

**Land adjacent to
Llantwit Major
Bypass, Boverton**

**Dormouse
Mitigation
Strategy**

Prepared by:
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Dimension
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On Behalf of:
**Barratt Homes,
South Wales**

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THE
ENVIRONMENTAL
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Section 1 Introduction, Site Context and Purpose

Introduction

- 1.1 This Dormouse Mitigation Strategy has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf Barratt David Wilson Homes South Wales (hereafter referred to as 'the Client'), in relation to land at Llantwit Major Bypass, Boverton (hereafter referred to as 'the Application Site').
- 1.2 An application for full planning permission (application reference 2014/00995/FUL) for the development of 66 residential dwellings, public open space, landscaping, highways improvements and associated engineering works on agricultural land adjacent to Llantwit Major Bypass, Boverton was received by Vale of Glamorgan Council (VoGC) on 22 August 2014.
- 1.3 The proposed Planning Layout is provided at **EDP Appendix 1**. This Dormouse Mitigation Strategy has been prepared to form part of the detailed application submission.

Site Context

- 1.4 The Application Site measures approximately 1.85 hectares and is located to the immediate east of Boverton and west of the Ministry of Defence (MoD) site at St. Athan, approximately 2km inland from the south Wales coastline. Beyond the built up areas of Boverton and MoD Saint Athan the wider landscape is otherwise dominated by agricultural land.
- 1.5 The Application Site is bound on all sides by transport links, including Llantwit Major Bypass (B4265) along its south western edge, the Vale of Glamorgan railway line along its north eastern edge, and minor roads including Eglwys Brewis Road and Llantwit Road, defining the north western and south eastern boundaries of the Application Site respectively.
- 1.6 Habitats onsite include two agricultural fields dominated by poor semi-improved grassland and divided by an intact, native species-poor hedgerow. A second intact, species-poor and outgrown hedgerow forms the south eastern boundary of the Application Site. Additionally, an established belt of broadleaved woodland aligns the railway line forming the north eastern boundary, whilst the south western boundary is defined by highways planting aligning Llantwit Bypass and supporting relatively young and semi-mature tree standards. This belt of vegetation also extends along Eglwys Brewis Road forming the north western boundary of the Application Site, with an additional tree line extending south westwards from the north eastern boundary and

running parallel. A building formed partly of breeze-block walls, corrugated metal roof and corrugated metal extension is also located here.

- 1.7 It should be noted that in addition to fields F1 and F2, field F3 located to the immediate south east of the Application Site will likely be subject to a planning application for its future residential development. As such, a wider Ecology Masterplan has been devised with respect to dormice and other wildlife, to ensure that those mitigation measures detailed within this Mitigation Strategy remain coherent in the long-term.
- 1.8 The Ecology Masterplan for the wider site is further illustrated at **Appendix EDP 2** and seeks to demonstrate the potential application to field F3 of those mitigation principles detailed in relation to the development of fields F1 and F2, thereby ensuring the maintenance of the favourable conservation status of the species over the long term.

Purpose

- 1.9 A Preliminary Ecological Assessment of the Application Site comprising an Extended Phase I Habitat Survey and ecological desk study, was undertaken by Thomson Ecology in July 2014 to inform the detailed planning application for residential development of the Application Site (Report reference ABAW105/002/002). Following the submission of detailed application documents to VoGC, further surveys were requested by the Council Ecologist to fully determine any impact of the proposals on protected species, including dormouse. Subsequent dormouse surveys undertaken by Thomson Ecology in 2015 confirmed the presence of this species onsite.
- 1.10 The hazel dormouse is listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV(a) to the Habitats Directive), affording it protection under the Conservation of Habitats and Species Regulations (2010).
- 1.11 In absence of appropriate compensation and mitigation measures, the development proposals are considered likely to result in the destruction of, and disturbance to, dormouse habitat both on and immediately adjacent to the Application Site. Additionally, the potential for disturbance, injury and killing of individuals could also arise during the pre-construction and construction phases. Given the risk of causing an offence under the Conservation Regulations, an EPS licence from Natural Resources Wales (NRW) will therefore be necessary prior to any commencement of works.
- 1.12 This Dormouse Mitigation Strategy therefore sets out the necessary sensitive working methodologies in relation to the construction of the new residential development permitted. The methodologies devised are based upon the findings of the dormouse survey as detailed within the Dormouse Survey Report prepared by Thomson Ecology in June 2015 and submitted as part of the original detailed planning application. This strategy also details the necessary compensation, mitigation and enhancement measures required for implementation, to ensure no significant negative effects will arise upon the favourable conservation status of a local dormouse population following development

of the site. This strategy will therefore form the basis of the Method Statement template comprising the future EPS licence application submission going forward.

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Section 2 Survey Findings

Desk Study

- 2.1 No records of dormice were returned within 1km of the Application Site by the South East Wales Biodiversity Records Centre (SEWBRc) during the desk study undertaken by Thomson Ecology in 2014 as part of the Preliminary Ecological Appraisal of the Application Site. A known population of dormouse associated with the West Gate entrance of St. Athan Royal Airforce east of Application Site, was however identified by the Council Ecologist within their consultation response dated 24 October 2014 (**Appendix EDP 3**).

Habitats

Habitat Assessment

- 2.2 An assessment of the suitability of all habitats on and immediately adjacent to site for dormouse was undertaken by Thomson Ecology in 2015. The full methodology is detailed within the dormouse survey report included at **Appendix EDP 4**. In brief, a number of habitat features were recorded to determine their suitability to support dormice, including: habitat type; size; species richness; structure and management; habitat connectivity; and availability of natural nesting and hibernation sites.
- 2.3 Additionally, an update walkover of the site was undertaken on 29 November 2016 by a suitably qualified and licensed EDP ecologist, to determine any material change to those habitats to be impacted with regards to their potential to support dormice.
- 2.4 The vast majority of the Application Site comprises poor, semi-improved grassland subject to regular management through cutting and/or grazing and of negligible value to dormice. However the vegetated boundaries of the Application Site offer suitable dispersal and foraging habitat for this species, comprising habitat corridors both across the Application Site and to the wider landscape, as summarised below:
- *North eastern boundary (circa 260m)*: Linear belt of broadleaved woodland located along the full length of this boundary and extending beyond the site along the railway line. This woodland belt is characterised by abundant mature ash (*Fraxinus excelsior*) and frequent sycamore (*Acer pseudoplatanus*) with an understorey characterised by hawthorn (*Crataegus monogyna*), English elm (*Ulmus procera*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*) and sycamore. Ivy (*Hedera helix*) dominates the ground flora;
 - *South western (c.290m) & north western (c.63m) boundary*: Comprises recently established highways planting aligning Llantwit Bypass and located on a bank

measuring approximately 10m in width. Species present young to semi-mature specimens of ash, hawthorn, English elm and Scots pine (*Pinus sylvestris*), achieving heights of between approximately 5m and 12m. This linear belt of vegetation also extends along Eglwys Brewis Road forming the northern boundary, with sycamore and ash dominant here;

- *South eastern boundary (c.74m)*: Intact, species-poor and outgrown hedgerow with existing field access present at its southern end measuring c. 2m-3m in width. Hedgerow measuring approximately 5m in height and 3m in width, and dominated by hawthorn, blackthorn and elder. Bramble scrub is particularly prominent along its southern edge;
- *North western, internal boundary (c.30m)*: Comprises a tree line extending from the north eastern boundary of the Application Site towards the interiors of the northernmost field at its northern end. Species include hawthorn, ash and sycamore, reaching between 6m-8m in height; and
- *Internal Hedgerow (c. 65m)*: Intact, species-poor and recently coppiced hedgerow measuring approximately 2m-3m in width and dominated by hawthorn, blackthorn, elder and ash. An existing field access measuring c. 2m-3m in width is present at its north eastern end.

Dormouse Survey

Methodology

- 2.5 A dormouse survey was undertaken by Thompson Ecology over the course of 2015, as detailed within their dormouse survey report included at **Appendix EDP 4**.
- 2.6 To summarise, a total of 60 dormouse nest tubes were deployed onsite on 19 March 2015. Tubes were left *in situ* and checked by licensed surveyors for evidence of use by dormice on six separate occasions over the course of 2015 during suitable weather conditions, on 20 April, 19 May, 18 June, 20 July, 13 August and 4 September.

Results

- 2.7 Nest tube surveys of suitable dormouse habitat undertaken in 2015, confirmed the presence of dormouse activity onsite, as follows:
- Dormouse nest present within tube 10 recorded during the May check, situated along the internal species-poor hedgerow; and
 - Evidence of the start of a dormouse nest within tube 26 also recorded during the May check, situated within highways planting aligning Llantwit Bypass forming the south western boundary of the Application Site.

- 2.8 An update walkover of the area completed by EDP on 29 November 2016, confirmed no material changes to those habitats to be impacted with regards to their potential to support dormouse.
- 2.9 In line with Natural England guidance¹ which states that “the survey should be from the current or previous active season. Surveys up to 3 years old are acceptable if the habitats haven’t significantly changed”, the above findings as documented within Thompson Ecology’s dormouse survey report (**Appendix EDP 4**), are thus considered to remain a valid baseline upon which appropriate mitigation measures can be based.

Assessment of Survey Findings

- 2.10 Of the 60 survey tubes deployed onsite, 2 (tubes 10 and 26) recorded evidence of dormouse during the 2015 surveys, with two nests found in May 2015. No further evidence of dormice was recorded for the site however over the remainder of the survey period. Given the findings of the survey, it is considered that only a low population of dormice is present within the locality; likely existing at only very low densities.
- 2.11 Habitats onsite confirmed to support dormice are contiguous with the remainder of the boundary vegetation present on and immediately adjacent to the site. Given the connectivity of such habitats onsite and with similar habitat extending across the wider landscape to the north, east and west, facilitated further by those vegetated corridors aligning Llantwit Major Bypass and the railway line, all hedgerows and linear belts of vegetation on and immediately adjacent to the Application Site are assumed to be used by the local dormouse population.

¹ <https://www.gov.uk/guidance/hazel-or-common-dormice-surveys-and-mitigation-for-development-projects>

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Section 3 Legislative Context

- 3.1 Dormice receive strict protection which is mainly derived from the legal protection provided primarily through the EU Habitats Directive, transposed in the UK through the Conservation of Habitats and Species Regulations 2010. The legal context of the Directive and Regulations as it applies to dormice is set out below.

EU Habitats Directive

- 3.2 Article 12(1) of the Habitats Directive requires Member States to:

"Establish a system of strict protection for the animal species listed in Annex IV (a) in their natural range, prohibiting:

- *All forms of deliberate capture or killing of specimens of these species in the wild;*
- *Deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration;*
- *Deliberate destruction or taking of eggs from the wild; and*
- *Deterioration or destruction of breeding sites or resting places".*

- 3.3 Dormouse is included at Annex IV(a) of the Directive.

- 3.4 Article 16(1) of the Habitats Directive states that:

"provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, Member States may derogate from the provisions of Articles 12:

- *In the interest of protecting wild fauna and flora and conserving natural habitats;*
- *To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;*
- *In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment;*

- *For the purpose of research and education, of repopulating and re-introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants; and*
- *To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species listed in Annex IV in limited numbers specified by the competent national authorities”.*

3.5 “Favourable Conservation Status” (FCS) is defined by the EU Habitats Directive by Article 1(e) of the Directive. The conservation status of a species is defined as *“the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory”*. This is considered “favourable” when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The Conservation of Habitats and Species Regulations 2010

3.6 Articles 12 and 16 of the EU Habitats Directive are transposed into UK law through the provisions of The Conservation of Habitats and Species Regulations 2010 (as amended).

3.7 Regulation 40 states that Schedule 2 of the Regulations lists those species of animals listed in Annex IV(a) to the Habitats Directive which have a natural range which includes any area in Great Britain. The species listed are considered EPS and include dormouse.

3.8 Regulation 41(1) states that it is against the law to:

- *“Deliberately capture, injure or kill any wild animal of a European protected species;*
- *Deliberately disturb wild animals of any such species;*
- *Deliberately take or destroy the eggs of such an animal, or*
- *Damage or destroy a breeding site or resting place of such an animal”.*

3.9 Regulation 41 (2) further states that with respect to “disturbance” this includes in particular any disturbance which is likely to:

- *“Impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or*
- *Impair their ability to, in the case of animals of a hibernating or migratory species, to hibernate or migrate; or*
- *To affect significantly the local distribution or abundance of the species to which they belong”.*

3.10 The protection afforded under Regulation 41 can be derogated through a licensing process under the requirements of Regulation 53 under certain circumstance, including the preservation of public health and public safety or other imperative reasons of overriding public need including those of a social nature, subject to there being no satisfactory alternative or that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range.

Additional Protection

3.11 Additional protection for dormice is also afforded under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb dormice whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place.

3.12 This species is also listed as a Species of Principle Importance under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006.

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Section 4

Impact Assessment in Absence of Mitigation or Compensation

Impacts

- 4.1 The development proposals will result in the permanent loss of approximately 425m² of dormouse habitat as follows:
- Full loss of a single, internal species-poor hedgerow subdividing the two semi-improved grassland fields, amounting to approximately 251m² (c. 65m in length) to accommodate residential units;
 - Partial loss of the north easternmost section of the south eastern boundary, species-poor hedgerow, amounting to approximately 34m² (c. 15m in length), to accommodate the construction footprint adjacent; and
 - Loss of a small section of woodland comprising relatively recently established highways planting aligning Llantwit Major Bypass along the south western boundary of the Application Site, amounting to approximately 140m² to facilitate construction of the main access road.
- 4.2 The development will also result in the temporary loss removal of an approximately 6m wide section of hedgerow at the north western end of the Application Site, at the junction of the Llantwit Major Bypass and Eglwys Brewis Road, to facilitate the connection of the foul sewer.
- 4.3 The extent of habitat losses proposed across the Application Site are calculated based upon a topographical survey undertaken for the Application Site and is illustrated within **Appendix EDP 5**.
- 4.4 Losses are considered minimal relative to the extent of existing dormouse habitat present immediately adjacent to the Application Site along the railway line and Llantwit Major Bypass, forming the north eastern and north western boundaries respectively. Nevertheless, such habitat losses have the potential to kill, injure and/or disturb dormice that may be present therein.
- 4.5 The Application Site will also be subject to increased levels of lighting, vehicular movement and noise disturbance as a result of converting a greenfield site to residential use, with 66 residential dwellings proposed.
- 4.6 Additionally, potential increases in predation levels could also arise as a result of the introduction of domestic cats following occupation.
- 4.7 In absence of mitigation or compensation, and considering the small size of the dormouse population located within the local landscape and confirmed utilising the site

for foraging and dispersal purposes, such impacts upon the dormouse population present onsite are considered to be significant negative at the site and local level, but negligible at the regional and national levels.

Section 5

Mitigation and Compensation

Works to be Undertaken

- 5.1 Vegetation clearance will commence following receipt of the consented application and approval of an EPS licence from NRW no earlier than 1 March 2017. Dormouse habitat requiring clearance to facilitate development is illustrated at **Appendix EDP 5**.

Site Briefing

- 5.2 A site-specific briefing will be given by a licensed dormouse ecologist, to the Principal Contractor appointed by the Developer, with regards to the strict working methodologies and legal obligations to be met, particularly with respect to those methodologies and timing constraints set out within any EPS Licence granted given the presence of a dormouse population onsite.

Pre-commencement Site Check

- 5.3 Immediately prior to the commencement of any pre-construction/enabling works onsite, including vegetation clearance, a site walkover will be conducted by the suitably qualified ecologist, to determine any significant changes to those habitats supported by the site with respect to dormouse. The purpose of the site walkover is to determine whether any further, species-specific working methodologies beyond those contained within this document will be required.

Protective Fencing

- 5.4 With respect to all mature trees, shrubs and hedgerows to be retained, protective fencing accommodating root protection areas, to comprise post and wire fencing, will be securely installed at least two weeks prior to the commencement of the pre-construction/enabling works phase and adequately maintained along all identified boundaries. Such fencing is the responsibility of the Developer.
- 5.5 Additionally, all areas of vegetation to be cleared will be identified and agreed in advance by the suitably qualified ecologist and Principal Contractor appointed by the Developer, and appropriately marked out onsite prior to the commencement of site works.

Installation of Dormouse Boxes

- 5.6 A minimum of 20 dormouse nest boxes² will be installed approximately 20m apart upon suitable trees and shrubs, located primarily along the south western and north eastern boundaries prior to April 2017 to further enhance the site for dormice.
- 5.7 Dormouse boxes will be installed by a licensed dormouse ecologist, in accordance with those requirements set out within any forthcoming EPS licence approved by NRW. Their installation, maintenance and repair throughout the pre-construction/enabling works phase remain the responsibility of the Developer.

Temporary Lighting

- 5.8 Temporary lighting across the site, if required, will be kept to the lowest permissible level through the use of sensitive lighting design. This will include:
- The reduction in height of lighting columns employed across the site to allow for low-level lighting or, where more appropriate, the use of tall columns designed to allow light to be directed downwards more acutely so as to reduce horizontal spill;
 - The use of light spill accessories such as hoods, shields and filters to allow for lighting to be directed to the intended area only, such that light spillage is avoided elsewhere;
 - The use of timed and/or sensor lighting across the site; and
 - The programming of timed lighting to ensure adequate dark periods between dusk and dawn across the site, particularly along the eastern and northern boundaries.
- 5.9 Such sensitive lighting strategies aim to maintain existing habitat corridors across the site utilised by notable and protected species for commuting, foraging and dispersal during the pre-construction/enabling works phase on site.

Sensitive Vegetation Clearance

- 5.10 Habitats to be lost to the development footprint include:
1. Permanent loss of the single, internal species-poor hedgerow subdividing the two semi-improved grassland fields (c. 251m²/65m length);
 2. Permanent loss of the north easternmost section of hedgerow forming the south eastern boundary of the Application Site (c. 34m²/15m length);

² Nest box construction to meet specifications detailed within Bright, P., Morris, P. & Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook, 2nd Edition*. English Nature, Peterborough or similar (e.g. as per Peoples Trust for Endangered Species () specifications: <https://ptes.org/campaigns/dormice/>)

3. Permanent loss of a small section of woodland, comprising relatively recently established highways planting aligning Llantwit Major Bypass along the southern boundary of the Application Site (totalling c. 140m²);
4. Temporary loss of a 6m wide section of hedgerow forming the north western boundary of the Application Site, at the junction of Llantwit Major Bypass and Eglwys Brewis Road; and
5. Temporary loss of a 1-1.5m wide section of hedge forming the south eastern boundary through the widening of the existing field access gap to c. 3.5m in width.

5.11 Clearance of these specific areas/habitat types will be undertaken as follows:

Two Stage Clearance – Full Length of Internal Hedgerow, North Eastern Section of South Eastern Boundary Hedgerow, and Section of Highways Planting Along North Western Boundary

- 5.12 Vegetation clearance of the full length of the internal hedgerow dividing the two fields comprising the Application Site, in addition to the loss of a small section of hedgerow forming the south eastern boundary of the Application Site and a section of highways planting along the north western boundary, will be undertaken over two stages to avoid harm to dormice as far as possible.
- 5.13 The first stage of clearance will be limited to above-ground clearance, to be undertaken as soon as possible between 1 March and 31 March 2017 (to avoid the dormouse active season and main bird breeding season). The second stage of clearance will involve below-ground clearance commencing no earlier than 1 May 2017 (following dormouse full emergence from hibernation) and completed by 30 June 2017.
- 5.14 All clearance works will be overseen by the suitability qualified ecologist (or their accredited agents) named on the EPS licence.
- 5.15 A tool-box talk will be given to the vegetation clearance contractors by the ecologist prior to commencement, with respect to the legal protection afforded to dormice, the working methodologies to be employed, identification of individuals and their nests, and procedures to be followed, should any evidence of dormice be encountered during the works. Any other ecological considerations / potential constraints will also be identified.
- 5.16 A pre-commencement check for dormice, their nests and active bird nests will be undertaken by the ecologist immediately prior to clearance, with the ecologist working closely alongside the contractor and declaring discrete sections as being clear of dormice and nests, following a thorough search before enabling targeted and sequential clearance to occur.

