Land at St. Cyres, Dinas Powys

Dormouse Mitigation Strategy

Prepared by:
The Environmental Dimension Partnership Ltd

On Behalf of:
Barratt and David Wilson Homes, South Wales

August 2017
Report Reference
EDP3927_02b

Contents

Appendices

Plans

This version is intended for electronic viewing only

For EDP use	
Report no.	C_EDP3927_02b
Author	Kate Henson
Peer Review	Emily Williams
Formatted	Georgia Lewis
Proofed	Donna Kraven
Date	08 August 2017

Section 1
Introduction, Site Context and Purpose

Introduction

1.1 This Dormouse Mitigation Strategy has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf Barratt and David Wilson Homes, South Wales (hereafter referred to as 'the Client'), in relation to land at St. Cyres, Dinas Powys (hereafter referred to as 'the Application Site').

1.2 The Dormouse Mitigation Strategy has been prepared to inform a detailed planning application submission to Vale of Glamorgan Council (VoGC) for the development of 220 residential dwellings and associated engineering works. The detailed Planning and External Works Layouts are provided at **Appendix EDP 1**.

Site Context

1.3 The Application Site is centred approximately at Ordnance Survey Grid Reference (OSGR) ST 162 707 within the Local Planning Authority of VoGC and encompasses approximately 12 hectares (ha) of predominantly poor semi-improved grassland.

1.4 The eastern half of the Application Site comprise the grounds of a former school (now demolished), with areas of hardstanding remaining alongside former playing fields. The northern and southern boundaries of the former school are delineated by broadleaved plantation woodland, whilst the eastern boundary is defined by Murch Road and a native species-rich hedgerow adjacent to a lane.

1.5 The western half of the Application Site is dominated by a series of poor semi-improved grassland fields sub divided by native treelines, outgrown hedgerows and broadleaved woodland. Of particular note is a relatively large area of semi-natural broadleaved woodland located along its southern boundary which partly extends into the Application Site. This area is designated as Cross Common Site of Importance for Nature Conservation (SINC), of which two sections are included on the Ancient Woodland Inventory (AWI)[1], classed as areas of Ancient Semi Natural Woodland.

1.6 More generally, the Application Site is bound to the immediate north and west by existing residential development comprising part of the settlement of Dinas Powys. The urban area of Penarth lies to the east. Wider open countryside comprising a network of fields, hedgerows and woodland is otherwise present south of the Application Site.

[1] The Ancient Woodland Inventory defines Ancient Semi Natural Woodland to consist of broadleaf woodlands comprising mainly native tree and shrub species which are believed to have been in existence for over 400 years. https://naturalresources.wales/guidance-and-advice/environmental-topics/woodland-management/woodlands-and-the-environment/ancient-woodland-inventory/?lang=en

Purpose

1.7 An Ecological Appraisal of the Application Site was undertaken by RPS during 2015 to inform a future detailed planning application for its residential development (**Appendix 2**). The appraisal included the completion of a Desk Study, Extended Phase 1 survey and further detailed surveys for protected and notable species over the course of 2015, with surveys for dormouse (*Muscardinus avellanarius*), confirming the presence of this species onsite.

1.8 The hazel dormouse is listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV(a) to the Habitats Directive), affording it protection under the Conservation of Habitats and Species Regulations (2010).

1.9 In the absence of appropriate compensation and mitigation measures, the development proposals are considered likely to result in the destruction of, and disturbance to, dormouse habitat both on and immediately adjacent to the Application Site. Additionally, the potential for disturbance, injury and killing of individuals could also arise during the pre-construction and construction phases. Should the development proposals be consented, given the risk of causing an offence under the Conservation Regulations a Development licence from Natural Resources Wales (NRW), will therefore be necessary prior to any commencement of works.

1.10 This Dormouse Mitigation Strategy, therefore, sets out the recommended sensitive working methodologies to be implemented during the pre-construction and construction phases of the residential development proposed. The methodologies devised are based upon the findings of the dormouse survey completed by RPS during 2015, as detailed within their Ecological Appraisal Report (**Appendix EDP 2**). This strategy also sets out the recommended compensation, mitigation and enhancement measures to be implemented as part of the proposals, to ensure no significant negative effects will arise upon the favourable conservation status of the local dormouse population following occupation. As such, it is considered that this strategy could form the basis of the Method Statement template comprising any future Development Licence application submission to NRW going forward.

Section 2
Survey Findings

Desk Study

2.1 No records of dormice were returned within 2km of the Application Site by the South East Wales Biodiversity Records Centre (SEWBReC) during the desk study undertaken by RPS in 2015 as part of the Preliminary Ecological Appraisal of the Application Site (**Appendix EDP 2**).

Habitats

Habitat Assessment

2.2 An assessment of all habitats on and immediately adjacent to the Application Site for dormouse was undertaken by RPS in 2015 as part of an Extended Phase 1 Habitat Survey (**Appendix EDP 2**). An update survey was also completed on 19 April 2017 by a suitably qualified EDP ecologist to determine any material change to those habitats to be impacted with regards to their potential to support dormice. Consideration was given to the following features: habitat type; size; species richness; structure and management; habitat connectivity; and availability of natural nesting and hibernation sites.

2.3 The update assessment, as detailed within the Ecological Appraisal Report prepared by EDP in August 2017 submitted alongside this strategy (report reference **C_EDP3927_01b**), confirmed no significant changes to such habitats with respect to dormouse. The eastern half of the Application Site, comprising the former school grounds, associated hardstanding and two large, open grassland fields is generally considered sub-optimal for dormouse, with opportunities limited to the relatively narrow belts of plantation woodland bounding the northern and southern peripheries. The western half of the Application Site, however, supports numerous fingers of mature, broadleaved woodland, treelines and outgrown hedgerows, with good connectivity across the Application Site itself and to the wider landscape, and specifically to Cross Common SINC and associated areas of Ancient Semi Natural Woodland.

2.4 **Plan EDP 1** illustrates those habitat features onsite and immediately adjacent which are considered suitable for dormouse, for which descriptions are given below:

- *Broadleaved Semi-Natural Woodland and Associated Hedgerows*: Broadleaved woodland, treelines and native hedgerow habitat are widespread across the western half of the Application Site, forming mature, outgrown boundaries of six grassland fields in addition to comprising the north western, western and southern boundaries of this western half. Internal field boundaries typically comprise understorey species including hawthorn (*Crataegus monogynea*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*), spindle (*Euonymus europaeus*), hazel (*Corylus avellana*), English oak (*Quercus robur*), dogwood (*Cornus sanguinea*), silver birch (*Betula*

pendula) and willow (*Salix sp.*). With respect to the peripheral boundaries, the north western boundary supports numerous English oak standards. The southern boundary comprises woodland associated with Cross Common SINC, supporting a canopy comprising English oak and ash, with understorey species including, hazel, spindle, holly (*Ilex aquifolium*), blackthorn, willow and dogwood;

- *Broadleaved Plantation Woodland*: The northern and southern boundaries of the eastern half of the Application Site comprise broadleaved plantation woodland. Plantation woodland forming the northern boundary supports predominantly semi-mature stands of English oak, poplar (*Populus sp.*), ash, silver birch, and wild cherry (*Prunus avium*). Field maple (*Acer campestre*), hazel, sycamore (*Acer pseudoplatanus*) and blackthorn are also present. The southern boundary is similarly defined by a broad band of plantation woodland comprising a mix of English oak, ash, hawthorn, field maple, wild cherry and silver birch;

- *Eastern Boundary Hedgerows:* Hedgerow H1 and H2 associated with the eastern boundary of the Application Site comprises outgrown, native, species-rich hedgerow supporting English oak, ash, field maple, hazel, dogwood, hawthorn, blackthorn and elm (*Ulmus sp.*). Bramble is also present throughout these hedgerows; and

- *Cross Common SINC*: This SINC aligns the southern boundary of the western half of the Application Site as previously described above and comprises mature woodland dominated primarily by ash but with oak also present. Field maple, dogwood and wild privet (*Ligustrum vulgare*) comprise the understorey, with outgrown hazel stools noted as abundant throughout this SINC.

