# WOODLAND MANAGEMENT PLAN
# AT CARDIFF EAST PARK AND RIDE, EASTERN AVENUE, PENTWYN

Prepared for Curtis Hall Ltd

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# 1. Terms of Reference

1.1 The proposed development site is centred on the existing park and ride and includes the construction of a new data centre and associated buildings. Also new access routes including a new bridge over the river Rhymney. The combined site extends to 23.0 ha in total. The plan encompasses an additional 4.5 ha of remedial tree and shrub planting both on site and on land provided by Cardiff Council to the west of the site on the opposite side of the river. In addition, a further 1.14 ha of new native woodland will be planted away from site when a suitable site or project is identified.

1.2 This document is a revised version of the previous plan (V20) prepared for the previous approved application for the site. The clients' instructions were to produce a Woodland Management Plan to include two small areas of Ancient and Semi Natural Woodland (ASNW) and all other areas of woodland and open ground in and around the proposed development site. The plan sets out how the woodlands and open ground will be managed over a twenty-five-year period on an ecologically sound and sustainable basis. The focus of the plan is retaining and preserving important elements of the landscape and, over time, producing improved biodiversity and resilience. Also included in the plan are full details of proposed remedial planting to mitigate the loss of woodland and dormice habitat due to the development.

1.3 The Woodland Management Plan has been prepared in the light of the ecological report for the site and ecological surveys completed. The key finding of the ecological report is that the woodlands have a population of the legally protected dormice (*Muscardinus avellanarius*) and the woodland management and new planting proposed is geared to preserving and protecting their habitat and will conform to the Habitat Regulations. The proposals in respect of dormice habitat improvement will, however, be subject to obtaining a licence from Natural Resources Wales. This plan will form part of the CEMP prepared to accompany the planning application.

1.4 The woodland and open ground extend to 15.87 ha of which 7% (1.2 ha) is ASNW. A key element of the brief was to set out a system of management to preserve the integrity of the woodlands. Appendix 1 is a copy of a plan found on the Welsh Ancient Woodland Inventory website showing the extent of ancient woodland.

1.5 It has been calculated that the associated development, while respecting the ASNW, will involve the loss of approximately 1.14 ha of other woodland. In addition to the woodland lost the proposed development will take up a further 2.62 ha of ruderal vegetation. This represents a loss of dormice habitat these losses will be remediated by 0.45 ha of new planting on site and 4.81 ha of remedial tree and woody shrub planting on a nearby site to the southwest on the opposite side of the river on land made available by Cardiff Council. The area for planting was selected in consultation with the County Ecologist Justin Groves. A key aspect is that this new planting will be linked with the site by a ribbon of existing woodland supplemented by woody shrub planting along the river edge. Two dormice bridges, over the river and another retrofitted over existing Ball Lane footbridge will strengthen this link. The new planting will include a high proportion of hazel in mixture with a range of other woody shrubs providing

food for dormice. The loss of the 1.14 ha of woodland will be remediated by offsite planting. In the local area.

1.6 In addition to the extensive remedial planting securing the future of the ASNW, improving the area for dormice and other wildlife, and preserving the local landscape character should be considered a positive biodiversity gain produced by the development. Without management the wildlife habitats across the area will become degraded by the spread of invasive species, reduction in ground flora, continued fly tipping and possibly the impact of ash dieback.

1.7 The plan conforms to the UK Forestry Standard which sets out guidelines for managing woodlands on a fully sustainable and environmentally responsible basis.

1.8 There is a network of public footpaths across the site which run though the woodlands, including the Rhymney riverside trail.

1.9 In addition to providing management, the proposals will deal with the interface between the ASNW other woodland areas and the new development and how this can be softened and improved for wildlife. The plan will aim to retain existing open areas thus preserving valuable eco-tones between woodland and open ground.

## 2. Description of the Woodlands in the Landscape

2.1 The ASNW forms two separate blocks. One of the woodlands is to the north of the site near Eastern Ave, whilst the other site edges the Rhymney River close to the proposed new bridge. The ASNW woods to the north of the site are, in many places, surrounded by woodland which, while thought to be relatively recently naturally regenerated, are very similar in terms of tree size and species mix to the ASNW.

2.2 A 1945 aerial photograph of the site viewed on Google Earth Pro Historic Maps shows the two areas of ancient woodland largely surrounded by agricultural land and hedgerows. Subsequent aerial photographs of the site show the gradual spread of trees into the areas surrounding the woods which increased with the construction of the existing park and ride around 2011.

2.3 Based on research on the British Geological Survey Website, the soils in all three woods are derived from Devensian Glaciofluvial Sheet Deposits – Sand and Gravel. These superficial deposits formed up to 2 million years ago in the Quaternary Period. Soils in the surrounding areas are also derived from sand and gravel but with a higher clay and silt content.

2.4 The annual rainfall in the area, based on Met Office statistics, is 1,150 mm.

### The Northern ASNW Woodland

2.5 The northern woodland near Eastern Avenue has some old hazel coppice stools, as shown in Figure 1, but is generally a mixed woodland with alder, sycamore, hawthorn, downy birch and goat willow. There are a small number of mature trees, but the majority are early mature and generally quite dense as shown in Figure 2. There are no veteran or ancient trees in the area, or trees with veteran characteristics.

**Figure 1:** Old hazel stools edging footpath.

**Figure 2:** Dense early mature trees with young sycamore natural re-generation.

2.6 There is a rich ground flora throughout the area with an understory of natural regeneration of mainly sycamore as shown in Figure 2 and Figure 3. If left unmanaged the understory and ground flora will become shaded out to the detriment of wildlife habitats including those for dormice.

2.7 At the southern end of the northern wood a power line runs west to east across the wood with an associated cleared easement of mainly hazel as shown in Figure 3.

**Figure 3**: The power line clearance at the southern end of the woodland

**Figure 4**: Naturally regenerated sycamore within dense cover

## The Southern ASNW Woodland near the Rhymney River

2.8 The southern wood adjoining the Rhymney River is on both sides of the river as shown in Figure 5. The tree cover is a mixture of mature trees, some of which have been coppiced, as shown in Figure 6. Part of the woodland to the south of the river is outside the project red line but assumed to be in public ownership.

2.9 The ground flora includes wild garlic, lesser celandine, nettle, bramble and ivy. Tree cover is patchy with a number of glades. Species include silver birch (70%), ash (25%) and sycamore (5%). Most trees are early mature, around 30 years old with scattered older mature trees. There are a small number of hazel and alder coppice stools.

**Figure 5**: Woodland is on both sides of the Rhymney River linked by a foot bridge.

**Figure 6**: Old coppice stools and informal paths.

## Other Woodland Areas (Not ASNW)

2.10 Beyond the ASNW boundaries are blocks of dense woodland with very similar characteristics. Figure 7 shows the edge of the ASNW to the left of the picture and the adjoining woodland to the right. The woodland outside the ancient woodland has a more species variation with less hazel coppice and more willow, ash and downy birch.

**Figure 7**: The transition between ASNW and younger naturally re- generated woodland.

**Figure 8**: Showing the Eco-tones (the graduation between different habitats) that are important for wildlife).

## Open Ground within the Woodland Management Plan

2.11 Interspersed between the woodland are areas of open ground with grasses, bracken and some bramble as shown in Figure 8. These open areas provide important transitional habitats for wildlife and landscape interest.

