

Ekopod

UK Habitat Classification Survey And Ecological Management Plan



Gain Consulting
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Gain

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1 Purpose and objectives

Ekopod is a glamping business in St Clether, on the edge of Bodmin Moor, close to Launceston, comprising 'safari tent' and 'geodesic dome' accommodation set within 4.5 acres, much of which is semi-natural habitat.

In line with its core values, Ekopod wishes to manage this land, as far as possible, for the benefit of nature and has sought guidance in this respect, specifically -

- 1) An ecological survey to understand what of ecological value exists on the site.
- 2) A Management Plan to support and build wildlife on the land to include ongoing monitoring.
- 3) A Biodiversity Action Plan

2 Methodology

2.1 Approach

Colette Beckham of Gain Consulting was appointed to undertake the ecological survey and production of the management plan. Colette has over 25 years' experience in environment, ecology, and landscape management, including experience of biodiversity action planning, habitat survey and ecological management planning. Colette is a full member of the Chartered Institute of Ecology and Environmental Management and a Chartered Member of the Landscape Institute.

The habitat survey followed the method set out for UK Habitat Classification¹, a survey methodology² developed relatively recently by Ecountability, CIEEM and the Centre of Ecology and Hydrology. It is a modern, unified and comprehensive approach to classifying habitats, designed to provide a simple and robust approach to survey and monitoring. The classification covers terrestrial and freshwater habitats, is flexible enough for use in a wide range of survey types from walkover surveys of small urban sites to regional and national scale rural habitat mapping.

2.2 Desk study

Desk study information had already been pulled together by Ekopod, sourcing a Phase 2 habitat/land cover map and species records from ERCCIS (The Cornwall and IOS Records Centre) within a 1km buffer of Ekopod.

At desk study stage, draft Habitat Units were mapped on QGIS, using Google Satellite Data/ aerial photography to map out vegetation changes on site for ground truthing at field survey stage.

¹ http://ecountability.co.uk/wp-content/uploads/2018/09/InPractice100_Jun2018_UKhabclass.pdf

² <https://ecountability.co.uk/ukhabworkinggroup-ukhab/>

Fig 1 Site Location Plan



2.3 Field survey

Field survey was carried out over three days on 17th, 25th and 28th June 2020 in mainly dry and sunny weather but with some rainy spells.

The field survey checked and revised the habitat boundaries drawn at desk study stage and made necessary revisions, adding detail and refining areas of distinct habitat. Each block was walked over in a zig zag fashion and the main vascular plant species were recorded. Each Habitat Unit defined was assigned a primary habitat code and one or more secondary habitat code(s) were given to describe habitat mosaics.

One of UKHab's key strengths is the combination of a primary habitat hierarchy and secondary codes. The primary hierarchy of UKHab comprises five nested levels:

1. Major ecosystems,
2. Ecosystems,
3. Broad habitats and
4. UK Biodiversity Action Plan Priority Habitats and those
5. Habitats Directive Annex 1 habitats that occur in the UK.

A list of secondary codes can be linked to primary habitats, allowing the recording of habitat mosaics and habitat complexes in a systematic way. Secondary codes also give surveyors the option of systematically recording habitat management, origins and other environmental and species features and linking these directly to the primary habitat.

The field survey was mainly completed to level four, with some habitats recorded to level 5 where habitats conformed well to the UK Hab Field Key. In addition, notable tree species were recorded across the site. Finally, photographs were taken of the main habitat blocks.

2.5 UKHab metadata

- a) UK Habitat Classification Edition Used: Professional
- b) Minimum monitoring unit (MMU): 5m (linear feature) 25m² area (with exceptions and smaller areas mapped around the accommodation.)
- c) The highest UKHab level that the survey will record to (1-5): 4
- d) Map projection and Units: QGIS Madeira 3.1 using Google Satellite ©2020Google. Map projection used is EPSG:3857 - WGS 84 / Pseudo-Mercator. Units in M.
- e) Year of Survey: 2020
- f) Organisation undertaking the survey: Gain Consulting
- g) References for datasets used: ERCCIS, Species records, Designations, County Wildlife Sites, Land Cover 2005, Land Cover Phase 1 2005 © Crown copyright and database rights 2019 OS 100049047.

2.6 Limitations

The UK Habitat Classification Survey is intended to provide an indication of the main habitats on site and their biodiversity value, which leads to recommendations for management. It is not intended to be a full inventory of species on site. It focuses on higher vascular plants and does not go into detail

on ferns, mosses or liverworts. Plants not in flower at the time of the survey have not all been keyed out and identified. Species lists of the main species evident have been gathered to enable identification of habitats.

Primary habitats within this survey have been taken down to UK Habitat Classification level 4 with secondary codes providing supplementary information about the habitat mosaic.

All drawn habitat boundaries and positions of individual trees have been estimated using aerial photography analysis and field survey and all locations and boundaries within the survey maps are therefore approximate and indicative.

The survey has not covered any other species e.g. bats and has not assessed for species specific types of habitats. For example, trees were not examined to check for signs of bats roosting.

2.4 The Ekopod Ecological Management Plan and Biodiversity Action Plan

The UK Habitat Classification Survey informs both plans. The Management Plan interprets the survey data, identifies constraints and opportunities for optimal management of the site for biodiversity, establishes ecological management objectives and suggests appropriate management interventions at an appropriate scale. In doing so Ekopod's resources for site management have been closely considered and working with Ekopod to ensure the plan is practical and useable. The plan includes annual habitat management prescriptions and monitoring protocols. The Biodiversity Action Plan sets out the survey results in terms of UK Biodiversity Action Plan priority habitats and species and sets out a two-year action plan to deliver results for these as a priority.

3 Survey Results

3.1 Desk study

3.1.1 Designations

The site and its immediate setting are not covered by any conservation designations. However, two County Wildlife Sites (CWS) lies within 1km of Ekopod. The first, to the South, is NC19, St Clether CWS and the second, to the North, is NC20.2, Napp's Moor CWS.

St Clether CWS is important for its Lowland Fen habitat of species rich wet grassland including Hemlock, Branched bur reed, Hemp agrimony, Lesser spearwort, Marsh bedstraw, Marsh pennywort, Water mint and Water horsetail.

The Napp's Moor CWS is a large moorland site where semi-natural habitat occurs as fragments within reclaimed and improved fields. Habitats include remnant lowland heathland and purple moor grass and rush pasture (remnant Culm grassland).

3.1.2 Habitats

The ERCCIS Land Cover and Phase 1 habitat data indicates a relatively high proportion of semi-natural habitat within 1km of Ekopod. These semi-natural habitats are strongly associated with drainage patterns of the River Inny catchment, including large areas of marshy grassland (as within the St Clether CWS), possibly unimproved marshy grassland, unimproved grassland and wetland. It also shows ribbons of broadleaved woodland contained within the stream valleys and along the lines of roadside Cornish hedges.

The ERCCIS Landcover data shows Ekopod as being improved grassland, which, in 2005, it might well have been, prior to coming out of management and being invaded by Bracken and Bramble scrub.

The Landcover mapping shows that there is the potential for Ekopod to contribute to a relatively cohesive network of unimproved wet and marshy grassland and broadleaved woodland, associated with the River Inny and its tributary streams, one of which flows through the Western valley side of the Ekopod site.

3.1.3 Species

The number of SOCC (Species of Conservation Concern) species records within 1km of Ekopod is extensive and reflective of the extent and connectivity of the semi-natural habitats in the area. There are several important mammal species including Otter, Hedgehog, Harvest Mouse and Hazel Dormouse (with records as recent as 2012). In addition, stoat, weasel and common and pygmy shrew are all present within the study area, along with the notable bat species, Brown Long-Eared and Lesser and Greater Horseshoe. The presence of Slow Worm, Adder and Common Lizard indicate good quality habitat for reptiles and the extensive wet marshy habitat also supports Common Frog, Palmate Newt and Common Toad. There is a wealth of records for birds, including a number of Biodiversity Action plan priority species including, Song Thrush, Marsh and Willow Tit, Water Rail, Curlew, Lapwing and Cuckoo. The SOCC records for invertebrates show the area to be particularly good for moths and some butterflies more associated with acidic marshy fens such as Small Heath and Marsh Fritillary. The high-quality riverine habitats support Brown Trout, European Eel, Brook Lamprey, Bullhead, Atlantic Salmon and Grayling, all of which are on the Cornwall Red Data Book list.

3.2 Field survey

3.2.1 Survey and Management Blocks

For the purposes of displaying survey results at an appropriate scale and to enable a sensible spatial structure for the Management Plan, the study area has been divided in to 5 distinct management blocks (See Fig 2.).

Block 1 – The North West part of the site containing geodesic dome and incorporating the car park.

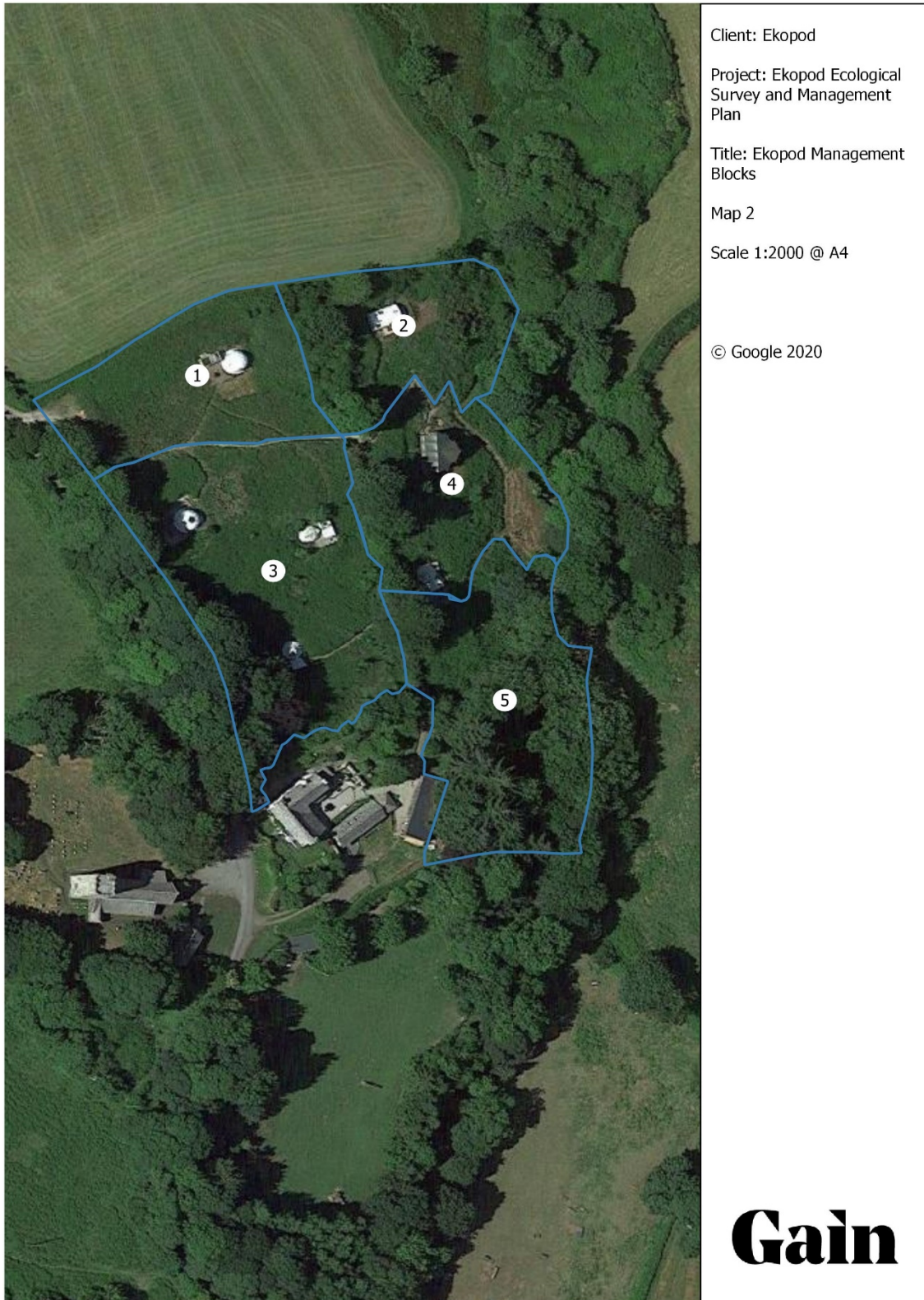
Block 2 – The North East part of the site sloping to the stream including geodesic dome and proposed hobbit house site.

