

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

**Reptile Mitigation
Strategy**

Prepared by:
**The Environmental
Dimension Partnership
Ltd (EDP)**

On behalf of:
**Barratt Homes, South
Wales**

December 2016
Report Reference
EDP3775_02a



THE
ENVIRONMENTAL
DIMENSION
PARTNERSHIP

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| For EDP use | |
| Report no. | C_EDP3775_02a |
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| Date | 23 December 2016 |

Section 1 Introduction

- 1.1 This Reptile Mitigation Strategy has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf Barratt Homes South Wales, hereafter referred to as 'the Developer' 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. The proposed Site Layout is provided at **EDP Appendix 1**. This Reptile Mitigation Strategy has been prepared to form part of the detailed application submission.

Site Context

- 1.3 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.
- 1.4 The Application Site is bound on all sides by transport links, including Llantwit Major Bypass (B4256) 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.
- 1.5 Habitats onsite include two agricultural fields (F1 and F2) 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.

Purpose

- 1.6 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 reptiles (Refer to **Appendix EDP 2** for consultation response dated 24 October 2014).
- 1.7 Subsequent reptile surveys were undertaken by Thomson Ecology in 2015 to confirm presence/infer absence of common reptile species within the boundaries of the Application Site (F1-F2) and adjacent habitat to the east (F3).
- 1.8 A 7-day presence/absence survey indicated presence of a low¹ population of slow-worm onsite, confined to the eastern agricultural field within the Application Site (F2) and offsite habitats adjacent to the eastern red line boundary (F3). Full details of the findings are provided within **Appendix EDP 3**.
- 1.9 In the absence of appropriate compensation and mitigation measures, the development proposals are considered likely to result in the destruction of, and disturbance to, reptile 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.
- 1.10 This Reptile Mitigation Strategy therefore aims to provide details of the necessary sensitive working methodologies, to be employed prior to the commencement of the construction phase, so as to ensure the avoidance of harm to reptile individuals residing on site. The methodologies devised are based upon the findings of the reptile survey as detailed within the Reptile Survey Report prepared by Thomson Ecology in May 2015, and submitted as part of the original detailed planning application.
- 1.11 This Reptile Mitigation Strategy further aims to provide a future management framework for the sensitive creation, enhancement, management and maintenance of semi-natural habitats proposed on site, the location of which is illustrated within the Site Layout provided at **Appendix EDP 1**.

¹ HGBI Advisory Note 'Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards'

Section 2 Baseline Ecology

Desk Study

- 2.1 No records of reptiles were returned within 1km of the Development 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.

Survey Methodology

Reptile Presence/Absence Surveys

- 2.2 Reptile surveys of suitable habitat within Fields F1-F3 were undertaken by Thomson Ecology in 2015. The full methodology is detailed within the reptile survey report included at **Appendix EDP 3**. In summary, however, reptile surveys comprised the deployment of a total of 120 artificial refugia, comprising 0.5 x 0.5m cuts of roofing felt, onsite on 31 March 2015 at a density of 50 artificial refugia per hectare. Artificial refugia were left in position for one week and then checked by suitably qualified ecologists for reptiles on seven occasions in April, during suitable weather conditions. This was followed by a visual search of the survey area for basking reptiles. Any reptiles found were recorded, along with the refugia location, species, life stage and number of reptiles recorded.

Results

- 2.3 Reptile surveys confirmed the presence of slow-worm both on and adjacent to the Application Site (refer to **Appendix EDP 3**). A summary of the number of individuals and peak survey count for each survey visit is given in **Table EDP 2.1**.

Table EDP2.1: Number, and peak survey count, of slow-worm recorded within Application Site

| | | Male | Female | Juvenile | Unknown Sex | Total |
|--|------------|------|--------|----------|-------------|-------|
| 1 | 07/04/2015 | 0 | 0 | 0 | 0 | 0 |
| 2 | 10/04/2015 | 1 | 1 | 0 | 0 | 2 |
| 2 | 13/04/2015 | 1 | 0 | 0 | 0 | 1 |
| 4 | 16/04/2015 | 1 | 0 | 0 | 1 | 2 |
| 5 | 20/04/2015 | 1 | 3 | 0 | 0 | 4 |
| 6 | 23/04/2015 | 2 | 2 | 0 | 0 | 4 |
| 7 | 27/04/2015 | 2 | 0 | 0 | 0 | 2 |
| Max. Count Recorded/Visit: 4 | | | | | | |
| Population Size Class Estimate: Low | | | | | | |

Assessment of Survey Findings

- 2.4 Slow-worm was recorded on all but the first survey visit. A peak survey count of 4 slow-worm was recorded on the fifth and sixth reptile survey visit indicating the presence of a low population on-site. Records of slow-worm were confined to the eastern field (F2) of the Application Site as well as the adjacent agricultural field (F3) immediately east of the Application Site.
- 2.5 The presence of a low population is consistent with the distribution and nature of habitats recorded onsite during the initial Extended Phase I Habitat Survey. Poor semi-improved grassland provides suitable terrestrial habitat for common reptile species. Grassland habitat comprising fields F1 and F2 are, however, subject to occasional disturbance from agricultural activities including grazing and hay cutting and is therefore characterised by a relatively short sward considered sub-optimal for reptiles.
- 2.6 Additionally, areas of dense scrub and woodland habitat located adjacent to the Application Site boundaries are considered to provide additional terrestrial habitat for reptiles, with highways planting and woodland associated with the adjacent railway line providing habitat corridors which likely facilitate dispersal of reptiles between the Application Site and wider landscape.

Section 3 Legislative Context

- 3.1 All species of common reptile (including common lizard, slow-worm, grass snake and adder), receive at least limited protection from harm under the Wildlife and Countryside Act, 1981 (as amended), such that it is considered an offence to cause intentional or reckless killing and injuring of these species. Common reptile species also comprise species of Principal Importance² for nature conservation in Wales.
- 3.2 The displacement of common reptile species away from the construction footprint to facilitate development is thus considered a legal requirement to ensure that such individuals are protected from injury, or killing throughout the development works. Given the level of protection afforded to common reptile species a mitigation licence is not required to undertake the works.
- 3.3 With respect to timings, the displacement of reptiles should only be undertaken when reptiles are active (i.e. between mid-March and mid-October), to ensure the avoidance of harm whilst maximising their ability to disperse. Best practice guidance³ further recommends that such works include the spring or late summer months to maximise capture rates, with a preference for reptile populations to be retained on site and translocations of animals to off-site receptor sites avoided as far as possible.

² Section 42 (S42) of the Natural Environment and Rural Communities (NERC) Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in Wales.

³ English Nature (2004). *Reptiles: Guidelines for Developers*. English Nature, Peterborough.

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Section 4 Impact Assessment

Impacts

- 4.1 The development proposals will result in the loss of suitable reptile habitat as follows:
- Permanent loss of poor semi-improved grassland comprising Fields F1 and F2;
 - 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 approximately 34m² of the south eastern boundary hedgerow at its northern end; 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 of reptile habitat as follows:
- The temporary 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; and
 - Temporary loss of a narrow band of semi-improved grassland measuring no greater than 3m in width through Field F3 to facilitate temporary vehicular access from its southern end to field F2.
- 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 reptile 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. Furthermore, the areas of poor semi-improved grassland to be lost are considered sub-optimal for reptiles due to its short, managed sward. Nevertheless, such habitat losses have the potential to kill, injure and/or disturb reptiles that may be present therein.

- 4.5 In absence of mitigation or compensation, and considering the small size of the reptile population located within the local landscape and confirmed utilising the Application Site, such impacts upon the reptile population present onsite are considered to be significant negative at the **Site Level** only.

Section 5 Method Statement

5.1 In consideration of the relatively limited suitability of the Application Site to support common reptiles, the small size of the population of slow-worm confirmed utilising the Application Site, the availability of suitable off-site habitat, and the inherent mitigation incorporated within the proposed development, the following mitigation strategy for the displacement and protection of reptiles is considered sufficient and proportionate to the level of impact anticipated. This mitigation strategy, therefore, includes the following measures:

- Site clearance under ecological watching brief;
- Displacement of reptiles to offsite habitats via habitat manipulation and sensitive vegetation clearance;
- Installation of reptile proof fencing around construction areas; and
- Enhancement and long-term management of retained and newly created habitats for reptiles.

Pre-Commencement Site Check

5.2 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 reptiles. 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.

Ecological Clerk of Works

5.3 Pre-construction/enabling works including vegetation clearance, the displacement of reptile species and installation of reptile proof fencing will be undertaken under direct supervision of an appointed Ecological Clerk of Works (ECoW). The ECoW will be responsible for the provision of site briefings and information to the Principle Contractor, and all relevant sub-contractors and Site personnel, on the presence of ecological constraints within the Site and precautionary measures of working that are to be adhered to during site clearance.

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, temporary high visibility fencing will be installed either side of the full alignment of the proposed, 3m wide temporary route required through field F3 so as to enable access to the proposed development footprint from Llantwit Road to the south east.
- 5.6 Thereafter, 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.

Vegetation Clearance

- 5.7 Habitats to be permanently lost to the development footprint include: fields F1 and F2 comprising species-poor, semi-improved grassland; the internal species-poor hedgerow subdividing these fields; a short section of the south eastern boundary hedgerow; and small area of woodland comprising relatively recently established highways planting aligning Llantwit Major Bypass.
- 5.8 Temporary loss of habitats will also be required, including a 3m wide band of grassland through field F3 from Llantwit Road to facilitate access and clearance of a short section of vegetation located along the north western boundary to facilitate the installation of a foul sewer connection.

Woodland and Hedgerow Habitat

- 5.9 Woodland and hedgerow habitat clearance will be undertaken in accordance with those methodologies as set out within the Dormouse Mitigation Strategy (Report Reference **C_EDP3775_01**) submitted as part of the full application submission and future European Protected Species (EPS) mitigation licence to be approved by Natural Resources Wales (NRW).
- 5.10 Woodland and hedgerow habitat clearance will be undertaken over two stages and under the supervision of a suitably qualified and licensed Ecologist, with above-ground vegetation clearance of trees, shrubs and scrub anticipated to be completed between 1 and 31 March 2017 to avoid the dormouse active season and main bird breeding season), and the below-ground removal of stumps and root balls to be completed between 1 May and 30 June 2017 following dormouse full emergence from hibernation.