## 3. The Long Term Vision

3.1 At the end of the 25-year plan period, it is expected that the woodland and open ground will be in the following condition:

a) The woodlands will be thinned to allow a stronger understory to develop, including hazel to be managed as coppice, and a range of native broadleaved trees.

b) The number of non-native species within the woodlands will be substantially reduced, and the regeneration from non-native trees and shrubs, particularly sycamore, will be controlled.

c) Traditional native hedges will strengthen the buffer between built structures and the ASNW and provide additional food sources and shelter for dormice and wild birds.

d) The variety of native species of trees and shrubs present will be increased, providing resilience against the future incidence of pests and diseases.

e) The existing open spaces and associated Eco-tones will be preserved by periodic mowing and raking of cuttings to avoid reversion to woodland.

f) Littering and fly tipping, particularly in Compartment 3 will be cleared up and a system of periodic litter control will be in place.

g) All existing public rights of way will be maintained in particular the footpath along the river Rhymney.

h) All compartments will have dead wood features both standing dead trees and dead wood at ground level.

i) Losses of dormice habitat will be remediated by on- and off-site planting of native trees and woody shrubs, predominately of hazel with scattered oak, totalling 5.29 ha which is more than double the area lost. The loss of 1.14 ha of woodland will be remediated by planting the same area of new native woodland off site.

## 4. Objects of Management

4.1 The objects of management, which have been carefully drafted to balance the public recreation and wildlife conservation aims, are as follows:

a) To increase the extent of coppice understory by thinning and enrichment planting with hazel.

b) To improve the biodiversity within the woodlands, with particular attention paid to dormice habitat by ensuring a varied range of cover with an increased proportion of hazel and other food plants.

c) To, as far as is practicable, remove exotic tree and shrub species and replace with a wider range of native species.

d) To preserve open spaces and existing eco-tones between woodland habitat as open ground.

e) To retain and, if necessary, create dead wood habitats both standing and on the ground.

f) To provide a buffer for the ancient woodland strengthened with native hedging.

g) To manage ash dieback within the woodland areas ensuring infected trees are removed or made safe before becoming dangerous and either planting or promoting natural regeneration of alternative native species.

h) To as far as is reasonably practicable remove and eradicate invasive plants such as Japanese knotweed and Himalayan balsam.

i) To improve access to compartment 2 with new paths to assist with conservation management.

j) To, as far as is reasonably practicable, ensure public safety from tree related hazards.

k) To promote community involvement in the conservation of the woodlands.

l) To take account of predicted climate change.

m) To provide appropriate mitigation in the form of new tree and shrub planting for both the loss of woodland and dormice habitat resulting from the development of part of the site.

## 5. Method of Working and General Prescriptions

5.1 The plan period will be twenty-five years from the date of commencement of the works. The plan years will run from 1st April until 31st March in the following year. Year 1 of the plan is therefore the period from 1st April 2026 to 31st March 2027.

5.2 The site has been divided into 12 compartments or management units as detailed below: -

| Compartment No | Position | Area (ha) |
|---|---|---|
| 1 | Northern ASNW woodland Nr Eastern Ave | 0.74 |
| 2* | | 0.00 |

| | | |
|---|---|---|
| 3 | Eastern ASNW Woodland Edging the River | 0.46 |
| 4 | North End of Site | 0.99 |
| 5 | North End of Site | 0.28 |
| 6 | North End of Site | 0.32 |
| 7 | Edging River Rhymney | 1.86 |
| 8 | North end of site | 0.71 |
| 9 | Surrounding ASNW Compartment1 | 2.63 |
| 10 | Western edge of site near A48 | 0.52 |
| 11 | Western edge of site near A48 | 1.33 |
| 12 | Southern end of the site | 3.36 |
| 13 | Southern end of the site | 2.17 |
| | **Total** | **15.35** |

*Note compartment 2 excluded as outside of development area

5.3 The woodlands will be managed on a continuous cover basis. Management of the trees during the plan period will aim to increase the number of native species by both natural regeneration and planting.

5.4 Natural regeneration will be the preferred method of increasing tree cover. However, this will be supplemented by enrichment planting with native broadleaved species. Where possible planting stock will be sourced from seed collected on site or in the local area. To achieve this, volunteers could be involved to collect seed and grow them on into planting stock. However, if plants from locally collected seed is unavailable, commercially produced planting stock will be used. All planted trees must have been grown in the UK for at least 12 months.

5.5 All planting of trees and woody shrubs will be maintained for a period of 5 years from the date of planting. All failures will be replaced with trees and shrubs of the same species, size, and quality. Weed growth will be controlled using mulch combined with hand cutting. stakes and tree guards will be maintained and replaced if required. Bracken is particularly vigorous and all pervasive and will require regular weed control at least two cuts during the growing season. alternatively, non-herbicide control methods include crushing with a roller.

5.6 In the event of drought conditions all planted trees and shrubs will be watered for as long as necessary to ensure survival, watering at least twice per week until conditions improve. All trees will be protected by tree shelters which often help survival in dry conditions by way of

the shelter they provide from drying winds and condensation running down the tubes. Mulching is specified which also helps retain moisture in the soil. For these reasons watering will only be carried out in extreme drought conditions.

# 6. Individual Compartment Prescriptions

**Compartment 1**

6.1 60% of the existing stools will be re-coppiced during the plan period, cutting 10% in year 1, 10% in year 5, 10% in year 10, 10% in Year 15, 10% in Year 20 and 10% in Year 25. Brash will be laid over the stools to protect against browsing by mammals. Cut stools will be monitored for browsing damage at least four times in the twelve months following coppicing. If browsing damage occurs, stools will be protected by temporary fencing such as Heras panels.

6.2 Areas of dense tree cover will be carefully selectively thinned to favour native species and allow light to penetrate the canopy and encourage natural regeneration on the woodland floor. No more than 1 in 3 trees will be removed in any one thinning operation. Within the plan period 50% of the area will be thinned. 25 areas of 290 $m^2$ will be thinned over the plan period, with one area completed per year. Non-native ground vegetation will be removed retaining any native regeneration. Enrichment planting will be carried out using 45 trees per area, with trees to be planted at approximately 2.5 m centres. The following table gives the enrichment planting species mix for one area of thinning:

| **Scientific name** | **Common Name** | **Qty** |
|---|---|---|
| *Acer campestre* | Field maple | 5 |
| *Betula pubescens* | Downy birch | 5 |
| *Carpinus betulus* | Hornbeam | 5 |
| *Corylus avellana* | Hazel | 15 |
| *Ilex aquifolium* | Holly | 5 |
| *Quercus petraea* | Sessile oak | 5 |
| *Tilia cordata* | Small-leaved lime | 5 |
| | **Total** | **45** |

6.3 A doubled staggered row of 140 m of hazel at 2.5 m centres will be established along the northern edge of the power line clearance as shown on Appendix 2. Ultimately this row will be managed as coppice. In addition, clumps of five hazel will be planted each side of the footpath leading to the A48 footbridge in the positions indicated on Appendix 2. The aim of this is to have pinch points to allow dormice crossing the path and make the foot path edge irregular in profile.

**Compartment 3**

6.4 Currently, access to this compartment is restricted by dense vegetation. It has wet ground conditions making any felling or coppicing operations difficult. No work is envisaged during the

plan period other than any essential maintenance to clear the river channel and deal with trees presenting a health and safety risk.

6.5 In year 1 the deposited rubbish will be cleared off the site and a system put in place for regular inspections followed by clearance on at least an annual basis.

6.6 Any ash infected with ash dieback will be felled and replaced on a one-for-one basis with a tree species from the list given for enrichment planting in Compartment 1.

**Other Woodland (Compartments 4, 9 and 12)**

6.7 Woodland outside the ASNW is similar in composition but generally very dense, to improve conditions for woodland flora this will be thinned. There are few coppice stools in this generally younger woodland so part of the enrichment planting will include 30% hazel intended as future coppice.

