CHAPTER 10: ECOLOGY AND NATURE CONSERVATION

Introduction

10.1 This chapter assesses the impact of the proposed development on Ecology and Nature Conservation. The chapter considers the potential effects of habitat loss and disturbance of protected species, both directly through loss of refuges and indirectly through disruption of foraging areas. It also considers potential effects on nature conservation designated sites.

10.2 The chapter describes the methods used to assess the impacts, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect impacts of the development arising from habitat loss/modification and protected species effects, the mitigation measures required to prevent, reduce, or offset the impacts and the residual impacts. It has been written by TEP.

Planning Policy Context

National Planning Policy

TAN 5: Nature Conservation and Planning (2009)[1]

10.3 This TAN brings together advice on sources of legislation relevant to various nature conservation topics including protected sites, such as Sites of Special Scientific Interest (SSSI) as well as protected species and habitats and species of principal importance in Wales.

Natural Environment and Rural Communities Act 2006[2]

10.4 The NERC Act requires local authorities to consider biodiversity when making planning decisions, especially having regard to the list (defined under s42 of the Act), of habitats and species of principal importance for biodiversity in Wales is defined. In relation to this development, the following are relevant

10.5 The following NERC Act 2006 Section 42 Habitats and Species for Wales have been assessed:

HABITATS	BIRDS	FISH
Hedgerows	Skylark	European eel
Lowland calcareous grassland	Dark-bellied brent goose	
Lowland dry acid grassland	Lesser redpoll	REPTILES & AMPHIBIANS
Lowland heathland	Common linnet	Slow-worm
Reedbeds	Ringed plover	Common toad
Rivers	Reed bunting	Common lizard
Ponds	Kestrel	Great crested newt
Maritime cliff and slopes	Herring gull	Adder
Coastal vegetated shingle	Black-headed gull	
Saline lagoons	Bar-tailed godwit	INVERTEBRATES
	Eurasian curlew	None identified.
MAMMALS	House sparrow	
Water vole	Grey partridge	VASCULAR PLANTS
Otter	Dunnock	None identified.
Noctule	Chough	
Common pipistrelle	Common Bullfinch	
Soprano pipistrelle	Starling	LICHENS
Brown long-eared bat	Song thrush	None identified.
	Lapwing	

Red squirrel		MOSSES AND LIVERWORTS None identified.

Local Planning Policy

Stopped Anglesey Unitary Development Plan (2001)[3]

10.6 The Isle of Anglesey Unitary Development Plan has nature conservation policies relevant to the Penrhos Leisure Village development.

- Environment Policy EN5 – International Sites – *concerns the protection of Special Areas for Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites*
- Environment Policy EN6 – National Sites – *concerns the protection of Sites of Special Scientific Interest (SSSIs)*
- Environment Policy EN7 – Local Sites – *concerns the protection of Local Nature Reserves (LNRs), ancient woodlands, Sites of Importance for Nature Conservation (SINCs)*
- Environment Policy EN8 – Development on the Coast – *partly concerns the protection of the marine environment as well as non-tidal water features*
- Environment Policy EN9 – Development Near Wetlands, Water Courses & Shorelines – *concerns the protection of nature conservation as well as water conservation, quality etc.*
- Environment Policy EN14 – Tree Preservation Orders (TPOs) and hedgerows – *concerns the protection of TPOs and hedgerows*
- Environment Policy EN15 – Projects – *concerns projects which have a beneficial effect on the local environment*

Gwynedd Structure Plan (2001)[4]

10.7 The Gwynedd Structure Plan (1993) has a number of nature conservation related policies that are of relevance to the Penrhos Leisure Village development.

- Policy D4 – *concerns the location, siting and design of developments and their effects on the environment*
- Policy D5 – *concerns the protection of coastlines and their nature conservation value*
- Policy D9 – *concerns development in environmentally sensitive areas*
- Policy D10 – *concerns the protection of nature conservation statutory and non-statutory sites*
- Policy D11 – *concerns the protection of river valleys and estuaries*
- Policy D14 – *concerns the protection of broadleaved woodlands and their native flora and fauna*

Isle of Anglesey County Council Local Plan (1996)5

10.8 The IOACC Local Plan (1996) has a number of nature conservation related policies that are of relevance to the Penrhos Leisure Village development.

- Policy 33 – *concerns the protection of statutory sites for nature conservation*
- Policy 34 – *concerns the protection of non-statutory sites for nature conservation*
- Policy 35 – *concerns the protection of wildlife species with statutory protection*
- *Policy 36 – partly concerns the protection of the nature conservation value of coastal locations*

Biodiversity Action Plans

10.9 The UK Biodiversity Action Plan (BAP)[6] reviews the status of species and habitats on a national scale. It sets out targets for a number of Priority Species and Habitats as well as for broad habitat types. The Wales Biodiversity Framework[7] sets out Welsh priorities and the means by which the priorities are to be achieved, including through the planning decisions process. The Anglesey BAP (LBAP) is the island's response to the UK and Welsh BAPs. It focuses on aspects of the local ecology, which are in need of protection or conservation.

10.10 A number of habitats and species are present within the application site which are prioritised by the BAPs. Some UK and Anglesey Habitat Action Plans (HAPs) and Species Action Plans (SAPs) are reviewed and referenced in the ecological assessment of the Penrhos Leisure Village to determine their relevance to the survey area. Inclusion of a HAP or SAP for review as part of the ecological assessment (those plans listed below) does not imply relevance to habitats or species within the survey area, as some plans may be referenced in order to discount BAP status.

10.11 The following national plans were reviewed:

Native hedgerows Ponds Rivers and streams Unimproved acid grassland Unimproved calcareous grassland Dwarf shrub heath Reedbeds Maritime cliff and slope (includes coastal heathland and coastal grassland) Coastal saltmarsh	GCNs Common toad Otter Water vole Red squirrel Grasshopper warbler Bullfinch Dunnock Herring gull Lapwing Corn bunting Yellowhammer	Linnet Reed bunting Song thrush Starling Curlew House sparrow Grey partridge

10.12 The following Anglesey plans were reviewed:

Hedgerows Coastal saline lagoons Field edges Gardens Lowland Heathland Maritime cliff and slope	Ponds Rivers and streams Sandy beaches Seagrass beds Wet reedbeds Woodland Plantations	Barn owl Chough Skylark GCNs Otter Red squirrel Water vole

Approach

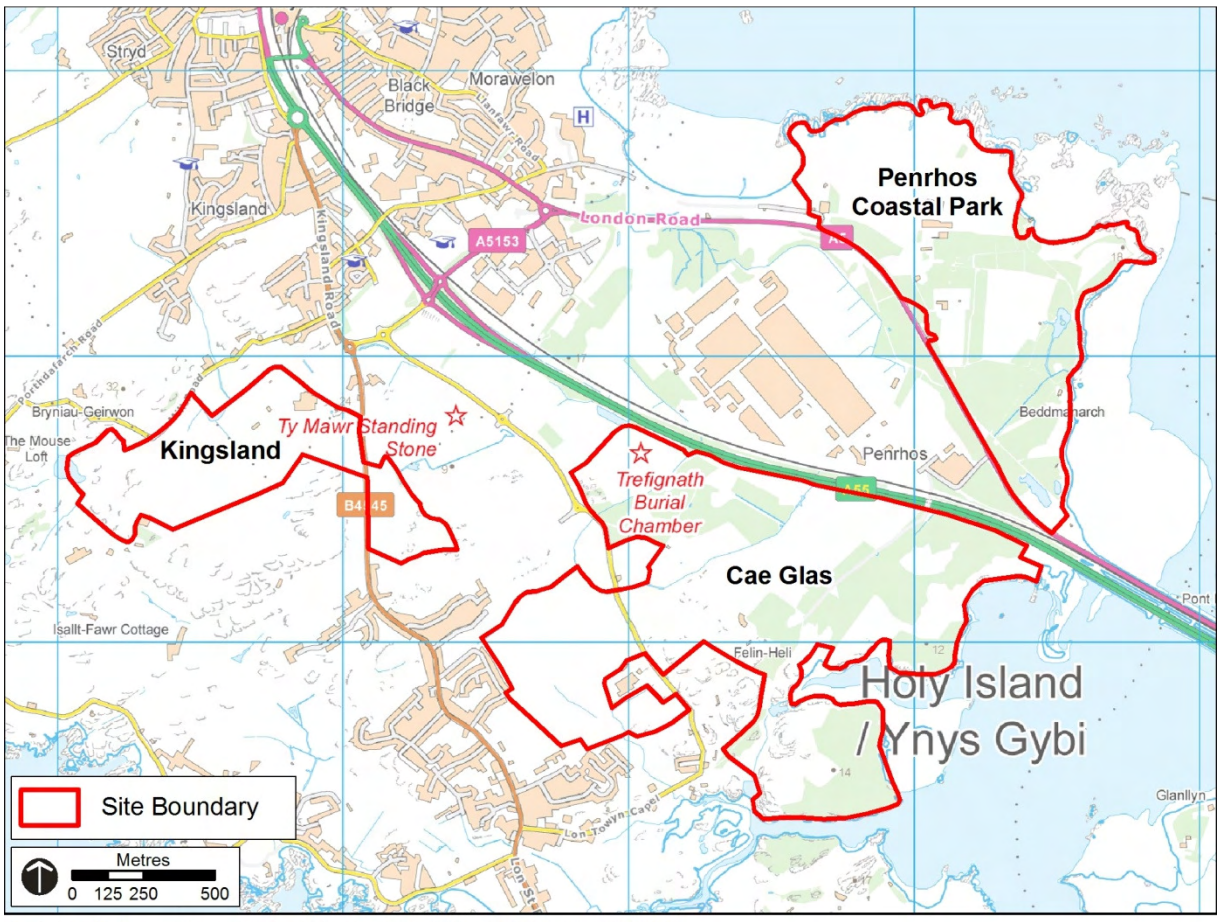
Assessment Methodology

10.13 The survey area and landscape context is illustrated in Figure 10.1.

10.14 The ecological assessment has been undertaken in accordance with Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment 1991) and the Institute for Ecology and Environmental Management's (IEEM) guidelines for ecological impact assessment in the UK[8].

10.15 As advised in TAN 5, discussions were held with IOACC and Countryside Council for Wales (CCW) to understand the potential effects the Penrhos Leisure Village development may have on species and habitats.

Figure 10.1: Location of Penrhos site and context of site areas.



Contains Ordnance Survey data © Crown copyright and database right 2011.

10.16 The following ecological surveys have been undertaken across the site on behalf of Land and Lakes (Anglesey) Limited:

- Desktop study – Capita Symonds (2010), TEP (2011 and 2012) – Appendix 10.1
- Extended Phase 1 Habitat Survey –Capita Symonds (2010), updated by TEP (2011) – Appendices 10.2 and 10.3
- Arboricultural assessment – TEP (2011) – Appendices 10.14 and 10.15

- NVC Phase 2 vegetation surveys – Capita Symonds (2010), TEP (2011) – Appendices 10.2 and 10.3
- Breeding Bird survey – Capita Symonds (2010), TEP (2011) – Appendices 10.2 and 10.4
- Winter Bird survey – Capita Symonds (early 2011), TEP (2011 to 2012) – Appendices 10.5 and 10.6
- Amphibian survey – Capita Symonds (2009 and 2010), TEP (2012) – Appendices 10.7 and 10.8
- Reptile survey – Capita Symonds (2010), TEP (2011 and 2012) -
- Bat surveys – Capita Symonds (2010), TEP (2011 and 2012)
- Badger survey – TEP (2011 and 2012)
- Red squirrel – TEP (2011)
- Water vole survey – Capita Symonds (2010), TEP (2012)

Desktop Search Methods

10.17 The desktop study included a search of publicly available sources as well as information requests from a range of organisations in order to identify pre-existing ecological information pertaining to designated sites, protected habitats or species and priority habitats or species.

10.18 Searches were undertaken by reviewing online sources (UK Biodiversity Action Plan (BAP), Anglesey LBAP, National Biodiversity Network Gateway (NBN), the adopted Local Plans, Magic Map and Countryside Council for Wales Interactive Mapping). Pre-existing ecological data obtained through field survey that was completed by other organisations on behalf of AAM also included in the information review.

10.19 The search radius for desktop records was 2km. The search radii for international and national wildlife sites was 5km and the search radii for local wildlife sites (SINCs) was 1km.

10.20 A summary of the information obtained from the desktop searches is presented in Table 10.1. Further details are presented in Appendix 10.1.

Table 10.1 Source of information reviewed for desktop survey

Source of information	Nature of information obtained
Magic Map: Multi-Agency Geographic Information for the Countryside	Online mapping system identifying statutory and rural designations, citations, natural area boundaries etc.
UK Biodiversity Action Plan	Identification of national priority species and habitats known to occur in the region.
Anglesey Biodiversity Action Plan	Identification of local priority species and habitats known to occur in the local area.
National Biodiversity Network Gateway (NBN)	Online national records database.
Countryside Council for Wales Interactive Mapping	Online mapping system for Wales for protected sites.
COFNOD	Identification of records for protected species within the local area
RSPB	Identification of records for bird species within the local area

Source of information	Nature of information obtained
BTO Birdtrack	Identification of records for bird species within the local area
WeBS data	Records for waders and wildfowl using the Beddmanarch Bay and Inland Sea.
AAM Biomass Plant Environmental Statement – August 2009	Identification of records for protected species within the local area
Holyhead Waterfront Environmental Statement December 2010	Identification of records for protected species within the local area
Menter Mon	Results of an otter survey undertaken on the Penrhos and Cae Glas coast in 2011.

Extended Phase 1 Habitat and Phase 2 NVC Surveys

10.21 An extended Phase 1 Habitat Survey was carried out across the survey area in 2010 by Capita Symonds. Phase 1 is a standard method of survey (JNCC 2007) and gives an overview of key habitats, wildlife corridors and the likely sites for species of conservation concern. Habitats of botanical interest were subject to a more detailed Phase 2 NVC survey. The 2010 Capita Symonds report is presented at Appendix 10.2.

10.22 Follow up habitat and NVC vegetation surveys were carried out by TEP ecologists Val Gateley and Sally Moralee. In early September 2011 21 quadrats (measuring 2m x 2m) were recorded across the three areas focussing on UKBAP and coastal habitats. The TEP Habitats and Vegetation Assessment report is presented at Appendix 10.3.

Breeding Bird Surveys

10.23 Breeding bird surveys were completed at Penrhos and Cae Glas in May and June 2010 by Capita Symonds. The survey was completed in accordance with the British Trust for Ornithology's (BTO) Breeding Bird Survey (BBS) methodology. Incidental bird records were noted at Kingsland. The 2010 Capita Symonds report is presented at Appendix 10.2.

10.24 In 2011 breeding bird surveys (inland and coastal) were undertaken by TEP Ornithology Manager Tim Ross MIEEM CEnv and experienced ornithologist Dr Mike Walker MIEEM during survey visits in June and July 2011. The survey area included Penrhos, Cae Glas and Kingsland and the Beddmanarch Bay and Inland Sea coastal areas. The TEP Breeding Bird Survey report is presented at Appendix 10.4.

Winter Bird Surveys

10.25 Winter bird surveys were completed at Penrhos and Cae Glas in January and February 2011 by Capita Symonds. The survey was completed in accordance with the BTO's Wetland Bird Survey (WeBS) methodology. Each visit lasted approximately 2½-3 hours, covering a period either side of low tide for Penrhos and high tide for Cae Glas. The 2011 Capita Symonds winter bird survey report is presented at Appendix 10.5.

10.26 In winter 2010-2011 winter bird surveys were undertaken at the Beddmanarch Bay and Inland Sea by TEP Ornithology Manager Tim Ross MIEEM CEnv and ornithologist Dr Mike Walker MIEEM. Survey visits were undertaken in October, December, February and March, ensuring that passage birds, as well as overwintering birds, were recorded. Following the October visit when low tide counts were recorded, the remaining three visits encompassed a complete tide cycle (high, medium and low tide) to provide a more detailed insight into roosting and feeding with these areas. The TEP Winter Bird Survey report is presented at Appendix 10.6.

Amphibian Surveys

10.27 Preliminary evening amphibian surveys were undertaken at two waterbodies by Capita Symonds including the Kingsland pond located at the far west end of Kingsland (SH274805)(three visits in May-June 2010 and two visits in May-June 2011) and a pond located at the south end of Penrhos (one visit in May 2010). The 2011 Capita Symonds great crested newt survey report is presented at Appendix 10.7.

10.28 In April 2012 TEP ecologists completed a daytime walkover survey during which all accessible waterbodies within Penrhos, Cae Glas and Kingsland sites and 500m survey buffers were subject to Habitat Suitability Index (HSI) Assessment. This method allows the potential suitability of each water body to support great crested newts to be determined. Ten ponds were subsequently identified as requiring nocturnal amphibian surveys to determine the presence of amphibian species. Four evening surveys were undertaken at each pond during which three survey methods were used including torchlit survey, bottle-trapping and egg searching. On occasion ponds were also hand netted where other survey techniques were inappropriate. The TEP Amphibian Survey report is presented at Appendix 10.8.

Reptile Surveys

10.29 A preliminary reptile survey was completed by Capita Symonds using artificial refugia between June and September 2010. Between two and three survey visits were undertaken. Survey areas included suitable habitat at Penrhos and in Trearddur Mews on the west side of Cae Glas.

10.30 TEP ecologists undertook reptile survey at Cae Glas and Kingsland entailing eight survey visits between early September and mid-October 2011. In 2012 TEP ecologists undertook a further reptile survey in Penrhos entailing seven visits between April and mid-May. All TEP reptile surveys were completed in accordance with the presence/absence methodology defined by Froglife Advice Sheet 10 for snake and lizard survey.

10.31 Further information regarding reptile survey methods are described within the TEP reptile survey report at Appendix 10.9.

Bat Surveys

10.32 An initial daytime scoping visit was undertaken on the 15th July 2011 by TEP's bat ecologist. The site was walked and preliminary assessments were made as to the potential value of the site for roosting bats.

10.33 Following the scoping survey, bat surveys were undertaken at the Penrhos site using a variety of survey techniques including the following:

- Internal and external surveys of buildings to identify potential for roosting bats.
- Assessment of trees to identify any of high bat roosting potential – August 2011.
- Targeted emergence and dawn re-entry surveys of any buildings and trees with high bat roost potential – July to September 2011 and May to August 2012.
- Walkover activities across the site to identify key bat migration/commuting routes and areas used for foraging – July to September 2011.

10.34 Further information regarding bat survey methods are described within the TEP bat survey report at Appendix 10.10.

Badger Surveys

10.35 Incidental observations of badger activity were recorded by Capita at Penrhos Coastal Park (CP) and Cae Glas during the course of undertaking field surveys in 2009 and 2010.

10.36 The TEP badger survey at Penrhos and Cae Glas on 18th November 2011 was carried out by ecologists Tim Ross CEnv MIEEM, Dr Mike Walker MIEEM and Alan Cowlishaw. The sites were searched for badger evidence including setts, latrines, snuffle holes and runs.

10.37 The survey focussed primarily on the Penrhos and the northern and eastern parts of Cae Glas, the areas where built development is proposed. Areas identified by Kehoe Countryside Ltd as having historical badger activity were also assessed in detail. Further information regarding badger survey methods are described within the TEP badger survey report at Appendix 10.11.

10.38 A bait marking badger study was undertaken within the Penrhos during April and May 2012. The purpose was to determine the territory extents of badger family groups present within Penrhos.

Red Squirrel Surveys

10.39 A red squirrel survey was undertaken by TEP ecologists within the conifer plantations at Cae Glas. The survey involved walking a series of transect routes using a standardised time-area count method during two survey visits during October and November 2011. As well as transect techniques the woodland areas were also searched for feeding evidence. Baited cameras traps were operated at two suitable woodland locations at Penrhos between August and Septeber 2012. The squirrel survey is reported at Appendix 10.12.

Water Vole Surveys

10.40 Capita Symonds undertook a water vole survey on a stretch of ditch of the north west boundary of Trearddur Mews on the west side of Cae Glas in June 2010. The 2010 Capita Symonds report is presented at Appendix 10.2.

10.41 In April 2012 TEP ecologists completed a daytime walkover survey where all accessible waterbodies and ditches within Penrhos, Cae Glas and Kingsland sites were subject to a habitat assessment to determine their suitability for water voles. This was followed up by water vole surveys in April and May 2012. Further information regarding water vole survey methods are described within the TEP water vole survey report at Appendix 10.13.

Consultations

10.42 As part of the study process, TEP conducted discussions and meetings with various parties concerning scoping of surveys, the predicted effects of development proposals and approaches to mitigation. These parties included CCW, RSPB, Anglesey County Council, Menter Mon and the Red Squirrel Trust Wales.

Significance Criteria

10.43 IEEM guidelines require ecological receptors to be valued according to a geographical scale, interpreted as follows for this development:

International: Internationally designated sites (e.g. Special Areas for Conservation (SAC), Special Protection Areas (SPA), Ramsar sites);
National: Nationally designated sites (e.g. Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR));
Regional: Local Nature Reserves; sites of importance for nature conservation; ancient woodlands; habitats or species populations of importance for Anglesey;
Local: Significant ecological features such as old hedgerows, woodlands habitats or species populations of importance for Holyhead Island;
Site: Features with ecological value of significance only within the application site or immediately adjacent environs; and
Negligible: Areas with very low or no ecological value, for example built development or intensive agricultural land.

10.44 The value of an ecological receptor is then used to determine the legal, policy and development control consequences of a significant impact. A significant impact, in ecological terms, is defined in the IEEM guidelines as:

> *'an impact (adverse or positive) on the integrity of a defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, including cumulative impacts.'*

10.45 The Government Circular ODPM 2005/06[9] defines site integrity as:

> *'the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of species for which it was classified'.*

10.46 The IEEM's use of scales of value helps a decision-maker to reach a balanced judgement. For example a significant impact on a receptor of 'local' value may be outweighed by a 'regional' benefit arising from the proposed development.

10.47 The IEEM guidelines also require consideration of the likelihood that a change or activity will occur as predicted, and also the degree of confidence in that impact assessment. A four point scale used to standardise the degree of certainty in a prediction is stated as follows:

Certain/Near Certain: probability estimated at 95% chance or higher;
Probable: probability estimated at above 50% but below 95%;
Unlikely: probability estimated above 5% but below 50%;
Extremely Unlikely: probability estimated at less than 5%.

10.48 When describing changes or activities and impacts on ecosystem structure and function, the following parameters are characterised:

Positive or Negative: is the impact positive or negative?
Magnitude/Extent: refers to the size or "amount" of the impact and the area over which the impact occurs;
Duration: The time for which the impact is expected to last prior to recovery or replacement of the resource or feature;
Reversibility: an irreversible (permanent) impact is one from which recovery is not possible within a reasonable timescale: a reversible (temporary) impact is one from which spontaneous recovery is possible or for which effective mitigation is possible;
Timing/Frequency: some changes may only cause an impact if they happen to coincide with critical life-stages or seasons (e.g. bird nesting season).
Assumptions / Limitations

10.49 There are limitations associated with the scope of any assessment. Some aspects of the details development designs, including lighting schemes, are not currently available at this stage. Assumptions are therefore made with regards to impacts upon fragmentation and isolation and worse case scenarios are presumed.

10.50 Details of construction methods are not currently available. However, the greatest impacts arising on ecological receptors during the construction stage are most commonly generated from site clearance works. The ecological assessment and design of the ecological mitigation measures are driven by the scale of the loss of habitats and resulting effects upon species from within the works area.

10.51 Calculations for habitat losses and gains have been based on an illustrative masterplan and therefore figures stated in Table 10.10 are therefore also indicative. Additional clarification can be provided at the detailed design stage.

Baseline Conditions

Desk-based Survey

Protected Sites

Beddmanarch – Cymyran SSSI

10.52 All of the east coastline of Penrhos and the entire coastline of the Inland Sea, which includes Cae Glas, is located on the boundary of the Beddmanarch – Cymyran SSSI.

10.53 This site is primarily designated for its ornithological and botanical interest. There are large areas of sandbank, mudflat and saltmarsh as well as two stands of dune. The site is especially important for overwintering ringed plover, greenshank, red breasted-merganser and goldeneye. A number of coastal birds also breed within the SSSI although the importance of the rocky areas within the Inland Sea for tern breeding colonies has diminished in recent years.

Holy Island Coast SPA/SAC/SSSI

10.54 Holy Island SPA qualifies under Article 4.1 of the Directive (79/409/EEC) for supporting populations of European importance of the Annex 1 species, chough (18 pairs counted in 1998 – breeding and overwintering). The resident chough

population depend on the diverse mix of habitats within the SPA/SSSI and their low intensity agricultural management.

10.55 The primary reason for the designation of Holy island Coast SAC relates to the presence of the Annex 1 Habitats 1230 Vegetation sea cliffs of the Atlantic and Baltic coasts and 4030 European dry heaths. Maritime heath habitat supports the rare spotted rock-rose *Tuberaria guttata.* Holyhead Coast SAC is the most important site in Wales for European dry heaths. The SAC also contains the qualifying Annex 1 habitat 4010 North Atlantic wet heaths with *Erica tetralix* although this is not a primary reason for designation.