Block 3 – The centre West portion of the site incorporating two geodesic domes and the wooded strip along the site boundary.

Block 4 - The centre East safari tent block, steeply sloping to the stream, bounded to the West by the central main path and Cornish hedge with line of mature trees.

Block 5 – The area of woodland and scrub, incorporating the stream valley in the lower Eastern part of the site.

Fig 2. Management blocks



4 Survey Results – UK Habitat Classification Maps

Fig 3. UK Habitat Classification: Survey Block 1

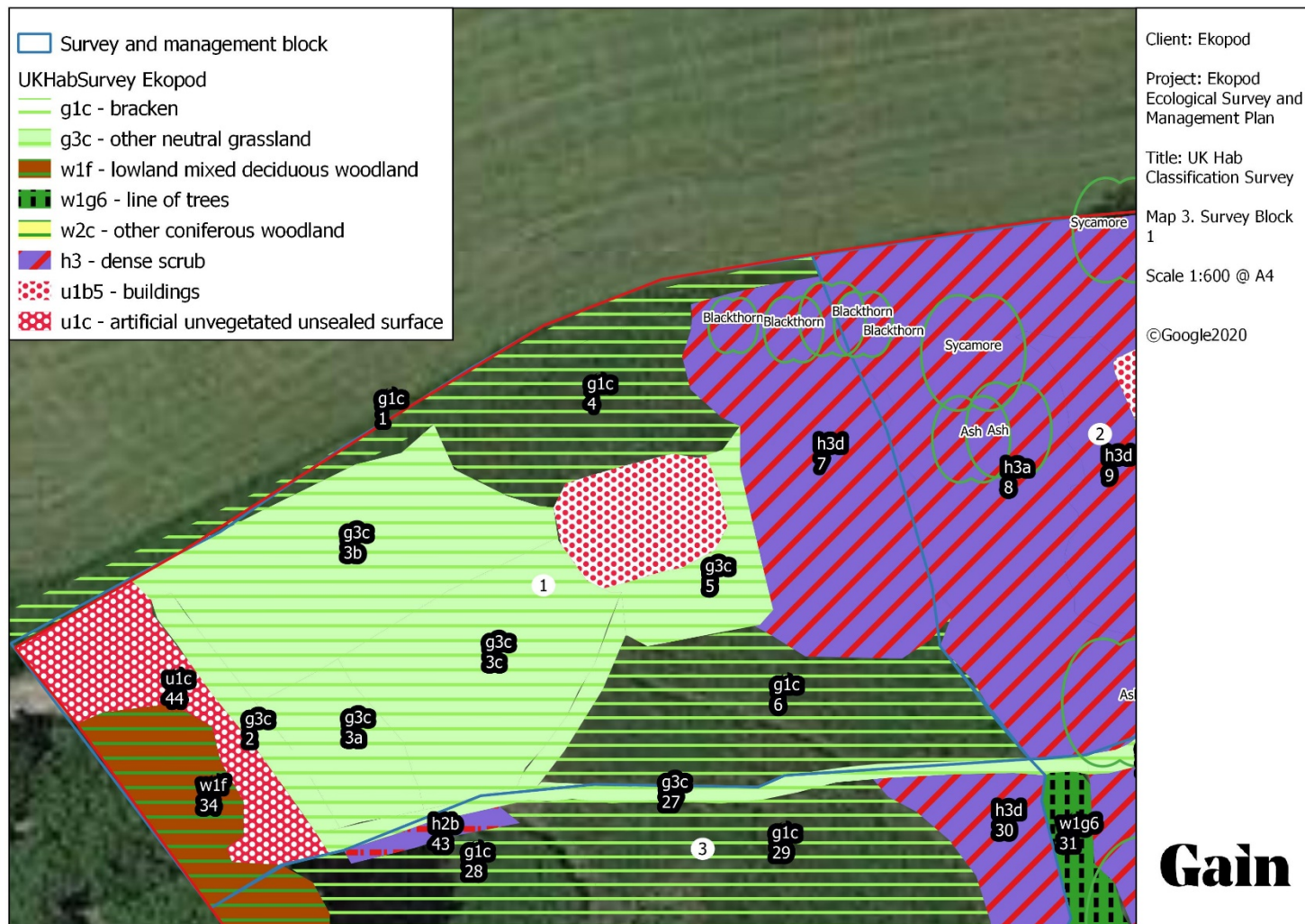


Fig 4: UK Habitat Classification: Survey Block 2

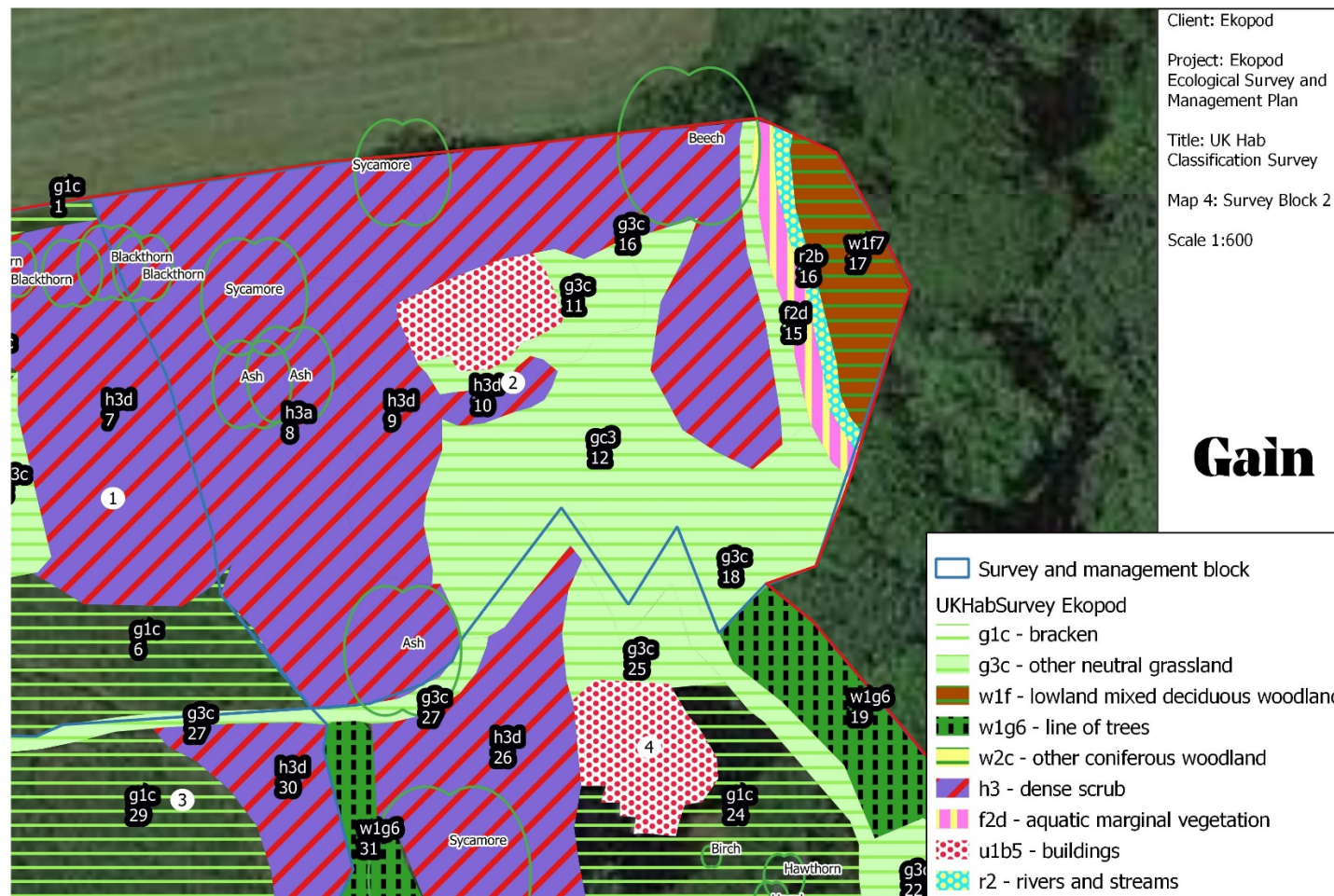


Fig 5. UK Habitat Classification: Survey Block 3

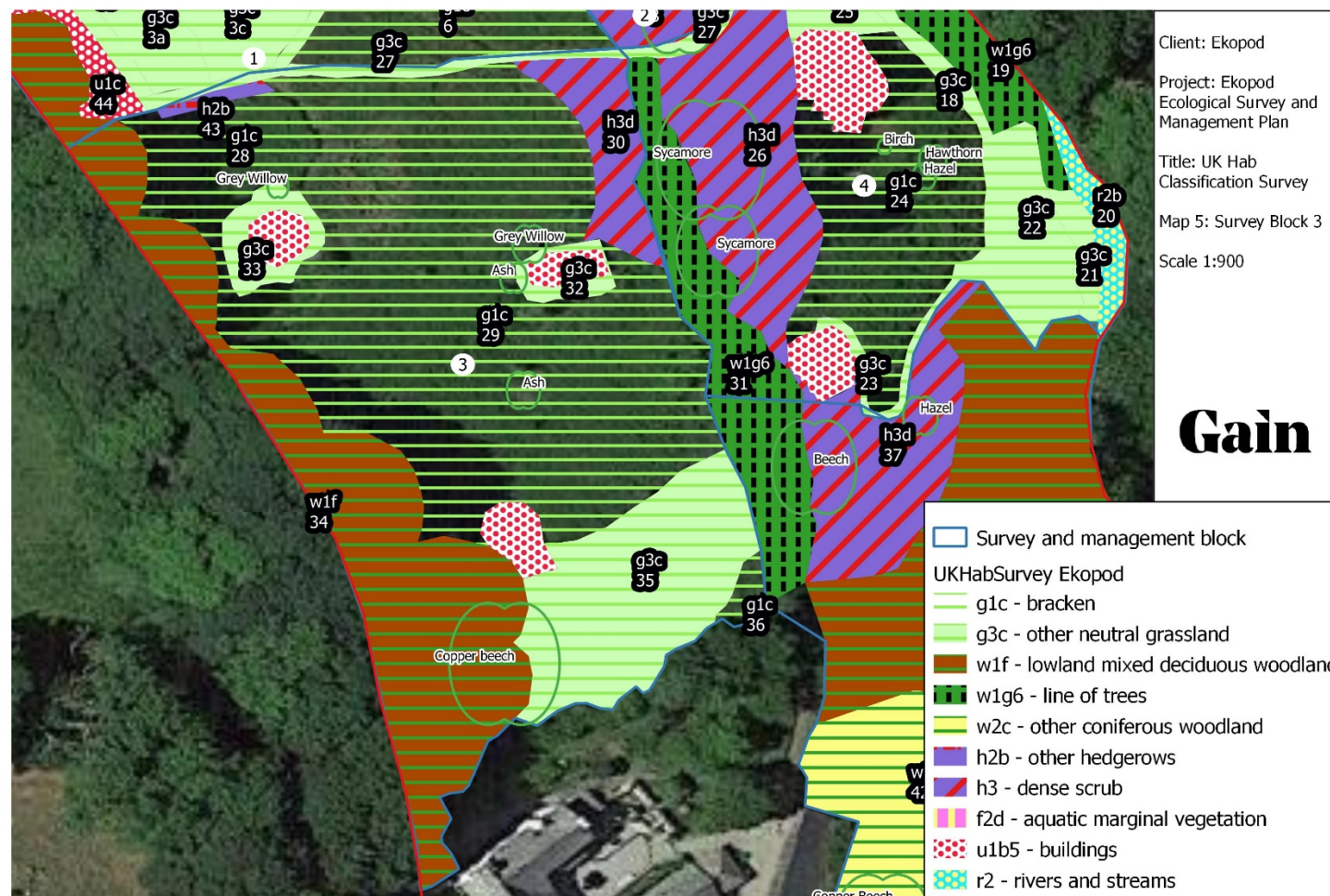


Fig 7. UK Habitat Classification: Survey Block 5

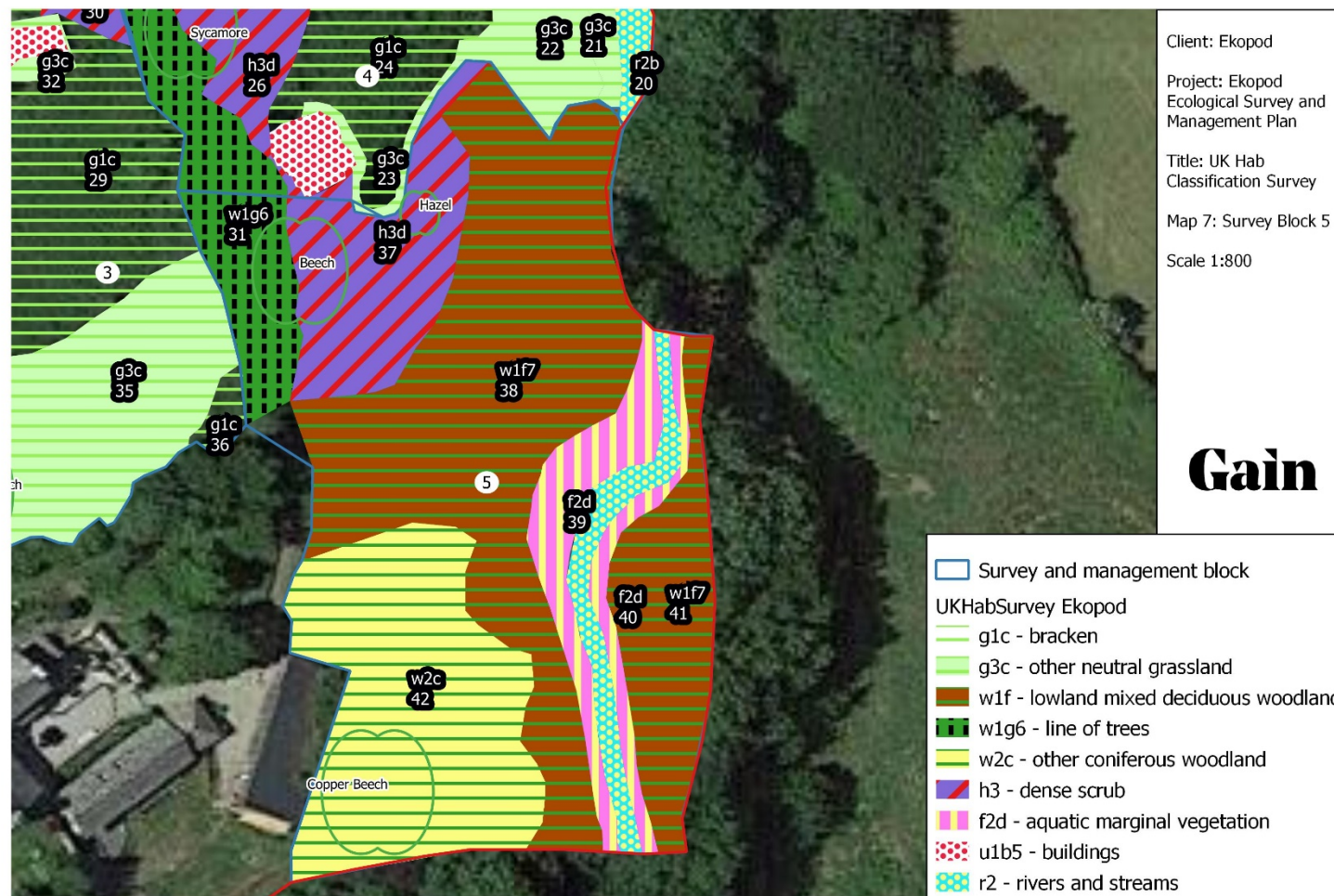
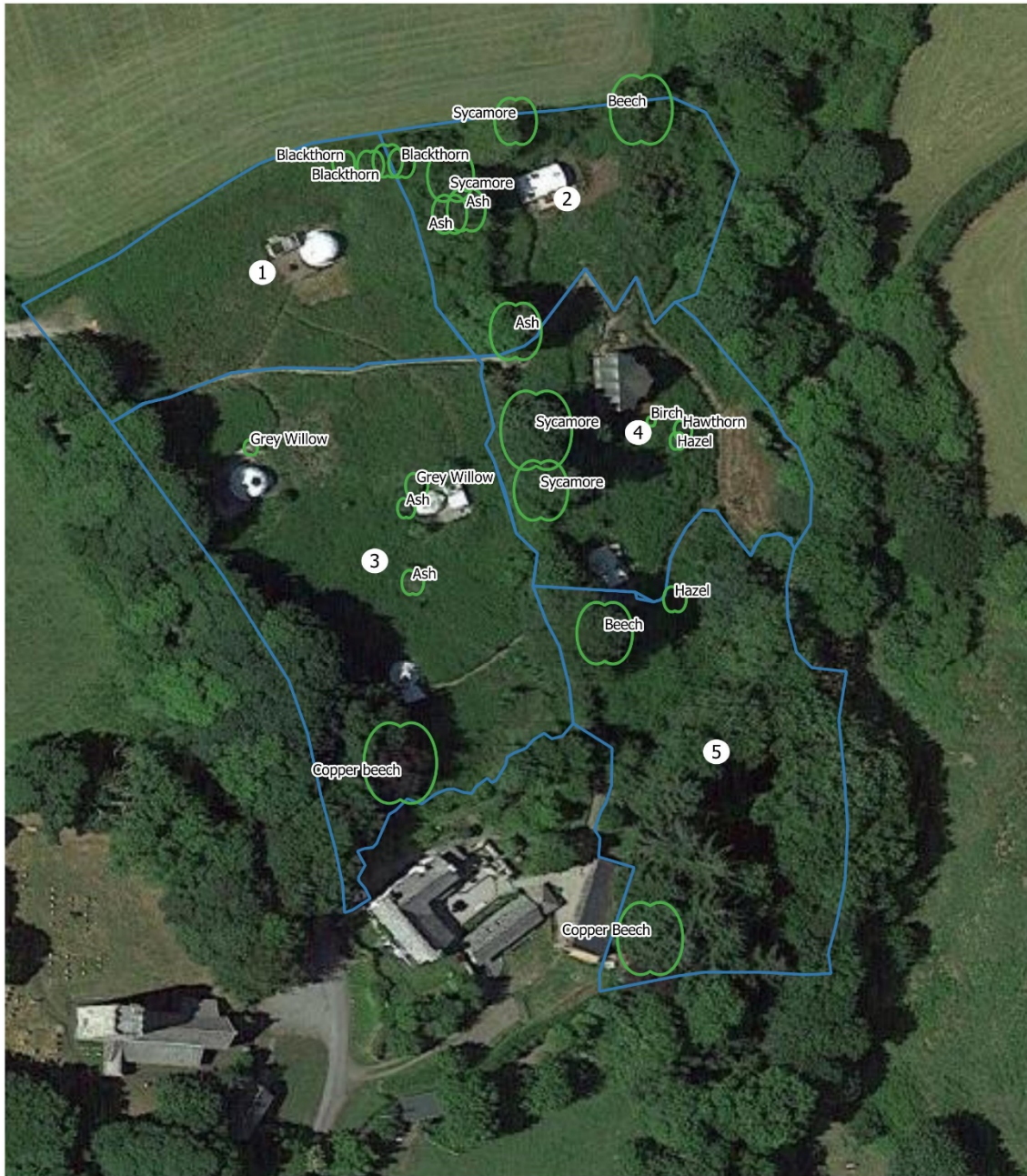


Fig 7. Notable and individual trees



Client: Ekopod
Project: Ekopod Ecological Survey and Management Plan
Title: Ekopod Management Blocks
Map 8: Notable and individual trees
Scale 1:1500 @ A4

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5 Habitat descriptions

There are 10 main habitats present across the survey area.

5.1 Bracken, Habitat Code g1c

