.
TN 10	Other habitat	NO 37867 00459	Hard standing is present on the site, some areas have successional growth however hard standing areas are present specifically around the perimeters of the site. Buddleia, rosebay willowherb and greater plantain are the species present.
TN 11	Bird nest	NO 37931 00397	A single inactive corvid nest in an immature ash tree
TN 12	Bridge with negligible roosting potential	NO 37884 00439	Leven Railway Bridge previously filled with negligible bat roosting potential
TN 13	Unnamed bridge	NO38023 00387	An unnamed bridge associated with the car park of concrete construction with low bat roosting potential
TN 14	Otter prints	NO 37723 00549	[REDACTED]
TN 15	Otter prints	NO 37777 00525	[REDACTED]
TN 16	Otter prints	NO 37958 00370	[REDACTED]
TN 17	Invasive species	NO 37964 00362	A stand of Himalayan balsam along the south bank of the River Leven
TN 18	Invasive species	NO 37934 00350	Stands of giant hogweed covering an area of c. 2m ² on the south bank
TN 19	Invasive species	NO 37937 00350	Himalayan balsam mixed between the hogweed noted above

APPENDIX E – SITE PHOTOGRAPHS



Photo 01: broadleaved semi-natural woodland



Photo 02: Mixed semi-natural woodland



Photo 03: Dense continuous scrub



Photo 04: Amenity grassland



Photo 05: Ephemeral / short perennial

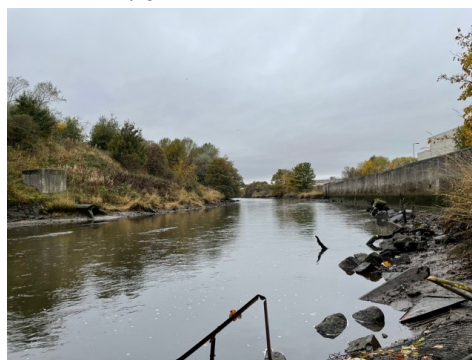


Photo 06: Running Water – River Leven



Photo 07: cobble / shingle



Photo 08: Wall lining the south bank of the River Leven



Photo 09: Giant hogweed



Photo 10: Himalayan balsam



Photo 11: Leven Railway Bridge with filler still present with negligible bat roost potential



Photo 12: unnamed bridge with low roost potential



Photo 13: [REDACTED]

Photo 14: [REDACTED]

APPENDIX F – ABBREVIATIONS

Table 8 : Glossary of abbreviations used in this report displays abbreviations of protected species legislation.

Code	Full Title	Explanation
Amber	Amber list	Amber listed species have a population status in the UK of medium conservation concern.
BA	The Protection of Badgers Act 1992	Legislation making it an offence to kill, injure or take a Badger, or to damage or interfere with a sett unless a licence is obtained from a statutory authority.
BAP	Biodiversity Action Plan	A plan that identifies threats to significantly important species and habitats, and sets out targets and actions to enhance or maintain biodiversity.
DA	The Deer Act 1991	All wild deer with the exception of Muntjac (<i>Muntiacus reevesi</i>) and Chinese Water deer (<i>Hydropotes inermis</i>) are protected by a closed season.
GB RDB	Red Data Book Species	Species identified in one of the UK Red Data 2001.
GB RDB(CR)	Critically Endangered	An IUCN Red List designation for species at an extremely high risk of extinction.
GB RDB(EN)	Endangered	An IUCN Red List designation for species at a very high risk of extinction.
GB RDB(VU)	Vulnerable	An IUCN Red List designation for species at high risk of extinction.
HAP	Habitat Action Plan	A plan that identifies threats to a priority habitat and sets out targets and actions to enhance or maintain that habitat.
HR-1994(Sch 2)	European Protected Species (Schedule 2)	Animals protected on Schedule 2 of the Conservation (Natural Habitats &c.) Regulations 1994 as amended in Scotland)
HR-1994(Sch 4)	European Protected Species (Schedule 4)	Plants protected on Schedule 4 of the Conservation (Natural Habitats &c.) Regulations 1994 as amended in Scotland)
IUCN	International Union for Conservation of Nature and Natural Resources (also known as The World Conservation Union)	A worldwide partnership and conservation network to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.
LBAP	Local Biodiversity Action Plan	A plan that identifies threats to locally important species and habitats, and sets out targets and actions in Species Action Plans and Habitat Action Plans to enhance or maintain biodiversity at the county or regional level.