6.8 Areas of dense tree cover will be carefully selectively thinned to favour native species and allow light to penetrate the canopy and encourage natural regeneration on the woodland floor. No more than 1 in 5 trees will be removed in any one thinning operation. Within the plan period 50% of the area will be thinned. 25 areas of 1248 $m^2$ will be thinned over the plan period, with one area completed per year. Non-native ground vegetation will be removed retaining any native regeneration. Enrichment planting will be carried out using 200 trees per area, with trees to be planted at approximately 2.5 m centres. The following table gives the enrichment planting species mix for one area of thinning:

| **Scientific name** | **Common Name** | **Qty** |
|---|---|---|
| *Acer campestre* | Field maple | 40 |
| *Betula pubescens* | Downy birch | 20 |
| *Corylus avellana* | Hazel | 60 |
| *Ilex aquifolium* | Holly | 20 |
| *Prunus avium* | Wild cherry | 20 |
| *Quercus robur* | Pedunculate oak | 20 |
| *Tilia cordata* | Small-leaved lime | 20 |
| | **Total** | **200** |

**Riparian Woodland Edging the River Compartment 7)**

6.9 This compartment edges the river and there will be no thinning during the plan period other than any clearance needed for a new riverside path linking with other footpaths in the vicinity. The river edge will be kept deliberately dense with vegetation. As for the other compartments ash suffering from ash dieback will be removed if presenting a health and safety risk or blocking the river.

6.10 Any natural regeneration in the area will be managed and protected if required throughout the plan period.

**Open Ground (Compartments 5, 8, 10 and 13)**

6.11 The existing areas of open ground and existing woodland will be retained. To avoid the open ground becoming invaded with tree cover the areas will be mown annually cutting up to half the area in one year and the remaining vegetation the second year. The cut will be timed to avoid nesting birds and peak dormouse activity and will normally be carried out in September. Cut material will be raked off and piles as habitat for grass snakes.

6.12 The ground flora will be monitored to avoid either bramble or bracken becoming dominant if either of these species show signs of suppressing grass and other species additional control measures may become necessary.

## 7. Remedial Tree and Shrub Planting

7.1 To serve as a replacement for the loss of I.14 ha of woodland a new section of native mixed broadleaved woodland will be planted off site on land to be identified by Cardiff Council.

7.2 Trees be well grown bare root transplants 40 to 60 cm planted at approximate 3 m centres avoiding planting in lines. Trees to be protected by 1.2 m tree shelters supported by 1,5 m stakes 32 mm x 32 mm.

| **Scientific Name** | **Common name** | **Qty** |
|---|---|---|
| *Acer campestre* | Field maple | 50 |
| *Alnus glutinosa* | Alder | 50 |
| *Betula pubescens* | Downy birch | 50 |
| *Carpinus betulus* | Hornbeam | 165 |
| *Corylus avellana* | Hazel | 325 |
| *Ilex aquifolium* | Holly | 25 |
| *Quercus robur* | Pedunculate oak | 125 |
| *Populus tremula* | Aspen | 100 |
| *Quercus petraea* | Sessile oak | 129 |
| *Salix alba* | White willow | 50 |
| *Salix caprea* | Goat Willow | 50 |
| *Sambucus nigra* | Elder | 50 |
| *Sorbus aucuparia* | Rowan | 40 |
| *Tilia cordata* | Small-leaved lime | 25 |
| *Prunus avium* | Wild cherry | 10 |
| Taxus baccata | Yew | 10 |
| | **Total** | **1254** |

7.3 A suitable area has yet to be identified for this planting. However, its inclusion in the plan does constitute a commitment to either plant or fund the establishment of 1.14 ha of new native woodland planting a minimum of 1245 trees protected with suitable tree shelters when suitable area or project is found in the Cardiff area. If Cardiff Council are unable to provide a

suitable area, then local conservation organisations will be contacted to offer to plant or fund the requisite number of new trees. It is accepted that this will be made a planning condition.

## 8. Dormice Habitat Restoration

8.1 The loss of dormice habitat totals 2.62 ha this will be remediated by establishing 4.81 ha of new dormouse habitat on land made available by Cardiff Council onto the southwest of the site on the opposite bank of the river. In addition, a further 0.45 ha will be planted in open areas on site.

8.2 The off-site planting area is shown on the site plan that forms Appendix 3. A narrow band of woody shrub planting, predominantly hazel, and existing trees will provide a link from the site to the new planting area. Just over half the site (2.29 Ha) consists of former sports pitches with mown grass. Beyond the pitches, near a small woodland area. Is a section of unmown grass with scattered naturally regenerating oak.

8.3 Before planting, grass will be screefed (Cut off at ground level with a sharp spade) on a radius of 500 cm from the planting hole.

8.4 The replanting area will have a 5 m managed ecotone along the edge. This will form a phased transition between woodland and grassland. Woodly re-growth will be prevented in this area.

8.5 The planting will involve planting 4620 bare rooted transplants (60 to 90 cm). Species will be planted in random mixture. However, large tree species (marked with an asterisk in the list below) will be spaced at 20 m centres with the hazel and other woody shrubs forming a matrix. Large tree species will be omitted in the narrow belt edging the new skateboard centre and a section to the south of the denser riverside woodland belt.

**Offsite Dormice Habitat 4.81 ha**
**3 m centres, 4.5 ha 5921 plants**

| Scientific name | Common Name | Qty |
|---|---|---|
| *Acer campestre* | Field maple | 100 |
| *Carpinus betulus** | *Hornbeam* | 85 |
| *Corylus avellana* | Hazel | 3750 |
| *Crataegus monogyna* | Hawthorn | 200 |
| *Cytisus scoparius* | Broom | 80 |
| *Lonicera periclymenum* | Honeysuckle | 105 |
| *Quercus petraea** | Sessile oak | 70 |
| *Prunus spinosa* | Black thorn | 85 |
| *Quercus robur** | Pedunculate oak | 120 |
| *Rosa cannina* | Dog rose | 120 |
| *Sambucus nigra* | Elder | 120 |
| *Tilia cordata** | Small leafed Lime | 78 |
| *Sorbus aucuparia* | Rowan | 120 |
| *Taxus baccata* | Yew | 18 |
| *Viburnum lantana* | Wayfaring tree | 120 |

| | | |
|---|---|---|
| *Viburnum opulus* | Guelder rose | 120 |
| | **Total** | **5291** |

8.6 Plants will be protected by Shrub shelters (75cm) supported by treated softwood stakes (90 cm x 32 mm x 32mm). Each tree to be fitted with a biodegradable mulch mat (50 cm x 50 cm). The larger tree species shown above with an asterisk to be protected by Tree shelters (1.2 m) supported by a treated softwood stake (1.5 x 32 mm x 32 mm).

8.7 Any existing natural regeneration of oak will be retained and preserved and in the event of future browsing selected trees will be protected with Tree Shelters either 75 cm shrub shelters of 1.2m tree shelters as appropriate.

8.8 The on-site remedial planting will include seven areas of hazel and woody shrub planting in compartments 5, 8 and 13. As shown hatched in blue. Plants bare rooted transplants (60 to 90 cm). to be planted at 3 m centres in random mixture and protected as detailed in section 8.6.

**Supplementary Dormice Habitat on Site 0.45 ha, 495 plants at 3 m centres,**

| | | |
|---|---|---|
| *Corylus avellana* | Hazel | 350 |
| *Crataegus monogyna* | Hawthorn | 10 |
| *Cytisus scoparius* | Broom | 15 |
| *Lonicera periclymenum* | Honeysuckle | 20 |
| *Rosa cannina* | Dog rose | 15 |
| *Sambucus nigra* | Elder | 15 |
| *Sorbus aucuparia* | Rowan | 15 |
| *Taxus baccata* | Yew | 5 |
| *Viburnum lantana* | Wayfaring tree | 15 |
| *Ilex aquifolium* | Holly | 15 |
| *Quercus robur* | Pedunculate oak | 5 |
| *Prunus spinosa* | Blackthorn | 15 |
| | **Total** | **495** |

8.9 In addition to the above further habitat planting will be completed around the two dormouse bridges, Retrofitted foot bridge and the new road bridge. This planting prescribed by the project ecological consultants is detailed in Appendix 5. All additional planting will be maintained and managed for dormice in areas in line with this plan. Details are also provided in the dormouse licence / Habitat Management Plan for dormice.