This is vegetation consisting of greater or equal to 95% cover, with or without a sparse herbaceous understorey. It was considered that the stands of Bracken had not yet peaked in terms of their biomass at the time of survey.



5.2 Other Neutral grassland, Habitat Code g3c

This habitat has appeared where intervention has been made into stands of Bracken. Where these have been strimmed out, there is evidence of a relatively species rich sward, potentially remnant unimproved grassland, with the main grasses being False Oat grass, (*Arrhenatherum elatius*) and



Cocks-Foot (*Dactylis glomerata*). Wetter areas of the site include greater proportions of Yorkshire Fog grass (*Holcus lanatus*). Herbs include Red Campion (*Silene dioica*) and Ox-eye daisy (*Leucanthemum vulgare*) (both in profusion in places), Creeping buttercup (*Ranunculus repens*), Ribwort plantain (*Plantago lanceolata*), Marsh Thistle (*Cirsium palustre*), Hogweed (*Heracleum sphondylium*) and Nettle (*Urtica dioica*). Less frequently other herbs occur such as Yarrow (*Achillea millefolium*), Lady's

Bedstraw (*Gallium verum*) and Betony (*Stachys officinalis*) which is an indicator of cleared ancient woodland and is present on the valley side. Bugle (*Ajuga reptans*) is also another clue to a former, greater extent of woodland along the valley side.

