

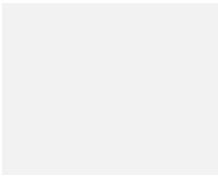
# **SULLY TO COSMESTON ATR**

## Preliminary Ecological Appraisal

SEPTEMBER 2023



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# Sully to Cosmeston Active Travel Route

## Preliminary Ecological Appraisal

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This report dated 29 September 2023 has been prepared for Vale of Glamorgan Council (the "Client") in accordance with the terms and conditions of appointment dated 01 June 2022 (the "Appointment") between the Client and **Arcadis UK** ("Arcadis") for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

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## APPENDIX A

Legislation and Policy

## APPENDIX B

Local Record Centre Data

## Summary

Arcadis Consulting (UK) Limited was commissioned by Vale of Glamorgan Council to produce a Preliminary Ecological Appraisal (PEA) report for a proposed active travel route between Sully and Cosmeston ('the site'). The PEA report identifies any ecological constraints associated with the proposed development and informs the design process by outlining appropriate mitigation measures.

The site is located between Penarth and Barry and is situated within a range of habitats. The western section of the site includes two potential options. The southern option follows the footpath on the northern side of the B4267 and is located adjacent to amenity grassland, a species poor hedgerow, a hedgerow with trees and scattered trees. The northern option follows a disused railway line to the north of the B4267 which comprises semi natural broadleaved woodland and dense scrub. The central section of the site crosses the B4267 and is located along a narrow footpath and disused railway line within semi-natural broadleaved woodland. The central part of the site is adjacent to the Ty'r Orsaf Site of Importance for Nature Conservation (SINC) which contains a pond. The eastern section of the site is on a footpath with bare ground, semi-improved neutral grassland and tall ruderal habitat. The north-eastern section of the site is within the residential estate of Cosmeston Drive. Bridges are also located along the route. There are no statutory designated sites located within the site boundary and no statutory protected sites will be impacted by the proposed development, given the nature and scale of the development.

The widening of the footpaths located within the western (B4267 section) and north-eastern section (Cosmeston Drive) will impact small areas of amenity grassland and it is likely that over-hanging trees may require some management. The western section along the disused railway line, and the central and eastern sections of the proposed development will impact semi-natural broadleaved woodland, semi-improved neutral grassland, scrub and tall ruderal habitat. The central section is located within proximity of a SINC which may also be negatively impacted. The impact of the proposed development on the bridges is currently unknown.

Habitats within the survey area were considered suitable to support hazel dormouse; foraging, commuting and roosting bats; badger; nesting birds; reptiles; amphibians during their terrestrial phase, and hedgehog.

At this stage it is not known how much vegetation clearance would be required, but it is anticipated that it will be necessary to remove woodland, hedgerow, scrub, tall ruderal, grassland and trees and so it is recommended that:

- The county ecologist be contacted regarding the proximity of the proposed development to Ty'r Orsaf SINC. The SINC should be protected during the works to ensure that it is not negatively impacted.
- Habitat is retained where possible and replacement planting is provided to ensure there is no net loss of biodiversity.
- If any works are proposed within 15m of any of the site's trees, hedgerows or woodland, it is recommended that an arboricultural survey and impact assessment be undertaken to ensure that appropriate measures are put in place to safeguard retained trees and hedgerows in accordance with BS 5837: 2012.
- An eradication programme for Hollyberry Cotoneaster (*Cotoneaster bullatus*) should be implemented on site. Removal should be undertaken under a species-specific method statement and the resulting waste should be disposed of as controlled waste.
- Great crested newt surveys be undertaken on the waterbody located next to the site, located in woodland east of Fort Road in Ty'r Orsaf SINC.
- A hazel dormouse survey be undertaken of suitable habitat (hedgerow, woodland and scrub) to confirm the presence/absence of this species and inform the need for appropriate mitigation and potentially a licence.
- Once the extent of the vegetation and tree clearance is confirmed, all trees that will be impacted (felled/managed/located within proximity to new lighting installed) should undergo a ground-based bat tree assessment, the results of which will determine if further surveys are required (e.g., aerial inspection, presence/absence surveys).

- A badger survey is undertaken within the woodland and habitat within 30m of the woodland to determine if badgers or their setts are present to inform the need for appropriate mitigation and potentially a licence.
- Vegetation clearance should be undertaken outside of the nesting bird season (March to August (inclusive)). If vegetation clearance works are required within this period, then a suitably qualified ecologist should undertake a nesting bird check no more than 48 hours prior to the works being undertaken.
- A phased approach to vegetation clearance should be adopted in areas of habitat identified as suitable for reptiles and amphibians (during their terrestrial phase). This should be formalised by a method statement, additional measures to safeguard reptiles may need to be adopted dependent on the results of the survey of the woodland area.
- New habitats of value to nesting birds and bats should be created to replace that which is lost to the development.
- Reasonable avoidance measures should be in place to avoid harm to hedgehog such as ensuring that suitable refuges and potential hibernation sites (such as piles of vegetation and deadwood which are also suitable to support invertebrates such as beetles) are removed outside of the winter months.
- Additionally, during works, any incomplete excavations should be covered overnight, or a ramp provided to allow escape of any animals that may become trapped. Landscape planting proposals should include native planting to maximise its value to nature conservation and mitigate for the loss of semi-natural habitats.
- The future lighting proposals for the proposed development should be developed with an ecologist to minimise effects on nocturnal wildlife.

# 1 Introduction and Aims

## 1.1 Background

Arcadis Consulting (UK) Limited was commissioned by Vale of Glamorgan Council to produce a Preliminary Ecological Appraisal (PEA) report regarding a proposed active travel route (ATR) between Sully and Cosmeston near Penarth ('the site').

The PEA report identifies any ecological constraints associated with the proposed development and informs the design process by outlining appropriate mitigation measures.

## 1.2 Site Location

The site is located between Penarth and Barry with a central grid reference of ST 17533 68504. The site links Sully to Cosmeston Lakes via a disused railway and existing footpath along the B4267 road. The site boundary is shown below in Figure 1.



© Google Image

Figure 1: Overview of proposed active travel route between Cosmeston and Sully

## 1.3 Scope of Works

The scope of this assessment includes the following:

- A desk study (within 2km of the site for protected species and designated sites, excepting Special Areas of Conservation (SACs) designated for bat interest, for which a search of up to 10km was undertaken).
- An extended Phase 1 habitat survey of the site to identify key habitats, assess their potential to support protected and/or notable species, and record any presence of non-native invasive species.
- An outline of measures and location for mitigation and possible ecological enhancement; and



- Associated habitat mapping.

## 1.4 Proposals

The proposals for the site are for a new ATR between Sully and Cosmeston. The western section of the site includes two potential options. One of the options follows the footpath on the northern side of the B4267. The second option follows a disused railway line to the north of the B4267. The central section of the site is along a footpath and old disused railway line off road. The eastern section is located predominately along a bare ground track through tall ruderal and grassland habitat. This section connects with the hardstanding of the residential street, Cosmeston Drive. The existing footpath and disused railway are likely to need widening and the proposals will lead to some vegetation clearance, but the extent of vegetation clearance is currently unknown. There may also be a requirement to incorporate lighting along the ATR.

## 2 Methodology

### 2.1 Desk Study

A desk study was undertaken in July 2022 to identify any existing ecological information relating to the site and its surroundings. The following resources/sources were used/consulted:

- The Multi-Agency Geographical Information for the Countryside (MAGIC) website (Ref 1) was used to search for statutory designated sites of nature conservation value within 2km of the site. The search buffer was extended to 10km for SACs designated for bats.
- South East Wales Biodiversity Records Centre (SEWBReC) was consulted for records of protected and notable species or species of conservation concern (from data collected in the last 10 years only) and Local Nature Conservation Sites within 2km of the site. The location of Ancient Woodlands was also provided.
- Habitats and species listed under Section 7 of the Environment (Wales) Act 2016 (Ref 2). These are Habitats of Principal Importance in Wales (HPIEs) and Species of Principal Importance in Wales (SPIEs).

### 2.2 Field Survey

An extended Phase 1 habitat survey was undertaken on 2 August 2022 by Arcadis Senior Ecologist Julie Player (MCIEEM) accompanied by Graduate Ecologist Dafydd James. The survey was undertaken during the daytime. Weather conditions were dry, sunny and windy. This survey covered the eastern and central sections of the site and the B4267 option to the west.

A second extended Phase 1 habitat survey was undertaken on 8 August 2023 by Arcadis Senior Ecologist Rebecca Howells accompanied by Consultant Ecologist Morgan Greedy. The survey was undertaken during the daytime. Weather conditions were variable, with sun, cloud and rain showers throughout the survey. This survey covered the disused railway option within the western section.

The surveys comprised a walkover survey to map habitats present within the site following the standard survey methodology (Ref 3). Dominant plant species were noted, as were any uncommon species or species indicative of particular habitat types. Botanical names follow New Flora of the British Isles (Ref 4) for higher plants.

The habitats on site were also assessed for their potential to support protected or notable species of plants and animals, and observation was made of any incidental signs of protected or notable species.

### 2.3 Limitations

The survey data and recommendations provided in this report are valid for two years from the date of survey.

Dense scrub present on site meant that the surveyors could not fully inspect a small section of approximately 100m of the site (highlighted in the yellow box on Figure 2). A full search for protected/invasive species could

not be completed in this area. In addition, no attempt was made to survey private gardens or adjacent arable fields/land as access had not been agreed.

The protected species assessment provides a preliminary view of the likelihood of protected species occurring within the site. This is based on the suitability of the habitat, known distribution of the species in the local area and any direct evidence within the survey area. It should not be taken as providing a full and definitive survey of any protected species group. It is only representative of the time the survey was carried out. Additional surveys may be recommended if, based on the preliminary assessment or during subsequent surveys, it is considered reasonably likely that protected species may be present.

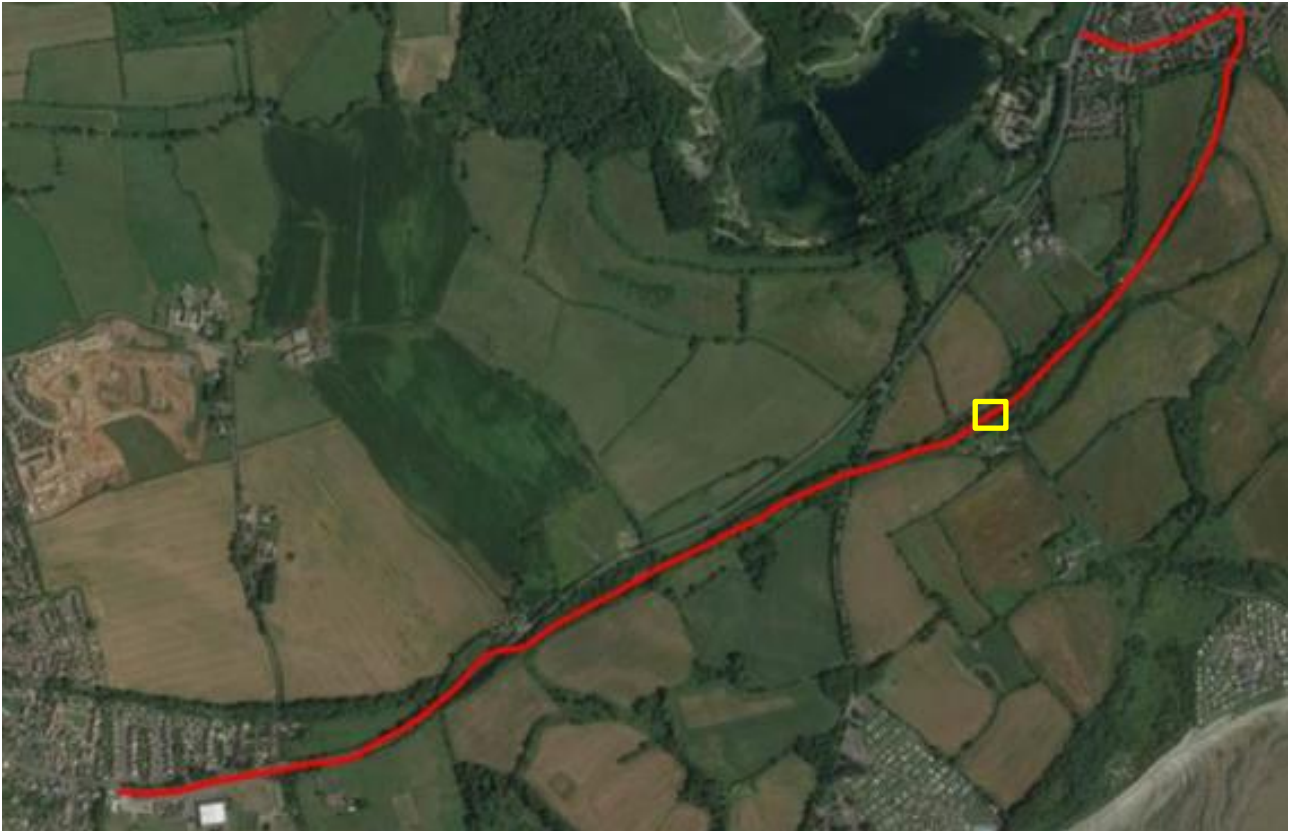


Figure 2: Yellow box highlights section of the site unable to survey

### 3 Results

The results of the desk study and extended Phase 1 habitat survey are described below, with sites or features of particular nature conservation interest detailed as appropriate.

Supporting documents to be read in conjunction with the results and subsequent discussion are as follows.

- A summary of relevant legislation and policy presented in Appendix A.
- The Phase 1 habitat survey plan is presented on Drawing 10056562-ARC-AT-300-DR-E-00001, whilst the associated photographs can be seen in Figures 3 to 11. Appendix B details the designated nature conservation sites and the results of the local record centre data search.
- Target Notes are provided in Appendix C.

### 3.1 Statutory Designated Sites

There are nine statutory designated sites within 2km of the proposed development site, as listed in Table 1 below. There are no SACs designated for bats within 10km of the site.