Grassland Habitat

5.11 The clearance of grassland habitat located across the full extent of fields F1 and F2 comprising the development footprint, in addition to grassland habitat comprising the temporary access route through field F3, will be undertaken between mid-March and early October (when temperatures are above 9°C) during the reptile active season and in accordance with those methodologies detailed below:

- To prevent harm/injury to common reptile species potentially present onsite, all vegetation clearance will be undertaken under supervision of a suitably qualified ecologist, hereafter referred to as the Ecological Clerk of Works (ECoW);
- Any potential reptile refugia located within the construction footprint (including within and around the footings of the existing built structure and associated log/stone/brush piles associated with the north eastern boundary of field F1) will be carefully dismantled using hand tools, hand-held machinery or untracked, light machinery to facilitate efficient supervision;
- All remaining grassland habitat located within the proposed development footprint will be subject to directional cutting over two phases. Specifically, an initial cut of grassland habitat will be undertaken using hand-held machinery, reducing vegetation height down to a minimum of 175mm, with clearance commencing from the centre of the fields and directed towards adjacent retained habitat (i.e. the railway line to the north east and hedgerow habitat to the south west). A second cut of the proposed footprint areas will be undertaken immediately thereafter, with vegetation cut to ground level and no greater than 30mm in height;
- All arisings will be removed from the construction footprint and vegetation will be maintained thereafter at a height no greater than 30mm through regular mowing or strimming to discourage common reptiles from returning; and
- In the event any reptiles are identified during site clearance these will be captured by hand and immediately released into retained habitat adjacent to the railway.

Installation of Temporary Reptile Exclusion Fencing

5.12 The site is bound by a railway and associated woodland habitat to the north east, poor semi-improved grassland with a confirmed low population of slow-worm to the south east, and highways planting associated with the adjacent Llantwit Bypass Road to the south west.

5.13 To prevent any re-colonisation Application Site by reptiles from adjacent habitats following the completion of the phased vegetation clearance therefore, the installation of reptile exclusion fencing by a suitably qualified fencing contractor around the full

perimeters of the proposed construction footprint will be required immediately following the completion of the phased vegetation clearance and prior to the commencement of construction works. The suitably qualified fencing contractor will be briefed by the appointed ECoW on the potential presence of reptiles, their legal protection and of working practices which would avoid harming any reptile that may be present.

- 5.14 Grassland habitat present within 3m of the boundaries of the proposed development footprint will firstly be stripped of its turf and upturned and compacted in situ where necessary, prior to the installation of reptile exclusion fencing along the centre line of this strip of bare ground.
- 5.15 Specifications of the proposed reptile fence is proposed as follows (or similar):
- The fence will be constructed from a UV resistant plastic/terram geotextile material;
 - It will be supported by wooden fence posts which will be dug 300mm into the ground and stand 600mm above ground level;
 - The plastic will be dug 150mm into the ground, with a 100mm horizontal lap below ground, facing away from the site to be cleared/trapped;
 - The plastic will be buried with compacted backfill so that no fissures or gaps are left in the backfill, or against the plastic. Any turf replaced will be inverted to restrict vegetation growth; and
 - The fence material will be nailed to the fence posts with galvanised clout nails and folded over at the top, on the side facing away from the site to be cleared, and stapled to form an overhang.
- 5.16 Additionally, suitably designed kick-backs and temporary gates will also be incorporated along the alignment of the reptile exclusion fencing, specifically at key points of entry/exit to/from the construction footprint including along the south eastern and south western boundaries.
- 5.17 Reptile exclusion fencing and associated areas of bare ground within the development footprint will be maintained throughout the construction period so as to remain clear of vegetation, rubble piles and storage of materials. Responsibilities for its maintenance will lie with the Principal Site Manager.
- 5.18 Reptile exclusion fencing will be removed following completion of the constructed development.

Section 6 Post-Development Site Safeguard

Reptile Habitat to be Retained, Enhanced and Created

- 6.1 Given the confirmed presence of slow-worm onsite, the development has been designed to retain, protect and enhance key reptile habitat, in addition to creating new reptile habitat within the scheme as far as possible. This has been achieved through the following design measures:
- The offsetting of the development footprint towards the interiors of the Application Site and away from its vegetated peripheries by an average of 2m to minimise impacts upon suitable reptile habitat situated immediately adjacent;
 - 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 so as to strengthen and protect existing habitat corridors; and
 - The provision of an extensive area of new tree, shrub, scrub and grassland planting across the north western extent of the Application site adjacent to the proposed Local Area of Play and sustainable drainage feature to compensate for habitat loss.
- 6.2 Additionally, all retained, enhanced and newly created habitats 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.
- 6.1 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.
- 6.2 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.
- 6.3 With respect to areas subject to a wildflower grassland seed mix, perennial weeds should be removed during the first year through cutting, hand-pulling or spot-spraying, with flushes of weeds controlled by topping or mowing.

- 6.4 All products will be supplied and fitted in accordance with the manufacture's guidelines and whips protected using stakes and durable rubber ties. 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.
- 6.5 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.
- 6.6 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.
- 6.7 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.
- 6.8 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

- 6.9 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 arboriculturist to ensure that the tree stock is managed for its health and safety and its lifespan and coverage optimised.
- 6.10 With respect to retained and newly planted trees, shrubs and hedgerows, the implementation of long cutting cycles and appropriate management techniques including coppicing and/or laying where appropriate to species should be considered to maximise diversity.
- 6.11 Additionally, the selective thinning of newly planted native trees and shrubs and/or small-scale removal of invasive species should be undertaken 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.

- 6.12 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 reptile 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.
- 6.13 With respect to informal grassland habitat, areas of wildflower grassland should be cut no more than twice per annum to encourage tall sward heights, with a first summer hay cut undertaken in August, followed by a second cut between autumn and early spring thereafter. Cutting should avoid the months of May till July to enable the majority of species to have flowered and set seed.
- 6.14 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.

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Section 7 Monitoring and Works Schedule

Timetable of Works

- 7.1 Phased vegetation clearance as described previously at **Section 5** is to commence as soon as possible from March 2017 following the granting of consent of the detailed application, discharge of relevant conditions attached, and approved EPS licence from NRW in relation to the confirmed presence of dormice onsite.
- 7.2 Construction is anticipated to commence from 1 May 2017, completed June 2020.
- 7.3 The below table illustrates the proposed timings detailed within the Method Statement of this Reptile 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. |
| Installation of Tree Protective Fencing | To be installed immediately prior to commencement of works onsite | 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. |
| Removal of Above-ground Vegetation (in accordance with Dormouse EPS licence) | 1 - 31 March 2017 | Specific to areas of woodland and hedgerow proposed for loss. |
| Removal of Below-ground Vegetation (in accordance with Dormouse EPS licence) | 1 May – 30 June 2017 | Lifting out of tree stumps, root balls etc. associated with woodland and hedgerow habitat to be removed. |
| Phased Vegetation Clearance | Mid-March – September 2017 | Specific to areas of grassland habitat and potential reptile refugia present onsite. |

| Task | Timing | Comments |
|---|---|--|
| Stripping of Bare Ground and Installation of Reptile Exclusion Fencing | As soon as possible following completion of phased vegetation clearance | 3m wide strip of bare ground to be created along proposed alignment of reptile exclusion fencing prior to installation. Fencing and associated areas of bare ground to be maintained throughout construction period. |
| Construction Period | May 2017 – June 2020 | |
| Post-construction Management & Maintenance of 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

- 7.4 The tasks detailed above in relation to future management of the Development 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**).

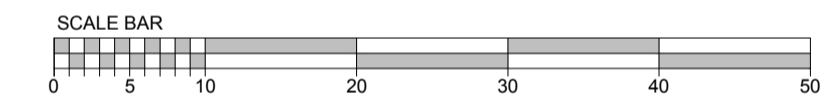
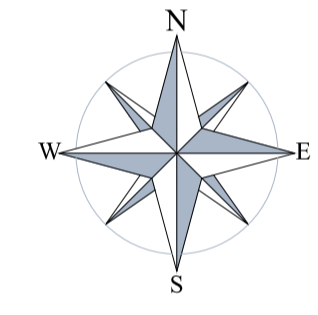
Appendix EDP 1
Site Layout
(Hammond Architectural Ltd., Drawing Number 1363-TP-03 Rev G)

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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 Hootop 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)



- 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. Incongruities to other plots adjusted. LAP to rear of site reduced in area by 5m². The LAP next to 43 increased in area by 5m². Post and rail fence introduced to some areas and landscaping added around PC5 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/cyeway 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: LAP at northwest of site increased to 285m². Site access verge/bankment 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
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 3
Reptile Survey Report, May 2015 (Thomson Ecology, Report
Reference ABAW105/007/005/001)

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Reptile Survey

Boverton, Vale of Glamorgan

For

Barratt Homes South Wales

Project No.: ABAW105 / 007

May 2015

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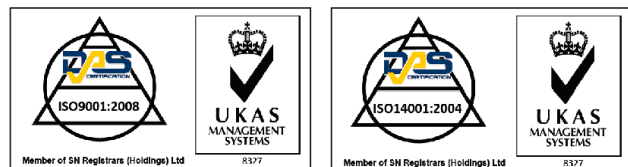
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| Project Number | Report No. |
|----------------|------------|
| ABAW105/007 | 005 |

| Revision No. | Report Status | Date of Issue | Author | Reviewer | Approver |
|--------------|---------------|---------------|-------------|-----------------|-------------|
| 001 | Final | 15/05/15 | Andrew Bone | Jonathan Reeves | Liz Bedford |

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Figure 1 Site Location

Figure 2 Reptile Refugia Locations and Survey Results

1. Summary and Main Recommendations

1.1 Summary

1.1.1 Barratt Homes South Wales are seeking planning permission for a residential development located adjacent to the B4265, Boverton, Vale of Glamorgan. The development will be located on 2.41 ha of farmland and will comprise the construction of residential units and associated tree planting and public open spaces. The location of the site is shown in Figure 1.

1.1.2 In March 2015 Thomson Ecology was commissioned to undertake a reptile survey to determine the presence or likely absence of reptiles at the site. The brief was to undertake a reptile survey using a visual search and survey of artificial reptile refugia in suitable habitat on site, comprising one visit to distribute the refugia and seven survey visits to check for the presence of reptiles.

1.1.3 The site was found to support slow worm (*Anguis fragilis*), which is estimated as being present at a low population size. Slow worm was recorded in the centre of the site and towards the south eastern boundary of the site, see Figure 2.