Most of the areas of neutral grassland which have been cleared of Bracken are showing signs of regenerating Bracken and Bramble scrub. Ongoing management will be required to maintain neutral grassland on site and prevent Bracken from becoming dominant again.

This habitat has been currently coded at level 4 of UK Hab. On some areas of the site, there is loose conformation to the level 5 habitats g3c5 'Arrhenatherum neutral grassland' and in wetter places, such as close to the stream floor e.g. Habitat Unit 22, g3c8, 'Holcus- Juncus Neutral Grassland' where Yorkshire Fog grass predominates and Soft rush (*Juncus effusus*) is occasional. As management consolidates these grassland habitats, we might see stronger conformity to the level 5 habitat definitions.



5.3 Bramble scrub, Habitat Code h3d

Dense scrub with Bramble, *Rubus fruticosus* agg. being the dominant species.

5.4 Mixed scrub, Habitat Code h3h

Dense scrub with Bracken and Bramble, some gorse and thorn. A mixture of species with not one dominant.

5.5 Blackthorn scrub, Habitat Code

Dense scrub with Blackthorn, (*Prunus spinosa*) as the dominant species

5.6 Aquatic marginal vegetation (Streamside), Habitat Code f2d



Includes bankside vegetation of the watercourse and within a wider area of temporarily inundated wet ground. The dominant species along the stream is Hemlock/ Water dropwort (*Conium maculatum*). This species is highly poisonous if ingested and contact with the leaves may cause skin irritation.

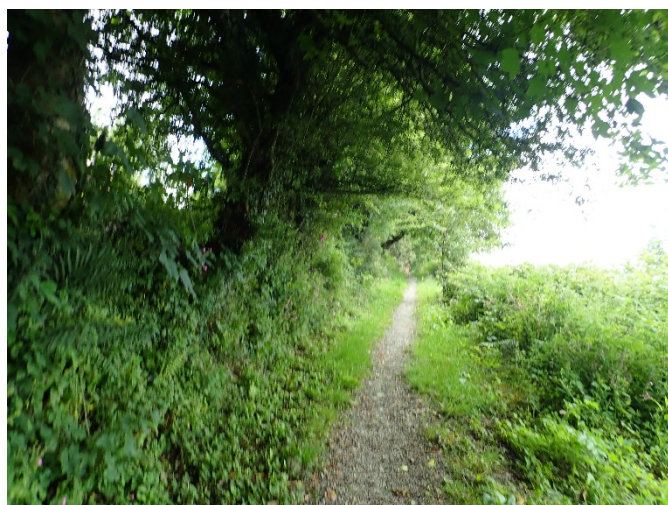
Other herbs found alongside the stream, include many fern species which were not keyed out as part of the survey. Nettle features strongly in the wooded area. Other herbs include Wood Avens, (*Geum urbanum*), Meadowsweet (*Filipendula ulmaria*) and Marsh thistle, (*Cirsium palustre*).

5.7 Other rivers and streams, Habitat Code r2b

This code is used to indicate flowing water that does not meet the definition of the rivers and streams priority habitat. The stream is not mapped as a priority habitat in Natural England's priority habitat inventory. River water bodies only qualify for priority habitat status if they can be classified as 'near natural' or because they fulfil a species criterion in relation to a priority species. Only a relatively small proportion of streams in the UK meet these criteria.

5.8 Line of trees, Habitat Code w1gc

A line of trees at least 20 m long with open habitats on either side.



There are several lines of individual trees on site, most notably the line of mature trees on top of the Cornish hedge that bounds the main path that runs North to South down the centre of the site. The line of trees that extends from the small woodland area along the roadside has been incorporated into the woodland habitat type along the site boundary, as this is seen as strongly associated with the woodland area and linking to it. The main tree species are Sycamore (*Acer pseudoplatanus*) with Ash (*Fraxinus*

excelsior) and there are examples of very mature, large beech (*Fagus sylvatica*) and copper beech (subspecies *Purpurea*).

5.9 Lowland mixed deciduous woodland, Habitat Code w1f

The woodland block is a mix of mainly even-aged Sycamore (*Acer pseudoplatanus*) and Ash (*Fraxinus excelsior*), with Beech, (*Fagus sylvatica*) and mature Hazel (*Corylus avellana*) and Hawthorn (*Crataegus monogyna*) lower in the canopy. Many of the tree species are covered in Ivy (*Hedera helix*). Oak (*Quercus robur*) is present, seen as rare saplings. There was no mature Oak visible in the canopy. In addition, natural woodland regeneration is limited, and this is likely due to deer browsing. The ground flora is that of a typical bluebell wood with Bluebell (*Hyacinthoides non-scripta*) the dominant species. There is relatively little standing dead wood within the wooded area.



5.10 Other coniferous woodland – Habitat code w2c

Non-native conifer plantation which does not meet the definition of a native, Scot's Pine woodland. This code has been used to describe the plantation Spruce block to the South East of the site. Trees are mature with no obvious regeneration occurring in the ground layer. The ground flora is more species poor beneath the conifers although Bluebell (*Hyacinthoides non-scripta*) is still present. The trees are past maturity and are progressing into senescence.

6 Habitat Units

A total of 44 UK Habitat Classification Units were identified across the site (See Figs 3-5). A full list of the Units, their habitat classification, and a list of main species for each are contained at **Appendix 1**.

7 Results and discussion

7.1 Bracken and scrub

Ekopod has been established as a glamping site since 2010. The land within which the glamping pods and safari tents sit has been without management for a time and scrubby habitats have become dominant across the more open parts of the site.

The most dominant of these is Bracken. Dense, impenetrable Bracken stands occur across significant areas. This is of relatively low conservation value and, whilst it will provide cover for reptiles, mammals, and amphibians, it doesn't provide any flower rich habitat valued by invertebrates. It should also be noted that several studies have highlighted the cancer-causing properties of Bracken spores, which whilst unlikely to affect temporary visitors to Ekopod, may pose a slight health risk to permanent residents.

There are other types of scrub on site, with areas where Bramble is dominant, and an area of Blackthorn dominated scrub. The scrubby habitats, particularly the Blackthorn and Bramble scrub will be very valuable for many types of species, including nesting birds, small mammals, hedgehog, and potentially Hazel dormouse. Bats will hunt over this kind of habitat, attracted by night-time feeding moths. Bramble scrub is more flower-rich than Bracken scrub as so attracts a wider variety of invertebrates.

Scrub is particularly valuable when part of a mosaic with tussocky grassland that provides roosting for butterflies and grasshoppers, flower rich and open habitats, with some dead wood and areas of bare ground which offer basking spots for reptiles and sightlines for predatory insects.

7.2 Bracken control areas/ flower rich neutral grassland

There are several areas where Ekopod has strimmed the Bracken. Whilst the Bracken hasn't been eradicated, the species springing up have given a glimpse of the more flower- rich grassland habitats that are available if the Bracken is controlled. The herbs within the regenerating sward such as Red campion and Ox-eye daisy indicate neutral soils, despite Bracken being more of an acid indicator. The site is therefore unlikely to support Heather or Devil's-bit scabious so conservation measures to encourage the Small heath or Marsh fritillary are not likely to meet with much success.

Areas of flower-rich neutral grassland are important for pollinating insects such as bees, moths and butterflies and provide hunting ground for amphibians, reptiles, all types of small mammals and bats. Areas of wet grassland provide important refuges for amphibians.

The site is clearly a wet site, even on the level land above the valley slope, indicated by the occasional presence of Soft rush, Marsh thistle and Willow. Lower slopes are also wet, indicated by the prevalence of Yorkshire fog grass. Several Common Frogs were seen within the wet grassland on

the valley slopes during the field survey. The presence of Betony and Bugle on the paths on the valley side, indicate that the woodland probably extended up the valley sides to a greater extent in the past.

7.3 Aquatic and Marginal Habitats

Ekopod is fortunate to have a tributary stream of the River Inny skirt its Eastern boundary, entering the site in places, and directly flowing through the wooded area to the South East of the site. The stream potentially provides habitat for all the fish species of conservation concern listed in the ERCCIS report. Whilst too fast flowing for amphibians, frogs, newts, and toad will use slower flowing areas away from the main channel, ancillary pools and temporarily inundated areas, as well as wet bankside habitats and the surrounding marshy grassland. Otter, Grey heron, and Kingfisher are also likely to hunt on the stream. The steeper ground on the Eastern bank of the stream in the woodland area of the site could provide suitable nesting habitat for Kingfisher.

The stream banks are mainly cloaked in Hemlock/ Water dropwort and there are many ferns along the bank. Streamside habitats, as well as being refuges for amphibians are utilised by a broad range of insect species, notably dragonflies and damselflies. A Beautiful demoiselle damselfly was seen at the time of survey within the wooded area.

There is an area of flat ground within the main woodland block which appears to be a temporary floodplain area for the stream. This may benefit from a scrape to diversify the topography and enable the creation of temporary still water pools which would benefit amphibians and aquatic insects.

There are no other significant areas of open water on site. It might be possible to provide an on-site pond/s for the benefit of amphibians, reptile, and aquatic insects. This might also be a popular feature for guests if properly implemented.

7.4 Woodland and trees

The sites contains two main blocks for woodland, the larger, to the South East is located within the stream valley and the second, runs along the Western boundary of the site, merging into a line of trees atop the Cornish hedges that bounds the road. In addition, there is a mature line of trees that dissects the site centrally, North to South on the Cornish hedges that bounds the central site path.

The woodland blocks are all secondary deciduous woodland of mainly Sycamore, apart from a small stand of plantation conifers on the stream valley site. Ash is the next common canopy species. Oak is present as some small saplings but not as mature trees. Presumably, they are browsed out before they can grow above browsing height.

Many of the trees have a dense growth of Ivy up the main trunk and into the canopy. It is a misconception that this is harmful to the trees. In fact, Ivy is great for wildlife, providing a very late source of nectar for pollinating insects and a crop of late berries for bird such as song thrush and blackbird. It provides shelter for bats and nesting habitat for small birds like wrens. It is also a specific caterpillar food plant for the Holly Blue butterfly and several other moth species.

Bluebell is the main ground flora of both stands of woodland and is a protected species.

There is a distinct lack of regeneration of woodland canopy and understorey species in the understorey layer. This is probably due mainly to deer browsing. The trees appear to be of quite even age, with the broadleaved trees mature and the conifers, over mature.

The presence of Grey willow (*Salix cinerea*) on site, along the stream corridor and within the Bracken stands at the top of the site, indicates that the site is wet. Wet woodland is priority habitat and could be increased to provide habitat for Willow tit.