- 5.17 Should any active bird nest or bird nest under construction be found, then a buffer zone of 5m will be created around the nest and maintained until all eggs have hatched and chicks fledged before works can recommence within this area.
- 5.18 Should a dormouse nest and/or torpid individuals be found during the works, they will be relocated to suitable retained habitat adjacent or to the nearest available dormouse box. Should an active dormouse be encountered during the clearance works, the individual will be given adequate time to disperse of its own accord and away from the area subject to the clearance works and towards retained habitat adjacent, before recommencing with the clearance works.
- 5.19 Above-ground clearance will be undertaken using hand-held tools/machinery at a slow pace and in a direction towards retained habitat to aid dispersal of any wildlife present. Trees and shrubs will be cut down to heights of between 30cm and 50cm above ground level. During the clearance, brash will remain in situ for 24 hours to aid dispersal for wildlife during this time, before being re-used to provide temporary dead-hedges to maintain habitat connectivity within the clearance area, and/or taken off site or chipped onsite and stored away from vegetated areas. Vehicles will avoid tracking across areas subject to clearance, and will instead be confined to the hedgerow edges and field interiors utilising long-reach machinery where required.
- 5.20 Second stage, below-ground clearance, to be completed between 1 May and 30 June 2017, will involve the lifting out of tree stumps, root balls, buried rubble, spoil etc. using a tracked excavator and undertaken in a sensitive manner to ensure no significant disturbance to soil and adjacent, retained planting. Clearance works will be supervised by the suitability qualified ecologist (or their accredited agents) named on the EPS licence. Any such excavations that occur within the root protection zone of retained vegetation will be undertaken by hand and backfilled as soon as possible. Dormice will be active during this time and will have dispersed of their own accord; however should any individuals be encountered during the works then such individuals will be persuaded to move away from the working area and towards retained vegetation and dormouse boxes.
- 5.21 During the below-ground clearance works, all tree and shrub specimens considered suitable for transplanting to new planting areas elsewhere onsite will be excavated in a sensitive manner to ensure the integrity of the root ball(s) is maintained. Suitable specimens identified for transplanting will be appropriately stored and cared for prior to planting in accordance with the specifications set by the appointed landscape contractor.
- 5.22 Following completion of the hedgerow clearance, the development footprint will be released to the developer to enable construction to commence.

Single Stage Clearance –Temporary Loss of Hedgerow Habitat along North Western Boundary to Facilitate Foul Sewer Connection

- 5.23 Temporary loss of hedgerow habitat will be required along the north western boundary of the Application Site. Such losses are minimal, with a 6m wide gap required through the north western hedgerow to facilitate the connection of the foul sewer.
- 5.24 Temporary habitat clearance will be undertaken using single stage clearance methodologies and are considered appropriate in this instance given the limited extent of clearance required.
- 5.25 Clearance will involve both above-ground and below-ground clearance undertaken during the early part of the dormouse active season when individuals are dispersing, i.e. between 1 May and 30 June 2017, and will be overseen by the suitability qualified ecologist (or their accredited agents) named on the EPS licence.
- 5.26 A tool-box talk will be given to the vegetation clearance contractors by the ecologist prior to commencement with respect to the legal protection afforded to dormice, the working methodologies to be employed, identification of individuals and their nests, and procedures to be followed should any evidence of dormice be encountered during the works. Any other ecological considerations / potential constraints will also be identified.
- 5.27 A thorough search for active nests will be undertaken prior to clearance, with the ecologist working closely alongside the contractor and declaring discrete sections as being clear of dormice and nests, before enabling targeted and sequential clearance to occur.
- 5.28 Both above-ground and below-ground vegetation will be removed using hand-held tools/machinery and will be undertaken at a slow pace and in a direction towards retained hedgerow habitat to aid dispersal of wildlife potentially remaining. Following clearance, brash will remain in situ for 24 hours to aid dispersal of wildlife during this time, before being taken off site or with waste chipped and stored away from vegetated areas.
- 5.29 Should a dormouse nest be found during the works, this will be relocated to suitable retained habitat adjacent or to the nearest available dormouse box. Should an active dormouse be encountered during the clearance works, the individual will be given adequate time to disperse of its own accord and away from the area subject to the clearance works and towards retained habitat adjacent, before recommencing with the clearance works.

Dormouse Habitat to be Retained, Enhanced and Created

- 5.30 Given the confirmed presence of dormice onsite, the proposed scheme has been designed to retain, protect and enhance key dormouse habitat, in addition to creating

new dormouse habitat within the scheme as far as possible. This has been achieved through the following design measures:

- Retention and protection of existing dormouse habitat on and immediately adjacent to the Application site, as follows:
 - The retention of existing tree and shrub planting located adjacent to the north western boundary of the Application Site (74m²);
 - The retention of the vast majority of the hedgerow forming the south eastern boundary of the Application Site (85m²);
 - the inclusion of 2m high, close-board fencing around the peripheries of the proposed development footprint to delineate and separate curtilages from adjacent vegetation to the north east, north west and south west;
 - the offsetting of the development footprint to the interiors of the Application Site and away from its vegetated peripheries by an average of 2m; and
 - the provision of additional native low-level shrub and scrub planting between adjacent curtilages and existing vegetation along the north eastern and south western boundaries, amounting to 1158m², so as to strengthen and protect existing habitat corridors.

- The creation of additional dormouse habitat onsite, as follows:
 - The provision of an extensive area of new tree, shrub and scrub planting across the north western extent of the Application site amounting to 462m² to compensate for habitat loss, to include planting adjacent to existing vegetated boundary features occurring within this area, in addition to the creation of further habitat 'ecotones' around the proposed attenuation basin and Local Area of Play (LAP). Such ecotones will seek to maximise structural and species diversity, fruiting/flowering potential and ground cover for dormice;
 - The reinstatement of the vast majority of the south eastern boundary hedgerow through the provision of new tree and hedgerow planting (amounting to 32m²), along an adjusted alignment at its north eastern extent to compensate for the section of hedgerow lost to facilitate construction adjacent;
 - The creation of new native hedgerows amounting to 111m², including hedgerows proposed around units 16-18 & 40-43 and forming the boundaries of the LAP;

- The transplanting of suitable, mature specimens of hawthorn, blackthorn, elder and ash present within the internal hedgerow otherwise proposed for loss, towards the north western area of open space subject to extensive new planting; and
- The provision of 20 dormouse nest boxes to be installed along the eastern boundary of the Application Site to facilitate future population monitoring.

5.31 Additionally, all retained, enhanced and newly created dormouse habitat excluded from adjacent curtilages will be subject to a sensitive management and maintenance regime by a Private Management Company over the lifetime of the development (further detailed at **Section 6**).

5.32 A summary of the extent of habitat loss, retention and creation proposed by the Proposed development is illustrated at **Appendix EDP 5** and further quantified within **Table EDP 5.1** below:

Table 5.1: Summary of habitats to be lost, retained and created onsite as part of the proposals (all m² approximate)

Dormouse Habitat Onsite	Existing (m²)	Of Which Lost (m²)	Of Which New (m²)	Net Gain/Loss (m²)
Highways planting (south western boundary)	140	140	0	-140
Tree & shrub planting - north western boundary	74	0	462	+462
Low-level shrub planting - habitat buffers	n/a	n/a	1,158	+1,158
Native hedgerow – internal	251	251	0	-251
Native hedgerow - south eastern boundary	119	34	32	-2
Formal hedgerow - adjacent to units 16-18 and 40-43	n/a	n/a	56	+56
Formal hedgerow - bounding LAP	n/a	n/a	55	+55
Total	584	425	1,763	+1,338
Ratio of replacement planting (425m² Loss : 1338m² Gain) = 1 : 2.3				

5.33 New planting proposed will include native tree and shrub species favoured by dormice, as summarised within **Table EDP 5.2**, with their locations and distribution illustrated at **Appendix EDP 6**.

Table EDP 5.2: Native Species Planting Proposed

Tree, Shrub and Scrub Mix Proposed Across North Western Extent	
Common Name	Latin Binomial
Alder	<i>Alnus glutinosa</i>
Field maple	<i>Acer campestre</i>
Downy birch	<i>Betula pubescens</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Spindle	<i>Euonymus europaea</i>
Holly	<i>Ilex aquifolium</i>
Privet	<i>Ligustrum vulgare</i>
Bird cherry	<i>Prunus padus</i>
Blackthorn	<i>Prunus spinosa</i>
Dog rose	<i>Rosa canina</i>
Bramble	<i>Rubus fructicosus</i> agg.
Small-leaved lime	<i>Tilia cordata</i>
English oak	<i>Quercus rober</i>
Shrub and Scrub Planting within Habitat Buffers	
Field maple	<i>Acer campestre</i>
Old man's beard	<i>Clematis vitalba</i>
Dogwood	<i>Cornus sanguinea</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Spindle	<i>Euonymus europaea</i>
Holly	<i>Ilex aquifolium</i>
Privet	<i>Ligustrum vulgare</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Crab Apple	<i>Malus sylvestrus</i>
Blackthorn	<i>Prunus spinosa</i>
Dog rose	<i>Rosa canina</i>
Bramble	<i>Rubus fructicosus</i> agg.
European gorse	<i>Ulex europaeus</i>
Guelder rose	<i>Viburnum opulus</i>
Hedgerow Planting Mix	
Alder	<i>Alnus glutinosa</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Privet	<i>Ligustrum vulgare</i>
Blackthorn	<i>Prunus spinosa</i>

Section 6

Post-Development Site Safeguard

Habitat Management and Maintenance

- 6.1 Native tree, shrub and hedgerow planting to be implemented across the proposed development will require ongoing sensitive and appropriate management over the lifetime of the development given the presence of dormice on site.
- 6.2 Sensitive management will seek to maximise the value of food, nesting and hibernation resources for dormice through:
- The inclusion of native tree and shrub species considered to offer valuable food resources throughout the dormouse active season;
 - The maintenance of canopy and understorey connectivity through appropriate management measures, including sensitive levels of coppicing and thinning to ensure good light levels reach the woodland floor; and
 - Minimising disturbance within newly planted areas through the exclusion of such habitats from adjacent curtilages.
- 6.3 Key management and maintenance prescriptions are detailed below.

New Planting Areas

Planting and Establishment

- 6.4 Native tree, hedgerow and shrub planting is proposed along the western, northern and eastern boundaries of the Application Site and is anticipated to commence from February 2017.
- 6.5 The locations, planting densities and species incorporated into the new planting areas are detailed within the soft landscape scheme included at **Appendix EDP 6**. Planting will be undertaken in accordance with those specifications stated therein. Additional measures are further provided below.
- 6.6 All planting material will incorporate native species and will be of local or at least UK origin. Such stock will be handled in accordance with the Horticulture Trade Association guidelines and will follow landscape specifications as provided by a Chartered Landscape Architect.
- 6.7 All products will be supplied and fitted in accordance with the manufacture's guidelines and whips protected using stakes and durable rubber ties.

- 6.8 The condition of all tree stakes, ties and guards will be checked by the Developer and all broken items will be replaced and items regularly adjusted to accommodate plant growth and prevent rubbing. Any bark damage will be cut back neatly with a sharp knife. All plants will be straightened and the ground at the base to be firmed up. All shelters will be hand weeded.
- 6.9 Watering will be undertaken as necessary by the Developer to ensure the establishment and thriving of all planted areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so.
- 6.10 All areas where plants or trees have failed to thrive (through death, damage or disease), will be identified by the Developer, with specimens removed and replaced with equivalent or more appropriate native species to match the size of adjacent nearby plants in the next appropriate planting season, as frequent as necessary. The advice of the project Landscape Architect should be sought wherever possible.
- 6.11 All plants will be pruned to promote healthy growth and natural shape, and any dead, dying or diseased wood and suckers will be removed. Pruning will be undertaken annually or as appropriate to each species between October and February inclusive, to avoid the main bird breeding and dormouse active season, and undertaken according to best practice. All arisings will be removed for composting.
- 6.12 Cultivation adjacent to established vegetation will take care to ensure no damage to existing root systems, with disturbance kept to the minimum necessary to expose fresh soil.

Long-term Maintenance and Management

- 6.13 To ensure the long-term viability of all retained and newly planted trees on site, a biannual inspection during the first three years should be undertaken by an AA approved arboricultural contractor or professional arboriculturalist, to ensure that the tree stock is managed for its health and safety and its lifespan and coverage optimised.
- 6.14 With respect to retained and newly planted trees, shrubs and hedgerow species, their management will aim to maximise the value of food, nesting and hibernation resources for dormice through the following measures:
- The implementation of long cutting cycles, with hedgerow cutting to occur every three years to maintain heights no less than 3m. Cutting will be undertaken on a 3 year rotation cycle, with a maximum of 30% of the hedgerow resource cut at any one time (thereby enabling a minimum of 30% left to grow for 7-10 years), to ensure that a proportion of cut versus un-cut hedgerows exists onsite at any one time;

- The implementation of appropriate hedgerow management, including coppicing and/or laying of the hedgerow where appropriate according to species, to encourage the formation of a more dense and continuous hedgerow. Where stands of hazel, willow and other coppice-tolerant species are present, then such species should be subject to coppicing regimes on a 6-10 year rotation or where appropriate to species;
 - The selective thinning of newly planted native trees and shrubs and/or small-scale removal of invasive species to ensure that overcrowding is reduced with increasing species maturity; that slower growing climax species are not outcompeted; and that diseased and dying plants are removed. Thinning is to be undertaken between December and February inclusive to avoid the main bird breeding and dormouse season; and
 - The avoidance of herbicide use unless considered necessary to inhibit re-growth of non-native and invasive species.
- 6.15 More generally, any maintenance pruning required should be undertaken in accordance with good horticultural and arboricultural practice with thinning, trimming and shaping of specimens undertaken as appropriate to species, location, and stage of growth. Pruning should be confined to the months of December and February inclusive so as to avoid the main bird breeding and dormouse active seasons. All arisings from any vegetation clearance will be taken away from the vicinity of the development footprint no later than the day after vegetation clearance.
- 6.16 The management and maintenance of all retained, enhanced and newly created habitats will be undertaken by a Private Management Company over the lifetime of the development.

Dormouse Boxes

- 6.17 Dormouse boxes installed across the Development Site will be annually inspected and regularly maintained over the required monitoring period.
- 6.18 The maintenance and repair of dormouse boxes installed along the eastern boundaries of the Application Site remain the responsibility of the Developer or any appointed Management Company.
- 6.19 Damaged boxes will be replaced where necessary.

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Section 7

Monitoring and Works Schedule

Monitoring

- 7.1 All twenty dormouse nest boxes installed along the eastern boundary of the development will be monitored annually during 2017, 2018 and 2019 by the suitability qualified ecologist (or their accredited agents) named on the EPS licence. A minimum of three checks will be completed each year between May and November, with each check carried out between the 19th and 25th of the nominated month in line with national monitoring methodologies.
- 7.2 Evidence of dormice, including nests and individuals will be recorded. Individuals will be sexed and weighed where appropriate to do so, before returning to the box from which it was captured. All findings will be recorded and submitted annually to Peoples Trust for Endangered Species (PTES) and NRW in accordance with the requirements of the EPS licence.

Timetable of Works

- 7.3 Above-ground woodland and hedgerow clearance is anticipated to commence from 1 March 2017 and below-ground vegetation clearance of such areas from 1 May 2017, following the granting of consent of the detailed application, discharge of relevant conditions attached, and approved EPS licence from NRW.
- 7.4 Construction is anticipated to commence from 1 May 2017, completed June 2020.
- 7.5 **Table EDP 7.1** illustrates the key optimal and sub-optimal times of year to undertake the main tasks as detailed within this Dormouse Mitigation Strategy.

Table EDP 7.1: Optimal and sub-optimal timings to undertake tasks anticipated in relation to the development of land adjacent to Llantwit Major Bypass, Boverton

Task	Timing	Comments
Site Check & Briefing of Personnel	Site check to be completed immediately prior to commencement of works onsite	To be undertaken by a suitably qualified ecologist.
Phased Vegetation Clearance	To commence no earlier than mid-March 2017	

Task		Timing	Comments
Installation of Protective Fencing		From February 2017	Install as soon as possible prior to vegetation clearance works. Maintain throughout pre-construction and construction phases.
New Habitat Creation & Planting		From February 2017	New planting to be undertaken during optimum period October to February unless otherwise advised by Landscape Contractor.
Installation of Dormouse Nest Boxes		Prior to 1 April 2017	Subject to annual inspections and regular maintenance over the required monitoring period. All damaged boxes replaced as required.
Single Stage Habitat Removal - Active (Dispersal) Season		1 May – 30 June 2017	Restricted to temporary loss of a 6m section of hedgerow forming the north western boundary (to facilitate foul sewer connection) and loss of c.1.5m width of hedgerow forming the south eastern boundary (to provide temporary access from Llantwit Road).
Two Stage Habitat Removal	Stage 1 - Above-ground	1 - 31 March 2017	Vegetation to be reduced to heights of between 30-50cm utilising hand-held machinery.
	Stage 2 - Below-ground	1 May – 30 June 2017	Lifting out of tree stumps, root balls etc.
Construction Period		May 2017 – June 2020	
Post-construction Management & Maintenance	Dormouse Nest Boxes	May - November 2017, 2018 & 2019	Monitoring to be undertaken annually over three years following installation.
	Retained, Enhanced & Created Habitats	Over lifetime of the development	Long-term management and maintenance to be undertaken by Private Management Company.

BDW South Wales Biodiversity Action Plan Requirements

- 7.6 The tasks detailed above in relation to management and monitoring of the Application Site in relation to key species and habitats identified comprise key actions to be undertaken to ensure the ecological value of the site is maintained, in accordance with the wider Biodiversity Action Plan requirements set by the Developer (**Appendix EDP 7**).