Dormouse Survey

Methodology

2.5 A dormouse survey was undertaken by RPS over the course of 2015, as detailed within their dormouse survey report included at **Appendix EDP 2**.

2.6 To summarise, a total of 85 dormouse nest tubes were deployed onsite during late April 2015. Tubes were left *in situ* and checked by licensed surveyors for evidence of use by dormice on three separate occasions over the course of 2015 during suitable weather conditions, on 28 May, 23 July, and 23 September. An additional 'ad hoc' check of nest tubes during 16 June 2015 was also undertaken.

Results

2.7 The nest tube surveys of suitable dormouse habitat undertaken in 2015 confirmed the presence of only limited dormouse activity onsite. A single, fresh nest comprising green hawthorn leaves, presumed to be a dormouse nest, was recorded within tube 26 situated towards the centre of the central north-south woodland finger (immediately south of hedgerow H4), during the ad hoc visit on 16 June. The 'nest' showed no evidence of

continued use during subsequent visits however, and had significantly deteriorated by the September check. No further evidence of dormouse was recorded.

2.8 An update walkover of the area completed by EDP on 19 April 2017, confirmed no material changes to those habitats to be impacted with regards to their potential to support dormouse. As such, the findings from the 2015 survey are considered to remain a valid baseline upon which appropriate mitigation measures can be based.

Assessment of Survey Findings

2.9 Of the 85 survey tubes deployed onsite, only 1 tube (tube 26) recorded evidence of dormouse during the 2015 surveys. No further evidence of dormice was recorded for the site over the remainder of the survey period. Given the findings of the survey, it is considered that only a low population of dormice is present within the locality; likely existing at only very low densities, a typical characteristic of this species.

2.10 Habitats onsite confirmed to support dormice are contiguous with the remainder of boundary vegetation present on and immediately adjacent to the Application Site. Given the connectivity of such habitats onsite and with similar habitat extending across the wider landscape to the south and south west, all hedgerows, treelines and woodland areas present on and immediately adjacent to the Application Site, together with associated areas of scrub, are assumed to be used by the local dormouse population.

This page has been left blank intentionally

Section 3
Legislative Context

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

EU Habitats Directive

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

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

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

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

3.4 Article 16(1) of the Habitats Directive states that provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, Member States may derogate from the provisions of Article 12:

- *"In the interest of protecting wild fauna and flora and conserving natural habitats;*
- *To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;*
- *In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment;*
- *For the purpose of research and education, of repopulating and re-introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants; and*

- *To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species listed in Annex IV in limited numbers specified by the competent national authorities*".

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

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

The Conservation of Habitats and Species Regulations 2010

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

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

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

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

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

- *"Impair their ability-*
    - *to survive, to breed or reproduce, or to rear or nurture their young, or*

- *in the case of animals of a hibernating or migratory species, to hibernate or migrate; or*

- *To affect significantly the local distribution or abundance of the species to which they belong"*.

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

Additional Protection

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

This page has been left blank intentionally

Section 4
Impact Assessment in Absence of Mitigation or Compensation

Impacts

4.1 The development proposals will result in the permanent loss of approximately 10,263m^2 of dormouse habitat (equating to circa 23.7% of total dormouse habitat present onsite), as illustrated at **Plan EDP 2** and described briefly as follows:

- Full loss of hedgerow H2 extending circa 45m into the proposed development footprint from the eastern boundary of the Application Site (Area A, totalling circa 640m^2);
- Erosion of a broad finger of plantation woodland extending circa 80m northwards into the proposed development footprint from the southern boundary of the Application Site (Area B, totalling circa 2,212m^2);
- Erosion of the southern edge of plantation woodland habitat located along the north eastern boundaries of the Application Site (Area C, totalling circa 1,201m^2);
- Loss of the westernmost finger of plantation woodland extending circa 100m southwards into the proposed development footprint from the northern boundary of the Application Site (Area D, totalling circa 2,468m^2); and
- Erosion of three further belts of broadleaved vegetation across the western half of the Application Site extending south eastwards into the proposed development footprint from its north western and western boundaries (including Area E totalling circa 913m^2, Area F totalling 1,572m^2, and Area G totalling 1,237m^2).

4.2 The extent of habitat losses proposed across the Application Site are calculated based upon a topographical survey and tree survey undertaken for the Application Site and is illustrated at **Plan EDP 2**.

4.3 Habitat losses proposed across the Application Site have the potential to kill, injure and/or disturb dormice that may be present therein. Habitat losses relate primarily to the erosion of existing habitat features across the Application Site rather than the outright loss of habitats per se. Habitat losses will also result in the fragmentation of dormouse habitat onsite. However, such impacts are considered to be relatively reduced given that retained habitats remain connected across the Application Site as well as to significant areas of suitable dormouse habitat present across the wider landscape.

4.4 The Application Site will also be subject to increased levels of lighting, vehicular movement, noise disturbance and unsympathetic habitat management by residents as a result of converting a greenfield site to residential use, with 220 residential dwellings proposed.

4.5 Additionally, potential increases in predation levels could also arise as a result of the introduction of domestic cats following occupation.

4.6 In the absence of mitigation or compensation, and considering the small size of the dormouse population located within the local landscape and confirmed utilising the site for foraging and dispersal purposes, such impacts upon the dormouse population present onsite are considered to be significant low negative at the site and local level, but negligible at the regional and national levels.

Section 5
Mitigation and Compensation

Works to be Undertaken

5.1 Vegetation clearance will commence following receipt of the consented application and approval of a Development Licence from NRW, anticipated during 2018. Dormouse habitat requiring clearance to facilitate development is illustrated at **Plan EDP 2**.

Site Briefing

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

Pre-commencement Site Check

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

Protective Fencing

5.4 With respect to all mature trees, shrubs and hedgerows to be retained, protective fencing accommodating root protection areas will be securely installed at least two weeks prior to the commencement of the pre-construction/enabling works phase occurring adjacent, and adequately maintained along all identified boundaries. Such fencing is the responsibility of the Developer.

5.5 Additionally, all areas of vegetation to be cleared will be identified and agreed in advance by the suitably qualified ecologist and Principal Contractor appointed by the Developer, and appropriately marked out onsite prior to the commencement of site works.

Installation of Dormouse Boxes

5.6 A minimum of 50 dormouse nest boxes[2] will be installed approximately 20m apart upon suitable woodland, hedgerows, trees and shrubs, located primarily along the north western, western and southern boundaries prior to/during April 2018 to further enhance the site for dormice.

5.7 Dormouse boxes will be installed by a licensed dormouse ecologist, in accordance with those requirements set out within any forthcoming Development Licence approved by NRW. Their installation, maintenance and repair throughout the pre-construction/enabling works phase remain the responsibility of the Developer.

Temporary Lighting

5.8 Temporary lighting across the site, if required, will be kept to the lowest permissible level through the use of a sensitive lighting design. This will include:

- The reduction in height of lighting columns employed across the site to allow for low-level lighting or, where more appropriate, the use of tall columns designed to allow light to be directed downwards more acutely so as to reduce horizontal spill;
- The use of light spill accessories such as hoods, shields and filters to allow for lighting to be directed to the intended area only, such that light spillage is avoided elsewhere;
- The use of timed and/or sensor lighting across the site; and
- The programming of timed lighting to ensure adequate dark periods between dusk and dawn across the site, particularly along the eastern and northern boundaries.

5.9 Such sensitive lighting strategies aim to maintain existing habitat corridors across the site utilised by notable and protected species for commuting, foraging and dispersal during the pre-construction/enabling works phase on site.