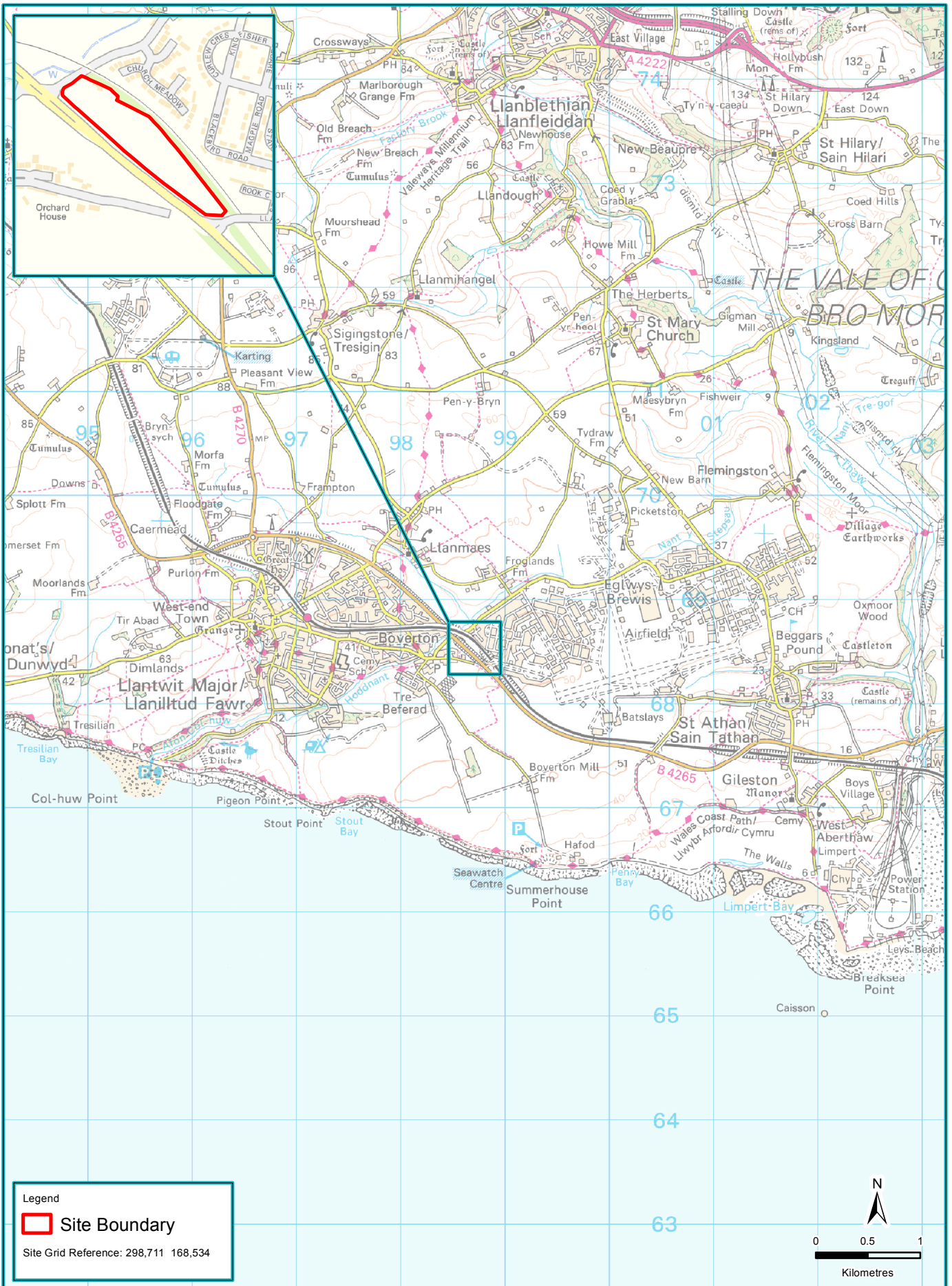
1.1.4 Slow worm receives protection under the Wildlife and Countryside Act 1981, as amended. As it is an offence to deliberately kill or injure slow worm, this will need to be avoided during the development process. Slow worm is also a Species of Principal Importance in Wales under Section 42 of the Natural Environment and Rural Communities Act 2006. It is government policy that local authorities should consider the conservation status of these species when determining the success of planning applications.

1.2 Main Recommendations

1.2.1 It is recommended that a reptile mitigation method statement should be agreed with the Local Planning Authority, which would be expected to include:

- Identification and, where necessary, enhancement of a suitable receptor site for use by reptiles;
- Installation of reptile exclusion fencing around the site;
- A programme of capture and removal of slow worm from within the site and translocation to the receptor site between March and September for a minimum of 30 days;
- Site clearance under an ecological watching brief; and
- Management of the receptor site to ensure the population remains viable.

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| | | | | | |
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| Client | Barratt Homes South Wales | | Drawing Ref | ABAW105/18445/1 | |
| Figure Number | 1 | | Scale at A4 | 1:50,000 | |
| Figure Title | Site Location | | Drawn | KM | Checked |
| | | | | | NS |
| | | Date | 05/05/2015 | Date | 05/05/2015 |

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Legend

Reptile Survey Results

Number of slow worm per visit

- 1
- 3

- Reptile Refugia
- Site Boundary

Site Grid Reference: 298,712 168,532

Contains Ordnance Survey data.
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Drawing Ref
ABAW105/18446/1

Scale at A3
1:1,050

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| Drawn KM | Checked NS |
| Date 05/05/2015 | Date 05/05/2015 |

Client
Barratt Homes South Wales

Figure Number
2

Figure Title
Reptile Refugia
Locations and Survey Results

2. Introduction

2.1 Development Background

2.1.1 Barratt Homes South Wales is proposing a residential development on a site in Boverton, located adjacent to the B4265 in the Vale of Glamorgan. The original proposal involved the development of a 1.85 ha area of land comprising two fields, however this has now been expanded to include an additional adjacent field within the development. In addition to the construction of residential units, the development will incorporate tree planting and the creation of public open spaces. The development will be accessed from the adjoining B4265 along the south-western perimeter of the development site. These proposals are hereafter referred to as 'the development'.

2.1.2 The development will be located on 2.41 ha of farmland (grid reference SS987685), between the B4265 Llantwit Major bypass and the Vale of Glamorgan railway line on the eastern edge of Boverton, see Figure 1. The area affected by the development is hereafter referred to as 'the site'.

2.1.3 Planning permission was sought for the original proposal in 2014 (planning application reference: 2014/ 009951/FUL), however following comments from the county ecologist, a reptile survey was commissioned at the site for 2015.

2.1.4 Planning permission for the revised development proposal is being sought by Barratt Homes South Wales. The site lies within an area identified in the Vale of Glamorgan Deposit Local Development Plan 2011 - 2026 for proposed housing to which Proposal MG2 applies. Policy MG2 - Housing allocations state that '*in order to meet housing requirements identified in policy SP3 land allocated for residential development at the following locations*' where the site is identified as '*MG2 (22) Land adjacent to Llantwit Major bypass*'.

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 reptiles were recorded within 1 km of the site during the desk study; the site was found to mainly comprise poor semi-improved grassland; however this was unsuitable for reptiles due to the short length of the vegetation. As the site was subsequently found to have become suitable for reptiles, a reptile survey 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 the additional field to be included within the development (Thomson Ecology Report Ref: ABAW105/009/003/002, issued May 2015). Habitat suitable to support reptiles was identified on site in the form of semi-improved grassland and field margins at the base of hedgerows and dense scrub.

2.2.3 A summary of the biology, conservation status and legal protection of reptiles is given in Appendix 1.

2.3 The Brief and Objectives

2.3.1 Barratt Homes South Wales commissioned Thomson Ecology on 23rd March 2015 to undertake a reptile presence/ absence survey within the site. The brief was to include:

- A site visit to distribute artificial refugia in suitable habitat at a density of approximately 50/ha, in Phase 1 and Phase 2 of the site adjacent to the B4265 Llantwit Major Bypass, Boverton, grid references SS986685 and SS988684;
- Seven survey visits to check the artificial refugia for the presence of reptiles during suitable conditions, retrieving the refugia on the seventh visit;
- A single report to include an introduction, methodology, results of the survey, a discussion of any legal or planning policy issues regarding reptiles in relation to the development and our recommendations as to how these may be overcome; and
- Appropriate digitised mapping.

2.4 Limitations

2.4.1 All surveys were carried out in optimal conditions and at an optimal time of year.

2.5 Surveyors

2.5.1 Surveys were undertaken by Andrew Bone BSc (Hons) MSc and Janine Burnham BSc (Hons) MRes.

3. Methodology

3.1 General Approach

3.1.1 The survey area encompassed 2.41 ha of farmland, with survey effort evenly distributed across the site, see Figure 2. Two survey methods were used to determine the presence or likely absence of reptiles. These were a visual search for basking reptiles and the checking of artificial refugia deployed specifically to attract reptiles.

3.1.2 For each reptile species found to be present, a size class estimate was made, based on Herpetofauna Groups of Britain and Ireland (HGBI 1998) guidelines.

3.1.3 Survey visits were undertaken during the active season for reptiles (generally mid-March to early October) when weather conditions were most suitable for reptile surveys. This excludes periods of heavy rain, strong wind and temperatures below 9°C and above 20°C (Gent & Gibson, 2003).

3.2 Presence / Absence Survey

Visual Search

3.2.1 On seven occasions the survey area was walked around slowly looking for basking reptiles. Any reptiles seen were approached cautiously so as not to disturb them and to allow species identification. Where necessary, binoculars were used to aid identification. The number, species, life stage and location of any reptiles seen were recorded on a map of the survey area using a mobile mapper. Any evidence of reptiles such as sloughed skins was also recorded.

Refugia Search

3.2.2 On 31st March 2015, a total of 120 artificial refugia were placed in suitable locations throughout the survey area distributed at approximately 10 metre intervals, giving an approximate density of 50 artificial refugia per hectare.

3.2.3 The artificial refugia were comprised of 0.5 m x 0.5 m cuts of roofing felt. The refugia were positioned so that they were in contact with the ground, in areas of suitable habitat and exposed to sunlight. The location of artificial refugia was mapped using a hand-held gps enabled mobile mapping device.

3.2.4 The artificial refugia were then left in place for one week before the survey commenced. Subsequently, on seven occasions, a minimum of two days apart, all of the refugia were cautiously checked for reptiles, both on top and underneath. If any reptiles were found, the refugia location, species, life stage and numbers of reptiles were recorded. Any evidence of reptiles such as sloughed skins was also recorded.

3.2.5 On days forecast to be hot and sunny, the survey was conducted during the morning or late afternoon, when the temperature beneath the refugia was not too high. On days forecast to be cooler or cloudy, the survey was conducted in mid- to late morning or early to mid- afternoon. The air temperature in the shade was recorded on each survey visit.

3.2.6 The artificial refugia were collected up and removed from the site after the end of the survey.

3.3 Dates of Survey

3.3.1 The table below shows the time of visit, the date, air temperature, temperature under refugia and general weather conditions for each of the seven visits.

Table 1: Details of reptile surveys

| Visit No. | Date | Time (start/finish) | Air Temperature (°C) | Temperature under Refugia (°C) | Conditions |
|---------------------------|------------|---------------------|----------------------|--------------------------------|---|
| Refugia deployment | 31/03/2015 | - | - | - | - |
| 1 | 07/04/2015 | 14.00 - 16.00 | 16 | 20 | Dry, sunny, no wind, 0% cloud cover |
| 2 | 10/04/2015 | 12.45 - 14.00 | 13 | 17 | Dry, cloudy/overcast, light wind, 90% cloud cover |
| 3 | 13/04/2015 | 13.45 - 15.30 | 16 | 22 | Dry, sunny, light wind, 10% cloud cover |
| 4 | 16/04/2015 | 12.00 - 14.00 | 15 | 19 | Dry, sunny, light wind, 10% cloud cover |
| 5 | 20/04/2015 | 11.00 - 15.00 | 15 | 21 | Dry, sunny, light wind, 10% cloud cover |
| 6 | 23/04/2015 | 11.30 - 12.45 | 16 | 20 | Dry, sunny, no wind, 10% cloud cover |
| 7 | 27/04/2015 | 12.45 - 14.10 | 11 | 17 | Dry, sunny, light wind, 10% cloud cover |

4. Results

4.1 Visual Search

4.1.1 No reptile species were observed during the visual search.

4.2 Refugia Search

4.2.1 Slow worm (*Anguis fragilis*) was the only reptile species recorded at the site. Slow worm was recorded on all but the first survey visit. Figure 2 shows the location of reptile records.