## 9. Protecting the ASNW from the Impact of the Development

9.1 A 20 m buffer zone will be retained around the ancient woodlands. In most areas this buffer zone has existing tree cover. The 20 m zone will be edged with 865 m of native mixed hedging. where it meets the built environment. The aim of the planting will be two-fold; to prevent and

discourage access to the ancient woodland and form an extended woodland fringe that will provide important woodland edge habitat for birds, dormice and other wildlife. Plants (40 to 60 cm) to be planted in random mixture in a double staggered row at 500 mm centres and protected by spiral shelters (60 cm x 50 mm) and a bamboo cane (90 cm). The table below gives the species and species mix for the hedge.

| **Scientific name** | **Common Name** | **% of Total** |
|---|---|---|
| *Corylus avellana* | Hazel | 20 |
| *Crataegus monogyna* | Hawthorn | 20 |
| *Ilex aquifolium* | Holly | 25 |
| *Prunus spinosa* | Blackthorn | 10 |
| *Rosa canina* | Dog rose | 15 |
| *Sambucus nigra* | Elder | 10 |

9.2 The hedges will be managed by annual trimming (outside of the bird nesting season) to form a hedge 2 to 3 m in height with a width of 1 to 2m. the aim will be to provide habitat for dormice but also to provide screening and a barrier to prevent easy pedestrian access into the ancient woodland.

9.3 In the case of Compartment 3, trees to the south of the river are beyond influencing distance of the development. In those areas of Compartment 3 on the development side the 20m buffer zone will be respected but hedging is not considered necessary or appropriate in this situation.

## 10. Protection

10.1 It is likely that deer will visit the area but given the size of the areas and level of disturbance, it seems unlikely that a resident population of the larger species will establish. High deer populations make coppicing and natural regeneration difficult due to browsing and have serious implications for ground flora. If deer browsing becomes a problem, tree guards will be extended to protect planted trees or, if necessary, temporary fencing will be erected around planting areas.

10.2 In the event of natural regeneration being browsed by deer, stems will be thinned to 2 m spacing and fitted with 1.2 m tree shelters. When coppicing, brash from the tops of trees will be piled over the stumps rather than chipped to protect against browsing. If rabbit numbers prevent any natural regeneration, selected areas may be protected by temporary rabbit proof netting or fencing where appropriate.

10.3 To prevent browsing damage by rabbits and hares, all planted trees will be fitted with individual tree shelters. A combination of 1.2 m tree shelters supported by treated timber stakes (1.2 m x 32 mm x 32 mm) and 75 cm shrub shelters supported by treated timber stakes (90 cm x 32 mm x 32 mm) will be used on hazel and woody shrubs.

10.4 Grey squirrels are present. This could have an impact on dormice food reserves and the number of nesting birds by predation on eggs and nestlings. Sycamore is particularly vulnerable to bark

stripping. Control of squirrels in an urban setting on land accessible to the public is difficult and will only be attempted if monitoring shows that a high population is having a serious impact on wildlife and trees. Humane control measures will be used if needed.

10.5 The risk of fire in these fragmented woodlands is low. However, the woodlands and adjoining open areas will be open to the general public and a fire plan will be prepared and agreed with the local fire service. This will include such matters as access, liaison with the owners, staff, water availability, erection of warning signs and measures to be taken in the event of extreme drought conditions. Any lop and top not used for dead wood piles and protecting coppice stools will be chipped or cleared to minimise the risk of fire. Given the high use of the site and range of vegetation this is considered an important measure to preserve the woodland and associated habitats, and it is expected that the production of a fire plan will be subject to a planning condition.

## 11. Managing the Risk of Tree Failure

11.1 To fulfill the owner's duty of care, a system of routine tree inspections will be established.

11.2 Trees within falling distance of any buildings, paths or public areas will have a professional survey in year 1 of the plan and then, subject to the condition of the trees at the time of the first inspection, at two-year intervals. Basic level checks should be carried out annually, these do not need to be completed by a professional arboriculturist, but a basic knowledge of trees would be preferable. Staff undertaking the basic surveys should, ideally, hold the LANTRA Basic Tree Inspection qualification. Results of the basic level survey will be retained along with those from the professional surveys of the site. Basic inspections should also be completed after extreme weather.

## 12. Measures to Accommodate Climate Change

12.1 Emissions of carbon due to human activity which exacerbate the greenhouse effect of the upper atmosphere is widely predicted to cause damaging variations in the climate.

12.2 The extent to which these potential problems will manifest themselves and over what timescale cannot be accurately predicted. The plan will have built in flexibility to, as far as is practicable, adapt to the predicted changes.

12.3 The plan will be reviewed at five-year intervals when any impacts of climate change adversely affecting progress towards the objectives can be considered and any necessary adjustments made.

12.4 Ways the plan has been designed to encompass the various aspects of climate change are described below:

**Increased temperatures and drought**

12.5 Some native species such as yew and beech are more susceptible to high temperatures and associated drought. Despite their usefulness as a shade bearing species, beech and yew will not be used in the enrichment planting in Compartment 1.

12.6 Natural regeneration will be encouraged to provide the widest possible genetic base which may contain individuals resistant to temperature changes.

**Storms and gales**

**12.7** The selective thinning proposed within the plan will only cover 60% of the area and the small areas to be thinned will be distributed evenly over the area thus allowing wind to percolate through the woodlands and reduce the risk of wind damage. Increasing the quantity of young trees in the thinning areas will provide a pool of new trees in the event of extreme gale damage.

**Potential for flooding**

12.8 Compartments 3 and 7 edge the Rhymney River and seasonal flooding is likely to occur. However, this is unlikely to threaten the trees as these woods contain species such as alder and willow that are adapted to flooding. Retention of tree cover in the riparian zones will help control the flow of surface water off adjoining higher ground.

**Changes to the carbon content of the atmosphere**

12.9 Increased levels of carbon dioxide have been shown, by experiment, to boost tree growth. No specific measures have been adopted. Maintaining continuous tree cover will lock and store carbon and reduce the carbon footprint of the development.

**Spread of pathogens**

12.10 The northerly migration of pests and pathogens from continental Europe and other warmer regions of the world is perhaps the aspect of climate change that could have the most serious impact on the trees and woodlands. This problem is exacerbated by the world plant trade. The general health of the trees on site will be checked annually on a compartment-by-compartment basis by a trained and qualified forester or arboriculturist and the results will be recorded. Persons responsible for the day-to-day management will be trained to identify some of the exotic pests and pathogens that may extend their range into the area.

12.11 An example of a possible protection problem in the woods is ash dieback (*Hymenoscyphus fraxineus*). This is present in some of the ash on site and it is likely that trees will be killed or made unsafe by the disease. These will be removed and replanted with other broadleaved species.

## 13. Stakeholder Involvement

13.1 Local residents will be informed of the Management Plan and its long term aims and invited to participate in the woodland conservation and regeneration.

13.2 Any local groups interested in conserving the woodland will be invited to participate in management work. Possible partners in the management of the areas and coordinators of volunteers are TCV, RSPB, Woodland Trust and The Wildlife Trust of South and West Wales (Cardiff Group).

## 14. Ecological and Environmental Considerations

14.1 Given the protected status of dormice, a licence will be required for implementation of the plan from Natural Resources Wales. Full details of management and mitigation for dormice habitat loss will be included in the licence application to be prepared by the project ecologists. However, some of the main features are included below.

14.2 Timing of the planned works will avoid the main dormice mid-summer breeding season (June to August) in any year. The table in Figure 11 below gives the calendar of dormice activity.