Sensitive Vegetation Clearance

5.10 Habitats to be lost to the development footprint are illustrated at **Plan EDP 2** and include:

- Full loss of hedgerow H2 extending circa 45m into the proposed development footprint from the eastern boundary of the Application Site (Area A totalling circa 640m^2);

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

- Erosion of a broad finger of plantation woodland extending circa 80m northwards into the proposed development footprint from the southern boundary of the Application Site (Area B, totalling circa 2,212m^2);

- Erosion of the southern edge of plantation woodland habitat located along the north eastern boundaries of the Application Site (Area C, totalling circa 1,201m^2);

- Loss of the westernmost finger of plantation woodland extending circa 100m southwards into the proposed development footprint from the northern boundary of the Application Site (Area D, totalling circa 2,486m^2); and

- Erosion of three further belts of broadleaved vegetation across the western half of the Application Site extending south eastwards into the proposed development footprint from its north western and western boundaries (including Area E totalling circa 913m^2, Area F, totalling 1,572m^2, and Area G totalling 1,237m^2).

5.11 The above clearance works comprise licensable actions and as such will be delivered under a Development Licence to be issued by NRW following planning approval, including the discharge of relevant conditions and execution of the agreed S106. As such, the timings of such clearance works will necessarily be dependent upon planning and licensing timeframes. Both single stage (summer) and two stage (winter) clearance methodologies, along with their associated clearance windows, are therefore proposed, as described further below.

Phase 1: Single Stage Clearance: To be completed between 1 September – 15 October 2018

5.12 Single stage, summer clearance methodologies[3], aimed at displacing active individuals away from the area to be cleared and towards retained vegetation adjacent, are considered appropriate in relation to the initial phase of clearance of a small proportion of sub-optimal dormouse habitat located across the eastern part of the Application Site, to enable pre-construction and construction activities to commence. Those areas considered appropriate for clearance utilising summer clearance methodologies are as follows:

- Area A, comprising a short section of native broadleaved hedgerow (H2) extending westwards into the development footprint from the eastern boundary, measuring circa 45m in length and totalling circa 640m^2 in area. Supports blackthorn, ash, elm, hawthorn and English oak (trees T15-T20 and tree group G3, as referenced within the Tree Survey Report provided at **Appendix EDP 3**);

- Area B, comprising a broad finger of plantation woodland extending circa 80m northwards from the southern boundary and totalling circa 2,212m^2 in area. Supports field maple, willow, ash, and English oak (trees T1-T9, T45 & T46, tree group G2 and small area of woodland W1, **Appendix EDP 3**; and

[3] Bright, P., Morris, P. & Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook, 2nd Edition*. English Nature, Peterborough.

- Area C, comprising the southern edge of the easternmost section of plantation woodland aligning the northern boundary, totalling circa 1,201m^2 in area. Supports wild cherry, ash, field maple, sycamore, silver maple, blackthorn, willow, silver birch and corsican pine (*Pinus nigra* 'Mauritima') (trees T30-32, T37 and tree groups G6, G7, G8 and G10, **Appendix EDP 3**).

5.13 Additionally, a number of individual tree standards scattered between these areas will also be removed during this period, including: T45 (silver birch); T46 (wild cherry); T47-T51 (silver birch), T52 & T53 (wild cherry); T54 (weeping willow); T55 (English oak); T56-T58 (ash); T59 & T60 (silver maple); and T134 (English oak) (**Appendix EDP 3**).

5.14 Single stage summer clearance works will involve the completion of both above-ground and below-ground vegetation clearance during the dormouse active season, with above-ground vegetation clearance confined to the period 1 September and 15 October 2018, thereby avoiding the main dormouse breeding season (considered to be between mid June and August inclusive), and hibernation period (considered to be between November and March inclusive). Such timings will also avoid the main breeding bird season (considered to be between March to August inclusive).

5.15 Clearance works will be overseen by the suitability qualified ecologist (or their accredited agents and assistants) named on the Development Licence.

5.16 A tool-box talk will be given to the vegetation clearance contractors by the ecologist prior to commencement, with respect to the legal protection afforded to dormice and breeding birds, the working methodologies to be employed, identification of individuals and their nests, and procedures to be followed should any evidence of dormice, breeding birds or active nests be encountered during the works. Any other ecological considerations/potential constraints will also be identified.

5.17 The removal of all mature trees considered to have bat potential will be subject to a prior update inspection by a licensed bat ecologist, as detailed within the Ecological Appraisal Report prepared by EDP (report reference **C_EDP3927_01b**).

5.18 A thorough pre-commencement check for dormice, their nests and active bird nests will be undertaken by the ecologist immediately prior to the clearance of woodland, hedgerow, shrub and scrub sections.

5.19 Should any active bird nest or bird nest under construction be found, then a buffer zone of at least a 5m radius (or wider dependent upon species found, to be advised by the ecologist), will be created around the nest and maintained until all eggs have hatched and chicks fledged, before works can recommence within this area.

5.20 Should an active dormouse be encountered during the clearance works, then the individual will be given adequate time to disperse of its own accord and away from the area subject to the clearance works and towards retained habitat adjacent, before re-commencing with the clearance works.

5.21 Should a torpid dormouse without dependant young be found during the works, they will be relocated by hand to a suitable, secure and protected area of retained habitat adjacent and/or to the nearest available dormouse box (maximum distance 150m).

5.22 In the unlikely event that a dormouse breeding nest containing young is encountered, clearance will cease within a 10m radius of the nest until all young have dispersed of their own accord, before works can recommence in this area. Habitat connectivity between the breeding site and area of suitable retained habitat adjacent will also be maintained throughout this period with no clearance works continuing here; where necessary, brash piles will be created between the nest and retained habitat adjacent to facilitate future foraging and dispersal.

5.23 Thereafter above-ground vegetation will be removed as follows:

- Vegetation will be removed using hand-held tools/machinery only and in a direction towards retained habitat to aid dispersal of wildlife potentially remaining, with the ecologist working closely alongside the contractor, declaring specified habitat sections as being clear following completion of a thorough search prior to clearance of those specified areas commencing; and

- All woody vegetation including trees, shrubs and scrub to be removed will be cut down to heights of between 30cm and 50cm above ground level and in a direction towards retained vegetation.

5.24 Following above-ground clearance, brash will remain in situ for 24 hours to aid dispersal of wildlife during this time, before being taken off site or with waste chipped and stored away from vegetated areas.

5.25 Vehicles will avoid tracking across areas subject to clearance, and will instead be confined to the hedgerow edges and field interiors utilising long-reach machinery where required.

5.26 Below-ground clearance will commence immediately following completion of above-ground clearance, as follows:

- Prior to below-ground clearance, a thorough pre-commencement check for dormice, their nests and active bird nests will be undertaken by the ecologist across all areas of above-ground vegetation remaining;

- Dormice will be active during this time and will have dispersed on their own accord; however, should any individuals be encountered during the works then such individuals will be persuaded to move away from the working area and towards retained vegetation and dormouse boxes;

- Should a torpid dormouse without dependant young be found during the works, they will be relocated by hand to a suitable, secure and protected area of retained habitat adjacent and/or to the nearest available dormouse box (maximum distance 150m);

- In the unlikely event that a dormouse breeding nest with dependent young is encountered, clearance will cease within a 10m radius of the nest until all young have dispersed of their own accord before works can recommence in this area. Habitat connectivity to retained habitat will be maintained throughout this period; where necessary, brash piles will be created between the nest and retained habitat adjacent to facilitate future foraging and dispersal;

- In the unlikely event that an occupied, dormouse winter nest is discovered, clearance will cease within a 10m radius of the nest and will recommence no earlier than 1 May 2019. Habitat connectivity between the hibernation site and area of suitable retained habitat adjacent will also be maintained with no clearance works continuing here; where necessary, brash piles will be created between the nest and retained habitat adjacent, to facilitate future foraging and dispersal;

- Thereafter, all below-ground material including tree stumps, root balls, buried rubble, spoil etc. will be lifted out using a tracked excavator and undertaken in a sensitive manner to ensure no significant disturbance to soil and adjacent, retained planting; and

- Any such excavations that occur within the root protection zone of retained vegetation will be undertaken by hand and backfilled as soon as possible.