Table 1: Statutory Designated Sites

Site Name	Reasons for Designation	Location in relation to the proposed development
Penarth Coast Site of Special Scientific Interest (SSSI)	This coastal section holds some species rich calcareous grassland and cliff-top scrub which supports a number of plant species of limited occurrence and distribution in the former counties of Mid and South Glamorgan, including Dyer's Greenweed ( <i>Genista tinctoria</i> ), Greater Butterfly Orchid ( <i>Plantanthera chlorantha</i> ), Bee Orchid ( <i>Ophrys apifera</i> ) and Adder's Tongue ( <i>Ophioglossum vulgatum</i> ). Lavernock Point is a well-known observation point for migratory birds.	210m south of site
Seven Estuary Special Area of Conservation (SAC)	This SAC supports Annex I habitats and Annex II species, the details of which are summarised below:  <u>Annex I habitats:</u> 1130 estuaries, 1140 mudflats and sandflats, 1330 Atlantic salt meadows  <u>Annex I habitats present as a qualifying feature, but not as a primary reason for site selection:</u> 1110 sandbanks which are slightly, 1170 reefs  <u>Annex II species:</u> sea lamprey ( <i>Petromyzon marinus</i> ), river lamprey ( <i>Lampetra faluviatilis</i> ) and twaite shad ( <i>Alosa fallax</i> )	230m east of site
Seven Estuary Special Protection Area (SPA)	The SPA holds national and international importance for breeding, feeding, wintering and migration of rare and vulnerable species of birds, such as:  Bewick's Swan ( <i>Cygnus Columbanus bewickii</i> ) Greater white-fronted goose ( <i>Answer albifrons</i> ) Dunlin ( <i>Calidris alpina</i> ) Common redshank ( <i>Tringa tetanus</i> ) Common shelduck ( <i>Tadorna tadorna</i> ) Gadwall ( <i>Anas strepera</i> )	230m east of site
Seven Estuary Ramsar Site / Wetland of International Importance	The Seven Estuary is a designated Ramsar site as it supports:  (a) Annex I habitats under Criterion 1 (b) Unusual estuarine communities under Criterion 3 (c) Rich assembly of fishes (over 110 species recorded) under Criteria 8 and also supports the run of migratory fish been sea and river via estuary, and also important for migratory birds during spring and autumn under Criterion 4 (d) Assemblages of international importance with species peak counts in winter under Criterion 5	230m east of site

Site Name	Reasons for Designation	Location in relation to the proposed development
	(e) Species / populations occurring at levels of international importance under Criterion 6	
Seven Estuary Site of Special Scientific Interest (SSSI)	<p>The SSSI is of international importance for wintering and passage wading birds, with total winter populations averaging about 44000 birds. The SSSI holds most of the estuary's internationally important curlew (<i>Numenius arquata</i>) and redshank (<i>Tringa tetanus</i>) populations, and most of its nationally important ringed plover (<i>Charadrius hiaticula</i>) and grey plover (<i>Pluvialis squatarola</i>) populations. The SSSI is internationally important for Dunlin (<i>Calidris aplina</i>) and supports about 7.5% of the British wintering population of this species.</p> <p>Seven species of migratory fish move through the estuary between the seas and rivers. These are particularly large numbers of Atlantic Salmon (<i>Salmo salar</i>) and Common Eel (<i>Anguilla Anguilla</i>). The other species are Allis Shad, the nationally rare Twaite Shad (<i>Alosa fallax</i>), the Sea Trout (<i>Salmo trutta</i>), Sea Lamprey (<i>Petromyzon marinus</i>) and the River Lamprey (<i>Lamptera fluviatilis</i>).</p>	230m east of site
Llynnoedd Cosmeston / Cosmeston Lakes Site of Special Scientific Interest (SSSI)	<p>This site includes two lakes, created from flooded limestone quarries which are connected by a narrow channel. These are deep, eutrophic water bodies which support a range of submerged plants. The presence of starry stonewort (<i>Nitellopsis obtuse</i>) in one of the lakes is of special interest. This site also includes areas of swamp, ponds, grassland that form part of the water catchment area for the lake.</p>	240m west of site
Sully Island Site of Special Scientific Interest (SSSI)	<p>Sully Island provides the main roost site for waders feeding in winter in the Taff/Ely estuary. The roost holds up to 100% of the dunlin, grey plover and ringed plover of the Taff/Ely and over 50% of the redshank and knot.</p> <p>The Taff-Sully system also constitutes an important part of the wider Severn estuary which is an internationally important wintering area for redshank, knot and dunlin.</p>	800m south of site
Cog Moors Site of Special Scientific Interest (SSSI)	<p>This SSSI supports extensive areas of relatively unimproved species-rich grassland, which traditionally managed for hay. Grassland is characterised by Common Knapweed (<i>Centaurea nigra</i>), Crested Dog's-tail (<i>Cynosurus cristatus</i>), Common Bird's-foot-trefoil (<i>Lotus corniculatus</i>) and Meadow Vetchling (<i>Lathyrus pratensis</i>). Other distinctive species found at Cog Moors include Pepper Saxifrage (<i>Silaum silaus</i>) and Meadow Barley (<i>Hordeum secalinum</i>).</p> <p>Cog Moors also supports populations of several species which are uncommon including Brown Sedge (<i>Carex disticha</i>), Adders-tongue (<i>Ophioglossum vulgatum</i>) and Green-winged Orchid (<i>Orchis morio</i>).</p>	1300m west of site

Site Name	Reasons for Designation	Location in relation to the proposed development
Hayes Point to Bendrick Rock Site of Special Scientific Interest (SSSI)	This is a key locality for the interpretation of Triassic lake and river environments. Fine-grained, lake-margin sediments occur here, interbedded with coarse-grained fluvial (river) sediments, representing the marginal facies of the Triassic Mercian Mudstone Group of South Wales.	1400m west of site

### 3.2 Non-Statutory Designated Sites

There are ten non-statutory designated sites within 2km of the site, including nine Local Wildlife Sites/ Sites of Importance for Nature Conservation (SINCs) and one Wildlife Trust Reserve. Information pertaining to these sites is listed below, in Table 2.

Table 2: Non-Statutory Designated Sites

Site Name	Reasons for Designation	Location in relation to the proposed development
Ty-r-Orsaf SINC	An old railway line supporting scrub and rough grassland with areas of species-rich neutral and calcareous grassland, lowland meadows, lowland calcareous grassland and mosaic habitats.	Immediately adjacent south/south-east of the site
Cosmeston Lakes SINC	An extensive Country Park supporting a mosaic of habitats including species-rich calcareous grassland and neutral grassland, scrub, hedgerows, woodland, streams and ponds which all support a wide assemblage of species.	300m west of site
Lavernock Point East SINC	Meets SINC criteria for lowland meadows and calcareous grassland.	300m south of the site
Lavernock Point Wildlife Trust Reserve	Supports 120 species of birds and nine species of mammals.	300m south of the site
Downs Wood SINC	Neutral grassland community that meets SINC criteria for lowland meadows. It holds potential for reptile/warblers. However, the area requires mowing.	420m north-west of the site
North of Cog Moors SINC	Ancient Semi-Natural Woodland.	1100m north of the site
Cogan Point SINC	Large pond supporting reedbed.	1200m north of the site
Cog Moors SINC	Presence of purple moor-grass and rush pasture. A botanical survey found this area also supports broad-leaved plantation woodland, scrub, species-rich semi-improved neutral grassland, marshy grassland and tall ruderal habitat.	1200m north of the site
North of North Road SINC	Site with large pond supporting large stands of reed bed, scrub and scattered trees.	1700m north-west of the site

Site Name	Reasons for Designation	Location in relation to the proposed development
Pop Hill SINC	Predominately ancient semi-natural broadleaved woodland.	1900m north of the site

### 3.3 Important Habitats

There are six ancient semi-natural woodland sites within 2km of the proposed development, the closest area is located at Cosmeston Lakes 300m from the site. There is also a Natural Resources Wales (NRW) Priority Area (Coastal Saltmarsh), and NRW Priority Area (Enclosed Farmland) within the 2km of the site. The closest area of enclosed farmland is located adjacent to the north of the disused railway line within the western section. The coastal saltmarsh priority habitat is located almost 1km south of the central section of the site.

### 3.4 Records of Protected and Notable Species

Desk study results for protected and notable species are discussed in Section 3.5.11 and Section 3.5.12 below.

### 3.5 Field Survey

#### 3.5.1 Site description

The site supported species-poor hedgerow, hedgerow with trees and scattered trees adjacent to the hardstanding footpath along the north of the B4267 (western section of the site, southern option) and near Cosmeston Drive (north-eastern section of the site). The northern option within the western section follows a disused railway line to the north of the B4267 which supported semi-natural broadleaved woodland and dense scrub. The central area of the site supported amenity grassland, semi-natural broadleaved woodland with semi-improved neutral grassland, tall ruderal vegetation and amenity grassland within the eastern section of the site.

#### 3.5.2 Semi Natural Broad-leaved Woodland

Small blocks of semi-natural broad-leaved woodland were recorded along the central section of the route (see Figures 3 – 6), with some new planting observed adjacent to the road. Canopy tree species consisted of Oak (*Quercus spp*), Sycamore (*Acer pseudoplatanus*), Ash (*Fraxinus excelsior*), Field Maple (*Acer campestre*), and Willow species (*Salix spp*). A footpath and disused railway line were located within the woodland creating woodland rides.

Understorey habitat within the woodland was dense in places. The dominant understorey species were Hazel (*Corylus avellana*) and Bramble (*Rubus fruticosus* agg.) with Hawthorn (*Crataegus monogyna*), Butterfly-bush (*Buddleja davidii*) and Dog Rose (*Rosa canina* agg.) also present.

Ground flora species recorded included Common Nettle (*Urtica dioica*), Wild Teasel (*Dipsacus fullonum*), Hogweed (*Heracleum sphondylium* subsp. *sphondylium*), Hedge Bindweed (*Calystegia sepium* subsp. *sepium*), Pendulous Sedge (*Carex pendula*), Yarrow (*Achillea millefolium*), Scarlett Pimpernel (*Anagallis arvensis* subsp. *arvensis*), Yorkshire-fog (*Holcus lanatus*), Cock's-foot (*Dactylis glomerata*), Herb-Robert (*Geranium robertianum*), Perforate St John's-wort (*Hypericum perforatum*), Cleavers (*Galium aparine*), Hairy-brome (*Bromopsis ramosa*), Ivy (*Hedera helix* agg.), Wood Avens (*Geum urbanum*), Hart's-tongue Fern (*Asplenium scolopendrium*) and Creeping Cinquefoil (*Potentilla reptans*).



Figure 3: Woodland located at the entrance off B4267 within the western section of the site



Figure 4: Broadleaved woodland with narrow footpath located at the centre of the site between the entrance at the B4267 and St Marys Well Bay Road



Figure 5: Woodland east of St Marys Well Bay Road

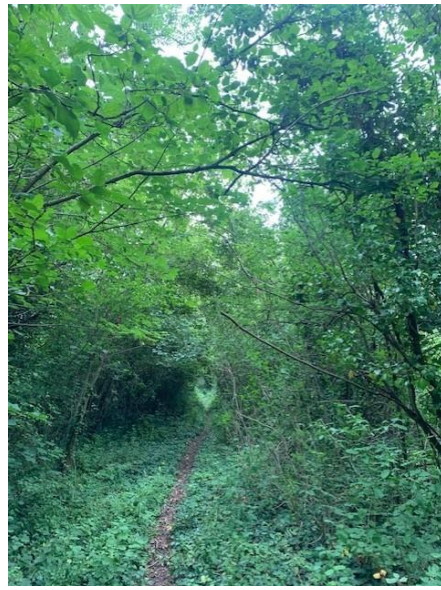


Figure 6: Woodland west of St Marys Well Bay Road

Within the western section of the site, along the disused railway line (northern option), there was also semi-natural broad-leaved woodland. The canopy comprised predominantly Sycamore and Ash, with small numbers of Cherry Plum (*Prunus cerasifera*). The understorey contained Hawthorn, Blackthorn (*Prunus spinosa*), Butterfly-bush, with English Elm (*Ulmus procera*), Dog-rose and Holly (*Ilex aquifolium*) also recorded. There were also several garden escapees scattered throughout the understorey, including Franchet's Cotoneaster (*Cotoneaster franchetii*), Divaricate Cotoneaster (*Cotoneaster divaricatus*), Hollyberry Cotoneaster (*Cotoneaster bullatus*), Russian-vine (*Fallopia baldschuanica*) and Rose-of-Sharon (*Hypericum calycinum*). The dominant species in the ground flora / field layer was Ivy, with common Hart's-tongue Fern and Bramble. Other species included Traveller's joy (*Clematis vitalba*), Lord's-and-Ladies (*Arum maculatum*), Creeping Cinquefoil, Cleavers, Herb-Robert, Bracken (*Pteridium aquilinum*), Male-fern

(*Dryopteris filix-mas*), Honeysuckle (*Lonicera periclymenum*), Hogweed, Mouse-ear-hawkweed (*Pilosella officinarum*) and Hemp-agrimony (*Eupatorium cannabinum*).

### 3.5.3 Scattered Broadleaved Trees

Broadleaved trees were located adjacent to the footpath alongside the northern side of the B4267 within the western area of the site and adjacent to amenity grassland near Cosmeston Drive, species recorded include Ash, Oak and Sycamore (see Figure 7 for an example).



Figure 7: Example of scattered trees adjacent to the B4267

### 3.5.4 Hedgerow

Species-poor hedgerow (see Figure 8) and a hedgerow with trees were located adjacent to the footpath along the B4267 along the western section of the site and the eastern section of the site near Cosmeston Drive. The hedgerow was Hawthorn-dominated with Bramble, Field Maple, Hazel and Ash were also present. Trees within the hedgerow included Sycamore, Ash and Hazel. Other species recorded include Lord's-and-Ladies, Traveller's-joy, Hedge Bindweed, and Sow-thistle (*Sonchus* spp.).



Figure 8: Species poor hedgerow along the B4267 with managed amenity grassland immediately adjacent to the footpath and the road.



### 3.5.5 Semi-Improved Neutral Grassland

Semi-improved neutral grassland (see Figure 9 below) was recorded adjacent to a bare ground pathway along the western section of the site. Tall ruderal habitat and dense scrub were located immediately adjacent to the grassland.

Species recorded include Cock's-foot, False Oat-grass (*Arrhenatherum elatius*), Perennial Rye-grass (*Lolium perenne*), Crested Dog's-tail (*Cynosurus cristatus*), Yorkshire-fog, Smaller Cat's-tail (*Phleum bertolonii*), Yarrow (*Achillea millefolium*), Oxeye Daisy (*Leucanthemum vulgare*) and White Clover (*Trifolium repens*).



Figure 9: Pathway along the eastern section of the site with grassland, tall ruderal and scrub habitat adjacent to it.

### 3.5.6 Tall Ruderal

Tall ruderal habitat (see Figure 10) was located adjacent to the semi-improved neutral grassland, within the woodland understorey and a large stand was recorded within the eastern section of the site adjacent to a bridge near Cosmeston Drive. The dense stand located near Cosmeston Drive, was dominated by Common Nettle, other tall ruderal habitat species recorded included Hemp-agrimony and Rosebay Willowherb (*Chamerion angustifolium*).



Figure 10: Large area of tall ruderal habitat located within the eastern area of the site near the Cosmeston Drive.

### 3.5.7 Scrub

Dense areas of scrub (see Figure 11) were located within areas of the woodland and adjacent to the pathway within the eastern area of the site. Species recorded include Bramble, Hawthorn and Blackthorn.



Figure 11: Dense areas of scrub within the eastern section of the site

There was also a small area of Bramble-dominated dense scrub on a bridge, with bare areas exposing track ballast, within the western section of the site. Creeping Cinquefoil, Herb-Robert, Common Toadflax (*Linaria vulgaris*) and Raspberry (*Rubus idaeus*) were recorded in this area.

### 3.5.8 Amenity Grassland

Regularly managed amenity grassland was located along the B4267 adjacent to the road and the footpath along the western section of the site (see Figures 7 and 8) and towards Cosmeston Drive along the eastern section of the site. Species recorded include Annual Meadow-grass (*Poa annua*), Perennial Rye-grass, Dandelion (*Taraxacum agg.*), Daisy (*Bellis perennis*), Bristly Oxtongue (*Helminthotheca echioides*) and Yarrow.

### 3.5.9 Other Habitat

Hardstanding footpaths, roads (see Figures 7 and 8) and bare ground paths (see Figure 9) were located along the north-eastern and western sections of the site. Bridges were located along the central and eastern section of the site.

### 3.5.10 Protected and Notable Species

A full range of protected species were considered at an initial stage in planning the current work. Some have been discounted on the grounds that there was no likelihood of their occurrence on site (for example, due to an absence of suitable habitat). Only those species with ranges within the geographical area of the site and where suitable habitats were present within or adjacent to the site are included below. Where confirmed presence was established or a likelihood of presence was anticipated, the relevant legislation is included in Appendix A.

#### 3.5.10.1 Protected and Notable Plant Species

The desk study returned records of nine species of flowering plants. Key notable species include Divided Sedge (*Carex divisa*), Tubular Water Drop-wort (*Oenanthe fistulosa*), Marsh Stitchwort (*Stellaria palustris*), Shore Dock (*Rumex rupestris*) and Fragrant Orchid (*Gymnadenia conopsea*). The closest record was of Ley's Whitebeam (*Sorbus leyana*) 122m from the site in Cosmeston Cement Works. The habitats recorded within the site were not suitable to support any of these notable species.

### 3.5.10.2 Algae

The desk study returned records of one species of algae Wig Wrack or Sea-loch Egg Wrack (*Ascophyllum nodosum*) a Local Biodiversity Action Plan of the Vale of Glamorgan. This is a marine species and there were no suitable habitats within the survey boundary to support it.

### 3.5.10.3 Bryophyte

The desk study returned records for bryophytes in the locality, but there were no habitats suitable to support any rare or protected bryophyte species within the survey boundary.

## 3.5.11 Protected Fauna and/ or Species of Conservation Concern

### 3.5.11.1 Terrestrial Invertebrates

The desk study returned records of 30 terrestrial invertebrate species, these include a range of butterfly, moth, beetle and bee species.