10.56 Holy Island Coast SSSI is located approximately 900m to the south west of Kingsland, 1.8km to the west of Cae Glas and 3km to the south west of Penrhos.

10.57 Holy Island Coast SSSI is designated for its seabird colony; its guillemots, razorbills and puffins combine to create one of the largest colonies of breeding auks in North Wales. Fulmar and kittiwake also nest on these cliffs together with peregrine and chough.

10.58 Holy Island SSSI is also designated for its habitats which include heathland, maritime grassland and coastal cliffs and ledges. The coastal cliffs and the associated grassland and heaths are of major botanical interest. The South Stack fleawort *Tephroseris integrifolia subsp. maritima* is unique to the site and the nationally rare spotted rock-rose *Tuberaria guttata* occurs within the mosaic of heath and grassland communities above the cliffs.

Tre Wilmot SSSI

10.59 Tre Wilmot SSSI is a large area of acidic lowland heath overlying a number of rocky ridges and depressions. The site is dominated by ling heather and western gorse. Plants of particular note include *Gentiana pneumonanthe* marsh gentian and pillwort *Pilularia globulifera*, both plants having decrease in range nationally due to reclamation of their habitats. Chough feed in areas of short vegetation around rock outcrops or recently burnt vegetation.

10.60 Tre Wilmot SSSI is a part of the Holy Island Coast SPA/SAC. The SSSI is located just over 1km north west of Kingsland.

Porth Diana SSSI

10.61 Porth Diana SSSI is designated for its coastal heath vegetation including the very localised annual rock rose *Tubercaria guttata* ssp. The SSSI is located 1.6km south west of Cae Glas.

Glannau Rhoscolyn SSSI

10.62 Glannau Rhoscolyn SSSI, a component site of the Holy island Coast SPA, is designated for its geological interest, its lowland and coastal heath habitats and its ornithological and marine interest. The site supports spotted rock rose and the Annex 1 bird species chough and peregrine both nest on the cliffs. The SSSI is located 4.6km south of Cae Glas.

Glannau Rhoscolyn Reedbed SSSI

10.63 Glannau Rhoscolyn Reedbed SSSI is designated for tall fen habitat which is dominated by common reed *Phragmites australis*. The SSSI also supports a range of breeding birds and is located 4km south of Cae Glas.

Anglesey Valley Lakes SSSI

10.64 Anglesey Valley Lakes SSSI is designated for its mesotrophic marshland and grassland habitats. There are two lakes including Llyn Penrhyn and Llyn Dinam and a number of smaller waterbodies. The SSSI attracts overwintering wildfowl including teal, tufted duck, pochard and goldeneye. The SSSI is located4.1km south east of Penrhos and Cae Glas.

Llyn Dinam SAC

10.65 The primary reason for the designated of Llyn Dinam SAC relates to the presence of the Annex 1 Habitats 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation. Common reed is abundant on the lake margins while rigid hornwort *Ceratophyllum demersum* is abundant in shallow open water. Llyn Dinam SAC is located 4.1km south east of Penrhos and Cae Glas. Llyn Dinam SAC forms a part of the Anglesey Valley Lakes SSSI.

10.66 Locations of these sites in relation to the application area are illustrated in Figure 10.2. Details of the designations, including citation forms, are detailed in Appendix 10.1.

10.67 There are no Local Nature Reserves (LNRs) within 2km of the application area.

Habitats and Flora

Habitats

10.68 Detailed findings of the habitat survey, including target note descriptions (TNs) and species lists, are given in Appendix 10.3. The habitats present across the application area are illustrated in Figures 10.3 to 10.5 (Drawings G2977.049a to G2977.051a).

10.69 Table 10.2 quantifies the habitats of Penrhos.

Table 10.2 Quantification of habitats present within Penrhos

Phase 1 Code	Habitat	Area (ha)	Nature Conservation Status
	Penrhos site extent	c.61.31	n/a
A111	Semi-natural broadleaved woodland	0.87	Anglesey BAP
A112	Broadleaved plantation woodland	22.07	Anglesey BAP
A122	Coniferous plantation woodland	2.07	Anglesey BAP
A131	Semi-natural mixed woodland	2.50	Anglesey BAP
A21	Dense/continuous scrub	3.88	-
A22	Scattered scrub	1.13	-
B21	Unimproved neutral grassland	2.99	UKBAP
B22	Semi-improved neutral grassland	3.15	-
B31	Unimproved calcareous grassland	0.05	UKBAP
B5	Marsh/marshy grassland	0.13	-
B6	Poor semi-improved grassland	17.86	-
F1	Swamp	0.08	UKBAP
F21	Marginal vegetation	0.24	-
G11	Eutrophic standing water	0.87	Some ponds are UKBAP All are Anglesey BAP
J2	Hedgerows	364 m	UKBAP and

Phase 1 Code	Habitat	Area (ha)	Nature Conservation Status
			Anglesey BAP
J12	Amenity grassland	3.50	-
J26	Ditch	479 m	-

10.70 Table 10.3 quantifies the habitats of Cae Glas.

Table 10.3 Quantification of habitats present within Cae Glas

Phase 1 Code	Habitat	Area (ha)	Nature Conservation Status
	Cae Glas site extent	c.124.41	n/a
A111	Semi-natural broadleaved woodland	8.71	Anglesey BAP
A112	broadleaved plantation woodland	8.95	Anglesey BAP
A122	Coniferous plantation woodland	12.86	Anglesey BAP
A132	Mixed plantation woodland	11.16	Anglesey BAP
A21	Dense/continuous scrub	8.55	-
A22	Scattered scrub	12.89	-
A31	Broadleaved parkland	1.49	-
B11	Unimproved acid grassland	0.75	UKBAP
B12	Semi-improved acid grassland	30.87	UKBAP
B21	Unimproved neutral grassland	0.84	UKBAP
B5	Marsh/marshy grassland	5.01	-
B6	Poor semi-improved grassland	12.66	-
C11	Continuous bracken	0.94	-
C31	Tall ruderal	0.00	-
C32	Non-ruderal	0.24	-
D11	Dry acid dwarf shrub heath	0.94	UKBAP
F1	Swamp	1.30	UKBAP
F21	Marginal vegetation	0.05	-
G11	Eutrophic standing water	0.03	Some ponds are UKBAP All are Anglesey BAP
G12	Mesotrophic standing water	0.05	Some ponds are UKBAP
G16	Brackish standing water	0.19	Anglesey BAP
H24	Scattered plants saltmarsh	0.87	UKBAP
H26	Dense continuous saltmarsh	1.00	UKBAP
H81	Maritime hard cliff	0.30	UKBAP
H84	Coastal grassland	0.32	UKBAP
H85	Coastal heathland	0.74	UKBAP
I111	Natural inland cliff acid/neutral	0.12	UKBAP
I141	Other exposure acid/neutral	2.13	-
J2	Hedgerows	639 m	UKBAP and Anglesey BAP
J12	Amenity grassland	0.43	-
J26	Ditch	2797 m	
J36	Building	0.01	None

10.71 Table 10.4 quantifies the habitats of Kingsland.

Table 10.4 Quantification of habitats present within Kingsland

Phase 1 Code	Habitat	Area (ha)	Nature Conservation Status
	Kingsland site extent	**33.07**	
A21	Dense/continuous scrub	1.64	-
A22	Scattered scrub	1.34	-
B11	Unimproved acid grassland	0.02	UKBAP
B5	Marsh/marshy grassland	1.07	-
B6	Poor semi-improved grassland	26.67	-
C31	Tall ruderal	0.18	-
F1	Swamp	1.25	UKBAP and Anglesey BAP
G11	Eutrophic standing water	0.29	UKBAP*
G21	Eutrophic running water	0.06	UKBAP and Anglesey BAP
I141	Other exposure acid/neutral	0.54	-
J2	Hedgerows	1,432 metres	UKBAP and Anglesey BAP
J26	Ditches	455 m	-

*Limited to ponds that support the UKBAP species common toad or common eel.

Flora

10.72 The Schedule 8 protected plant species native bluebell *Hyacinthoides non-scripta* (*Wildlife and Countryside Act 1981, as amended*) was recorded within parts of the woodland at Penrhos. Bluebells were recorded in 15 out of 26 woodland block at Penrhos during the 2010 habitat survey with a typical Domain value of 7 (34 to 50% coverage). Bluebells were also recorded as widespread within woodland associated with the Cae Glas Farm and Tre-gof ruins at Cae Glas.

10.73 Plant species which are common on Anglesey but rare elsewhere include seaside centaury *Centaurium littorale*, recorded at Penrhos, and wood small reed *Calamagrostis epigejos*, recorded on the Cae Glas coastline. Lanceolate spleenwort *Aspenium obovatum*, also recorded on the Cae Glas coastline, is listed on the Anglesey rare plants register.

Species Desktop Records

10.74 Table 10.5 identifies species of conservation concern within the site and within 1km of the site boundary. Further details regarding these records are presented in Appendix 10.1.

Table 10.5 Species of Conservation Concern known from desktop records (2007 to 2012)

Species group	Recorded in application area	Recorded within 1km of application area
Amphibians	Penrhos Common toad *Bufo bufo*	Cae Glas Common toad *Bufo bufo*
Reptiles	Penrhos Common lizard, slow worm Cae Glas Common lizard	
Bats	Penrhos Common pipistrelle, soprano pipistrelle, whiskered bat, Daubenton's bat Cae Glas Common pipistrelle, whiskered/Brandt's bat, Daubenton's bat Kingsland Common pipistrelle, whiskered bat, noctule	Common pipistrelle, soprano pipistrelle, Daubenton's bat, whiskered/Brandt's bat, brown long-eared bat, noctule.
Other mammals	Penrhos Badger Cae Glas Badger, water vole, red squirrel, otter* (*Mentor Mon completed otter surveys of Penrhos and Cae Glas coastline in May and September 2011 and did not find any evidence for the presence of otters – Pritchard, *pers. comm*. Apr 2012).	Penrhos Water vole, otter
Birds	Penrhos UKBAP/Red-listed: Lesser black-backed gull, dunnock, house sparrow, linnet, song thrush. Amber-listed: Black-headed gull, Mediterranean gull (also a Schedule 1 species although it does not breed anywhere in North Wales), mallard, willow warbler, whitethroat, curlew. Cae Glas UKBAP/red-listed: Dunnock, song thrush Amber-listed: Willow warbler, white-throat, curlew, mistle thrush Other notable species: grey heron Kingsland UKBAP/red-listed: Linnet, reed bunting Amber-listed: tufted duck, housemartin, swallow Other: sedge warbler	Penrhos Chough, mallard, song thrush, shelduck, little grebe, oystercatcher, black-headed gull, common gull, herring gull, sandwich tern. Cae Glas Mallard, song thrush, shelduck, little grebe, oystercatcher, black-headed gull, common gull, herring gull, sandwich tern.
Fish	None	None
Plants	Penrhos Bluebell *Hyacinthoides non-scripta*	Penrhos/Cae Glas Starved wood-sedge *Carex*

Species group	Recorded in application area	Recorded within 1km of application area
		depauperata Dwarf eel-grass *Zostera noltei* Wood small-reed *Calamagrosts epigejos* Lanceolate speenwort *Aplenium obovatum* <u>Kingsland</u> Locally rare plants: Seaside centaury *Centaurium littorale* Golden samphire *Inula crithmoides*
Fungi	None	None
	Moth records of importance for Anglesey (2009): <u>Penrhos</u> Buff footman, least black arches, muslin footman, pinion-streaked snout, scallop shell, triple spotted clay, *Ypsolopha sequella* (micro-moth) <u>Cae Glas</u> Brussels lace, buff footman, heath rustic, triple spotted clay	None

Breeding birds

10.75 45 bird species were observed at both Penrhos and Cae Glas during the 2011 inland breeding bird survey. 31 bird species were observed during the 2011 breeding bird survey at Kingsland.

10.76 No Schedule 1 species were observed during Penrhos 2011 survey. Evidence indicates that the Schedule 1 species common crossbill nests within the conifer plantation within Cae Glas. The Schedule 1 bird chough was recorded just outside Kingsland although the grassland habitats of Kingsland are mostly unsuitable for feeding chough.

10.77 The south part of Cae Glas adjacent to the Inland Sea has been assessed as being of local importance for breeding birds on account of the range of UKBAP and red- and amber-listed Birds of Conservation Concern (BoCC) that these sites support. A heronry is present within the conifer plantation within Cae Glas.

10.78 Penrhos is considered to have site level importance for breeding birds, however the woodland supports only a small number of woodland breeding bird specialists indicating that the woodland is in a sub-optimal state.

10.79 The pasture at the north end of Penrhos has some limited value as a feeding area for small flocks of curlew but is unsuitable for chough feeding.

10.80 Kingsland is assessed to be of less than local importance for breeding birds since the area supports a limited range of bird species including very few declining BoCC. The two areas of swamp have some value for reed bunting.

10.81 A single chough was recorded on land to the south of Kingsland and a group of four chough was seen flying to the south of the site. Grassland within Kingsland

is unsuitable for chough foraging either because it is managed intensively for silage or because it lacks management.

10.82 Further information regarding the breeding bird survey results are described within the TEP breeding bird survey report at Appendix 10.4.

Winter birds

10.83 None of the birds observed at the Penrhos and Cae Glas coast during the 2011/2012 Winter Bird Survey were recorded in numbers exceeding GB thresholds, as defined by the BTO. None of the 2011/2012 Wetland Bird Survey (WeBS) counts of these species in Beddmanarch Bay and the Inland Sea exceeded GB thresholds.

10.84 Peak counts recorded by TEP Ecologists and WeBS volunteers for bird species for which the Beddmanarch-Cymyran SSSI are designated are presented in Table 10.6.

Table 10.6 Peak counts of birds of importance with the Beddmanarch-Cymyran SSSI – Winter 2011 – 2012

Species	TEP peak count	WeBS peak count	GB threshold*
Ringed plover	105 – Nov 2011	34 – Jan 2012	340
Greenshank	4 – Nov 2011	9 – Nov 2011	50**
Red-breasted merganser	39 – Mar 2012	75 – December 2011	84
Goldeneye	15 – Jan 2012	39 – Jan 2012	200

*GB threshold represent 1% of the British population (Holt *et al*., 2009). **the minimum GB threshold stated by the BTO is 50 birds.

10.85 During the 2011/2012 winter bird survey and WeBS counts, moderate numbers of the following wader and wildfowl species were recorded using Beddmanarch Bay (adjacent to Penrhos) and the Inland Sea (adjacent to Cae Glas): oystercatcher, lapwing, golden plover, grey plover, knot, dunlin, bar-tailed godwit, wigeon, brent goose, greylag goose, teal and coot.

10.86 The winter bird survey identified a number of specific areas within the survey area which are regularly used by certain specific wader/wildfowl species or a wide range of species for roosting and/or feeding activities. These included the following areas:

- Beddmanarch Bay mudflats
- Rocky outcrops at Carrig yr Adar
- Shingle Spit at north of Inland Sea
- Inlet at north west of Inland Sea and associated saltmarsh

10.87 Further information regarding the winter bird survey results are described within the TEP winter bird survey report at Appendix 10.6.

Bats

Internal and External Building Assessment

10.88 References in this section relate to Appendix 10.10, Drawing G2977.016.

10.89 Two groups of buildings and two isolated buildings within Penrhos were identified during the internal and external building assessment to have high value for

roosting bats. These included Erw Deg (Building 1 house and water tower), the Farm Buildings (Building 11 – stone barns only), The Tower (Building 8) and Charay (Building 10).

10.90 Fresh bat droppings were found at Erw Deg (Building 1). Old bat droppings were found within two of the Farm Buildings at Penrhos (Building 11).

10.91 Two buildings in Cae Glas were also identified as having potential high value for roosting bats include Cae Glas Farm (Building 6) and Cae Glas Derelict Building (Building 15).

Emergence and Dawn Swarming Surveys

10.92 No swarming activity was recorded during the emergence and dawn swarming surveys.

10.93 A probable brown long-eared bat was recorded emerging from the Water Tower at Erw Deg (Building 1) on 25th July although no emerging bats were recorded on subsequent visits.

10.94 A single common pipistrelle was recorded on 24th August 2011 emerging from a group of trees within Penrhos which have some limited potential to support roosting bats. It is likely that a number of day bat roosts are present within the trees identified as having the greatest potential for roosting bats in the north of Penrhos, particularly woodland area W63.

10.95 Emergence surveys at the three confirmed roost sites in buildings indicate that the use of these roost sites is very transient since no bats were recorded emerging or swarming at Erw Deg house or the pavilion building.

10.96 No bats were recorded emerging from any buildings within Cae Glas.

Activity Surveys

10.97 Bat species recorded during the activity surveys included common pipistrelle, soprano pipistrelle, noctule and myotis species. The myotis bats recorded included whiskered/Brandt's and Daubenton's bat species.

Penrhos:

10.98 Low levels of common pipistrelle activity were recorded throughout Penrhos with slight concentrations of activity to the north and east of the woodland area. Moderate levels of common pipistrelle activity were also recorded foraging around the Erw Deg building cluster (Building 1), along the adjacent track and over the Farm Buildings (Building 11) in the north. Activity included commuting, foraging and social calls.

10.99 Low levels of soprano pipistrelle bat activity were recorded over the largest pond in the south of the site with less frequent activity recorded in scattered locations in the north of the site.

10.100 Moderate levels of myotis species activity was recorded over the Erw Deg building cluster (Building 1) and within the area of woodland where a bat emergence was recorded on the 26th July 2011.

10.101 Low levels of noctule activity were recorded in the very far southern corner of the site on the main track, as well as along the coastal path in the far north east of the site.

Cae Glas:

10.102 Low levels of common pipistrelle, soprano pipistrelle, noctule and myotis bat species were recorded throughout the Cae Glas area during the 2011 bat activity surveys. Although no moderate levels of bat activity were recorded, regular low levels of common pipistrelle was recorded along the main track in the north east area, and over the woodland area in the north west of the Cae Glas area.

Kingsland:

10.103 The Kingsland area was found to support very low levels of bat activity, almost exclusively common pipistrelle although it is possible that brown long-eared bat was under recorded.

Tree and Woodland Assessment

10.104 The majority of trees and woodland surveyed are relatively young and of low habitat value for roosting bats but will provide foraging habitat and connectivity to surrounding tree cover and other features such as ponds and waterways.

10.105 Trees with moderate and high bat roosting potential are situated in proximity to the ruins of Tre-gof Farm in the Cae Glâs area and in several woodland blocks in the central and southern parts of Penrhos including W22, W57, W63, W65 and W68. The locations of these woodland blocks are illustrated at Appendix 10.15 - Drawings D2977.002 & D2977.003.

Badgers

10.106 Detailed badger survey findings are included in Appendix 10.11 which is a confidential document for limited circulation.

10.107 The desk-based survey revealed that badgers had historically been recorded within 2km of the site during the early 1980's. Correspondence with local wildlife groups revealed that badgers had since become extinct in the Holy Island as a result of culling, and were subsequently re-introduced during the 1990's.

10.108 Previous walkover badger surveys were carried out at Penrhos by Capita Symonds in 2010. One active main sett was identified in Penrhos.

10.109 During the 2011 Badger Survey, two distinct areas of badger activity were identified within Penrhos (Areas 1 and 2 – refer to Drawing G2977.22A in Appendix 10.11). Area 1 included a main sett, an annexe sett and 4 outlier setts.

10.110 Area 2 included a main badger sett, an annexe sett, and a subsidiary sett. The bait marking survey confirmed that Areas 1 and 2 were occupied by the same family group of badgers.

10.111 Five active main badger setts were identified within Cae Glas (refer to Drawing G2977.23 in Appendix 10.11). There are therefore likely to be at least two distinct badger family groups within Cae Glas.

10.112 An additional main sett, annexe sett and outlier sett were found outside the site boundary, adjacent to the AAM plant (refer to Drawing G2977.24A in Appendix 10.11). The bait marking survey confirmed that this sett was occupied by a separate family group.

Red Squirrel

10.113 Capita Symonds, in 2010, found red squirrel feeding remains in Cae Glas, in the woodland dominated by Scots pine along the northwest corner of the Inland Sea.

10.114 During the 2011 red squirrel survey carried out by TEP, four red squirrels were recorded during the first visit (two in each conifer plantation block), and one red squirrel was recorded during the second visit.

10.115 Feeding remains of red squirrels were also found to be widespread across the woodland areas in eastern Cae Glas.

10.116 Additional sightings of a red squirrel juvenile have been recorded within Cae Glas during 2011 confirming recent red squirrel breeding in this area (S. Roberts, *pers comm.*).

10.117 Baited camera traps established in two woodland locations in Penrhos in August to September 2012 did not record any red squirrel activity.

Water Voles

10.118 The Capita Symonds survey confirmed that numerous water vole feeding stations were identified along the ditch on the north west boundary of Trearrdur Mews on the west side of Cae Glas. In addition, seven sites were found with water vole droppings including some accumulated into latrines.

10.119 A water vole was observed in Ditch 11 close to the Capita Symonds water vole site. Ditch 11 will not be affected by development proposals. A single burrow was identified in Ditch 14 close to the north boundary of Cae Glas. No evidence was found in Ditch 14 to confirm water vole presence although the east end of the ditch is suitable for water voles. The east end of Ditch 16, also in Cae Glas, is also suitable for water voles.

Reptiles

10.120 The desk-based survey revealed that common lizard had historically been recorded within 1km of the Penrhos Coastal Park (CP), Cae Glas and Kingsland areas during the early 1990's. Common lizard and slow worm have also previously been recorded at the south east corner of Kingsland.

10.121 Common lizard and slow-worm were observed along the coastal strip of Penrhos during surveys undertaken by Capita Symonds in 2010. However no reptiles were recorded using potential reptile habitat located within Penrhos during 2012. Incidental observations of common lizard were also observed in the southeast-facing coastal habitats of Cae Glas.

10.122 During the 2011 reptile survey, both common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*) were recorded within the Cae Glas area. Slow worm were only recorded within one location in the south eastern corner of Trearddur Mews on one occasion. The majority of common lizard records were concentrated in the capped landfill area adjacent to the inland sea in the north east of Cae Glas.

10.123 No reptiles were recorded in the Kingsland area.

Amphibians

10.124 The locations of ponds and ditches assessed for their potential to support amphibians are illustrated at Appendix 10.8 – Drawing G2977.048.

10.125 With the exception of Ditch 17 to the north of Cae Glas, none of the other ditches were suitable for great crested newt (GCN) breeding. The majority of ditches were found to be dry at the time of survey.

10.126 Table 10.7 below provides the result of the Habitat Suitability Index Assessment undertaken to determine the suitability of each pond for GCNs.

Table 10.7 Great Crested Newt Habitat Suitability Index assessment results April 2012

Pond No.	HSI result	GCN suitability	Distance from proposed works (metres)
1	0.55	Below average	10
2	0.51	Below average	35
3	0.65	Average	250
4	0.45	Poor	335
5	0.68	Average	65
6	No access	-	45
7-10	Brackish water	-	-
11	0.56	Below average	
12	0.53	Below average	
13	0.74	Good	110
14	No access	-	0
15	0.77	Good	270
16	0.77	Good	
17	0.87	Excellent	
18	0.69	Average	160
19	0.64	Average	120
20	0.78	Good	90
21	0.76	Good	500
22	Dry	-	0
23	0.77	Good	220
24-27	No access	-	0/505/255/420
28	0.43	Poor	750

10.127 Four amphibian species were recorded during the 2012 survey including smooth newt, palmate newt, common frog and common toad. No great crested newts were found during the survey. Survey findings are presented in Table 10.8 (see also Appendix 10.8 – Drawing G2977.048).

Table 10.8 Amphibian survey results for 2012

Site / Species	Smooth Newt	Palmate Newt	Common Frog	Common Toad
Penrhos	-	-	Ponds 1, 3	Ponds 1, 3
Cae Glas	*Ponds 15, 16*	*Ponds 15, 16*	Pond 5 *Ponds 15, 17*	*Ponds 15, 16*
Kingsland	Pond 23 *Ponds 20, 21, 25*	Pond 23 *Ponds 20, 21, 25*	Pond 23 *Ponds 20, 21, 25*	Pond 23 *Ponds 20, 21, 25*

Potential Impacts

10.128 This section details the potential impacts of the scheme and their significance (before mitigation). It considers:

- Short term (construction phase), medium term and long term (operational phase) impacts; and
- Indirect, direct, adverse and beneficial effects as well as consideration of spatial and temporal scope of the effects.

Assumptions

10.129 IEEM guidance requires that impacts be assessed with and without mitigation. However, there are a range of standard working practices and avoidance measures (in relation to ecology) that are used during construction phases to avoid statutory offences. Examples of such measures are outlined in the following paragraphs.

10.130 As it is certain these avoidance measures will be applied to the redevelopment, impacts "without mitigation" are assessed on the basis these measures would be applied.