5.27 Additionally, during the below-ground clearance, suitable specimens tolerant of a coppice regime considered suitable for transplanting along the north western or southern boundaries, will be excavated in a sensitive manner to ensure the integrity of the root ball(s) is maintained. Suitable specimens identified for transplanting will be appropriately stored and cared for prior to planting in accordance with the specifications set by the appointed landscape contractor.

5.28 Following completion of the above and below ground vegetation clearance works, the site area will be released to the Developer to enable the commencement of the construction works.

Phase 2: Two Stage Clearance: 1st stage from 1 November 2018 – 30 March 2019; 2nd stage from 1 May 2019

5.29 All remaining areas of dormouse habitat located across the western half of the Application Site requiring removal will be undertaken using winter clearance methodologies[4]. The first stage of clearance will involve above-ground vegetation clearance undertaken between 1 November 2018 and 30 March 2019 inclusive, i.e. outside of the dormouse active season and main bird breeding season. The second stage of clearance will involve below-ground clearance commencing no earlier than 1 May 2019 (i.e. following dormouse full emergence from hibernation).

[4] Bright, P., Morris, P. & Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook, 2nd Edition*. English Nature, Peterborough.

5.30 Areas to be cleared utilising winter clearance methodologies relate to the further erosion of plantation woodland aligning the northern boundary at its western end, in addition to the removal of three linear sections of broadleaved vegetation forming the field boundaries across the western half of the Application Site, as follows:

- Area D comprising the westernmost finger of plantation woodland extending circa 100m southwards into the proposed development footprint from the northern boundary of the Application Site, totalling circa 2,486m^2 in area. Supports field maple, English oak, ash, silver birch, hazel, poplar, alder (*Alnus sp.*), willow, blackthorn, hawthorn and spindle (tree groups G13-15, G17, G39 and G41, as referenced within the Tree Survey Report provided at **Appendix EDP 3**);

- Area E comprising an area of blackthorn, hawthorn, ash, spindle in addition to mature oak trees, ash totalling 913m^2, extending into the proposed development footprint from the north western boundary of the Application Site (comprising trees T158-T163 and tree groups G40 and G42, **Appendix EDP 3**);

- Area F comprising an area of hazel, field maple, English oak, blackthorn, hawthorn, spindle and ash, totalling 1,572m^2, located centrally across the western half of the Application Site (comprising tree groups G36-G38, **Appendix EDP 3**); and

- Area G comprising an area of hawthorn, field maple, hazel, blackthorn, spindle and English oak totalling circa 1,237m^2, extending eastwards into the proposed development footprint from the western boundary of the Application site (comprising tree T93 and tree groups G32 and G31, **Appendix EDP 3**).

5.31 Additionally, should unforeseen delays arise during the initial, Phase 1 (summer) clearance, any vegetated areas remaining which require clearance will be completed during this second phase of clearance utilising two stage, winter clearance methodologies.

5.32 Clearance works will be overseen by the suitability qualified ecologist (or their accredited agents and assistants) named on the Development Licence.

5.33 A tool-box talk will be given to the vegetation clearance contractors by the ecologist prior to commencement, with respect to the legal protection afforded to dormice and breeding birds, the working methodologies to be employed, identification of individuals and their nests, and procedures to be followed should any evidence of dormice, breeding birds or active nests be encountered during the works. Any other ecological considerations/potential constraints will also be identified.

5.34 Trees and shrubs considered suitable for future translocation will be identified and marked up prior to commencement of clearance works.

5.35 The removal of all mature trees considered to have bat potential will be subject to a prior update inspection by a licensed bat ecologist, as detailed within the Ecological Appraisal Report prepared by EDP (report reference **C_EDP3927_01**).

5.36 A thorough pre-commencement check for dormice, their nests and active bird nests will be undertaken by the ecologist immediately prior to the clearance of woodland, hedgerow, shrub and scrub sections.

5.37 Should any active bird nest or bird nest under construction be found, then a buffer zone of at least 5m radius (or greater dependent upon species found, to be advised by the ecologist), will be created around the nest and maintained until all eggs have hatched and chicks fledged, before works can recommence within this area.

5.38 Should a torpid dormouse without dependant young be found during the works, they will be relocated by hand to a suitable, secure and protected area of retained habitat adjacent and/or to the nearest available dormouse box (maximum distance 150m).

5.39 Should an occupied, dormouse winter nest be discovered, clearance will cease within a 10m radius of the nest and will recommence no earlier than 1 May 2019. Habitat connectivity between the hibernation site and area of suitable retained habitat adjacent will also be maintained with no clearance works continuing here; where necessary, brash piles will be created between the nest and retained habitat adjacent to facilitate future foraging and dispersal.

5.40 In the unlikely event that an active dormouse be encountered during the clearance works, then the individual will be given adequate time to disperse of its own accord and away from the area subject to the clearance works, and towards retained habitat adjacent, before re-commencing with the clearance works.

5.41 Thereafter above-ground vegetation will be removed as follows:

- Vegetation will be removed using hand-held tools/machinery only, undertaken in a slow and steady manner with no limits on quantities or extents to be removed, and in a direction towards retained habitat to aid dispersal of wildlife potentially remaining; and

- All woody vegetation including trees, shrubs and scrub to be removed will be cut down to heights of between 30cm and 50cm above ground level and in a direction towards retained vegetation.

5.42 During the clearance, brash will remain in situ for 24 hours to aid dispersal for wildlife during this time, before being re-used where appropriate/required to provide temporary dead-hedges to maintain habitat connectivity within the clearance area, and/or taken off site or chipped onsite and stored away from vegetated areas.

5.43 Vehicles will avoid tracking across areas subject to clearance, and will instead be confined to the hedgerow edges and field interiors utilising long-reach machinery where required.

5.44 Second stage, below-ground clearance, to be completed from 01 May 2019, will involve the lifting out of tree stumps, root balls, buried rubble, spoil etc. using a tracked excavator and undertaken in a sensitive manner to ensure no significant disturbance to soil and

adjacent, retained planting. Clearance works will be supervised by the suitably qualified ecologist (or their accredited agents) named on the Development Licence, and will follow those methodologies previously described in relation to summer clearance.

5.45 With respect to the translocation of suitable specimens identified, such material will be excavated to a depth appropriate to root depth during the below-ground clearance works. Identified specimens will be gently lifted to ensure the root ball is fully intact and transferred to the receptor trench for replanting at similar heights as previous. Specimens will be backfilled with topsoil ensuring no roots are left exposed, with area firmed and sufficiently watered in.

5.46 Following completion of the below-ground clearance, the Development Site footprint will be released to the developer to enable construction to commence.