The closest record is for a small blue (*Cupido minimus*) butterfly located just 8m from the site, suitable food sources for this species were recorded within the survey boundary (e.g Common Bird's-foot-trefoil). Other records include marsh fritillary (*Euphydryas aurinia*), latticed heath (*Chiasmia clathrata*), lackey (*Malacosoma neustria*), dingy skipper (*Erynnis tages*), two-toned reed beetle (*Donacia bicolora*) and moss carder bee (*Bombus muscorum*).

Deadwood within the woodland is suitable to support beetles amongst other invertebrate' species, although there was no suitable habitat located on site to support the two-toned reed beetle. The grassland and some understorey species (e.g., Butterfly-Bush) within the woodland are suitable to support a range of common butterfly species. Important food plants (e.g Devil's-bit Scabious) (*Succisa pratensis*) for marsh fritillary were not recorded within the survey boundary. The semi-natural grassland located within the western section of the site is suitable to support a variety of bee species include species associated with the moss carder bee. The woodland on site is also suitable to support a range of moth species.

### 3.5.11.2 Amphibians

The desk study returned records of four species of amphibians namely common toad (*Bufo bufo*), common frog (*Rana temporaria*), great crested newt (*Triturus cristatus*) and palmate newt (*Lissotriton helveticus*). The closest record is for common toad located 274m from the site. Great crested newt was recorded 648m north of the site.

There were no waterbodies within the site boundary, therefore the site was not suitable for breeding amphibians. One waterbody suitable to support breeding amphibians was identified on Ordnance Survey mapping next to the site within woodland east of Fort Road in Ty-r-Orsaf SINC. Terrestrial habitats such as, woodland, hedgerows and tall ruderal vegetation were considered suitable for amphibian species during their terrestrial phases. These habitats provide cover from predation, foraging and potential hibernation sites.

### 3.5.11.3 Reptiles

Three reptile species were recorded as part of the desk study slow-worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*) and grass snake (*Natrix helvetica*), the closest record being slow worm 260m from the site.

The site supports suitable habitats for all three common species recorded as part of the desk study. The woodland, tall ruderal and grassland can be utilised by reptile species for foraging, cover from predation and hibernation.

### 3.5.11.4 Birds

There were multiple records of notable bird species within 2km of the site, with the closest records being for dunnock (*Prunella modularis*), Eurasian skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), European herring gull (*Larus argentatus*), Eurasian bullfinch (*Pyrrhula pyrrhula*), common reed bunting (*Emberiza schoeniclus*), black-headed gull (*Chroicocephalus ridibundus*), kestrel (*Falco tinnunculus*), marsh tit (*Poecile palustris*), mistle thrush (*Turdus viscivorus*), linnet (*Linaria cannabina*), yellowhammer (*Emberiza citrinella*) and willow warbler (*Phylloscopus trochilus*) 80m from the site.

The hedgerow, scrub, woodland and trees present within the site were all suitable to support nesting birds. The site was considered unlikely to support any ground nesting birds due to the limited extent of suitable habitats.

#### 3.5.11.5 Bats

The desk study returned records of eight species of bats – lesser horseshoe bat (*Rhinolophus hipposideros*), whiskered bat (*Myotis mystacinus*), common noctule (*Nyctalus noctula*), lesser noctule (*Nyctalus leisleri*), common pipistrelle (*Pipistrellus pipistrellus*), Nathusius's pipistrelle (*Pipistrellus nathusii*), soprano pipistrelle (*Pipistrellus pygmaeus*), and serotine (*Eptesicus serotinus*). The closest record was for a foraging pipistrelle bat located 139 m from the site, with the closest roost being 531m from the site for an unknown bat species.

Habitats located within the site suitable to support foraging and commuting bats include the hedgerow, scattered trees and woodland. Trees located within the woodland and hedgerow along the B4267 at the most western section of the site were of a suitable size and structure that they could support potential bat roosting features, but a ground level tree roost assessment was outside the scope of the survey.

All bridges on site appeared to be in good condition with some dense Ivy suitable to support small numbers/individual crevice dwelling roosting bats.

#### 3.5.11.6 Hazel Dormouse

The desk study returned four records of the hazel dormouse (*Muscardinus avellanarius*). These records were from the Cosmeston Livery and Dinas Powys, with the closest record being 58m from the site which is connected to the site boundary via woodland and hedgerows.

The woodland, scrub and hedgerow on site were suitable to support foraging and nesting dormouse, the woodland contained a range of suitable food species including Hazel, Oak and Bramble.

#### 3.5.11.7 Water voles

The desk study returned ten records of the water vole (*Arvicola amphibius*); the closest record was 263m from the site. There were no suitable habitats for water vole within the site.

#### 3.5.11.8 Otters

The desk study returned no records for otter (*Lutra lutra*) within 2km of the site and there were no suitable habitats within the site suitable to support otter. There were no watercourses suitable to support otter within proximity to the site, it is therefore unlikely that they would transverse the otter or use it as a laying up area.

#### 3.5.11.9 Badgers

The desk study returned no records of badger (*Meles meles*) within 2km of the site. The woodland located within the site was suitable to support badgers and their setts. Adjacent fields were also suitable to support foraging badger along the site. Mammal paths were noted within the woodland, and under fences during the survey, but these could not be confirmed as badger paths. Results of a badger survey undertaken within the site have been included within a separate protected species report (Ref 5).

#### 3.5.11.10 Other mammals

The desk study returned records for the west European hedgehog (*Erinaceus europaeus*), The scrub and woodland habitat is suitable to support nesting and foraging hedgehog.

### 3.5.12 Invasive Species

The desk study recorded several invasive species present. These include Harpoon Weed (*Asparagopsis armata*), Three-cornered Garlic (*Allium triquetrum*), Japanese Knotweed (*Fallopia japonica*), Himalayan Cotoneaster (*Cotoneaster simonsii*), Small-leaved Cotoneaster (*Cotoneaster microphyllus*), Indian Balsam (*Impatiens glandulifera*), Montbretia (*Crocasmia aurea*), Wall Cotoneaster (*Cotoneaster horizontalis*), Western conifer seed bug (*Leptoglossus occidentalis*) and Zebra Mussel (*Dreissena polymorpha*).

The habitat on site is not suitable to support some of the invasive species mentioned above namely Harpoon Weed, and Zebra Mussel. Hollyberry Cotoneaster, a species included in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref 6) was recorded during the survey (TN1).

## 4 Discussion

### 4.1 Potential Ecological Constraints

#### 4.1.1 Ecological Features Scoped Out

The following ecological features have been scoped out as not requiring further consideration with regard to the proposed development on site (no likely significant effects are anticipated).

- Statutory Designated Sites: All works will be localised affecting the site and the immediate adjacent habitats. These sites are considered to be sufficiently distant from the site, with no impact pathways identified so they will not be impacted by the proposed development.
- Non-Statutory Designated Sites: Most of these sites are sufficiently distanced from the site with no impact pathways identified and so they will not be impacted by the proposed development.
- Invertebrates: The site offered a range of habitats within its boundaries suitable to support invertebrates, but the clearance of vegetation will be localised with larger areas of similar habitat within the wider area. There will be no significant impacts on invertebrates.
- Protected and Notable Plant Species: The woodland and grassland within the site were suitable to support protected/notable species, but the clearance of vegetation will be localised with large areas of similar habitat located within the wider area. There will be no significant impacts on the species recorded as part of the desk study.
- Protected and Notable Plants, Bryophytes and Algae, Water Vole, Otter: There were no habitats within the site suitable to support these species. No significant impacts are predicted.

#### 4.1.2 Ecological Features Scoped In

The following ecological features have been scoped in as needing further consideration with regard to the proposed development (potential for significant effects).

- Non-Statutory Designated Site: Ty-r-Orsaf SINC is adjacent to the site and could potentially be impacted by the proposed development.
- Habitats: The proposed development is likely to lead to the loss of semi-natural habitats located within the site.
- Invasive species: Hollyberry Cotoneaster was recorded within the site.
- Hazel dormouse: Hazel dormouse were recorded as part of the desk study, with a record 58m from the site located in connected habitat. In the absence mitigation, if dormouse are present, they are likely to be negatively impacted during construction due to loss of habitat and post development (through disturbance and lighting along the route).
- Great crested newt: Great crested newt was recorded as part of the desk study. No waterbodies suitable to support breeding amphibians were recorded during the survey, but a waterbody was recorded as part of the desk study next to the site. Great crested newt surveys are required for the waterbody located in woodland east of Fort Road to ascertain whether or not great crested newt would be affected by the proposed development.
- Reptiles: Reptiles and common amphibian species were recorded as part of the desk study within 2km of the site. Habitats within the site were not suitable to support breeding amphibians, but the site contained habitats suitable to support reptiles and amphibians during their terrestrial phase. In the absence mitigation, if reptiles or amphibians are present, they may be negatively impacted through killing/injury during vegetation clearance.
- Birds: The woodland, hedgerows, scattered trees and scrub on site were likely to support nesting birds. The nesting bird season for most UK species runs from March to August (inclusive). If vegetation clearance is undertaken on site during this period in the absence of mitigation, there will be potential for

negative impacts on nesting bird species. Development on site is also likely to lead to the loss of bird nesting habitat.

- Bats: There were multiple records for bat species within 2km of the site. Scattered trees, trees within the hedgerow and woodland may have bat roosting potential. In the absence of mitigation if bats are present, they would be negatively impacted by the proposed development through the loss of roosting sites and increased lighting along the route.
- Badgers: No records of badger were returned as part of the desk study, but the woodland and adjacent fields were suitable to support foraging badger and may contain badger setts. In the absence mitigation if badger are present, they may be negatively impacted by the proposed development through the loss of badger setts, foraging habitat and disturbance (during vegetation clearance and once the proposed development is operational).
- Hedgehog: The dense scrub/woodland and edge habitats were considered suitable for foraging and nesting hedgehog and the presence of this species on site was considered to be likely. In the absence of mitigation site clearance/construction works will have potential for negative impact on this species.

## 5 Recommendations for Further Surveys, Mitigation and Possible Enhancement

### 5.1 Further Surveys

#### 5.1.1 Woodland, Scattered Trees and Hedgerow

If works are proposed within 15m of the site's trees, hedgerows or woodland, it is recommended that an arboricultural survey and impact assessment be undertaken to ensure that appropriate measures are put in place to safeguard retained trees and hedgerows in accordance with BS 5837: 2012 (Ref 7).

#### 5.1.2 Great Crested Newt

Great crested newt surveys are required on the waterbody located next to the site, located in woodland east of Fort Road. eDNA surveys must be completed between mid-April and the end of June. If great crested newts are confirmed to be present within the pond a licence may be required for the potential injury/disturbance to great crested newt during vegetation clearance and dependent on the amount of habitat removed the licence may also need to cover the loss of terrestrial habitat. Appropriate mitigation would need to be provided as part of any licence application.

#### 5.1.3 Hazel Dormouse

Dependent on the amount of habitat to be removed a dormouse presence/absence survey would be required in the woodland, scrub and hedgerow within the site to determine if they are present. Nest tubes should be installed in suitable dormouse habitat and checked once a month between April and November. If dormouse is confirmed to be present a licence will likely be required from NRW before vegetation clearance can commence and compensatory planting will be required (typically twice as much habitat would need to be planted to replace that which is lost). The method statement that would be required as part of the licence would specify when vegetation clearance can take place to avoid disturbance to breeding and hibernating dormouse.

#### 5.1.4 Bats

Once the extent of the vegetation clearance has been confirmed all trees that will be impacted as part of the proposed development (to be felled/managed or located within proximity to new lighting along the route) should undergo a ground level tree roost assessment to determine their suitability to support roosting bats. In turn, further surveys (aerial inspection, bat presence/absence surveys) may be required to confirm the presence/absence of bats. If roosting bats are found to be present, a bat licence will be required from NRW before vegetation clearance can commence with mitigation and compensation for the loss of bat roosts required. Ground based bat tree assessments can be undertaken at any time of the year.

It is unclear if the bridges within the site will be directly impacted as part of the proposed development. Once the extent of the works on the bridges is confirmed a decision can be made as to whether further inspection/surveys will be required in relation to bats.

### 5.1.5 Badger

A badger survey is required within the woodland and within habitat located within 30m of the woodland to determine if badgers or their setts are present. This survey can be undertaken at any time of the year but is best undertaken in the winter months when the vegetation is less vigorous and likely to obscure setts. If a badger sett is confirmed to be present, and it is considered that the sett will be impacted, a badger licence may be required from NRW before works can commence.

## 5.2 Recommended Mitigation

### 5.2.1 Habitats

The proposed development should seek to minimise the loss of habitats. Once the extent of the required vegetation is confirmed a replacement planting plan should be produced to ensure there is no net loss to biodiversity.

### 5.2.2 Invasive Species

The invasive non-native species Hollyberry Cotoneaster was recorded within the site. This species is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (HMSO, 1981). This legislation makes it an offence to “*plant or otherwise cause such species to grow*” in the wild. This includes spreading of the species or transferring polluted ground material from one area to another.

An eradication programme for this species should be implemented on site. Removal should be undertaken under a species-specific method statement and the resulting waste should be disposed of as controlled waste.

### 5.2.3 Reptiles and Amphibians

The woodland, scrub, tall ruderal and grassland have the potential to support reptiles and amphibians (during their terrestrial phase). As there are likely to be small areas of habitat loss and there is ample of suitable habitat adjacent, these areas can be cleared using phased strimming to encourage reptiles and amphibians to move into the areas of retained habitat. As described below:

- Phase 1: The vegetation should be strimmed down to 150mm using hand tools only (i.e., brush-cutter/trimmer) with the arisings raked and removed from the works footprint. Suitable refuges (e.g., rubble piles, logs) should be dismantled by hand and removed from the works area). Vegetation clearance should begin at the edge of the works furthest away from areas of suitable reptile habitat and move systematically towards the area’s most suitable for reptiles. The disturbance and vibration will encourage reptiles to move out of the working corridor of their own accord. At this point the cleared area can either be left undisturbed for at least 24 hours or the ecologist on site can undertake an inspection to check for the presence of amphibians and reptiles.
- Phase 2: Following an inspection or at least 24 hours, vegetation should be strimmed to ground level (using hand tools only). The arisings from this must be raked off and removed from the works footprint.

### 5.2.4 Birds

The woodland, hedgerow, scrub and trees on site were considered likely to support nesting bird species during the breeding season. All bird species are protected from harm whilst nesting, with the main breeding season for most UK species from March to August (inclusive), it is recommended that all vegetation clearance works be undertaken outside of this period where possible.

If vegetation clearance works are required within the main nesting season, then a nesting bird check should be undertaken by a suitably qualified ecologist no more than 48 hours prior to the works being undertaken. If

an active nest is found during the check, an exclusion cordon should be put in place around the nest, and it must remain in situ until the chicks within the nest have fledged. A Method Statement would be required for clearance of vegetation within the main nesting season. Habitat suitable for nesting birds should be incorporated into the landscape proposals for the site to minimise the effects of habitat loss on nesting birds.

### **5.2.5 Badger**

Whether or not further surveys reveal the presence of active setts in the vicinity of the site as a precaution any excavations should be covered at night, or a soil ramp or wooden plank installed to ensure that nocturnal animals can escape. Any animal burrows used by species other than badger directly affected by the proposed development would need to be checked to ensure any animals have dispersed. If a badger sett is discovered in the dense vegetation works should stop immediately and advice sought from the site ecologist.

### **5.2.6 Hedgehog**

The woodland grassland and scrub on site were considered to be suitable for foraging and nesting hedgehog. Reasonable avoidance measures should be put in place to avoid harm to hedgehog, such as ensuring that suitable refuges and potential hibernation sites (such as piles of vegetation and deadwood) are removed outside of the winter months. Additionally, during works, any incomplete excavations should be covered overnight, or a ramp provided to allow escape of any animals that may become trapped. This approach should be captured in a Method Statement. The landscape planting for the scheme should include the creation of habitats suitable for foraging hedgehog and provide for their movement across the site.