Trees and hedges

10.131 Appropriate tree protection measures will be implemented for all retained woodland and tree areas. These measures will be in accordance with current standards (BS5837:2012 Trees in relation to design, demolition and construction – recommendations). These measures will minimise incidental damage and disturbance to the habitats and the species they support.

10.132 Assumptions have been made with regard the quantities of hedgerows, trees and plantation woodland that would require removal to facilitate development and access. Actual removal of these features shall be minimised as far as practical.

10.133 A detailed assessment of arboricultural impact has been made outside the IEEM guidelines and is provided at Appendix 10.15.

Ponds and watercourses

10.134 Impacts during the construction and operational phases will be avoided by preventing silt-laden or contaminated run-off from entering ponds and watercourses. This will be achieved through the use of bunds to catch and divert runoff, drip trays to prevent any oil and fuel spillages spreading and net fencing to catch windblown rubbish.

Nesting birds

10.135 Tree, hedge and scrub vegetation removal will take place outside the bird nesting season (avoiding the period March to August inclusive). If this is not achievable, removal will only be allowed on confirmation by an ecologist that no nesting birds are present. However, nesting bird inspections are less suitable for large areas of dense vegetation such as mature woodland. In these situations, it may not be possible to confidently confirm absence of nesting birds and removal will have to wait until after the nesting season.

10.136 Retained hedges and trees will be protected from machinery and accidental damage using fencing (BS5837:2012), which will minimise disturbance to nesting birds in retained habitat.

Evaluation and Identification of Potential Ecological Receptors

10.137 Although there are numerous ecological features of significant value within and out with the application area, not all will be subject to effects from the proposals. The identification of potential ecological receptors is based upon the changes that will arise as a result of the proposals. Figures 10.6 to 10.8 illustrate some of the ecological constraints associated with these ecological receptors.

10.138 Table 10.09 presents the initial evaluation of each feature of ecological value within the site and whether it is likely to be subject to significant effects arising from the proposals. Any feature that may be significantly affected is considered a potential ecological receptor and subject to further impact assessment.

Table 10.9 Identification of potential ecological receptors

Valued Feature	**Value** ***and status***	**Location/Extent Relative To Site**	**Potential Ecological Receptor?**
Beddmanarch-Cymyran SSSI	National	Beddmanarch-Cymyran SSSI is located immediately adjacent to much of the Penrhos coast and all Cae Glas coast. The SSSI is designated for its ornithological and botanical interest. Important overwintering waterbirds include ringed plover, greenshank, red-breasted merganser and goldeneye. The UKBAP priority habitats vegetated shingle, intertidal mudflats and seagrass beds occur exclusively in the SSSI and will be assessed as being a part of the SSSI.	**YES** Works are proposed within 50m of the SSSI. Post-construction disturbance effects in particular require assessment.
Holy Island Coast SPA	International	Holy Island Coast SPA is located 900m to the south west of Kingsland, 1.8km to the west of Cae Glas and 3km to the south west of Penrhos. The SPA is designated for its resident chough population.	**YES** No works are proposed within 1km of the SPA. However indirect impacts such as displacement from foraging habitat require assessment.
Holy Island Coast SAC	International	For location details see above. The SAC is designated for its Annex 1 habitats including: 1230 Vegetation sea cliffs of the Atlantic and Baltic coasts and 4030 European dry heaths and 4010 North Atlantic wet heaths with *Erica tetralix.*	**YES** No works are proposed within 1km of the SAC. However indirect impacts such as vegetation trampling caused by increased visitor numbers require assessment.

Valued Feature	Value *and status*	Location/Extent Relative To Site	Potential Ecological Receptor?
Holy Island Coast SSSI	National	For location details see above. The SSSI is designated for its breeding auks and other cliff nesting birds.	**NO** No works are proposed within 1km of the SSSI. There are no predicted effects on Holy Island Coast SSSI. This feature is **scoped out** of the assessment.
Tre Wilmot SSSI	National	Tre Wilmot SSSI is located just over 1km north west of Kingsland. The SSSI is designated for its acidic lowland heath habitats and plant species.	**NO** No works are proposed within 1.3km of the SSSI. There are no predicted effects on Tre Wilmot SSSI. This feature is **scoped out** of the assessment.
Porth Diana SSSI	National	Porth Diana SSSI is located 1.8km south west of Cae Glas. The SSSI is designated for its coastal heath vegetation.	**NO** No works are proposed within 2.3km of the SSSI. There are no predicted effects on Porth Diana SSSI. This feature is **scoped out** of the assessment.
Glannau Rhoscolyn SSSI	National	Glannau Rhoscolyn SSSI is located 4.6km south of Cae glas. The SSSI is designated for its heath habitat and its breeding chough and peregrine.	**NO** No works are proposed within 5.5km of the SSSI. There are no predicted effects on Glannau Rhoscolyn SSSI. This feature is **scoped out** of the assessment.
Glannau Rhoscolyn Reedbed SSSI	National	Glannau Rhoscolyn SSSI is located 4km south of Cae glas. The SSSI is designated for its tall fen habitat.	**NO** No works are proposed within 5km of the SSSI. There are no predicted effects on Glannau Rhoscolyn Reedbed SSSI. This feature is **scoped out** of the assessment.
Anglesey Valley Lakes SSSI	National	Anglesey Valley Lakes SSSI is located 4.2km south east of Penrhos and Cae Glas. The SSSI is designated for its wetland habitats and vegetation as well as its overwintering wildfowl.	**NO** No works are proposed within 4.7km of the SSSI. There are no predicted effects on Anglesey Valley Lakes SSSI. This feature is **scoped out** of the assessment.

Valued Feature	Value *and status*	Location/Extent Relative To Site	Potential Ecological Receptor?
Llyn Dinam SAC	International	Llyn Dinam SAC is designated for its Annex 1 Habitats 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation. The SAC is located 4.1km south east of Penrhos and Cae Glas.	**NO** No works are proposed within 4.5km of the SAC. There are no predicted effects on Llyn Dinam SAC. This feature is scoped out of the assessment.
Hedgerows	Site *UKBAP* *LBAP*	Location of hedgerows: Penrhos: 364m Cae Glas: 639m Kingsland: 1,432m	**YES** Hedgerows will be directly affected by the proposals. Assessment is required to determine significance of change.
Woodlands and plantation	Local (Holy Island) *Woodlands and plantation are LBAP*	Location of semi-natural and plantation woodland: Penrhos: 27.54ha Cae Glas: 41.68ha Kingsland: 0ha All woodland including plantation is Anglesey LBAP.	**YES** Semi-natural and plantation woodland will be directly affected by proposals. Assessment is required to determine significance of change.
Ponds	Site *UK BAP** *LBAP* **only Pond 23 qualifies*	Ponds are present in all three areas as follows: Penrhos: 0.87ha Cae Glas 0.27ha Kingsland: 0.29ha However no pond qualifies by merit of incidental observations of aquatic plant and invertebrate species or assemblages, as defined by the UKBAP pond description. Pond 23 at Kingsland qualifies as UKBAP by virtue of BAP species common toad. Brackish ponds in Cae Glas qualify under the Anglesey LBAP.	**YES** No ponds will be lost as a result of the proposed development. Three ponds within Penrhos and two ponds within Cae Glas will be enhanced to benefit wildlife and amenity. Assessment is required to determine significance of change.
Coastal saline lagoon	Site UKBAP and LBAP	A saline lagoon is located within Cae Glas.	**NO** There are no predicted impacts affecting coastal saline lagoons.
Rivers and streams	Local *UKBAP* (excludes ditches) *LBAP*	There is a small flowing stream on the west boundary of Kingsland: 0.06ha. There are no development works proposed within 200m of the stream. Several ditches with flowing water occur including one in Penrhos, two in Cae Glas and one in Kingsland.	**NO** There are no predicted impacts affecting UKBAP rivers and streams. Water voles associated with ditches are considered separately. This feature is scoped out of the assessment.

Valued Feature	Value *and status*	Location/Extent Relative To Site	Potential Ecological Receptor?
Unimproved neutral grassland	Site	Penrhos: 2.99ha Cae Glas: 0.84ha Unimproved grasslands are not particularly diverse, but represent the more diverse swards within the site.	**YES** Proposals will directly affect each of these grassland types. Assessment is required to determine significance of change.
Gardens	Site *LBAP* Penrhos only	There are a number of residential gardens associated with Penrhos.	**YES** Proposals will directly affect gardens. Assessment is required to determine significance of change.
Lowland heathland	Local *LBAP* Cae Glas only	Heathland habitat at Cae Glas includes: Dry acid dwarf shrub heath: 0.94ha Coastal heathland: 0.74ha	**YES** Heathland habitats will be enhanced as part of management proposals for nature reserve. Assessment is required to determine significance of change.
Maritime cliff and slopes	Local Local LBAP Penrhos and Cae Glas	Cae Glas has 0.3ha of maritime hard cliff and 0.32ha of coastal grassland. Maritime hard cliff is located along the boundary of Penrhos outside the site.	**YES** Maritime cliff and slopes will not be directly affected by development proposals. Increased visitor use could indirectly affect this habitat. Assessment is required to determine significance of change.
Reedbeds	Local UKBAP and LBAP	Cae Glas has 1.30ha of swamp habitat mostly located within the proposed nature reserve. Kingsland has 1.25ha of swamp habitat mostly located on the north boundary adjacent to land where residential development is proposed.	**YES** The close proximity of the reedbed to proposed residential development could lead to indirect impacts such as pollution from urban run-off. Assessment is required to determine significance of change.
Saltmarsh	Local UKBAP Cae Glas only	Cae Glas supports 1.00ha of dense continuous saltmarsh and 0.87ha of scattered plants saltmarsh.	**YES** This habitat is sensitive to trampling. Assessment is required to determine significance of change.
Unimproved acid grassland	Local UKBAP	Cae Glas supports 0.75ha of unimproved acid grassland located on the east side of the proposed nature reserve. Kingsland supports 0.02ha.	**YES** Unimproved grassland will be enhanced through appropriate management. Assessment is required to determine significance of change.

Valued Feature	Value *and status*	Location/Extent Relative To Site	Potential Ecological Receptor?
Lowland calcareous grassland	Local	Penrhos supports 0.05ha of unimproved calcareous grassland on the Gorsedd-y-penrhyn peninsula.	**NO** There will be no direct impact on unimproved calcareous grassland. This feature is scoped out of the assessment.
Vascular plants	Site Penrhos *Sch8 WCA (Bluebell only)*	Bluebells (*Hyacinthoides non-scripta*) were recorded in broad-leaved plantation and semi-natural broadleaved woodland within Penrhos. Although some bluebells appear to be hybrids it has been assumed that all bluebells will require protection.	**YES** *Hyacinthoides non-scripta* occurs in locations directly affected by development proposals. Assessment is required to determine significance of change.
Vascular plants	Local	Common centaury is found in grassland at Penrhos coastline. Wood small reed and lancolate spleenwort are found on the Cae Glas coastline.	**YES** These plants are sensitive to the effects of trampling.
Birds	Local (Cae Glas proposed nature reserve) Site (Penrhos, Kingsland and other parts of Cae Glas) *UK and LBAP species* *WCA (while nesting)* *Nesting Schedule 1 species include common crossbills*	45 bird species were observed at both Penrhos and Cae Glas during the 2011 inland breeding bird survey. 31 bird species were observed during the 2011 breeding bird survey at Kingsland. The south part of Cae Glas, the proposed nature reserve, is assessed as being of local important for breeding birds.	**YES** Vegetation removal, including trees and hedgerows are included in proposals. Assessment is required to determine significance of change.
Bats	Local *UKBAP* *LBAP* *Sch5 WCA* *Annex II Habitats Regulations*	Bat species recorded in 2011 include common pipistrelle, soprano pipistrelle, myotis species (Daubenton's bat and whiskered bat), noctule and brown long-eared bat. Four bat roosting sites have been identified in buildings in Penrhos. Evidence of roosting in trees at the north end of the plantation has also be confirmed although the majority of trees are unsuitable for bat roosting.	**YES** One roost will be lost to development and another two roosts will have significant indirect disturbance effects. Potential for disturbance to foraging/commuting bats may arise. Assessment is required to determine significance of change.

Valued Feature	Value *and status*	Location/Extent Relative To Site	Potential Ecological Receptor?
Badger	Local *Protection of Badgers Act 1992*	Two main setts have been identified within Penrhos along with a number of smaller setts indicating that two badger families are based in Penrhos. Six large badger setts have been recorded in Cae Glas, four being in the proposed Cae Glas nature reserve.	**YES** No main setts will be lost to development although development activities are proposed within 30m of two main setts at Penrhos and two main setts at Cae Glas. A number of smaller setts will be closed. Assessment is required to determine significance of change.
Otter	Local (Cae Glas only) *Sch 5 WCA* *UKBAP* *LBAP* *Annex II Habitats Regulations*	Evidence for the presence of otter has been recorded on the Inland Sea in the last five years. A survey in 2011 by Menter Mon (Appendix A) did not identify any otter field signs on Penrhos or Cae Glas coasts.	**YES** No works are proposed within 30m of the Inland Sea. However use of the Cae Glas nature reserve will require management to minimise potential disturbance in the future.
Water vole	Local (Cae Glas only) *Sch 5 WCA* *UKBAP and LBAP species*	Water voles occur in a ditch on the north boundary of Trearrdur Mews and within the main AAM plant site. Further survey is required to confirm if water voles are present on ditch habitat within Cae Glas.	**YES** It is assumed that water voles are present on some ditches within Cae Glas that will be directly affected by development.
Red squirrel	Local *Sch5 UKBAP and LBAP species*	Red squirrels nest in conifer plantations in the proposed Cae Glas nature reserve. Likely to be utilising the hedgerow woodland networks for foraging and shelter in other parts of Cae Glas and potentially Penrhos.	**YES** Hedgerows and woodland habitats outside Cae Glas nature reserve will be directly affected. Assessment is required to determine significance of change.
Reptiles	Local *Sch 5 WCA*	Common lizard and slow-worm are present along the coastal strip of Penrhos. Common lizard and slow worm are present at Cae Glas. Slow worm were only recorded in the south eastern corner of Trearddur Mews. The majority of common lizard records were concentrated in the proposed Cae Glas nature reserve. No reptiles have been recorded at Kingsland.	**YES** Most habitats within parts of Cae Glas and Penrhos most likely to be utilised by reptiles are not affected by proposals. Some habitat loss will occur at Cae Glas. Assessment is required to determine significance of change.

Valued Feature	Value *and status*	Location/Extent Relative To Site	Potential Ecological Receptor?
Amphibian assemblage	Site *assemblage includes UKBAP priority species common toad*	Common toad and common frog are present at on-site ponds 1 and 3 at Penrhos. Only common frog was recorded on-site at Cae Glas (Pond 5) although smooth/palmate newt and common toad were recorded in off-site ponds. All four species were recorded in Pond 23 at Kingsland although no development works are proposed within 250m of Pond 23.	**YES** Assessment is required to determine significance of change.
Common eel	Site *UKBAP*	Common eel have been recorded in Pond 23 at the far west end of Kingsland in June 2011.	**NO** There will be no direct or indirect impact on common eel. This feature is scoped out of the assessment.
Invertebrates	Local	A number of locally important moth species have been recorded within woodland habitats associated with Penrhos and Cae Glas proposed nature reserve.	**NO** Proposals will not affect habitats where moths were recorded. Proposals are not considered to be of significant scale to affect invertebrates. Invertebrate species are **scoped out** of the assessment.

Demolition and Construction

10.139 The primary impacts resulting from construction activities will be the loss and disturbance of habitats and the subsequent loss or disturbance of species within the works areas during site clearance. This section evaluates these potential impacts. The significance of these impacts is summarised in Table 10.12.

10.140 A summary of areas of anticipated habitat lost, modified to other habitat types, or gained for Penrhos, Cae Glas and Kingsland is presented in Table 10.10.

Table 10.10 Habitats lost, modified and gained

Habitat type	Area	Area lost to development	Area gained under development*	Net gain or loss*
Semi-natural woodland and plantation (all types)	Penrhos	11.34	4.53	6.81 loss
	Cae Glas	10.34	9.08	1.26 loss
	Kingsland	0.00	1.52	1.52 gain
Hedgerow	Penrhos	364m	400m	36m gain
	Cae Glas	158m	250m	92m gain
	Kingsland	212m	250m	38m gain
Unimproved grasslands	Penrhos	2.99 (neutral grassland only)	0.00	2.99 loss

Habitat type	Area	Area lost to development	Area gained under development*	Net gain or loss*
	Cae Glas	1.46 (acid and neutral grassland)	0.00	1.46 loss
	Kingsland	0.00	0.00	none
Other grassland excluding amenity	Penrhos	10.01 (mostly semi-improved species poor)	1.75	8.26 loss
	Cae Glas	23.14 (mixture of semi-improved acid and species poor semi-improved neutral grassland)	9.79	13.35 loss
	Kingsland	19.89 (species poor semi-improved neutral grassland only)	1.02	22.12 loss
Wildflower and native shrub	Penrhos	0.00	1.43	1.43 gain
	Cae Glas	0.00	8.07	8.07 gain
	Kingsland	0.00	2.90	2.90 gain
Dry dwarf heath scrub	Penrhos	0.00	0.00	none
	Cae Glas	0.83	4.68	3.85 gain
	Kingsland	0.00	0.00	none
Maritime cliff and slope (includes coastal grassland and coastal heathland)	Penrhos	0.00	0.15	0.15 gain
	Cae Glas	0.00	2.73	2.73 gain
	Kingsland	0.00	0.00	none
Saltmarsh	Penrhos	0.00	0.00	none
	Cae Glas	0.00	0.00	none
	Kingsland	0.00	0.00	none
Ponds	Penrhos	0.09	0.11	0.02 gain
	Cae Glas	0.06	1.09	1.03 gain
	Kingsland	0.01	0.05	0.04 gain
Reedbed	Penrhos	0.00	0.00	none
	Cae Glas	0.00	0.00	none
	Kingsland	0.29	0.00	0.29 loss

**Excludes mitigation habitats.*

10.141 A summary of anticipated impacts arising on valued ecological receptors as a result of demolition and construction in the absence of mitigation is presented in Table 10.12. These impacts are characterised in the following paragraphs.

Holy Island Coast SPA

10.142 The Holy Island Coast SPA/SSSI is located 900m south west of Kingsland, 1.8km to the west of Cae Glas and 3km to the south west of Penrhos. Holy Island Coast SPA is designated for its resident chough population whilst the SSSI is also designated for its seabird colony as well as its chough and nesting peregrine.

10.143 Normally between 16 and 20 chough pairs nest on Holy Island each year with between 10 and 13 of those pair nesting on the RSPB South Stack Nature Reserve. Up to another three pairs will nest between the RSPB reserve and Trearddur Bay. Several more pairs nest on the southwest coast of Holy Island. Choughs on Holy Island are site faithful when selecting nest sites once a site has become established. The Holy Island chough population has increased over the last 20 years (Moralee, *pers comm*., Aug 2012).

10.144 The closest chough nest location to Kingsland, the nearest part of the development, is approximately 970m to the southwest as the crow flies. The built part of the Kingsland site is approximately 1.1km from the nest site. It is therefore very unlikely that construction related activities could result in the disturbance of chough nest sites.

10.145 There is some evidence to indicate that the Holy island chough population is not at carrying capacity because there are a large number of suitable nest sites along the north and west coastline. However it is possible that there is a shortage of suitable foraging habitat. It is believed that breeding choughs on Holy Island predominately forage within 1km of their nest sites. There is evidence to indicate that chough adults and juveniles migrate to Snowdonia in the winter although the adult choughs return to Holy Island in January leaving the juveniles in Snowdonia (Moralee, *pers comm*., Aug 2012).

10.146 The opinion that the Choughs are likely to forage mostly within 1km of their nest sites is supported by the findings of a study looking at the relationship between the regularity of feeding visits and foraging distances of choughs on the Isle of Man and Snowdonia (Holyoak, 1972). In Snowdonia, where the foraging habitat was very dispersed, choughs tended to take up to 50 minutes between nest visits and travel up to 2 or even 3km. However on the Isle of Man the frequency of nest visits was more frequent, every 20 to 37 minutes, indicating that choughs flew shorter distances since habitat foraging quality was concentrated close to the nesting areas. Essentially choughs will not tend to forage at distances greater than 1km from the nest site if suitable foraging habitat is present close to the nest site. Therefore it is reasonable to assume that choughs on Holy Island forage mostly within 1km of their nest sites, since the conditions on Holy Island are likely to be comparable with the Isle of Man, at least in terms of habitat quality.

Loss of chough foraging habitat

10.147 There is the potential for the proposed development to result in a reduction in available foraging habitat for choughs associated with the Holy Island SPA. The proposed development will result in the loss of several large areas of grassland at Penrhos, Cae Glas and Kingsland; predominately species-poor semi-improved grassland.

10.148 Choughs feed on a range of different prey items including various invertebrates, shrews, berries and carrion. Research into the contents of droppings of choughs on Bardsey Island indicates the importance of beetles and other invertebrate from April to late November (Cramp *et al*., 1994). A great variety of surface active insects are taken however many studies outline the importance of dung-associated insects in the spring, late summer and autumn (Warnes and Stroud, 1989; in Kerbiriou and Julliard, 2007).

10.149 Preferred chough foraging habitats include coastal grassland, permanent semi-natural improved pasture, dry heath or coastal heath and acid grassland, rock

outcrops, beaches/strandlines, dune systems and overwinter stubble (McKay, 1996; in Rylands *et al.,* 2012).

10.150 A summary of chough land management requirements, which provide insight into chough foraging patterns, is provided in Table 10.11.

Table 10.11 Summary of chough land management requirements

Favourable to Choughs	Detrimental to Choughs
Short vegetation	Rank vegetation
Diverse pastoral habitats	Habitat monocultures
Winter stubbles	Arable stubble or winter sown cereals
Permanent/regular grazing	Irregular or no grazing
Mixed species grazing	Single species grazing
Out-wintering of stock	Housing of stock in winter
Hay/silage aftermath (2 week period after cutting unless grazed)	Hay/silage
Rabbit grazing	Control of rabbits
Intact pasture	Heavily poached pasture

(based on McKay, 1996; in Rylands et al., 2012).

10.151 The grassland to be lost to development at Cae Glas is assessed as being unsuitable for foraging chough since it is managed as silage for the spring and summer periods. Therefore choughs would not able to access the soil to capture invertebrates. The quality of the soil for invertebrates is also likely to be low.

10.152 The fields at Kingsland where built development is proposed are also unsuitable for choughs since they are managed intensively for silage with only irregular grazing. The field at the west end of Kingsland, which will not be subject to built development, does have some limited foraging potential for chough although none have been recorded in this location during field surveys.

10.153 The coastal pastures in the north part of Penrhos are also of limited value for chough since although they are grazed for some of the year, the livestock are removed for the period May to July each year year to allow the grass to grow and then be cut for silage (Green, *pers comm*., Aug 2012). It is also considered that Penrhos is too distant from chough nesting areas on the north and west parts of Holy island to be used by chough during the breeding season.

10.154 Therefore, based on literature review findings, the grasslands to be subject to development at Cae Glas, Kingsland and Penrhos are unsuitable for chough foraging.

10.155 Desktop survey, breeding (2010 and 2011) and winter (2011-2012) bird survey findings provide supporting evidence that choughs do not use grassland habitats within Penrhos, Cae Glas or Kingsland for foraging. It is concluded that there will be no loss of chough foraging habitat as a result of the proposed development.

Disturbance of chough foraging habitat

10.156 It is considered to be very unlikely that construction activities at Penrhos, Cae Glas and Kingsland could result in the disturbance of foraging choughs. It has been established that Penrhos and Cae Glas are likely to be too distant from chough nesting areas to be used by foraging chough during the breeding period.

10.157 Kingsland is considerably nearer to two or three known chough nesting sites although the built part of the Kingsland site is still located over 1km from the chough nest sites. Since breeding chough on Holy Island tend to forage within 1km of their nest sites it is unlikely that significant disturbance of foraging chough would occur during construction activities at Kingsland.

10.158 A single chough was recorded foraging on the golf course to the south of Kingsland on grassland more typical of chough feeding habitat during June 2011. However it is considered very unlikely that any disturbance effects on this area would lead to a significant reduction in the capacity of choughs to forage effectively, in the vicinity of Kingsland.

Holy Island Coast SAC

10.159 The primary reason for the designation of Holy Island Coast SAC relates to the presence of the Annex 1 Habitats 1230 Vegetation sea cliffs of the Atlantic and Baltic coasts and 4030 European dry heaths. Maritime heath habitat supports the rare spotted rock-rose *Tuberaria guttata.* Holyhead Coast SAC is the most important site in Wales for European dry heaths. The SAC also contains the qualifying Annex 1 habitat 4010 North Atlantic wet heaths with *Erica tetralix* although this is not a primary reason for designation.

10.160 Holy Island Coast SAC is located at least 900m to the west of Kingsland. There are no direct or indirect impacts predicted concerning the Holy Island Coast SAC during the construction phase.

Holy Island SSSI

10.161 Holy Island Coast SSSI is designated for its seabird colony as well as its chough and nesting peregrine. The site is also designated for its coastal habitats and rare vascular plants.