Dormouse Habitat to be Retained, Enhanced and Created

5.47 Given the confirmed presence of dormice onsite, the proposed scheme has been designed to retain, protect and enhance key dormouse habitat, in addition to creating new dormouse habitat within the scheme as far as possible. This has been achieved through the following design measures:

- Retention and protection of existing dormouse habitat on and immediately adjacent to the Application site, as follows:
    - The retention of existing woodland, hedgerow, tree and shrub habitats present along the northern, eastern, southern and western boundaries of the Application Site (totalling circa 33,071m^2), to minimise impacts of habitat fragmentation whilst maintaining existing habitat connectivity across the peripheries of the Application Site to the wider landscape;
    - The sensitive design of the layout to sufficiently offset the development footprint away from its vegetated peripheries through:
        - locating single-sided roadways and access drives to separate retained and newly created habitats from curtilage boundaries as far as possible; and/or
        - displacing curtilage boundaries from adjacent areas of dormouse habitat to be retained and/or created through the provision of 2m wide maintenance access strips.
    - The inclusion of 1.8m high, brick screen wall or close-board fence further separating rear gardens from adjacent dormouse habitat.
- The creation of new dormouse habitat onsite to compensate for habitat losses whilst strengthening and maximising habitat connectivity across the Application Site, and to the wider landscape, as follows:

- The provision of new tree, shrub and scrub planting amounting to 10,298 m^2 to compensate for loss of dormouse habitat, with habitat creation focusing on strengthening and broadening areas of existing dormouse habitat forming the peripheries of the Application Site, whilst enhancing connectivity to additional ancient and semi-natural broadleaved woodland located immediately adjacent to the Application Site and across the wider landscape;

- The planting of new native, species-rich hedgerows fronting all areas of newly created dormouse habitat proposed along the north western, western and south western boundaries of the Application Site;

- The inclusion of agricultural fencing along the boundaries of all areas of retained and newly created dormouse habitat to facilitate habitat establishment whilst preventing public access and recreational use of such areas;

- The transplanting of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss to suitable receptor sites, located along the north western and western boundaries of the Application Site, where appropriate to close up existing gaps and speed up establishment of newly created dormouse habitat; and

- The provision of 50 dormouse nest boxes to be installed along the northern, western and southern boundaries of the Application Site to enable future population monitoring.

5.48 Planting will include a diversity of native species of local provenance considered to be favourable to dormouse, chosen to maximise structural and species diversity, fruiting/flowering potential and seasonal availability, and designed to create natural woodland edges, shrubby glades and dense hedgerow habitats, as summarised within **Table EDP 5.1**, with their locations and distribution illustrated at **Appendix EDP 4**.

Table EDP 5.1: Native Species Planting Proposed at St. Cyres.

Tree, Shrub and Scrub Mix Proposed Across the Application Site	
Common Name	**Latin Binomial**
Field maple	*Acer campestre*
Dogwood	*Cornus sanguinea*
Hazel	*Corylus avellana*
Hawthorn	*Crataegus monogyna*
Spindle	*Euonymus europaea*
Holly	*Ilex aquifolium*
Honeysuckle	*Lonicera periclymenum*
Crab Apple	*Malus sylvestrus*
Wayfaring tree	*Viburnum lantana*
Guelder rose	*Viburnum opulus*
Blackthorn	*Prunus spinosa*

Tree, Shrub and Scrub Mix Proposed Across the Application Site	
Dog rose	*Rosa* canina
English oak	*Quercus rober*
Hedgerow Planting Mix	
Dogwood	*Cornus sanguinea*
Hazel	*Corylus avellana*
Hawthorn	*Crataegus monogyna*
Holly	*Ilex aquifolium*
Crab Apple	*Malus sylvestrus*
Blackthorn	*Prunus spinosa*
Dog rose	*Rosa* canina
Wayfaring tree	*Viburnum lantana*

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

5.50 A summary of the extent of habitat loss, retention and creation proposed by the proposed development is illustrated at **Plan EDP 2** and further quantified within **Table EDP 5.2** below:

Table EDP 5.2: Summary of habitats to be lost, retained and created onsite as part of the proposals (all m^2 approximate).

Dormouse Habitats	**Existing (m^2)**	**Of Which Lost (m^2)**	**Of Which New (m^2)**	**Net Gain/ Loss (m^2)**
Broadleaved woodland, treeline and hedgerow habitat	43,334	10,263	10,298	+35
Ratio of replacement planting (Loss: Gain) = 1: 1				

This page has been left blank intentionally

Section 6
Post-Development Site Safeguard

Habitat Management and Maintenance

6.1 Native tree, shrub and hedgerow planting to be implemented across the proposed development, will require ongoing sensitive and appropriate management over the lifetime of the development given the presence of dormice on site.

6.2 Sensitive management will seek to maximise the value of food, dispersal, breeding, and hibernation resources for dormice through:

- The maintenance of canopy and understorey connectivity within woodland areas through appropriate management measures, including sensitive levels of coppicing and thinning to ensure good light levels reach the woodland floor;

- The maintenance of dense and continuous hedgerow habitats through appropriate management measures, including coppicing and laying where appropriate according to species, to encourage the formation of a more dense and continuous hedgerow; and

- Minimising disturbance within newly planted areas through the provision and future maintenance of permanent fencing installed around the peripheries of dormouse habitat to be created and enhanced to facilitate establishment whilst preventing public access.

6.3 Key management and maintenance prescriptions are detailed below.

New Planting Areas

Planting and Establishment

6.4 Native tree, hedgerow and shrub planting, including the translocation of suitable specimens, is proposed along the southern, western north western and eastern boundaries of the Application Site, and will commence as soon as possible during the first appropriate season as determined by the Chartered Landscape Architect/Contractor appointed by the Developer.

6.5 The locations, planting densities and species incorporated into the new planting areas are detailed within the soft landscape scheme included at **Appendix EDP 4**.

6.6 Planting will be undertaken in accordance with those specifications stated therein. Additional measures are further provided below.

6.7 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/Contractor appointed by the Developer.

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

6.9 The condition of all tree stakes, ties and/or guards will be checked by the appointed Landscape Contractor or 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.

6.10 Watering will be undertaken as necessary by the appointed Landscape Contractor or Developer to ensure the establishment and thriving of all planted and translocated 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.

6.11 All areas where plants or trees have failed to thrive (through death, damage or disease), will be identified by the appointed Landscape Contractor or 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. Any variation of this will only occur upon consent by the Local Planning Authority (LPA).

6.12 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.

6.13 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

6.14 To ensure the long-term viability of all retained, translocated and newly planted trees, hedgerows and shrubs onsite, an assessment of their condition will be carried out by an Arboricultural Association (AA), approved arboricultural contractor or professional arboriculturalist every two years for the first five years, to ensure that the tree stock is managed for its health and safety and its lifespan and coverage optimised.

6.15 With respect to retained, translocated and newly planted trees, shrubs and hedgerow species, their management will aim to maximise the value of food, nesting and hibernation resources for dormice through the following measures:

- The implementation of long cutting cycles, with hedgerow cutting to occur every three years to maintain heights no less than 3m. Cutting will be undertaken on a 3 year rotation cycle, with a maximum of 30% of the hedgerow resource cut at any one time (thereby enabling a minimum of 30% left to grow for 7-10 years), to ensure that a proportion of cut versus un-cut hedgerows exists onsite at any one time;

- The implementation of appropriate hedgerow management, including coppicing and/or laying of the hedgerow where appropriate according to species, to encourage the formation of a more dense and continuous hedgerow. Where stands of hazel, willow and other coppice-tolerant species are present, then such species should be subject to coppicing regimes on a 6-10 year rotation or where appropriate to species;

- The selective thinning of all retained and newly planted native trees and shrubs, and small-scale removal of scrub and invasive species where appropriate, will be undertaken to ensure the following: that overcrowding is reduced with increasing species maturity; that slower growing climax species are not outcompeted; and that diseased and dying plants are removed. Thinning is to be undertaken between December and February inclusive to avoid the main bird breeding and dormouse season; and

- The avoidance of herbicide use unless considered necessary to inhibit re-growth of non-native and invasive species.

6.16 In addition to the above, any maintenance pruning required should be undertaken in accordance with good horticultural and arboricultural practice with thinning, trimming and shaping of specimens undertaken as appropriate to species, location, and stage of growth. Pruning should be confined to the months of December and February inclusive, so as to avoid the main bird breeding and dormouse active seasons. All arisings from any vegetation clearance will be taken away from the vicinity of the development footprint no later than the day after vegetation clearance.

6.17 The management and maintenance of all retained, enhanced and newly created habitats will be undertaken by a Private Management Company over the lifetime of the development.