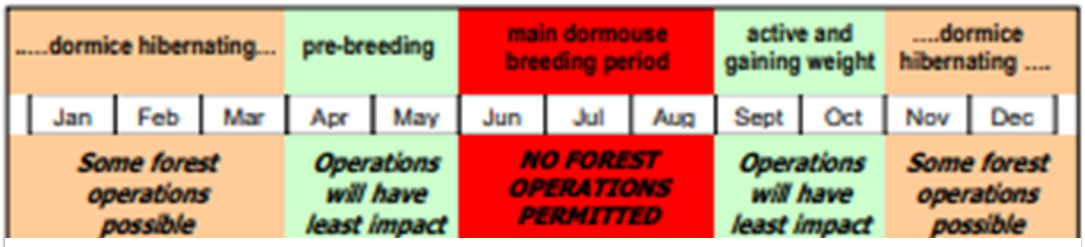



**Figure 11**: Taken from "Dormice Guidance Wales 2010"

14.3 The woodlands are relatively small and lend themselves to small scale working using hand tools and motor manual methods which will reduce disturbance, compaction of the soil and allow careful working. There will be opportunities for the involvement of volunteer groups.

14.4 As part of the remediation 50 boxes will be erected for dormice in the retained woodlands. These boxes will be sited, maintained, and monitored in line with the project ecologist's recommendations.

14.5 Two dormice bridges will be erected across the river linking with the new habitat planting and one retro fitted across the existing pedestrian bridge, which will further improve connectivity and encourage colonisation of the new habitat created.

14.6 During construction 100 m of new 1 to 2m high earth bank will be constructed edging open ground cut tree stems and brash will be incorporated into the mound to form new wildlife habitat.

14.7 Otters have been noted in the Rhymney River and care will be taken to retain and enhance suitable habitat along the riverbank with additional understory species. Otters also protected and work will follow Natural Resources Wales Guidelines. No evidence was found of otters within the site on the initial survey, but a further survey will be completed prior to commencement. However, it is presumed they use the area, on occasions at least. The plan will keep and encourage dense cover along the riverbanks to provide suitable otter habitat.

14.8 Wherever possible, deadwood, both standing and fallen, will be retained to provide biodiversity. At least five standing dead trees will be retained in each compartment, subject to health and safety considerations. If no dead trees are present, five trees removed during thinning will be left as 4 to 5 m conservation stumps. In areas where there is a low health and safety risk ash that have been killed by ash dieback can be retained to achieve the dead wood target.

14.9 No pesticides or chemicals will be used and weed control will involve the use of biodegrade able mulch mats and woodchip mulch, some of which will be produced from thinning. The only exception is the control of invasive species particularly Japanese Knot weed where chemical control may be the only practical solution.

14.10 All tree and shrub guards will be biodegradable. When fitting, care will be taken to ensure any supporting stakes are driven below the rim of the tube to avoid access by mice and voles to the top of the tube. Tree and shrub shelters will be removed after five years and industrially composted in line with the manufacturer's recommendations. Mulch mats will be biodegradable made from organic material. All timber products used in the woodlands will be from renewable FSC certified sources.

14.11 Any chainsaws used will use bio chain oil. No fuel will be stored on site. Refuelling stations will be on a bunded pad outside the woodland area. Any powered machinery will carry a spillage control kit. Commercial battery powered chain saws or hand saws will be the preferred tools for thinning work.

## 15. Permissions and Constraints

15.1 As the entire area is the subject of a TPO, any tree work or felling will require permission from Cardiff Council. No work can be done until written permission has been obtained. It is hoped that the management plan will be accepted by the Council and an agreement made that any tree work or felling contained within the period of the plan will not require further permission or applications.

15.2 The proposed thinning will also require felling permission as required by the Felling Licence Regulations included in the 1967 Forestry Act (as amended). As the woods are the subject of a TPO, Natural Resources Wales will liaise with Cardiff Council regarding granting felling permission. It should be possible to obtain a 10-year felling licence based on submission of this plan.

15.3 While the work is designed to improve dormice habitat it still has the potential to impact the species and permission will be required from Natural Resources Wales.

## 16. Implementation and Method of Working

16.1 A schedule of works and timetable for implementation of the plan is set out in Appendix 4.

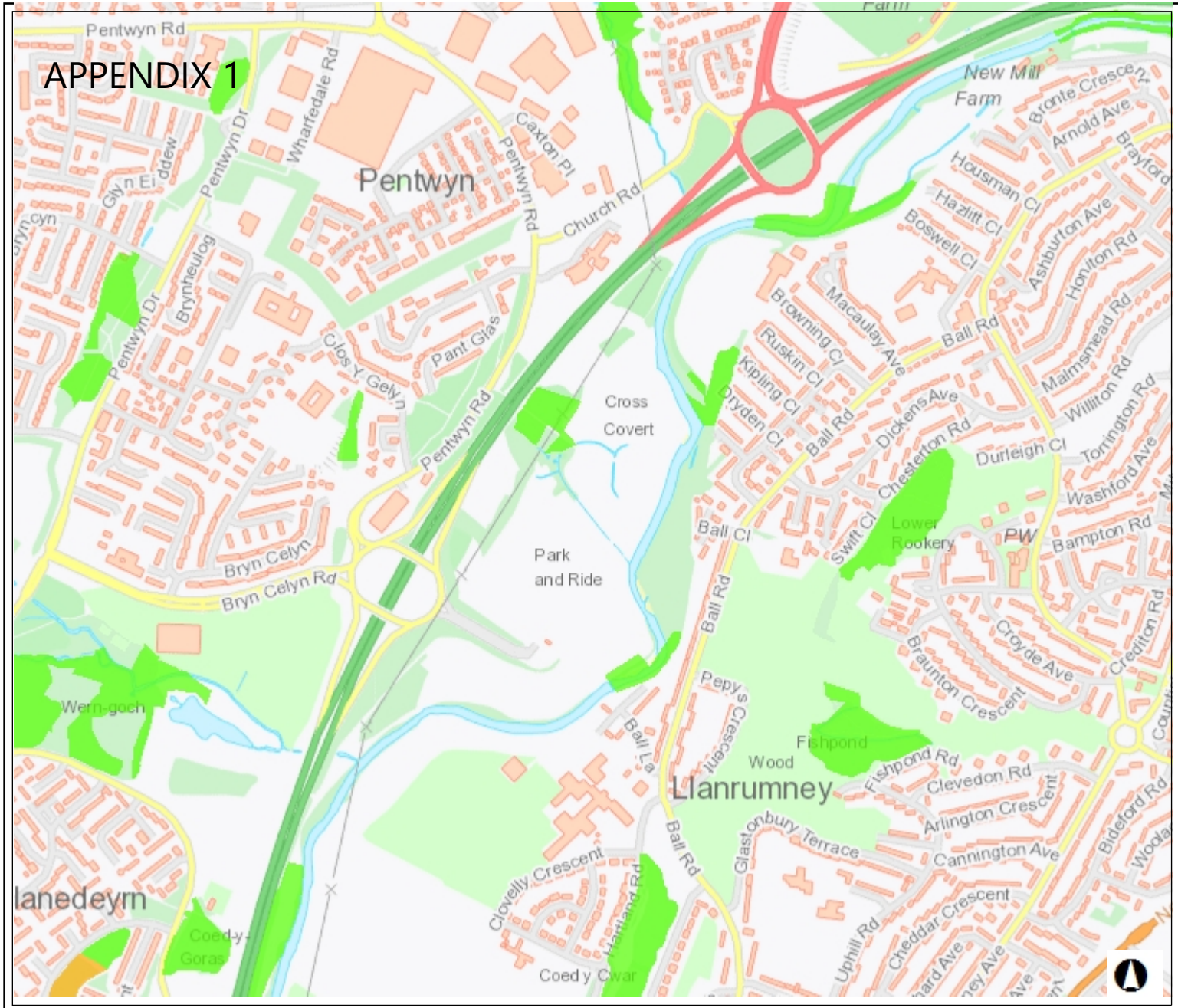
16.2 Implementing the plan including the remedial planting has been fully costed. Arrangements will be made for the long-term management of the woodland areas which will be funded by an annual charge on the company running the data centre. The initial phase of work (Years 1 and 2) including all remedial planting will be undertaken using funds from the construction budget.