There is a relative lack of dead wood within the woodland blocks, particularly standing dead wood which is immensely valuable for saproxylic invertebrates and fungi (decaying wood feeders) and bats, who find shelter and hibernation sites under the bark and in cracks in rotting and dead wood.

Ash Die Back disease is obviously a cause for concern. A few trees on site do already appear to be displaying signs of wilt, potentially due to the disease. Loss of Ash across the site will impact quite significantly. If Ash Die back does take hold, Ekopod can expect to lose most or all of its Ash in 10-15 years.

8 Recommendations and conclusions

The survey has enabled a broad assessment of the kinds of habitats found within the Ekopod site and examined the site within the context of the wider landscape. It has enabled an assessment of the relative biodiversity value of each habitat and discussed some of the potential actions that could be taken on site to improve biodiversity. The major finding of the survey is the importance of the interrelations between each habitat type and how maintaining a diverse range of interrelated habitats on site will result in better outcomes for nature.

8.1 Main recommendations

The main recommendations for Ekopod to be carried forward into the management plan are as follows:

- a) Retain a small amount of Bracken scrub on site but mainly work to weaken the hold that Bracken has gained on a large proportion of the site.
- b) Restore flower rich grassland habitat in areas of former grassland, currently invaded by stands of Bracken.
- c) Retain Blackthorn scrub and maintain a graded edge to the scrubby areas from dense scrub to scattered scrub, grading into the open grassland habitats.
- d) Retain areas of dense Bramble scrub.
- e) Maintain a graded edge to the paths.
- f) Relax the management of the boundary Cornish hedges to encourage some scrub and woody vegetation on the tops.
- g) Provide more opportunities for standing open water/ pools and temporarily inundated pools on site.
- h) Encourage natural broadleaved and wet woodland regeneration through the exclusion of deer.

- i) Consider some supplementary planting of local provenance tree species within the woodland area and as individual trees within the more open habitats, providing suitable deer protection.
- j) Thin the over-mature conifer trees to let in some more light and encourage understorey regeneration. Leave some trunks as standing dead wood.
- k) Create habitat piles of fallen dead wood within the woodland area.
- l) Consider a small woodland corridor between the two main blocks of woodland to increase connectivity.
- m) Install man made bird and bat boxes within the woodland areas.
- n) Protect regenerating oak saplings from deer browsing.
- o) Consider expansion of the woodland along the valley bottom to the North East with a focus on Willow planting.
- p) Manage Ash Die back in line with the [current government guidance](#).
- q) Consider commissioning an Ash Die Back survey to determine the number of trees currently affected and assess risk. Fell unstable Ash trees which might pose a risk to guests. Undertake controlled felling in the woodland of the weakest trees to allow light in and encourage natural regeneration. Where it is safe to do so, consider leaving some felled Ash as standing dead wood.

8.2 Further survey work

The following more specialist surveys could be undertaken to supplement this survey and provide added detail to inform the management plan.

1. Ferns, mosses and liverworts survey.
2. Bat survey
3. Dormouse survey
4. Reptile survey
5. Invertebrates survey
6. Ash die back survey

Ekopod 5-Year Ecological Management Plan

9 Overarching management aims

- a) Restore and maintain flower rich grassland habitat in areas overtaken by Bracken.
- b) Retain areas of dense Bramble and Blackthorn scrub maintaining connectivity between stands of scrub and with the woodland areas.
- c) Extend and diversify the woodland areas, encouraging regeneration to achieve a more diverse age structure of canopy and understorey trees.
- d) Create more habitat niches through to provision of standing and fallen dead wood, standing open-water and made features like bird and bat boxes.
- e) Improve the connectivity between woodland blocks and individual trees on site.
- f) Consider and manage for the relationships between different habitats on site, encouraging graded boundaries and the creation of habitat mosaics.

10 Five-Year Management objectives

10.1 Management Block 1

- a) Continue to revert the Bracken in UK Hab Unit 3 (a,b and c) to semi-natural grassland and manage in one block as hay meadow, extending this into at least half of the Bracken stands in Units 4 and 6.
- b) Maintain 10% tussocky grassland around the edges of all species rich grassland areas.
- c) Allow woody vegetation to regenerate on hedge Unit 1 and hedge bank Unit 2.
- d) Allow scrubby vegetation in Unit 7 to grade into woody vegetation on hedges.
- e) Maintain Bramble scrub, in Unit 7 encouraging scattered scrub at interface with grassland and scattered Blackthorn into Unit 8.
- f) Grade the vegetation away from the path 1m each side, aiming for different sward heights.
- g) Consider introducing an area of standing open water (pond) within the grassland area.

10.2 Management Block 2

- a) Retain Blackthorn scrub and individual trees in Unit 8.
- b) Replace trees affected by Ash Die Back in Unit 8. Oak, Birch and Rowan would be suitable species.
- c) Retain the Bramble scrub in Units 9 and 10.
- d) Retain Bramble scrub along hedge in Unit 16 and encourage woody growth on top of the field boundary.

- e) Continue to revert the hillside Bracken in Units 11, 12 and 18 to semi-natural grassland, managed as hay meadow.
- f) Encourage the lower part of Unit 16 closer to the stream to revert to scrubby habitat and seek to encourage reversion to streamside woodland by planting Grey Willow.

10.3 Management Block 3

- a) Retain Bracken in Unit 28, grading the path 1m into the Bracken to encourage the Bracken to grade into grassland.
- b) Significantly reduce the stands of Bracken in Unit 29 by c 80% in favour of semi-natural grassland in hay meadow management.
- c) Of the 80% grassland reverted from Bracken in Unit 29, aim for 20% tussocky/rough grassland and 80%, species rich hay meadow.
- d) Plant a belt of trees along the Southern boundary to better connect woodland across the site, converting as much of UK Hab Unit 35 into woodland as possible, whilst maintaining a desired open area around the accommodation.
- e) Construct a pond within Unit 29. There would be the possibility of pond dipping access and interpretation for guests.
- f) Retain and extend stands of Willow and scrub around the Geodesic domes in Units 32 and 33.

10.4 Management Block 4

- a) Retain Bramble scrub on the upper slopes and adjacent to the central site path in Unit 26.
- b) Revert the Bracken on the slopes of Unit 24 to semi-natural grassland and manage as hay meadow
- c) Maintain a graded edge between the path and the Bramble scrub in Unit 37
- d) Extend woodland along the stream valley bottom through woodland planting in Units 21 and 22, providing suitable deer protection.
- e) Manage a graded edge to the paths 1m each side.
- f) Protect existing natural regeneration e.g. oak saplings from deer.

10.5 Management Block 5

- a) Ensure woodland in Units 38, 40, 41 and 42 is suitably protected from deer.
- b) Thin the stand of conifer in Unit 42 via selective felling to allow light onto the woodland floor and encourage natural regeneration, leaving some tall trunks as standing dead wood.
- c) Create habitat piles of fallen wood on the woodland floor.
- d) Thin the stand of Ash on the far bank of the stream in Unit 41 to encourage natural regeneration.

- e) Create a scrape/s on the flat floor of the woodland in Unit 39 to allow some temporary inundation and encourage the formation of seasonal pools of standing open water.

11 Management prescriptions

11.1 Bracken control

Bracken can be very hard to eradicate and it may be very difficult to permanently eliminate Bracken in areas under grassland management. Bracken control will need to be a long-term ongoing commitment. Since the banning of Asulox/ Asulam which was the effective chemical control for Bracken, the main method of control is by cutting. Small stands of Bracken can be cut using a strimmer or a scythe. Large stands can be cut using a forage harvester.

Some Bracken habitat is useful for a number of protected species such as fritillary butterflies so it's important not to aim to completely eradicate Bracken from Ekopod. Stands of Bracken can be left. It may be beneficial to leave some stands close to other areas of Bramble scrub, or where they will perform another useful function such as screening between pods.

For the first two years, where Bracken has taken hold, such as in Management Block 3, an intensive programme of cutting should be implemented if possible, to weaken it and re-establish species rich grassland.

In years 1-2, cut areas of Bracken three times in May, July and August.

Intensive management for Bracken is contrary to management for species rich grassland, so care must be taken not to manage-out wildflowers due to Bracken control measures. After the second year, management should revert to the optimal management for the habitat to be encouraged and retained e.g. species rich semi-natural grassland. Bracken re-establishment should be constantly monitored, and a flexible approach taken to control where a more intensive cutting programme is reinstated if Bracken appears to be getting the upper hand again.

Rollering is a management option which can be incorporated into the management regime for semi-natural grassland (see 11.2 below) and carried out at a time of year complementary to grassland management. Specialist Bracken rollers/ Bracken bruisers are available for towing behind a quad bike. Bracken bruising can also be carried out by hitting the Bracken with a broom handle or by standing on the Bracken using a plank of wood held on ropes.

11.2 Semi-natural grassland management

The most effective way of managing semi-natural grassland to encourage wildflowers is by adopting the traditional system of hay meadow management. This is a two-cut per year mowing system. All arisings (cuttings) are raked and removed. Cutting is done once in September when perennial wildflowers have finished flowering and set seed. Cuttings are left for a day or two so seeds can fall and then cuttings are raked and removed. If cuttings are not removed, the ground will increase in

fertility which will increase the competition from robust grasses and eventually push out the wildflowers.

The regenerating grassland can again be cut in spring around mid-April. This will help reduce the vigour of the grasses and Bracken within the sward and allow light to reach perennials.

Due to the obvious success in establishing flower rich habitats at Ekopod where Bracken has already been controlled on site, it is recommended that hay meadow management is put in place to try to encourage the natural regeneration of wildflower species, rather than artificially seeding the site with wildflower seeds.

Artificial seeding of areas may be an option longer term, if hay meadow management alone management is not successful in producing a flower rich sward, for example because there are no remaining wildflowers in the seed bank. Should this be the case, a local source of species rich green hay from unimproved grassland should be sought and spread over the grassland areas. It may be worth investigating St Clether County Wildlife Site as this seems to be a very valuable habitat in the immediate vicinity and may offer the opportunity for harvesting and/ or collecting seed of local provenance.

If after two cuts a year hay meadow management is implemented, Bracken is still taking over, rolling could be considered between the final cut in September and the spring cut. This will further weaken the Bracken at a time of year when perennials are vegetative and shouldn't unduly affect the wildflowers.

If hay meadow management and rolling does not result in control over Bracken dominance, then reverting to summer cutting may be necessary. Bracken control is most effective between May and July. Cut when Bracken is in full leaf, either twice or three times, six weeks apart from mid-May.

Cut grass may be piled in areas on site to compost and this will provide ideal nesting habitat for small mammals such as field vole and reptiles like slow worm.

Whilst herb rich grassland is largely the desired outcome, areas of tussocky/ rough grassland which are not cut annually are vital for overwintering insects, cover for birds, small mammals, amphibians and reptiles. It is therefore recommended that the margins of core areas of species rich grassland are left uncut with 1/3 of the rough grass area cut every three years.