4.2.2 The peak count of adult slow worm (maximum number recorded on any single visit) was four, recorded on the fifth and sixth survey visits.

4.2.3 Herpetofauna Groups of Britain and Ireland (HGBI 1998) guidelines determine a low population of slow worm to be less than 50 per hectare. The peak counts recorded give an approximate population density of 1.7 per hectare and consequently the population size class is estimated as low.

4.2.4 The complete results for each survey visit are provided in Table 2 below.

Table 2: Reptile survey results showing number of slow worms observed (peak counts given in bold).

| Visit No. | Date | Male | Female | Unknown Sex | Total Adults | Juveniles |
|-----------|------------|------|--------|-------------|--------------|-----------|
| 1 | 07/04/2015 | 0 | 0 | 0 | 0 | 0 |
| 2 | 10/04/2015 | 1 | 1 | 0 | 2 | 0 |
| 3 | 13/04/2015 | 1 | 0 | 0 | 1 | 0 |
| 4 | 16/04/2015 | 1 | 0 | 1 | 2 | 0 |
| 5 | 20/04/2015 | 1 | 3 | 0 | 4 | 0 |
| 6 | 23/04/2015 | 2 | 2 | 0 | 4 | 0 |
| 7 | 27/04/2015 | 2 | 0 | 0 | 2 | 0 |

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 reptile survey.
- 5.1.2** As set out in Appendix 1, slow worm is protected by the Wildlife and Countryside Act 1981, as amended. This makes it an offence to intentionally kill or injure a slow worm.
- 5.1.3** Slow worm is also listed as a Species of Principle Importance in Wales under Section 42 of the Natural Environment and Rural Communities NERC Act 2006. It is government policy that local authorities should consider the conservation status of this species when determining the success of a planning application.
- 5.1.4** Planning Policy Wales (PPW) 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'*.
- 5.1.5** Without appropriate mitigation, the development could contravene wildlife legislation and policy with respect to slow worm. This is because the clearance of the site could result in the killing or injury of this species. However, using established techniques it should be possible to:
- Avoid killing or injuring slow worm during the development process; and
 - Adequately mitigate any adverse impact on slow worms at this site, by maintaining and enhancing the population size of this species.
- 5.1.6** To comply with legislation and planning policy, the avoidance, mitigation and compensation measures outlined in Section 6 should be adopted as part of the development proposal.

6. Recommendations

6.1.1 It is recommended that a reptile mitigation strategy should be prepared which should be agreed with the Local Planning Authority. The mitigation strategy should include a working method statement covering the approach that will be taken to safeguard reptiles during the development process. The mitigation programme would be expected to include:

- Identification of a suitable receptor site for use by reptiles (to be identified on site if possible);
- Enhancement of the receptor site if necessary;
- Installation of reptile proof fencing around the areas found to support slow worm;
- A programme of capture and removal of reptiles from within the areas and translocation to the receptor site between March and September for a minimum of 30 days, only ceasing when no reptiles have been captured for a minimum of five consecutive days;
- Site clearance under ecological watching brief; and
- A programme of management and monitoring to ensure that the reptile population remains viable within the receptor site.

7. Conclusion

7.1.1 The reptile survey recorded an estimated low population of slow worm on the site with peak counts of four slow worms.

7.1.2 Slow worm is legally protected under the Wildlife and Countryside Act 1981, as amended, and without appropriate mitigation the development could result in causing an offence through killing or injuring slow worm. The preparation and implementation of a reptile mitigation strategy is recommended to ensure that reptiles are safeguarded throughout the development process.

8. References

- 8.1.1 Gent and Gibson (2003). Herpetofuana Workers Manual. JNCC, Peterborough.
- 8.1.2 HGBI (1998). Evaluating local mitigation/ translocation programmes: Maintaining best practice and lawful standards. Froglife.
- 8.1.3 Thomson Ecology (2014). Desk Study and Extended Phase 1 Habitat Survey. Boverton, Vale of Glamorgan. Report Reference: ABAW105/002/002. Issued August 2014.
- 8.1.4 Thomson Ecology (2015). Desk Study and Extended Phase 1 Habitat Survey. Boverton, Vale of Glamorgan. Report Reference: ABAW105/009/003/002. Issued May 2015.

9. Appendix 1: British Reptiles

9.1 Introduction

9.1.1 A summary of the biology of British reptiles, the legislation that protects them and other mechanisms of highlighting species of conservation concern is provided below.

9.2 Biology

9.2.1 Five British reptile species can be found in Wales. These are the adder (*Vipera berus*), grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*), sand lizard (*Lacerta agilis*) and slow worm (*Anguis fragilis*). The other British species, the smooth snake (*Coronella austriaca*), is restricted to parts of southern England only. In addition, occasional sightings of non-native alien species may occur, arising from escapes or illegal releases. A summary of each of the native species is given below, based on information provided in Arnold (1995), Beebee and Griffiths (2000) and Gent and Gibson (1998).

Adder

9.2.2 Adders emerge from hibernation from March onwards and bask in open areas, particularly in spring. The mean temperature of a basking adder is about 33°C. Mating occurs every year throughout April and May and the young are born in late August to September. Hibernation commences in October. Adders have a distinctive zigzag pattern running down the length of their spine. Males are generally white or pale grey with a black zigzag whilst females are a pale brown colour, with a darker brown zigzag. They are a venomous species with small mammals making up the majority of their diet.

9.2.3 The adder has a widespread but patchy distribution in Britain and is more abundant in the south than the north. Nevertheless, species records exist for northern Scotland. They require undisturbed, open sunny areas in proximity to thick cover south-facing slopes with a mosaic of bare ground, bracken, tall heath and rocky outcrops may be ideal, although heathland, moorland, coarse grassland and scrub may also suffice.

Grass snake

9.2.4 The grass snake is the largest snake in Britain and is easily identifiable by its green/olive body, dark streaks on the flanks and a distinct yellow and black collar behind the head. They emerge from hibernation in March and, during spring in particular, bask in open areas in order to raise their body temperature. Active grass snakes maintain temperatures of between 26 and 30°C. Eggs are laid in June and July with the young hatching in September. Their main food items are amphibians and fish, which they hunt in both terrestrial and aquatic environments.

9.2.5 Grass snakes are widespread in Wales, but appear to be commonest near the west coast and are rather rare in the central region. The grass snake is essentially an aquatic species, occurring mainly where there are healthy populations of amphibians. Open areas with direct sunshine in proximity to dense cover are also important, as are suitable egg laying sites, such as compost or manure heaps.

Common lizard

- 9.2.6** The common lizard is the smaller of the two British lizards with the typical legged body form. Common lizards typically emerge from hibernation from March onwards, but earlier emergence can occur during exceptionally warm and sunny conditions. Common lizards bask in open sunny areas and try to achieve an optimum operating temperature of around 30°C. The young are born from mid-July to mid-September and hibernation commences in October. The main food items of this species are invertebrates.
- 9.2.7** Common lizards have a widespread distribution across Wales and the rest of Britain. They prefer undisturbed ground, with dense but short vegetation and patches of bare ground or promontories that are fully exposed to the sun. South facing slopes are often favoured. They are found in a variety of open habitats including roadside verges, railway embankments, woodland clearings, rough grassland, scrub, heathland and coastal sand dunes.

Sand lizard

- 9.2.8** The sand lizard is the other British lizard with the typical legged body form. The sand lizard is generally more bulky with a blunt snout, and the males have vivid green flanks in the spring. Sand lizards emerge from hibernation from February onwards. They bask in open, sunny areas in spring but spend little time basking in the height of summer. They try to achieve a body temperature of between 27.5 and 32.5°C. Eggs are laid from the beginning of June to the end of August and hatch between 7 and 12 weeks later. Hibernation commences in early October. The main food items of this species are invertebrates.
- 9.2.9** The sand lizard has very specialised habitat requirements and only occurs naturally on lowland sandy heathland and on coastal dunes densely vegetated with marram grass (*Ammophila arenaria*). The sand lizard was once common on coastal sites along the north Wales coast, but became extinct in Wales during the 1960s due to habitat loss and sea defence development. It has been re-introduced to a site in North Wales, where a breeding population have successfully established themselves. Further suitable sites are being sought.

Slow worm

- 9.2.10** The slow worm is a legless lizard that superficially resembles a snake. Slow worms emerge from hibernation from March onwards. When active, slow worms rarely bask in open areas and instead try to maintain a body temperature between 14.5 and 28°C mainly by contact with warm surfaces. The young are born from mid-August to mid-September and hibernation commences in October. The main food items of this species are invertebrates.
- 9.2.11** Slow worms have a widespread but rather patchy distribution across Wales. They require fairly thick vegetation interspersed with sunny areas for thermoregulation and underground or covered refuges. They are found in a wide variety of habitats including rough grassland, heathland, moorland, downland, hedgerows, scrub and woodland edge. Good populations can sometimes be found on railway embankments, motorway verges and allotments.

9.3 Site Designation

9.3.1 The most important sites for reptiles in the UK receive statutory protection under the following legislation:

- Wildlife and Countryside Act 1981, as amended;
- The Countryside and Rights of Way Act 2000 (which amends the Wildlife and Countryside Act); and
- Natural Environment and Rural Communities Act 2006 (which amends the Wildlife and Countryside Act).

9.3.2 Sites designated under the Wildlife and Countryside Act 1981 (WCA) are known as Sites of Special Scientific Interest (SSSIs). SSSIs received further protection under the Countryside and Rights of Way Act 2000 (CRoW) and the Natural Environment and Rural Communities Act 2006 (NERC).

9.3.3 Some SSSIs are designated for the populations of reptiles that they support. The criteria for selecting SSSIs on the basis of their reptile populations are provided in Guidelines for the Selection of Biological SSSIs (NCC, 1989):

- Sand Lizard - all important and established populations in Dorset and all established populations elsewhere;
- Other reptiles - best locality in a given area with outstanding assemblages of at least 3 species of the 4 other reptile species.

9.3.4 Sites that qualify as SSSIs are considered to be of at least national importance for the reptiles they support.

9.3.5 Sites designated for nature conservation at the county level may also include reptile 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.

Planning Policy

9.3.6 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 reptiles, 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.

9.3.7 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.