## 17. Monitoring Throughout the Plan Period

17.1 It will be necessary to monitor the impact of the implementing the proposals, in particular, to review the plan at five-year intervals to ensure the measures completed produce the planned habitat improvements. In particular assessing the impact on the dormice population. Any changes needed will be made in the next five-year period.

**A. T. Coombes NDF, MSc (Arb & Urban For), PDArb (RFS), FICFor, MArborA**
**A.T. Coombes Associates Ltd**
**04 December 2025**

APPENDIX 1




Cyfoeth Naturiol Cymru
Natural Resources Wales

**Ancient Woodland Cardiff East Park and Ride**

**Allwedd / Map Key**

Ancient Woodland Inventory 2021

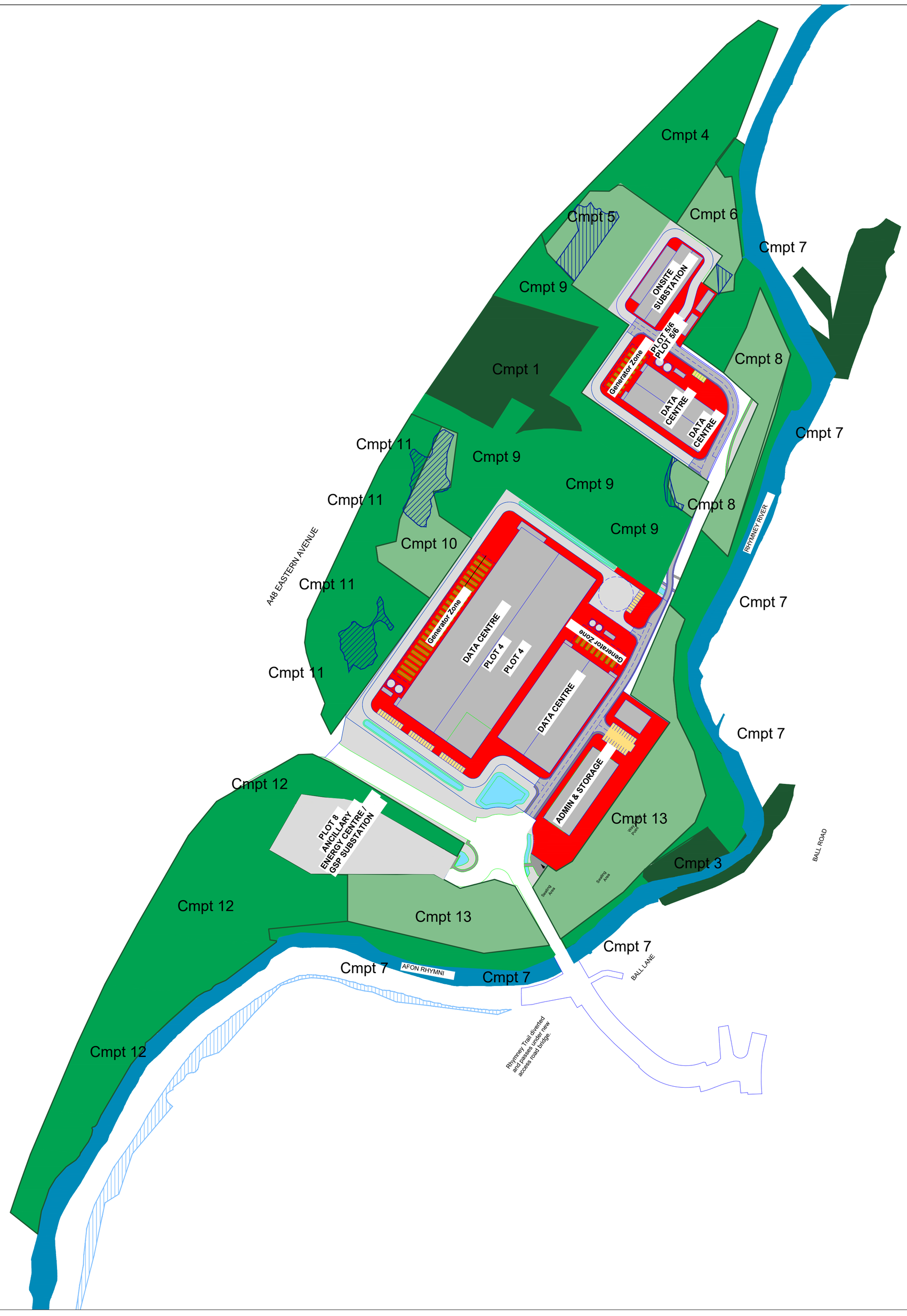
- Ancient Semi Natural Woodland
- Ancient Woodland Site of Unknown Category
- Plantation on Ancient Woodland Site
- Restored Ancient Woodland Site

**Graddfa / Scale** 1: 10,000

**Dyddiad / Date**
08/04/2022

0.5 0 0.25 0.5

British_National_Grid Kilometers




Drawing Title:

# Appendix 2 - Woodland Management Plan

Site:

Cardiff Park and Ride East, Cardiff

Client:

Sweco

NORTH

To Scale 1:2000 at A1

KEY

- Ancient Woodland
- Existing Woodland
- Open Space
- Proposed Path
- Proposed Hedging
- River Rhymney
- Proposed Hazel Planting

| Drawn By: RG | Date: 04/12/2025 |
|---|---|


TREE SURVEYS

A. T. Coombes Associates Ltd

mail@atcoombes.com
01603 759618

**Offsite Dormice Habitat 4.5 ha at 3 m centres 4950 plants**

The planting will involve planting 4950 bare rooted transplants (60 to 90 cm) at 3 m spacing. Species will be planted in random mixture. However, large tree species (marked with an asterisk in the list below) will be spaced at 20 m centres with the hazel and other woody shrubs forming a matrix. Large tree species will be omitted in the narrow belt edging the new skateboard centre and a section to the south of the denser riverside woodland belt.

| Scientific name | Common Name | Qty |
|---|---|---|
| *Acer campestre* | Field maple | 75 |
| *Carpinus betulus** | *Hornbeam* | 55 |
| *Corylus avellana* | Hazel | 3700 |
| *Crataegus monogyna* | Hawthorn | 200 |
| *Cytisus scoparius* | Broom | 80 |
| *Lonicera periclymenum* | Honeysuckle | 75 |
| *Quercus petraea** | Sessile oak | 25 |
| *Prunus spinosa* | Black thorn | 75 |
| *Quercus robur** | Pedunculate oak | 100 |
| *Rosa cannina* | Dog rose | 100 |
| *Sambucus nigra* | Elder | 100 |
| *Tilia cordata** | Small leafed Lime | 55 |
| *Sorbus aucuparia* | Rowan | 100 |
| *Taxus baccata* | Yew | 10 |
| *Viburnum lantana* | Wayfaring tree | 100 |
| *Viburnum opulus* | Guelder rose | 100 |
| **Total** | | **4950** |

**Tree and Shrub Protection**

Plants will be protected by Shrub shelters (75 cm) supported by treated softwood stakes (90 cm x 32 mm x 32 mm). Each tree to be fitted with a biodegradable mulch mat (50 cm x 50 cm). The larger tree species shown above with an asterisk to be protected by Tree shelters (1.2 m) supported by a treated softwood stake (1.5 x 32 mm x 32 mm).

Any existing natural regeneration of oak will be retained and preserved and in the event of future browsing selected trees will be protected with Tree Shelters either 75 cm shrub shelters of 1.2 m tree shelters as appropriate.