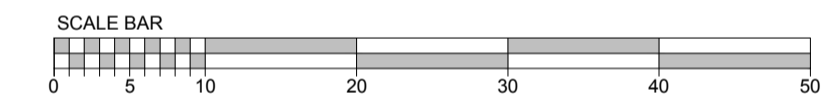
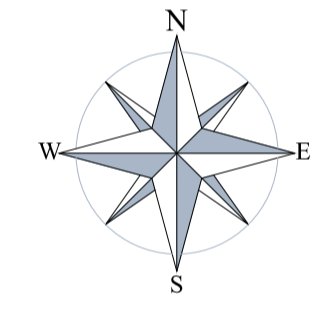
Appendix EDP 1
Site Layout(Hammond Architectural Ltd.,
Drawing Number 1363-TP-03 Rev G)

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House Type Schedule							
House Code	Net Floor Area (ft²)	Number of Bedrooms	House Type Name	Number of Units	Total Net Area of Each Unit (ft²)	Total Net Area of Units (ft²)	
MAI	830	3	Maidstone	10	8300		
DER	907	3	Derwent	8	7256		
KIS	1078	4	Kingville	8	8624		
ALD	1225	4	Alderney	6	7350		
HLN	1268	4	Halton	4	5072		
TMT	1299	4	Tamerton	4	5196		
RAD	1316	4	Radleigh	6	7896		
WAS	615	2	Washington	4	2460		
PAL	776	3	Palmerston	2	1552		
HAW	459	1	Hawthorne	6	2754		
ALR	514	1	Alder	4	2056		
OLI	840	2	Olive	4	3360		
Total No. of Units on Site & Total Net Area (ft²)					66	61876	

- Site Key**
- 1.8m High Timber Close Board Fence
 - 1.8m High Brick Screen Wall
 - 1.1m High Hoottop Railings
 - 2m High Close Board Fence with 120mm gaps at base for hedgerow movement
 - 1.2m High Post and 3 Rail Fence
 - Proposed Hedgerow (Refer to landscaping layout)
 - Existing Hedgerow Retained (within site layout)
 - Proposed New Trees (indicate only refer to landscaping layout)
 - Existing Trees (approximate location)
 - 1.8m High Close Board Gate
 - Affordable Unit - Social Rented
 - Affordable Unit - LCHO
 - 12 Plot Numbers
 - Parking space
 - Bin Collection Point
 - 2m wide buffer from existing landscaping outside site boundary. Suitable planting to be proposed within buffer
 - Existing Building (location picked up from OS)



Works to existing highway to be carried out in accordance with MayerBrown highway works information.

Central markings to tie in with existing central hatching

Potential Phase 2 Access

PHASE 2

- G: Indicative phase 2 layout revised. New hedge to rear of plots 44-49 widened. 20.12.16
- F: Note added to southeastern boundary. Site key updated to state suitable planting may be located within buffer. 12.12.16
- E: Existing landscaping outside site boundary shown. 2m wide ecological buffer from existing landscaping added to layout and some plots adjusted as a result. Plots 40-51 repositioned. Incongruous to other plots adjusted. L.A.P. to rear of site reduced in area by 5m². The L.A.P. next to 43 increased in area by 5m². Post and rail fence introduced to some areas and landscaping added around P45 basin. Layout amended to provide a 1m maintenance strip added along existing hedgerow. 30.11.16
- C: Road revised to 5.5m wide and turning heads revised. Additional parking added to plots 5/6. Parking to plots 50-53 revised. Plots 57 to 59 revised. Footway/cycleway increased to 3.2m wide. Parking bays widened to 2.6m. Drive lengths and widths revised. 23.11.16
- D: Drive lengths and widths revised. 23.11.16
- B: House types at plots 28-29 & 30/31 switched. Paved areas with bollards added. 30.09.16
- A: L.A.P. at northwest of site increased to 285m². Site access verge/bank/embankment added and application boundary updated to suit. 09.09.16

REV.	DESCRIPTION	DATE
CLIENT Barratt Homes South Wales		
JOB TITLE Land North of B4265, Boverton		
DRAWING TITLE Site Layout		
SCALE @ A1 1:500	DATE May 16	DRAWN BY RW
JOB NO. 1363	DRAWING NO. TP-03	REVISION G

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Figured dimensions must be taken in preference to scaled dimensions and any discrepancies are to be referred to Hammond Architectural Ltd. Contractors, subcontractors and suppliers must verify all dimensions on site before commencing any work or making any workshop drawings.

Appendix EDP 2
Ecology Masterplan (Hammond Architectural Ltd.,
Drawing Number 1363-EM-03 Rev B)

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House Type Schedule					
House Code	Net Floor Area (ft ²)	Number of Bedrooms	House Type Name	Number of Units	Total Net Area of Each Unit (ft ²)
MAI	830	3	Maldstone	10	8300
DER	907	3	Derwent	8	7256
KIS	1078	4	Kingsville	8	8624
ALD	1225	4	Alderney	6	7350
HLN	1268	4	Halton	4	5072
TMT	1299	4	Tamerton	4	5196
ROD	1316	4	Radleigh	6	7896
WAS	615	2	Washington	4	2460
PAL	776	3	Palmerston	2	1552
RAW	459	1	Rowthorne	6	2754
ALR	514	1	Alder	4	2056
OLI	840	2	Olive	4	3360
Total No. of Units on Site & Total Net Area (ft²)				66	61876

Ecology Site Key

- 1.8m High Timber Close Board Fence
- 1.8m High Brick Screen Wall
- 1.1m High Hooptop Railings
- 2m High Close Board Fence with 130mm gaps at base for hedgehog movement
- 1.2m High Post and 3 Rail Fence
- Proposed Hedgerow (refer to landscaping layout) (within site layout boundary)
- Existing Hedgerow/Trees Retained (within site layout boundary)
- Existing Hedgerow/Trees (outside of site layout boundary)
- 2m wide buffer from existing landscaping outside site boundary. Suitable planting to be proposed within buffer
- Existing Building (location picked up from OS)
- Proposed New Trees (indicative only refer to landscaping layout)
- Existing Trees (approximate location)
- Proposed bird boxes to be installed on plots 1, 16, 17, 22, 23, 25, 28, 33, 35, 39, 40-43, 52, 53, 54, 56 & 66

B:	Note removed from site key	20.12.16
A:	Indicative phase 2 layout revised. Text within site key corrected.	20.12.16
REV.	DESCRIPTION	DATE

CLIENT
Barratt Homes South Wales

JOB TITLE
Land North of B4265, Boverton

DRAWING TITLE
Ecology Masterplan

SCALE @ A1	DATE	DRAWN BY
1:500	Dec 16	RW
JOB NO.	DRAWING NO.	REVISION
1363	EM-03	B

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Figured dimensions must be taken in preference to scaled dimensions and any discrepancies are to be referred to Hammond Architectural Ltd. Contractors, subcontractors and suppliers must verify all dimensions on site before commencing any work or making any workshop drawings.



Works to existing highway to be carried out in accordance with MayerBrown highway works information.

Central markings to tie in with existing central hatching

Potential Phase 2 Access

PHASE 2

rd Farm

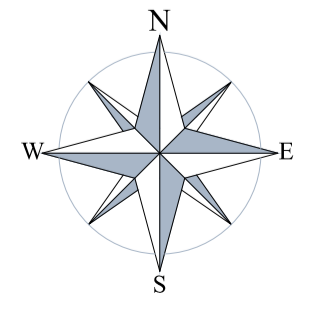
Orchard House

Carreg Wen

Belvedere House

Bay Tree Cottage

BOVERTON ROAD



Appendix EDP 3
Council Ecologist Consultation Response, 24 October 2014

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CONSULTATION RESPONSE: COUNTRYSIDE AND ENVIRONMENT (ECOLOGY)

To / I:	Operational Manager Development & Building Control	From / Oddi Wrth:	Ecology, Development Services Countryside and Economic Projects.
FAO	Mr. Robert Lankshear		Mrs Erica Dixon
Date / Dyddiad:	24 October 2014	Tel / Ffôn:	(01446) 704855
Your Ref / Eich Cyf:	2014/00995/FUL	My Ref / Fy Cyf:	
Location	Land adjacent to Llantwit Major Bypass, Boverton		
Proposal	Change of use of agricultural land to residential development (C3) including demolition of a disused building and the development of 64 residential dwellings, public open space, landscaping, highway improvements and associated engineering works		

ECOLOGY RESPONSE	
<input type="checkbox"/> No comment	<input type="checkbox"/> Notes for applicant
<input checked="" type="checkbox"/> Object (holding objection)	<input checked="" type="checkbox"/> Request for further information
<input type="checkbox"/> Object and recommend refusal	<input type="checkbox"/> Recommend planning conditions

SUMMARY

The Ecology Officer has a holding objection to this application as insufficient information has been submitted at the current time, to allow the LPA to fully determine the impact on protected species.

Action required (prior to determination)

- Surveys Required Prior to determination: Dormouse survey, reptile survey / assessment, more detailed Great Crested Newt assessment / survey
- LPA to reconsult NRW regarding dormouse presence.

DETAILED COMMENTS

We note and welcome the submission of an ecological survey report "*Boverton, Vale of Glamorgan Desk Study and Extended Phase I Habitat Survey*" for Barratt Homes South Wales; August 2014 by Thomson Ecology. The report is below the standard accepted for ecological surveys and does not meet the current British Standard for Biodiversity (BS42020).

Dormouse

The Ecology report does not mention dormouse or the possibility of the presence of dormice at the site. However, there is a known population of dormouse, with a dormouse nest being found at the entrance to West Gate, St Athans (as a result of 2009/2010 surveys for DTC and ABP St Athans). This is directly adjacent to the site, and within hedgerows contiguous with the application sites' southern boundary. As a result, survey is required and we recommend that NRW are re-consulted.

Reptiles

The report does not include any mention of reptiles despite the site having habitat suitable to support the four species of reptile present in South Wales. We recommend that the consultant ecologists demonstrate consideration of reptiles in construction and operational phases of the proposed development.

Great Crested Newt

St Athans MOD base has a widespread population of Great Crested Newt and the application site shares a common boundary. The Ecology Report asserts that GCN are not using the application site. This conclusion needs to be backed up by further evidence. However, given the proximity of the site, a GCN survey is recommended.

ANNEX 1 – SUPPORTING INFORMATION (LEGISLATION, PLANNING POLICY AND CASE LAW)

CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2010 (AS AMENDED):

Known as the “Habitats Regulations”, this statutory instrument transposes the Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the Habitats Directive) into UK law. The Directive is the means by which the European Union meets its obligations under the Bern Convention. The most vulnerable and rarest of species internationally (in the European context) are afforded protection under this legislation. The species listed on Schedule 2 are termed “European Protected Species” and are afforded the highest levels of protection and command strict licensing requirements for any works which may affect them. The species include all British bats, Otter, Dormouse and Great Crested Newt. They are fully protected against disturbance, killing, injury or taking. In addition any site regarded as their “breeding site or resting place” is also protected. It is generally regarded that the site is protected whether the animals are present or not.

The Habitats Regulations clearly outline the role of Planning Authorities in the implementation of the Habitats and Birds Directives; by stating [Section 9(3)] “**A competent authority, in exercising any of their functions, must have regard to the requirements of the Habitats Directive and Birds Directive so far as they may be affected by the exercise of those functions**”

New amendments to the Conservation of Habitats and Species Regulations 2010 included a duty on LPAs to “*take such steps in the exercise of their functions as they consider appropriate to contribute to... the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat....*” (Reg 9A(2) & (3))

Habitats Regulations Licensing

Where works will affect a EPS, then the developer must seek a derogation (licence) prior to undertaking the works. The licence can only be issue once the “3 tests” are satisfied, that is:

- Test 1 – the purposes of “preserving public health or safety, or for reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment”.
- Test 2 – there must be “no satisfactory alternative”; and
- Test 3 – the derogation is “not detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range”.

Licences are issued by Natural Resources Wales (NRW), with NRW assessing Test 3, and the LPA assessing tests 1 & 2 (where proposals are not subject to planning, then NRW alone will assess all three tests). Where Planning regulations apply, the NRW will only issue a licence after determination of the planning application. Planners failing to do so will be in breach of the Habitats Regulations (see also Case Law, Morge Case and Woolley Ruling below).

WILDLIFE AND COUNTRYSIDE ACT 1981 (AS AMENDED)

The WCA protects the UK's most vulnerable and rare species as outlined below.

Section 1 – breeding birds. The basic protection afforded to all birds is:

- Protection from killing, injury or taking of any wild bird
- Protection from taking, damaging or destroying the nest of any wild bird
- Protection from taking or destroying the egg of any wild bird

Further, some species, specifically those listed on Schedule 1 of the Act are afforded extra levels of protection to include:

- Protection from disturbance whilst it is nest building; or, is at or near a nest with eggs or young, or disturb the dependant young of such a bird.

There are exemptions from this basic protection for, for example: sale, control of pest species and sporting eg. game birds outside of the close season.

Section 9 (Schedule 5) - protected animals (other than birds) All animals listed on Schedule 5 are protected against killing, injury or taking. Any structure/place used for shelter or protection is protected against damage, destruction or obstructing access to. And it is an offence to disturb an animal whilst using such a structure / place. Some species are afforded "Part Protection" meaning that they enjoy only some of the protection outlined above – eg the animals may be protected, but not their structure used for shelter/protection (such as slow worm).

Section 13 (Schedule 8) – protected plants. Protected plants are afforded protection against: being picked, uprooted or destroyed. They are also protected against sale (or advertising for sale) – this is particularly relevant with respect to bluebells.

THE PROTECTION OF BADGERS ACT 1992

This protects badgers from killing, injury and taking; or attempting to kill, injure or take. Badger setts are also afforded protection and it is an offence to:

- Damage a badger sett or any part of it
- Destroy a badger sett
- Obstruct access to any entrance of a badger sett
- Disturb a badger when it is occupying a badger sett

Development which will destroy or disturb a badger sett (within 30m) is subject to licensing. The licensing body is NRW. However, badgers are considered a species protected under UK legislation (see PPW) and are therefore a material consideration during the planning decision.

NATURAL ENVIRONMENT AND RURAL COMMUNITIES (NERC) ACT 2006

Under the NERC Act, Local authorities have a Duty to have regard to the conservation of biodiversity in exercising their functions. The Duty affects all public authorities and aims to raise the profile and visibility of biodiversity, to clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making. Note - Conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.

PLANNING POLICY WALES SEPTEMBER 2009 (TECHNICAL ADVICE NOTE 5: NATURE CONSERVATION AND PLANNING)

Section 6.2.1 – the presence of a protected species is a material consideration when a local planning authority is considering a development proposal, that, if carried out, would be likely to result in disturbance or harm to the species or its habitat.

Section 6.2.2 – It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted.

Section 6.3.5 – any step in the planning or implementation of a development likely to affect a European Protected Species could be subject to a licence to permit or the survey or implement the proposal are under a duty to have regard to the requirements of the Habitats Directive in exercising their functions.

PLANNING POLICY WALES (EDITION 5, NOVEMBER 2012)

Planning Policy Wales, Section 5.5.11 states that *“The presence of a species protected under European or UK legislation is a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat”*.

Furthermore, Section 5.5.12 states that *“Developments are always subject to the legislation covering European Protected Species regardless of whether or not they are within a designated site. ”*And *“Local planning authorities are under a duty to have regard to the requirements of the Habitats Directive in exercising their functions. To avoid developments with planning permission subsequently not being granted derogations in relation to European protected species, planning authorities should take the above three requirements for derogation into account when considering development proposals where a European protected species is present”*.

VALE OF GLAMORGAN COUNCIL - SUPPLEMENTARY PLANNING GUIDANCE

Supplementary Planning Guidance – Biodiversity and Development

WOOLLEY RULING

This case confirmed that local planning authorities must apply the same three tests as Natural England (in Wales, CCW) when deciding whether to grant planning permission when one or more of the European protected species offences under the Habitats Regulations may be committed.

This judgment clarifies a legal duty which was already in existence although many planning authorities were not applying it correctly. His Honour Judge Waksman QC, in the High Court in June 2010, handed down this ruling in the case of R (on the application of Simon Woolley) v Cheshire East Borough Council concerning a development with a bat roost. **This judgment makes it clear that the local planning authority must apply the “3 tests” when determining a planning application.**

MORGE CASE (SUPREME COURT CASE 19 JANUARY 2011)

The case gives clarification to deliberate disturbance and to the interpretation of “damage or destruction of a breeding site or resting place”. It also gives guidance on how LPA should discharge their duties with respect to the Habitats Directive.

CORNWALL RULING

Judgement that a planning authority had acted unlawfully by granting planning permission without sufficient information on flora and fauna.

Sometimes planning authorities grant planning permission before some or all ecological surveys have been carried out, making ecological surveys a planning condition, or Section 106 Agreement, under the Town and Country Planning Act 1990.

For development that requires an Environmental Impact Assessment this practice was subject to judicial review proceedings in the High Court and it was determined that the planning authority had acted unlawfully by granting planning permission without sufficient information on flora and fauna (known as the Cornwall Ruling because the planning authority in this case was Cornwall County Council). Requiring surveys as a condition of the Section 106 Agreement was not sufficient, as this would exclude the consultation process that is required under the Town and Country Planning (EIA) Regulations (1999).

Appendix EDP 4
Dormouse Survey Report, June 2016 (Thompson Ecology,
Report Reference ABAW105/006/001/002)

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Dormouse Survey

Boverton, Vale of Glamorgan

For

Barratt Homes South Wales

Project No.: ABAW105/006

June 2016

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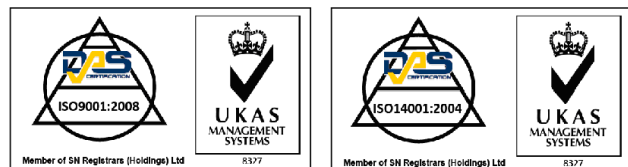
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Project Number	Report No.
ABAW105/006	001

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002	Final	13/06/16	Janine Burnham	Kristina Lewis	Natalie Drury

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Figure 1	Site Location
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1. Summary and Main Recommendations

1.1 Summary

1.1.1 Barratt Homes South Wales is seeking planning permission for a residential development located adjacent to the B4265 Llantwit Major Bypass, Boverton, Vale of Glamorgan. The development will be located on 1.8 hectares (ha) of farmland and will comprise the construction of 64 residential units with associated tree and hedgerow planting, and public open spaces, whilst the survey area totals 2.41 ha. The location of the site is shown in Figure 1.

1.1.2 In March 2015 Thomson Ecology was commissioned to undertake dormouse surveys at the site. The brief was to undertake an assessment of the suitability of habitat within the site for dormouse and undertake a dormouse nest tube survey on the site, comprising one visit to deploy the tubes and six survey visits to check for the presence of dormouse.

1.1.3 Evidence of dormouse presence on site was found during the nest tube survey, with nests being recorded in one internal hedge and a hedgerow on the south western perimeter of the site. These results suggest that the species is also likely to be present in suitable connected habitat around the edge of the site, and adjacent to the site.