11.3 Path management

Paths offer the chance to put in linear features which can be used by small mammals and bats to navigate the site. Existing paths at Ekopod which are short mown contain some different plant species that thrive in the more intensive mowing regime along the paths. It is recommended that a graded edge is maintained by mowing the central path corridor short and then mowing or strimming a strip in rotation to provide intermediate vegetation between the short-mown path and other Habitat Units. For example, if paths are short mown several times during the summer, aim to cut the margins of the path, every second or third cut.

11.4 Habitat interfaces

Habitat interfaces (where one habitat type meets another) are important. In nature, blocks of habitat rarely begin and end at a defined line. There are usually intermediate areas by which one habitat transitions into another. Achieving this where possible at Ekopod will benefit biodiversity greatly.

Examples of habitat transitions on site are:

- Between Blackthorn and Bramble scrub, where scattered Blackthorn and other scrubby species such as gorse exists within the Bramble scrub.
- Between Bramble scrub where Bramble grades into rough grassland with some Bramble within the grassland
- Between woodland and other habitats such as grassland where there might be scattered trees or scrubby habitats
- Tussocky grassland with more robust herbs like marsh thistle and hogweed, around the margins of areas of species rich grassland (with finer perennial wildflowers such as ox-eye daisy and red campion).

Habitat interfaces are usually managed by intervening on a regular rotation.

- Scattered Blackthorn scrub might be thinned on a three to five-year rotation, aiming to have equal parts of the interface in a different stage of succession at any one time.
- The interface between Bramble scrub and grassland might be cut on a 1/3 rotation where 1/3 of the total edge is cut in any one year.
- Bracken might be retained at the edge of Bramble scrub and rough grassland by cutting once every three to five years during the summer.
- Rough tussocky grassland can be retained at the edge of species rich grassland by cutting 50% of the tussocky grassland area per year on a two-year rotation.

11.5 Bramble scrub

Bramble scrub needs very little maintenance although it may try to succeed to scrub and woodland. If it becomes too full of very woody species such as gorse, management on a long rotation, e.g. strim 1/10 every 10 years, should keep it in check.

11.6 Woodland planting

Tree planting is suggested to extend the woodland along the stream valley in block 4 and to join up the two areas of woodland, through block 3. Success of tree planting at Ekopod will be dependent on keeping deer at bay with suitable fencing, until the trees are above browsing height.

11.6.1 Suitable species native to Cornwall for tree planting at Ekopod

- Common Oak – *Quercus robur*
- Silver birch – *Betula pendula*
- Downy birch – *Betula pubescens* (better for damp ground than pendula)
- Hazel – *Coryllus avellana*
- Grey willow, *Salix cinerea* ssp. *Oleifolia* (for damp waterside locations)

- Elder – *Sambucus nigra* (understorey)
- Holly – *Ilex aquifolium* (understorey)
- Rowan – *Sorbus acuparia*

In addition to the above native species list, Ekopod already has Sycamore, (*Acer pseudoplatanus*,) Beech, (*Fagus sylvatica*) and Copper Beech, (*Fagus sylvatica* spp. *Purpurea*). These trees are introduced non-natives but are common to Cornwall and common to the site. These species, whilst not being of as high conservation value as Oak, they are present on site and can contribute to future tree cover, both planted and through natural regeneration. Given that Ekopod is likely to lose a lot of Ash in the next century, before slow growing oak will have time to mature, then these species should also be considered as part of the mix.

Nature abhors a straight line! When planting trees, aim to mimic natural patterns. Trees of similar species such as birch can be placed in groups. Ensure wavy edges along any block of woodland planting and place canopy species at random/ irregular intervals.

11.7 Tree Thinning and Woodland Regeneration

Thinning is required in the secondary broadleaved woodland, particularly in the stand of Ash at the far side of the stream and in the conifer plantation, to allow natural light onto the woodland floor and promote regeneration and therefore encourage a more mixed age structure for the canopy and understorey. Aim to achieve gaps in the canopy, selecting trees which are very close to other trees. Aim to take out weaker trees, old or diseased trees, trees which are in the way of a desire line etc.

Monitor for natural regeneration and ensure deer are excluded. If monitoring shows natural regeneration is failing, it may be prudent to also consider planting within the woodland. Birch is a good pioneer species to use for this.

11.8 Permanent pond creation

Standing open water is one of the most valuable habitats for all wildlife and particularly good for insects and amphibians. Having a pond in Block 3 and possibly in Block 1 would be very valuable for wildlife. The pond should be as large as possible with shallow, gently sloping sides, and a deeper area in the middle. Deeper areas in ponds do not freeze in the winter, providing a refuge for aquatic creatures. Provided the pond does not slope more steeply than 30 degrees in any place, the pond can be lined with puddle clay, or a butyl liner can be used. The Freshwater Habitats Trust is a mine of information on pond creation. <https://freshwaterhabitats.org.uk/projects/million-ponds/pond-creation-toolkit/>

11.9 Scrapes for temporary pools

A scrape is a shallow depression meant to seasonally hold water after heavy rainfall or inundation by a watercourse. These are beneficial to amphibians and a wide variety of insects. The area available for a scrape is within the Southern woodland block Unit 39 where there is bare ground of current limited conservation value on a flatter area of the valley floor where it would be fed by the stream when in flood and in periods of heavy rainfall. The scrape should be around 10m² and no deeper

than 40 cm with shallow margins. The relatively small scrape can be created by hand to avoid disturbance of woodland vegetation.

12 Considerations for carrying out works

Before cutting, mowing or any other works involving machinery, which could be potentially harmful to wildlife, searches should be made of the habitat prior to works taking place and any animals such as frogs removed to a safe area before works begin. When mowing or cutting, begin in the centre of the area to be cut and slowly work towards the edges, enabling any remaining species to move out of the way of the machine.

All birds, their nests and eggs receive legal protection under the Wildlife and Countryside Act 1981. Works such as scrub clearance, hedge trimming and tree felling should not take place during bird nesting season which is legally 1st March to 31st August. If any hedge/ tree work is to take place during this period, the area must be thoroughly inspected for nesting birds first and work halted if nesting birds are seen.

There is a possibility that ground nesting birds may use Bracken and grassland habitats at Ekopod. Again, the same applies that a thorough search must be made for any ground nesting birds prior to any works such as mowing taking place.

Felling licences are normally required for tree felling. Details of requirements are found on the Forestry Commission's website. <https://www.gov.uk/guidance/tree-felling-licence-when-you-need-to-apply>.

Bats are another important consideration. Before carrying out any tree works, a suitably qualified arborist should check for bat roosts. If bats are found, work should stop, and Natural England should be consulted.

13 Monitoring

Monitoring the success of habitat management involves monitoring different populations of species using the site over time. There are some simple surveys which can be undertaken that can give an indication of success. Many of the conservation organisations run standardised surveys which can be put to good use in ecological monitoring at Ekopod.

13.1 Vegetation

It would be useful to undertake regular vegetation surveys of flowering plants. A suggested methodology is as follows.

The following method has been greatly simplified from the National Plant Monitoring Scheme. https://www.npms.org.uk/sites/default/files/PDF/NPMS%20Guidance%20Notes_WEB.pdf

1. Record 2, 3m x 3m survey plots for each UK Hab Classification type at Ekopod. For the woodland habitat types, choose 2, 5m x 5m plots. Keep the plots the same each year.

2. Also record at least 1, 5 m length for each different liner feature types such as line of trees, hedge bank, stream bank and along the paths. Keep the lengths the same.
3. Undertake a survey of vegetation around wet habitat features such as ponds, once created.
4. For all plots and lengths, carry out a flowering plant count (number of different species flowering in the plot), twice a year, once in late spring to early summer and once in late summer. If possible, draw up a list of flowering species.
5. For the woodland plots, also record canopy, understorey and regenerating tree and shrub species.

Keeping these records will allow Ekopod to monitor flowering plant diversity and keep track of how the woodland blocks are regenerating. The aim is to keep flowering plant diversity high and if counts show that the number of flowering species is dropping then some adaptive management may be needed. Similarly, the aim for woodland is to promote regeneration and increase diversity and out monitoring will aim to track if management efforts are being successful.

13.2 Breeding birds

<https://www.bto.org/our-science/projects/bbs/taking-part>

Ekopod could adapt the methodology to monitor breeding birds at Ekopod.

13.3 Pollinators

The flower insect timed count (FIT) run by the Centre of Ecology and Hydrology as part of the UK pollinator monitoring scheme could be adopted at Ekopod and used as a proxy for invertebrates generally. This is a simple survey and it may even be possible to get guests involved.

<https://www.ceh.ac.uk/sites/default/files/FIT%20Count%20survey%20guidance%20v3.pdf>

13.4 Review of the Management Plan

It is recommended that the implementation of the Management Plan is monitored and that the Plan is reviewed every five years. The programme of priority actions for biodiversity set out in the Biodiversity Action Plan should be reviewed every two years.

Ekopod Biodiversity Action Plan.

14 Ekopod Biodiversity Priority Habitats

All habitats at Ekopod are semi-natural and in sub-optimal condition so therefore none completely conform to the current Priority habitats definitions set out by the Joint Nature Conservation Committee³. However, the following UK Biodiversity Action Plan broad habitats described in the 1998 UK Biodiversity Habitat Action Plan for Terrestrial and Freshwater Habitats⁴ are present at Ekopod.

- Rivers and streams
- Lowland Mixed Deciduous Woodland and Wet woodland
- Hedgerows
- Neutral grasslands

The Ecological Management Plan also recommends that broad habitat type

- Standing Open Water (ponds) are recreated on site.

The key priority for Ekopod is to manage these habitats so that they are performing as well as they can be for wildlife and are contributing as much as possible to UK biodiversity objectives.

14.1 Objective for broad BAP habitats at Ekopod

Improve the extent, condition, and connectivity of broad BAP habitats at Ekopod to make them 'bigger, better and more joined up'.

15 Biodiversity Action Plan Species

In addition, several key UK Biodiversity Action Plan species have been recorded within a 1.0km radius of Ekopod.

15.1 BAP Priority Mammals

Erinaceus europaeus	West European Hedgehog
Lepus europaeus	Brown Hare
Lutra lutra	Otter
Micromys minutus	Harvest Mouse
Muscardinus avellanarius	Dormouse
Brown long-eared bat	Plecotus auritus
Greater Horseshoe Bat	Rhinolophus ferrumequinum
Lesser Horseshoe Bat	Lesser Horseshoe Bat

³ <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/>

⁴ <http://data.jncc.gov.uk/data/9c2e576a-31b7-4bae-a620-972d99177a1f/UKBAP-Tranche2-ActionPlans-Vol2-1998.pdf>

15.1.1 Objective for mammals at Ekopod

- a) To retain connected Bramble scrub to provide suitable Hedgehog, Dormouse and Harvest Mouse habitat and to encourage an increase in Bramble scrub within the woodland areas.
- b) To retain flower rich habitats and scrub adjacent to linear features to support foraging bats.
- c) To provide artificial habitat for mammals to supplement natural habitat.
- d) To retain high quality streamside habitats for otter that include cover for lying up, such as large log piles, and are relatively undisturbed by visitors e.g. in the wooded valley.
- e) Encourage amphibians as a food source for otters.