**On-Site Supplementary Dormice Habitat on site 0.76 ha 836 plants**

The planting will involve planting 836 bare rooted transplants (60 to 90 cm). Species will be planted in random mixture at 3 m spacing

| Scientific name | Common Name | Qty |
|---|---|---|
| *Corylus avellana* | Hazel | 600 |
| *Crataegus monogyna* | Hawthorn | 20 |
| *Cytisus scoparius* | Broom | 20 |
| *Lonicera periclymenum* | Honeysuckle | 26 |
| *Rosa cannina* | Dog rose | 25 |
| *Sambucus nigra* | Elder | 25 |
| *Sorbus aucuparia* | Rowan | 25 |
| *Taxus baccata* | Yew | 10 |
| *Viburnum lantana* | Wayfaring tree | 25 |
| *Ilex aquifolium* | Holly | 25 |
| *Quercus robur* | Pedunculate oak | 10 |
| *Prunus spinosa* | Blackthorn | 25 |
| | **Total** | **836** |

**Tree and Shrub Protection**

Plants will be protected by shrub shelters (75 cm) supported by treated softwood stakes (90 cm x 32 mm x 32 mm). Each tree to be fitted with a biodegradable mulch mat (50 cm x 50 cm)

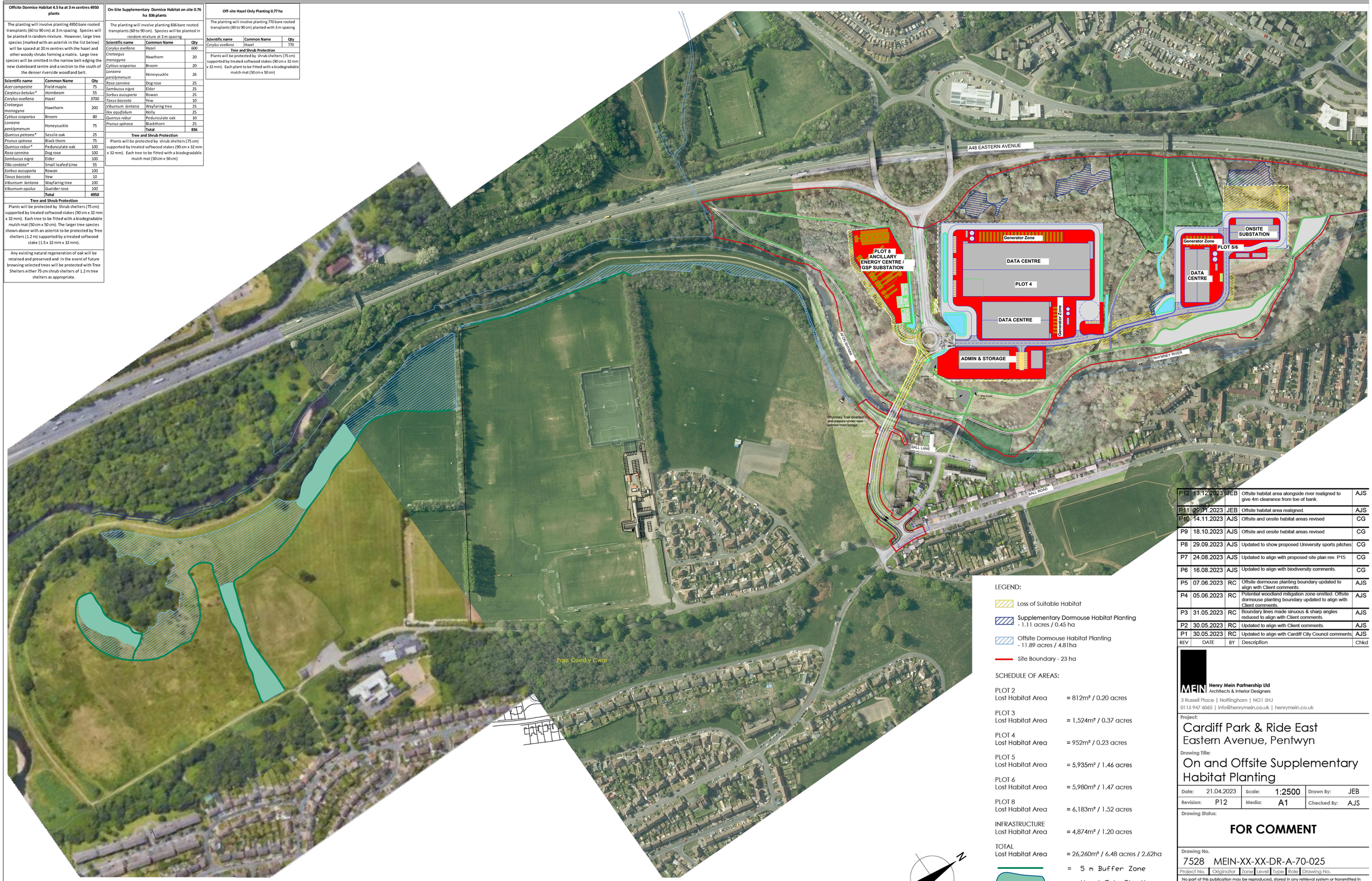
**Off-site Hazel Only Planting 0.77 ha**

The planting will involve planting 770 bare rooted transplants (60 to 90 cm) planted with 3 m spacing

| Scientific name | Common Name | Qty |
|---|---|---|
| *Corylus avellana* | Hazel | 770 |

**Tree and Shrub Protection**

Plants will be protected by shrub shelters (75 cm) supported by treated softwood stakes (90 cm x 32 mm x 32 mm). Each plant to be fitted with a biodegradable mulch mat (50 cm x 50 cm)




Proposed Site Plan

scale 1:2500

LEGEND:

- Loss of Suitable Habitat
- Supplementary Dormouse Habitat Planting - 1.11 acres / 0.45 ha
- Offsite Dormouse Habitat Planting - 11.89 acres / 4.81ha
- Site Boundary - 23 ha

SCHEDULE OF AREAS:

PLOT 2
Lost Habitat Area = 812m² / 0.20 acres

PLOT 3
Lost Habitat Area = 1,524m² / 0.37 acres

PLOT 4
Lost Habitat Area = 952m² / 0.23 acres

PLOT 5
Lost Habitat Area = 5,935m² / 1.46 acres

PLOT 6
Lost Habitat Area = 5,980m² / 1.47 acres

PLOT 8
Lost Habitat Area = 6,183m² / 1.52 acres

INFRASTRUCTURE
Lost Habitat Area = 4,874m² / 1.20 acres

TOTAL
Lost Habitat Area = 26,260m² / 6.48 acres / 2.62ha

= 5 m Buffer Zone

= Hazel Only Planting

50m SCALE 1:2500

| REV | DATE | BY | Description | Chkd |
|---|---|---|---|---|
| P12 | 13.12.2023 | JEB | Offsite habitat area alongside river realigned to give 4m clearance from toe of bank. | AJS |
| P11 | 29.11.2023 | JEB | Offsite habitat area realigned. | AJS |
| P10 | 14.11.2023 | AJS | Offsite and onsite habitat areas revised | CG |
| P9 | 18.10.2023 | AJS | Offsite and onsite habitat areas revised | CG |
| P8 | 29.09.2023 | AJS | Updated to show proposed University sports pitches | CG |
| P7 | 24.08.2023 | AJS | Updated to align with proposed site plan rev. P15 | CG |
| P6 | 16.08.2023 | AJS | Updated to align with biodiversity comments. | CG |
| P5 | 07.06.2023 | RC | Offsite dormouse planting boundary updated to align with Client comments. | AJS |
| P4 | 05.06.2023 | RC | Potential woodland mitigation zone omitted. Offsite dormouse planting boundary updated to align with Client comments. | AJS |
| P3 | 31.05.2023 | RC | Boundary lines made sinuous & sharp angles reduced to align with Client comments. | AJS |
| P2 | 30.05.2023 | RC | Updated to align with Client comments. | AJS |
| P1 | 30.05.2023 | RC | Updated to align with Cardiff City Council comments. | AJS |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Project:

# Cardiff Park & Ride East
## Eastern Avenue, Pentwyn

Drawing Title:

# On and Offsite Supplementary Habitat Planting

| | | | | | |
|---|---|---|---|---|---|
| Date: | 21.04.2023 | Scale: | 1:2500 | Drawn By: | JEB |
| Revision: | P12 | Media: | A1 | Checked By: | AJS |

Drawing Status:

**FOR COMMENT**

Drawing No.