9.4 Species Protection

Legislation

9.4.1 Both within and outside designated sites, individual smooth snakes and sand lizards are fully protected by the Conservation of Habitats and Species (Amendment) Regulations 2012 (which replaces the Conservation (Habitats &c) Regulations 1994). The Regulations make it an offence, with very few exceptions, to:

- Deliberately capture, injure or kill a smooth snake or sand lizard;
- Deliberately disturb a smooth snake or sand lizard 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 sand lizard;
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead smooth snake or sand lizard, or any part of, or anything derived from a smooth snake or sand lizard.

9.4.2 In addition to the protection given to sand lizard under the Conservation of Habitats and Species (Amendment) Regulations 2012 already described, sand lizard are 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.

9.4.3 If proposed work could cause killing, injury or disturbance to this species or damage to its habitat, appropriate mitigation which seeks to avoid these impacts should be devised and implemented under licence from Natural Resources Wales.

9.4.4 Grass snake, common lizard, slow worm and adder also receive some protection under the WCA, though are protected from intentional killing, injuring and selling only. If proposed work could result in the killing and/or injury of grass snake, common lizard, slow worm or adder, appropriate mitigation should be devised and implemented with agreement from the local planning authority or Natural Resources Wales. However, mitigation for these species is not subject to licensing by Natural Resources Wales.

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

9.5.1 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.

9.5.2 All British reptiles have been adopted as 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.

9.6 **References**

- 9.6.1** Arnold, H.R (1995). Atlas of amphibian and reptiles in Britain. HMSO. London.
- 9.6.2** Beebee, T.J.C and Griffiths, R.A (2000). Amphibians and Reptiles. Harper Collins Publishers. London
- 9.6.3** Countryside Council for Wales (2005). Reptiles in Wales. Species Series.
- 9.6.4** Gent, A.H and Gibson, S.D eds (1998). Herpetofauna Workers Manual. Joint Nature Conservation Committee, Peterborough.
- 9.6.5** 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>.
- 9.6.6** NCC (1989). Guidelines for Selection of Biological SSSIs. Nature Conservancy Council, Peterborough.

Appendix EDP 4 Illustrative Photographs (November 2016)



Photo EDP 1: View to south east of field F1 comprising poor semi-improved grassland.



Photo EDP 2: View across field F1 of south western boundary comprising highways planting adjacent to Llantwith Major Bypass.



Photo EDP 3: View of north eastern boundary of F1 illustrating woodland habitat adjacent to railway line and existing built structure.



Photo EDP 4: Existing public footpath into the Application site from Eglwys Brewis Road at north eastern end.



Photo EDP 5: One of three potential reptile refugia present across field F1.



Photo EDP 6: Built structure located adjacent to north-eastern boundary of Application Site.



Photo EDP 7: View to south east of field F2 comprising poor semi-improved grassland.



Photo EDP 8: North eastern boundary vegetation comprising woodland aligning railway line.

**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)

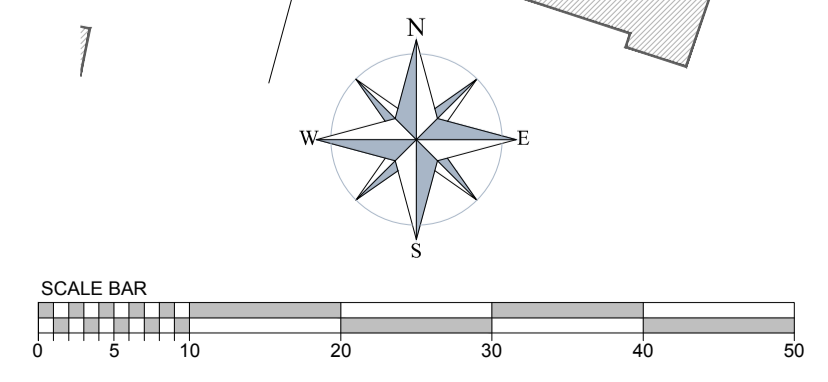
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|--|-----------------------|-----------------|
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| JOB TITLE Land North of B4265, Boverton | | |
| DRAWING TITLE Existing & Proposed Planting Calculations | | |
| SCALE @ A2 1:500 | DATE Dec 15 | DRAWN BY: RW |
| JOB NO. 1363 | DRAWING NO. VEG-01 | REVISION 3 |

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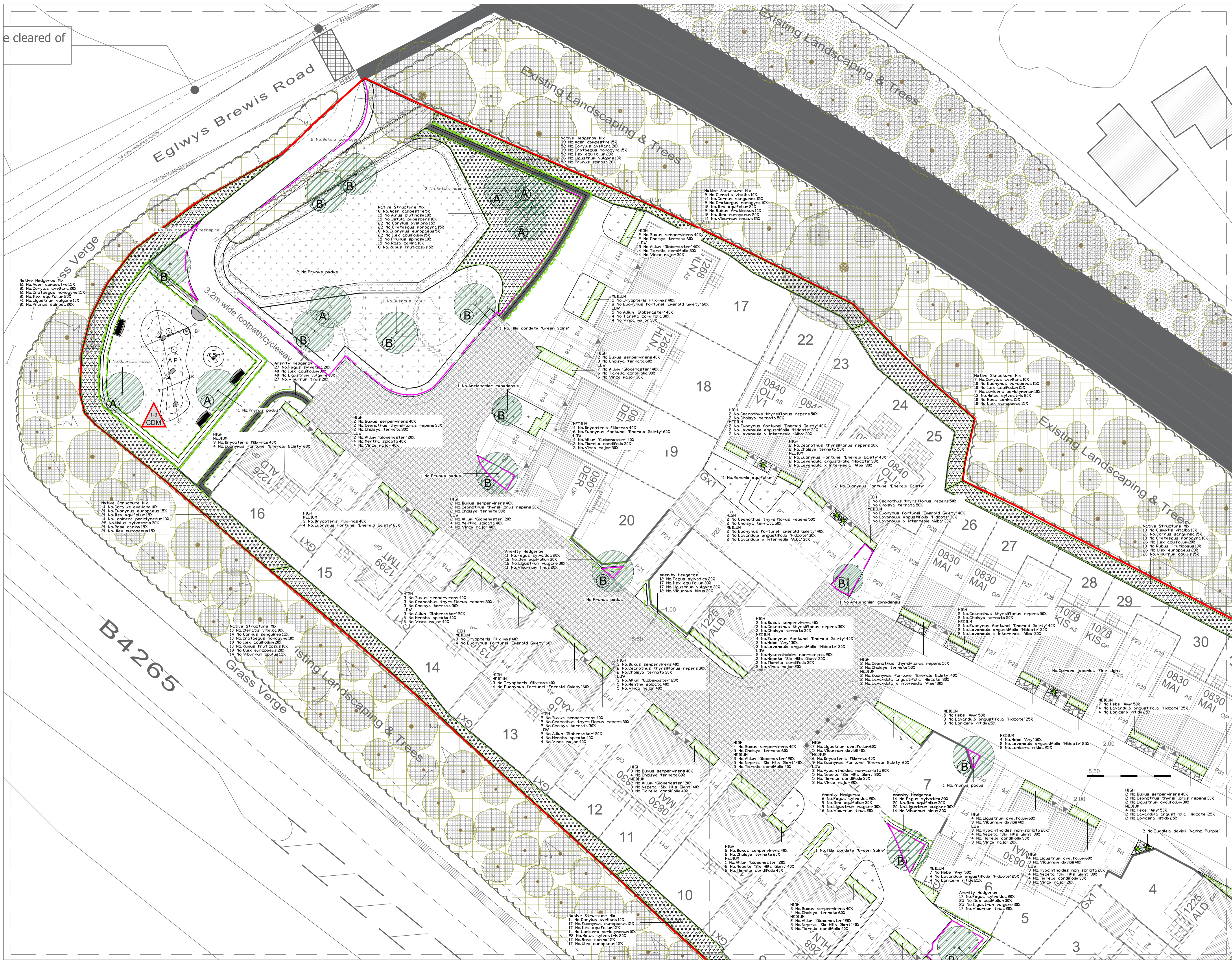
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 Figured dimensions must be taken in preference to scaled dimensions and any discrepancies are to be referred to Hammond Architectural Ltd. Contractors, subcontractors and suppliers must verify all dimensions on site before commencing any work or making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



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

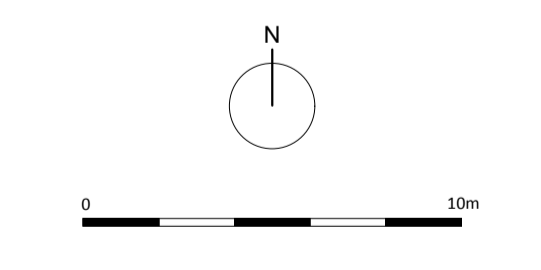
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cleared of