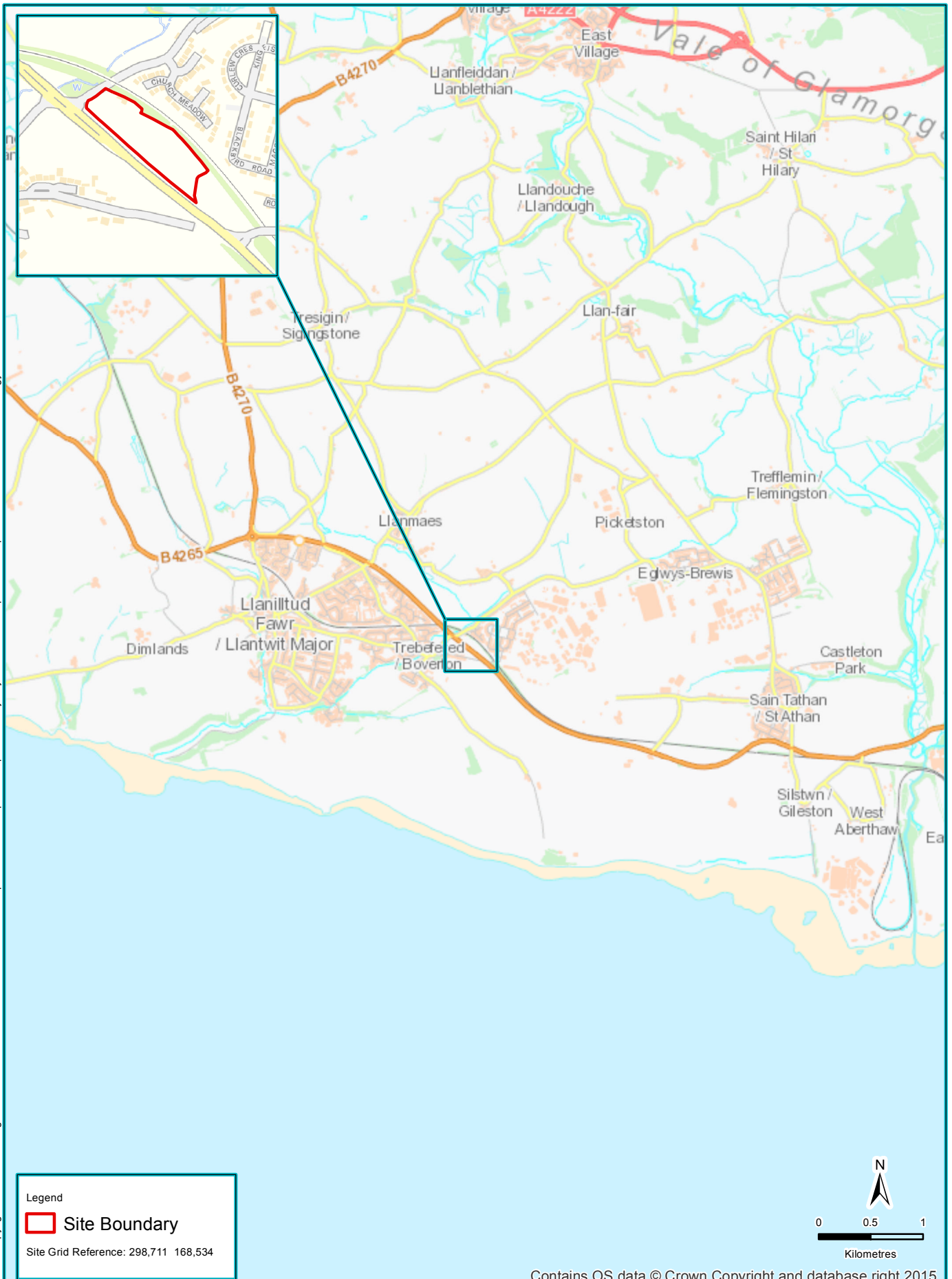
1.2 Main Recommendations

1.2.1 Without mitigation, it is possible that dormice will be disturbed, harmed or their habitat destroyed as a result of the proposed development.

1.2.2 In order for the works to proceed lawfully, a European Protected Species Licence application for dormouse including a mitigation method statement should be prepared and submitted to Natural Resources Wales, once planning permission has been received.

1.2.3 The results of these surveys will be used to inform the planning application with respect to dormouse and to inform appropriate mitigation methods to be formulated based upon finalised development plans.

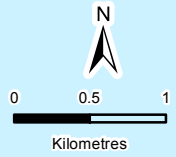
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Legend

Site Boundary

Site Grid Reference: 298,711 168,534







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Client	Barratt Homes South Wales		Drawing Ref	ABAW105/19307/1	
Figure Number	1		Scale at A3	1:50,000	
Figure Title	Site Location		Drawn	KM	Checked
					AC
			Date	09/06/2016	Date

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Legend

-  Photograph Location and Direction
-  Suitable Dormouse Habitat
-  Survey Boundary
-  Site Boundary

Site Grid Reference: 298,712 168,532

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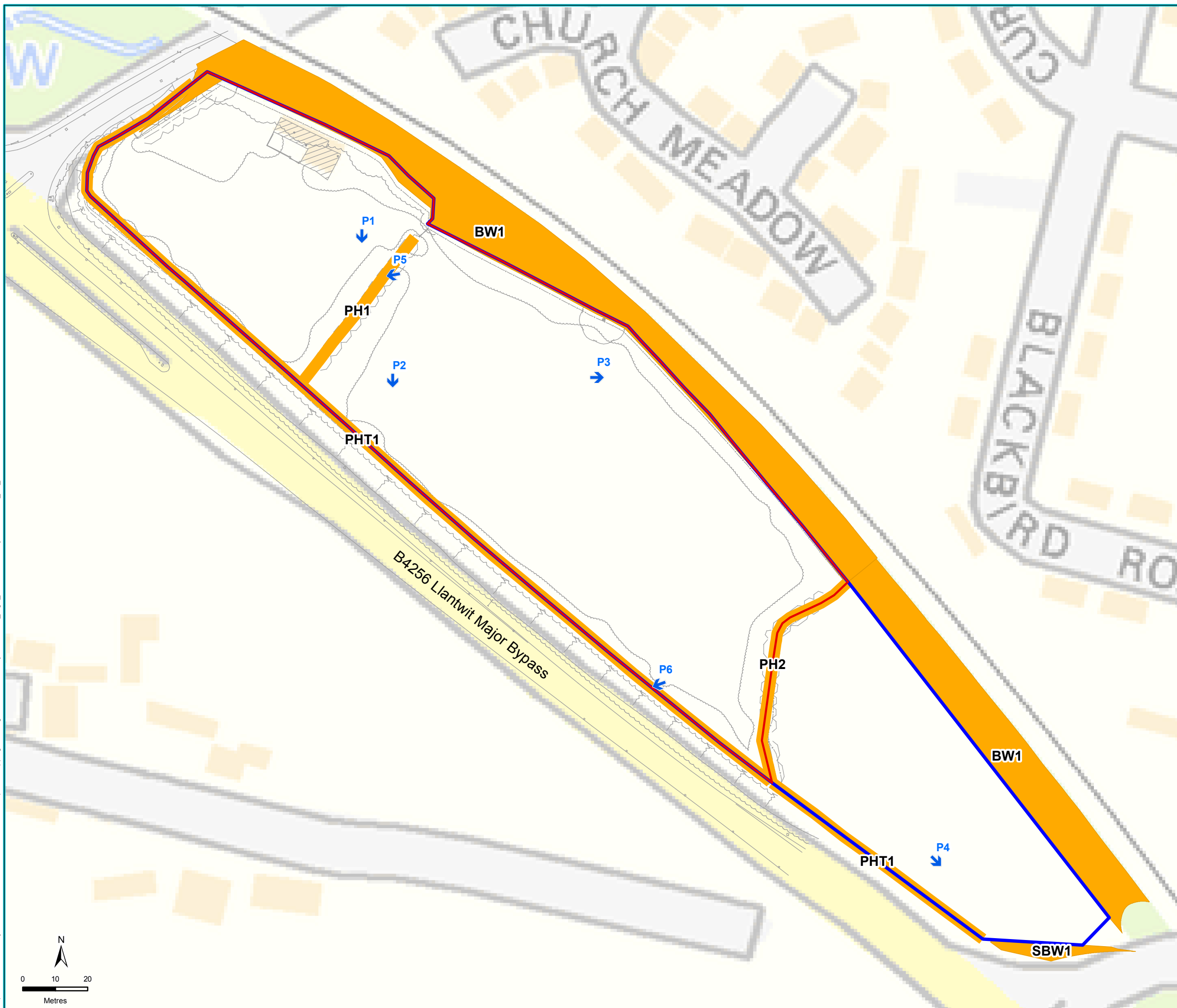
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Date 09/06/2016	Date 09/06/2016

Client
Barratt Homes South Wales

Figure Number
2

Figure Title
Habitat Suitability Assessment



Legend

- Dormouse Nest Found
- Dormouse Tube Location
- Suitable Dormouse Habitat
- Survey Boundary
- Site Boundary



Site Grid Reference: 298,712 168,532

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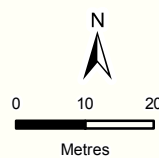
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Client
Barratt Homes South Wales

Figure Number
3

Figure Title
Results of Dormouse Nest Tube Survey





Photograph 1:
Species poor hedge (PH1) looking south.



Photograph 2:
Species poor hedge with trees (PHT1) along south western site boundary.



Photograph 3:
Edge of broadleaved woodland (BW1) along north eastern site boundary.



Photograph 4:
Scattered broadleaved trees (SBW1).



Photograph 5:
Dormouse nest in Tube 10 in PH1.



Photograph 6:
Temporary dormouse resting nest in Tube 26 in PHT1.

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Client	Barratt Homes South Wales	Drawing Ref	ABAW105/19310/1	
Figure Number	4	Scale at A4	Not applicable	
Figure Title	Photographs of the Site	Drawn	DJ	Checked
				AC
		Date	08/09/2015	Date

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2. Introduction

2.1 Development Background

- 2.1.1** Barratt Homes South Wales is proposing the development of 64 residential units on a site in Boverton, Vale of Glamorgan. The site comprises fields and hedgerows and one disused building. The proposed development will include an access road joining the B4265 at the southern edge of the site. The proposals are hereafter referred to as 'the development'.
- 2.1.2** The development will be located on a parcel of farmland with an area of approximately 1.8 ha (Grid Reference SS 986 685), bounded by the B4265 Llantwit Major bypass to the west and the Vale of Glamorgan railway line to the east (Figure 1). The area affected by the development is hereafter referred to as 'the site'.
- 2.1.3** The site lies within an area that has been identified for potential housing development under Policy MG2 in the Vale of Glamorgan Deposit Local Development Plan 2011 - 2026. Policy MG2 - Housing Allocations states that *'in order to meet the housing requirement identified in policy SP3 land is allocated for residential development at the following locations'* where the site is identified as site number '22 - Land adjacent to Llantwit Major bypass'. Barratt Homes South Wales is currently seeking planning permission for the development.

2.2 Ecology Background

- 2.2.1** In July 2014, Thomson Ecology was commissioned by Barratt Homes South Wales to undertake an extended Phase 1 habitat survey and desk study to inform a planning application for the original Phase 1 site boundary (Thomson Ecology Report Ref: ABAW105/002/002 issued August 2014). No records of dormouse were recorded within 1 kilometre (km) of the site during the desk study; however information provided by the Vale of Glamorgan County Ecologist in November 2014 indicated the presence of a recent dormouse record in habitat connected to the site. Consequently, a dormouse survey at the site was recommended for 2015.
- 2.2.2** In April 2015, Thomson Ecology was commissioned by Barratt Homes South Wales to undertake an extended Phase 1 habitat survey of an additional field to be included within the development (Thomson Ecology Report Ref: ABAW105/009/003/002, issued May 2015). Habitat suitable to support dormouse was identified in the form of broadleaved woodland and hedgerows.
- 2.2.3** In June 2016, Barratt Homes South Wales informed Thomson Ecology that this additional field was no longer to be included in the proposed development, however, the survey area includes the site and the additional field (see Figure 2).
- 2.2.4** A summary of the biology, conservation status and legal protection of dormouse is given in Appendix 1.

2.3 The Brief and Objectives

2.3.1 Barton Willmore LLP commissioned Thomson Ecology, on behalf of Barratt Homes South Wales, on 11th March 2015 to undertake a dormouse survey on the development site. The brief included:

- One visit to deploy a minimum of 50 nest tubes, spaced approximately every 20m, in areas of suitable habitat within the site;
- A habitat suitability assessment;
- Six monthly visits to check nest tubes for signs of dormouse activity, removing them on the final (sixth) visit; and
- Production of a survey report (supported by appropriate digitised mapping), which will provide the methods and results of the survey any legal and planning policy issues relating to dormouse and the development, our recommendations as to how these may be overcome.

2.4 Limitations

2.4.1 The surveys were carried out at optimum times of year and at suitable intervals for this type of survey.

2.5 Surveyors

2.5.1 The surveys were undertaken by Janine Burnham BSc (Hons) MRes, Natural Resources Wales European Protected Species (Dormouse) Licence Number: 61538: OTH: SA: 2015.

3. Methodology

3.1 General Approach

- 3.1.1 Following an initial desk study, a survey area was defined which encompassed the whole development site.
- 3.1.2 Within the survey area, habitat that is potentially suitable for dormouse was identified. Such habitat included woodland, scrub and hedgerows.
- 3.1.3 Each of the areas of potential dormouse habitat were then subject to a habitat suitability assessment. Where habitat was found to be suitable, a dormouse survey was undertaken using dormouse nest tube survey methods to determine the presence or likely absence of dormouse. Survey effort was focussed on hedgerows and woodland which were assessed as providing suitable habitat for dormouse.
- 3.1.4 The survey methods used are based on those described in Bright *et al.*, 2006.

3.2 Desk Study

- 3.2.1 Records of dormouse within a 1 km radius of the development site were obtained from South Wales Biological Records Centre (SEWBRc).
- 3.2.2 For continuity between Thomson Ecology reports the habitat identification codes have remained the same as those in the Phase 1 Habitat Assessment reports for the site (Thomson Ecology Report Ref: ABAW105/002/001 and ABAW/009/003/001).

3.3 Habitat Assessment

- 3.3.1 An assessment of habitat suitability for dormice was made of all potential dormouse habitats in the survey area. This included all areas of woodland, scrub and hedgerows.
- 3.3.2 Within each area of potentially suitable habitat (or habitat parcel), the following features were recorded:
- Type of habitat and size in hectares;
 - Tree, shrub and climbing species and their abundance on the DAFOR scale;
 - Density of the canopy layer expressed as an average percent cover;
 - Degree of continuity in the shrub layer expressed as an average percent cover;
 - Degree of connectivity with other areas of potential habitat expressed as high, medium or low;
 - Presence of potential summer and winter nest sites, such as tree holes, deep litter layers, wood piles and tangled woody vegetation;

- Evidence and stocking density, where known, of grazing animals, including deer and livestock;
- Evidence of likely presence of competitors and predators, such as squirrel and cats, respectively; and
- Evidence of woodland management techniques *e.g.* coppicing.

3.3.3 For each hedgerow, additional habitat information was recorded, including:

- Hedgerow structure (leggy, dense, with trees, without trees, layered);
- Average height and width;
- Degree (annually, less frequent or none) and type of hedgerow management (flailed, traditional or none); and
- Number of gaps and length of gap as a percentage of the total length of the field boundary.

3.3.4 Each area of potentially suitable habitat was then assessed and assigned a category of negligible, low, good or excellent suitability (Figure 2), using the criteria in Table 1 below:

Table 1: Assessment of Habitat Suitability for Dormouse

Category	Examples
Negligible	Annually cut hedgerows in arable landscapes. Small (<5ha) area of woodland which is isolated from others by 500m or more and lacks two or more key features. Woodland or scrub which floods throughout in winter.
Low	Annually cut hedgerows in wooded landscapes. Small (<5ha) area of woodland which is isolated and lacks up to one of the key features*. Moderate (5 - 20ha) or large areas (>20ha) of woodland or scrub which lack two or more of the key features.
Good	Moderate areas of woodland or scrub (5 - 20ha) with all the key features but which are isolated from other areas of high suitability woodland. Large areas of woodland (>20ha) which lack one of the key features. Infrequently cut hedgerows that are relatively isolated but have some connectivity to other areas of suitable dormouse habitat.
Excellent	Small and moderate areas of woodland with all the key features and well connected to other areas of suitable dormouse habitat. Large areas (>20ha) of woodland or scrub with all the key features. Infrequently cut hedgerows either in dense networks or linking areas of high suitability woodland.

Category	Examples
	Large areas (>20ha) of young plantation with good connectivity to other areas of suitable dormouse habitat.

*Key Features for dormouse: (i) mixed vegetation comprising a high proportion of at least three of these species: hazel (*Corylus avellana*), oak (*Quercus* sp.), honeysuckle (*Lonicera periclymenum*) and bramble (*Rubus fruticosus*); (ii) a dense shrub layer; (iii) no or relatively open tree canopy (above the shrub layer); (iv) scattered old trees with hollows, dense tangled vegetation, nest boxes or other suitable nest sites, such as dense leaf litter; and (v) tree stumps with cavities at around ground level or other suitable hibernation sites.

3.3.5 Areas of suitable habitat were selected for a dormouse presence, or likely absence, survey.

3.4 Dormouse Nest Tube Survey

3.4.1 Nest tubes placed in appropriate places in suitable habitat may be used by dormouse to nest in. Dormouse summer and breeding nests within nest tubes can often be distinguished from other animal nests by a number of key characteristics: (i) they often incorporate strips of honeysuckle bark, or other shredded bark and green leaves and (ii) lack an obvious entrance hole.

3.4.2 Nest tubes constructed from folded corrugated plastic sheeting (approximately 60mm x 60mm wide and 250mm long) were used. Each nest tube has a sliding plywood base, which also forms the end of the tube and provides a platform extending approximately 50mm from the front of the tube.

3.4.3 The nest tubes were installed on 19th March 2015, a month before the first survey visit, in order to allow dormouse time to find and nest in the tubes before the first survey visit. Sixty nest tubes were installed across the site. Nest tubes were installed along the hedgerows bounding the bordering the site and the two internal hedges at 20 metre intervals.

3.4.4 Dormouse nest tubes were fastened to scrub or beneath a horizontal tree branch of sufficient thickness at a height of approximately 1.5m using garden wire. Tubes were positioned with the entrance of the tube orientated towards the centre of the shrub and angled slightly downwards to prevent water collecting within the tube. Each nest tube was given a number and its location recorded on a GPS enabled mobile mapper. The location of the nest tubes is shown on Figure 3.

3.4.5 The nest tubes were left *in situ* for the duration of the survey and subsequently removed on completion of the survey, excluding any nest tubes which contained dormice or dormouse nests during the survey as these might still be in use by dormouse.

3.4.6 All tubes were checked for the presence of dormice or their nests once a month for a total of six times between April and September. The dates of each survey visit are provided in Table 2.

Table 2: Dates of dormouse survey visits

Survey Date	Visit Number
19/03/2015	Deployment of survey tubes
20/04/2015	Visit 1
19/05/2015	Visit 2
18/06/2015	Visit 3
20/07/2015	Visit 4
13/08/2015	Visit 5
04/09/2015	Visit 6 and collection of dormouse nest tubes*

*Excluding any nest tubes which contained dormouse or dormouse nests that have been retained on site after the survey was completed.

3.4.7 The number of the nest tubes deployed and the timing of the survey met the requirements for a thorough survey (Bright *et al*, 2006). This is defined as a survey in which the combined dormouse detection probability scores from Table 3 below exceed 20 points and the survey is conducted over a minimum period of five months. The score for this survey was 25.2 points.

Table 3: Dormouse detection probability scores (examples).

Month	Score with 50 tubes	Score with 100 tubes	Score with 150 tubes
April	1	2	3
May	4	8	12
June	2	4	6
July	2	4	6
August	5	10	15
September	7	14	21
October	2	4	6
November	2	4	6

4. Results

4.1 Desk Study

- 4.1.1 No records of dormouse within 1km of the site were identified, however information provided by the Vale of Glamorgan County Ecologist in November 2014 indicated the presence of a recent dormouse record in habitat connected to the site.

4.2 Habitat Assessment

- 4.2.1 All habitats with potential to support dormouse (species poor hedgerows (PH1 and PH2), species poor hedgerow with trees (PHT1), semi-natural broadleaved woodland (SBW1) and broadleaved woodland (BW1)) were assessed as having good suitability for dormouse (see Figure 2). Habitat continuity and the degree of connectivity across the site and to surrounding suitable habitat is high and the dense shrub layer and understorey offer medium potential for nesting opportunities.
- 4.2.2 The complete data set on which the assessment of habitat suitability for dormouse was assessed are presented in Appendix 2.
- 4.2.3 Following the assessment of habitat suitability for dormouse confirming the presence of habitat with good suitability for dormouse and the record highlighted by the Vale of Glamorgan Council, it was considered necessary to conduct a dormouse nest tube survey for presence/absence of dormouse across the site.