## **5.3 Possible Enhancements**

### **5.3.1 Habitat Creation**

Development on this site may lead to the loss of green infrastructure, it is therefore recommended that an ecologist contributes to the evolution of the development and landscaping design (if required) to minimise biodiversity loss and to advise upon the provision of appropriate green infrastructure. The ecologist should ensure that wildlife corridors are maintained and created and that any new planting is designed to be beneficial to wildlife.

Measures to be considered within the design include the incorporation of bird and bat boxes, sensitive lighting strategy, tree replacement and new tree planting where feasible.

### **5.3.2 Bat Boxes**

Bat boxes should be installed within the retained trees on site. This would provide enhancement/replacement for the loss of potential roost features within woodland trees, which would potentially be removed. The bat boxes that are suitable are detailed below, but other makes of boxes would also be suitable:

- Schwegler 2F Bat Box or similar woodcrete boxes that are suitable for small species such as pipistrelle.
- Schwegler 2FN Bat Box or similar woodcrete boxes that are suitable for larger bat species and small species, the box has two entrances.

Woodcrete boxes have been recommended as they are constructed from a material which is long lasting, and the design of the boxes means they require no maintenance; however, other materials do have similar thermal properties and could be considered. Care should be taken to avoid using boxes that are not long lasting or require cleaning. All boxes require annual inspections to ensure they remain in situ and are fit for purpose.

### **5.3.3 Bird Boxes**

It is recommended that bird boxes be installed within the woodland trees on site. This will provide additional nesting opportunities and mitigate for the loss of natural nesting habitats. The bird boxes that are recommended are detailed below:

- Schwegler 1B Bird Box or similar woodcrete boxes that are suitable for small species of bird.



### 5.3.4 Habitat Piles

Habitat piles should be created in safe locations adjacent to the site using materials cleared from the site. This will provide suitable habitat for reptiles, hedgehog and a range of invertebrate species.

## 6 Conclusions

The site is located between Penarth and Barry and is situated within a range of habitats. The western section of the site follows the footpath on the northern side of the B4267 and is located adjacent to amenity grassland, a species-poor hedgerow, hedgerow with trees and scattered trees. The central section of the site crosses the B4267 and is located along a narrow footpath and disused railway line within semi-natural broadleaved woodland. The central part of the site is adjacent to the Ty'r Orsaf SINC which contains a pond. The eastern section of the site is on a footpath with bare ground, semi-improved neutral grassland and tall ruderal habitat. The north-eastern section of the site is within the residential estate of Cosmeston Drive. Bridges are also located along the route. There are no statutory designated sites for nature conservation located within close proximity to the site boundary and will not be impacted as part of the proposed development.

The widening of the footpaths located within the western (B4267 section) and north-eastern section (Cosmeston Drive) will impact small areas of amenity grassland and it is likely that some over-hanging trees may require some management. The central and eastern section of the proposed development will impact semi-natural broadleaved woodland, semi-improved neutral grassland, scrub and tall ruderal habitat and is located within proximity of a SINC which may be negatively impacted. The impact of the proposed development on the bridges is currently unknown.

Habitats within the survey area were considered suitable to support hazel dormouse, foraging, commuting and roosting bats, badgers, nesting birds, reptiles, amphibians during their terrestrial phase, and hedgehog.

At this stage it is not known how much vegetation clearance would be required, but it is anticipated that it will be necessary to remove woodland, scrub, tall ruderal, grassland and trees and so it is recommended that:

- The county ecologist be contacted regarding the proximity of the proposed development to Ty-r-Orsaf SINC. The SINC should be protected during the works to ensure that it is not negatively impacted.
- Habitat is retained where possible and that replacement planting is provided to ensure there is no net loss of biodiversity.
- An eradication programme for Hollyberry Cotoneaster should be implemented on site. Removal should be undertaken under a species-specific method statement and the resulting waste should be disposed of as controlled waste.
- Great crested newt surveys be undertaken on the waterbody located next to the site, in woodland east of Fort Road and Ty-r-Orsaf SINC.
- A hazel dormouse survey be undertaken of suitable habitat (hedgerow, woodland and scrub) to confirm the presence/absence of this species and inform the need for appropriate mitigation and potentially a licence.
- Once the extent of the vegetation and tree clearance is confirmed, all trees that will be impacted (felled/managed/located within proximity to new lighting installed) should undergo a ground-based bat tree assessment, the results of which will determine if further surveys are required (e.g., aerial inspection, presence/absence surveys).
- A badger survey is undertaken within the woodland and habitat within 30m of the woodland to determine if badgers or their setts are present to inform the need for appropriate mitigation and potentially a licence.
- If any works are proposed within 15m of any of the site's trees, hedgerows or woodland, it is recommended that an arboricultural survey and impact assessment be undertaken to ensure that appropriate measures are put in place to safeguard retained trees and hedgerows in accordance with BS 5837: 2012.
- Vegetation clearance should be undertaken outside of the nesting bird season (March to August (inclusive)). If vegetation clearance works are required within this period, then a nesting bird check should

be undertaken by a suitably qualified ecologist no more than 48 hours prior to the works being undertaken.

- A phased approach to vegetation clearance should be adopted in areas of habitat identified as suitable for reptiles and amphibians (during their terrestrial phase). This should be formalised by a method statement, additional measures to safeguard reptiles may need to be adopted dependent on the results of the survey of the woodland area.
- New habitats of value to nesting birds and bats should be created to replace that which is lost to the development.
- Reasonable avoidance measures should be put in place to avoid harm to hedgehog such as ensuring that suitable refuges and potential hibernation sites (such as piles of vegetation and deadwood which are also suitable to support invertebrates such as beetles) are removed outside of the winter months.
- Additionally, during works, any incomplete excavations should be covered overnight, or a ramp provided to allow escape of any animals that may become trapped.
- Landscape planting proposals should include native planting to maximise its value to nature conservation and mitigate for the loss of semi-natural habitats.
- The future lighting proposals for the proposed development should be developed with an ecologist to minimise effects on nocturnal wildlife.

## 7 References

Ref 1 MAGIC (2014). Magic Interactive Mapping Application  
<http://www.natureonthemap.naturalengland.org.uk/MagicMap>;

Ref 2 HMSO (2016). The Environment (Wales) Act.

Ref 3 Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey: A technique for environmental audit. JNCC, Peterborough. <http://jncc.defra.gov.uk/>;

Ref 4 Stace, C. (2010). New Flora of the British Isles, Third Edition. Cambridge University Press, Cambridge.

Ref 5 Arcadis Consulting (UK) Ltd (2023). Sully to Cosmeston ATR Badger Survey Report. Document reference: 10056562-ARC-AT-300-RP-E-00002.

Ref 6 HMSO (1981). The Wildlife and Countryside Act 1981 (as amended).

Ref 7 British Standards (2012) BS 5837:2012: Trees in relation to design, demolition and construction.

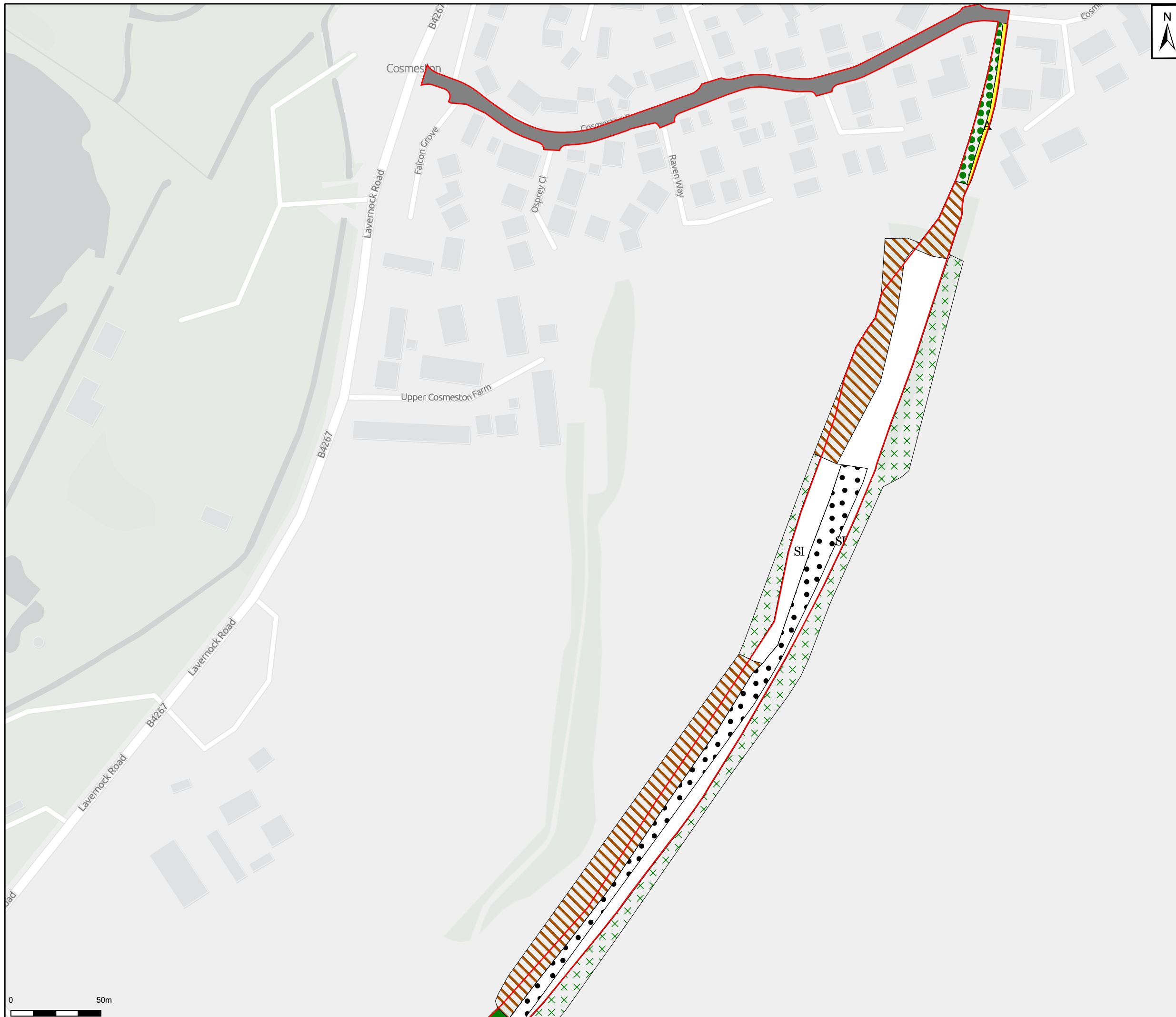
Ref 8 HMSO (2017). The Conservation of Habitats and Species Regulations 2017(as amended by the EU Exit Regulations 2019).

Ref 9 HMSO (1992). Protection of Badgers Act 1992.

Sully to Cosmeston ATR

**Phase 1 habitat survey 10056562-ARC-AT-300-DR-E-00001**

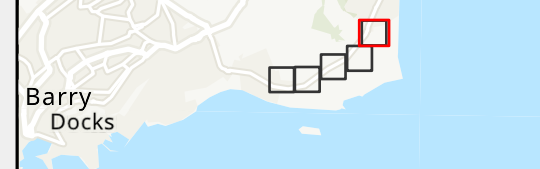
Phase 1 habitat survey drawing



**Legend**

- Site boundary
- Bare ground
- Broadleaved Parkland/scattered trees
- Broadleaved woodland - semi-natural
- A Cultivated/disturbed land - amenity grassland
- Hardstanding
- Hedge with trees - species-poor
- Other tall herb and fern - ruderal
- SI Poor semi-improved grassland
- Scrub - scattered
- Scrub - dense/continuous

GB Light Grey: Contains OS data © Crown Copyright and database right 2023  
 Contains data from OS Zoomstack  
 World Topographic Map: Esri UK, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



Rev	Date	Description	Drawn	Check	Approv
01	20-09-23	INITIAL ISSUE	RP	AC	SW

Client:



**Site**  
Sully to Cosmeston  
Active Travel Route

**PROJECT:**  
**SULLY TO  
COSMESTON ATR**

**Client**  
Vale of Glamorgan County Borough Council



Registered office:  
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**Phase 1 Habitat Survey  
Sully to Cosmeston ATR**

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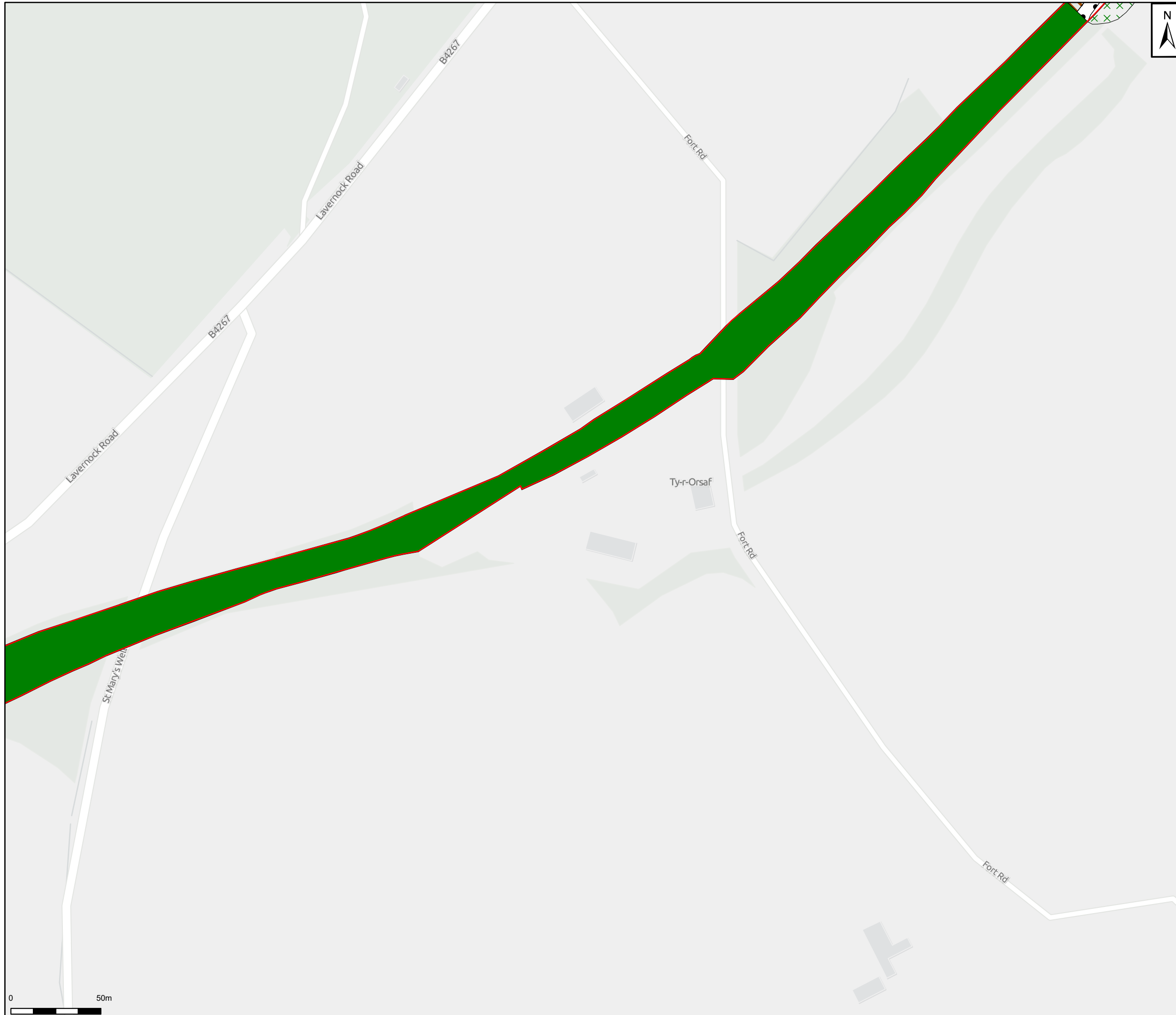
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Drawn	R. Pakhare	Date: 20 SEP 23	Signed
Checked	A. Cordon	Date: 20 SEP 23	Signed
Approved	S. Walters	Date: 20 SEP 23	Signed
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Suitability Code:	S2	Project Number:	10056562