- 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



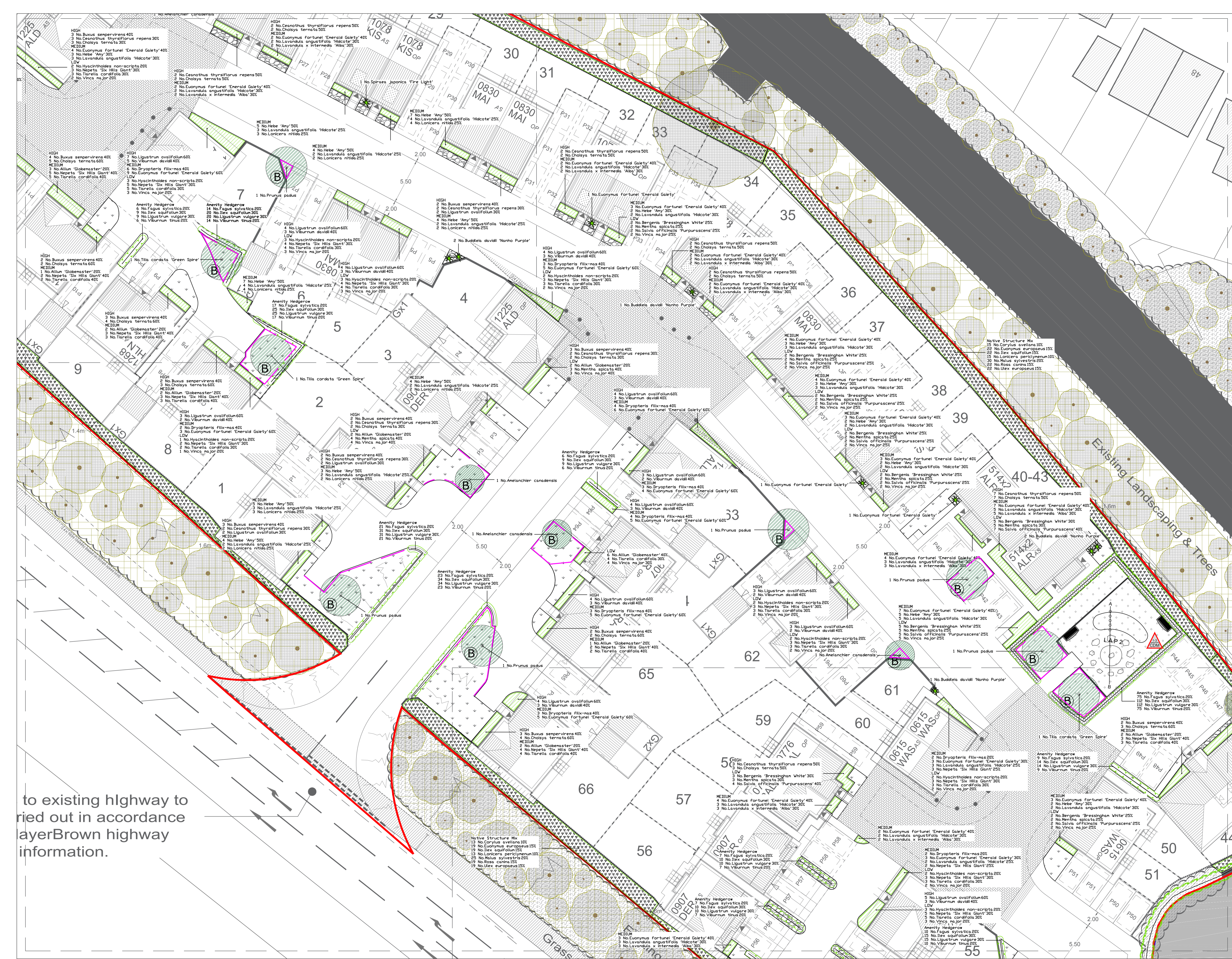
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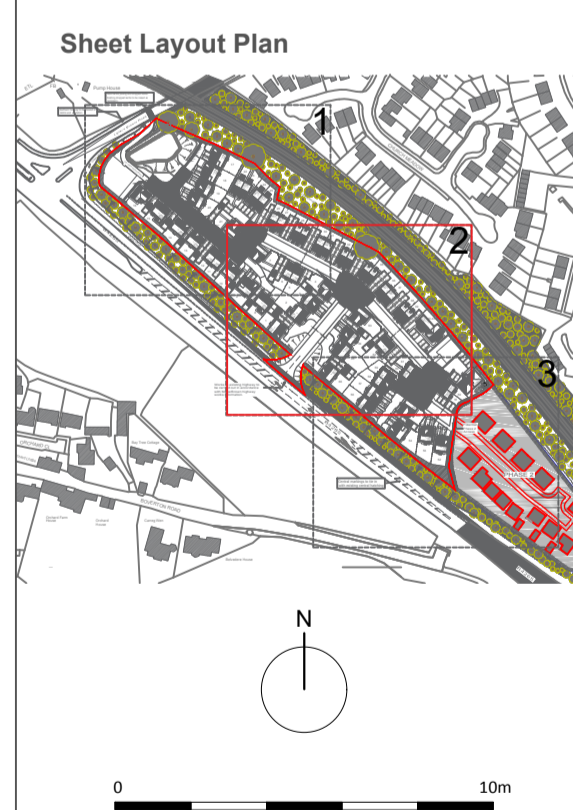
project title
Liantwit Major Bypass, Boverton

drawing title
Detailed Soft Landscape Plan 1 of 5

date 22 DECEMBER 2016 drawn by DB
 drawing number EDP37501 checked KH
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- Site Boundary
- Retained Trees
- Proposed Trees
- Tree Pit Specification Type
Refer to edp3202_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 Stone Chippings
- Root Barrier System



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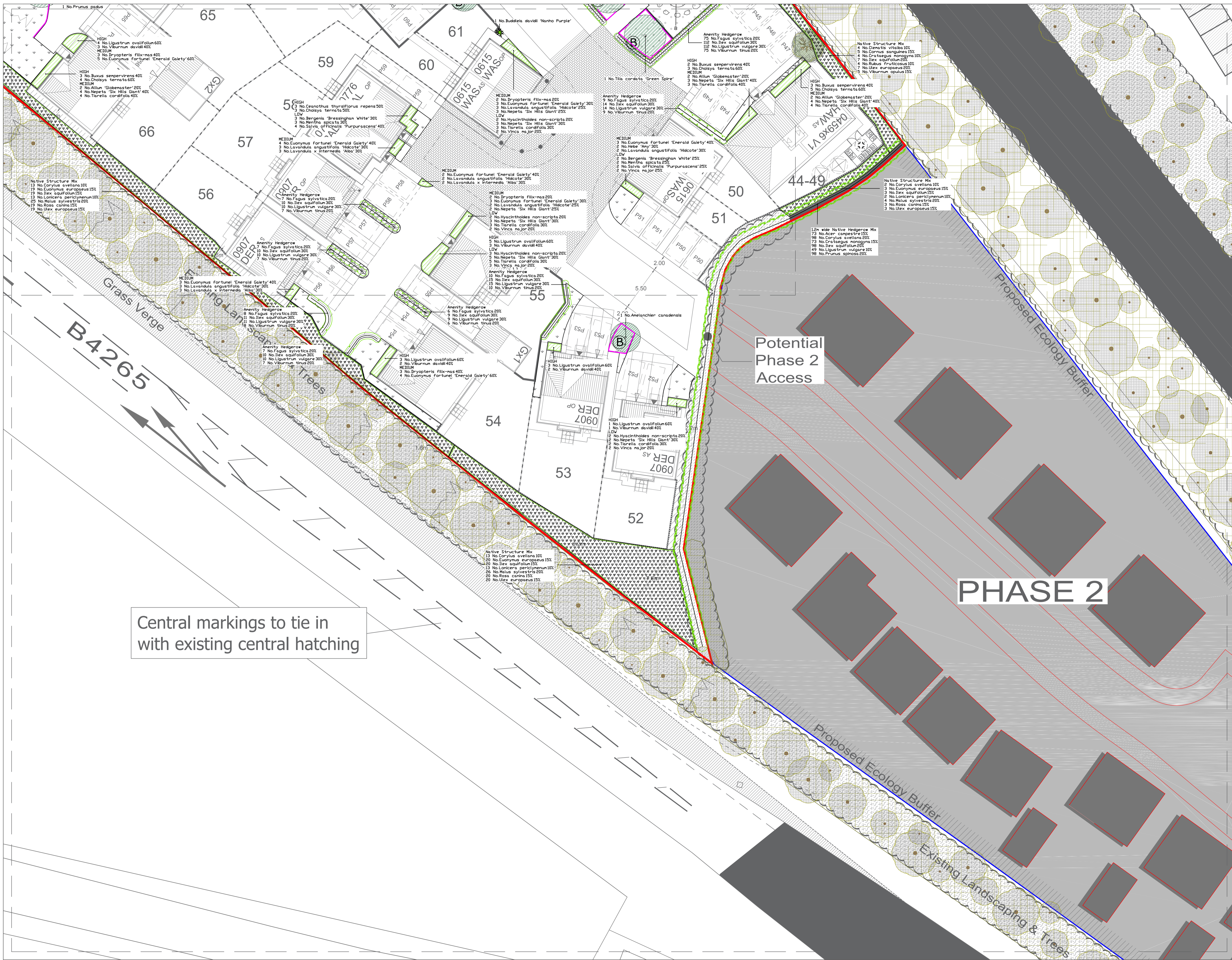
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project title
Llantwit Major Bypass, Boverton

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



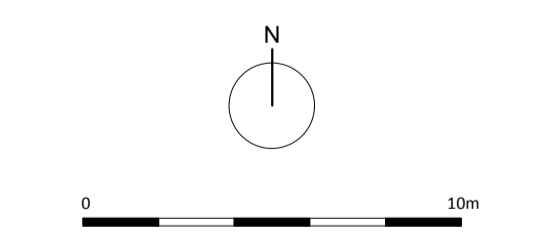
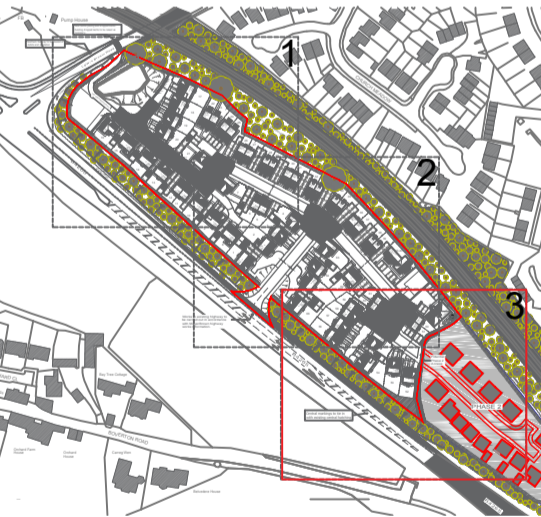
Central markings to tie in with existing central hatching

Potential Phase 2 Access

PHASE 2

- 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

Sheet Layout Plan



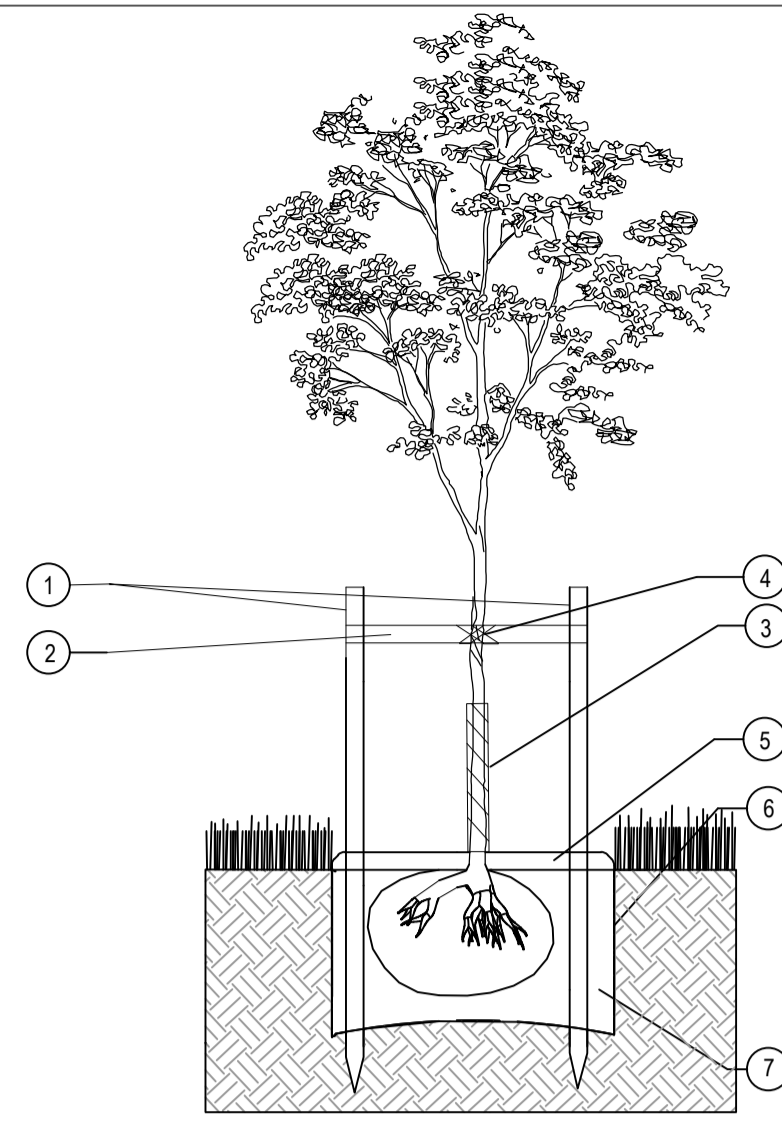
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client
Barratt Homes

project title
Llantwit Major Bypass, Boverton

drawing title
Detailed Soft Landscape Plan 3 of 5

date 22 DECEMBER 2016 drawn by DB
drawing number EQD07503 checked KH
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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 and 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.