10.162 Anecdotal evidence indicates that peregrine associated with Holy Island SSSI forage on the Inland Sea. However there are no predicted construction phase impacts on peregrine. This is because the proposed construction activities will be very limited around the Inland Sea and the peregrine will have a foraging range which extends well beyond the boundaries of Cae Glas. Neither are there any predicted impacts on the seabird colony or the chough population.

10.163 There are no direct or indirect construction phase impacts predicted for the habitats and plants associated with the Holy Island SSSI since the SSSI is too distant from the site.

Beddmanarch-Cymyran SSSI

10.164 No habitat loss will occur within the Beddmanarch-Cymyran SSSI as a result of the proposed development.

10.165 Beddmanarch–Cymyran SSSI, on the Penrhos and Cae Glas coast, is primarily designated for its overwintering waterbirds however common terns also nest on a small rocky islet 115 metres from the Cae Glas coast. Common tern, like all tern species, are sensitive to human related disturbance during nesting.

10.166 The spit immediately north east of Cae Glas is used by a range of wader and wildfowl species for nesting and winter roosting. The nesting birds associated with the spit are vulnerable to both visual and noise related disturbance. An

increase in visual or noise disturbance during the construction phase could disrupt nesting/roosting in these sensitive locations.

Woodland and Plantation

10.167 Development proposals will result in the loss of 11.34ha of woodland from Penrhos and 10.34ha of woodland from Cae Glas. Woodland at Penrhos affected by the development is predominately broadleaved plantation which is dominated by sycamore. A small block of broadleaved semi-natural woodland on the west side of the site will also be lost to development.

10.168 Woodland at Cae Glas affected by the development is predominately young plantation woodland associated the Cae Glas nature reserve as well as some areas of older broadleaved plantation, mixed plantation woodland and some scrub woodland. The young plantation associated with Cae Glas nature reserve was planted circa 2001 as a part of the capping and restoration process for the former landfill site. It is proposed that 2.73ha of this young plantation is converted to heathland habitat and a further 1.00ha is converted to wildflower grassland to benefit reptiles.

10.169 Extensive tree planting will be undertaken at Penrhos, Cae Glas and Kingsland as a part of landscaping proposals for each of the sites. New woodland areas will be composed of native trees species as well as trees and shrubs which benefit wildlife and those suited to exposed, coastal locations. Where possible woodland planting will ensure that fragmentation of existing tree cover and habitats within each of the sites does not take place.

10.170 The management of retained plantation is also proposed. This will help to secure long-term tree cover and facilitate the transition from plantation to self-sustaining woodland.

10.171 The net loss of plantation is anticipated to be no more than 24.8% of total woodland within Penrhos and 3% within Cae Glas. There will be a net increase in woodland at Kingsland.

10.172 The net loss of woodland at Penrhos and Cae Glas will not adversely affect the integrity of the woodlands since the majority of the canopy of woodland areas will not become fragmented. This is because of the glade creation approach to the development where the external surface of each woodland block will be retained resulting in no loss of connectivity. However in a small number of cases there will be a complete loss of a woodland block, such as is the case at the north end of Penrhos woodland.

10.173 A detailed assessment of arboricultural impact has been made outside the IEEM guidelines and is provided at Appendix 10.15.

Hedgerows

10.174 The proposed development will result in the loss of all existing hedgerow habitat at Penrhos; 364 m of species poor hedgerow. It is estimated that 158 m of hedgerow will be lost at Cae Glas to facilitate development. The vast majority of hedgerow habitat within Kingsland will be retained with the exception of several sections of hedgerow to be removed to make way for residential access roads and footpaths. All affected hedgerows are species-poor.

10.175 Hedgerow loss is considered to be a direct negative impact, which would be reversible only through new planting. However approximately 884m of new

native hedgerow will be planted as part of the proposals to assist definition of new footpath lines and car parking areas as well as strengthening site boundary features. The new hedgerow planting will ensure a small net gain in this habitat type at Penrhos, Cae Glas and Kingsland. However new hedgerows will be species-rich resulting in an increase in habitat quality compared to current conditions.

Ponds

10.176 No ponds will be lost as a result of the proposed development. Three ponds within Penrhos will be subject to habitat enhancement works to improve their wildlife and amenity value.

10.177 Proposals include the creation of two waterbodies within the north part of the Cae Glas site including a small lake and a smaller pond and reedbed area. The small lake will also be designed as a naturalistic feature to be planted up with a range of aquatic and emergent plant species providing habitat for wildlife. The new pond habitat will result in a net gain in standing water.

10.178 During the construction phase there is a potential risk of pollution from a release of hazardous chemicals into pond habitat in Penrhos. However construction activities within the vicinity of the ponds are mostly limited to footpath construction with a small amount of lodge construction within 50m of the north pond.

10.179 The pond located on the west boundary of Kingsland is too distant from development works areas to be affected by a pollution event and it is not hydrologically linked to parts of the proposed development site to be subject to construction activities.

Unimproved grasslands

10.180 No neutral, acid or calcareous grassland will be lost as a result of the proposed development. Neither will there be any indirect impacts on unimproved grasslands during the construction phase.

Gardens

10.181 Three gardens associated with the existing dwellings of Penrhos including Erw Deg, Homewood and The Bungalow will be lost to development. However development proposals include the creation of extensive areas of managed gardens. Therefore overall there will be a net gain in this habitat type.

Lowland heathland

10.182 No lowland heathland will be lost as a result of the proposed development apart from minimal losses associated with the establishment of footpaths within the proposed Cae Glas nature reserve.

Maritime cliff and slopes

10.183 No maritime cliff and slopes will be lost as a result of the proposed development. Neither will there be any indirect impacts on maritime cliff and slopes during the construction phase.

Reedbeds

10.184 All reedbed habitat within Penrhos and Cae Glas will be retained and enhanced to increase its wildlife value. Approximately 0.3ha of the reedbed habitat on the north boundary of Kingsland will be lost to development to provide a band of new woodland planting to screen the proposed residential development from neighbouring developments.

10.185 However new areas of reedbed will be created within the new lake and pond habitats to be constructed in the north part of Cae Glas. This will ensure no net loss in reedbed habitat overall.

10.186 During the construction phase there is a risk of pollution from a release of hazardous chemicals into reedbed habitat on the north boundary of Kingsland.

Saltmarsh

10.187 No saltmarsh will be lost as a result of the proposed development during the construction phase.

Vascular plants

10.188 The majority of woodland areas in Penrhos which support bluebells will be retained as a part of development proposals. However the proposed development will result in some woodland areas, which currently support bluebells, being lost to development.

Birds

10.189 The majority of birds that nest within Penrhos are associated with the woodland and scrubby undergrowth habitats. The loss of 25.75ha of woodland from Penrhos and Cae Glas combined, would temporarily reduce the number of available nest sites for birds. This impact would be short term as new nest sites would become available as new woodland developed in the short to medium term.

10.190 A number of bird species have been found to nest in buildings within Penrhos. There is a risk of nests and young birds being harmed if building demolition is undertaken without pre-construction bird nest checks being undertaken. There is also a risk of harming nests and young birds on ponds to be subject to pond modification or enhancement works.

10.191 The pasture at the north end of Penrhos has some limited value a feeding area for curlew, particularly at high tide with flocks of around twenty birds being recorded feeding on the pasture. The reduction in coastal pasture as a result of the proposed development and the increase in human disturbance caused by visitors may reduce the value of the pasture as a feeding area for curlew.

10.192 The Schedule 1 bird common crossbill is believed to be nesting in conifer plantations within the proposed Cae Glas nature reserve. Schedule 1 birds are afforded additional protection under the *Wildlife and Countryside Act 1981 (as amended)*. It is an offence to intentionally or recklessly disturb a Schedule 1 bird species at or near the nest, which includes preventing the bird from gaining access to its nest site.

10.193 The grey heron colony associated with the north conifer plantation is also particularly susceptible to human related disturbance. There is the potential for

crossbill and grey heron nesting to be disrupted if path or bird hide construction is undertaken during the crossbill nesting season.

Bats

10.194 The Penrhos Masterplan shows that the Water Tower and the Pavilion Building roost sites will be retained, however the other confirmed bat roost, known as Erw Deg house, will be lost to development. There will also be some lodge construction within 50m of the Pavilion Building and the Water Tower.

10.195 Parts of woodland compartments W63 and W68 which are likely to contain day bat roosts at low densities, will be lost to development (Appendix 10.14 - Drawing G2977.003). Much of the western half of woodland compartment W63 will be lost through the construction of a number of lodge buildings. The eastern edge of W68 will be lost through landscaping works (total loss 4.1ha). Woodland compartments W57 and W65, which have some potential to support day bat roosts, will not be directly affected by the proposed development.

10.196 The woodland within Penrhos provides foraging and commuting habitat for a range of bat species including common pipistrelle, soprano pipistrelle, noctule, and myotis species, likely to be Daubenton's bat and whiskered bat. However bat surveys confirm that these bats are only present in low numbers. The key areas of bat activity within Penrhos include the footpath within the south west of the site, and to a lesser extent, Erw Deg and the Farm Buildings.

10.197 The track in the south west will not be affected by development but, as mentioned above, some of the buildings at Erw Deg and the Farm Buildings will be demolished.

10.198 Potential impacts to bats arising from the proposed development at Penrhos include:

- Loss of one confirmed day roosting sites (Erw Deg house);
- Loss of a number of potential bat roosts within the woodlands;
- Loss of foraging habitat;
- Potential isolation of bat populations through removal of commuting habitat; and
- Potential disturbance during site clearance and construction works.

10.199 Tree clearance operations within the plantation will not require lighting at night however there is potential for artificial lighting to affect the two retained roost sites at the Water Tower and the Pavilion Building during the construction phase.

10.200 Habitat links, such as woodland and hedgerows, are already poor around the Pavilion Building at Penrhos therefore the increased development in this location could deter bats from using the roost site. However the importance of the roost site for bats is limited since only old bat droppings have been found and no emerging bats were recorded in 2011 or 2012.

10.201 Since construction activities are unlikely to take place when bats are foraging and commuting; it is extremely unlikely that construction noise would disrupt foraging and commuting bats. Connectivity with adjacent landscape features will be maintained since the majority of tree lines within Penrhos and Cae Glas will be retained.

Badgers

10.202 References in this section relate to Appendix 10.11, Drawing G2977.022A (Confidential Appendix for limited circulation).

10.203 It is likely that the proposed development within Penrhos will require the closure of four outlier setts in Area 1 (Setts 3, 4, 5 and 6) and one annexe sett (Sett 8) in Area 2.

10.204 Development proposals will allow the retention of two main setts and one annexe sett and one subsidiary sett (Setts 1, 2, 7 and 9) although licensable development works are proposed within 30m of these setts including some tree felling and lodge and footpath construction.

10.205 No setts will be lost from Cae Glas, and no construction works will take place within 30m of a sett.

10.206 Construction works including the construction of a number of lodges is proposed to take place approximately 10 to 20m from two active main setts (Sett 1 and Sett 7). This will result in temporary disturbance of these setts particularly if construction areas are floodlit or works are permitted after dusk. In the worse-case scenario this could lead to sett abandonment making the badger family group vulnerable to mortality on roads or via another means. Although it is known that the family group has a number of large setts in several locations in Penrhos.

10.207 The proposed construction works will result in losses of woodland throughout Penrhos. This includes the loss of approximately 6.8ha of foraging habitat from Penrhos and 5.3ha of foraging habitat from Cae Glas.

10.208 The loss of woodland and other foraging habitat at Cae Glas and surrounding land is relatively small and it is unlikely that the reduction in woodland foraging will be a significant impact.

10.209 The significance of the loss of foraging habitat at Penrhos is potentially much greater since the presence of the old A5 highway may limit the ability of the badgers to access foraging areas outside of Penrhos. However it is known that only one family group occupy Penrhos. Furthermore the new woodland glades and areas of amenity grassland may offer new foraging opportunities for badgers, as the increased presence of grassland will diversify habitats, allowing more varied foraging.

Water voles

10.210 Watercourses in or adjacent to Penrhos Country Park and Kingsland have low to moderate suitability to support water voles. None will be significantly affected by proposals, although ditch 27 will be located within a proposed habitat area in Kingsland.

10.211 Within Cae Glas, ditch 11 was confirmed to support water voles, although only part of this ditch borders the site and will not be affected by proposals. Ditches that will be affected by the proposals include ditches 14, 15 and 16. These have low to moderate suitability for water voles. Their main value is likely to be as permeable corridors which connect with ditch 11. Proposals are unlikely to result in adverse effects on known water vole populations on ditch 11, as works will be downstream of this area.

Otters

10.212 Surveys undertaken by Mentor Mon in 2011 confirm that there were no otter holts present on the Cae Glas coastline. However prior to 2011, evidence of otter activity has been recorded on the Inland Sea (Roberts, *pers. comm*., 2011).

10.213 There is a low possibility that an otter holt could be established on the Cae Glas coastline prior to footpath and hide construction works in the Cae Glas nature reserve. There is therefore a possibility that disturbance impacts could occur during the construction phase.

Red squirrels

10.214 Red squirrels are known to be present within Cae Glas conifer plantation in the eastern area of Cae Glas, and are known to successfully breed in this location. It will be necessary to fell a number of trees within this woodland area to construct the footpaths for the proposed nature reserve. Without appropriate mitigation these works could potentially result in a loss of drey sites or disturbance of dreys.

10.215 Selective felling will be undertaken within the conifer plantations to improve the structure of the woodland. Tree planting of broadleaved tree species will be undertaken within the conifer plantations using species known to benefit red squirrels including hazel, sweet chestnut, English oak and walnut.

10.216 It is very unlikely that red squirrel dreys will be located within woodland affected by development in Penrhos. However the possible effect of felling on recently established dreys or den sites should be considered.

Reptiles

10.217 No impacts are predicted on slow-worm since this species was only recorded on the south boundary of Trearddur Mews, at least 300m from any proposed development area. No reptiles were recorded within Kingsland. Common lizard were most abundant within the proposed Cae Glas Nature Reserve although common lizard also occurred in areas potentially affected by development including a coastal strip along the Penrhos coast and a hedgerow near the north boundary of Cae Glas.

10.218 The potential impacts of the proposed development at Penrhos on reptiles include destruction of foraging habitat, hibernacular and the possible death of reptiles.

10.219 The vast majority of grassland habitats known to support reptiles at Penrhos and Cae Glas will be retained.

10.220 The stone walls at the field boundaries within the north of Penrhos and the rubble piles present adjacent to the farm buildings may be used as reptile refugia. It is likely that these features will be lost through construction works.

10.221 New shelter opportunities for reptiles are being provided at Penrhos in the form of a long stretch of new dry stone wall around the perimeter of the headland lodges and a series of planted hibernacula bunds with associated wildflower grassland and gorse scrub interspersed between the headland lodges.

10.222 Additional reptile habitat is being provided along an 800m long earth bund along the north boundary of Cae Glas. The bund with be planted to provided screening

from the A55 to the north although there will be open south facing areas along the length of the bund providing basking opportunities for reptiles. The bund will also function as a wildlife corridor for reptiles and other wildlife.

Amphibians

10.223 Common toad was recorded in a total of eight ponds. None of these ponds will be lost as a result of the proposed development, so there will be no impact on toad breeding habitat, but there will be a loss of terrestrial habitat associated with the development.

10.224 Toads and other amphibians will benefit from pond habitat enhancement works proposed at three ponds at Penrhos as well as the creation of two new waterbodies at Cae Glas.

10.225 Limited development activities will occur within 50m of amphibian breeding ponds at Penrhos (Ponds 1 and 3) and Cae Glas (Ponds 5, 15 and 16).

10.226 Proposals within the vicinity of amphibian breeding ponds include plantation felling and ground clearance within 50m and 250m of some amphibian breeding ponds.

10.227 The terrestrial habitat losses are not considered to significantly affect the availability of shelter, foraging or ranging habitats for the small populations which are supported by amphibian breeding ponds.

Summary of construction impacts

10.228 Table 10.12 summarises the ecological impacts of the development on the defined key receptors.

Table 10.12 Summary of demolition and construction impacts prior to mitigation

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Holy Island Coast SPA	International	Displacement of chough from foraging areas outside SPA	Low impact – Grassland habitats within Penrhos, Cae Glas and Kingsland are assessed as having little or no suitability for chough feeding.	Permanent	Irreversible	Continuous	Unlikely	Not significant
Beddmanarch-Cymyran SSSI	National	Disturbance of coastal breeding/overwintering birds during bird hide and footpath construction in nature reserve	Low impact – Vegetated spit and common tern rocky islet within the Inland Sea breeding areas and coastal mudflats (winter feeding areas). The extent of works causing disturbance is limited.	Temporary	Reversible (populations would eventually replenish itself)	Continuous	Probable	Adverse
Beddmanarch-Cymyran SSSI	National	Removing sand accretion near spit in Inland Sea	High (beneficial) impact - Providing protection for breeding and roosting birds.	Permanent (medium term)	Reversible	Continuous	Certain	Beneficial
Hedgerows	Site	Loss and gains in hedgerows	Low (beneficial) impact – There will be small net gain in native hedgerows at Penrhos, Cae Glas and Kingsland. New hedgerows will be species diverse.	Permanent	Irreversible	Continuous	Certain	Beneficial
Woodlands and plantation	Local	Partial loss of woodland to facilitate new development	Low impact – 6.81ha net loss of resource from Penrhos and 5.33ha net loss of resource from Cae Glas. A partial loss of receptor but no significant affect upon integrity.	Permanent	Irreversible within reasonable timeframe	Continuous	Certain	Adverse
Ponds	Site	Ponds enhanced to increase their wildlife and amenity value	Low (beneficial) impact - Three ponds within Penrhos will be subject to habitat enhancement works.	Permanent	Irreversible within reasonable timefame	Continuous	Certain	Beneficial
Ponds	Site	Creation of a small lake	Low (beneficial) impact – A new lake will be created within Cae Glas to provide wildlife and amenity value.	Permanent	Irreversible	Continuous	Certain	Beneficial

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Gardens	Site	Loss and gains in garden habitat	Moderate (beneficial) impact - There will be a small loss of garden habitat from Penrhos. However this will be off-set by the creation of residential gardens in Kingsland.	Permanent	Irreversible	Continuous	Certain	Beneficial
Coastal heathland	Local	Gain of heathland habitat	Low impact – There will be a minimal loss of heathland to construct footpaths within the proposed Cae Glas nature reserve. However 2.73ha of new heathland will be created in areas of existing young plantation woodland.	Permanent	Reversible	Continuous	Near Certain	Beneficial
Reedbed	Local	Loss/gain of reedbed to development	Low impact – 0.3ha of reedbed will be lost to development within Kingsland. However replacement reedbed at Cae Glas and Kingsland will ensure no net loss.	Permanent	Irreversible	Continuous	Near Certain	Not significant
Reedbed	Local	Contamination of reedbed during construction phase	Low impact – There is the potential for the reedbed on the north boundary of Kingsland to be aeffected by contaminants during construction activities.	Temporary	Reversible	Continuous	Probable	Adverse
Vascular plants	Site	Partial loss of plant Species of Conservation Concern.	Low impact – Reduction in the distribution of native bluebells within Penrhos.	Permanent	Reversible	Continuous	Near Certain	Adverse
Birds – breeding passerines and woodland species	Site or Local (Cae Glas)	Loss/gain of nesting and foraging habitats to facilitate development.	Low impact – Principally effecting common bird species associated with Penrhos.	Permanent	Irreversible within reasonable timeframe	Continuous	Near certain	Not significant

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Birds	Site or Local (Cae Glas)	Disturbance of remaining habitats leading to localised temporary exclusion.	Moderate impact – Disturbance to bird species breeding in retained habitats and partial loss of breeding territories. Potential to effect Schedule 1 bird species common crossbill and sensitive heronry at Cae Glas	Short term	Reversible	Intermittent	Probable	Adverse
Bats	Local	Loss of bat roosts associated with buildings.	Moderate impact – The Erw Deg bat roost within Penrhos will be lost to development. Species unconfirmed but likely to be common pipistrelle or whiskered/Brandt's. Species affected are common and widespread. No loss of FCS predicted.	Temporary	Irreversible	Continuous	Certain	Adverse
Bats	Local	Loss of potential tree roosts during tree clearance to facilitate new development.	Low impact – The majority of trees are unsuitable for roosting bats however trees at north end of Penrhos do have some bat potential. Tree losses in this location will include 4.1ha broadleaved plantation woodland. No loss of FCS predicted.	Permanent	Irreversible within reasonable timeframe	Continuous	Near certain	Adverse
Bats	Local	Disturbance of two bat roosts during construction	Low impact – Construction activities will occur within 50m of two bat roosts located within Penrhos. One roost site is inhabited by brown long-eared bats.	Temporary	Irreversible within reasonable timeframe	Intermittent	Probable/Near certain	Adverse
Bats	Local	Disruption of foraging and commuting bats.	Negligible impact – Modifications to tree lines arising from woodland clearance and structure planting. New structure at north end of Penrhos will	Medium to long term.	Irreversible	Continuous	Probable	Not significant

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
			strengthen connectivity of site. Creation of woodland clearings will increase woodland edge habitat.					
Badger	Site	Disturbance of badger setts and foraging behaviour.	Moderate Impact – Construction activities may disturb badgers using the several setts including two main setts.	Temporary	Reversible	Continuous	Probable	Adverse
Water voles	Local	Disturbance or modification of ditch habitat.	Low Impact – Ditches 14 to 16 in Cae Glas may potentially be used by commuting water voles.	Temporary and Permanent	Irreversible	Continuous	Certain	Not significant
Otters	Local	Disturbance of otters	Moderate impact – There is a possibility that otters could be dissuaded from using the Cae Glas coastline during the construction phase.	Temporary	Reversible	Continuous but short duration	Unlikely	Adverse
Red squirrels	Local	Loss/disturbance of drey and den sites.	Moderate impact – Tree felling at the Cae Glas conifer plantation could result in the loss or disturbance of drey sites. A loss of an active drey site could have a short term detrimental effect on the population.	Permanent	Reversible	Continuous but short duration	Probable	Adverse
Red squirrels	Local	Loss of foraging habitat to facilitate development	Low impact – Tree loss in Cae Glas and Penrhos could result in a loss of foraging habitat. A loss of a proportion of the available foraging resource.	Permanent	Reversible	Continuous	Probable	Adverse
Red squirrels	Local	New woodland planting.	High (beneficial) impact – Substantial woodland planting will occur at Cae Glas and Penrhos. Approximately 50% of woodland planting will be	Permanent	Reversible	Continuous	Certain	Beneficial

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
			comprised of suitable tree for squirrel feeding.					
Reptiles	Local	Losses and gains in terrestrial habitats (foraging, shelter & dispersal	Low (beneficial) impact – Habitat creation proposals at Penrhos and Cae Glas will ensure that there is gain in reptile habitat. A small loss of foraging/refuge resource resulting in minor effects on toad dispersal. The majority of reptile habitat is unaffected.	Permanent	Irreversible	Continuous	Certain	Beneficial
Reptiles	Local	Loss of individuals – killing or injury during site clearance and construction works.	Low impact – Killing or injury of individuals that may be present within works areas. Loss of a small proportion of population.	Effect upon individuals is short term and immediate.	Reversible (populations would eventually replenish itself)	Continuous	Probable	Adverse
Amphibian assemblage	Site or Local (Cae Glas)	Loss of terrestrial habitats (foraging, shelter & dispersal) to facilitate new development.	Low impact – A small loss of foraging/refuge resource resulting in minor effects on toad dispersal.	Permanent	Irreversible	Continuous	Certain	Adverse
Amphibian assemblage	Site or Local (Cae Glas)	Loss of terrestrial habitats (foraging, shelter & dispersal) to facilitate new development.	Low impact – Loss of available terrestrial habitats in Penrhos, Cae Glas and Kingsland. A small loss of foraging/refuge resource resulting in minor effects on toad dispersal.	Permanent	Irreversible	Continuous	Certain	Adverse
Amphibian assemblage	Site or Local (Cae Glas)	Loss of individuals – killing or injury during site clearance and construction works.	Low impact – Killing or injury of individuals that may be present within works areas. Loss of small proportions of population.	Effect upon individuals is short term and immediate.	Reversible (populations would eventually replenish itself)	Continuous	Probable	Adverse

Completed Development

10.229 This section describes the operational impacts that are predicted to occur after the new development is constructed and occupied. It includes an assessment of significance prior to mitigation.

Holy Island Coast SPA

10.230 The proposed development will eventually lead to increased numbers of residents on Holy Island, particularly in the summer, but also at other times of year. This change in the population and demographics of Holy Island will to result in greater numbers of people walking the coastal footpaths within the Holy Island Coast SPA. It is possible that increased use of the footpaths in Holy Island could result in disturbance of choughs using the SPA for nesting and foraging.

10.231 At its nearest point, Holy Island Coast SPA/SAC/SSSI is located approximately 900m to the south west of Kingsland, 1.8km to the west of Cae Glas and 3km to the west of Penrhos.