Suitability Description:

**For Information**

Drawing Number:	10056562-ARC-AT-010-DR-E-00001	Revision:	<b>P01</b>
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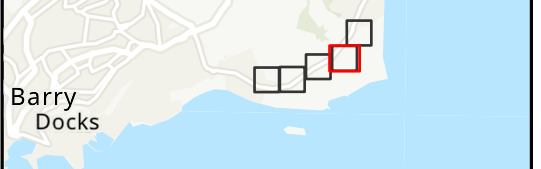




**Legend**

- Site boundary
- Bare ground
- Broadleaved Parkland/scattered trees
- Broadleaved woodland - semi-natural
- Cultivated/disturbed land - amenity grassland
- Hardstanding
- Hedge with trees - species-poor
- Other tall herb and fern - ruderal
- SI Poor semi-improved grassland
- Scrub - scattered
- Scrub - dense/continuous

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01	20-09-23	INITIAL ISSUE	RP	AC	SW
Rev	Date	Description	Drawn	Check	Approv

Client:

**PROJECT:**  
SULLY TO  
COSMESTON ATR

**Site**  
Sully to Cosmeston  
Active Travel Route

**Client**  
Vale of Glamorgan County Borough Council

Registered office:  
80Fen  
80 Fenchurch Street  
London  
EC3M 4BY

Coordinating Office:  
Cymru House  
St Mellons Business Park  
Fortran Road  
Cardiff, CF3 0EY

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Title:

Phase 1 Habitat Survey  
Sully to Cosmeston ATR

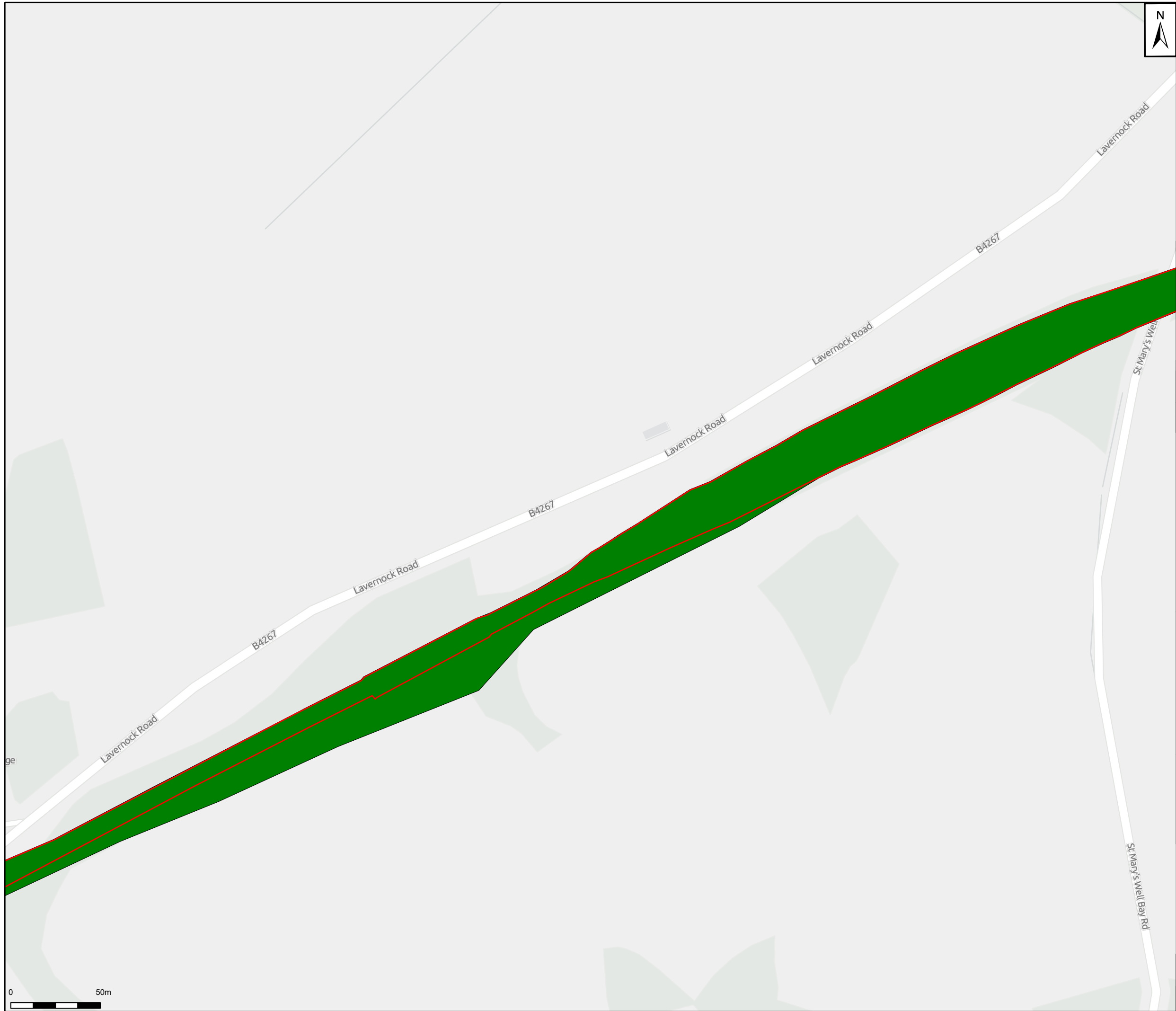
Page 2 of 5

Designed	A. Cordon	Date: 20 SEP 23	Signed
Drawn	R. Pakhare	Date: 20 SEP 23	Signed
Checked	A. Cordon	Date: 20 SEP 23	Signed
Approved	S. Walters	Date: 20 SEP 23	Signed
Scale:	1:2,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10056562

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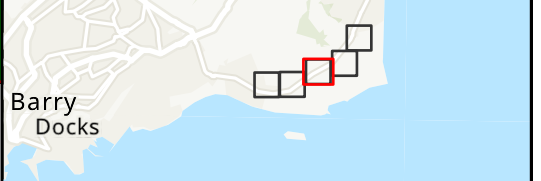




**Legend**

- Site boundary
- Bare ground
- Broadleaved Parkland/scattered trees
- Broadleaved woodland - semi-natural
- A Cultivated/disturbed land - amenity grassland
- Hardstanding
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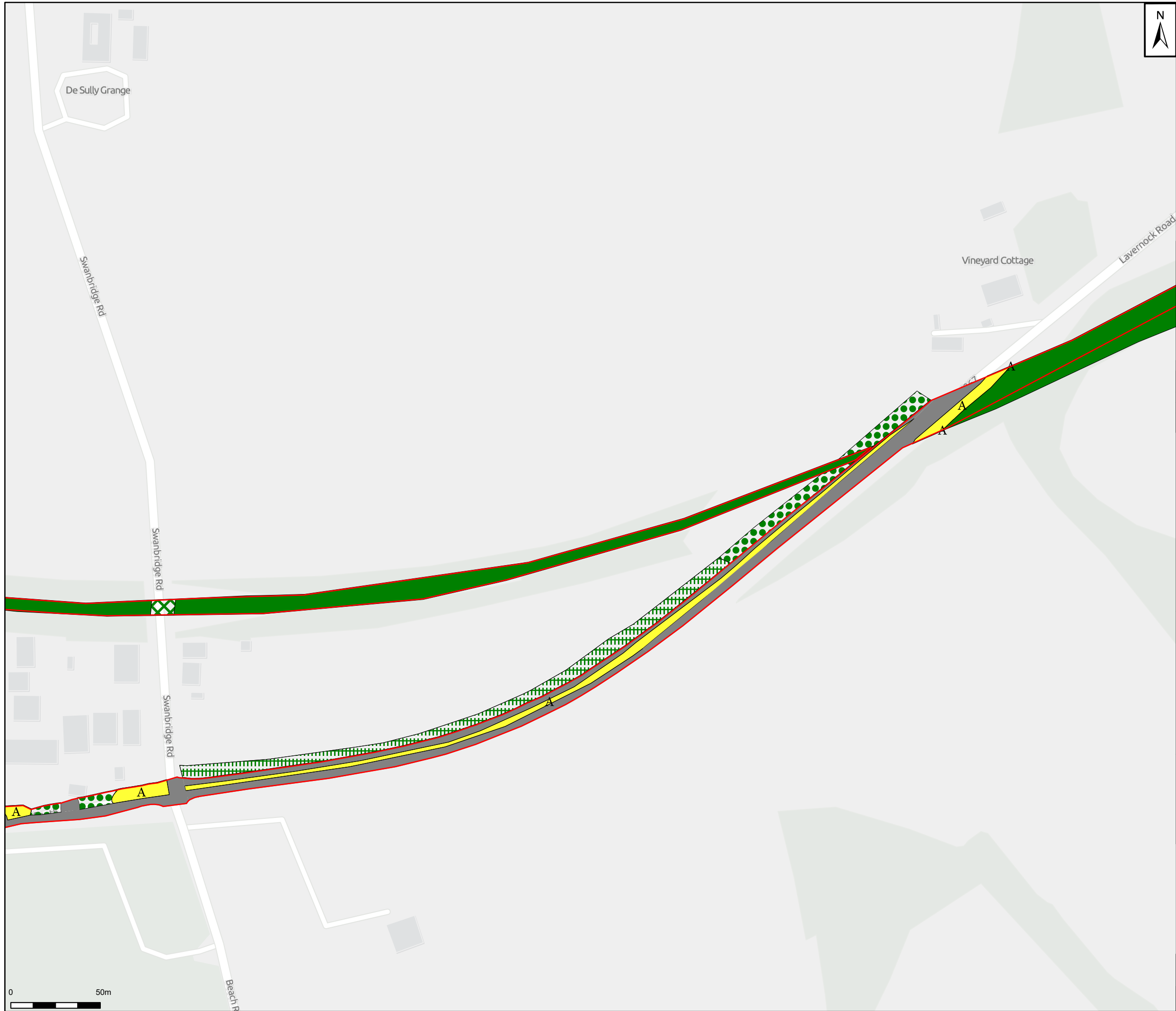
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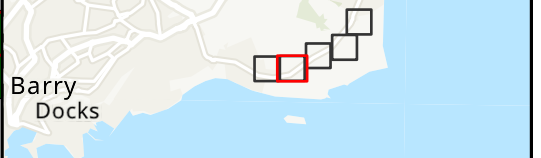




**Legend**

- Site boundary
- Bare ground
- Broadleaved Parkland/scattered trees
- Broadleaved woodland - semi-natural
- Cultivated/disturbed land - amenity grassland
- Hardstanding
- Hedge with trees - species-poor
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Sully to Cosmeston ATR**

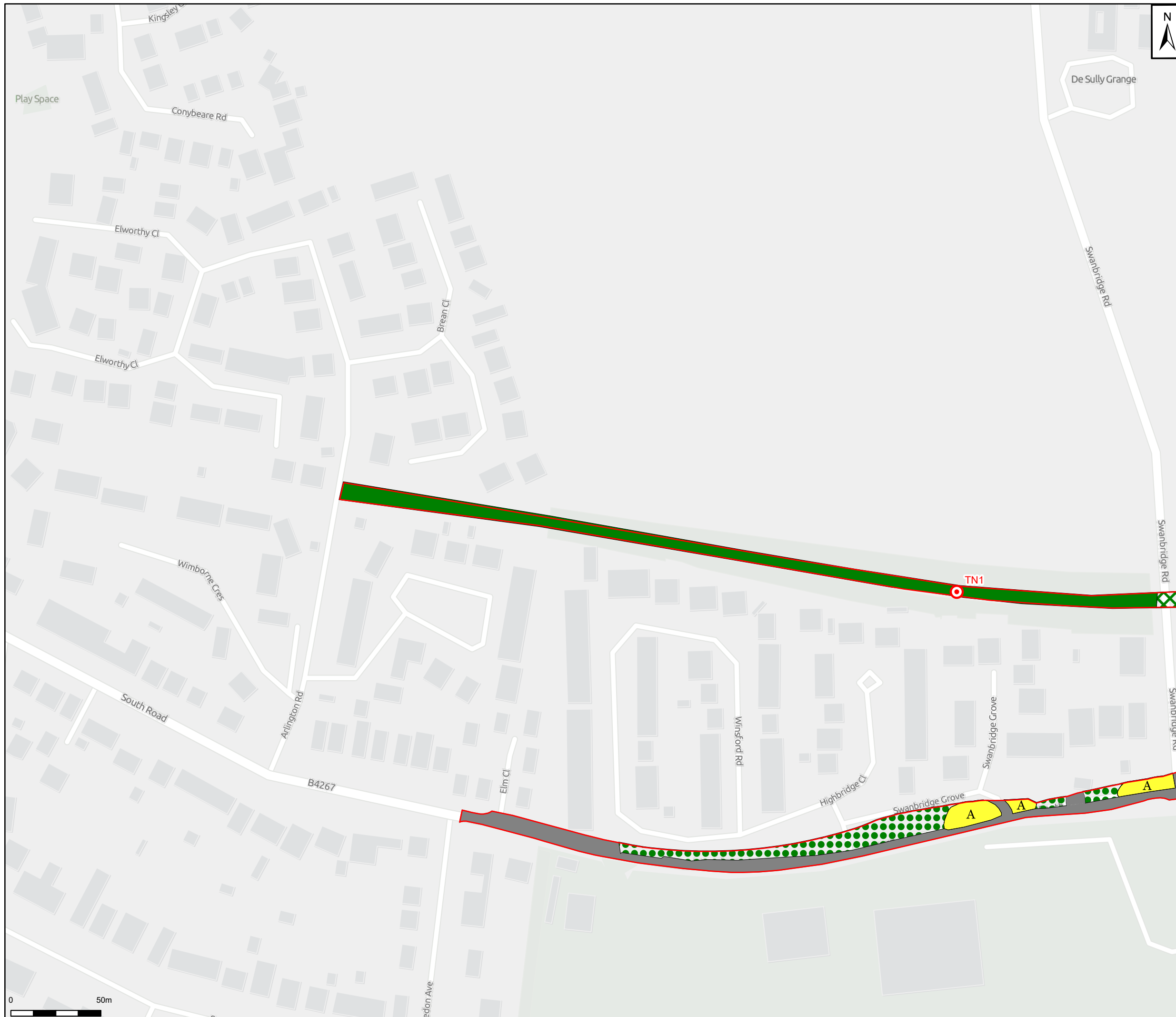
Page 4 of 5

Designed	A. Cordon	Date: 20 SEP 23	Signed
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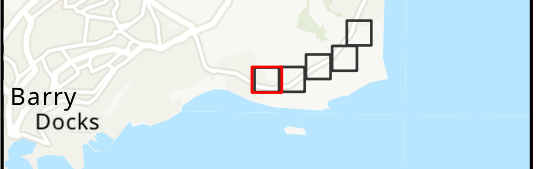
**For Information**

Drawing Number: 10056562-ARC-AT-010-DR-E-00001	Revision: <b>P01</b>
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- Legend**
- Site boundary
  - Target note
  - Bare ground
  - Broadleaved Parkland/scattered trees
  - Broadleaved woodland - semi-natural
  - Cultivated/disturbed land - amenity grassland
  - Hardstanding
  - Hedge with trees - species-poor
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Client:



**VALE of GLAMORGAN**  
BRO MORGANNWG

**PROJECT:**  
**SULLY TO COSMESTON ATR**

**Site**  
Sully to Cosmeston  
Active Travel Route

**Client**  
Vale of Glamorgan County Borough Council



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80Fen  
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**Phase 1 Habitat Survey  
Sully to Cosmeston ATR**

Page 5 of 5

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Suitability Code:	S2	Project Number:	10056562	

Suitability Description:

For Information

Drawing Number: 10056562-ARC-AT-010-DR-E-00001	Revision: <b>P01</b>
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## Appendix A