4.3 Dormouse Nest Tube Survey

- 4.3.1 A complete dormouse nest was found in Nest Tube 10 located in species poor hedgerow PH1 and evidence of a temporary dormouse resting nest in Nest Tube 26 located in PHT1 on the second survey visit (see Figure 3).
- 4.3.2 Other small mammal species incidentally recorded using nest tubes included wood mouse (*Apodemus sylvatica*). Bird droppings were also recorded within the nest tubes.

5. Legal and Planning Policy Issues

- 5.1.1** The content of the legislation and planning policy section is the legislation and planning policy issues that we know are relevant based on this dormouse nest tube survey.
- 5.1.2** As set out in Appendix 1, dormouse and their habitats are strictly protected by a range of legislation and policy, including the following:
- Conservation (Habitats &c) Regulations 2010, as amended;
 - Wildlife and Countryside Act 1981, as amended;
 - Countryside and Rights of Way Act 2000;
 - Natural Environment and Rural Communities Act 2006; and
 - Planning Policy Wales (PPW).
- 5.1.3** Furthermore, development affecting dormice is governed by a licensing procedure administered by Natural Resources Wales (NRW).
- 5.1.4** The Hedgerow Regulations (1997) provide for the conservation of 'important' hedgerows and their constituent trees. The presence of a protected species such as dormice is included in the assessment of whether a hedgerow is considered 'important' and applications to remove such hedgerows must be made to the planning authority.
- 5.1.5** Dormice are a Species of Principal Importance (SPI) for the conservation of biodiversity in Wales under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 and are also a Vale of Glamorgan Local BAP Priority Species. This places a duty on all government departments to have regard for the conservation of these species and on the Welsh Ministers to further, or promote others to further, the conservation of these species. Additionally, some of the habitats of SPI's receive protection through planning policy.
- 5.1.6** As evidence of dormouse presence was found on the site a European Protected Species Licence (EPSL) from NRW, detailing appropriate mitigation, will be required. Without mitigation and licensing, the development would contravene the legislation and policy set out above with respect to dormouse. This is because the clearance of vegetation prior to the development could result in harm to individual dormouse, the loss of suitable dormouse habitat and affect the ability of dormouse to disperse. However, using established mitigation techniques it should be possible to:
- Avoid harm to individual dormouse during the development process; and
 - Maintain the population of dormouse at a favourable conservation status through the creation of replacement habitats and enhancement of existing habitat.
- 5.1.7** As dormouse is a European Protected Species the local planning authority will be required to consider three licencing tests in the determination of the planning application for this development that is:

- The purpose of the work is for preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
- There is no satisfactory alternative; and
- The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

5.1.8 Mitigation measures for dormouse are outlined in Section 6.

6. Recommendations

6.1 Mitigation

6.1.1 Without mitigation measures dormouse populations may be negatively affected both during and after development works so a European Protected Species Licence (EPSL) from Natural Resources Wales (NRW) will be required. The EPSL application will require the production of a detailed mitigation method statement describing the mitigation approach. No mitigation can be undertaken without approval of the appropriate licence and mitigation method statement, which once issued, makes the licence and associated mitigation method statement a legally binding document.

6.1.2 It will be necessary to implement mitigation methods to minimise any negative impacts of the development on the dormouse population.

6.1.3 Important elements of the mitigation measures likely to be included in the mitigation method statement are outlined in the following paragraphs:

- Where hedgerow removal is proposed (PH1 and PH2 and a section of PHT1 for the construction of the access road), techniques to persuade any dormice present to move away to suitable habitat should be employed;
- Searches for nests and animals, in vegetation both above ground and at ground level, should be undertaken by a suitably licenced ecologist immediately prior to any clearance;
- Ideally clearance should be carried out in the winter, to encourage dormouse to move to retained areas of suitable habitat when they emerge from hibernation. Vegetation should be cut to a height of 30 - 50 cm above ground level between November and March, this should be undertaken in a sensitive manner to minimise the likelihood of disturbing or killing hibernating dormouse. Stump extraction should then take place after dormouse emerge from hibernation in the following spring;
- If removal is not possible during the winter months, as the lengths of hedge to be removed are short, summer clearance should be an acceptable alternative. May or late September are the best times for these works to avoid the likelihood of young being present in nests. Small sections (approximately 10 m) of vegetation could be removed on successive days in the direction of any suitable habitat that is being retained on site. Clearance should be undertaken using hand tools at a slow pace; dormice are active at this time of year and therefore will be able to respond immediately. However, it is important to note that there are restrictions on hedge removal/vegetation clearance at this time of year due to the bird nesting season;
- Native hedgerow species should be planted within the development to compensate for the loss of habitat from hedge removal. The compensatory planting should be like for like in terms of area of habitat that is removed from the site;
- Dormouse nest boxes should be installed in adjacent suitable habitat, prior to any development work commencing on site, to make it attractive to displaced dormouse;

- All lighting during the development should be directed away from hedgerows, woodland and scrub areas to reduce light pollution and disturbance to dormice; and
- Management of new and remaining habitat should be sympathetic to dormice *i.e.* no intensive flailing of hedges or aggressive scrub management.

6.1.4 The proposed mitigation strategy outlined above is subject to approval by NRW.

6.2 Opportunities for Enhancement

6.2.1 Habitat enhancement and expansion could be achieved by supplementary planting of native tree and shrub species on site following the development to increase the diversity and availability of food resources for dormice.

6.2.2 Any sparsely vegetated areas and hedgerows could be supplemented by planting of species known to benefit dormice. Species such as hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*) and honeysuckle (*Lonicera periclymenum*) provide important food resources for dormice, help to improve habitat connectivity and provide nesting opportunities.

6.3 Further Survey

6.3.1 No further surveys for dormouse are recommended.

7. Conclusion

- 7.1.1** The survey found evidence of the presence of dormouse on the site in hedgerows PH1 and PHT1. As dormouse are present in one area of the site they are also likely to be present in connected suitable habitat along the hedgerows across the site and around the perimeters of the site.
- 7.1.2** As dormouse is a European protected species, mitigation is required, under licence from NRW, to allow development of the site to proceed. The data collected during this survey can be used to inform a dormouse licence mitigation method statement for the site to be submitted to NRW for approval.

8. References

- 8.1.1 Bright, P., Morris, P. & Mitchell-Jones, A. (2006) The dormouse conservation handbook 2nd Edition. English Nature, Peterborough.
- 8.1.2 Thomson Ecology Ltd. (2015) Boverton, Vale of Glamorgan, Phase Desk Study and Extended Phase 1 Habitat Survey (report reference ABAW105/002/002). Thomson Ecology Ltd.
- 8.1.3 Thomson Ecology Ltd. (2015) Boverton, Vale of Glamorgan, Phase Desk Study and Extended Phase 1 Habitat Survey (report reference ABAW105/009/003/003). Thomson Ecology Ltd.

9. Appendix 1 - Dormouse Ecology

9.1 Introduction

9.1.1 A summary of the biology of the common dormouse (*Muscardinus avellanarius*) and the legislation and policy that protects this species is given below.

9.2 Biology

9.2.1 Two species of dormouse occur in Britain, the common dormouse (also known as the hazel dormouse) and the edible dormouse, (*Glis glis*) (also known as the fat dormouse). The edible dormouse was introduced to the UK in 1902 and its distribution is mainly restricted to the Chilterns, within a 25 mile radius of Tring, where it was first released in 1902. This summary will focus on the common dormouse, our native species which has undergone a rapid decline in numbers and distribution over the last century.

9.2.2 The common dormouse is physically quite distinctive from other native small mammals, having an orange-brown coat (when adult), large dark eyes and a thickly furred tail.

9.2.3 It is a nocturnal animal and is active between April and late October, spending the remainder of the year in hibernation. During its active season, however, adverse weather (cold and wet conditions) can reduce activity and summer torpor is common. It is a highly arboreal species and individuals rarely travel far from their nests in one night (70 metres). Generally dormice only descend to the ground to hibernate during the winter months, though on occasion individuals may descend to gather nest making material and to cross narrow lanes and tracks when moving between adjacent parcels of habitat.

9.2.4 Dormice typically live 2-3 years and first breed in the year following birth. Young are born between June and September and are weaned between 6-8 weeks later. A second litter in the same year is reasonably common, the success of which is influenced by food availability.

9.2.5 The dormouse builds three types of nest: summer, breeding, and hibernation. The summer and breeding nests are normally to be found above ground in tangles of vegetation, holes in trees and hedgerows whilst winter hibernation nests are usually constructed at ground level or below ground level under moss, leaf-litter, old stools, wood piles and rocks.

9.2.6 Dormouse habitat is traditionally thought of as ancient semi-natural woodlands with mixed species rich under storey, whilst open coppiced woodland and hedgerows are also important habitats. However, dormice have also been found in a variety of other habitats, including pure sessile oak woodlands; pure beech woodlands; replanted ancient conifer plantations; gorse and bracken scrub; coastal scrub; alder/reed beds; bramble thickets and even overgrown gardens.

9.2.7 The principal factor governing habitat suitability appears to be food availability. Important food species include hazel, being the principal source of nuts in the autumn prior to hibernation; blackthorn, being a particularly important nectar and flower source in early spring; brambles, being important as a source of berries; and, honeysuckle, being a source of not only nectar and flowers but easily shredded bark, for nesting material. Sycamore and other species which are

characterised by a high insect biomass, become especially important during the mid summer as other food sources are low at this time.

9.2.8 This species has undergone a rapid decline in numbers, which can be attributed to a variety of factors including direct habitat loss, isolation and other habitat fragmentation effects.

9.2.9 The current distribution and status of the dormouse, however, is not well understood. The species has a rather localised distribution in Wales, as it is on the western edge of its range here. There are four key areas for dormice in Wales: central and eastern Monmouthshire, east Montgomeryshire, south east Radnor/east Brecon and Carmarthen/west Glamorgan. Most records come from suitable habitat in southern and eastern parts of Wales, although scattered populations are known in the south west of Wales.

9.3 Site Designation

9.3.1 Some sites with dormouse populations may be designated as Special Areas of Conservation (SAC) under the Conservation of Habitats and Species (Amendment) Regulations 2012 (which replaces the Conservation (Habitats &c) Regulations 1994) and/or Sites of Special Scientific Interest (SSSI) under the Wildlife and Countryside Act (WCA), 1981 (as amended).

9.3.2 However, the Habitats Directive does not require that SACs are designated specifically to protect dormouse populations and, according to NCC guidelines, the presence of dormouse on its own is not normally considered to be sufficient for the designation of a SSSI. Instead, the guidelines imply that the presence of dormouse within an SSSI should be regarded as an attribute which enhances the value of an already important site.

9.3.3 Sites designated for nature conservation at the county level may include dormouse populations as part of the site qualifying criteria, although the criteria used may vary from county to county. Such sites are protected through the planning system and there is generally a presumption against development that affects such sites in local authority development plans.

9.4 Planning Policy

9.4.1 Planning Guidance, Technical Advice Note 5; Nature conservation and planning (TAN5) gives further direction with respect to land use and development. It states that protected species, including dormice, should be a material planning consideration when local authorities are considering a development proposal that is deemed likely to result in disturbance or harm to the species or its habitat.

9.4.2 Furthermore, the Natural Environment and Rural Communities (NERC) Act (2006) places a duty on all public authorities to conserve biodiversity; conserve including preservation and enhancement.

9.5 Species Protection

9.5.1 Dormice are protected under the Conservation of Habitats and Species (Amendment) Regulations 2012 (which replaces the 1994 Regulations). The Regulations make it an offence, with very few exceptions, to:

- Deliberately capture, injure or kill a dormouse;
- Deliberately disturb a dormouse in such a way as to be likely:
 - i. to impair its ability to survive, to breed or reproduce, or to rear or nurture its young; or
 - ii. to impair its ability to hibernate or migrate; or
 - iii. to affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of a dormouse; and
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead dormouse, or any part of, or anything derived from such an animal or plant.

9.5.2 In addition to the protection given to Dormice under the Conservation of Habitats and Species (Amendment) Regulations 2012 already described, the dormouse is also partially protected in Wales under the Wildlife and Countryside Act, which adds the following offences (with certain exceptions):

- Disturbance while it is occupying a structure or place which it uses for shelter or protection; or
- Obstructing access to any structure or place used for shelter or protection.

9.5.3 The dormouse is also incidentally protected by The Hedgerow Regulations (1997), the aim of which is to prevent the removal of 'important' hedgerows which includes those which support Schedule 5 species of the WCA 1981. If dormice are known to be using the hedgerows or to have done so within the last 5 years, then they are afforded some protection.

9.5.4 If proposed work could cause killing, injury or disturbance to either of dormice or damage to their habitats, appropriate mitigation which seeks to avoid these impacts should be devised and implemented under licence. Licences for 'scientific or educational', 'ringing or marking' and 'conservation' may be issued by Natural Resources Wales, licences for the reason of 'preserving public health or public safety' by the Welsh Assembly Government (WAG).

9.6 UK Post-2010 Biodiversity Framework and Species of Principal Importance

9.6.1 Published by the Joint Nature Conservation Committee (JNCC) and the Department for Environment, Farming and Rural Affairs (Defra) in July 2012, the UK Post-2010 Biodiversity Framework identifies UK-scale activities and priority works that are required to deliver the EU Biodiversity Strategy. Following a process of devolution, the framework is underpinned by country level strategies which are now largely responsible for continuing the work carried out under the former UK Biodiversity Action Plans (UK BAP). JNCC guidance dictates that UK BAP background information on priority species and habitats still remains relevant and it now forms the basis of country specific priority lists which, for Wales, are specified under Section 42 of the NERC Act 2006. The Section 42 list is used as a guide and a reference for ensuring that appropriate consideration is given to the conservation of biodiversity in all development activity, and affords legal protection to those species and habitats it includes. The dormouse has been

adopted as a Species of Principal Importance for the Conservation of Biodiversity in Wales. This places a duty on all government departments to have regard for the conservation of these species and on the Secretary of State to further, or promote others to further, the conservation of these species. Furthermore, TAN5 states that species of Principal Importance for the conservation of biodiversity should be protected from the adverse effects of development, which presumably includes those listed the former UK BAP and on Local or Regional priorities species lists.

9.7 References

- 9.7.1 Bright, P., Morris, P. & Mitchell-Jones, A. (2006) The dormouse conservation handbook 2nd Edition. English Nature, Peterborough.
- 9.7.2 JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). (2012). UK Post-2010 Biodiversity Framework. Available from: <http://jncc.defra.gov.uk/page-6189>.
- 9.7.3 Morris, P. (2004) Dormice. Whittet Books, Stowmarket.
- 9.7.4 Highways Agency (1996 et seq) Design Manual for Roads and Bridges, Volume 10 Environmental Design and Management, Section 4 The Good Roads Guide - Nature Conservation, Part 5 Nature Conservation Management Advice in Relation to Dormice.

10. Appendix 2 - Dormouse Habitat Suitability Assessment Index Data

ALL HABITATS		PH1	PH2	PHT1	BW1	SBW1
Type	Hedge	Hedge	Hedge	Hedge with Trees	Broadleaved Woodland	Broadleaved Trees
Area/ Length	57m	73m	415m		0.46	N/A
Species abundance DAFOR	Frequent elder (<i>Sambucus nigra</i>), hawthorn (<i>Crataegus monogyna</i>) and blackthorn (<i>Prunus spinosa</i>) in shrub layer with frequent bramble (<i>Rubus fruticosus agg.</i>) in the understorey	Dominant hawthorn (<i>Crataegus monogyna</i>) with occasional elder (<i>Sambucus nigra</i>). Ivy (<i>Hedera helix</i>) is frequent throughout the hedge, and the understorey is dominated by bramble (<i>Rubus fruticosus agg.</i>).	Abundant mature ash (<i>Fraxinus excelsior</i>) and occasional sycamore (<i>Acer pseudoplatanus</i>) and hornbeam (<i>Carpinus betulus</i>) trees, with Scots pine (<i>Pinus sylvestris</i>) also present. The shrub layer features abundant hawthorn (<i>Crataegus monogyna</i>) with bramble (<i>Rubus fruticosus agg.</i>), ivy (<i>Hedera helix</i>) and elder (<i>Sambucus nigra</i>) also present.	Abundant ash (<i>Fraxinus excelsior</i>), and frequent sycamore (<i>Acer pseudoplatanus</i>). The shrub layer includes abundant hawthorn (<i>Crataegus monogyna</i>) with occasional elm (<i>Ulmus procera</i>) and blackthorn (<i>Prunus spinosa</i>) and sycamore (<i>Acer pseudoplatanus</i>) saplings, and the ground flora includes abundant ivy (<i>Hedera helix</i>). Rare honeysuckle also present (<i>Lonicera periclymenum</i>).	Dominant sycamore (<i>Acer pseudoplatanus</i>), with each tree having abundant cover of ivy (<i>Hedera helix</i>). The ground layer consists of occasional bramble (<i>Rubus fruticosus agg.</i>).	
Canopy density %	90	75	95	80	40	
Shrub continuity %	90	100	80	80	30	
Degree of connectivity	High	High	High	High	High	
Nest site potential	Dense shrub layer and understorey offer medium potential for nesting opportunities.	Dense shrub layer and understorey offer medium potential for nesting opportunities.	Dense shrub layer and understorey offer medium potential for nesting opportunities.	Trees with holes in and dense scrub layer offer high potential for nesting opportunities.	Mature trees and connectivity with scrub layer offer high potential for nesting opportunities.	
Evidence of competitors and predators	Surrounded by residential area where cats may be present. No evidence of wild competitors or predators recorded during assessment.	Surrounded by residential area where cats may be present. No evidence of wild competitors or predators recorded during assessment.	Surrounded by residential area where cats may be present. No evidence of wild competitors or predators recorded during assessment.	Surrounded by residential area where cats may be present. No evidence of wild competitors or predators recorded during assessment.	Surrounded by residential area where cats may be present. No evidence of wild competitors or predators recorded during assessment.	
Grazing evidence	None	None	None	None	None	
Woodland management	None	None	None	None	None	
HEDGES						
Structure	Dense	Dense	Dense with trees	N/A	N/A	
Height	5	5	10	N/A	N/A	
Width	3	3	8	N/A	N/A	
Management	No	No	No	N/A	N/A	
Gaps %	1 gap, 10%	0	0	N/A	N/A	

Appendix EDP 5
Existing and Proposed Planting Calculations
(Hammond Architectural Ltd., Drawing Number 1363-VEG-01 Rev 3)

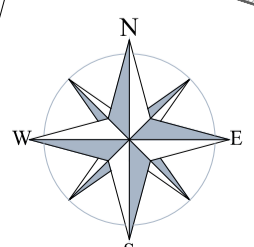
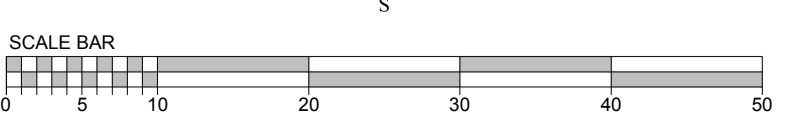
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Site Key

- Site Application Boundary
- Existing Hedgerow/Trees Retained \square 159m²
- Existing Hedgerow/Trees Removed \square 425m²
- Proposed new Planting/Trees \square 462m²
- Proposed new hedgerows \square 88m²
- Existing Planting Outside Redline > 5601m²
- Buffer on average 2m wide within redline to act as root protection area to trees outside boundary. Suitable planting may be proposed within this buffer. Area of approximately 1158m²