Code	Full Title	Explanation
LHAP	Local Habitat Action Plan	A plan that identifies threats to a locally important priority habitat and sets out targets and actions to enhance or maintain that habitat.
LSAP	Local Species Action Plan	A plan that identifies threats to locally important species, and sets out targets and actions to prevent losing that species from the local area.
Notable	Scarce and threatened invertebrates	Invertebrate species which are estimated to occur within the range of 16 to 100 10km squares but subdivision into Notable A and Notable B categories is not possible as there is insufficient information available).
Notable:A	Scarce and threatened invertebrates	Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid or, for less well-recorded groups, within seven or fewer vice-counties.
Notable: B	Scarce and threatened invertebrates	Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less-well recorded groups between eight and twenty vice-counties.
NN	Nationally Notable	Designation for invertebrate taxa that are thought to be notably important in the UK.
NR	Nationally Rare	Species in 15 or fewer hectads in Great Britain.
NS	National Scarce	Species in 16-100 hectads in Great Britain.
OSPAR	OSPAR	Species listed on The Convention for the Protection of the Marine Environment of the North-East Atlantic
Red	Red List	Red listed species have a population status in the UK with high conservation concern.
SBL	Scottish Biodiversity List	A list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland.
WCA	The Wildlife & Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011	Containing 4 Parts and 17 Schedules, the Act covers protection of wildlife (birds, and some animals and plants), the countryside, National Parks, and the designation of protected areas, and public rights of way. All wild plants in Britain are protected from intentional uprooting by an unauthorized person, but land owners, land occupiers, persons authorized by either of these or persons authorized in writing by the Local Authority for the area are exempt. Protection for some species may be limited to certain Sections of the Act (e.g. S13(2)).

Code	Full Title	Explanation
WCA1	Schedule 1 of The Wildlife & Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011	<p>This Schedule lists birds protected by special penalties at all times, but virtually all wild birds have some protection in law.</p> <p>Acts which are prohibited for all wild birds (except derogated 'pest' species) include intentional killing, injuring or taking; taking, damaging or destroying nests in use or being built; taking or destroying eggs; possessing or having control of (with certain exceptions but including live for dead birds, parts or derivative); setting or permitting certain traps, weapons, decoys or poisons. Selling, offering or exposing for sale, possessing or transporting for sale any live wild bird, egg or part of an egg or advertising any of these for sale, or dead wild bird including parts or derivatives are also prohibited. Many birds must be formally registered and ringed if kept in captivity.</p> <p>Schedule I WCA birds are additionally protected from intentional or reckless disturbance while building a nest, or when such a bird is in, on or near a nest containing eggs or young, or intentional or reckless disturbance of dependent young.</p>
WCA5	Schedule 5 of The Wildlife & Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011	<p>Schedule 5 animals are protected from intentional killing, injuring or taking; possessing (including parts or derivatives); intentional or reckless damage, destruction or obstruction of any structure or place used for shelter or protection; selling, offering or exposing for sale, possessing or transporting for the purpose of sale (alive or dead, including parts or derivatives). Protection of some species is limited to certain Sections of the Act (e.g. S9(1), S9(4a), S9(4b), S9(5)).</p>
WCA8	Schedule 8 of The Wildlife & Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011	<p>Plants and fungi protected from intentional picking, uprooting, destroying, trading (including parts or derivatives), etc.</p>