Dormouse Boxes

6.18 Dormouse boxes installed across the Development Site will be annually inspected and regularly maintained over the required monitoring period, with damaged boxes replaced where necessary.

6.19 The maintenance and repair of dormouse boxes installed along the eastern boundaries of the Application Site remain the responsibility of the Developer, or any appointed Management Company.

This page has been left blank intentionally

Section 7
Monitoring and Works Schedule

Monitoring

7.1 All fifty dormouse nest boxes installed along the boundaries of the Application Site will be subject to monitoring both during the construction period and following occupation, with monitoring completed during years 1, 3 and 5 following dormouse box installation by the suitably qualified ecologist (or their accredited agents) named on any future NRW Development Licence. A minimum of three checks will be completed during each monitoring year between May and November. Each check will be carried out between the 19th and 25th of the nominated month in line with national monitoring methodologies.

7.2 Evidence of dormice, including nests and individuals will be recorded. Individuals will be sexed and weighed where appropriate to do so, before returning to the box from which it was captured.

7.3 All findings will be recorded and submitted annually to Peoples Trust for Endangered Species (PTES) and NRW in accordance with the requirements of the EPS licence. A monitoring report detailing the findings of the monitoring surveys and any remedial action undertaken to dormouse boxes and their habitat will also be submitted annually to VoGC.

Timetable of Works

7.4 Above-ground woodland and hedgerow clearance is anticipated to commence from 1 September 2018 following the granting of consent of the detailed application, discharge of relevant conditions attached, and approved Development Licence from NRW.

7.5 Construction is anticipated to commence as soon as possible following granting of consent and completion of the initial phase of vegetation clearance, for a period of circa 36 months.

7.6 **Table EDP 7.1** illustrates the key optimal and sub-optimal times of year to undertake the main tasks, as detailed within this Dormouse Mitigation Strategy.

Table EDP 7.1: Optimal and sub-optimal timings to undertake tasks anticipated in relation to the development of land at St. Cyres, Dinas Powys.

Task	Timing	Comments
Site Check & Briefing of Personnel	Immediately prior to commencement of any clearance works onsite	To be undertaken by the suitably qualified ecologist.

Task		Timing	Comments
Installation of Dormouse Nest Boxes		As soon as possible prior to vegetation clearance and by 30 April 2018	Subject to annual inspections and regular maintenance over the required monitoring period. All damaged boxes replaced as required.
Site Check & Briefing of Personnel		Immediately prior to commencement of clearance works onsite	To be undertaken by the suitably qualified ecologist.
Installation of Protective Fencing		As soon as possible	Install as soon as possible prior to commencement of construction. Maintain throughout construction phase.
New Habitat Creation & Planting		As soon as possible	New planting to be undertaken during first appropriate season according to appointed Landscape Contractor and suitably qualified Ecologist, and supervised by the Ecologist as and when necessary.
Single Stage Habitat Removal - Active (Dispersal) Season		1 September – 15 October 2018	Vegetation to be reduced to heights of between 30-50cm utilising hand-held machinery before commencing with below-ground clearance thereafter.
Two Stage Habitat Removal	Stage 1 - Above-ground	30 November 2018 - 31 March 2019	Vegetation to be reduced to heights of between 30-50cm utilising hand-held machinery.
	Stage 2 - Below-ground	From 1 May 2019	Lifting out of tree stumps, root balls etc.
Construction Period		Circa 36 Months	To commence following completion of the vegetation clearance works.
Post-construction Management & Maintenance	Dormouse Nest Boxes	Between May - November of each year	Monitoring to be undertaken during years 1, 3, and 5 following installation.
	Retained, Enhanced & Created Habitats	Over lifetime of the development	Long-term management and maintenance to be undertaken by Private Management Company.

BDW South Wales Biodiversity Action Plan Requirements

7.7 The tasks detailed above in relation to management and monitoring of the Application Site with respect 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 5**).

Appendix EDP 1
Planning Layout (Hammonds Yates Limited, Drawing Number 1540_100_Rev. B) and External Works Layouts (Hammonds Yates Limited, Drawing Number 1540_102_1_Rev. A, 102_2 & 102_3)

This page has been left blank intentionally

ACCOMMODATION SCHEDULE

Exeter	Ex	1484	10
Layton	La	1611	9
Chelworth	Ch	1703	7
Holden	Ho	1536	8
Cornell	Co	1374	4
Bradgate	Ba	1441	7
Moresby	Mo	854	6
Buchanan	Bu	875	3
Richmond	Ri	711	10
Maidstone	Md	830	21
Collaton	Cl	863	15
Eskdale	Es	1058	9
Ennerdale	En	917	2
Andover	An	998	4
Kingsley	Ki	1080	8
Hereworth	He	1152	1
Alderney	Ad	1225	7
Radleigh	Ra	1317	1
Washington	Wa	615	26
Alder	Al	570	20
Olive	Ol	861	35
Larch	Lh	998	4
Cherry	Cy	1179	3
Total			220

THE CONTRACTOR IS TO COMPLY IN ALL RESPECTS WITH CURRENT BUILDING BUILDING LEGISLATION, N.H.B.C. AND BUILDING REGULATIONS WHETHER OR NOT SPECIFICALLY STATED ON THIS DRAWING.

THIS DRAWING MUST BE READ & CHECKED AGAINST ANY STRUCTURAL GEOTECHNICAL OR OTHER SPECLIST DOCUMENTATION OR PLANS PROVIDED.

THIS DRAWING IS NOT INTENDED TO SHOW DETAILS OF FOUNDATIONS, GROUND CONDITIONS OR GROUND CONTAMINANTS. EACH AREA OF GROUND RELIED UPONTO SUPPORT ANY STRUCTURE DEPICTED (INCL. DRAINAGE) MUST BE INVESTIGATED BY THE CONTRACTOR. A SUITABLE METHOD OF FOUNDATION SHOULD BE PROVIDED ALLOWING FOR EXISTING GROUND CONDITIONS. ANY EARTHWORK CONSTRUCTIONS SHOWN INDICATE TYPICAL SLOPES FOR GUIDANCE ONLY AND SHOULD BE FURTHER INVESTIGATED BY A SUITABLE EXPERT.

WHERE EXISTING TREES ARE SHOWN TO BE RETAINED THEY SHOULD BE SUBJECT TO A FULL ARBORICULTURAL INSPECTION FOR SAFETY. A SUITABLE METHOD OF FOUNDATION IS TO BE PROVIDED TO ACCOMMODATE PROPOSED TREE PLANTING.

General Notes

Rev	Date	By	Comment
B	08.08.17	IB	Redline revised to Client comment
A	06.07.17	IB	Entrance arrangement and plots 37-41 & 50-52 revised to Client instructions

RESIDENTIAL DESIGN
PLANNING
CIVIL ENGINEERING DESIGN
Hammonds Yates
HAMMONDS YATES LIMITED
Kestrel Court : Harbour Road : Portishead : BS20 7AN
T: 01275 844744 E Mail:info@hammondsyates.com

Client
Barratt & David Wilson Homes South Wales

Project Title
St Cyres
Dinas Powys

Drawing Title
Planning Layout

Drawing Status

Drawn By: DA | Scales: 1:500 | A0 | Date: June 2017

Job No.: 1540 | Drawing No.: 100 | Rev.: B

DO NOT SCALE THIS DRAWING. ALL DIMENSIONS AND LEVELS TO BE VERIFIED PRIOR TO BUILDING OPERATIONS OR CONSTRUCTION.
© THIS DRAWING AND THE BUILDING WORKS DEPICTED ARE THE COPYRIGHT OF HAMMONDS YATES LTD AND MAY NOT BE REPRODUCED OR AMENDED EXCEPT BY WRITTEN PERMISSION. NO LIABILITY WILL BE ACCEPTED FOR AMENDMENTS MADE BY OTHER PERSONS.