Existing planting loss on site is 425m² and proposed planting amounts to 550m².
Planting loss:gain ratio of 1:1.29 (figure does not include planting within 2m buffer)



REV.	DESCRIPTION	DATE

CLIENT
Barratt Homes South Wales

JOB TITLE
Land North of B4265, Boverton

DRAWING TITLE
Existing & Proposed Planting Calculations

SCALE @ A2	DATE	DRAWN BY:
1:500	Dec 15	RW

JOB NO.	DRAWING NO.	REVISION
1363	VEG-01	3

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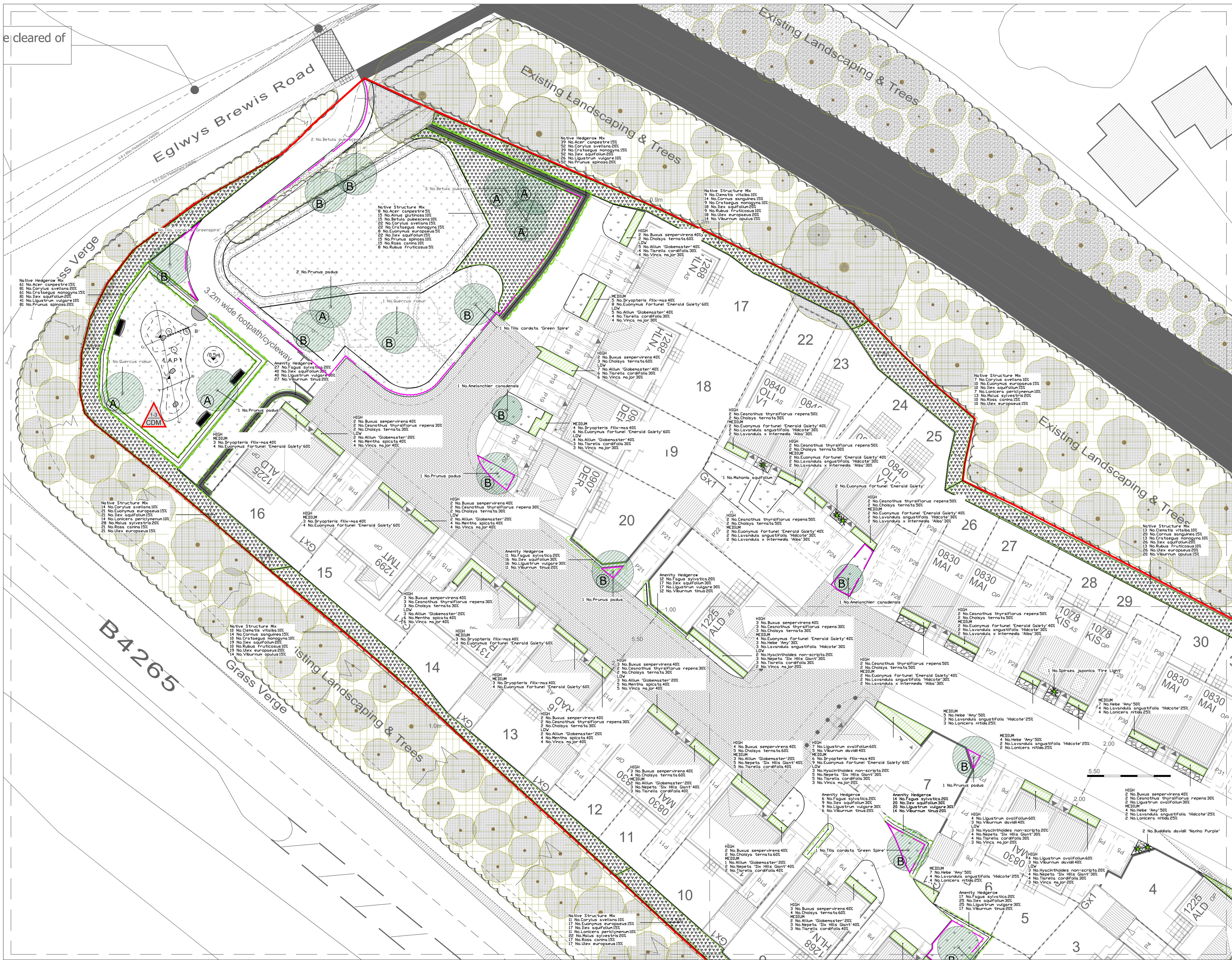
www.hammond-ltd.co.uk

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Figured dimensions must be taken in preference to scaled dimensions and any discrepancies are to be referred to Hammond Architectural Ltd. Contractors, subcontractors and suppliers must verify all dimensions on site before commencing any work or making any workshop drawings.

Appendix EDP 6
Detailed Soft Landscape Plan 1 to 5
(EDP3775/01 - 05 22 December 2016 DB//KH/JW)

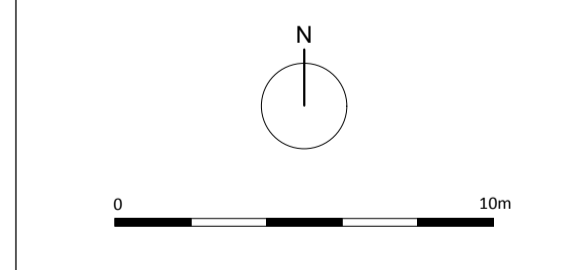
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cleared of



- Site Boundary
- Retained Trees
- Proposed Trees
- Tree Pit Specification Type
Refer to ecp3206_06 for specification detail
- Native Hedgerow
- Ornamental / Native Hedge
- Native Whip Structure Planting
- Specimen Shrub
- Amenity Plot Planting
- Amenity Turf
- Wildflower Meadow
EM7 - Meadow Mixture for Sandy Soils
- Wear Tolerant Turf Mixture
EG22 - Wear Tolerant Turf Mixture
- Existing Vegetation
- Decorative Aggregate Gravel
Plum Stone Chippings
- Root Barrier System

Sheet Layout Plan



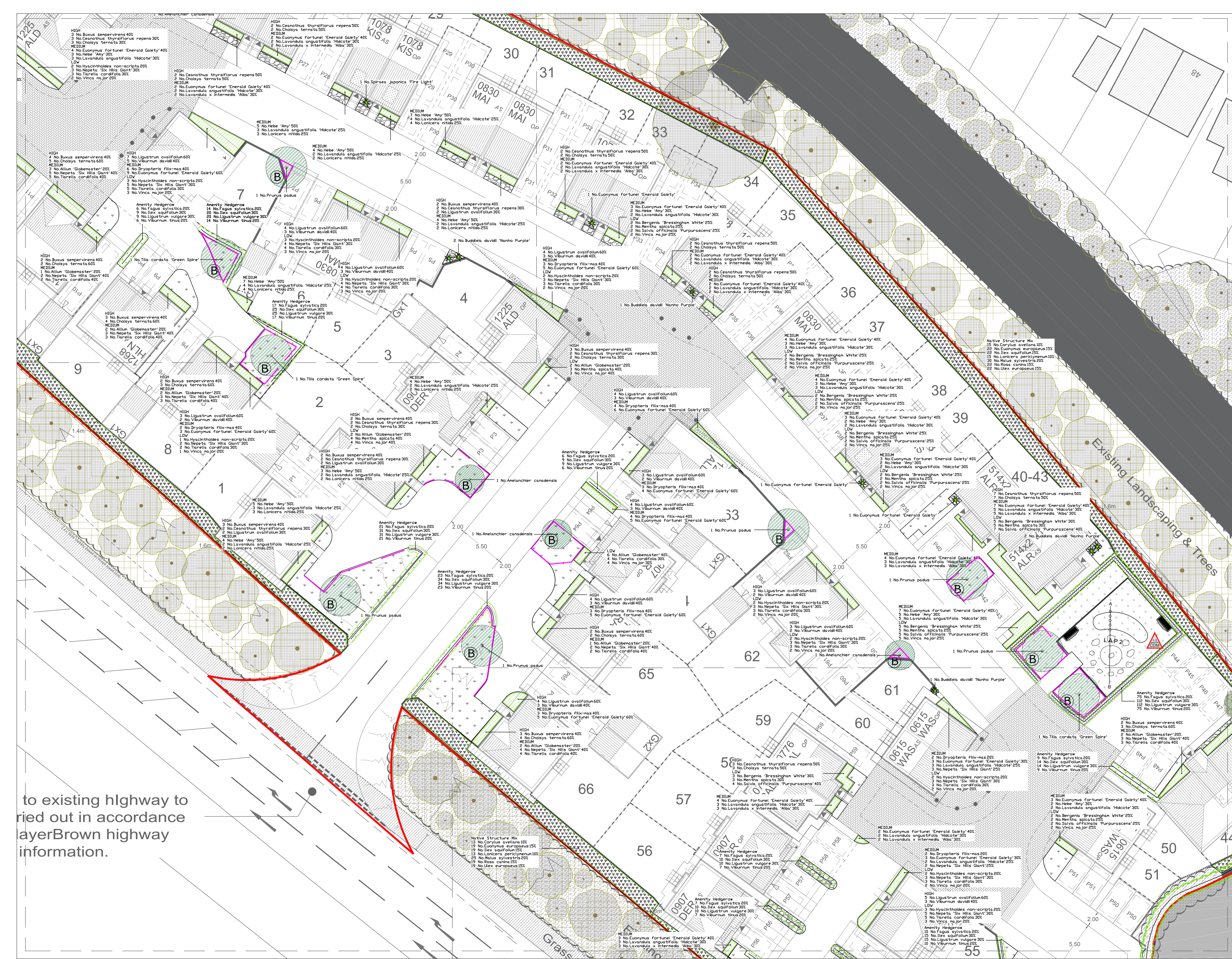
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client
Barratt Homes

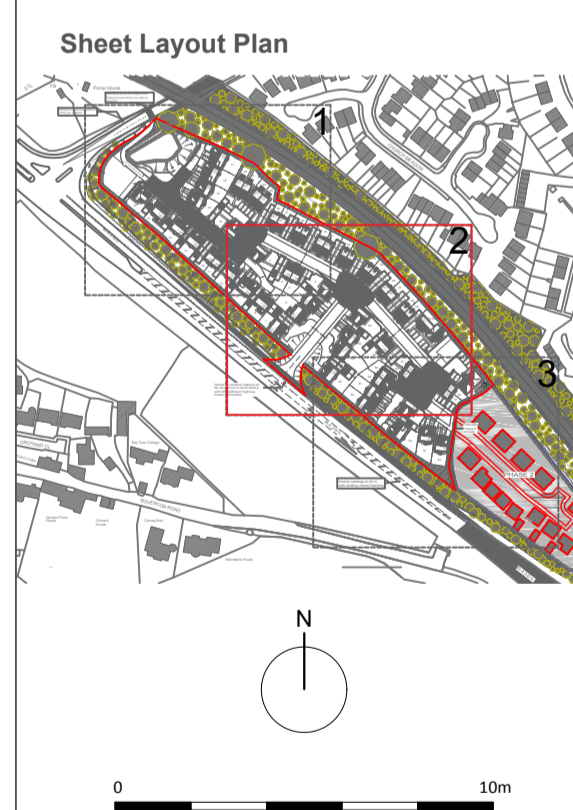
project title
Llantwit Major Bypass, Boverton

drawing title
Detailed Soft Landscape Plan 1 of 5

date 22 DECEMBER 2016 drawn by DB
drawing number EDP37501 checked KH
scale 1:200 @ A1 JW



- Site Boundary
- Retained Trees
- Proposed Trees
- Tree Pit Specification Type
Refer to edp3202_06 for specification details
- Native Hedgerow
- Ornamental / Native Hedge
- Native Whip Structure Planting
- Specimen Shrub
- Amenity Plot Planting
- Amenity Turf
- Wildflower Meadow
EM7 - Meadow Mixture for Sandy Soils
- Wear Tolerant Turf Mixture
ES22 - Wear Tolerant Turf grass Mixture
- Existing Vegetation
- Decorative Aggregate Gravel
Plum Stone Chippings
- Root Barrier System



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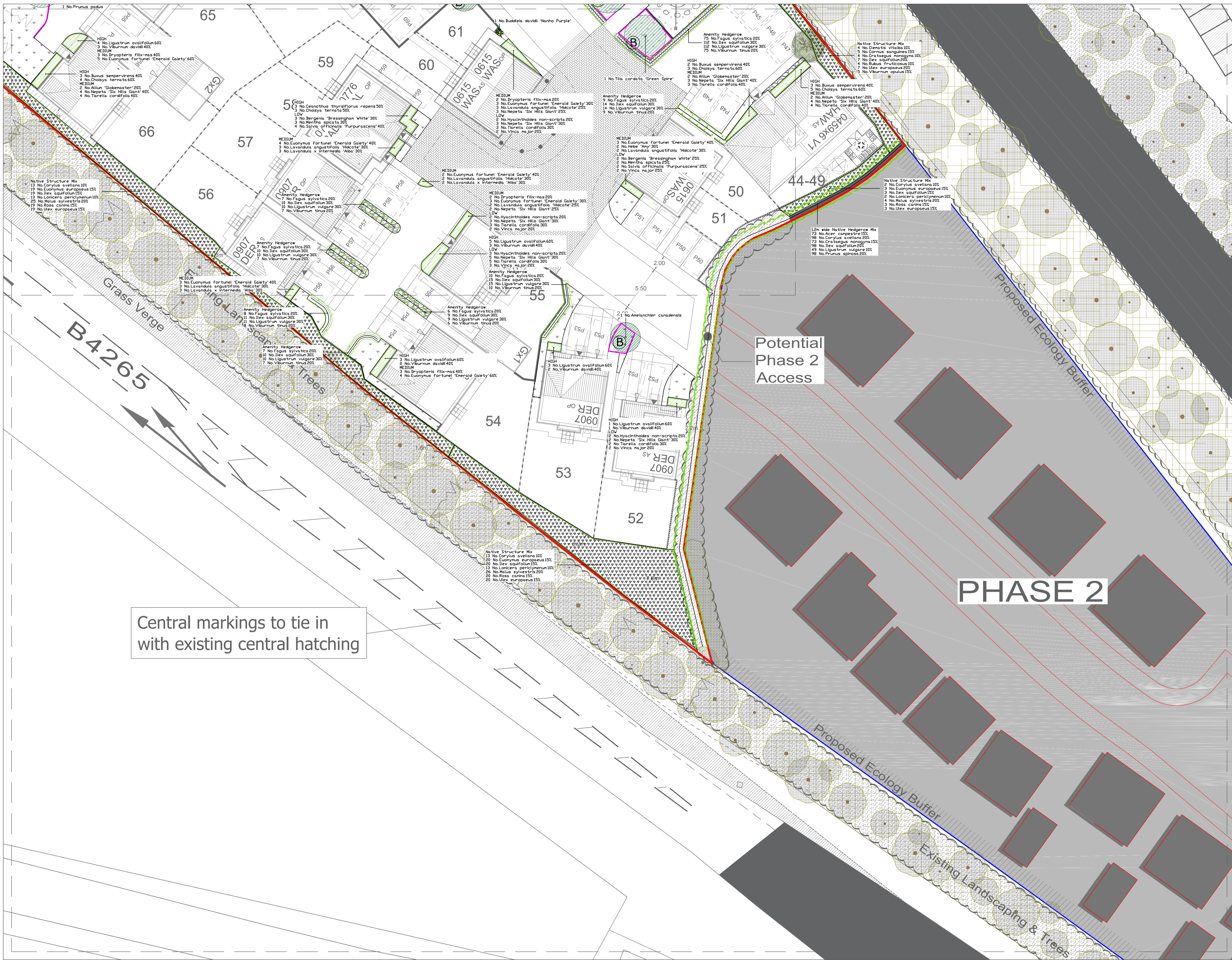
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client
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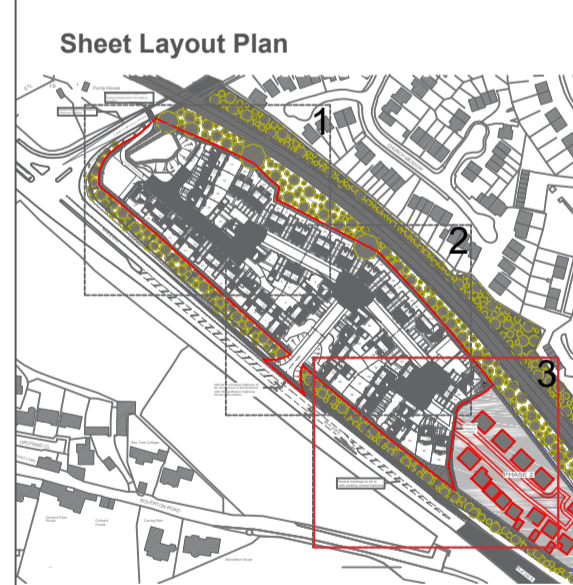
project title
Llantwit Major Bypass, Boverton

drawing title
Detailed Soft Landscape Plan 2 of 5

date 19 DECEMBER 2016 drawn by DB
drawing number EQP37502 checked KH
scale 1:200 @A1 JW

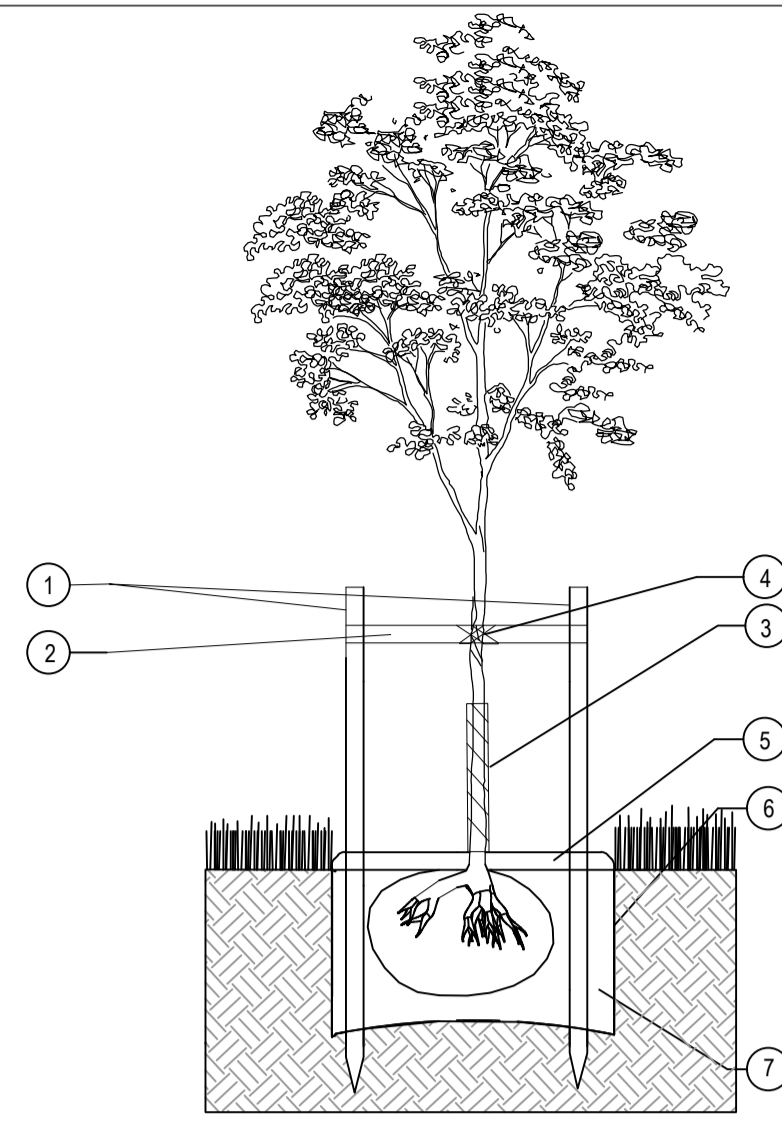


- Site Boundary
- Retained Trees
- Proposed Trees
- Tree Pit Specification Type
Refer to edp3205_06 for specification detail
- Native Hedgerow
- Ornamental / Native Hedge
- Native Whip Structure Planting
- Specimen Shrub
- Amenity Plot Planting
- Amenity Turf
- Wildflower Meadow
EM7 - Meadow Mixture for Sandy Soils
- Wear Tolerant Turf Mixture
ES22 - Wear Tolerant Turf grass Mixture
- Existing Vegetation
- Decorative Aggregate Gravel
Plum Slate Chippings
- Root Barrier System



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client	Barratt Homes
project title	Llantwit Major Bypass, Boverton
drawing title	Detailed Soft Landscape Plan 3 of 5
date	22 DECEMBER 2016
drawing number	EDP037503
scale	1:200 @ A1
drawn by	DB
checked by	NH
QA	JW



Tree Pit Detail A - Trees to be planted in Open Space

1&2. 2x tanalised timber tree stake 2m, 75mm Ø and crossbar driven into backfilled pit to provide support to the tree.