### Legislation and Policy

Ecological constraint	Rationale
<p>European Designated sites (Special Areas of Conservation, Special Protection Areas and Ramsar Sites)</p>	<p>Under the Conservation of Habitats and Species Regulations 2017, as amended (Ref 8), an assessment is required where a plan or project may give rise to significant effects upon 'European Sites' including SACs, SPAs, and Ramsar sites. The process of assessing the implications of development on European Sites is known as Habitats Regulations Assessment (HRA).</p> <p>The initial stage of the HRA is Screening. This process initially identifies the likely impacts upon a European Site of a project or plan, either alone or in combination with other projects or plans and considers whether these impacts may be significant.</p> <p>Natural Resources Wales must be consulted in relation to the outcome of Screening. Unless the likelihood of a significant effect can be ruled out on the basis of objective information, then an Appropriate Assessment must be undertaken (this is the next stage of the HRA).</p>
<p>Nationally Designated Sites (Sites of Special Scientific Interest)</p>	<p>It is a legal requirement to apply for 'assent' from Natural Resources Wales for any works which could potentially damage the flora, fauna or features for which a SSSI is designated (under the Wildlife and Countryside Act (1981) (as amended) (Ref 6)).</p>
<p>Non-native invasive Plants (Rhododendron, Giant Hogweed, Japanese Knotweed, certain species of Cotoneaster, Variegated Yellow Archangel, Canadian Waterweed, Japanese Rose, Monbretia, New Zealand Pigmyweed, Virginia Creeper, Water-fern etc.)</p>	<p>It is an offence under Section 14 of Wildlife and Countryside Act 1981 (as amended) (Ref 6) to cause plants listed in Schedule 9 of this act to grow in the wild.</p> <p>Material contaminated with these species is classified as controlled waste under the Environmental Protection Act 1990 and should therefore be disposed of in an appropriately licensed landfill site.</p>
<p>European protected species (great crested newts, natterjack toad, sand lizard, smooth snake, bats, dormice, otters)</p>	<p>It is an offence under the Conservation of Habitats and Species Regulations 2017, (Ref 8) to deliberately kill or injure a European protected species, to destroy breeding/ resting sites, or to deliberately disturb these species and affect their ability to survive, rear young, breed or hibernate.</p>
<p>Nationally protected species- those listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (Allis shade, twaite shad, great crested newt, natterjack toad, bats, dormice, otter)</p>	<p>It is an offence under the Wildlife and Countryside Act 1981, as amended (Ref 6) to intentionally or recklessly disturb a species listed on Schedule 5 whilst it is in a place of shelter, or to obstruct access to a place of shelter.</p>
<p>Reptiles</p>	<p>It is an offence under the Wildlife and Countryside Act 1981 (as amended) (Ref 6) to kill or injure common species of reptiles.</p>
<p>Nationally protected bird species- those listed under Schedule 1 of the Wildlife of the Wildlife and Countryside Act 1981 (as amended) (barn owl, peregrine falcon, red kite, kingfisher, firecrest etc.)</p>	<p>All nesting birds are protected whilst nesting as identified below. However, for those listed under Schedule 1 of the Wildlife and Countryside Act 1981, as amended (Ref 6) it is also an offence to intentionally or recklessly disturb these birds at, on or near an active nest.</p>

Sully to Cosmeston ATR

Ecological constraint	Rationale
Nesting birds	It is an offence under the Wildlife and Countryside Act 1981 (as amended) (Ref 6) to damage or destroy a bird's nest whilst it is in use, and to kill or injure a bird or destroy an egg.
Badger	It is an offence under the Protection of Badgers Act (1992) (Ref 9) to damage or destroy a badger sett; obstruct any entrance of a badger sett; and disturb a badger whilst it is occupying a badger sett.

## Appendix B

### Local Record Centre Data

Common Name	Scientific Name	Legislation
<b>Algae</b>		
Harpoon Weed	<i>Asparagopsis armata</i>	LBAP (VoG)
Wig Wrack/ Sea-loch Egg Wrack	<i>Ascophyllum nodosum</i>	INNS
<b>Bryophyte</b>		
Small-bud Bryum	<i>Bryum gemmiferum</i>	RDB1 (Wales) - LC, LI(BIS), LI(VC45, LR), LI(VC46, LR), LI(VC48, LR), LI(WWBIC)
Heath Star Moss	<i>Campylopus introflexus</i>	INNS
Common Feather-moss	<i>Kindbergia praelonga</i>	RDB1 (Wales) - LC, LBAP (CON)
Marble Screw-moss	<i>Syntrichia papillosa</i>	RDB1 (Wales) - LC, LBAP (CON, FLI)
Showy Feather-moss	<i>Oxyrrhynchium speciosum</i>	RDB1 (Wales) - LC, LI(VC42, EX), LI(VC43, LR), LI(VC44, LR), LI(VC48, EX), LI(VC49, LR), LI(WWBIC)
Nicholson's Beard Moss	<i>Didymodon nicholsonii</i>	RDB1 (Wales) - LC, LI(BIS)
Awl-leaved Earth-moss	<i>Pleuridium subulatum</i>	RDB1 (Wales) - LC, LBAP (CON)
Strap-leaved Earth-moss	<i>Ephemerum recurvifolium</i>	RDB1 (Wales) - VU, LI(VC45, LR), LI(VC49, LR), LI(WWBIC)
Golden Thread-moss	<i>Leptobryum pyriforme</i>	RDB1 (Wales) - LC, LI(VC35, LS), LI(VC45, LR), LI(WWBIC)
Dwarf Feather-moss	<i>Oxyrrhynchium pumilum</i>	RDB1 (Wales) - LC, LI(VC43, LR)
Great Plait-moss	<i>Hypnum cupressiforme</i>	RDB1 (Wales) - LC, LI(VC45, LR), LI(WWBIC)
<b>Pteridophyte</b>		
Maidenhair Fern	<i>Adiantum capillus-veneris</i>	RDB2 (UK) - S, LBAP (VOG), LI(SEWBRcC)
<b>Fungi</b>		
Persistent Waxcap	<i>Hygrocybe acutoconica</i>	LBAP (CDF, DEN, GWY)
<b>Flowering plant</b>		
Dwarf Thistle	<i>Cirsium acaule</i>	LBAP (DEN, FLI), LI(SEWBRcC), LI(VC47), LI(VC50, LR), LI(VC51, LR)

Sully to Cosmeston ATR

Common Name	Scientific Name	Legislation
Rigid Hornwort	<i>Ceratophyllum demersum</i>	LBAP (BRG, CON), LI(SEWBRcC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LR), LI(VC52, LS)
Bird Cherry	<i>Prunus padus</i>	LBAP (GWY), LI(SEWBRcC), LI(VC47), LI(VC49, LS)
Wayfaring-tree	<i>Viburnum lantana</i>	LI(SEWBRcC), LI(VC51, LS)
Bee Orchid	<i>Ophrys apifera</i>	CITES, LBAP (CLY, GWY, TRA, TRF), LI(SEWBRcC), LI(VC47), LI(VC48, LR), LI(VC49, LS)
Japanese Knotweed	<i>Fallopia japonica</i>	WCA9, INNS
Meadow Barley	<i>Hordeum secalinum</i>	LBAP (GWY), LI(SEWBRcC), LI(VC43), LI(VC49, LS)
Pale Flax	<i>Linum bienne</i>	LBAP (BRG), LI(SEWBRcC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LS), LI(VC52, LS)
Autumn Lady's-tresses	<i>Spiranthes spiralis</i>	RDB1 (UK) - NT, LBAP (CON, GWY, TRA), LI(SEWBRcC), LI(VC47), LI(VC48, LS), LI(VC49, LS), LI(VC50, LR), LI(VC51, LS), LI(VC52, LS)
Yellow-wort	<i>Blackstonia perfoliata</i>	LBAP (GWY), LI(SEWBRcC), LI(VC47), LI(VC48, LR), LI(VC49, LS), LI(VC52, LS)
Hairy Violet	<i>Viola hirta</i>	LI(SEWBRcC), LI(VC43), LI(VC47), LI(VC49, LS), LI(VC50, LS), LI(VC52, LS)
Pyramidal Orchid	<i>Anacamptis pyramidalis</i>	LBAP (BRG, CLY, TRA), LI(SEWBRcC), LI(VC47), LI(VC48, LS)
Wild Madder	<i>Rubia peregrina</i>	LBAP (CON), LI(SEWBRcC), LI(VC48, LR), LI(VC50, LS), LI(VC51, LR), LI(VC52, LS)
Pepper-saxifrage	<i>Silaum silaus</i>	LI(SEWBRcC), LI(VC47), LI(VC50, LS)
Woolly Thistle	<i>Cirsium eriophorum</i>	LBAP (BRG), LI(SEWBRcC), LI(VC43)
Dwarf Spurge	<i>Euphorbia exigua</i>	RDB1 (Wales) - NT, RDB1 (UK) - NT, LI(SEWBRcC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LS), LI(VC52, LR)
Service-tree	<i>Sorbus domestica</i>	RDB1 (Wales) - EN, RDB1 (UK) - CR, RDB2 (UK) - R, LBAP (VOG)
White Water-lily	<i>Nymphaea alba</i>	LBAP (GWY), LI(SEWBRcC), LI(VC49, LS)
Stinking Iris	<i>Iris foetidissima</i>	LI(SEWBRcC), LI(VC51, LS)
Hairy St John's-wort	<i>Hypericum hirsutum</i>	LI(SEWBRcC), LI(VC48, LR), LI(VC49, LR)

Sully to Cosmeston ATR

Common Name	Scientific Name	Legislation
Spurge-laurel	<i>Daphne laureola</i>	LBAP (GWY), LI(SEWBRcC), LI(VC47), LI(VC49, LS), LI(VC52, LS)
Butterfly-bush	<i>Buddleja davidii</i>	INNS
Greater Periwinkle	<i>Vinca major</i>	INNS
Spotted Medick	<i>Medicago arabica</i>	LBAP (GWY), LI(SEWBRcC), LI(VC49, LS), LI(VC50, LR), LI(VC51, LR), LI(VC52, LR)
Bluebell	<i>Hyacinthoides non-scripta</i>	INNS
Cherry Laurel	<i>Prunus laurocerasus</i>	INNS
Ivy Broomrape	<i>Orobanche hederæ</i>	LBAP (ANG, CON), LI(SEWBRcC), LI(VC48, LR), LI(VC50, LS), LI(VC52, LS)
Greater Butterfly-orchid	<i>Platanthera chlorantha</i>	RDB1 (UK) - NT, LBAP (GWY, MON, TRA), LI(SEWBRcC), LI(VC43), LI(VC49, LS), LI(VC50, LS), LI(VC51, LS), LI(VC52, LR)
Butcher's-broom	<i>Ruscus aculeatus</i>	HDir, RDB1 (Wales) - VU, LI(SEWBRcC)
Greater Knapweed	<i>Centaurea scabiosa</i>	LI(SEWBRcC), LI(VC47), LI(VC48, LR), LI(VC49, LR), LI(VC50, LS)
Small Leaved Elm	<i>Ulmus minor</i>	LI(SEWBRcC)
Yellow Horned-poppy	<i>Glaucium flavum</i>	LBAP (BRG), LI(SEWBRcC), LI(VC48, LS), LI(VC50, LR), LI(VC51, LR), LI(VC52, LS)
Lesser Celandine	<i>Ficaria verna var. bulbifer</i>	LI(VC49, LS), LI(VC52, LS)
Black Horehound	<i>Ballota nigra</i>	LI(SEWBRcC)
Charlock	<i>Sinapis arvensis</i>	RDB1 (Wales) - VU
Smooth Brome	<i>Bromus racemosus</i>	LBAP (GWY), LI(SEWBRcC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LR), LI(VC52, LR)
Upright Brome	<i>Bromopsis erecta</i>	LBAP (BGW, CON), LI(SEWBRcC), LI(VC43), LI(VC47), LI(VC49, LR), LI(VC50, LS), LI(VC51, LS), LI(VC52, LR)
Common Rock-rose	<i>Helianthemum nummularium</i>	LBAP (GWY), LI(SEWBRcC), LI(VC43), LI(VC47), LI(VC48, LR), LI(VC49, LS)
Hoary Plantain	<i>Plantago media</i>	LI(SEWBRcC), LI(VC43), LI(VC48, LR), LI(VC49, LR), LI(VC50, LS), LI(VC52, LR)

Sully to Cosmeston ATR

Common Name	Scientific Name	Legislation
Black Poplar	<i>Populus nigra subsp. betulifolia</i>	LBAP (CON, DEN, FLI, SNP, TRA, WRE), LI(SEWBRcC), LI(VC43), LI(VC48, LS), LI(VC50, LS), LI(VC52, LR)
Himalayan Cotoneaster	<i>Cotoneaster simonsii</i>	WCA9, INNS
Small-leaved Cotoneaster	<i>Cotoneaster microphyllus</i>	WCA9, INNS
Indian Balsam	<i>Impatiens glandulifera</i>	WCA9, INNS
Knotted Hedge-parsley	<i>Torilis nodosa</i>	LI(SEWBRcC), LI(VC47), LI(VC49, LS), LI(VC50, LR), LI(VC51, LR), LI(VC52, LS)
Autumn Lady's-tresses	<i>Spiranthes spiralis</i>	RDB1 (UK) - NT, LBAP (CON, GWY, TRA), LI(SEWBRcC), LI(VC47), LI(VC48, LS), LI(VC49, LS), LI(VC50, LR), LI(VC51, LS), LI(VC52, LS)
Broad-leaved Everlasting-pea	<i>Lathyrus latifolius</i>	INNS
Montbretia	<i>Crocasmia</i>	WCA9, INNS
Wall Cotoneaster	<i>Cotoneaster horizontalis</i>	WCA9, INNS
Himalayan Honeysuckle	<i>Leycesteria formosa</i>	INNS
Three-cornered Garlic	<i>Allium triquetrum</i>	WCA9, INNS
Invasive Non-Native Species		
Wig Wrack/ Sea-loch Egg Wrack	<i>Ascophyllum nodosum</i>	INNS
Western Conifer Seed Bug	<i>Leptoglossus occidentalis</i>	INNS
Zebra Mussel	<i>Dreissena polymorpha</i>	INNS
Heath Star Moss	<i>Campylopus introflexus</i>	INNS
Japanese Knotweed	<i>Fallopia japonica</i>	WCA9, INNS
Butterfly-bush	<i>Buddleja davidii</i>	INNS
Greater Periwinkle	<i>Vinca major</i>	INNS
Bluebell	<i>Hyacinthoides non-scripta</i>	INNS
Cherry Laurel	<i>Prunus laurocerasus</i>	INNS
Himalayan Cotoneaster	<i>Cotoneaster simonsii</i>	WCA9, INNS

Sully to Cosmeston ATR

Common Name	Scientific Name	Legislation
Small-leaved Cotoneaster	<i>Cotoneaster microphyllus</i>	WCA9, INNS
Indian Balsam	<i>Impatiens glandulifera</i>	WCA9, INNS
Broad-leaved Everlasting-pea	<i>Lathyrus latifolius</i>	INNS
Montbretia	<i>Crococsmia</i>	WCA9, INNS
Wall Cotoneaster	<i>Cotoneaster horizontalis</i>	WCA9, INNS
Himalayan Honeysuckle	<i>Leycesteria formosa</i>	INNS
Three-cornered Garlic	<i>Allium triquetrum</i>	WCA9, INNS
Terrestrial Invertebrates (Beetle)		
Harlequin Ladybird	<i>Harmonia axyridis</i>	INNS
Two-tone Reed beetle	<i>Donacia bicolora</i>	S7, RDB2 (UK) - S
Ground Beetle	<i>Ophonus ardosiacus</i>	RDB2 (UK) - NB
	<i>Oedemera femoralis</i>	RDB2 (UK) - NB, RDB2 (UK) - S
	<i>Orthochaetes insignis</i>	RDB2 (UK) - NB
	<i>Hedobia imperialis</i>	RDB2 (UK) - NB
Terrestrial Invertebrates (Butterfly)		
Brown Argus	<i>Aricia agestis</i>	LBAP (BRG, DEN)
Dingy Skipper	<i>Erynnis tages</i>	S7, RDB1 (UK) - VU, LBAP (BGW, BRG, CON, FLI, GWY, SWN, VOG), LI(SEWBRcC)
Dark Green Fritillary	<i>Speyeria aglaja</i>	LBAP (BRG, FLI, GWY, TRF), LI(SEWBRcC), LI(VC43)
Silver-Washed Fritillary	<i>Argynnis paphia</i>	LBAP (BRG, CDF, CON, FLI, MON, NEW, POW, SWN), LI(SEWBRcC), LI(VC43)
Marbled White	<i>Melanargia galathea</i>	LBAP (SWN, VOG), LI(BIS)
Marsh Fritillary	<i>Euphydryas aurinia</i>	HDir, WCA5, S7, Bern, RDB1 (UK) - VU, LBAP (ANG, BBNP, CER, CON, CRM, GWY, PEM, POW, SNP, TRA, VOG), LI(SEWBRcC)
Small Heath	<i>Coenonympha pamphilus</i>	S7, RDB1 (UK) - NT, LBAP (GWY, VOG)