Current and predicted population levels on Holy Island

10.232 The population of Holy Island was determined to be 13,500, based on the 2001 census (www.anglesey.co.uk). Census information for 2011 has not yet been published.

10.233 The Kingsland development will result in the construction of up to 360 residential houses leading to an increased population of approximately 1,000 eventually, i.e. a 7.5% increase in population. Construction activities at Kingsland will commence around 2014 although they will be phased with approximately 50 dwellings being built each year between 2015 and 2022. Therefore the actual increase in the population of Holy Island will be very gradual over a period of at least eight years.

Current and predicted increases in visitors to Anglesey and Holy Island

10.234 The Anglesey tourism and leisure sector is highly seasonal, with few year round activities. This consequently leads to peaks and troughs in Anglesey visitor numbers with 15% of the total number of visits (total visits in 2010 was 218,500) occurring in August and half of visits occurring between June and September. (Regeneris, 2012). Unfortunately there are no visitor numbers available for Holy Island although it is assumed that visitor numbers follow a similar seasonal trend.

10.235 Table 10.13 present the predicted numbers of visitors that the Penrhos development will attract. It is predicted that the Penrhos Leisure scheme will attract an additional 150,000 visitors per year once the entire scheme is completed.

10.236 It should be noted that the Penrhos Leisure Village is expected to attract visitors all year around in equal numbers each season. Therefore it can be assumed that post 2022 the Leisure Village will attract 12,500 visitors a month.

Table 10.13: Predicted numbers of visitors to the Penrhos Leisure Village (Penrhos and Cae Glas)

Year	Stage in development	Predicted numbers of visitors per year
2020	Penrhos completed	Up to 85,000
Post 2022	Cae Glas refurbishment completed	Up to 150,000

(data extracted from Regeneris, 2012).

Current numbers of walkers within the Holy Island Coast SPA

10.237 Information on the annual usage of different sections of the Anglesey Coastal Path is presented in Table 10.14. However these figures are likely to be under estimates due to limitations in monitoring methods (Jones, *pers comm*., Aug 2012).

Table 10.14 Annual numbers of visitors using different parts of the Anglesey Coastal Footpath

Location	Distance to nearest part of development	2006	2007	2008	2009	2010
Breakwater CP	3.6km northwest of Penrhos	-	-	-	8,425	9,904
Rhoscolyn	4.3km south of Cae Glas	11,122	-	-	-	-

10.238 In excess of 100,000 people currently visit South Stack RSPB nature reserve (Moralee, *pers. comm.* 2011). Approximately 50% of the Holy island SPA coastline falls within the RSPB reserve.

10.239 It is likely that a very large proportion of the visitors to the Holy Island SPA will visit parts of the SPA located within the RSPB South Stack nature reserve. However, given that other parts of the SPA coastline are accessible it is likely that the total number of annual visitors to the Holy Island Coast SPA will exceed 120,000.

Predicted numbers of walkers within the Holy Island Coast SPA

10.240 It has been predicted that once the Penrhos Leisure Village is at full capacity, post 2022, there could be a 7% increase in visitors to Anglesey in the summer months and up to a 30% increase in visitors in the winter months. In addition to this the existing population on Holy Island would rise by approximately 7.5% by 2022 as a result of Kingsland.

10.241 Taking into account the locations of the Penrhos Leisure Village sites relative to the location of the Holy Island Coast SPA it can be assumed, as a reasonable worst case scenario, that 50% of visitors to the Penrhos sites will visit the Holy Island Coast SPA. Therefore assuming that the SPA currently attracts 120,000 visitors each year, the total number of visitors to the SPA would eventually rise by around 75,000 to 195,000 visitors each year (a 62.5% increase).

10.242 Therefore assuming the chough breeding season is April to July inclusive, an additional 25,000 visitors could use the Holy island SPA during the chough breeding season. It is likely that the majority of these extra visitors will visit the RSPB South Stack nature reserve where visitors are managed by wardens to ensure that any potential disturbance to choughs is minimised. It is also likely that the majority of these visitors would only walk short sections of the coastal path, thus reducing the potential for chough disturbance to occur.

10.243 It is unlikely that the chough nest sites will be directly affected by disturbance since choughs usually nest in sea caves within the cliffs, which are generally inaccessible. However walkers on the coastal footpath could potentially disturb birds foraging in cliff top habitat.

Sensitivity of choughs to disturbance

10.244 It is known that the chough population at Holy Island Coast SPA has been gradually increasing over the last twenty years. The current breeding population is estimated to be between 16 and 20 pairs. Holy Island SPA qualifies under Article 4.1 of the Directive (79/409/EEC) for supporting populations of European importance of the Annex 1 species, chough (18 pairs counted in 1998 – breeding and overwintering). Therefore the chough population appears to be stable or increasing overall.

10.245 However, Countryside Council for Wales's (CCW's) Core Management Plan for Holy Island SAC and SPA (2008) states that the chough breeding population is considered to be "unfavourable declining" because despite the steady increase in breeding numbers over the last 30 years, chough feeding within the SPA, notably on heathland areas, has diminished. This is because the heathland and other habitats lack areas of bare ground as well as animal dung and its associated invertebrate fauna. Due to a reduction in grazing within the SPA this has led to the heathland vegetation becoming sub-optimal for chough foraging and this has resulted in choughs having to leave the SPA, at least some of the time, to forage within farmland in the wider locality.

10.246 A study of chough fledging success at Ouessant in Brittany revealed that prey biomass availability can influence fledging success and potentially fledgling survival (Kerbiriouu and Julliard, 2007). Therefore it is possible that the availability of good foraging habitat close to nest sites is presently a limiting factor for choughs nesting on Holy Island.

10.247 Choughs are generally tame birds which can be approached without causing disturbance, research indicating minimum flushing distances of nine to eleven metres. Therefore the chough is not a species likely to be easily disturbed when feeding (Cramp *et al*., 1994).

Conclusion

10.248 Taking into account the predicted increase in visitors to the Holy Island SPA, the stability of the chough breeding population and the existing habitat management undertaken by the RSPB in visitor hotspots, it is considered unlikely that the proposed Penrhos Leisure Village development will result in a significant adverse effects on the Holy Island Coast SPA or its chough population.

Holy Island Coast SAC

10.249 The increased number of residents on Holy Island and the increased number of visitors, particularly in the summer, will result in greater numbers of people walking the coastal footpaths within the Holy Island Coast SAC. This could result in trampling effects on Annex 1 habitats associated with the Holy Island Coast SAC, particularly European dry heaths.

10.250 The primary reason for the designated of Holy Island Coast SAC relates to the presence of the Annex 1 Habitats 1230 Vegetation sea cliffs of the Atlantic and Baltic coasts and 4030 European dry heaths. Maritime heath habitat supports the rare spotted rock-rose *Tuberaria guttata.* Holyhead Coast SAC is the most important site in Wales for European dry heaths. The SAC also contains the qualifying Annex 1 habitat 4010 North Atlantic wet heaths with *Erica tetralix* although this is not a primary reason for designation.

10.251 It has already been predicted that there would be a 16,800 increase in visitors every year as a result of the Penrhos Leisure Village. It has also been estimated that in the region of 120,000 people visit the SAC each year. The number of visitors would increase gradually increase between 2018 and 2022.

Condition of the Castal habitats

10.252 Table 10.15 confirms the condition of qualifying feature coastal habitats within the SAC.

Table 10.15 The condition of qualifying feature habitats within the Holy Island Coast SAC

Habitat	Condition	Locations particularly requiring management within SAC
Dry heath	Unfavourable declining	Holyhead Mountain, Penrhosfeilw (The Rangle) and Porth Dafarch E and W and Silver Bay.
Vegetated sea cliffs of the Atlantic and Baltic coasts	Unfavourable declining	Tre-Wilmot and Silver Bay.
Wet heath	Unfavourable declining	Tre-Wilmot and Silver Bay.

(CCW, 2008)

10.253 The principle reason for the unfavourable condition of the coastal habitats at Holy Island Coast SAC is due to low grazing pressure. On dry heath, for example, this has resulted in western gorse Ulex europeaus spreading in some areas as well as a low diversity growth of heather devoid of other heathland species and a development of a thatch of fescue grasses and a lack of early successional stages. On dry heaths the lack of grazing has resulted in increased levels of scrub encroachment and a decline in march gentian, pillwort and three-lobed water crowfoot.

10.254 Consultations with the Breakwater Country Park have confirmed that trampling of heathland habitat is not of specific concern within parts of the Country Park which are subject to statutory designation. This is because walkers tend to stay on the footpaths. However on-going grazing research on the heathland within the Country Park is yielding positive results (Stewart, *pers comm*., Sept 2012).

10.255 The RSPB confirm that path maintenance works undertaken on their South Stack reserve focusses primarily on specific locations within the reserve which attract the greatest number of visitors (Bateson, *pers comm*., Sept 2012). Other management priorities within the reserve include mowing and heather burning. Visitors are encouraged to keep to the paths to avoid damage to vegetation adjacent to the footpaths.

Sensitivity of the coastal heathland to trampling

10.256 Trampling refers to the physical effects of walkers, riders, cyclists and motor-cyclists on the heathland habitat. This can be of particular concern to certain specialist heathland species including reptiles and invertebrates that are often associated with the bare ground found along paths and tracks. Trampling can also result in direct loss of heathland habitat due to erosion. This is particularly evident on steep slopes and in wet heathland and mire.

10.257 According to Gallet and Roze (2002) in recent decades, human trampling has become an important factor in the degradation of Atlantic heathlands. In their research into the effects of trampling on heathland in Brittany, they demonstrated that the resistance of heathland to trampling varies with vegetation type, season

and weather conditions. Dry heaths are more tolerant to trampling in the winter than in the summer. Wet conditions in the summer can lower tolerance of bell heather *Erica cinerea* to trampling. The study concluded that management of tourist pressure on heathland sites should take into account the sensitivity of different vegetation types.

10.258 A number of visitor surveys have been undertaken to determine the use of heathlands for recreation, both in the Thames Basin and Dorset. Of particular value is the survey commissioned by English Nature in 2005 (Jonathan Cox Associates, 2006). This study revealed the following insights into how people used heathland SPA sites:

- The majority of people visiting the SPA arrived by car (83% of people), and only 13% arrived on foot;
- The median distance people had driven to reach an access point was 3.1km and 70% of car drivers had come from within a radius of 5km from the access point. For those people travelling by foot, 90% came from within 1.5km;
- A variety of reasons were given for visiting the heaths, representing a broad range of recreational activities, such as cycling, fishing, picking mushrooms, flying model aircraft, wildlife watching or simply taking the children out;
- The number of houses surrounding each access point was a significant predictor of visitor numbers using a radius of 5km, but not further;
- The proportion of residents at different distance bands from each access point was calculated and the report suggests this is the most reliable method to model visitor levels;
- This figure was used to extrapolate an estimate of the total number of visits to the SPA per annum. A crude estimate of over 5 million visits per annum was calculated, using the assumption that the 26 access points used in the study are representative of all access points within the SPA. Accepting the limitations, the figure of 5 million visits per year, if reasonable, is equivalent to many National Parks.

10.259 As a general rule, the number of walkers, riders, cyclists and motor-cyclists likely to use a heathland will increase with an increase in local population and hence there should be some relationship between housing development and the impact of trampling and disturbance. However, it is unlikely that such an impact will increase in a linear and progressive fashion (Jonathan Cox Associates, 2006).

10.260 What influences people to walk or ride on a Heathland protected site and the impact they will have is the result of a number of variables, these will include:

- The proximity of the housing development to the protected site;
- The provision of car parks near to the protected site;
- The provision of paths and access points into the protected site for walkers and riders;
- Proximity of access points and car parks to sensitive areas of the protected site;
- Availability of alternative destinations for walkers and riders and their relative attractiveness;
- Information provided to visitors to the protected site about the potential impacts associated with their visit.

10.261 The nearest proposed houses within the Kingsland site to the Holy Island Coast SAC would be just over a 1.5km walk away along existing public footpaths and roads. Therefore on the basis that 90% of walkers begin their walk within 1.5km

of the heathland site, it is considered unlikely that walkers based in Kingsland would regularly visit the Holy Island SAC, especially as many new Kingsland houses would be a 2km walk from the SAC.

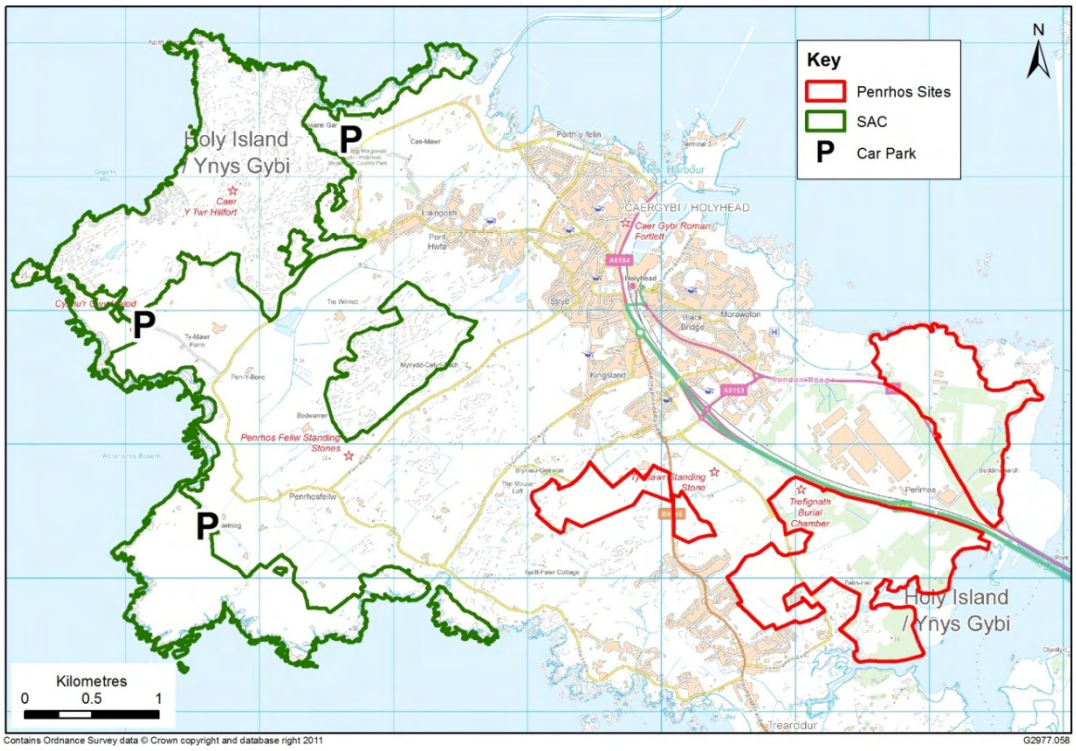
10.262 It is therefore considered likely that areas of coastal habitat within the Holy Island Coast SAC most likely to be effected by trampling will be located near to publicly accessible car parks in various locations on the coast line.

10.263 Reviewing OS mapping, car parks occur in three locations on the northwest Holy Island coastline. The locations of these car parks and the distances by road between the car parks and each Penrhos site are presented in Table 10.16.

Table 10.16 Road distances between Penrhos sites and public car parks within or adjacent to the Holy Island SAC

Car Park Location	Distance in km (approx.)		
	Penrhos	Cae Glas	Kingsland
Porth Namarch (SH226834)	5	6	5
Plas Nicol (SH211818)	7	7.5	6.5
The Range (SH215804)	7	7	5.5

Figure 10.2: Locations of car park access points to the Holy Island Coast SAC



10.264 The Penrhos Leisure Village development will be operated in such a way that visitors are discouraged from using their cars whilst staying on Holy Island. For this reason car parks within the Cae Glas and Penrhos parts of the Leisure Village are located in locations separate from the lodges and other accommodation. Instead, visitors will be given the opportunity to visit a range of local attractions by signing up for organised trips organised by the Leisure Village. Visitors will

ferried to the local attractions via shuttle buses thus avoiding the need for visitors to use their cars.

10.265 Based on the findings of the Thames Basin study it is also important to consider the availability of other attractions in the vicinity of the Penrhos development. The Penrhos and Cae Glas sites will have varied sports and leisure facilities including the Penrhos coastline, Cae Glas nature reserve, extensive gardens and woodland walks, and nearby areas of heathland. The presence of other attractions in close proximity to the Penrhos sites will help to reduce visitor pressure on the Holy Island Coast SAC.

10.266 Furthermore the shuttle bus system will allow visitors to go to a wide range of local attraction including site like the Breakwater Country Park among others on Anglesey and further afield in Northwest Wales. The shuttle bus system will also help to avoid additional pressure on the existing car park facilities associated with the Breakwater Country Park.

Conclusion

10.267 It is predicted that the Penrhos Leisure development will lead to a gradual increase in visitor numbers to the Holy Island SAC; the total number of visitors to the SPA could eventually rise by around 75,000 to 195,000 visitors each year (a 62.5% increase).

10.268 It is also concluded that the Kingsland housing development will be located sufficiently distant from the SAC that residents will tend to drive to the site. It is considered likely that visits to the SAC will be less regular.

10.269 The Penrhos Leisure Village organised trips to sites such as the Breakwater Country Park will help to manage the increase in visitor pressure, avoiding a considerable increase in car park usage and limiting the number of visitors that actually go to the SAC. Furthermore visitors will be given opportunities to go to a wide range of destination, both local and further afield.

10.270 Land managers of the Holy Island Coast SAC, such as the Breakwater Country Park, have confirmed that heathland trampling is not currently of specific concern at this time. Therefore it is unlikely that the predicted increase in numbers of visitors to the SAC would result in serious trampling impacts on heathland.

10.271 Therefore it is considered unlikely that the Penrhos leisure development will result in trampling effects on the SAC which result in the loss of substantial areas of heathland.

10.272 In the worst-case scenario it is considered likely that increased visitor pressure would result in trampling impacts on heathland habitat located alongside footpaths located within 500m of each of the three main car park access points. Therefore 3km of coastal footpath would be affected. Assuming that trampling effects would primarily affect heathland habitat within 50cm of the footpath on average this would mean that 3,000 square metres of heathland would be impacted by excessive trampling. The total area of Holy Island Coast SAC is 464.27ha (4,642,700 square metres). Therefore 0.065% of the SAC would be affected by excessive trampling.

Holy Island SSSI

10.273 Holy Island Coast SSSI is designated for its seabird colony and other cliff nesting birds as well as its coastal habitats and vascular plants. Potential operational

impacts on the Holy Island SSSI have already been considered under the SSSIs other designations (SPA and SAC).

Beddmanarch-Cymyran SSSI

Penrhos

10.274 The proposed development is likely to result in increased numbers of people using the existing coastal footpath at Penrhos. Development proposals include the construction of up to 500 lodges on the Penrhos site.

10.275 The coastal footpath is already used throughout the year by dog walkers, families and birdwatchers. Based on observations during field surveys, Penrhos appears to be predominately used by the local population rather than visitors to Holy Island.

10.276 Information on the annual usage of Penrhos Country Park is presented in Table 10.17 although it has been acknowledged that these figures are likely to be under estimates (Jones, pers comm., Aug 2012).

Table 10.17 Annual numbers of visitors using Penrhos CP

Location	Distance to nearest part of development	2006	2007	2008	2009	2010
Penrhos CP	Within Penrhos	18,306	25,167	19,288	22,365	20,959

10.277 Wintering birds that use the Penrhos coast are therefore already subject to a moderate level of disturbance from both the pedestrians currently using the Coastal Park and the car parking area, and from the busy A55/A5 road crossing to the south of Penrhos. It is highly unlikely that any increase in levels of disturbance in this location will be sufficient to significantly affect waders and wildfowl using these areas.

10.278 Birds were only found to roost on the rocky outcrops to the north of Penrhos at mid and high tide when the rocks are inaccessible from the shore. These locations will therefore be inaccessible to pedestrians while they are being used by roosting birds. It is therefore highly unlikely that birds in this area be vulnerable to disturbance caused by increased numbers of pedestrians using these rocky areas for recreational activities such as rock pooling.

10.279 The Penrhos development includes proposals to operate water based recreation facilities from a location at the north end of Penrhos outside of the Beddmanarch-Cymyran SSSI. It is intended that a voluntary management agreement will be put in place by which the SSSI will be treated as a prohibited zone for water based recreation activities.

10.280 It is well documented that boat based activities can cause disturbance effects on coastal waterbirds (Cutts *et al.,* 2009). The magnitude of these effects vary in magnitude from a reduction in waterbird feeding efficiency due to increased alertness up to displacement of waterbirds from a zone within a site or even the entire site. Motorboats in particular can cause disturbance at distances of up to 600m whereas kayaks can cause disturbance at distances of at least 100m.

10.281 The rocky outcrops used by roosting waders at the north end of the SSSI could therefore be affected by disturbance from water based recreation activities even if no activities are permitted within the SSSI itself.

Cae Glas

10.282 The coastline of Cae Glas, which is adjacent to the Beddmanarch-Cymyran SSSI, is not currently accessible to the public although members of the public are able to access the Inland Sea from other locations on the Inland Sea. Small numbers of kayak are seen on the Inland Sea during good weather and fishermen occasionally visit the Inland Sea. However the Cae Glas coastline part of the Inland Sea is currently only subject to very low levels of disturbance at present. There is therefore the potential that an increase in access to the Cae Glas coastline could increase disturbance effects on waterbird roosting areas, feeding areas and breeding areas associated with this area.

10.283 Surveys have revealed that several locations along the Cae Glas coastline are particularly important for roosting waterbirds during the winter months and also spring and autumn migration periods. However feeding waders and wildfowl have been recorded along most parts of the Cae Glas coastline in small to moderate numbers during the winter months. In addition to this surveys have identified an important waterbird breeding area on the vegetated spit at the north end of the Cae Glas coastline and also a small common tern colony on a rocky islet 115 metres to the east Cae Glas. The most sensitive locations on the Cae Glas coastline are illustrated in Figure 10.7.

10.284 Surveys undertaken during the winter 2011/2012 at Cae Glas showed that wintering waders and wildfowl at the coast in this location are vulnerable to disturbance and flush easily. However the layout of the nature reserve will help to avoid disturbance of wintering waders and wildfowl within the Inland Sea. Reserve wardens will help ensure visitors do not stray from footpaths. Dogs will not be permitted in the nature reserve.

10.285 In addition to the Inland Sea's bird interest, this part of the SSSI includes a range of UKBAP priority habitats including saltmarsh, vegetated shingle, sea grassbeds, mudflats. Saltmarsh and vegetated shingle habitats are sensitive to trampling. However the layout of the proposed Cae Glas nature reserve has been designed to discourage visitors from accessing sensitive habitats associated with the SSSI.

10.286 The establishment of the Cae Glas nature reserve will help to ensure that the part of the SSSI known as the Inland Sea is protected since the coastline will be kept free from development for the long term. This will benefit the waterbirds, terns and other birds associated with the SSSI.

10.287 Furthermore natural coastal habitats located within Penrhos and Cae Glas will be subject to a Wildlife Management Plan to help to ensure that the habitats and their associated species are provided long term protection.

10.288 The establishment of the Cae Glas nature reserve and management of its biodiversity under a Wildlife Management Plan will benefit the important birds and habitats associated with this location.

Woodlands and plantation

10.289 Increased visitor pressure could result in deterioration of the woodland edge through disturbance (littering, antisocial use, compaction, etc). However, the woodland plantation will continue to be monitored and managed for wildlife

conservation, public amenity and health and safety. Arboricultural management will include measures to alleviate compaction. No significant effect is anticipated upon woodland or plantation during operation of the site once the proposals have been completed.

Ponds and reedbeds

10.290 During the post-construction period there is a potential risk of pollution from a release of hazardous chemicals into pond or reedbed habitat. The reedbed on the north boundary of Kingsland and ponds within Penrhos and Cae Glas are located within relatively close proximity to roads, a potential source of pollution.

10.291 The pond located on the west boundary of Kingsland is too distant from development works areas to be affected by a pollution event and it is not hydrologically linked to parts of the proposed development site to be subject to construction activities.

10.292 Disturbance or degradation of pond habitat could occur though compaction, erosion or prevention of establishment of bankside vegetation arising from increased visitor access in Penrhos in particular. Other degradation effects might include litter and windblown debris.

UKBAP habitats (sensitive to trampling)

10.293 There is a possibility that visitors to the Cae Glas nature reserve could trample lowland heathland vegetation and saltmarsh in the event that the visitors leave the footpath network.

10.294 Areas of lowland heathland located on the west part of Cae Glas including part of Trearrdur Mews and also at the far west end of Kingsland are also sensitive to trampling.

Vascular plants

10.295 Increased visitor access and numbers are not likely to result in significant impacts upon bluebells. Bluebells are present in broadleaved plantation woodland at Penrhos. Bluebells are generally considered to evoke enjoyment and it is likely that displays would be valued by the visitors accessing Penrhos.

10.296 The uncommon coastal plants seaside centaury on the Penrhos coastline and lanceolate spleenwort and wood small reed on the Cae Glas coastline could also be effected be trampling. However, these trampling effects are likely to be more significant on the Penrhos coastline due to the greater numbers of people that will be walking the Penrhos coastline.