3. Clear spiral guard to be fitted to trunk to protect against animal browsing.

4. Use 2x Tree Tie *GLB25A* with *GLPFA* spacer sleeve or similar to secure tree to support post.

5. 50mm deep bark mulch layer to be spread evenly over a circular area 1000mm Ø around the tree to prevent weed growth and retain moisture.

6. Excavate tree pit to sufficient size to accommodate tree root ball. Loosen any compaction in base of excavated pit to aid drainage. The tree should be planted at a depth where the root flare is still visible just breaching the soil surface following backfilling.

7. Backfill tree pit with subsoil and topsoil excavated from pit if this is regarded as of sufficient quality to promote the healthy establishment of the tree. If either the top soil or sub soil excavated from the pit is of poor quality then soil ameliorants may be used sparingly or imported topsoil compliant with **BS3882** should be used.

Immediately after planting, water the tree, saturating the tree pit to field capacity.

The notes above are intended as a basic guide only. For further guidance on tree planting refer to **BS 8545:2014** Section 10.

Products suggested in italics above are available from Green Blue Urban (<http://greenblueurban.com/>)

Tree Planting Program

Trees to be planted between October 2015 and March 2016.

A full young tree management programme with budgetary provision should be in place for all planting schemes. This management programme should be in place for at least 5 years. Between the months of March and October monthly visits should be made to inspect tree specimens, and correct irrigation carried out in line with management information provided. Trees should be watered to recommended field capacity percentage, and not allowed to drop below the permanent wilting point percentage where risk of failure is likely (see table fig 1). Tree monitoring frequency should be increased accordingly in periods of hot weather.

Tree Maintenance and Management During 5 Year Establishment Period

Immediately following planting, the tree should be watered thoroughly. Following this, and with regard to prevailing weather conditions, newly planted trees should be watered regularly during periods of dry weather. If the tree pit has been specified with an irrigation pipe, this should be used as the primary method of watering. If no irrigation pipe is specified, the square metre of ground around the tree should be soaked to field capacity (refer to **BS 8545:2014** for further detail) by surface watering. Watering frequency is more important than quantity to prevent the root ball of the newly planted tree from drying out.

All trees are fitted with protective guards to prevent animal damage. These should be checked regularly to ensure they remain in place and are providing adequate protection against the animals in the area. If damage to trees from browsing by animals still occurs additional measures may be required.

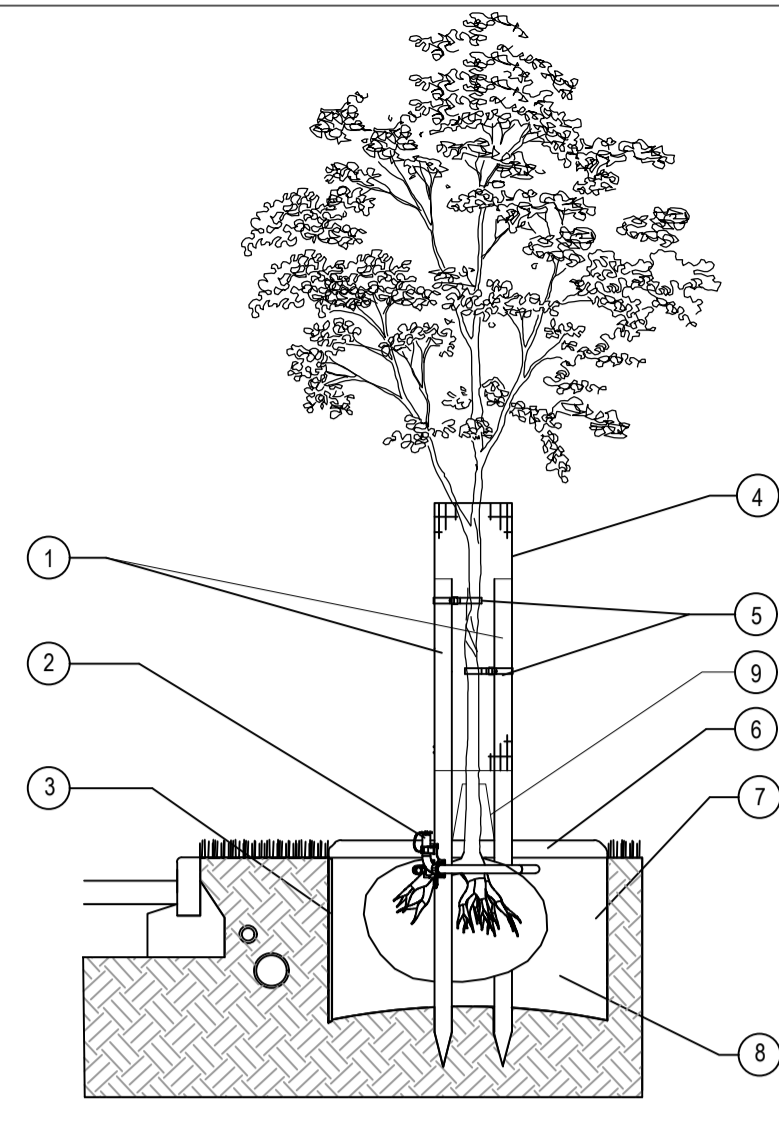
A formal assessment of young tree health and development should be carried out annually by a qualified arborist who will be able to advise on solutions should any problems be picked up. During this assessment any stakes and ties should be checked to ensure they are providing support but not damaging the tree and that the tree is still firmly seated in the ground. If the tree has become loose in the ground the soil around the base should be re-firmed and stakes and ties adjusted accordingly.

The mulched area around the base of the tree should be kept clear of competing vegetation and weeds at all times.

Tree stakes and ties should be removed once the tree has established a strong enough root system to support itself, likely to be 1-2 years after planting. Strimmer guards should remain in place until the end of the 5 year establishment, with adjustments or segments added as necessary to facilitate tree growth. Tree guards should only be removed if they are beginning to restrict tree growth or if it is felt the risk of damage has significantly reduced due to strong tree growth and development or changes in the surrounding environment.

Formative pruning should be carried out in accordance with **BS 3998** as required throughout the five year establishment period.

For further guidance on tree maintenance during establishment refer to **BS 8545:2014** Section 11.



Tree Pit Detail B - Trees to be planted within 3m of Hard Surfaces and/or Services

1. 2x tanalised timber tree stake 2m, 75mm Ø driven into backfilled pit to provide support to the tree.

2. *RootRain Metro* irrigation system or similar. Place around top of root ball and nail to supporting stake ensuring filler cap finishes slightly above mulch level.

3. *ReRoot* root barrier with root deflecting ribs installed between tree root ball and hard surfaces/services where there is a risk of root damage as the tree grows outward. As a general rule root barriers should be installed in locations where hard surfaces and/or services are located within four metres of the tree stem. Install closer to the paving/service than the tree, to allow space for the tree roots to grow into the space available, with the ribs facing the tree. Note this may mean not placing the barrier within the tree pit, but further away within its own trench. Root barriers must extend a minimum of 2m lengthways beyond the expected canopy of the mature tree. The top of the root barrier should be set as close to the soil surface as possible without being visible.

4. 50mm square galvanized wire mesh bent in circle 320mm Ø and nailed to tree stake to protect tree from damage by people and animals. Bottom of mesh should be 300mm above ground level to allow strimmer guard to be fitted and prevent litter and grass/weeds building up around the base of the tree. Top of mesh should be below the first lateral branch.

5. Use 2x Tree Tie *GLB25A* with *GLPFA* spacer sleeve or similar to secure tree to support post.

6. 50mm deep bark mulch layer to be spread evenly over a circular area 1000mm Ø around the tree to prevent weed growth and retain moisture.

7. Excavate tree pit to sufficient size to accommodate tree root ball. Loosen any compaction in base of excavated pit to aid drainage. The tree should be planted at a depth where the root flare is still visible just breaching the soil surface following backfilling.

8. Backfill tree pit with subsoil and topsoil excavated from pit if this is regarded as of sufficient quality to promote the healthy establishment of the tree. If either the top soil or sub soil excavated from the pit is of poor quality then soil ameliorants may be used sparingly or imported topsoil compliant with **BS3882** should be used.

9. *Strimmer guard* by *Arbortech* or similar to be fitted around base of tree to protect from damage by grass maintenance machinery primarily but also to provide an additional layer of defense against animal browsing.

Immediately after planting, water the tree, saturating the tree pit to field capacity.

The notes above are intended as a basic guide only. For further guidance on tree planting refer to **BS 8545:2014** Section 10.

Products suggested in italics above are available from Green Blue Urban (<http://greenblueurban.com/>) and *Arbortech* (www.arbortech.co.uk)

Irrigation of new tree planting

The timing and frequency of irrigation should take into account the prevailing weather conditions, soil moisture release characteristics, and the response of the tree species to water deficits or periods of prolonged soil saturation.

The water holding capacity varies between soils and should be assessed before determining irrigation needs.

The frequency of irrigation is more important than volume of water at any one time. Increased water volumes should not compensate for a lack of frequency.

Additional monitoring is recommended if there are 10 consecutive days during the growing season at >25°C. Water should only be added if soil moisture probe/ tensiometer values indicate that it would be appropriate to do so.

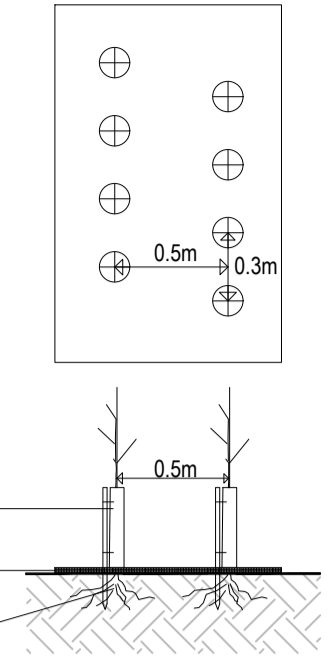
Ongoing Maintenance and Management

- All trees are to be regularly inspected by a member of the arboricultural association to ensure that they remain in a safe condition, do not obstruct access routes or visibility and do not cause nuisance. In undertaking the inspection, consideration should be given to safety aspects in balance with visual and ecological benefits provided by the tree
- Replace dead or dying trees in the next planting season (November to March)
- All tree works are to be carried out in accordance with good arboricultural practice, and under the direction of a member of the arboricultural association BS8545. In undertaking tree works, consideration must be given to safety aspects in balance with visual and ecological benefits provided by the tree.
- Tree works must take place outside of the bird nesting season (March to August inclusive, for most British birds) or under the supervision of a suitably qualified ecologist. If tree works need to be carried out between March and August seek ecological advice.
- Remove annually any excess growth encroaching onto grassed areas, paths, roads, signs, sightlines and light fittings

Texture	FC (v%)	PWP (v%)
Sand	10	5
Loamy sand	12	5
Sandy loam	18	8
Sandy clay loam	27	17
Loam	28	14
Sandy clay	36	25
Silt loam	31	11
Silt	30	6
Clay loam	36	22
Silty clay loam	38	22
Silty clay	41	27
Clay	42	30

Table fig 1: This table shows field capacity and past wilting point percentages, and how they vary according to soil texture and composition.

Double Staggered Row



Native Hedgerow Planting Detail

1. Tubex shrub shelter with supporting cane or stake.

2. Tubex 1m wide biodegradable Jute/Hessain Fabric roll pegged down with supplied biodegradable plastic pegs along line of hedgerow to prevent weed growth and retain moisture.

3 Whip to be notch planted following clearance of any existing vegetation.

Immediately after planting, water the whip, saturating the ground around its base to field capacity.

The notes above are intended as a basic guide only. For further guidance on whip planting refer to **BS 8545:2014** Section 10.

Whip planting only to take place between November and March

Products suggested in italics above are available from Green Blue Urban (<http://www.tubex.com/>)

Whip Maintenance and Management During 5 Year Establishment Period

Immediately following planting, the whip should be watered thoroughly. Following this, and with regard to prevailing weather conditions, newly planted whips should be watered regularly during periods of dry weather. When watering the square meter of ground around the whip should be soaked to field capacity (refer to **BS 8545:2014** for further detail) by surface watering. Watering frequency is more important than quantity to prevent the roots of the newly planted whip from drying out.

All whips are fitted with protective guards to prevent animal damage. These should be checked regularly to ensure they remain in place and are providing adequate protection against the animals in the area. If damage to trees from browsing by animals still occurs additional measures may be required.

A formal assessment of areas of whip planting should be carried out annually by a qualified arborist who will be able to advise on solutions should any problems be picked up. During this assessment any guards and canes/stakes should be checked to ensure they are providing protection but not damaging the developing whip and that its roots are still firmly seated in the ground. If the whip has become loose in the ground the soil around the base should be re-firmed and guards adjusted accordingly.

The space above the mulch mat around the whip should be kept clear of competing vegetation and weeds at all times.

The shrub shelter/guard should be removed once the whip has established a strong enough root system to support itself and has begun to grow strongly clear of the top of the shelter/guard, likely to be 1-2 years after planting. Biodegradable fabric can remain in place indefinitely.

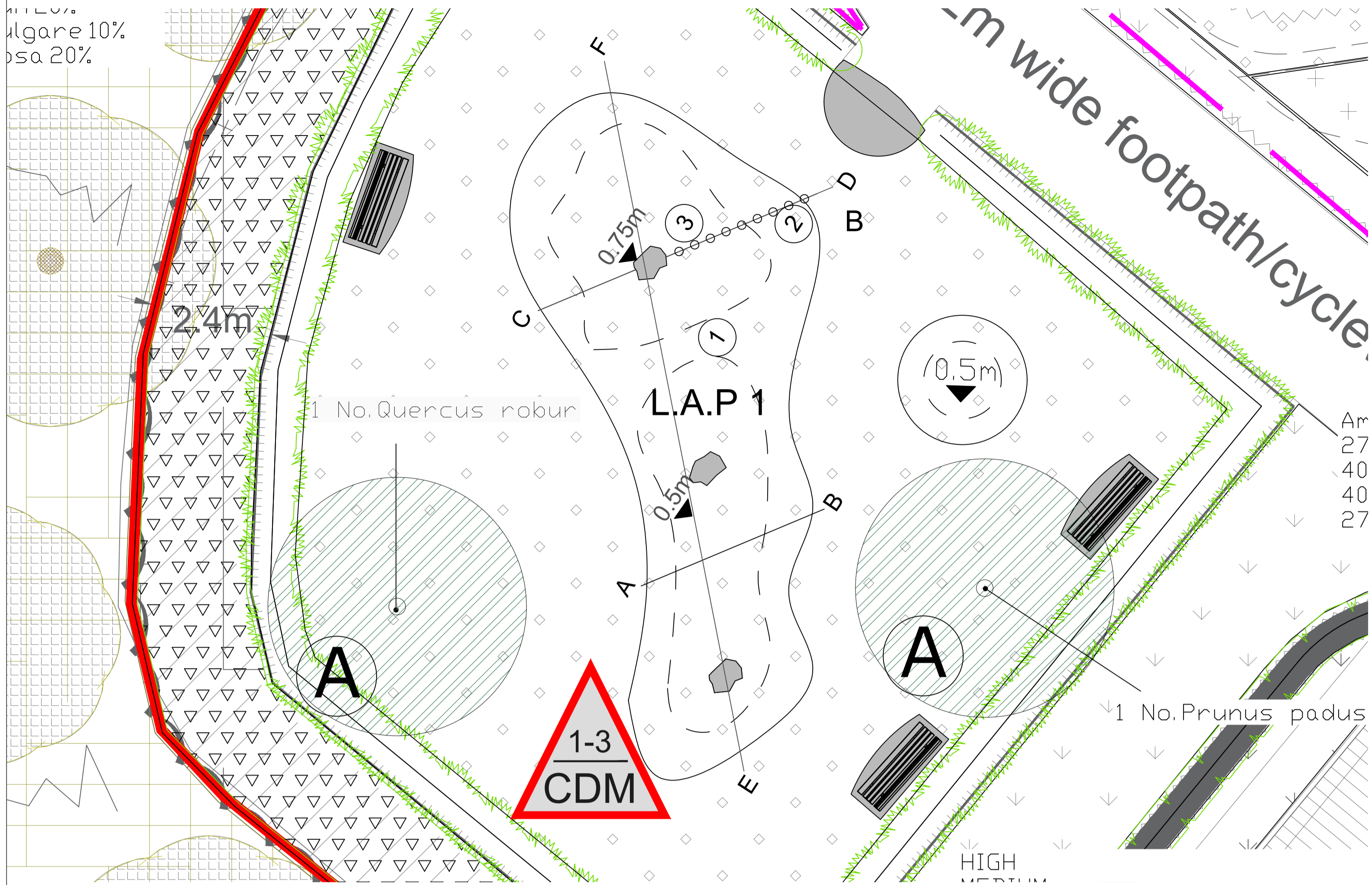
Formative pruning should be carried out in accordance with **BS 3998** as required during the first five years to ensure the desired form is achieved.

For further guidance on whip and tree maintenance during establishment refer to **BS 8545:2014** Section 11.