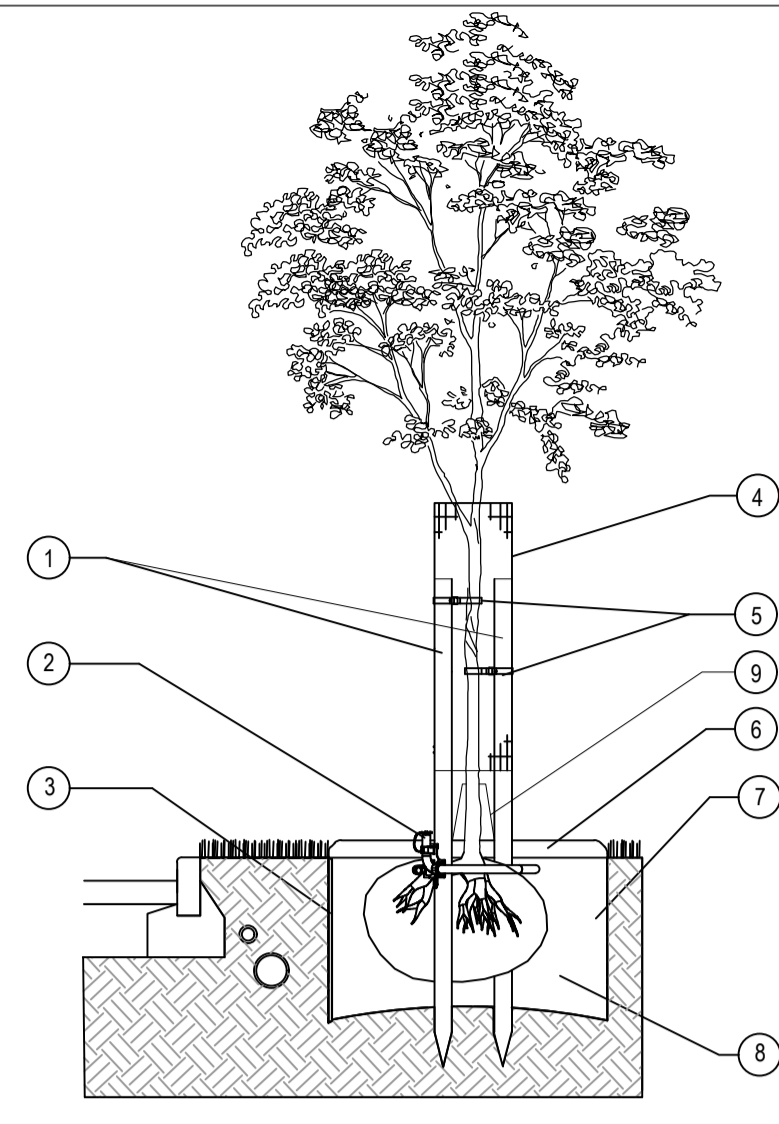
A formal assessment of young tree health and development should be carried out annually by a qualified arborist who will be able to advise on solutions should any problems be picked up. During this assessment any stakes and ties should be checked to ensure they are providing support but not damaging 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.

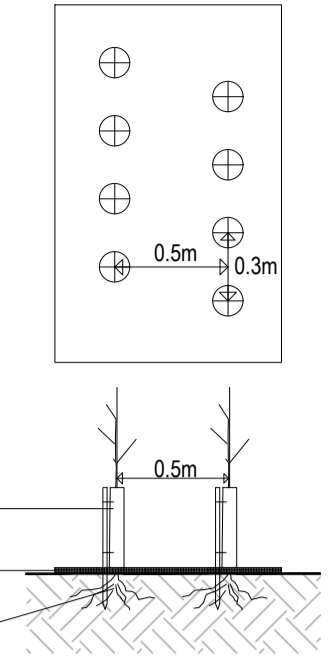
Ongoing Maintenance and Management

- 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 Fbric 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.

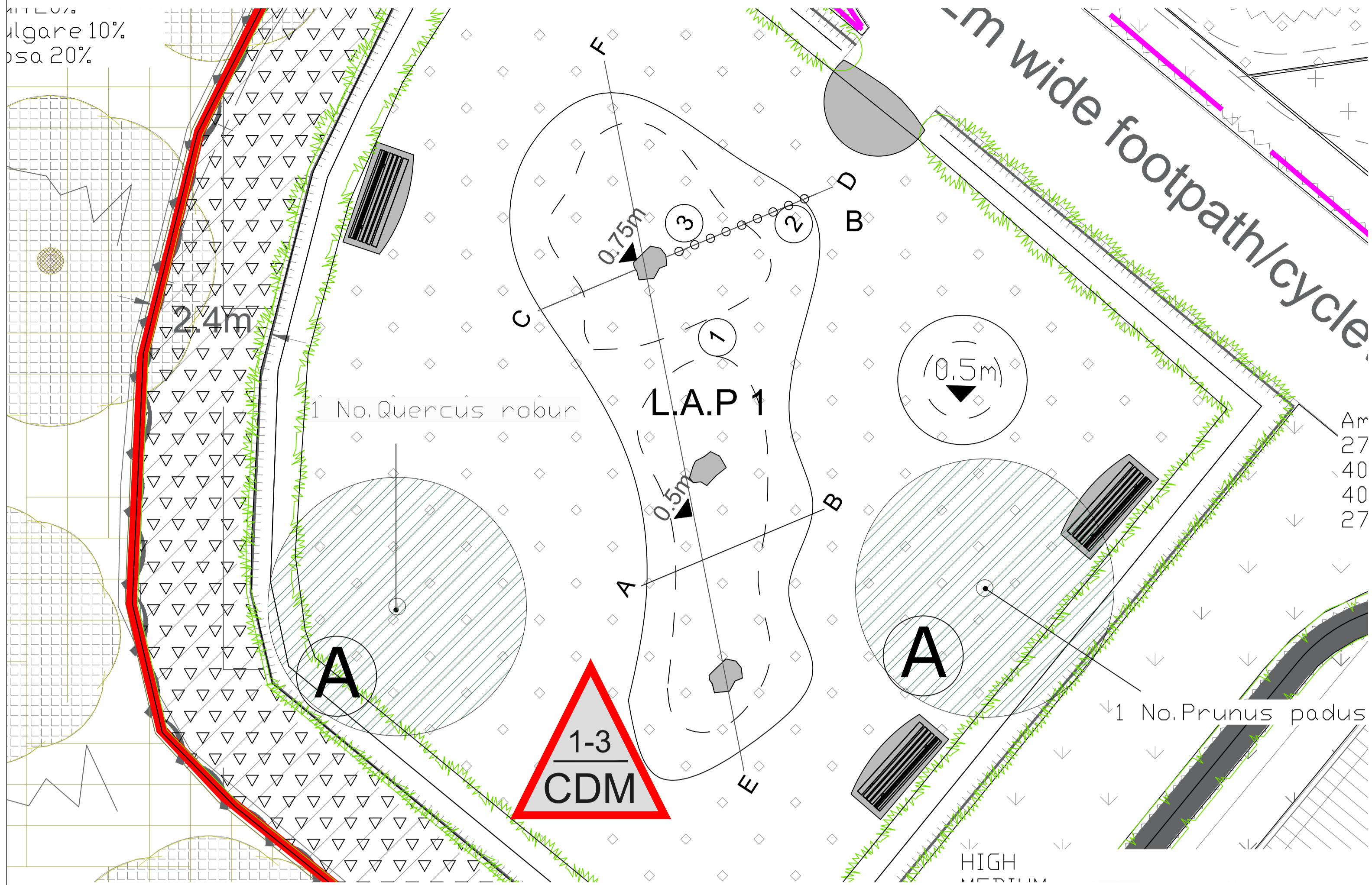
Formative pruning should be carried out in accordance with **BS 3998** as required during the first five years to ensure the desired form is achieved.