Breeding birds

10.297 The grey heron colony associated with the north conifer plantation is particularly susceptible to human related disturbance and it is an offence to disturb the Schedule 1 bird species common crossbill which also nests in the conifer plantation at Cae Glas. However the layout of the proposed nature reserve will help ensure that visitors do not disturb the heronry.

Bats

10.298 Bats are nocturnal creatures emerging from roost sites at dusk to forage during the hours of dark and returning to roost at dawn. Different species emerge at

different times according to varied preferences in light levels. As a consequence, bats are vulnerable to disturbance from changes in lighting levels. Permanent artificial lighting can impact on foraging and commuting behaviour of bats and could result in roost abandonment if lighting falls onto a roosting feature or if roost dispersal routes become significantly fragmented.

10.299 Lighting designs for the new buildings, footpaths and activity areas are not finalised. Designs are assumed include lighting of woodland lodge and car park areas as well as central hub locations associated with Penrhos and Cae Glas. Where lighting is proposed in woodland areas at Penrhos, there is the potential to effect roosting bats. Lighting of new footpaths is also possible.

10.300 Lighting is currently present within some of the more open locations within the Penrhos and existing bat populations will have acclimatised to a certain level of lighting in certain areas.

10.301 The levels of change introduced as a result of the development are likely to be significant in the central hub of Penrhos where the Pavilion Building bat roost site is located.

10.302 The Water Tower roost site is located within an area of woodland that will be retained. The retained trees will help to screen the roost from new artificial lighting associated with woodland lodges approximately 30m to the west of the roost. However any artificial lighting associated with the existing footpath in the location could detrimentally affect the roost.

10.303 The creation of new woodland glades for new lodges and car parking areas at Penrhos and Car Glas have the potential to provide a more structurally and botanically diverse habitat than currently exists. This will increase invertebrate diversity and abundance, resulting in increased foraging opportunities. Additionally, the creation of the new woodland glades will ensure that sheltered woodland edge foraging and commuting habitats exist during most weather conditions.

Badgers

10.304 The proximity of the lodges to the sett may cause a minor long term increase in disturbance to existing setts located in close proximity to the new development.

10.305 The creation of the two new badger core habitat areas at Penrhos will help to ensure that the badgers have access to setts in locations relatively free from disturbance.

10.306 It is likely that the footpaths located in the vicinity of the badger core habitat areas will be heavily used both by visitors to Penrhos and visitors to the Penrhos Leisure Village. Any unauthorized access to the badger core habitat areas might potentially lead to the discovery and subsequent disturbance of the setts. Occasional disturbance of the setts could disrupt badger foraging behaviour whilst regular disturbance might cause the badgers to abandon the sett.

10.307 Artificial lighting within woodland areas at Penrhos, and particularly along footpaths adjacent to the badger core habitat areas, could cause some disruption of badger foraging behaviour.

Water voles

10.308 There is a possibility that the new proposed water vole ditch habitat to be located adjacent to new car parking areas at the north end of Cae Glas could be affected by urban run-off from the car park. This could result in a reduction in water quality resulting in a degradation of water vole habitat, should water voles colonise the area.

Otters

10.309 There is a possibility that otter disturbance could occur post-construction in the event that an otter holt was established within the Cae Glas nature reserve. Disturbance could be caused by visitors to the nature reserve or by habitat management activities.

Red squirrels

10.310 There is a possibility that visitors to the Cae Glas nature reserve will disturb red squirrel drey sites even if the visitors do not leave the footpath network. Red squirrels siting of drey sites is very dynamic and it is possible that drey sites could be stabled close to the footpaths.

10.311 The proposed development will result in the gradual thinning and re-planting of existing conifer plantation at Cae Glas nature reserve. There is the potential for squirrel dreys to be effected by these woodland management works.

Reptiles

10.312 There is a possibility that reptiles could be harmed during habitat management activities undertaking in reptile habitats such as grassland cutting.

10.313 Increased public pressure from walkers could result in the occasional disturbance of common lizards on the Penrhos coastline and the Cae Glas nature reserve. However there will be ample opportunity for reptiles in these locations to take cover in scrub, long grass and other habitats adjacent to footpaths.

Amphibian Assemblage

10.314 Operation of the site will not introduce significant new impacts upon the existing amphibian breeding populations.

10.315 The presence of the new waterbodies and ditch habitat at Cae Glas will encourage the population around the site to expand and will also create a 'stepping stone' feature encouraging dispersal and interchange with populations offsite to the north. These effects will reduce any isolation pressures currently experienced by the common toad population present in the locality.

10.316 The new lodge development in the vicinity of the common toad ponds at Penrhos and increased use of footpaths will not significantly influence the dispersal of amphibians across the site.

Summary of post-construction impacts

10.317 Table 10.18 summarises the ecological impacts of the development on the defined key receptors.

Table 10.18 Summary of post-construction impacts prior to mitigation

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Holy Island Coast SPA	International	Displacement of chough from foraging areas outside SPA	Low impact - Some grassland habitats in the vicinity of Kingsland are suitable for chough feeding. The extent of suitable foraging habitat close to Kingsland is low.	Permanent	Irreversible	Continuous	Unlikely	Not significant
Holy Island Coast SPA	International	Disturbance of chough breeding habitat	No impact - Coastal chough nesting areas within SPA.	Permanent	Irreversible within reasonable timeframe	Continuous	Unlikely	Not significant
Holy Island Coast SAC	International	Trampling of vegetation within Annex 1 habitats	Low impact - Dry and wet heath and cliff habitats within the Holy Island Coast SAC. The integrity of the site will not be affected.	Permanent	Reversible	Continuous	Unlikely	Adverse
Beddmanarch-Cymyran SSSI	National	Disturbance of coastal breeding/overwintering birds	Moderate to High impact - Disturbance levels could increase substantially at Cae Glas nature reserve (High impact) where disturbance levels prior to development are currently low. Waterbirds roosting at Penrhos could also be affected by water based recreation activities.	Permanent	Reversible	Continuous	Probable	Adverse
Beddmanarch-Cymyran SSSI	National	Trampling of saltmarsh/coastal vegetation	Moderate impact – Visitors to Penrhos and the Cae Glas Nature Reserve could cause damage to vegetation within the SSSI, particularly Cae Glas.	Permanent	Reversible	Continuous	Probable	Adverse
Beddmanarch-Cymyran SSSI	National	Incidental disturbance of birds during habitat management works	Moderate impact – Habitat management activities at Cae Glas nature reserve could result in the disturbance of birds in the SSSI.	Permanent	Reversible	Continuous	Probable	Adverse
Woodlands and plantation		Deterioration of woodland edge habitat through physical disturbance	Low impact – Visitors to Cae Glas and Penrhos could cause deterioration of woodland habitat.	Permanent	Reversible	Intermittent for life of development	Unlikely	Adverse

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Ponds	Site	Disturbance or degradation of pond habitat	Low impact – Disturbance or degradation of habitat though compaction, erosion or prevention of establishment of bankside vegetation arising from increased visitor access. FCS of overall resource of standing water would not be reduced.	Permanent	Reversible	Intermittent for life of development	Unlikely	Adverse
UKBAP habitats sensitive to trampling	Local	Trampling of UKBAP habitat	Low impact – Areas of UKBAP habitat (especially lowland heathland and saltmarsh) within Cae Glas, Penrhos and Kingsland could be damaged by trampling. Low impact but becoming more serious over time.	Temporary	Reversible	Intermittent for life of development	Probable	Adverse
Ponds and reedbed	Local	Contamination of pond/reedbed habitat	Low impact – There is the potential for pond and reedbed habitat to be effected by contaminants during the operational phase.	Temporary	Reversible	Continuous	Probable	Adverse
Vascular plants	Site	Trampling of protected plant species	Low impact – Reduction in the distribution of native bluebells within Penrhos.	Temporary	Reversible	Continuous	Probable	Adverse
Vascular plants	Site	Trampling of uncommon plants species	Low impact – Reduction in the distribution of uncommon coastal plant species such as Seaside centaury at Penrhos.	Temporary	Reversible	Continuous	Probable	Adverse
Birds	Local (Cae Glas)	Disturbance of habitats leading to localised exclusion.	Moderate impact – Disturbance to bird species breeding in retained habitats and partial loss of breeding territories. The Schedule 1 bird species common crossbill and the heronry, both at Cae Glas, are particularly sensitive.	Temporary or Permanent	Reversible	Intermittent	Probable	Adverse

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Birds	Site/Local	Disturbance of birds due to human avoidance	Low impact – The increased presence of visitors across the site and increased access in the broadleaved plantation could have a localised disturbance effect on nesting birds. A reduction in the function or quality of the receptor, but no significant habitat loss or reduction in FCS.	Permanent	Reversible	Continuous	Unlikely	Adverse
Bats	Local	Increased disruption to foraging and commuting bats offsite by increased lighting	Moderate impact – New lighting at Penrhos may affect behaviour of roosting bats at the Pavilion and Water Tower buildings. Moderate magnitude of change – disruption of population (e.g. change to roosting emergence patterns), but no significant habitat loss or reduction in FCS.	Permanent	Reversible	Continuous	Probable	Adverse
Bats	Local	Changes to foraging and commuting routes	Low impact – Increased connectivity in north Penrhos and Cae Glas nature reserve and increased sheltered foraging habitats along woodland edge associated with new glades. Low magnitude of change – increase in commuting and foraging options but no effect on FCS.	Permanent	Irreversible	Continuous	Probable	Beneficial
Badgers	Site	Disturbance of badgers by visitors	High impact – Increased exposure of badger setts in some locations within Penrhos resulting from lodge development within 30m and increased use of existing footpaths. A reduction in the function or quality of the receptor could occur resulting in potential displacement.	Permanent	Reversible	Continuous	Unlikely	Adverse
Badgers	Site	Disturbance of badgers during woodland management works.	Moderate impact – Future woodland management activities in Penrhos and Cae Glas nature reserve in particular have the potential to disturb badger setts.	Temporary	Reversible	Continuous but short duration	Probable	Adverse

Receptor	Value	Impact Description	Extent & Magnitude	Duration	Reversibility	Frequency	Probability	Direction of Significance
Water voles		Reduction in quality of water vole habitat	Moderate impact – Should water voles colonise new habitats in Cae Glas, urban run-off from car parking could a reduction in quality.	Temporary	Reversible	Continuous	Unlikely	Adverse
Otters	Local (Cae Glas only)	Disturbance of otters	Moderate impact - Disturbance of an otter holt might be caused by nature reserves visitors or by habitat management works.	Temporary or Permanent	Reversible	Continuous	Unlikely	Adverse
Red squirrels	Local	Disturbance of red squirrel drey and den sites.	High impact – Increased exposure of red squirrel drey sites in some locations within Cae Glas nature reserve resulting from visitors. A reduction in the function or quality of the receptor resulting in potential displacement.	Permanent	Reversible	Continuous but short duration	Probable	Adverse
Reptiles	Local	Loss of individuals – killing or injury during management works.	Low impact – Killing or injury of individuals that present within habitat management works areas. A small proportion of the population would be affected.	Effect upon individuals is short term and immediate.	Reversible (populations would eventually replenish itself)	Continuous	Probable	Not significant
Reptiles	Local	Disturbance of basking reptiles	Low impact – This could occur on footpaths associated with the Penrhos coastline and Cae Glas nature reserve.	Temporary	Reversible	Continuous but short duration	Near certain	Not significant

Mitigation Measures

10.230 This section describes the measures which are required to mitigate any significant environmental impacts.

10.231 Mitigation proposals for Kingsland, Cae Glas and Penrhos are presented at Figures 10.10 to 10.12 respectively.

10.232 The appointment of an experienced Ecological Clerks of Works will be a key foundation to ensure the successful implementation of the mitigation package. This ensures that all mitigation works are implemented correctly helping to ensure that many potential impacts are avoided and being available to provide advice to contractors as necessary. The correct implementation of mitigation works would also be supported by a Construction Environmental Management Plan (CEMP) which would include the following generic measures:

- Comply with the requirements of the Ecological Clerk of Works employed on behalf of the developer;
- Establish site fencing to prevent access to areas outside works areas, particularly in areas adjacent to features of ecological value;
- Implement procedures to ensure that potentially dangerous materials on site are stored to safely to avoid ecological impact;
- Provide briefings and instruction to contractors regarding biodiversity issues present on the site.

Demolition and Construction

Beddmanarch SSSI

10.233 No development proposals are planned for parts of Cae Glas near The Inland Sea apart from woodland and habitat management, path creation and potentially bird hide construction. None of these activities will be undertaken in the vicinity of the nesting birds associated with the tern colony or the spit during the breeding season of the bird species associated with each nesting site.

10.234 Construction activities will be timed to avoid sensitive periods including the breeding season and the late winter period when birds are most vulnerable to disturbance.

Woodland and trees

10.235 Retained and new woodland areas within the Penrhos and Cae Glas sites will be managed in the long term to maximise their wildlife and amenity value. Management objectives would include proposals to continue to diversify species composition and habitat structure over time. Woodland management works would be undertaken in accordance with a Landscape and Wildlife Management Plans.

Heathland

10.236 Retained and new heathland areas within Cae Glas will be managed in the long term to maximise their wildlife and amenity value. Heathland management works would be undertaken in accordance with a Landscape and Wildlife Management Plans.

Vascular plants

10.237 A survey will be completed in the appropriate season prior to tree felling to identify the current presence and locations of viable influorescences of native bluebells within areas to be affected by tree removal works.

10.238 Any inflourescences that are found which will be affected by the hedgerow removal works will be translocated using suitable methods. Where appropriate, soil samples and host plant specimens will also be harvested to maximise the success of the translocations. Seed may also be harvested, if seasons are appropriate, to assist re-establishment of the plant in other suitable locations.

Birds

10.239 No development proposals are planned in the vicinity of the heronry on the Cae Glas coastline during the grey heron breeding season. Note that grey herons being nesting as early as February.

10.240 Buildings and ponds will be checked for nesting birds prior to their demolition/modification if these activities are undertaken during the breeding bird season.

10.241 A bird nest box scheme will be set up in the Penrhos and Cae Glas sites to increase nesting opportunities for breeding birds.

10.242 Replacement reedbed habitat will be created in the event that any area of reedbed is lost to development.

10.243 Replacement hedgerows will be planted to mitigate for the loss of hedgerow within the Cae Glas and Kingsland sites. Replacement hedgerows will be composed of a broad mix of native tree species, ideally of local provenance.

10.244 The risk of predation by foxes has recently increased due to sand accretion removing the barrier of water between the spit and the mainland. It is planned that the area is re-excavated to prevent foxes from accessing the spit nesting site resulting in a conservation benefit.

Bats

10.245 A bat development licence will be obtained from CCW prior to undertaking construction activities affecting roosting bats.

10.246 One artificial bat roost will be constructed prior to the Erw Deg house bat roost being lost to development. The new roost will resemble the old roosts in as many aspects as possible including size, orientation and location.

10.247 The new bat roost building will be constructed on the west boundary of woodland block W54 approximately 300m east of the Erw Deg roost site. The new roost building will be in a location connected to suitable foraging and commuting habitat where light disturbance will not occur.

10.248 An existing building located 50m to the north of the proposed new bat roost building will be installed with bat bricks within its roof space to provide possible mitigation for the reduction in the potential of the Pavilion Building to support roosting bats.

10.249 Demolition of buildings with moderate or high potential for roosting bats will be carried out using best practice guidelines, dismantling any bat friendly features by hand under the supervision of an ecologist.

10.250 Bat box schemes will be installed across Penrhos and retained woodland within Cae Glas to encourage roosting bats in these areas and to compensate for any loss of potential bat roosts in trees (Figures 10.10 to 10.12).

10.251 Further survey work of the trees in areas W22, W57, W63, W65 and W68 (Appendix 10.14 – G2977.002) will be undertaken when felling works is undertaken in these areas. If any of the trees are found to support roosting bats a licence will be obtained from the Welsh Government to fell these trees.

10.252 If demolition works of any of the buildings is necessary more than 12 months from the date of the 2012 survey, further bat surveys will be required prior to demolition of buildings with moderate or high bat potential.

10.253 Site clearance and construction activities will be limited to daytime periods to minimise light disturbance effects on bats during the construction phase.

Badgers

10.254 A badger licence will be obtained from CCW for setts requiring demolition. Sett closure works will be undertaken between July and November.

10.255 Two distinct areas will be provided within Penrhos as mitigation for loss of badger cover; one in the woodland east of the current walled garden (Badger Mitigation Area 1) and another within a sizeable block of continuous woodland in the south part of Penrhos (Badger Mitigation Area 2). These two areas, shown on Figure 10.10, will be kept free from human disturbance using features such as dense shrubs and potentially dog-proof fences close to existing footpaths.

10.256 An artificial main badger sett would be constructed in Badger Mitigation Area 1, and an artificial subsidiary badger sett would be constructed in Badger Mitigation Area 2. Artificial setts will be created approximately one year in advance of licensable works affecting subsidiary, annexe or main setts.

10.257 Consideration will be given to whether it is necessary to temporarily close existing main setts at Penrhos to be retained during construction activities within 20m of the setts. Tree planting will be undertaken in the vicinity of both main setts prior to construction activities to provide additional screening.

10.258 Temporary construction fencing will be used to ensure that construction workers do not enter sensitive badger sett locations at Penrhos and Cae Glas during the construction phase.

Water voles

10.259 To ensure that water voles are not disturbed, pre-construction surveys will be undertaken to determine the locations of any burrows present and burrows will be protected for the duration of works.

10.260 Scrub covering ditches 14, 15 and 16 (as defined in Appendix 10.13) will be cut back to allow unrestricted access for a repeat inspection to ensure that no water vole activity is evident. In the unlikely event that water vole activity is subsequently confirmed on any of these ditches, a method statement to avoid killing, injury or disturbance to these animals will be produced.

10.261 Water flow will be improved along ditches 14 and 16 (see Appendix 10.13) to enhance habitat quality for water voles in Cae Glas. Remodelling of these ditches will ensure that the new channel is profiled to benefit water voles. At least one bank will be profiled to offer burrowing opportunities. Similar measures will be implemented around the margins of the two new waterbodies to be created in Cae Glas.

10.262 A new ditch will be created along the west edge of the new car park in the north of Cae Glas provided that hydrological survey indicates that the ditch would be likely to contain water.

Otters

10.263 To ensure that otters are not disturbed, pre-construction surveys will be undertaken to determine the presence of any otter holts or evidence of otter activity. It is noted that the otter holt could potentially be some distance inland away from the coastline. There is no specific sensitive time associated with breeding otters since they are polyoestrus.

10.264 In the event that an otter holt is discovered on the Cae Glas coastline it may be necessary to obtain a development licence from the CCW prior to any construction activities. However a licence may not be required if no footpath or bird hide construction activities are proposed close to the otter holt.

Red squirrels

10.265 Dreys are dynamic structures, and their locations will continually change. It will therefore be necessary to undertake pre-construction surveys to determine the exact locations of squirrel dreys within the Cae Glas woodland. Buffer zones will be enforced around any dreys found within in which no construction works will take place. Footpaths within the proposed Cae Glas nature reserve will be routed to avoid existing active drey sites.

10.266 Tree works at Cae Glas will avoid the sensitive period of February to September to ensure active drey sites are not disturbed. Tree felling works at Cae glas nature reserve will be phased over an extended period of several years. All habitat works within the nature reserve will be undertaken in accordance with a Management Plan.

10.267 Management priorities will include safeguarding the red squirrel population at Cae Glas and enhancing opportunities for red squirrels to disperse into areas of suitable habitat located outside Cae Glas. Woodland management within the coastal conifer plantations within Cae Glas will aim to increase structural and species diversity by planting a range of broadleaved tree species.

10.268 Red squirrel feeding stations will be established at undisturbed locations at Cae Glas and Penrhos during the construction period to ensure the available feeding resource is not affected. Supplementary feeding will particularly target the summer and winter months when less food is available.

10.269 Red squirrel nest boxes will be set up in suitable woodland blocks in Cae Glas and Penrhos post-construction to provide additional nesting opportunities.

Amphibians

10.270 Linking areas of tall grassland/scrub will be maintained/created between breeding ponds to ensure suitable cover is available for refuge/movement through the site.

10.271 Two amphibian hibernacula will be created in the following locations to compensate for the loss of terrestrial habitat:

- Within suitable cover adjacent to Pond 1 in Penrhos;
- Within suitable cover adjacent to Pond 3 in Penrhos;
- Within suitable cover in the planting to the north-east of the car parking area in Cae Glas, in the planting adjacent to the newly created pond to the south-east of the car parking area and within boundary planting near Pond 16 on the northwest boundary of Cae Glas.

10.272 A minimum of ten informal refugia incorporating rubble piles and/or brash will be created within woodland/scrub/heathland areas within Penrhos. The precise number and location of these could be agreed at a later stage.

10.273 In addition to the above, a small number of shallow scrapes will be created within the proposed Cae Glas nature reserve area (avoiding the former landfill) which will enhance this area for amphibians as well as other species such as birds and invertebrates.

Reptiles

10.274 A range of Reasonable Avoidance Measures (RAMs) would be implemented to protect reptiles during the construction phase.

10.275 Without prejudice to the proposed method statement, the following measures are likely to be required to protect reptile prior to and during construction, all of which are considered to be licensable activities:

- Appropriate timing of potential hibernacular to reduce disturbance of reptiles during hibernation period;
- Temporary exclusion of the footprint required for the construction buildings in locations where reptiles are known to be present. Capture of reptiles from within construction area and translocation of reptiles to undisturbed areas;
- Destructive searching prior to and during possible hibernacular removal works;
- Destructive searching and phased vegetation clearance (grass cutting) within footprint of site compounds and key access routes that affect suitable habitats;
- Hand searches of works areas >100m from reptile sites prior to works and watching brief during all site clearance and construction activities.

Completed Development

Holy Island Coast SAC

10.276 In the worst-case scenario it is considered possible, but unlikely, that increased visitor pressure could result in trampling impacts on heathland habitat located alongside footpaths located within 500m of each of the three main car park access points. It has been predicted that 3,000 square metres of heathland (0.065% of the SAC) would be impacted by excessive trampling post 2022 when Penrhos and Cae Glas are fully operational.

10.277 The likelihood of this worst-case scenario occurring has already been reduced considerably since visitors to the Penrhos Leisure Village will be discouraged from using their cars whilst staying on Holy Island and will provided with opportunities to visit a wide range of attractions both on Anglesey and further afield.

10.278 Organised trips to the Breakwater Country Park will help to concentrate visitor pressure on the Holy Island Coast SAC making it possible to manage potential trampling effects more effectively. This will principally be achieved through the use of educational awareness using interpretation boards and leaflets. These measures would be implemented through consultation with land managers within the SAC such as the RSPB and the Breakwater Country Park.

10.279 Consultation with land managers of the SAC has confirmed that habitat management works, such as grazing by ponies, are proven to be particularly effective at increasing heathland habitat quality, which also benefits choughs and a range of other specialist species.

10.280 As a pro-active measure it is proposed that an appropriate financial contribution, secured through a S106 agreement, will be made towards the on-going habitat management works being undertaken by the land managers on the SAC. An appropriate fee would be collected for each Penrhos Leisure Village resident that visits the SAC on the organised shuttle bus service which would be passed on to the parties responsible for the management of the visited site. This measure will be implemented as soon as the shuttle bus service commences, prior to 2022, when the Penrhos Leisure Village is predicted to be fully operational.

10.281 Consultations may also be required with the owners and managers of the car parks, Isle of Anglesey County Council and the RSPB respectively, to identify opportunities to improve access conditions to manage the predicted increase in visitor numbers.

Beddmanarch-Cymyran SSSI

10.282 Disturbance and trampling related impacts have been predicted on the Beddmanarch-Cymyran SSSI, principally being caused by visitors to the Cae Glas nature reserve.

10.283 Disturbance and trampling impacts will be minimised or avoided by implementing the following measures:

- The Cae Glas nature reserve will be manned with wardens at all times that the reserve is open to visitors;
- The footpath network will be designed to reduce the risk of disturbance events occurring;
- Visitors numbers to the nature reserve will be limited to an appropriate level at all times;
- Dog walkers will not be permitted to access the Cae Glas nature reserve with their dogs;
- Disturbance events and trampling effects will be monitored regularly;
- Remediation works will be undertaken to respond to any evidence of disturbance or trampling effects;
- Strict controls will be placed on water based recreation activities.

10.284 The Cae Glas nature reserve will be manned by trained wardens at all times while the reserve is open to visitors. The nature reserve will have a strong educational ethos and this approach will include educating visitors about the sensitivity of the habitats and species present within the reserve.

10.285 The footpath network has been designed to largely avoid any negative effects on sensitive waterbirds associated with the Inland Sea. Visitors will not be allowed to access the Cae Glas coastline apart from in a small number of locations where bird hides will be constructed to allow wildlife viewing with minimal disturbance effects on birds. Full use will be made of information boards, way-markers and user friendly paths within both the Cae Glas nature reserve and Penrhos footpaths.