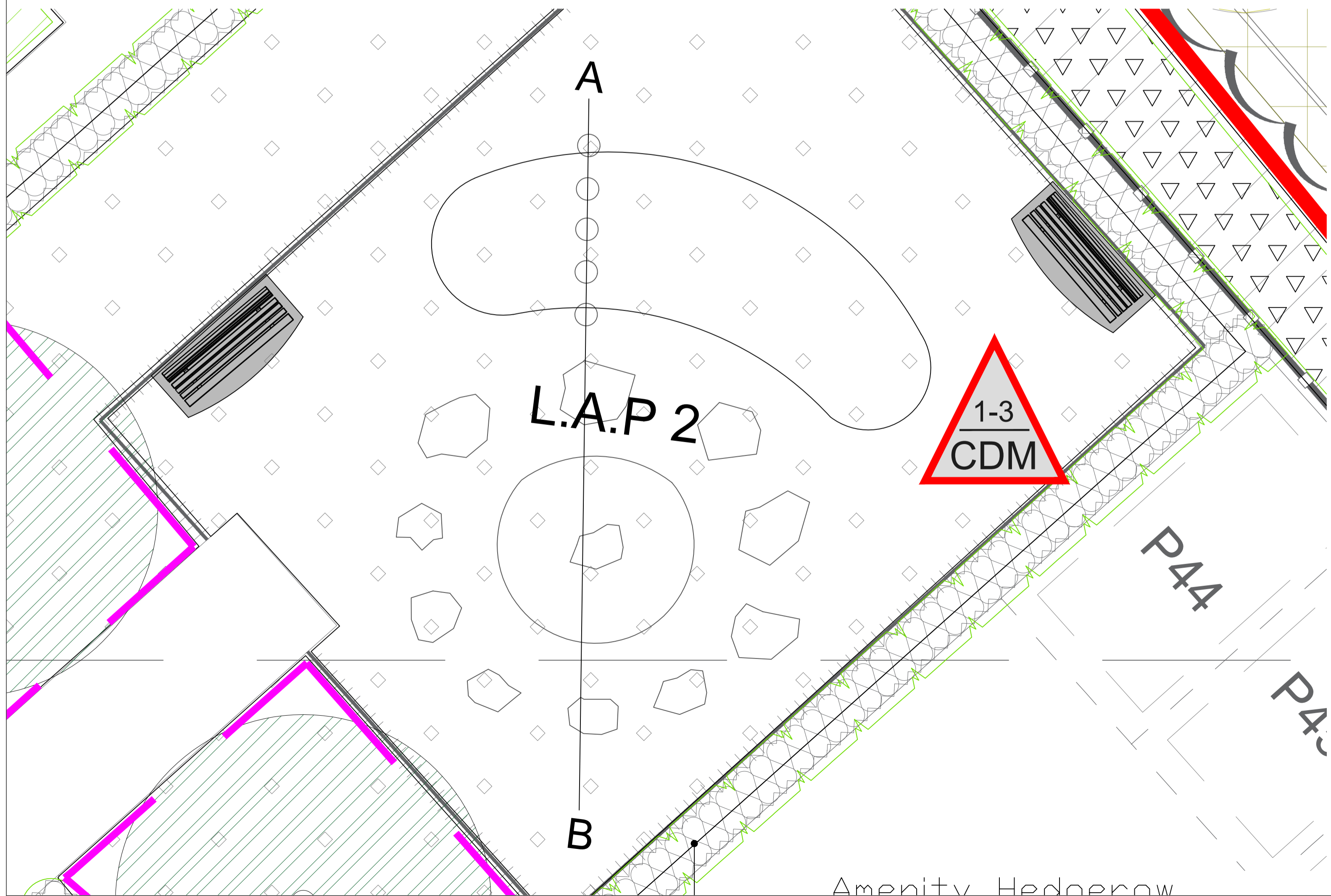
Ongoing Maintenance and Management

- Allow whips to reach desired height before trimming
- Maintain weed-free area around trees and whips, minimum diameter from stem, using mulch mats
- Any dead or dying plants to be replaced during the winter season (November to March)
- Re-firm any plants loosened by frost heave, wind rock or vandalism by treading around the base
- Watering to be undertaken regularly during the summer months and as required in the first five years following planting, to achieve successful plant establishment
- Ameliorants to be added as necessary to amenity hedgerows and in accordance with the on-going maintenance above
- Shrub shelters/guards to be removed after two years to facilitate further growth and management
- Ideally hedges should be cut to form an 'A' shape, allowing light to reach the lower branches, which leads to a healthier and stronger hedge, whilst also offering a better habitat for wildlife and shelter for livestock;
- Native hedges are generally cut to a height of between 2 and 3m in sections on a three year rotation to allow fruit and berries to develop and remain as a food source for birds through the winter.

Natural play bund, boulders and stepping stone log cross section elevations L.A.P 1



Natural play bund, boulders and stepping stone log cross section elevations L.A.P 2



L.A.P Design Details

1. Natural Theme Play

The Natural Theme play aspect of the L.A.P will consist of gentle banks and undulations giving rise to an interesting and imaginative landscape setting. Stepping pads and natural boulders add tactile features enhancing the experience of play whilst implying key routes and trails within the space.

2. Stepping Stone Logs or similar approved

Supplier: Playdale Playgrounds
Dimensions: 0.2x0.2x0.6
To be installed and maintained as per manufacturers recommendations



3. Natural Quarry Stone Boulders or similar approved

Supplier: Specialist Aggregates Ltd.
Dimension: 1200x1000x500mm.
Net weight: Approximately 1.5 tons. To be installed and maintained as per Landscape Architects and Engineers recommendations.

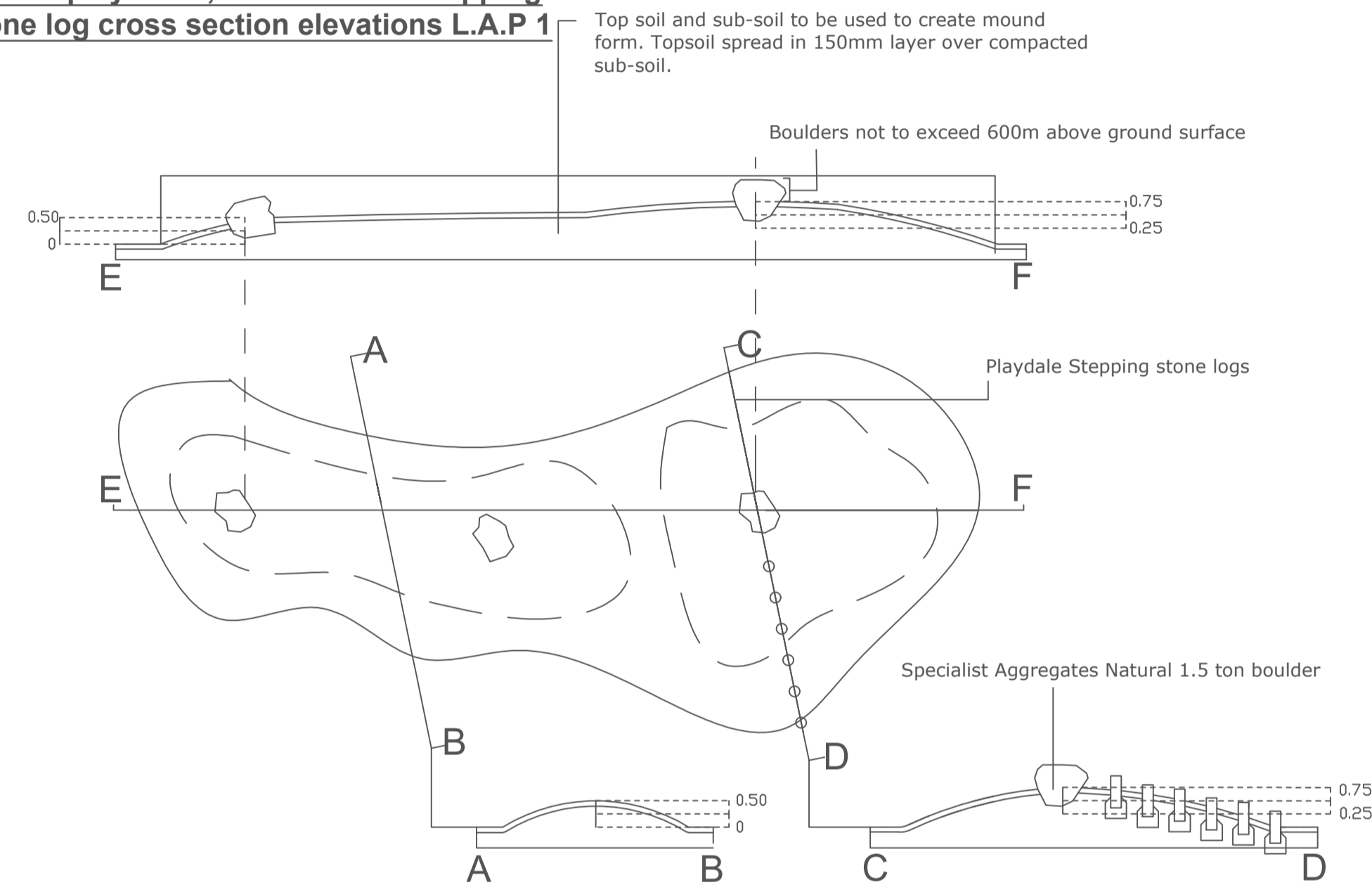


4. Bench with Backrest, Pine or similar approved

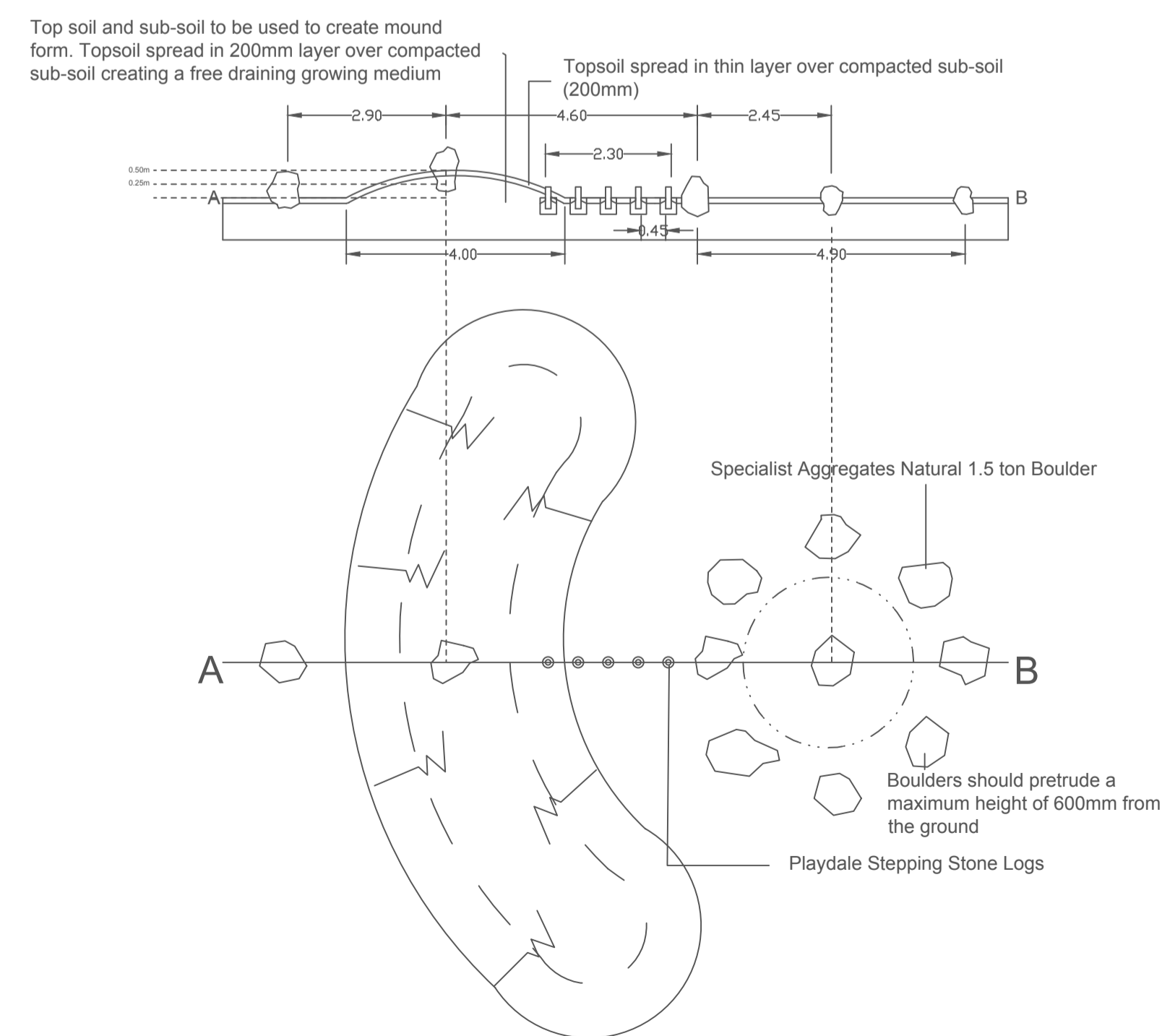
Supplier: Kompan
Dimension: 1800x580mm
Weight: n/a
To be installed and maintained as per manufacturers recommendations



Natural play bund, boulders and stepping stone log cross section elevations L.A.P 1



Natural play bund, boulders and stepping stone log cross section elevations L.A.P 2



	Site Boundary
	Retained Trees
	Proposed Trees
	Tree Pit Specification Type <small>Refer to eqs3206_e6 for specification detail</small>
	Native Hedgerow
	Ornamental/ Native Hedge
	Native Whip Structure Planting
	Specimen Shrub
	Amenity Plot Planting
	Amenity Turf
	Wildflower Meadow <small>EM7 - Meadow Mixture for Sandy Soils</small>
	Wear Tolerant Turf Mixture <small>EG22 - Wear Tolerant Turf grass Mixture</small>
	Existing Vegetation
	Decorative Aggregate Gravel <small>Plum Slate Chippings</small>
	Root Barrier System
	Concrete Pads
	Bench Unit

CDM Notes
A risk assessment has been carried out for the design of the LAP. Residual risks identified following completion of the design process are listed below.

- Residual Risks**
1. Timber posts or stepping stones becoming loose in the ground.
 2. Tops of timber posts becoming slippery due to any build up of moss/algal growth.
 3. Erosion of embankment exposing jagged concrete foundations.

- Control Measures**
1. Timber posts and stepping stones to be checked monthly to ensure they are securely rooted in the ground. Any loose posts or stones to be re-seated or replaced.
 2. Tops of timber posts to be kept free of moss/algal growth through pressure washing.
 3. Embankment and grass to be inspected monthly with soil replaced and grass replaced if necessary.



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client	Barratt Homes		
project title	Llantwit Major Bypass, Boverton		
drawing title	Detailed Soft Landscape - L.A.P Construction Details and Street Furniture Sheet 5 of 5		
date	21 DECEMBER 2016	drawn by	DB
drawing number	EDP37505	checked	KH
scale	Not to scale	checked	JW

Appendix EDP 7

BDW South Wales Biodiversity Action Plan

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Key Species/habitat	Target	KPIs	Actions to Achieve Target					
			During Construction	After Construction				
				Year 1	Year 2	Year 3	Year 4	Year 5
Dormice	Maintain or increase habitat quality and connectivity to ensure no detrimental impact to the species Favourable Conservation Status in the long term.	Dormouse Mitigation Strategy and EPS licence written and adopted by appropriate body to cover all required targets. Monitoring to confirm continued presence of dormice within suitable habitats on and adjacent to the Development	All sensitive working methodologies, management and monitoring prescriptions to be implemented as set out within the Dormouse Mitigation Strategy (EDP Report Reference C_EDP3775_01) and future EPS licence to be followed.	Ensure EDP's Dormouse Mitigation Strategy (Report Reference C_EDP3775_01) and future EPS licence methodologies and requirements are correctly followed. Monitoring data to be collected and submitted to	Ensure EDP's Dormouse Mitigation Strategy (Report Reference C_EDP3775_01) and future EPS licence methodologies and requirements are correctly followed. Monitoring data to be collected and submitted to	Ensure EDP's Dormouse Mitigation Strategy (Report Reference C_EDP3775_01) and future EPS licence methodologies and requirements are correctly followed. Monitoring data to be collected and submitted to	Ensure EDP's Dormouse Mitigation Strategy (Report Reference C_EDP3775_01) and future EPS licence methodologies and requirements are correctly followed	Ensure EDP's Dormouse Mitigation Strategy (Report Reference C_EDP3775_01) and future EPS licence methodologies and requirements are correctly followed
Reptiles	Maintain or increase habitat quality and habitat connectivity to benefit the local reptile population.	Reptile Mitigation Strategy to be adopted by appropriate body to cover all required targets.	All sensitive working methodologies and management prescriptions to be implemented as set out within the Reptile Mitigation Strategy (EDP Report Reference C_EDP3775_02) to be followed.	Ensure appropriate methodologies as set out within EDP's Reptile Mitigation Strategy (Report Reference C_EDP3775_02) are correctly followed. Collect and review reptile data from "citizen scientists" where appropriate.	Ensure appropriate methodologies as set out within EDP's Reptile Mitigation Strategy (Report Reference C_EDP3775_02) are correctly followed. Collect and review reptile data from "citizen scientists" where appropriate.	Ensure appropriate methodologies as set out within EDP's Reptile Mitigation Strategy (Report Reference C_EDP3775_02) are correctly followed. Collect and review reptile data from "citizen scientists" where appropriate.	Ensure appropriate methodologies as set out within EDP's Reptile Mitigation Strategy (Report Reference C_EDP3775_02) are correctly followed. Collect and review reptile data from "citizen scientists" where appropriate.	Ensure appropriate methodologies as set out within EDP's Reptile Mitigation Strategy (Report Reference C_EDP3775_02) are correctly followed. Collect and review reptile data from "citizen scientists" where appropriate.
Breeding Birds	Maintain or increase habitat quality to encourage a diverse assemblage of breeding birds to be established over the long term.	Birds recorded nesting within bird boxes installed across the Development and within retained, enhanced or newly created habitats.	Install 17 bird boxes upon units 1, 16, 17, 22, 23, 25, 28, 33, 35, 40-43, 52-54, 56 & 66 as per Ecology Masterplan (Hammond Architects Drawing Nos. 1363_EM-03_Rev. B)	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"
Hedgehog	Maintain or increase habitat quality and habitat connectivity to benefit the local hedgehog population.	Hedgehogs recorded utilising habitats across the Development Site.	Ensure the inclusion of a 130mm gap at base of close board fencing to be installed around curtilages adjacent to retained and newly created habitat, as per Ecology Masterplan (Hammond Architects Drawing Nos. 1363_EM-03_Rev. B)	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"	Collect and review data from "citizen scientists"
Trees, Hedgerows, Shrubs and Grassland	Enhance existing and create new tree/shrub belts, native hedgerows, and grassland habitat for wildlife to be maintained over the long-term	Damage or disturbance to vegetation during construction avoided	Protective fencing to be installed around root protection areas and adequately maintained throughout construction period and toolbox talk to be given to	n/a	n/a	n/a	n/a	n/a
		Successful establishment of native trees, hedgerow, shrub and grassland habitat onsite to required species diversity or greater.	Native hedgerow, tree, shrub and grassland mix sown in accordance with details of the Soft Landscape Plan prepared by EDP (Plan EDP3775/01) submitted.	Ensure hedgerow, tree, shrub and grassland management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference C_EDP3775_01), Reptile Mitigation Strategy (EDP Report Reference C_EDP3775_02) and Soft Landscape Plan (Plan EDP 3775/01) are correctly	Ensure hedgerow, tree, shrub and grassland management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference C_EDP3775_01), Reptile Mitigation Strategy (EDP Report Reference C_EDP3775_02) and Soft Landscape Plan (Plan EDP 3775/01) are correctly	Ensure hedgerow, tree, shrub and grassland management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference C_EDP3775_01), Reptile Mitigation Strategy (EDP Report Reference C_EDP3775_02) and Soft Landscape Plan (Plan EDP 3775/01) are correctly	Ensure hedgerow, tree, shrub and grassland management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference C_EDP3775_01), Reptile Mitigation Strategy (EDP Report Reference C_EDP3775_02) and Soft Landscape Plan (Plan EDP 3775/01) are correctly	Ensure hedgerow, tree, shrub and grassland management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference C_EDP3775_01), Reptile Mitigation Strategy (EDP Report Reference C_EDP3775_02) and Soft Landscape Plan (Plan EDP 3775/01) are correctly



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