Sully to Cosmeston ATR

Common Name	Scientific Name	Legislation
Small Pearl-bordered Fritillary	<i>Boloria selene</i>	S7, RDB1 (UK) - NT, LBAP (BGW, BRG, CON, DEN, FLI, GWY, MTR, NEW, POW, RCT, SNP, SWN, TRF, VOG), LI(SEWBRcC), LI(VC43)
Small Blue	<i>Cupido minimus</i>	WCA5, S7, RDB1 (UK) - NT, LBAP (CON, PEM, VOG), LI(SEWBRcC)
Grayling	<i>Hipparchia semele</i>	S7, RDB1 (UK) - VU, LBAP (BRG, CDF, GWY, RCT, VOG), LI(SEWBRcC), LI(VC43)
Terrestrial Invertebrates (Dragonfly)		
Black-tailed Skimmer	<i>Orthetrum cancellatum</i>	LBAP (CLY, SNP), LI(BIS), LI(SEWBRcC)
Beautiful Agrion	<i>Calopteryx virgo</i>	LBAP (CLY, SNP), LI(BIS), LI(SEWBRcC)
Hairy Dragonfly	<i>Brachytron pratense</i>	LBAP (BRG, CLY, GWY, PEM, SNP), LI(BIS), LI(SEWBRcC)
Common Emerald Damselfly	<i>Lestes sponsa</i>	LBAP (CLY, SNP), LI(SEWBRcC), LI(VC42), LI(VC43), LI(VC47), LI(VC50)
Ruddy Darter	<i>Sympetrum sanguineum</i>	LBAP (CLY, SNP), LI(SEWBRcC), LI(VC42), LI(VC43), LI(VC47), LI(VC50)
Banded Agrion	<i>Calopteryx splendens</i>	LBAP (CLY, SNP), LI(BIS), LI(SEWBRcC)
Black Darter	<i>Sympetrum danae</i>	LBAP (CLY, SNP), LI(BIS), LI(SEWBRcC)
Terrestrial Invertebrates (Hymenoptera)		
Red-tailed Bumblebee	<i>Bombus lapidarius</i>	LBAP (FLI, MTR)
Common Carder Bee	<i>Bombus pascuorum</i>	LBAP (FLI, MTR)
Buff-tailed Bumblebee	<i>Bombus terrestris</i>	LBAP (FLI, MTR)
White-tailed Bumblebee	<i>Bombus lucorum</i>	LBAP (FLI, MTR)
Early Bumblebee	<i>Bombus pratorum</i>	LBAP (FLI, MTR)
Garden Bumblebee	<i>Bombus hortorum</i>	LBAP (FLI, MTR)
Red-tailed (hill) Cuckoo Bee	<i>Bombus rupestris</i>	RDB2 (UK) - NB, LBAP (GWY)
Painted Nomad Bee	<i>Nomada fucata</i>	RDB2 (UK) - NA
Brown-banded Carder-bee	<i>Bombus humilis</i>	S7, LBAP (CER, CON, FLI, GWY, PEM, POW, VOG)
Moss Carder-bee	<i>Bombus muscorum</i>	S7, LBAP (FLI, GWY, MTR, VOG)



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Common Name	Scientific Name	Legislation
Terrestrial Invertebrates (Moth)		
Greenweed Flat-body	<i>Agonopterix atomella</i>	S7
Latticed Heath	<i>Chiasmia clathrata</i>	S7, LBAP (GWY, VOG)
Large Wainscot	<i>Rhizedra lutosa</i>	S7, LBAP (BRG, GWY)
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	S7, LBAP (GWY, VOG)
Grey Dagger	<i>Acronicta psi</i>	S7, LBAP (GWY, VOG)
Centre-barred Swallow	<i>Atethmia centrago</i>	S7, LBAP (GWY, VOG)
Dusky Thorn	<i>Ennomos fuscantaria</i>	S7, LBAP (GWY, VOG)
Blood-vein	<i>Timandra comae</i>	S7, LBAP (VOG)
Lackey	<i>Malacosoma neustria</i>	S7, LBAP (GWY, VOG)
Dot Moth	<i>Melanchra persicariae</i>	S7, LBAP (GWY, VOG)
Knot Grass	<i>Acronicta rumicis</i>	S7, LBAP (GWY, VOG)
Narrow-bordered Bee Hawk-moth	<i>Hemaris tityus</i>	S7, LBAP (CER, CON, GWY, POW)
Dark-barred Twin-spot Carpet	<i>Xanthorhoe ferrugata</i>	S7, LBAP (GWY, VOG)
Rustic	<i>Hoplodrina blanda</i>	S7, LBAP (GWY, VOG)
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>	S7, LBAP (GWY, VOG)
Small Square-spot	<i>Diarsia rubi</i>	S7, LBAP (GWY, VOG)
Sallow	<i>Cirrhia icteritia</i>	S7, LBAP (GWY, VOG)
White Ermine	<i>Spilosoma lubricipeda</i>	S7, LBAP (GWY, VOG)
Pretty Chalk Carpet	<i>Melanthia procellata</i>	S7, LBAP (GWY, VOG), LI(BIS)
Buff Ermine	<i>Spilosoma lutea</i>	S7, LBAP (GWY, VOG)
August Thorn	<i>Ennomos quercinaria</i>	S7, LBAP (GWY, VOG), LI(BIS)
Small Phoenix	<i>Ecliptopera silaceata</i>	S7, LBAP (GWY, VOG)
Greenweed Groundling	<i>Mirificarma lentiginosella</i>	RDB2 (UK) - NB
Bulrush Veneer	<i>Calamotropha paludella</i>	RDB2 (UK) - NB, LBAP (NEW)

Sully to Cosmeston ATR

Common Name	Scientific Name	Legislation
Coronet	<i>Craniophora ligustri</i>	LBAP (BRG)
Round-winged Muslin	<i>Thumatha senex</i>	LBAP (BRG)
Six-belted Clearwing	<i>Bembecia ichneumoniformis</i>	LBAP (TRF)
Coastal Pearl	<i>Mecyna asinalis</i>	RDB2 (UK) - NB
Fern	<i>Horisme tersata</i>	LBAP (BRG)
Barred Sallow	<i>Tiliacea aurago</i>	LBAP (BRG)
Terrestrial Invertebrates (Orthoptera)		
Long-winged Cone-head	<i>Conocephalus fuscus</i>	LI(SEWBRcC)
Short-winged Cone-head	<i>Conocephalus dorsalis</i>	LBAP (BRG, TRF), LI(SEWBRcC)
Speckled Bush-cricket	<i>Leptophyes punctatissima</i>	LI(SEWBRcC)
<b>Fish</b>		
Common carp	<i>Cyprinus carpio</i>	LBAP (CON), INNS
Amphibians		
Common Toad	<i>Bufo bufo</i>	WCA5, S7, Bern, LBAP (ANG, CLY, CON, DEN, FLI, GWY, POW, TRA, VOG)
common frog	<i>Rana temporaria</i>	HDir, WCA5, Bern, LBAP (ANG, CLY, CON, FLI, POW, TRA)
great crested newt	<i>Triturus cristatus</i>	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, BBNP, CLY, CON, DEN, FLI, MON, POW, SNP, TRA, TRF, VOG, WRE)
Palmate newt	<i>Lissotriton helveticus</i>	WCA5, Bern, LBAP (ANG, CLY, CON, DEN, FLI, POW, TRA), LI(BIS)
Reptiles		
Slow-worm	<i>Anguis fragilis</i>	WCA5, S7, Bern, LBAP (ANG, CLY, CON, DEN, FLI, GWY, POW, SNP, TRA, VOG)
Red-eared Terrapin	<i>Trachemys scripta</i>	INNS
<b>Birds</b>		
Spotted Flycatcher	<i>Muscicapa striata</i>	S7, Bern, WBR(RSPB), LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), UKBR(RSPB)

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Common Name	Scientific Name	Legislation
Eurasian Skylark	<i>Alauda arvensis</i>	BDir22, S7, LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRF, VOG), WBAm(RSPB), UKBR(RSPB)
Lesser Black-backed Gull	<i>Larus fuscus</i>	BDir22, LBAP (CON, GWY, PEM, POW, SNP), WBAm(RSPB), UKBAm(RSPB)
Long-tailed Tit	<i>Aegithalos caudatus</i>	WBAm(RSPB)
Dunnock	<i>Prunella modularis</i>	S7, Bern, LBAP (CON, POW, VOG), UKBAm(RSPB)
Canada Goose	<i>Branta canadensis</i>	BDir21, WCA9, INNS
Mallard	<i>Anas platyrhynchos</i>	BDir21, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Tufted Duck	<i>Aythya fuligula</i>	BDir21, LBAP (CON, POW, VOG), WBAm(RSPB)
Mistle Thrush	<i>Turdus viscivorus</i>	BDir22, Bern, WBAm(RSPB), UKBR(RSPB)
Goldcrest	<i>Regulus regulus</i>	Bern, LBAP (CON, POW), WBAm(RSPB)
Song Thrush	<i>Turdus philomelos</i>	BDir22, S7, Bern, LBAP (ANG, BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, SNP, TRF, VOG, WRE), WBAm(RSPB), UKBR(RSPB)
Linnet	<i>Linaria cannabina</i>	S7, Bern, WBR(RSPB), LBAP (ANG, BBNP, CER, CLY, DEN, FLI, PEM, VOG), LBAP (CON, GWY), UKBR(RSPB)
Greenfinch	<i>Chloris chloris</i>	Bern, LBAP (CON, POW), WBAm(RSPB)
Whitethroat	<i>Curruca communis</i>	WBR(RSPB), LBAP (CON, POW)
Cormorant	<i>Phalacrocorax carbo</i>	LBAP (CON, GWY, POW), WBAm(RSPB)
Redwing	<i>Turdus iliacus</i>	BDir22, WCA1.1, LBAP (CON, POW), WBAm(RSPB), UKBR(RSPB)
Swallow	<i>Hirundo rustica</i>	Bern, LBAP (ANG, CON, GWY, POW, VOG), WBAm(RSPB)
European Herring Gull	<i>Larus argentatus</i>	BDir22, S7, WBR(RSPB), LBAP (CON, GWY, POW, VOG), UKBR(RSPB)
Eurasian Coot	<i>Fulica atra</i>	BDir21, LBAP (BRG), WBAm(RSPB)
Gadwall	<i>Mareca strepera</i>	BDir21, LBAP (CON, GWY), UKBAm(RSPB)
Eurasian Bullfinch	<i>Pyrrhula pyrrhula</i>	S7, WBR(RSPB), LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, TRF, VOG), UKBAm(RSPB)

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Common Name	Scientific Name	Legislation
Common Reed Bunting	<i>Emberiza schoeniclus</i>	S7, Bern, LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), WBAm(RSPB), UKBAm(RSPB)
Grey Heron	<i>Ardea cinerea</i>	LBAP (BRG, RCT), WBAm(RSPB)
European Green Woodpecker	<i>Picus viridis</i>	Bern, LBAP (CLY, CON, DEN, FLI, GWY, PEM, POW, SNP), WBAm(RSPB)
Pochard	<i>Aythya ferina</i>	BDir21, WBR(RSPB), LBAP (CON, POW), UKBR(RSPB)
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	BDir22, S7, WBR(RSPB), LBAP (GWY, VOG), UKBAm(RSPB)
Kingfisher	<i>Alcedo atthis</i>	BDir1, WCA1.1, Bern, LBAP (CLY, CON, DEN, FLI, GWY, POW, TRA), WBAm(RSPB), UKBAm(RSPB)
Teal	<i>Anas crecca</i>	BDir21, CITES, LBAP (ANG, CON, DEN, FLI, GWY), LBAP (ANG, DEN, FLI), WBAm(RSPB), LI(VC43), UKBAm(RSPB)
Starling	<i>Sturnus vulgaris</i>	BDir22, S7, Bern, WBR(RSPB), LBAP (BBNP, CON, FLI, GWY, VOG), UKBR(RSPB)
Lesser Whitethroat	<i>Curruca curruca</i>	LBAP (BRG, CON, DEN, FLI, POW)
Willow Warbler	<i>Phylloscopus trochilus</i>	WBR(RSPB), LBAP (CON), UKBAm(RSPB)
Swift	<i>Apus</i>	LBAP (BRG, RCT, VOG), WBAm(RSPB), UKBAm(RSPB)
Sand Martin	<i>Riparia riparia</i>	Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB)
Snipe	<i>Gallinago gallinago</i>	BDir21, LBAP (ANG, CON, DEN, FLI, GWY, POW), WBAm(RSPB), LI(VC43), UKBAm(RSPB)
House Sparrow	<i>Passer domesticus</i>	S7, LBAP (CLY, CON, FLI, GWY, VOG), WBAm(RSPB), UKBR(RSPB)
Red Kite	<i>Milvus milvus</i>	BDir1, WCA1.1, WCA9, CITES, LBAP (CON, CRM, GWY, POW), WBAm(RSPB)
Kestrel	<i>Falco tinnunculus</i>	S7, Bern, CITES, WBR(RSPB), LBAP (ANG, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), LI(VC43), UKBAm(RSPB)
Common House Martin	<i>Delichon urbicum</i>	Bern, LBAP (BRG, CON, POW, RCT, VOG), UKBAm(RSPB)

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Common Name	Scientific Name	Legislation
Marsh Tit	<i>Poecile palustris</i>	S7, Bern, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), UKBR(RSPB)
Grey Wagtail	<i>Motacilla cinerea</i>	Bern, LBAP (CLY, CON, POW, TRA), WBAm(RSPB), UKBR(RSPB)
Brambling	<i>Fringilla montifringilla</i>	WCA1.1, LBAP (CON), WBAm(RSPB)
Fieldfare	<i>Turdus pilaris</i>	BDir22, WCA1.1, LBAP (CON, POW), WBAm(RSPB), UKBR(RSPB)
Peregrine	<i>Falco peregrinus</i>	BDir1, WCA1.1, Bern, CITES, LBAP (ANG, CLY, CON, GWY, PEM, POW, TRF, VOG), LI(VC43)
Wigeon	<i>Mareca penelope</i>	BDir21, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Meadow Pipit	<i>Anthus pratensis</i>	Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
Shoveler	<i>Spatula clypeata</i>	BDir21, CITES, LBAP (ANG, CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)
Night-heron	<i>Nycticorax nycticorax</i>	BDir1, WCA9, Bern, INNS
Tree Pipit	<i>Anthus trivialis</i>	S7, Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB), UKBR(RSPB)
Whinchat	<i>Saxicola rubetra</i>	Bern, WBR(RSPB), LBAP (BRG, CON, DEN, FLI, GWY, PEM, POW, RCT), UKBR(RSPB)
Cetti's Warbler	<i>Cettia cetti</i>	WCA1.1, LBAP (ANG, PEM, VOG)
Wheatear	<i>Oenanthe oenanthe</i>	Bern, LBAP (BRG, CON, POW), WBAm(RSPB)
Redstart	<i>Phoenicurus phoenicurus</i>	Bern, LBAP (CON, GWY, POW, SNP), WBAm(RSPB), UKBAm(RSPB)
Common Gull	<i>Larus canus</i>	BDir22, WBR(RSPB), UKBAm(RSPB)
Yellow-legged Gull	<i>Larus michahellis</i>	UKBAm(RSPB)
Cuckoo	<i>Cuculus canorus</i>	S7, WBR(RSPB), LBAP (CON, DEN, FLI, GWY, VOG), UKBR(RSPB)
Scaup	<i>Aythya marila</i>	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
Goshawk	<i>Accipiter gentilis</i>	WCA1.1, WCA9, CITES, LBAP (CLY, CON, POW, VOG)
Ring Ouzel	<i>Turdus torquatus</i>	S7, Bern, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), LI(VC43), UKBR(RSPB)