THE CONTRACTOR IS TO COMPLY IN ALL RESPECTS WITH CURRENT BUILDING BUILDING LEGISLATION, N.H.B.C. AND BUILDING REGULATIONS WHETHER OR NOT SPECIFICALLY STATED ON THIS DRAWING.

THIS DRAWING MUST BE READ & CHECKED AGAINST ANY STRUCTURAL GEOTECHNICAL OR OTHER SPECLIST DOCUMENTATION OR PLANS PROVIDED.

THIS DRAWING IS NOT INTENDED TO SHOW DETAILS OF FOUNDATIONS, GROUND CONDITIONS OR GROUND CONTAMINANTS. EACH AREA OF GROUND RELIED UPON TO SUPPORT ANY STRUCTURE DEPICTED (INCL. DRAINAGE) MUST BE INVESTIGATED BY THE CONTRACTOR. A SUITABLE METHOD OF FOUNDATION SHOULD BE PROVIDED ALLOWING FOR EXISTING GROUND CONDITIONS. ANY EARTHWORK CONSTRUCTIONS SHOWN INDICATE TYPICAL SLOPES FOR GUIDANCE ONLY AND SHOULD BE FURTHER INVESTIGATED BY A SUITABLE EXPERT.

WHERE EXISTING TREES ARE SHOWN TO BE RETAINED THEY SHOULD BE SUBJECT TO A FULL ARBORICULTURAL INSPECTION FOR SAFETY. A SUITABLE METHOD OF FOUNDATION IS TO BE PROVIDED TO ACCOMMODATE PROPOSED TREE PLANTING.

General Notes

MURCH ROAD

EXTERNAL WORKS LEGEND

- 1.8m BRW — 1.8m BRICK SCREEN WALL Colour : Red Brick
- 1.8m CBF — 1.8m CLOSE BOARD FENCE (Hedgehog Friendly)
- 1.2m FDL — 1.2m FLEUR-DE-LYS RAILINGS Colour : Black
- 1.2m BTR — 1.2m BALL TOP RAILINGS Colour : Black
- PERSONNEL GATE POSITION
- PATHS TO FRONT DOOR (450mm Slabs)
- PATHS AND PATIO (450mm Slabs)
- 31 — PLOT NUMBERS
- 3P — CAR PARKING ALLOCATION
- E — ELECTRIC METER LOCATION
- G — GAS (WALL/SEMI CONSEALED) METER LOCATION
- FRONT/REAR DOOR POSITION
- GARAGE/CAR PORT LOCATION
- ** — SALES AREA
- AFFORDABLE HOUSING Social Rent
- AFFORDABLE HOUSING Shared Ownership
- BLOCK PAVING SURFACE TREATMENT Colour : TBA
- COLOURED TARMAC SURFACE TREATMENT Colour : TBA
- EXISTING TREES TO BE RETAINED WITH ROOT PROTECTION ZONE
- PROPOSED TREES
- EXISTING TREES TO BE REMOVED

10 5 0 10 20 30 40 50

Rev	Date	By	Comment
A	08.08.17	IB	Redline revised to client comment

Hammonds Yates
RESIDENTIAL DESIGN
PLANNING
CIVIL ENGINEERING DESIGN
HAMMONDS YATES LIMITED
Kestrel Court : Harbour Road : Portishead : BS20 7AN
T: 01275 844744 E Mail:info@hammondsyates.com

Client
Barratt & David Wilson Homes (South Wales)

Project Title
St Cyres
Dinas Powys

Drawing Title
External Works Layout Sheet 1

Drawing Status

Drawn By	Scales		Date
	1:250	A0	July 2017

Job No.	Drawing No.	Rev.
1540	102-1	A

DO NOT SCALE THIS DRAWING. ALL DIMENSIONS AND LEVELS TO BE VERIFIED PRIOR TO BUILDING OPERATIONS OR CONSTRUCTION.
© THIS DRAWING AND THE BUILDING WORKS DEPICTED ARE THE COPYRIGHT OF HAMMONDS YATES LTD AND MAY NOT BE REPRODUCED OR AMENDED EXCEPT BY WRITTEN PERMISSION. NO LIABILITY WILL BE ACCEPTED FOR AMENDMENTS MADE BY OTHER PERSONS.

THE CONTRACTOR IS TO COMPLY IN ALL RESPECTS WITH CURRENT BUILDING BUILDING LEGISLATION, N.H.B.C AND BUILDING REGULATIONS WHETHER OR NOT SPECIFICALLY STATED ON THIS DRAWING.

THIS DRAWING MUST BE READ & CHECKED AGAINST ANY STRUCTURAL, GEOTECHNICAL OR OTHER SPECILIST DOCUMENTATION OR PLANS PROVIDED.

THIS DRAWING IS NOT INTENDED TO SHOW DETAILS OF FOUNDATIONS, GROUND CONDITIONS OR GROUND CONTAMINANTS. EACH AREA OF GROUND RELIED UPONTO SUPPORT ANY STRUCTURE DEPICTED (INCL. DRAINAGE) MUST BE INVESTIGATED BY THE CONTRACTOR. A SUITABLE METHOD OF FOUNDATION SHOULD BE PROVIDED ALLOWING FOR EXISTING GROUND CONDITIONS. ANY EARTHWORK CONSTRUCTIONS SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND SHOULD BE FURTHER INVESTIGATED BY A SUITABLE EXPERT.

WHERE EXISTING TREES ARE SHOWN TO BE RETAINED THEY SHOULD BE SUBJECT TO A FULL ARBORICULTURAL INSPECTION FOR SAFETY. A SUITABLE METHOD OF FOUNDATION IS TO BE PROVIDED TO ACCOMODATE PROPOSED TREE PLANTING.

General Notes

EXTERNAL WORKS LEGEND

- 1.8m BRICK SCREEN WALL Colour: Red Brick
- 1.8m CLOSE BOARD FENCE (450mm Gravel Board)
- 1.2m PLEUR-DE-LYS RAILINGS Colour: Black
- 1.2m BALL TOP RAILINGS Colour: Black
- PERSONNEL GATE POSITION
- PATHS TO FRONT DOOR (450mm Slabs)
- PATHS AND PATIO (450mm Slabs)
- 31 PLOT NUMBERS
- CAR PARKING ALLOCATION
- ELECTRIC METER LOCATION
- GAS (VALVE/METER CONCEALED) METER LOCATION
- FRONT/REAR DOOR POSITION
- GARAGE/CAR PORT LOCATION
- ★★ SALES AREA
- AFFORDABLE HOUSING Social Rent
- AFFORDABLE HOUSING Shared Ownership
- BLOCK PAVING SURFACE TREATMENT Colour : TBA
- COLOURED TARMAC SURFACE TREATMENT Colour : TBA
- EXISTING TREES TO BE RETAINED WITH ROOT PROTECTION ZONE
- PROPOSED TREES
- EXISTING TREES TO BE REMOVED

Rev	Date	By	Comment

RESIDENTIAL DESIGN
PLANNING
CIVIL ENGINEERING DESIGN
Hammonds Yates
HAMMONDS YATES LIMITED
Kestrel Court : Harbour Road : Portishead : BS20 7AN
T: 01275 844744 E: Mail:info@hammondsyates.com

Client
Barratt & David Wilson Homes (South Wales)

Project Title
St Cyres
Dinas Powys

Drawing Title
External Works Layout Sheet 2

Drawing Status

Drawn By	Scales	A0	Date
	1:250		July 2017

Job No.	Drawing No.	Rev.
1540	102-2	

DO NOT SCALE THIS DRAWING. ALL DIMENSIONS AND LEVELS TO BE VERIFIED PRIOR TO BUILDING OPERATIONS OR CONSTRUCTION.
© THIS DRAWING AND THE BUILDING WORKS DEPICTED ARE THE COPYRIGHT OF HAMMONDS YATES LTD AND MAY NOT BE REPRODUCED OR AMENDED EXCEPT BY WRITTEN PERMISSION. NO LIABILITY WILL BE ACCEPTED FOR AMENDMENTS MADE BY OTHER PERSONS.