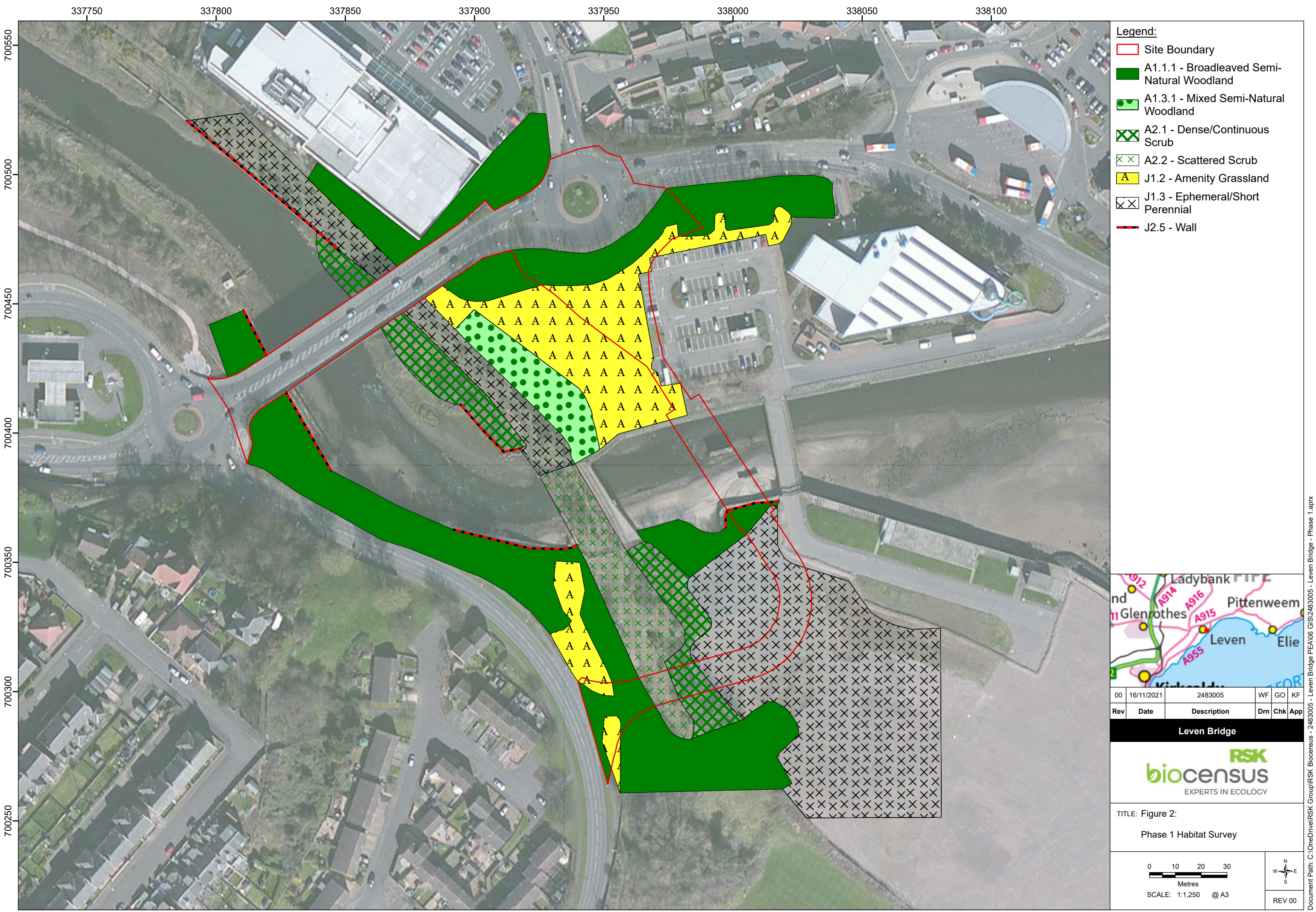


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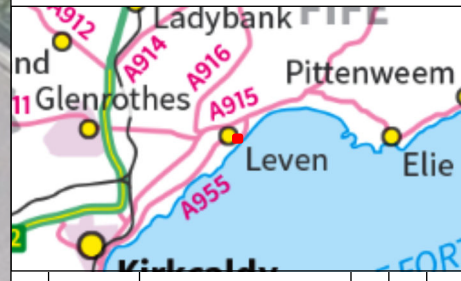
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- Legend:**
- Site Boundary
 - A1.1.1 - Broadleaved Semi-Natural Woodland
 - A1.3.1 - Mixed Semi-Natural Woodland
 - A2.1 - Dense/Continuous Scrub
 - A2.2 - Scattered Scrub
 - J1.2 - Amenity Grassland
 - J1.3 - Ephemeral/Short Perennial
 - J2.5 - Wall