15.2 BAP Priority Birds

<i>Alauda arvensis</i> subsp. <i>arvensis/scotica</i>	Sky Lark
<i>Emberiza citrinella</i>	Yellowhammer
<i>Emberiza schoeniclus</i>	Reed Bunting
<i>Larus argentatus</i> subsp. <i>argenteus</i>	Herring Gull
<i>Locustella naevia</i>	Common Grasshopper Warbler
<i>Muscicapa striata</i>	Spotted Flycatcher
<i>Numenius arquata</i>	Eurasian Curlew
<i>Passer domesticus</i>	House Sparrow
<i>Perdix perdix</i>	Grey Partridge
<i>Poecile montanus</i> subsp. <i>kleinschmidti</i>	Willow Tit
<i>Poecile palustris</i> subsp. <i>palustris/dresseri</i>	Marsh Tit
<i>Prunella modularis</i> subsp. <i>occidentalis</i>	Hedge Accentor
<i>Pyrrhula pyrrhula</i> subsp. <i>pileata</i>	Common Bullfinch
<i>Sturnus vulgaris</i> subsp. <i>vulgaris</i>	Common Starling
<i>Turdus philomelos</i> subsp. <i>clarkei</i>	Song Thrush
<i>Vanellus vanellus</i>	Northern Lapwing

15.2.1 Objectives for birds at Ekopod

- a) Improve, connect and extend broadleaved and wet woodland habitats to encourage woodland bird assemblages.
- b) Increase grassland habitats on-site, including rough grassland and species rich grassland to benefits insect feeding birds such as Yellowhammer and Grasshopper warbler that utilise grassland habitat.
- c) Maintain wide thick, Bramble rich hedges for nesting birds.
- d) Do not trim hedges before September, as the late nests of yellowhammers are the most important for overall species reproduction.

15.3 BAP Priority Fish

<i>Anguilla anguilla</i>	European eel
<i>Salmo salar</i>	Atlantic salmon
<i>Salmo trutta</i>	Brown/Sea trout

15.3.1 Objectives for fish at Ekopod

- a) Maintain as far as possible water quality by avoiding chemicals, fertilisers, and slurry input on site.
- b) Maintain damp woodland and grassland habitats for European eel.
- c) Piles of boulders and logs in damp areas may provide refuges for Eel.
- d) Maintain muddy stream margins for Eel.

15.4 BAP Priority Herpetiles (Amphibians and reptiles)

Anguis fragilis	Slow-worm
Bufo bufo	Common Toad
Vipera berus	Adder
Zootoca vivipara	Common Lizard

15.4.1 Objectives for herpetiles at Ekopod

- a) To create artificial habitat for reptiles to supplement natural habitats.
- b) To encourage amphibians by providing areas of standing open water and wet grassland.

15.5 BAP Priority Invertebrates

NB Specific larvae foodplant requirements are noted next to species. gr= general grassland

Acronicta rumicis	Knot Grass (gr)
Arctia caja	Garden Tiger (gr)
Caradrina morpheus	Mottled Rustic (nettle and dandelion)
Coenonympha pamphilus	Small Heath (Heathers, Festuca sp)
Diarsia rubi	Small Square-spot (heather, dandelion dock)
Ecliptopera silaceata	Small Phoenix (gr)
Eugnorisma glareosa	Autumnal Rustic (gr)
Euphydryas aurinia	Marsh Fritillary (Devil's bit scabious)
Hepialus humuli	Ghost Moth (gr)
Hoplodrina blanda	The Rustic (gr)
Hydraecia micacea	Rosy Rustic (gr)
Lasiommata megera	Wall (Fetuca, Holcus grasses)
Lycia hirtaria	Brindled Beauty (Deciduous trees)
Malacosoma neustria	The Lackey (Woodland and hedgerow)
Melanchra persicariae	Dot Moth
Orthonama vittata	Oblique Carpet (Bedstraws, Gallium sp.)
Spilosoma lubricipeda	White Ermine (Nettle and docks)
Spilosoma luteum	Buff Ermine (Nettle, honeysuckle, hops and birch)
Tholera decimalis	Feathered Gothic (gr)
Timandra comae	Blood-vein (Dock, sorrel, knotgrass)
Tyria jacobaeae	The Cinnabar (Ragwort and groundsel)

15.5.1 Objective for invertebrates at Ekopod

- a) Maintain a range of open grassland habitats, from flower rich haymeadow to rough tussocky grassland and short grassland around paths that supports low growing rosette species such as dandelion and bird's foot trefoil (foodplant of the common blue, dingy skipper and green hairstreak butterfly).
- b) Allow tall ruderal 'weed' species such as Nettle (*Urtica dioica*), Ragwort (*Senecio jacobea*) and Marsh thistle (*Cirsium palustre*) to grow up along the margins of scrub and grassland areas. Nettle, for example is a vital caterpillar foodplant for a number of butterfly species and Ragwort feeds the larvae of the BAP priority Cinnabar moth, whilst Marsh thistle is one of the richest nectar sources, and caterpillar food plant of the Painted Lady butterfly.
- c) Maintain tussocky grassland for (among other things) roosting areas for butterflies and moths, nesting habitat for bumblebees and overwintering protection.
- d) Bare ground is invaluable for insects, providing warm basking areas and hunting sight lines for predatory insects. It is important to include some areas of bare ground within the grassland matrix.

16 Two-year Biodiversity Action Plan

- a) To have instigated Bracken control in all areas identified within the Management Plan to restore neutral grassland habitat and encourage flower rich swards.
- b) To have increased connectivity between woodland block on site through woodland planting.
- c) To have protected woodland from deer browsing and thinned coniferous woodland on site to encourage natural regeneration of broadleaved trees.
- d) To have created at least one area of standing open water/ pond habitat.
- e) To have relaxed hedgerow management to allow woody species to regenerate on hedgerows.
- f) To have secured suitable locations and instigated a programme of installation of bat and dormouse boxes and hedgehog and reptile hibernacula.
- g) To contribute to stream water quality and encourage biodiversity by avoiding the use of pesticides, herbicides, molluscicides and insecticides on site.
- h) To have instigated a programme of vegetation monitoring on-site.

Appendix 1: Habitat Units – Primary and Secondary Habitats and Species List

Habitat Unit Number	UKHab Code	UK_Habitat	Secondary Codes			Species List
1	g1c	Bracken	72 Stone faced bank			Bracken, <i>Pteridium aquilinum</i> Foxglove, <i>Digitalis purpurea</i>
2	g3c	Other neutral grassland	71 Earthbank			Red campion, <i>Silene dioica</i> Dock, <i>Rumex obtusifolius</i> Ox-eye daisy, <i>Leucanthemum vulgare</i> Common knapweed, <i>Centaurea nigra</i> Creeping buttercup, <i>Ranunculus repens</i> Common sorrel <i>Rumex acetosa</i> Hedge bindweed, <i>Calystegia sepium</i> Yarrow, <i>Achillea millefolium</i>
3	g3c	Other neutral grassland				Red campion, <i>Silene dioica</i> Bracken, <i>Pteridium aquilinum</i> (regen) False oat grass, <i>Arrhennatherum elatius</i> Cocksfoot, <i>Dactylis glomerata</i> Common Knapweed, <i>Centaurea nigra</i> Nettle, <i>Urtica dioica</i> Hogweed, <i>Heracleum sphondylium</i>

					Common Sorrel, <i>Rumex acetosa</i>
4	g1c	Bracken			Bracken, <i>Pteridium aquilinum</i>
					Bramble, <i>Rubus sp.</i>
5	g3c	Other neutral grassland	10 Mown		
6	g1c	Bracken			Bracken, <i>Pteridium aquilinum</i>
7	h3d	Bramble Scrub			Bracken, <i>Pteridium aquilinum</i>
					Blackthorn, <i>Prunus spinosa</i>
8	h3a	Blackthorn scrub			Blackthorn, <i>Prunus spinosa</i>
					Bramble, <i>Rubus sp.</i>
					Nettle, <i>Urtica dioica</i>
					Bracken, <i>Pteridium aquilinum</i>
					Sycamore, <i>Acer pseudoplatanus</i>
					Ash, <i>Fraxinus excelsior</i>
9	h3d	Bramble scrub			Bramble, <i>Rubus sp.</i>
					Nettle, <i>Urtica dioica</i>
					Ash, <i>Fraxinus excelsior</i>

10	h3d	Bramble Scrub				Bramble, <i>Rubus sp.</i>
11	g3c	Other neutral grassland	10 Mown	71 Earth bank		White clover, <i>Trifolium repens</i> Creeping buttercup, <i>Ranunculus repens</i> Smooth hawsbeard, <i>Crepis capillaris</i> Common cat's ear, <i>Hypochaeris radicata</i> Lady's bedstraw, <i>Galium verum</i>
12	gc3	Other neutral grassland	12 Scattered bracken	16 Tall herb	10 Mown	Bracken, <i>Pteridium aquilinum</i> Marsh thistle, <i>Cirsium palustre</i> Bramble, <i>Rubus sp.</i> Square stalked willowherb, <i>Eplonium tetragonum</i>
13	h3d	Bramble scrub				Bramble, <i>Rubus sp.</i>
14	h3h	Mixed scrub				Bracken, <i>Pteridium aquilinum</i> Bramble, <i>Rubus sp.</i> Gorse, <i>Ulex europaeus</i> Ash, <i>Fraxinus excelsior</i>

15	f2d	Aquatic marginal vegetation				Hemlock/ Water dropwort, <i>Conium maculatum</i>
						Meadowsweet, <i>Filipendula ulmaria</i>
						Marsh thistle, <i>Cirsium palustre</i>
						Dock, <i>Rumex obtusifolius</i>
						Herb robert, <i>Geranium robertianum</i>
						Creeping buttercup, <i>Ranunculus repens</i>
						Wood avens, <i>Genum urbanum</i>
16	r2b	Other rivers and streams				
17	w1f7	Other lowland mixed deciduous woodland				Willow, <i>Salix sp.</i>
						Sycamore, <i>Acer pseudoplatanus</i>
18	g3c	Other neutral grassland	17 Ruderal/ ephemeral	115 Track		Germander speedwell, <i>Veronica chamaedrys</i>
						Creeping cinquefoil, <i>Potentilla reptans</i>
						Lesser trefoil, <i>Trifolium dubium</i>
19	w1g6	Line of trees				Ash, <i>Fraxinus excelsior</i>
						Sycamore, <i>Acer pseudopltanus</i>
						Hazel, <i>Corylus avellana</i>
						Hawthorn. <i>Crategus monogyna</i>

20	r2b	Other rivers and streams				Hemlock/ Water dropwort, <i>Conium maculatum</i> Nettle, <i>Urtica dioica</i>
21	g3c	Other neutral grassland	10 Scattered scrub	10 Tall herb	72 Stone faced bank	Sycamore (regen), <i>Acer pseudoplatanus</i> Bramble, <i>Rubus sp.</i> Foxglove, <i>Digitalis purpurea</i> Water figwort, <i>Scrophularia auriculata</i> Burdock, <i>Arctium sp.</i> Creeping buttercup, <i>Ranunculus repens</i> Common sorrel, <i>Rumex acetosa</i> Red campion, <i>Silene dioica</i> Cleavers, <i>Galium aparine</i> Bracken, <i>Pteridium aquilinum</i> Square stalked willowherb, <i>Epilobium tetragonum</i> Ivy, <i>Hedera helix</i> Wood avens, <i>Geum arbanum</i>
22	g3c	Other neutral grassland				Yorkshire fog, <i>Holcus lanatus</i> Cocksfoot, <i>Dactylis glomerata</i> False oat grass, <i>Arrhenatherum elatius</i> Creeping buttercup, <i>Ranunculus repens</i> Bracken (regen), <i>Pteridium aquilinum</i>