7528 MEIN-XX-XX-DR-A-70-025

| Project No. | Originator | Zone | Level | Type | Role | Drawing No. |
|---|---|---|---|---|---|---|

| item + | Cmpt No | Type | Description of Work | Qty | Unit | Yr1 | Yr2 | Yr3 | Yr4 | Yr5 | Yr6 | Yr7 | Yr8 | Yr9 | Yr10 | Yr11 | Yr12 | Yr13 | Yr14 | Yr15 | Yr16 | Yr17 | Yr18 | Yr19 | Yr20 | Yr21 | Yr22 | Yr23 | Yr24 | Yr25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | ASNW | Native hedge planting | 865 | m | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1 | ASNW | Maintain hedge planting | 1 | Job | | X | X | X | X | X | | | | | | | | | | | | | | | | | | | |
| 3 | | ASNW | Annual hedge trimming | 865 | m | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 4 | 1 | ASNW | Undertake hazel enrichment planting | 117 | m | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 1 | ASNW | Maintain enrichment planting | 1 | Job | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 6 | 1 | ASNW | Undertake thinning | 270 | m2 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 7 | 1 | ASNW | Clear enrichment planting regeneration areas | 1 | Job | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 8 | 1 | ASNW | Undertake enrichment planting | 45 | ech | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 9 | 1 | ASNW | Maintain enrichment planting | 1 | Job | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 10 | 1 | ASNW | Coppicing 10% stools | 740 | m2 | X | | | | X | | | | | X | | | | | X | | | | | X | | | | | X |
| 11 | 1 | ASNW | Pile brash over stools | 1 | md | x | | | | X | | | | | X | | | | | X | | | | | X | | | | | X |
| 19 | 3 | ASNW | Form new ride/ path for access | 1 | Job | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 3 | ASNW | Initial Clear deposited rubbish | 1 | Job | X | | | | | | | | | | | | | | | | | | | | | | | | |
| | | ASNW | Annual rubbish clearance (contingency) | 1 | Job | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 21 | 7 | Riparian | Informal path clearance | 1 | Job | x | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Undertake thinning | 1 | Job | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | 4,9 and 12) | Other Woodland | Undertake thinning | 1248 | m2 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 23 | 4,9 and 12) | Other Woodland | Clear enrichment planting/ regeneration areas | 1 | Job | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 24 | | Other Woodland | Undertake enrichment planting | 200 | ech | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 25 | | Other Woodland | Maintain enrichment planting | 1 | Job | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 26 | 5, 8, 10 and 13 | Open Ground | Biannual mowing late summer (50% 6.2 ha per yr) | 3.1 | ha | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 27 | 5, 8, 10 and 14 | Open Ground | Rake off cuttings and pile | 3.1 | ha | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 28 | Remedial Habitat Creation | On site Domice habitat | Plant and guard hazel and woody shrubs | 836 | ech | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | Remedial Habitat Creation | On site Domice habitat | Maitain Dormice habitat planting | 0.76 | ha | | X | X | X | X | | | | | | | | | | | | | | | | | | | | |
| 30 | Remedial Habitat Creation | Off site Dormice habitat | Plant and guard hazel and woody shrubs | 4950 | ech | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | Remedial Habitat Creation | Off site Dormice habitat | Maitain Dormice habitat planting | 4950 | ech | | X | X | X | X | | | | | | | | | | | | | | | | | | | | |
| 32 | Replacement Woodland | Off site Dormice habitat | Plant trees and woody shrubs | 1254 | ech | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | Replacement Woodland | Off site Dormice habitat | Maintinance of trees and woody shrubs | 1254 | | | X | X | X | X | | | | | | | | | | | | | | | | | | | | |
| | All | Dormice Habitat | Erect Dormice boxes | 50 | | X | | | | | | | | | | | | | | | | | | | | | | | | |

| item + | Cmpt No | Type | Description of Work | Qty | Unit | Yr1 | Yr2 | Yr3 | Yr4 | Yr5 | Yr6 | Yr7 | Yr8 | Yr9 | Yr10 | Yr11 | Yr12 | Yr13 | Yr14 | Yr15 | Yr16 | Yr17 | Yr18 | Yr19 | Yr20 | Yr21 | Yr22 | Yr23 | Yr24 | Yr25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | Dormice Habitat | Erect Dormice bridges | 5 | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| | All | Dormice Habitat | Form new earth bank with included timber and brash using spoil from the development | 100 | m | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | All | | Remove or make safe ash infected with ash dieback (contingence) | 1 | Job | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 35 | All | | Undertake professional tree heath and safety survey | 1 | Job | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X |
| 36 | All | | Undertake basic tree health and safety survey | 1 | Job | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | |
| 37 | All | | Maintain enrichment planting | 1 | Job | | X | X | X | X | X | | | | | | | | | | | | | | | | | | | |
| 38 | All | | Path maintenance | 1 | Job | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 39 | All | | Eradicate Japanese knotweed and Himalayan balsam | 1 | Job | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | |
| 40 | All | | Manage natural regeneration | 1 | Job | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |

**Appendix 5 - Additional Dormouse Habitat Planting associated with the Dormouse Bridges and Road Bridge Prescribed by WSP Ecological Consultants**

1. New area of **Off-Site** dormouse habitat planting (new area same planting ratios as the other areas of off-site planting):

| **Off-Site dormouse habitat planting (1.02ha)** | | |
|---|---|---|
| **Whips/Transplants on 3m grid** | | |
| **%** | **Species** | **Qty** |
| 2% | *Acer campestre* | 22 |
| 2% | *Carpinus betulus* | 18 |
| 71% | *Corylus avellana* | 795 |
| 4% | *Crataegus monogyna* | 43 |
| 2% | *Cytisus scoparius* | 17 |
| 2% | *Lonicera periclymenum* | 22 |
| 1% | *Quercus petraea* | 15 |
| 2% | *Prunus spinosa* | 18 |
| 2% | *Quercus robur* | 25 |
| 2% | *Rosa canina* | 25 |
| 2% | *Sambucus nigra* | 25 |
| 1% | *Tilia cordata* | 17 |
| 2% | *Sorbus aucuparia* | 25 |
| 1% | *Taxus baccata* | 5 |
| 2% | *Viburnum lantana* | 25 |
| 2% | *Viburnum opulus* | 25 |
| 100% | TOTAL | 1,122 |

2. New area of **On-Site** dormouse habitat planting (shade-tolerant shrubs and ferns adjacent to and up to 2m under proposed road bridge):

| **Road bridge adjacent planting (0.04ha)** | | |
|---|---|---|
| **Whips/Transplants on 3m grid** | | |
| **%** | **Species** | **Qty** |
| 27% | *Corylus avellana* | 12 |
| 27% | *Ilex aquifolium* | 12 |
| 14% | *Lonicera periclymenum* | 6 |
| 16% | *Sambucus nigra* | 7 |
| 16% | *Taxus baccata* | 7 |
| 100% | TOTAL | 44 |

3. New area of **On-Site** dormouse habitat planting (shade-tolerant ferns under proposed road bridge):

| **Road bridge under planting (0.004ha)** | | |
|---|---|---|
| **Transplants on 500mm grid** | | |
| **%** | **Species** | **Qty** |
| 25% | *Asplenium scolopendrium* | 40 |
| 25% | *Dryopteris dilatata* | 40 |
| 25% | *Dryopteris filix-mas* | 40 |
| 25% | *Polystichum setiferum* | 40 |
| 100% | TOTAL | 160 |