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

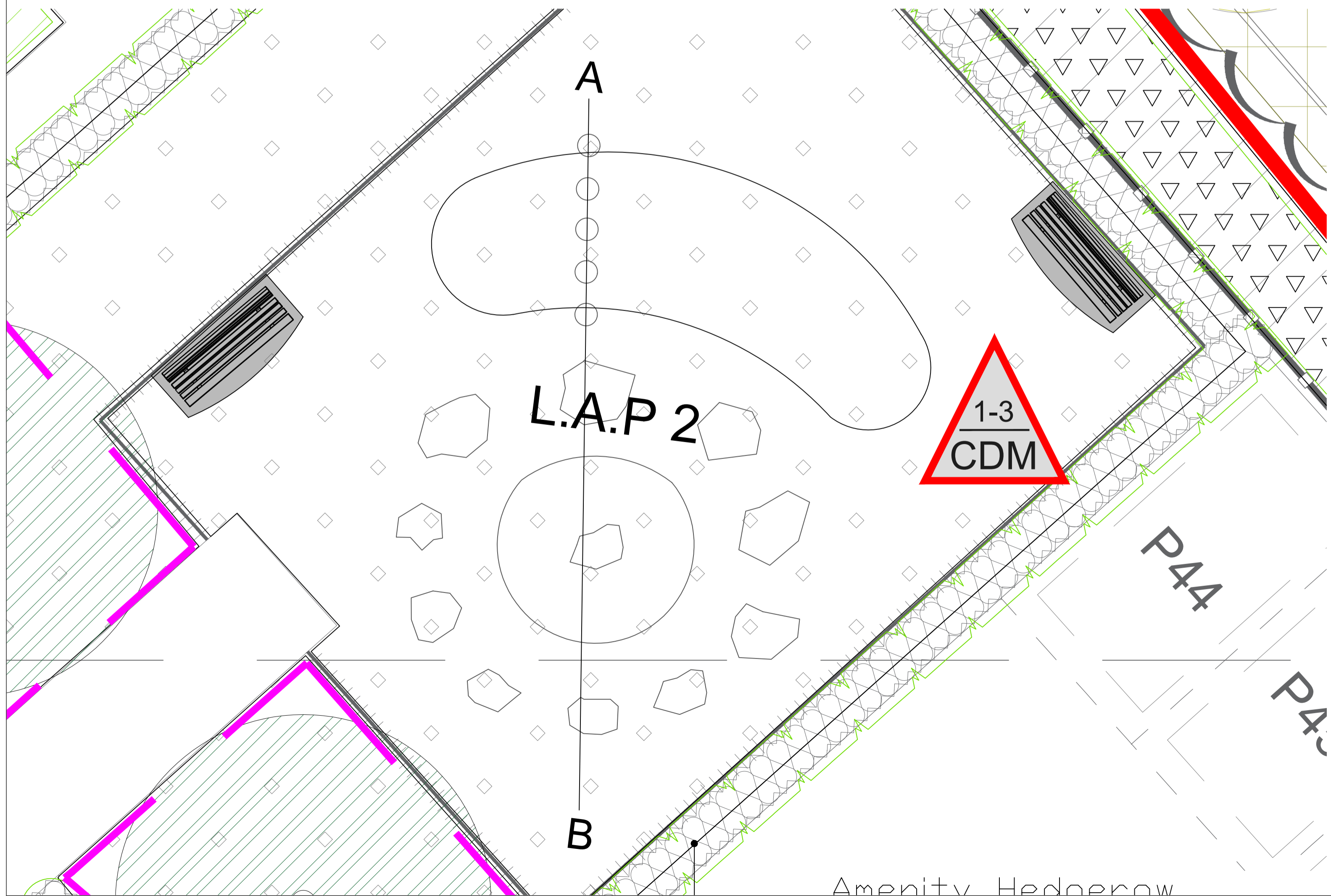
Ongoing Maintenance and Management

- 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



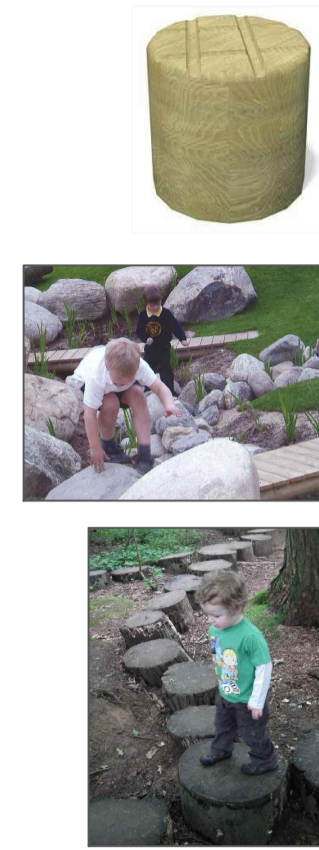
L.A.P Design Details

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.

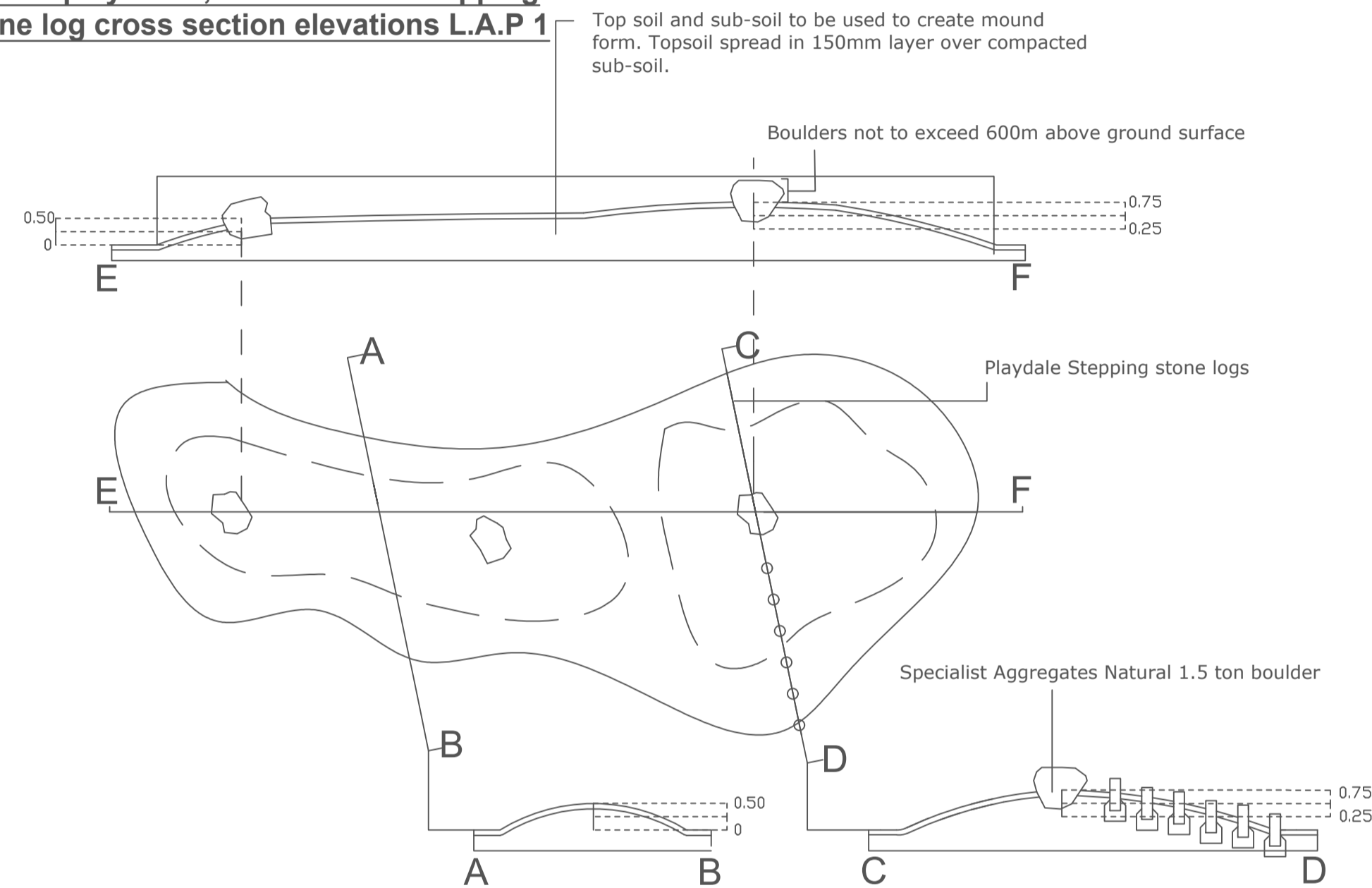


4. Bench with Backrest, Pine or similar approved

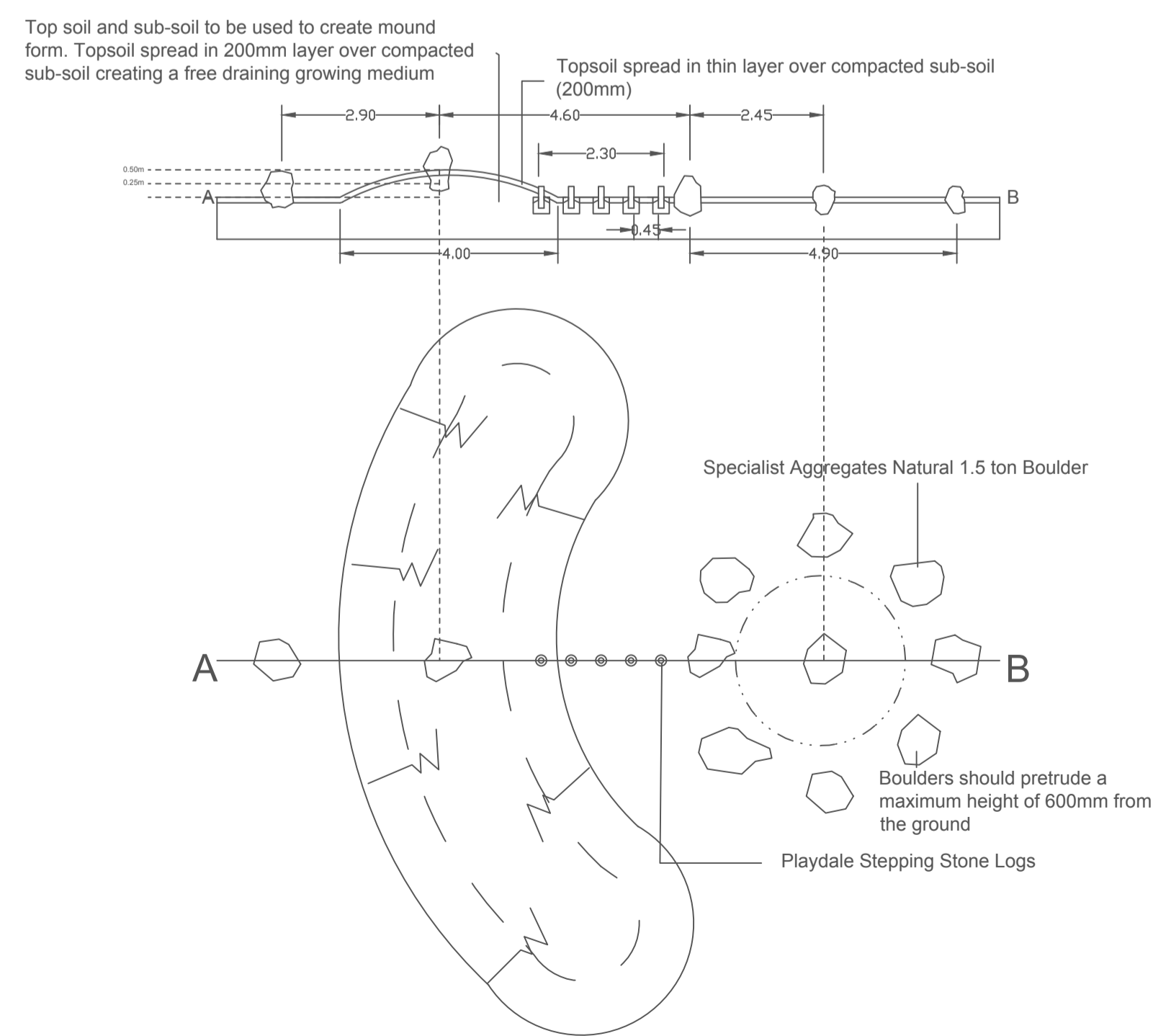
Supplier: Kompan
Dimension: 1800x580mm
Weight: n/a
To be installed and maintained as per manufacturers recommendations



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

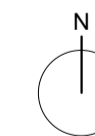


| | |
|--|--|
| | Site Boundary |
| | Retained Trees |
| | Proposed Trees |
| | Tree Pit Specification Type <small>Refer to eqs3206_e6 for specification detail</small> |
| | Native Hedgerow |
| | Ornamental/ Native Hedge |
| | Native Whip Structure Planting |
| | Specimen Shrub |
| | Amenity Plot Planting |
| | 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.



edp
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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 | EDP070205 | checked | KH |
| scale | Not to scale | CJA | 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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