10.286 Discussions are taking place with the RSPB regarding how best to achieve an optimal footpath and bird hide layout which will provide good opportunities for visitors to experience wildlife within the wildlife being affected unacceptably. It will be a priority to ensure that these discussions with the RSPB continue throughout the planning and development of the Cae Glas nature reserve so that the wealth of experience the RSPB has in nature reserve design can be utilized.

10.287 The visitor centre within the Cae Glas nature reserve will provide opportunities for visitors to experience wildlife in an environment that avoids the potential for disturbance to occur through the use of VDUs allowing live observation of the varied wildlife within the reserve and on the Inland Sea coastline. Green spaces will also be provided close to the visitor centre to provide a resting place for visitors, thus concentrating possible disturbance effects in one location within the reserve.

10.288 It will be necessary to cap the number of visitors that are able to access the Cae Glas nature reserve at any one time since it is recognised that the reserve will have a carrying capacity. It is understood that disturbance and trampling effects will become more likely should that carrying capacity be exceeded. The carrying capacity of the reserve will be determine in consultation with the RSPB and other consultees prior to the reserve becoming open to visitors.

10.289 It is considered necessary to prohibit visitors from bringing dogs onto the Cae Glas nature reserve since the likelihood of disturbance events occurring would be increase to unacceptable levels.

10.290 The requirement to undertake monitoring of disturbance and trampling effects would be stipulated in the Wildlife Management Plan and implemented by reserve wardens potentially with the support of Ecological Consultants. The methodology for monitoring of effect would be identified in the Wildlife Management Plan. Trigger levels identifying when remediation works would be required to address any evidence of disturbance and trampling effects would also be stipulated in the Wildlife Management Plan and implemented by wardens when required.

10.291 The findings of monitoring and a description of any remediation works undertaken would be made available in an annual Management and Monitoring report which will be circulated to Isle of Anglesey County Council, the RSPB and other relevant stakeholders.

10.292 Water sports will be restricted to areas outside the Beddmanarch Bay part of the SSSI, which will be marked by buoys. Furthermore consideration will be given to establishing a protective buffer zone which extends beyond the boundary of the SSSI to ensure disturbance effects are minimised. This protective buffer zone would be identified in consultation with CCW, the RSPB and other key stakeholders.

Birds

10.293 Monitoring of breeding bird activity would be undertaken to inform habitat management works within all Penrhos sites. The Wildlife Management Plan would be reviewed in the light of survey findings if necessary.

10.294 Regular annual monitoring of sensitive common crossbill and grey heron colonies would also be undertaken to inform the management of the Cae Glas nature reserve.

Woodland and trees

10.295 Wardens will monitor any evidence of degradation of woodland degradation and undertake remediation works as required.

Ponds and reedbeds

10.296 Wardens patrolling the Penrhos and Cae Glas nature reserve will educate visitors and undertake monitoring to identify the occurrence of habitat degradation as a result of increased visitors to Penrhos. No direct access will be provided to the ponds and small lake at the Penrhos and Cae Glas sites.

UKBAP habitats

10.297 Certain habitats at Cae Glas are sensitive to the effects of trampling, particularly saltmarsh and lowland heathland. Footpath layouts will be constructed to discourage walkers from accessing areas of lowland heathland, saltmarsh and other sensitive UKBAP habitats. The sensitivity of such habitats will be highlighted on interpretation boards.

10.298 Wardens on the Cae Glas nature reserve will also educate visitors and undertake monitoring to identify the occurrence of desire lines within the nature reserve.

10.299 UKBAP habitats located within Penrhos, Cae Glas and Kingsland will be managed to protect and enhance the habitats.

10.300 Long term ecological monitoring of sensitive UKBAP habitats will be undertaken to assess the condition of the habitats. The findings of this monitoring will inform habitat management proposals within the Wildlife Management Plan.

Vascular plants

10.301 The sensitivity of bluebells and uncommon coastal plant species to trampling will be highlighted on interpretation boards. Wardens will monitor any loss of distribution in bluebells due to trampling within Cae Glas and Penrhos.

Bats

10.302 Detailed layout plans for lighting are not known at this time, however where lighting is necessary within the new development, it will be directional and low-level wherever possible. Light would aim to be directed below the horizontal plane at an angle of less than 70^0. Limiting the height of lighting columns and directing light at a low level will reduce the impact of the light on bats. Roads and tracks within the development should contain unlit stretches to avoid isolation of bat colonies.

Red squirrel

10.303 Monitoring of red squirrel dreys within the Cae Glas nature reserve will be undertaken to determine the presence of drey sites which might be sensitive to visitor disturbance and/or certain habitat management works. The Wildlife Management Plan would be reviewed in the light of survey findings if necessary. Monitoring would also be necessary in woodland areas outside of the nature reserve to determine if breeding red squirrels establish drey sites elsewhere within the Penrhos sites.

Water voles

10.304 Monitoring of potential water vole activity on waterbodies within the Penrhos sites will be undertaken to determine if active water vole burrows are present. The Wildlife Management Plan would be reviewed in the light of survey findings if necessary.

Otters

10.305 Monitoring of otter activity within Cae Glas nature reserve will be undertaken to determine if otter holt(s) become established. The Wildlife Management Plan would be reviewed in the light of survey findings if necessary.

Long term monitoring of biodiversity

10.306 Table 10.19 describes long term monitoring requirements of biodiversity at Penrhos between 2013 and 2022. More frequent monitoring may be required during construction periods, particularly if any works are subject to development licences from CCW/Welsh Government.

Table 10.19 Long term monitoring of biodiversity at Penrhos 2013 to 2022

Species group	Monitoring commitment
Phase 1 Habitat survey	Updated every five years including 2014 and 2019.
Vascular plants survey	Updated every five years including 2014 and 2019.
Breeding birds	Undertake a breeding bird survey in accordance with the British Trust for Ornithology's (BTO) BBS guidance with two visits each survey year. Updated in 2014, 2017 and 2020.
Sensitive breeding bird species	Annual counts of common tern, common crossbill and grey heron would be undertaken in collaboration with the RSPB.
WeBS	Full access would be provided to BTO representatives of the WeBS waterbird monitoring scheme to ensure this work is continued.
Bats	The bat box and bat building mitigation scheme will be monitored in 2015, 2018 and 2021.
Red squirrels	Updated every three years including 2014, 2017 and 2020.
Badgers	Updated every three years including 2014, 2017 and 2020.
Otters	Updated every three years including 2014, 2017 and 2020.
Water voles	Updated every three years including 2014, 2017 and 2020.
Amphibians	Four survey visits in accordance with CCW guidance covering all on-site ponds. Updated every three years including 2015, 2018 and 2021.

Residual Impacts

10.307 The residual impact assessment assumes that the mitigation described in the section above has been implemented.

10.308 Tables 10.20 and 10.21 summarise the residual impacts on the key receptors during the construction and operation phases on the basis that the mitigation measures (detailed in the previous section) are incorporated into the scheme design.

10.309 The assessment of residual impacts accounts for how successful the suggested mitigation measures are anticipated to be in avoiding, reducing or compensating for the identified impacts. A precautionary view is taken. For example, if the impact without mitigation is slight adverse, and the mitigation is likely to remove most of the impact, but there is some uncertainty as to whether it would remove all the impact, then the residual impact is classed as "negligible", rather than "none". Where construction mitigation measures may only become effective in the very long term timescales (such as for establishment of mature trees), the significance of residual impacts are not reduced, regardless of the eventual certainty of the mitigation measure.

Demolition and Construction

10.310 The summary of residual impacts after construction effects (including site clearance) have been mitigated for is presented in Table 10.20. This table includes a summary of significance in accordance with IEEM guidelines (significant residual impacts, adverse or beneficial, operating on the level at which the receptor is valued).

Table 10.20 Summary of residual impacts arising from demolition and construction

Receptor	Value	Impact in the absence of Mitigation	Mitigation	Direction of Significance
Beddmanarch-Cymyran SSSI	National	Disturbance of coastal breeding/overwintering birds during bird hide and footpath construction in nature reserve	Avoidance of works during sensitive periods – breeding and late winter.	Not significant
Beddmanarch-Cymyran SSSI	National	Removing sand accretion between vegetated spit and Cae Glas coastline	None	Beneficial
Woodlands and plantation	Local	Partial loss of woodland to facilitate new development	Long term management of retained and new woodland areas.	Not significant
Hedgerows	Local	Small increase in quantity but increase in habitat quality	Long term management of retained and new hedgerow habitat.	Beneficial
Ponds	Site	Ponds enhanced to increase their wildlife and amenity value	None	Beneficial
Ponds	Site	Creation of a small lake	None	Beneficial
Gardens	Site	Loss and gains in garden habitat	None	Beneficial

Receptor	Value	Impact in the absence of Mitigation	Mitigation	Direction of Significance
Reedbed	Local	Contamination of reedbed during construction phase	Implement pollution control measures as defined in CEMP.	Not significant
Coastal heathland	Local	Creation of new habitat in Cae Glas nature reserve	None	Beneficial
Vascular plants	Site	Partial loss of plant Species of Conservation Concern.	Confirm native bluebell distribution prior to felling works. Translocate plants to suitable receptor sites.	Not significant
Birds	Site or Local (Cae Glas)	Disturbance of remaining habitats leading to localised temporary exclusion.	Avoidance of works during sensitive periods – breeding and late winter. Establishment of nest box scheme.	Not significant
Bats	Local	Loss of bat roosts associated with buildings.	Construction of bat roost building. Installation of bat bricks in retained building. Avoidance of works during sensitive periods – late spring and summer.	Not significant
Bats	Local	Loss of potential tree roosts during tree clearance to facilitate new development.	Pre-construction tree surveys. Establishment of bat box scheme.	Not significant
Bats	Local	Disturbance of two bat roosts during construction	Construction activities limited to daytime periods.	Not significant
Badger	Site	Disturbance of badger setts and foraging behaviour.	Provide artificial badger setts in two badger mitigation areas. Phase construction activities to minimise disturbance. Temporarily close setts is required. Erect temporary construction fencing.	Not significant
Otters	Local	Disturbance of otters	Undertake pre-construction survey to confirm presence/distribution.	Not significant
Red squirrels	Local	Loss/disturbance of drey and den sites.	Undertake pre-construction survey to confirm presence/distribution.	Not significant
Red squirrels	Local	Loss of foraging habitat to facilitate development	Establishment of nest box scheme and feeding stations.	Not significant
Red squirrels	Local	New woodland planting.	None	Beneficial
Reptiles	Local	Losses and gains in terrestrial habitats (foraging, shelter & dispersal)	None	Beneficial
Reptiles	Local	Loss of individuals – killing or injury during	Implementation of RAMS. Creation of hibernacular prior	Not significant

Receptor	Value	Impact in the absence of Mitigation	Mitigation	Direction of Significance
		site clearance and construction works.	to destructive works.	
Amphibian assemblage	Site or Local (Cae Glas)	Loss of terrestrial habitats (foraging, shelter & dispersal) to facilitate new development.	Creation of hibernacular prior to destructive works.	Not significant
Amphibian assemblage	Site or Local (Cae Glas)	Loss of individuals – killing or injury during site clearance and construction works.	Implementation of RAMS.	Not significant

Completed Development

10.311 Mitigation measures that are implemented during the construction phase, which may only become fully effective in the long (or very long) term, will come into effect after completion of the development, during the Penrhos scheme life. Significance of residual impacts after operational mitigation measures for these impacts are thus influenced by the overlap with some construction and development effects, due to anticipated establishment of habitats that were created during the construction phase.

10.312 A summary of residual impacts after completion of the development that have been mitigated for is presented in Table 10.21. As with the presentation of residual impacts following construction phase mitigation measures, the table below presents residual impacts in accordance with IEEM guidelines (residual adverse or beneficial impacts significant on the level at which the receptor is valued).

Table 10.21 Summary of residual impacts arising post-completion

Receptor	Value	Impact in the absence of Mitigation	Mitigation	Direction of Significance
Holy Island Coast SAC	International	Trampling of vegetation within Annex 1 habitats	Management of visitors to the SAC via a shuttle bus. Implementing educational awareness measures such as interpretation boards. Collecting a small fee for each visit to a part of the SAC to be contributed to the current on-going habitat management works.	Not significant
Beddmanarch-Cymyran SSSI	National	Disturbance of coastal breeding/overwintering birds	Wardens will patrol Cae Glas nature reserve and Penrhos. Footpath network designed to reduce risk. Visitor numbers to Cae Glas reserve capped and no dog walkers allowed access. Disturbance events monitored.	Not significant

Receptor	Value	Impact in the absence of Mitigation	Mitigation	Direction of Significance
Beddmanarch-Cymyran SSSI	National	Trampling of saltmarsh/coastal vegetation	Wardens will patrol Cae Glas nature reserve and Penrhos. Footpath network designed to reduce risk. Visitor numbers to Cae Glas reserve capped. Trampling effects monitored	Not significant
Beddmanarch-Cymyran SSSI	National	Incidental disturbance of birds during habitat management works	Habitat management works timed to avoid sensitive periods/locations. Breeding birds monitored.	Not significant
Woodlands and plantation		Deterioration of woodland edge habitat through physical disturbance	Condition of woodland monitored.	Not significant
Ponds	Site	Disturbance or degradation of pond habitat	Condition of ponds monitored. Interpretation boards used to educate visitors. Limited direct access to pond edges provided.	Not significant
UKBAP habitats sensitive to trampling	Local	Trampling of UKBAP habitat	Condition of UKBAP habitats monitored. Interpretation boards used to educate visitors.	Not significant
Ponds and reedbed	Local	Contamination of pond/reedbed habitat	Implementation of pollution control structures.	Not significant
Vascular plants	Site	Trampling of protected plant species	Condition of bluebells monitored.	Not significant
Vascular plants	Site	Trampling of uncommon plants species	Condition of uncommon plant species monitored. Interpretation boards used to educate visitors.	Not significant
Birds	Local (Cae Glas)	Disturbance of habitats leading to localised exclusion.	Breeding bird populations monitored. Sensitive bird species monitored on an annual basis. Remediation works implemented under Management Plan if required	Not significant
Birds	Site/Local	Disturbance of birds due to human avoidance	Breeding bird populations monitored. Sensitive bird species monitored on an annual basis.	Not significant
Bats	Local	Increased disruption to foraging and commuting bats offsite by increased lighting	Bat populations monitored at roost sites.	Not significant
Bats	Local	Changes to foraging and commuting routes	Bat populations monitored at roost sites.	Not significant

Receptor	Value	Impact in the absence of Mitigation	Mitigation	Direction of Significance
Badgers	Site	Disturbance of badgers by visitors	Badger sett monitoring. Wardens will patrol Cae Glas nature reserve and Penrhos.	Not significant
Badgers	Site	Disturbance of badgers during woodland management works.	Avoidance of works during sensitive periods.	Beneficial
Otters	Local (Cae Glas only)	Disturbance of otters	Otter migration and holt monitoring.	Not significant
Red squirrels	Local	Disturbance of red squirrel drey and den sites.	Red squirrel monitoring. Wardens will patrol Cae Glas nature reserve.	Not significant
Reptiles	Local	Loss of individuals – killing or injury during management works.	Reptile monitoring. Avoidance of works during sensitive periods in sensitive locations. Safe working practices defined in Wildlife Management Plan	Not significant

Conclusions

10.313 A robust and all-encompassing set of ecological surveys have been undertaken over a three year period from 2010 to 2012. These surveys have identified the extent of a large of habitats and species of ecological importance. Survey scoping was agreed in consultation with CCW and on-going dialogue with CCW, Isle of Anglesey County Council, the RSPB and other key parties has ensured that Penrhos Leisure Village design has been optimised to safeguard and benefit wildlife.

10.314 The development will not directly impact upon statutory designated sites, although there is a possibility of indirect impacts on Holy Island Coast SAC and Beddmanarch-Cymyran SSSI through increased recreational use.

10.315 The potential effect on the Holy Island Coast SAC will be managed by encouraging visitors to the Penrhos Leisure Village to use a shuttle bus system enabling visitors to access a wide range of attractions on Anglesey and beyond including established attractions associated with the SAC. Visitors will also be encouraged to avoid using their cars during their stay. This will make it easier to manage visitor pressure at sites such as South Stack RSPB nature reserve and Breakwater Country Park, more effectively using a variety of visitor management techniques.

10.316 Indirect impacts on birds and habitats associated with the Beddmanarch-Cymyran SSSI will be avoided or minimised by implementing various people management measures. Habitat and bird monitoring will be undertaken to identify if changes in habitat or people management are necessary. These measures would be implemented via a Habitat Management Plan. The sensitive Cae Glas coastline on the Inland Sea would be managed as a nature reserve where visitors can experience wildlife in a carefully managed environment. Establishing the Cae Glas nature reserve will also ensure it is protected long term.

10.317 Some woodland loss will occur within the Penrhos and Cae Glas sites although the areas of wood will retain their woodland character through taking a glade creation approach in the development masterplan. Substantial tree planting will also be undertaken using native species which will maximise benefits for red squirrels, birds and other wildlife. The woodland will be managed in accordance with a woodland management plan ensuring the woodland quality improves over time. Substantial hedgerow planting will also take place to ensure a net gain of this habitat both in terms of quantity but also quality in particular.

10.318 The Penrhos, Cae Glas and Kingsland parts of the development have been designed to maximise benefits for wildlife through the retention and management of important habitats and the creation of new habitats.

10.319 Two ponds and a ditch will be created in the north part of Cae Glas which will be partly designed to benefit wildlife such as water voles. Reed planting will ensure no net loss of this habitat. Extensive areas of gorse covered earth bunds around headland lodges at Penrhos will provide new habitat for reptiles.

10.320 It will be necessary to translocate bluebells in some locations at Penrhos to avoid a reduction in the distribution of this protect plant species.

10.321 Two core badger mitigations areas will be established in Penrhos to mitigate for disturbance impacts during construction and operational phases. Two artificial badger setts will be created at Penrhos as well as a bespoke bat barn/tower replacement bat roost. The lighting scheme at Penrhos will be sympathetic to bats and other wildlife.

10.322 Mitigation measures required to protect ecological features during the construction phase will be detailed in a Construction Environmental Management Plan (CEMP). A number of pre-construction surveys will be undertaken to ensure that survey information is up to date.

10.323 A number of positive residual effects have been identified from the Penrhos Leisure Village proposals whilst no significant negative effects have been identified.

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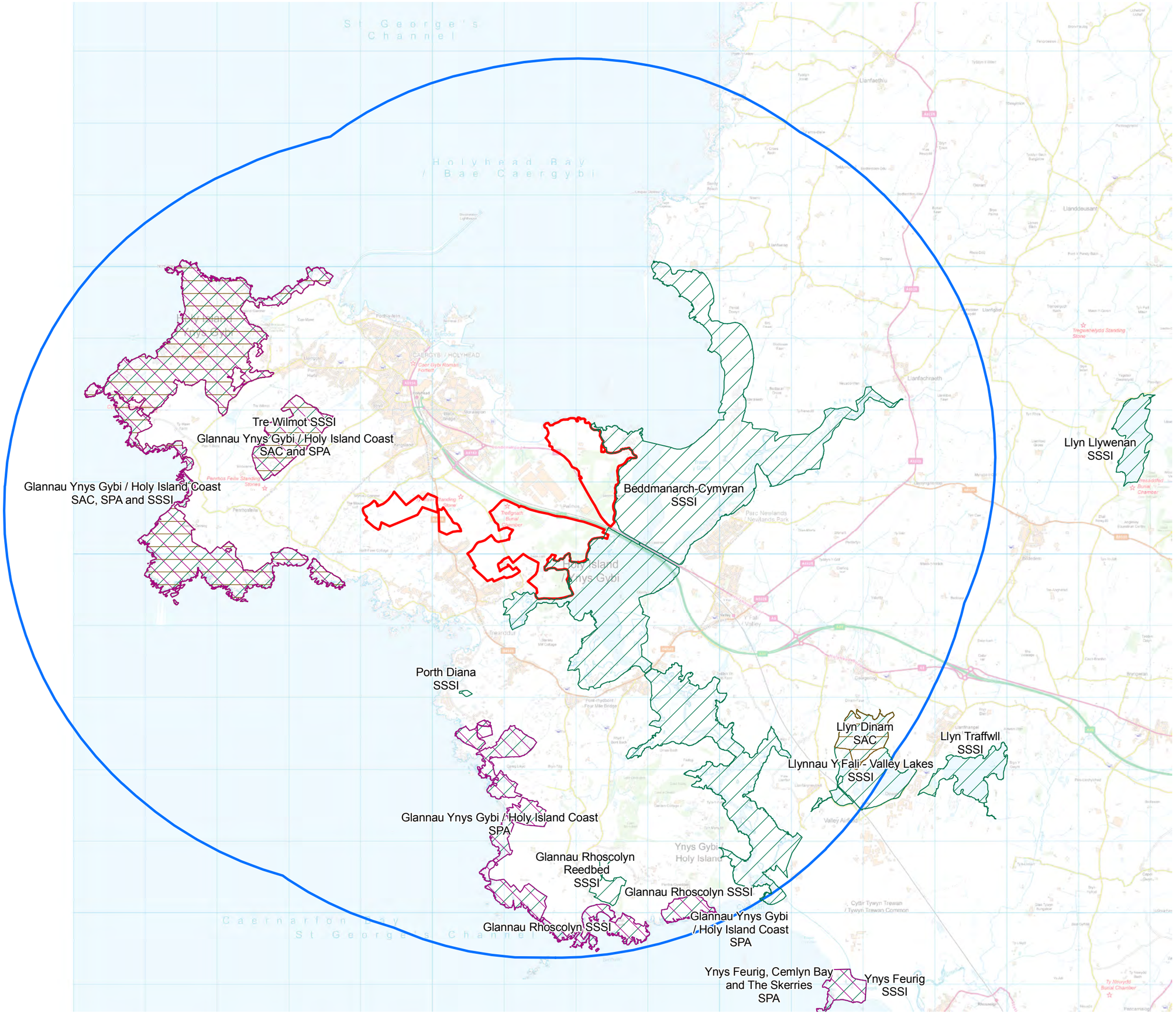

Key

- Approximate Site Boundary
- 5km Buffer from Approximate Site Boundary
- Special Area of Conservation
- Special Protection Area
- Site of Special Scientific Interest

Rev	Description	Dwn	Appvd	Date

TEP
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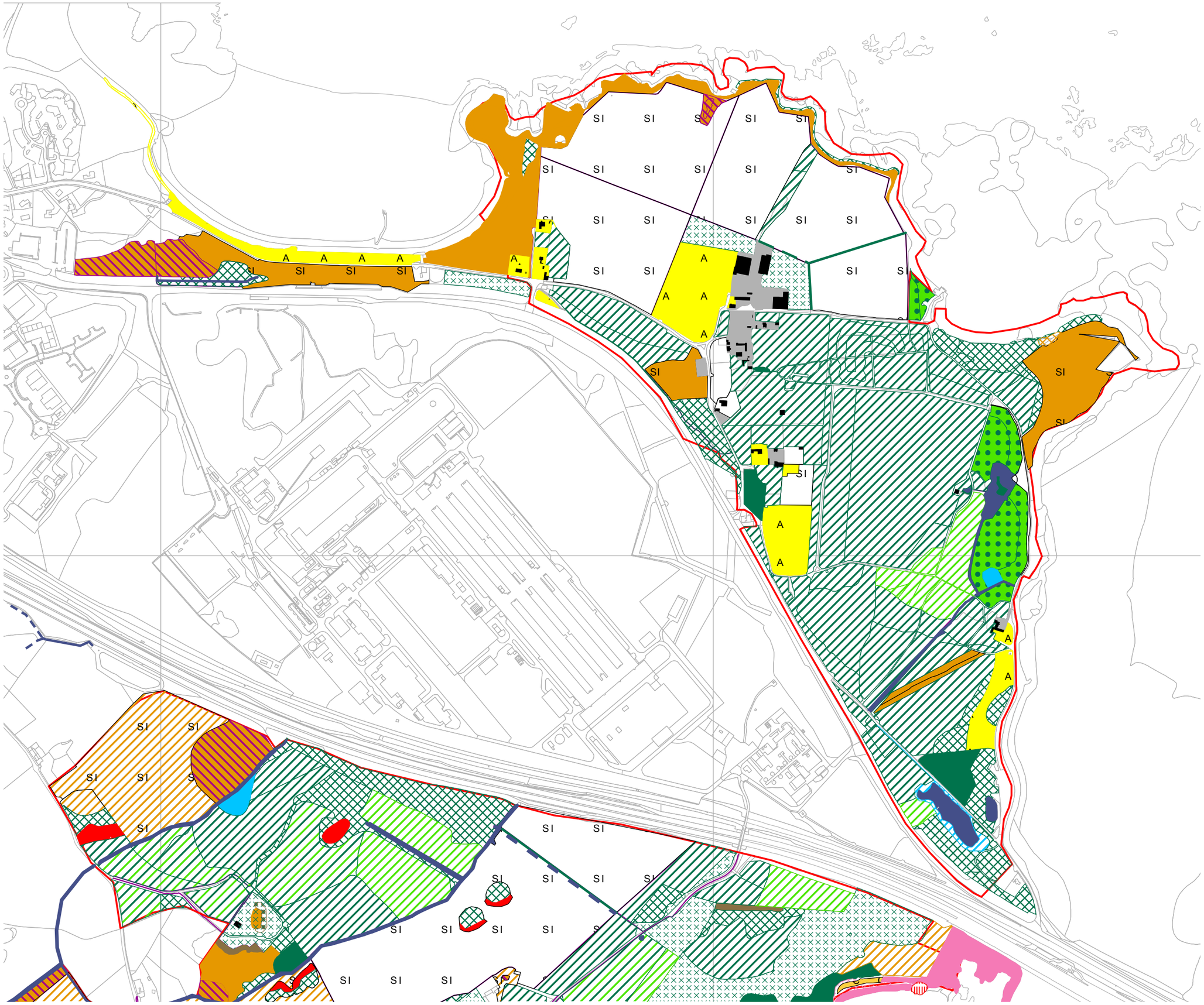
Project:
Penrhos Leisure Village