00	16/11/2021	2483005	WF	GO	KF
Rev	Date	Description	Drn	Chk	App

Leven Bridge



TITLE: Figure 2:
Phase 1 Habitat Survey

0102030

Metres

SCALE: 1:1,250 @ A3

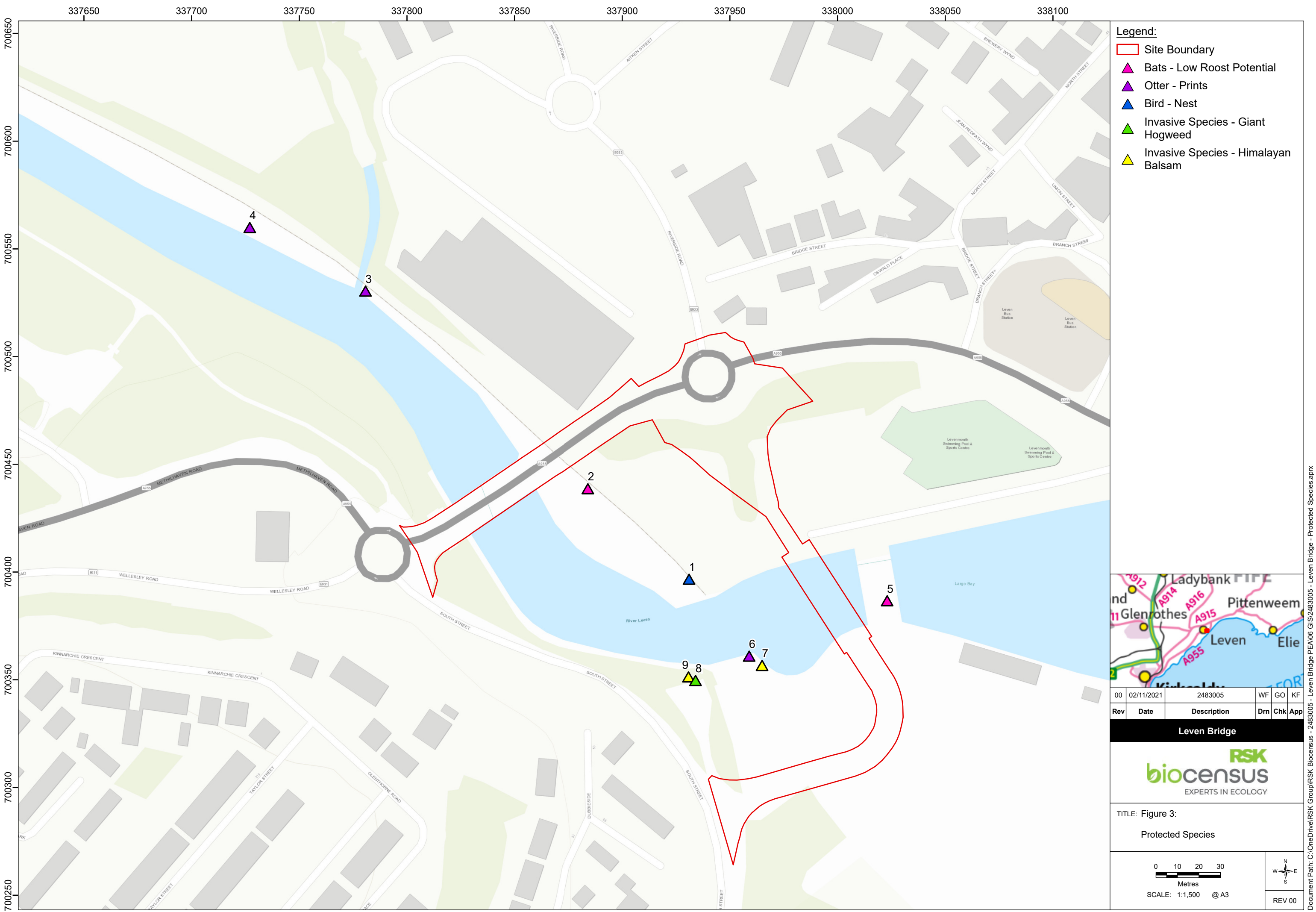
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- Legend:**
- Site Boundary
 - Bats - Low Roost Potential
 - Otter - Prints
 - Bird - Nest
 - Invasive Species - Giant Hogweed
 - Invasive Species - Himalayan Balsam



00	02/11/2021	2483005	WF	GO	KF
Rev	Date	Description	Drn	Chk	App

Leven Bridge



TITLE: Figure 3:
Protected Species

0102030

Metres

SCALE: 1:1,500 @ A3

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