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Common Name	Scientific Name	Legislation
European Pied Flycatcher	<i>Ficedula hypoleuca</i>	S7, WBR(RSPB), LBAP (CON, GWY, POW, SNP, VOG), UKBR(RSPB)
Pintail	<i>Anas acuta</i>	BDir21, WCA1.2, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Hobby	<i>Falco subbuteo</i>	WCA1.1, Bern, CITES, LBAP (CON, GWY, POW, VOG), LI(VC43)
Bearded Reedling	<i>Panurus biarmicus</i>	WCA1.1, Bern, LBAP (CON, POW), WBAm(RSPB)
Lesser Redpoll	<i>Acanthis cabaret</i>	S7, LBAP (CON), LBAP (DEN, POW, VOG), WBAm(RSPB), UKBR(RSPB)
Common Loon	<i>Gavia immer</i>	BDir1, WCA1.1, Bern, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Hawfinch	<i>Coccothraustes coccothraustes</i>	S7, Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB), UKBR(RSPB)
Common Sandpiper	<i>Actitis hypoleucos</i>	WBR(RSPB), UKBAm(RSPB)
Ruddy Duck	<i>Oxyura jamaicensis</i>	WCA9, INNS
Grasshopper Warbler	<i>Locustella naevia</i>	S7, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), UKBR(RSPB)
Merlin	<i>Falco columbarius</i>	BDir1, WCA1.1, Bern, CITES, WBR(RSPB), LBAP (CON, DEN, FLI, GWY, POW), LI(VC43), UKBR(RSPB)
Black-tailed Godwit	<i>Limosa limosa</i>	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
Mediterranean Gull	<i>Ichthyaetus melanocephalus</i>	BDir1, WCA1.1, Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
Goldeneye	<i>Bucephala clangula</i>	BDir22, WCA1.2, LBAP (CON, POW), UKBAm(RSPB)
Western Marsh Harrier	<i>Circus aeruginosus</i>	BDir1, WCA1.1, CITES, LBAP (CON), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)
Lapwing	<i>Vanellus vanellus</i>	BDir22, S7, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, MON, PEM, POW, SNP, TRF, VOG), LI(VC43), UKBR(RSPB)
Western Yellow Wagtail	<i>Motacilla flava</i>	S7, Bern, WBR(RSPB), LBAP (CON, DEN, FLI, POW, TRA, VOG), LI(VC43), UKBR(RSPB)

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Common Name	Scientific Name	Legislation
Western Barn Owl	<i>Tyto alba</i>	WCA1.1, WCA9, Bern, CITES, LBAP (ANG, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRA, VOG, WRE), LI(VC43)
Woodlark	<i>Lullula arborea</i>	BDir1, WCA1.1, S7, LBAP (BBNP, CER, POW)
Black-throated Loon	<i>Gavia arctica</i>	BDir1, Bern, WBAm(RSPB), UKBAm(RSPB)
Whooper Swan	<i>Cygnus cygnus</i>	BDir1, WCA1.1, Bern, LBAP (CON, GWY, POW), UKBAm(RSPB)
Eurasian Bittern	<i>Botaurus stellaris</i>	BDir1, WCA1.1, S7, Bern, LBAP (ANG, BBNP, CER, CON, GWY, POW, VOG), WBAm(RSPB), UKBAm(RSPB)
Shelduck	<i>Tadorna tadorna</i>	Bern, LBAP (CON, GWY, VOG), WBAm(RSPB), UKBAm(RSPB)
Iceland Gull	<i>Larus glaucooides</i>	Bern, UKBAm(RSPB)
Common Firecrest	<i>Regulus ignicapilla</i>	WCA1.1, Bern, LBAP (BRG, CON, GWY, POW), WBAm(RSPB), LI(VC43)
Bar-headed Goose	<i>Anser indicus</i>	WCA9, INNS
Oystercatcher	<i>Haematopus ostralegus</i>	BDir22, LBAP (CON, GWY), WBAm(RSPB), LI(VC43), UKBAm(RSPB)
Curlew	<i>Numenius arquata</i>	BDir22, S7, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, VOG), LI(VC43), UKBR(RSPB)
Little Gull	<i>Hydrocoloeus minutus</i>	BDir1, WCA1.1, Bern, LBAP (CON), WBAm(RSPB)
Common Tern	<i>Sterna hirundo</i>	BDir1, Bern, LBAP (ANG, CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Jack Snipe	<i>Lymnocyptes minimus</i>	BDir21, LBAP (CON, POW), WBAm(RSPB)
Redshank	<i>Tringa totanus</i>	BDir22, LBAP (ANG, CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)
Turtle Dove	<i>Streptopelia turtur</i>	BDir22, S7, CITES, WBR(RSPB), LBAP (BBNP, CON, GWY, MON, POW), UKBR(RSPB)
Pink-footed Goose	<i>Anser brachyrhynchus</i>	BDir22, Bern, UKBAm(RSPB)
Great Black-backed Gull	<i>Larus marinus</i>	BDir22, WBR(RSPB), UKBAm(RSPB)
Barnacle Goose	<i>Branta leucopsis</i>	BDir1, WCA9, Bern, UKBAm(RSPB), INNS

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Common Name	Scientific Name	Legislation
Black-tailed Godwit	<i>Limosa limosa</i>	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
Black Swan	<i>Cygnus atratus</i>	WCA9, INNS
Red Crossbill	<i>Loxia curvirostra</i>	WCA1.1, Bern, LBAP (CON, POW), LI(VC43)
Eurasian Whimbrel	<i>Numenius phaeopus</i>	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
Hen Harrier	<i>Circus cyaneus</i>	BDir1, WCA1.1, S7, CITES, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, SNP, VOG), LBAP (BBNP, DEN, FLI, POW, SNP, VOG), LI(VC43)
Woodcock	<i>Scolopax rusticola</i>	BDir21, WBR(RSPB), LBAP (CON, DEN, FLI, GWY, POW), LI(VC43), UKBR(RSPB)
Glaucous Gull	<i>Larus hyperboreus</i>	Bern, UKBAm(RSPB)
Wood Warbler	<i>Phylloscopus sibilatrix</i>	S7, WBR(RSPB), LBAP (CON, GWY, SNP, VOG), UKBR(RSPB)
Black-necked Grebe	<i>Podiceps nigricollis</i>	WCA1.1, Bern, WBAm(RSPB), UKBAm(RSPB)
Green Sandpiper	<i>Tringa ochropus</i>	WCA1.1, Bern, LBAP (CON, VOG), WBAm(RSPB), UKBAm(RSPB)
Garganey	<i>Spatula querquedula</i>	BDir21, WCA1.1, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Shag	<i>Phalacrocorax aristotelis</i>	Bern, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
Egyptian Goose	<i>Alopochen aegyptiaca</i>	WCA9, INNS
Yellow Wagtail	<i>Motacilla flava flavissima</i>	S7, WBR(RSPB), LBAP (DEN, FLI, TRA), LI(VC43), UKBAm(RSPB)
Crane	<i>Grus grus</i>	BDir1, WCA9, Bern, CITES, UKBAm(RSPB)
Long-tailed Duck	<i>Clangula hyemalis</i>	BDir22, WCA1.1, RDB1 (UK) - VU, WBR(RSPB), UKBR(RSPB)
Caspian Gull	<i>Larus cachinnans</i>	UKBAm(RSPB)
Spoonbill	<i>Platalea leucorodia</i>	BDir1, WCA1.1, Bern, CITES, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
Dipper	<i>Cinclus cinclus</i>	Bern, LBAP (BRG, CLY, CON, MTR, POW, RCT, TRA), WBAm(RSPB), UKBAm(RSPB)



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Common Name	Scientific Name	Legislation
Common Ringed Plover	<i>Charadrius hiaticula</i>	S7, Bern, WBR(RSPB), LBAP (BBNP, CON, CRM, GWY, VOG), UKBR(RSPB)
Turnstone	<i>Arenaria interpres</i>	Bern, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Black Redstart	<i>Phoenicurus ochruros</i>	WCA1.1, Bern, LBAP (GWY, VOG), WBAm(RSPB), UKBR(RSPB)
Fulmar	<i>Fulmarus glacialis</i>	Bern, LBAP (VOG), WBAm(RSPB), UKBAm(RSPB)
Manx Shearwater	<i>Puffinus puffinus</i>	Bern, LBAP (CON, GWY, PEM), WBAm(RSPB), UKBAm(RSPB)
Gannet	<i>Morus bassanus</i>	LBAP (CON, GWY, PEM), WBAm(RSPB), UKBAm(RSPB)
European Storm Petrel	<i>Hydrobates pelagicus</i>	BDir1, Bern, LBAP (GWY, PEM), WBAm(RSPB), UKBAm(RSPB)
Sandwich Tern	<i>Thalasseus sandvicensis</i>	BDir1, Bern, LBAP (ANG), LBAP (ANG, CON, GWY), WBAm(RSPB), UKBAm(RSPB)
Common Scoter	<i>Melanitta nigra</i>	BDir22, WCA1.1, S7, LBAP (ANG, BBNP, CER, CON, CRM, DEN, FLI, GWY, PEM, VOG), WBAm(RSPB), UKBR(RSPB)
Arctic Tern	<i>Sterna paradisaea</i>	BDir1, Bern, WBR(RSPB), LBAP (ANG, CON, GWY), UKBAm(RSPB)
Dunlin	<i>Calidris alpina</i>	Bern, WBR(RSPB), LBAP (CON, GWY, POW), LI(VC43), UKBAm(RSPB)
Wryneck	<i>Jynx torquilla</i>	WCA1.1, Bern
Short-eared Owl	<i>Asio flammeus</i>	BDir1, Bern, CITES, WBR(RSPB), LBAP (CON, DEN, GWY, PEM, POW), LI(VC43), UKBAm(RSPB)
Golden Plover	<i>Pluvialis apricaria</i>	BDir1, BDir22, S7, WBR(RSPB), LBAP (BBNP, CON, CRM, FLI, GWY, POW, SNP, VOG), LI(VC43)
Ruff	<i>Calidris pugnax</i>	BDir1, BDir22, WCA1.1, LBAP (CON), WBAm(RSPB), UKBR(RSPB)
Greenshank	<i>Tringa nebularia</i>	BDir22, WCA1.1, LBAP (CON, POW), UKBAm(RSPB)
Yellowhammer	<i>Emberiza citrinella</i>	S7, Bern, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, VOG), UKBR(RSPB)

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Common Name	Scientific Name	Legislation
Grey Plover	<i>Pluvialis squatarola</i>	BDir22, WBR(RSPB), LBAP (CON, GWY), UKBAm(RSPB)
Willow Tit	<i>Poecile montanus</i>	S7, Bern, WBR(RSPB), LBAP (BBNP, DEN, FLI, POW, VOG), LBAP (CON, GWY), LI(VC43), UKBR(RSPB)
Light-bellied Brent Goose	<i>Branta bernicla hrota</i>	BDir22, LBAP (CON, GWY), UKBAm(RSPB)
Red-throated Loon	<i>Gavia stellata</i>	BDir1, WCA1.1, Bern, LBAP (CON, GWY), WBAm(RSPB)
Leach's Storm Petrel	<i>Oceanodroma leucorhoa</i>	BDir1, WCA1.1, Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
Common Murre	<i>Uria aalge</i>	LBAP (CON, PEM), WBAm(RSPB), UKBAm(RSPB)
Corn Bunting	<i>Emberiza calandra</i>	S7, WBR(RSPB), LBAP (CON, DEN, FLI), UKBR(RSPB)
Spotted Redshank	<i>Tringa erythropus</i>	BDir22, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
Common Rosefinch	<i>Carpodacus erythrinus</i>	WCA1.1, Bern
Sanderling	<i>Calidris alba</i>	Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
Bar-tailed Godwit	<i>Limosa lapponica</i>	BDir1, BDir22, S7, WBR(RSPB), LBAP (BBNP, CON, GWY, VOG), UKBAm(RSPB)
Roseate Tern	<i>Sterna dougallii</i>	BDir1, WCA1.1, S7, Bern, WBR(RSPB), LBAP (ANG, BBNP, GWY), UKBR(RSPB)
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	LBAP (CON), WBAm(RSPB), UKBR(RSPB)
Indet. Diver	<i>Gavia</i>	WCA1.1
Knot	<i>Calidris canutus</i>	BDir22, WBR(RSPB), LBAP (BBNP, CON, GWY), UKBAm(RSPB)
Purple Sandpiper	<i>Calidris maritima</i>	WCA1.1, Bern, LBAP (CON, VOG), WBAm(RSPB), UKBAm(RSPB)
Red-breasted Merganser	<i>Mergus serrator</i>	BDir22, LBAP (CON, POW), WBAm(RSPB)
Water Pipit	<i>Anthus spinoletta</i>	Bern, UKBAm(RSPB)
Nightjar	<i>Caprimulgus europaeus</i>	BDir1, S7, Bern, LBAP (BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, MON, PEM, POW, SNP, VOG), WBAm(RSPB), LI(VC43), UKBAm(RSPB)

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Common Name	Scientific Name	Legislation
Razorbill	<i>Alca torda</i>	Bern, LBAP (ANG, CON, PEM), WBAm(RSPB), UKBAm(RSPB)
Dark-bellied Brent Goose	<i>Branta bernicla</i>	S7, LBAP (VOG), WBAm(RSPB)
Black Tern	<i>Chlidonias niger</i>	BDir1, WCA1.1, Bern
Little Tern	<i>Sternula albifrons</i>	BDir1, WCA1.1, Bern, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY), UKBAm(RSPB)
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	WBAm(RSPB)
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	WBAm(RSPB)
Western Osprey	<i>Pandion haliaetus</i>	BDir1, WCA1.1, CITES, LBAP (GWY), WBAm(RSPB), UKBAm(RSPB)
Herring Gull	<i>Larus argentatus argentus</i>	S7, UKBAm(RSPB)
<b>Mammals</b>		
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, MON, PEM, POW, SNP, TRA, TRF, VOG, WRE)
Whiskered Bat	<i>Myotis mystacinus</i>	EPS, HDir, WCA5, Bern, RDB2 (UK), LBAP (ANG, DEN, FLI, GWY, POW, SNP, TRA, TRF)
Common Noctule	<i>Nyctalus noctula</i>	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, CLY, CON, DEN, FLI, GWY, POW, SNP, TRA, TRF, VOG)
Lesser Noctule	<i>Nyctalus leisleri</i>	EPS, HDir, WCA5, Bern, RDB2 (UK), LBAP (ANG, DEN, FLI, SNP, TRA, TRF)
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRA, TRF, VOG)
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	EPS, HDir, WCA5, Bern, RDB2 (UK), LBAP (ANG, DEN, FLI, SNP, TRA, TRF)
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, BBNP, CLY, DEN, FLI, GWY, PEM, POW, SNP, TRA, TRF, VOG)
Serotine	<i>Eptesicus serotinus</i>	EPS, HDir, WCA5, Bern, RDB2 (UK), LBAP (GWY, POW, TRA, TRF)
Hazel Dormouse	<i>Muscardinus avellanarius</i>	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, MON, PEM, POW, SNP, TRA, TRF, VOG)

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Common Name	Scientific Name	Legislation
Water Vole	<i>Arvicola amphibius</i>	WCA5, S7, LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRA, TRF, VoG)
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	WCA9, INNS
European Hedgehog	<i>Erinaceus europaeus</i>	S7, Bern, LBAP (ANG, BGW, BRG, CON, FLI, GWY, NEW, POW, RCT, VOG)
American Mink	<i>Neovison vison</i>	WCA9, INNS
Stoat	<i>Mustela erminea</i>	NRW, Bern, LBAP (ANG, BGW, BRG, CON, FLI, NEW, POW)

## Appendix C

### Target Notes

Target Note	Description	Photograph
1	Hollyberry Cotoneaster ( <i>Cotoneaster bullatus</i> ).	

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