						Common sorrel, <i>Rumex acetosa</i>
						Germander speedwell, <i>Veronica chamaedrys</i>
						Bugle, <i>Ajuga reptans</i>
						Marsh thistle, <i>Cirsium palustre</i>
23	g3c	Other neutral grassland	17 Ruderal ephemeral	16 Tall herb	115 Track	Ox-eye daisy, <i>Leucathemum vulgare</i>
						Ribwort plantain, <i>Plantago lanceolata</i>
						Creeping buttercup, <i>Ranunculus repens</i>
						Germander speedwell, <i>Veronica chamaedrys</i>
						Hemp agrimony, <i>Eupatorium cannabinum</i>
						Common knapweed, <i>Centaurea nigra</i>
						Bugle, <i>Ajuga reptans</i>
						Square stalked willowherb, <i>Epilobium tetragonum</i>
						Lesser stichwort, <i>Stellaria graminea</i>
24	g1c	Braken				Bracken, <i>Pteridium aquilinum</i>
						Bramble, <i>Rubus sp.</i>
						Birch, <i>Betula sp.</i>
						Hazel, <i>Corylus avellana</i>
						Hawthorn, <i>Crataegus monogyna</i>
						Gorse, <i>Ulex europaeus</i>
						Yarrow, <i>Achillea millefolium</i>
						Betony, <i>Stachys officinalis</i>

25	g3c	Other neutral grassland	12 Scattered bracken			Bracken (regen), <i>Pteridium aquilinum</i>
						Foxglove, <i>Digitalis purpurea</i>
						Ox-eye daisy, <i>Leucanthemum vulgare</i>
						Silverweed, <i>Potentilla anserina</i>
						Lesser stitchwort, <i>Stellaria graminea</i>
						Bugle, <i>Ajuga reptans</i>
						Creeping buttercup, <i>Ranunculus repens</i>
26	h3d	Bramble scrub				Bramble, <i>Rubus sp.</i>
						Nettle, <i>Urtica dioica</i>
						Red campion, <i>Silene dioica</i>
						Hedge woundwort, <i>Stachys sylvatica</i>
						False oat grass, <i>Arrhenaterum elatius</i>
						Hogweed, <i>Heracleum sphondylium</i>
						Common knapweed, <i>Centaurea nigra</i>
27	g3c	Other neutral grassland	17 Ruderal/ ephemeral	115 track		Creeping buttercup, <i>Ranunculus repens</i>
						Yarrow, <i>Achillea millefolium</i>
						Ribwort plantain, <i>Plantago lanceolata</i>
						Hogweed, <i>Heracleum sphondylium</i>
						Smooth hawksbeard, <i>Crepis capillaris</i>
						Common cat's ear, <i>Hypochoeris radicata</i>
28	g1c	Bracken				Bracken, <i>Pteridium aquilinum</i>
						Grey willow, <i>Salix cinerea</i>
29	g1c	Bracken				Bracken, <i>Pteridium aquilinum</i>

						False oat grass, <i>Arrhenatherum elatius</i>
						Bramble, <i>Rubus sp.</i>
						Red campion, <i>Silene dioica</i>
						Nettle, <i>Urtica dioica</i>
						Grey willow, <i>Salix cinerea</i>
						Ash, <i>Fraxinus excelsior</i>
						Birch, <i>Betula sp.</i>
30	h3d	Bramble scrub				Bramble, <i>Rubus sp.</i>
31	w1g6	Line of trees	72 Stone faced bank	115 Track		Sycamore, <i>Acer pseudoplatanus</i>
						Copper Beech, <i>Fagus sylvatica ssp. Purpurea</i>
						Hawthorn, <i>Crataegus monogyna</i>
						Ash, <i>Fraxinus excelsior</i>
						Hazel, <i>Corylus avellana</i>
32	g3c	Other neutral grassland	14 Tall herb			False oat grass, <i>Arrhenatherum elatius</i>
						Yorkshire fog, <i>Holcus lanatus</i>
						Common knapweed, <i>Centaurea nigra</i>
						Fescue, <i>Festuca sp.</i>
						Hogweed, <i>Heracleum sphondylium</i>
						Creeping buttercup, <i>Ranunculus repens</i>
						Marsh thistle, <i>Cirsium palustre</i>
						Soft rush, <i>Juncus effusus</i>
						Ribwort plantain, <i>Plantago lanceolata</i>
						Common sorrel, <i>Rumex acetosa</i>

						Square stalked willowherb, <i>Epilobium tetragonum</i>
						Red clover, <i>Trifolium pratense</i>
						Germander speedwell, <i>Veronica chamaedrys</i>
33	g3c	Other neutral grassland	12 Scattered bracken			Dock, <i>Rumex obtusifolius</i>
						Ribwort plantain, <i>Plantago lanceolata</i>
						Creeping buttercup, <i>Ranunculus repens</i>
						Nettle, <i>Urtica dioica</i>
						Bramble, <i>Rubus sp.</i>
						Water figwort <i>Scrophularia auriculata</i>
						Hedge woundwort, <i>Stachys sylvatica</i>
						Common knapweed, <i>Centaurea nigra</i>
						Bracken (regen), <i>Pteridium aquilinum</i>
						Red campion, <i>Silene diioica</i>
						Ox-eye daisy, <i>Leucanthemum vulgare</i>
34	w1f	Lowland, mixed deciduous woodland	72 Stone faced bank			Beech, <i>Fagus sylvatica</i>
						Ash, <i>Fraxinus excelsior</i>
						Sycamore, <i>Acer pseudoplatanus</i>
						Copper beech, <i>Fagus sylvatica ssp. purpurea</i>
						Oak, <i>Quercus robur (sap)</i>
						Hazel, <i>Corylus avellana</i>
						Bluebell, <i>Hyacithoides non-scripta</i>

						Bramble, <i>Rubus sp.</i>
						Ivy, <i>Hedera helix</i>
						Cleavers, <i>Gallium aparine</i>
						Herb robert, <i>Geranium robertianum</i>
						Ferns, <i>Dryopteris sp.</i>
35	g3c	Other neutral grassland	17 Tall herb	44 Recreated habitat (wildflower seeding)	49 Non-native	Bracken, <i>Pteridium aquilinum</i> (regen)
						Thistle, <i>Cirsium sp.</i>
						Bramble, <i>Rubus sp.</i>
						Red campion, <i>Silene dioica</i>
						White clover, <i>Trifolium repens</i>
						Dock, <i>Rumex obtusifolius</i>
						Cornflower, <i>Centaurea cyanus</i>
						Bird's eye gillia, <i>Gillia tricolor</i> (non native)
						Alyssum, <i>Lobularia maritima</i> (non-native)
						Five spot, <i>Nemophila maculata</i> (non-native)
						Borage, <i>Borago officinalis</i>
						Meadow foxtail, <i>Alopecurus pratensis</i>
						Square stalked willowherb, <i>Epilobium tetragonum</i>
						Foxglove, <i>Digitalis purpurea</i>
						Sow thistle, <i>Sonchus arvensis</i>
						Creeping buttercup, <i>Ranunculus repens</i>
36	g1c	Bracken				Bracken, <i>Pteridium aquilinum</i>

37	h3d	Bramble scrub				Bramble, <i>Rubus sp.</i>
38	w1f	Lowland mixed deciduous woodland				Sycamore, <i>Acer pseudoplatanus</i>
						Hazel, <i>Corylus avellana</i>
						Beech, <i>Fagus sylvatica</i>
						Hawthorn, <i>Crataegus monogyna</i>
						Oak, <i>Quercus robur</i>
						Ivy, <i>Hedera helix</i>
						Elder, <i>Sambucus nigra</i>
						Bluebell, <i>Hyacinthoides non-scripta</i>
						Ferns, <i>Dryopteris sp.</i>
						Nettle, <i>Urtica dioica</i>
						Bramble, <i>Rubus sp.</i>
						Herb robert, <i>Geranium robertianum</i>
						Geranium sp. (garden escape?)
						Dock, <i>Rumex obtusifolius</i>
						Cleavers, <i>Galium aparine</i>
						Creeping buttercup, <i>Ranunculus repens</i>
						Wood avens, <i>Geum arbanum</i>
						Wall pennywort, <i>Umbelicus rupestris</i>
						Foxglove, <i>Digitalis purpurea</i>
						Broadleaved willowherb, <i>Epilobium montanum</i>
						Hart's tongue fern, <i>Asplenium scolopendrium</i>
						Enchanter's nightshade, <i>Circaea lutetiana</i>
						Hedge woundwort, <i>Stachys sylvatica</i>

						<i>Rhododendron ponticum</i> (1 individual)
39	f2d	Aquatic marginal vegetation	120 Wet	166 Woodland open space		Nettle, <i>Urtica dioica</i> Fern species, <i>Dryopteris</i> sp.
						Hemlock/ Water dropwort, <i>Conium maculatum</i>
						Bramble, <i>Rubus</i> sp.
						Creeping buttercup, <i>Ranunculus repens</i>
						Hazel, <i>Corylus avellana</i> (regen)
						Sycamore, <i>Acer pseudoplatanus</i> (regen)
40	r2b	Other rivers and streams				
41	w1f	Lowland mixed deciduous woodland				Ash, <i>Fraxinus excelsior</i> (ground layer not surveyed as inaccessible)
42	w1h6	Other woodland, mainly conifer				Spruce sp. <i>Picea</i> sp. Copper beech, <i>Fagus sylvatica</i> Ash, <i>Fraxinus excelsior</i> Elder, <i>Sambucus nigra</i> Hazel, <i>Corylus avellana</i> Ivy, <i>Hedera helix</i> Enchanter's nightshade, <i>Circaea lutetiana</i>

						Bluebell, <i>Hycinthoides non-scripta</i>
						Hart's tongue fern, <i>Asplenium scolopendrium</i>
						Broad leaved willowherd, <i>Epilobium montanum</i>
						Cleavers, <i>Galium aparine</i>
						Herb robert, <i>Geranium robertianum</i>
						Dock, <i>Rumex obtusifolius</i>
						Fern, <i>Dryopteris sp.</i>
43	h2b	Other hedgerow	14 Tall herb	71 Earth bank		Creeping buttercup, <i>Ranunculus repens</i>
						Red campion, <i>Silene dioica</i>
						Hogweed, <i>Heracleum sphondylium</i>
						Bracken, <i>Pteridium aquilinum</i>
44	u1c	Artificial unvegetated, unsealed surface	Car Park			
	u1b5	Buildings				
	u1b5	Buildings				
	u1b5	Buildings				
	u1b5	Buildings				
	u1b5	Buildings				
	u1b5	Buildings				