Title:
Figure 10.2
Statutory Nature Designations within 5km of Proposed Development

Map No.		
G2977.045		
Scale: 1:50,000 @ A3		Date: 02/04/12
Drawn: DH	Checked: TR	Approved: TR



Key

- Approximate site boundary
- Species-poor intact hedge
- Species-poor defunct hedge
- Dry ditch
- Wet ditch
- Semi-natural broad-leaved woodland
- Plantation broad-leaved woodland
- Plantation coniferous woodland
- Semi-natural mixed woodland
- Plantation mixed woodland
- Dense/continuous scrub
- Scattered scrub
- Unimproved acid grassland
- Semi-improved acid grassland (SI)
- Unimproved neutral grassland
- Semi-improved neutral grassland (SI)
- Unimproved calcareous grassland
- Marsh/marshy grassland
- Poor semi-improved grassland (SI)
- Continuous bracken
- Non-ruderal
- Swamp
- Inundation vegetation
- Standing water
- Scattered plants saltmarsh
- Dense continuous saltmarsh
- Hard cliff
- Coastal heathland (C)
- Acid/neutral exposure inland cliff
- Amenity grassland (A)
- Buildings
- Hardstanding

Rev	Description	Dwn	Appvd	Date

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Title: Figure 10.3
Phase 1 Habitat Survey - Inset 3
(Amendment to Capita Symonds Drawing CS042489_GIS_SL1)

Map No. G2977.051c

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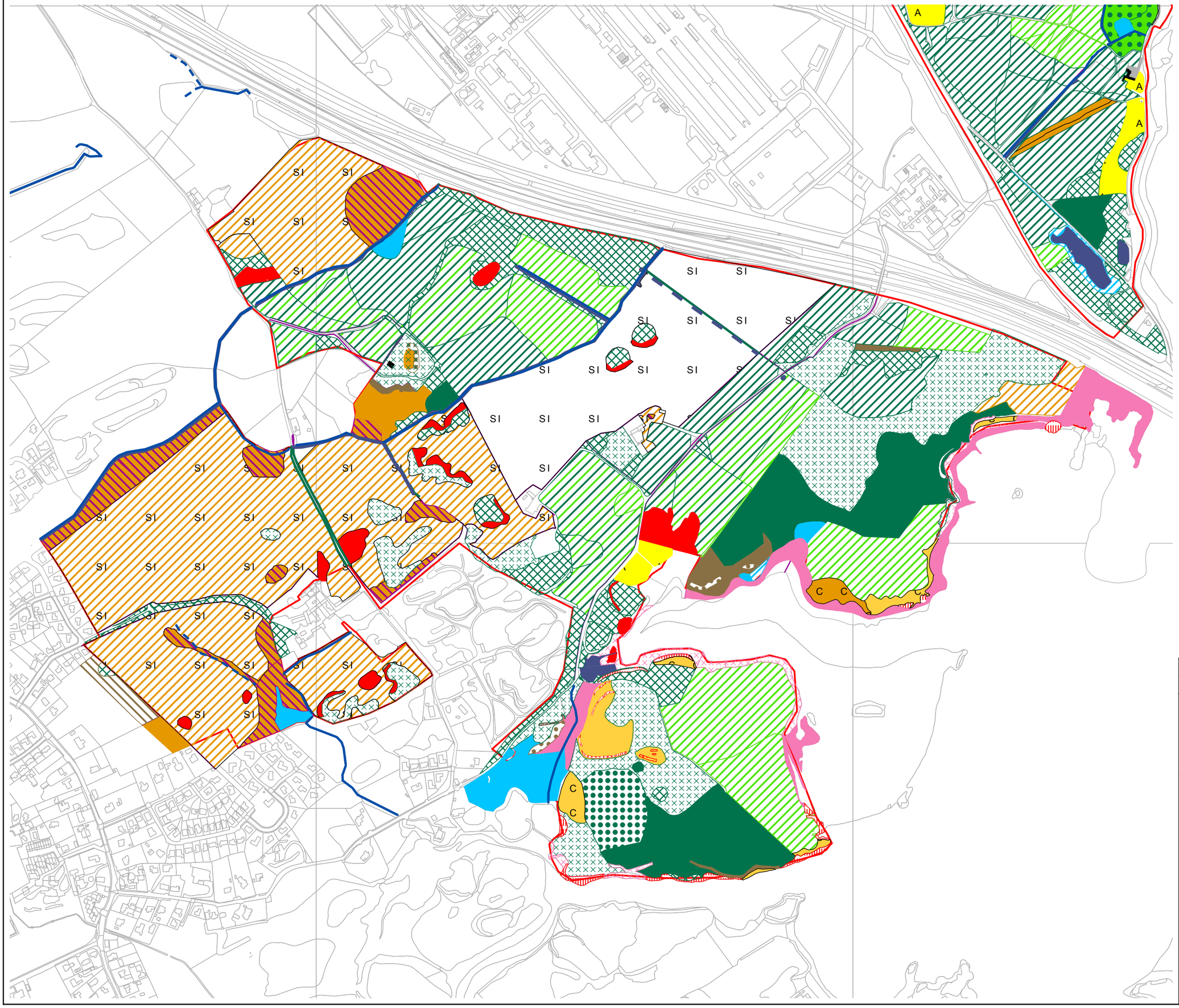
CM	TR	TR



Key

- Approximate site boundary
- Species-poor intact hedge
- Species-poor defunct hedge
- Dry ditch
- Wet ditch
- Semi-natural broad-leaved woodland
- Plantation broad-leaved woodland
- Plantation coniferous woodland
- Semi-natural mixed woodland
- Plantation mixed woodland
- Dense/continuous scrub
- Scattered scrub
- Broad-leaved parkland/ scattered trees
- Unimproved acid grassland
- SI Semi-improved acid grassland
- Unimproved neutral grassland
- SI Semi-improved neutral grassland
- Marsh/marshy grassland
- SI Poor semi-improved grassland
- Continuous bracken
- Tall ruderal
- Non-ruderal
- Acid dry dwarf shrub heath
- Swamp
- Inundation vegetation
- Standing water
- Scattered plants saltmarsh
- Dense continuous saltmarsh
- Hard cliff
- C Coastal grassland
- C Coastal heathland
- Acid/neutral inland cliff
- Acid/neutral exposure inland cliff
- A Amenity grassland
- Buildings
- Hardstanding

Rev	Description	Dwn	Appvd	Date

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Title:

Figure 10.4
Phase 1 Habitat Survey - Inset 2
(Amendment to Capita Symonds Drawing CS042489_GIS_SL1)

Map No.
G2977.050b

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Key

- Native species-rich hedge and trees
- Species-poor hedge and trees
- Approximate site boundary
- Fence
- Species-poor intact hedge
- Wall
- Species-poor defunct hedge
- Dry ditch
- Boundary removed
- Earth bank
- Dense/continuous scrub
- Scattered scrub
- Unimproved acid grassland
- Semi-improved acid grassland
- SI — Semi-improved neutral grassland
- Marsh/marshy grassland
- SI — Poor semi-improved grassland
- Swamp
- E E E — Eutrophic standing water
- E E E — Eutrophic running water
- Acid/neutral rock exposure

Rev	Description	Dwn	Appvd	Date

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Project:

Penrhos Leisure Village

Title: Figure 10.5
Phase 1 Habitat Survey - Inset 1
(Amendment to Capita Symonds Drawing CS042489_GIS_SL1)

Map No. G2977.049a

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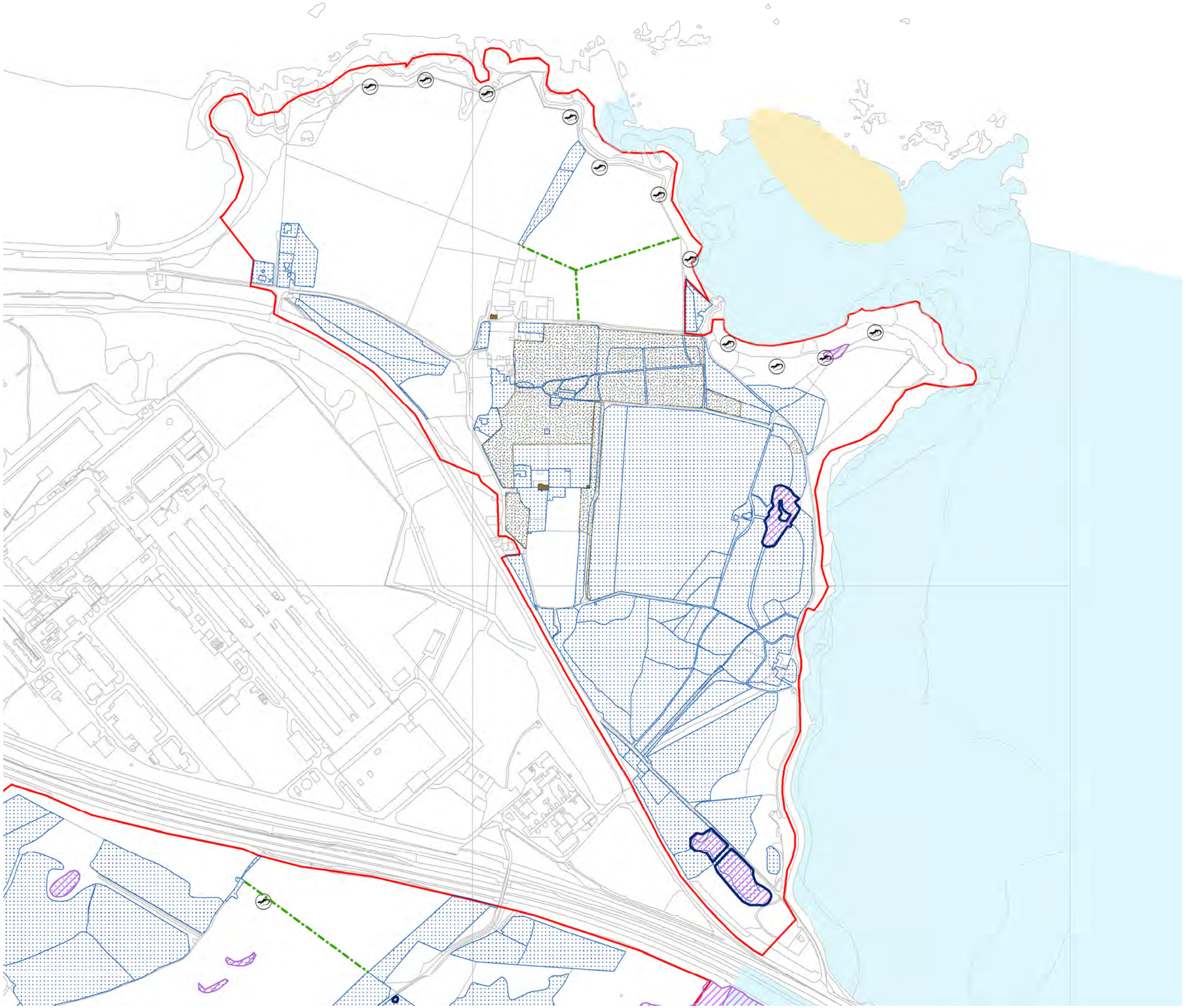

Key

- Penrhos Country Park
- UK BAP Habitats
- Local BAP Habitats
- Woodlands with the Potential to Support Bat Day Roosts
- Buildings with Evidence of Roosting Bats
- Coastal Birds Breeding and Roosting Sites
- Site of Special Scientific Interest (SSSI)
- Reptile Records
- Ponds with Common Toad Records
- Hedgerows

Badger areas not identified for reasons of confidentiality

Data sources:
TEP survey data
Capita Symonds survey data
CCW

Rev	Description	Dwn	Appvd	Date

TEP
Genesis Centre
Birchwood Science Park
Warrington WA3 7BH
Tel 01925 844004
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email tep@tep.uk.com

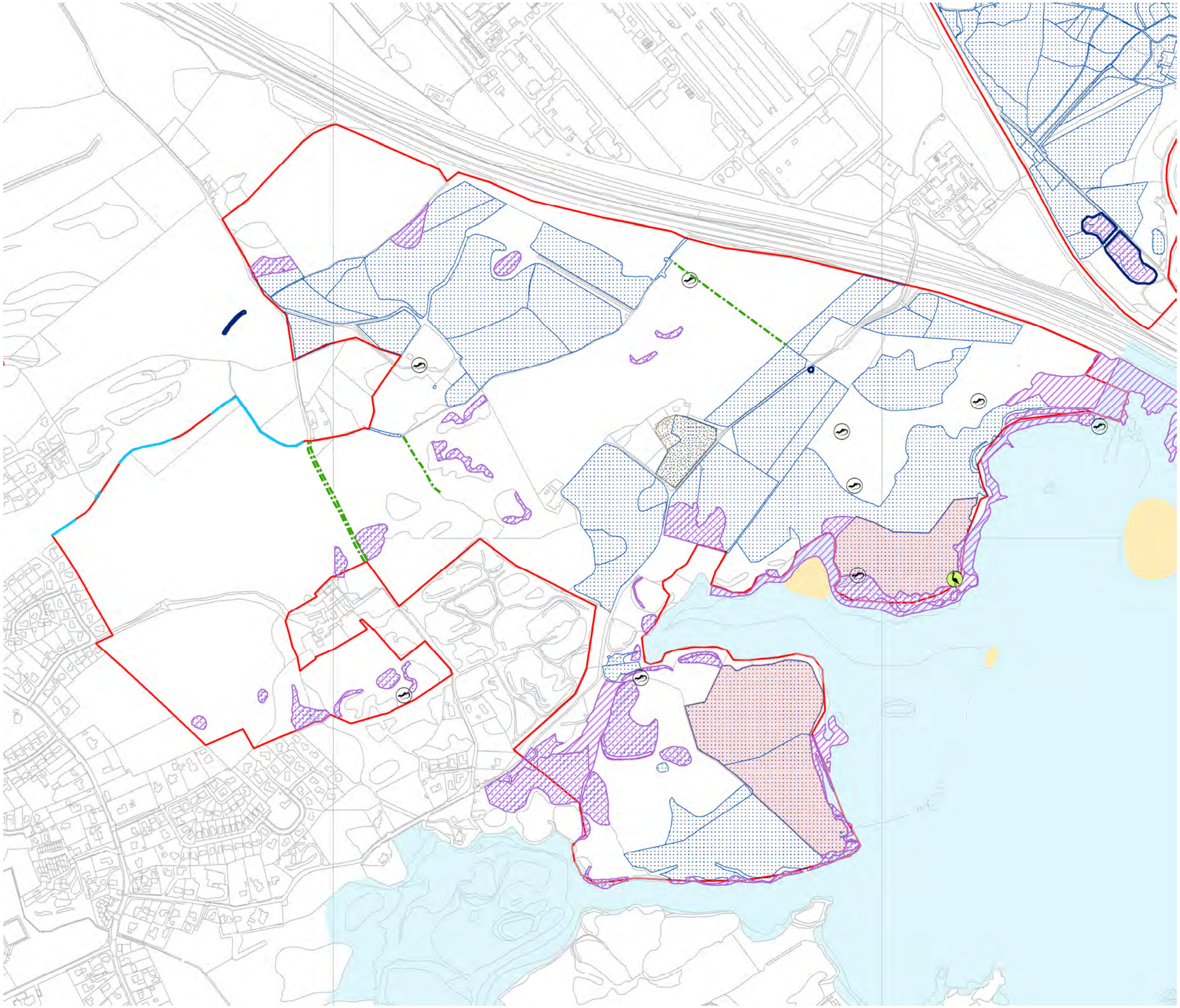
Project:
Penrhos Leisure Village

Title:
Public Version
Figure 10.6
Potential Ecological Receptors
Penrhos Country Park

Map No.
G2977.061

Scale:	Date:
1:6,000 @ A3	24/08/11

Drawn:	Checked:	Approved:
AP	TR	TR



Key

- Cae Glas
- UK BAP Habitats
- Local BAP Habitats
- Red Squirrel Breeding and Potential Common Crossbill Woodlands
- Woodlands with the Potential to Support Bat Day Roosts
- Water Vole Activity
- Coastal Birds Breeding and Roosting Sites
- Site of Special Scientific Interest (SSSI)
- Grey Heron Breeding Site
- Reptile Records
- Ponds with Common Toad Records
- Hedgerows

Badger areas not identified for reasons of confidentiality

Data sources:
TEP survey data
Capita Symonds survey data
CCW

Rev	Description	Dwn	Appvd	Date

TEP
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Project:
Penrhos Leisure Village

Title: **Public Version**
Figure 10.7
Potential Ecological Receptors
Cae Glas

Map No.
G2977.060

Scale:	Date:
1:6,500 @ A3	24/08/11

Drawn:	Checked:	Approved:
AP	TR	TR

Key

- Kingsland
- UK BAP Habitats
- Local BAP Habitats
- Ponds with Common Toad Records
- Hedgerows

Data sources:
TEP survey data
Capita Symonds survey data
CCW

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Rev	Description	Dwn	Appvd	Date

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Project:
Penrhos Leisure Village

Title:
Figure 10.8
Potential Ecological Receptors
Kingsland

Map No.
G2977.057

Scale:	Date:
1:4,750 @ A3	24/08/11

Drawn:	Checked:	Approved:
AP	TR	TR

KEY

1. New bat and bird box scheme.

2. Existing ponds enhanced to benefit amphibians.

3. New amphibian hibernacula.

4. New reptile hibernacula.

5. Lighting scheme designed to be sensitive to wildlife.

6. Badger mitigation areas.

7. New bat barn building.

8. Red squirrel feeding stations and nest boxes.

9. Footpath located to avoid chalk grassland habitat.

10. Wildlife interpretation boards.

11. Wader scrapes for foraging birds.

Not to scale

Masterplan received from Planit consultants - August 2012

TEP
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Birchwood Science Park
Warrington
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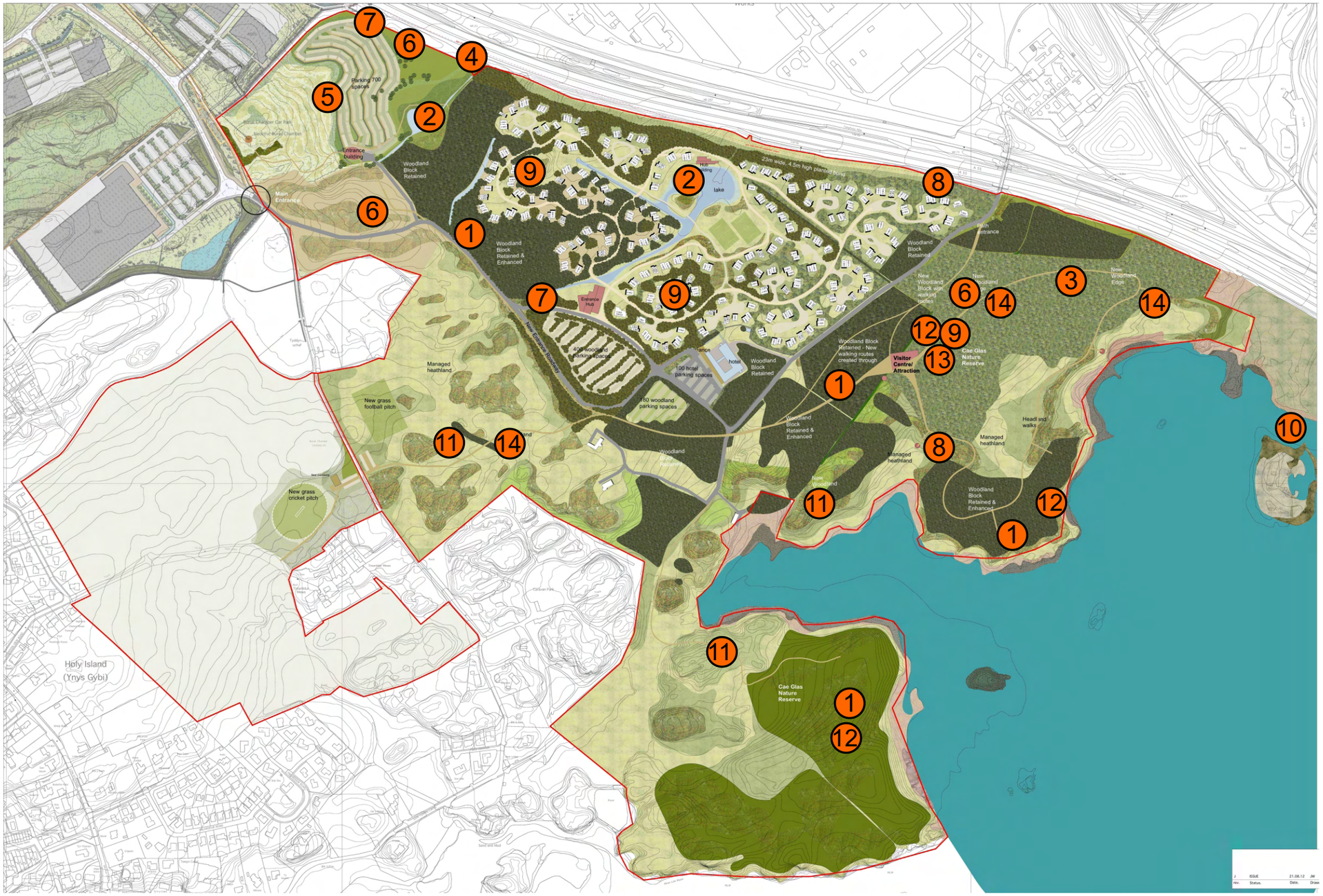
Tel 01925 844004

Project:	**Penrhos Leisure Village**
Title:	**Mitigation and Enhancement - Penrhos**
Figure:	**C2977.003**
Date: 28-08-2012	TEP Ref No: C2977.003
Drawn: DH	Checked: TR / Approved: RH



KEY

1. New bat and bird box scheme

2. New reedbed habitat

3. Nature reserve footpaths and hides located to avoid sensitive coastline and heronry

4. Ditch habitat enhanced for water voles

5. New ditch habitat for water voles

6. New woodland designed and managed to benefit birds and mammals; specifically red squirrels

7. New amphibian hibernacula.

8. New reptile hibernacula.

9. Lighting scheme designed to be sensitive to wildlife.

10. Excavation of silt accretion to the north of spit waterbird roosting area.

11. Control of bracken and scrub to enhance coastal heathland.

12. Red squirrel feeding station and nest boxes.

13. Controlled acess to Cae Glas Nature Reserve. Strong educational emphasis including interpretation boards, live wildlife cameras and trained staff.

14. Wildlife interpretation boards.

Not to scale

Masterplan received from Planit consultants - August 2012

TEP
Genesis Centre
Birchwood Science Park
Warrington
WA3 7BH
Tel 01925 844004

Project:	**Penrhos Leisure Village**
Title:	**Mitigation and Enhancement - Cae Glas**
Figure:	**C2977.001**
Date: 28-08-2012	TEP Ref No: C2977.001
Drawn: DH	Checked: TR / Approved: RH

KEY

1. New woodland designed and managed to benefit birds and mammals, especially red squirrels.

2. New amphibian hibernacula.

3. Lighting scheme designed to be sensitive to wildlife.

4. Control of bracken and scrub to enhance coastal heathland.

5. New diverse native hedgerow planting.

6. New bat and bird box scheme.

7. Control of shrub to entrance coastal heathland.

8. Creation of shallow scrapes to increase invertebrates for feeding waders and choughs.

UNIT NUMBERS	
Detached	17
Semi Detached (incl. 10 large barn types)	82
Terrace (blocks of 3&4 units)	10

rev.	Status.	Date.	Drawn
J	BOUNDARY UPDATE	14.08.12	JW

Not to scale

Masterplan received from Planit consultants - August 2012

TEP
Genesis Centre
Birchwood Science Park
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Project: **Penrhos Leisure Village**

Title: **Mitigation and Enhancement - Kingsland**

Figure: **C2977.002**

Date:	TEP Ref No:
28-08-2012	C2977.002

Drawn:	Checked:	Approved:
DH	TR	RH