10 5 0 10 20 30 40 50

THE CONTRACTOR IS TO COMPLY IN ALL RESPECTS WITH CURRENT BUILDING BUILDING LEGISLATION, N.H.B.C AND BUILDING REGULATIONS WHETHER OR NOT SPECIFICALLY STATED ON THIS DRAWING.

THIS DRAWING MUST BE READ & CHECKED AGAINST ANY STRUCTURAL, GEOTECHNICAL OR OTHER SPECIALIST DOCUMENTATION OR PLANS PROVIDED.

THIS DRAWING IS NOT INTENDED TO SHOW DETAILS OF FOUNDATIONS, GROUND CONDITIONS OR GROUND CONTAMINANTS. EACH AREA OF GROUND RELIED UPON TO SUPPORT ANY STRUCTURE DEPICTED (INCL. DRAINAGE) MUST BE INVESTIGATED BY THE CONTRACTOR. A SUITABLE METHOD OF FOUNDATION SHOULD BE PROVIDED ALLOWING FOR EXISTING GROUND CONDITIONS. ANY EARTHWORK CONSTRUCTIONS SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND SHOULD BE FURTHER INVESTIGATED BY A SUITABLE EXPERT.

WHERE EXISTING TREES ARE SHOWN TO BE RETAINED THEY SHOULD BE SUBJECT TO A FULL ARBORICULTURAL INSPECTION FOR SAFETY. A SUITABLE METHOD OF FOUNDATION IS TO BE PROVIDED TO ACCOMMODATE PROPOSED TREE PLANTING.

General Notes

EXTERNAL WORKS LEGEND

- 1.8m BRICK SCREEN WALL (Colour: Red Brick)
- 1.8m CLOSE BOARD FENCE (1.8m Overall Height)
- 1.2m PLEUR-DE-LYS RAILINGS (Colour: Black)
- 1.2m BALL TOP RAILINGS (Colour: Black)
- PERSONNEL GATE POSITION
- PATHS TO FRONT DOOR (450mm Slabs)
- PATHS AND PATIO (450mm Slabs)
- 31 PLOT NUMBERS
- CAR PARKING ALLOCATION
- ELECTRIC METER LOCATION
- GAS (VAN) (SEMI CONCEALED) METER LOCATION
- FRONT/REAR DOOR POSITION
- GARAGE/CAR PORT LOCATION
- SALES AREA
- AFFORDABLE HOUSING Social Rent
- AFFORDABLE HOUSING Shared Ownership
- BLOCK PAVING SURFACE TREATMENT Colour : TBA
- COLOURED TARMAC SURFACE TREATMENT Colour : TBA
- EXISTING TREES TO BE RETAINED WITH ROOT PROTECTION ZONE
- PROPOSED TREES
- EXISTING TREES TO BE REMOVED

Rev	Date	By	Comment

RESIDENTIAL DESIGN
PLANNING
CIVIL ENGINEERING DESIGN
Hammonds Yates
HAMMONDS YATES LIMITED
Kestrel Court : Harbour Road : Portishead : BS20 7AN
T: 01275 844744 E Mail:info@hammondsyates.com

Client
Barratt & David Wilson Homes (South Wales)

Project Title
St Cyres
Dinas Powys

Drawing Title
External Works Layout Sheet 3

Drawing Status

Drawn By	Scales		Date
	1:250	A0	July 2017

Job No.	Drawing No.	Rev.
1540	102-3	

DO NOT SCALE THIS DRAWING. ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE BEFORE COMMENCEMENT OF WORKS. THIS DRAWING AND THE BUILDING WORKS DEPICTED ARE THE COPYRIGHT OF HAMMONDS YATES LTD AND MAY NOT BE REPRODUCED OR AMENDED EXCEPT BY WRITTEN PERMISSION. NO LIABILITY WILL BE ACCEPTED FOR AMENDMENTS MADE BY OTHER PERSONS.

Oaks Rise
SUNNYCROFT LANE
Path (um)
10 5 0 10 20 30 40 50

Appendix EDP 2
Ecological Appraisal Report
(RPS, Report Reference JER6565, December 2015)

This page has been left blank intentionally

Ecological Appraisal

St Cyres, Dinas Powys

On Behalf of

Barratt Homes Ltd

Date: December 2015

Our Ref: JER6565

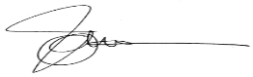
RPS

2420 The Quadrant
Aztec West, Almondsbury
Bristol
BS32 4AQ

Tel: (0)1454 853000
Fax: (0)1454 205820
Email: rpssw@rpsgroup.com

Successful Partners
DELIVERING QUALITY

Quality Management

Prepared by:	Paul Turner MCIEEM	
Authorised by:	Tim Oliver MCIEEM	
Date:	December 2015	
Revision:	0	
Project Number:	JER6565	
Document Reference:	151212 R JER6565 PT St Cyres Ecological Appraisal TO	
Document File Path:	O:\JER6565 - St Cyres Lower School\5. Reports\1. Draft Report\Ecological Appraisal\151212 R JER6565 PT St Cyres Ecological Appraisal TO.doc	

COPYRIGHT © RPS

The material presented in this report is confidential. This report has been prepared for the exclusive use of Barratt Homes Ltd and shall not be distributed or made available to any other company or person without the knowledge and written consent of Barratt Homes Ltd or RPS.

This document is Printed on FSC certified, 100% post-consumer recycled paper, bleached using an elemental chlorine- free process.

Amendment Record

Revision No.	Date	Reason for Change	Authors Initials

Contents

Tables, Drawings & Appendices

Table

Plates

Drawings

Appendices

1 Introduction

1.1 Background and Scope of Works

1.1.1 RPS was commissioned by Barratt Homes Ltd to undertake an Ecological Appraisal of the site known as St Cyres, located at Dinas Powys, Vale of Glamorgan. Barratt Homes proposes to submit a planning application for the development of the site for residential use.

1.1.2 The Ecological Appraisal undertaken in May identified habitats within and adjoining the site with the potential to support several protected species, specifically:

- Hedgerows and woodland edge with the potential to be used by foraging / commuting bats;
- Mature trees with the potential to be used by roosting bats;
- Hedgerows and woodland with the potential to be used by dormice;
- Two ponds within the site that could have potential to support great crested newts (GCN); and,
- Grassland and woodland fringe habitats with the potential to support reptiles.

1.1.3 Consequently RPS were commissioned to undertake the following protected species surveys:

- Bat activity surveys;
- Dormouse presence / likely absence of suitable hedgerow and woodland habits within the site; and,
- GCN Presence / likely absence survey of the two on-site ponds.

1.1.4 This report presents the findings of the Ecological Appraisal and protected species surveys. The report provides an ecological baseline of the site and provides an assessment of the potential ecological constraints on the future residential development of the site.

1.2 Site Description

1.2.1 The site is situated on the southern fringe of Dinas Powys, to the southwest of Cardiff (centred at Ordnance Survey grid reference ST16267078)

1.2.2 The site is approximately 12 ha in extent. The western half of the site is a series of grassland fields divided by overgrown hedgerows and linear wooded blocks. The eastern half of the site comprises two larger grassland fields (former school playing fields) with secondary and plantation woodland on the southern and northern boundaries. A green lane flanked by species-rich hedgerows on banks adjoins the eastern site boundary. The concrete footings of a former school (now demolished) are located in the northeast of the site

1.2.3 The site lies within a green corridor between the settlements of Dinas Powys to the west and Penarth to the East. Residential areas of Dinas Powys lie to the north and west with a series of large residential gardens adjoining the western site boundary. An operational construction site for a new medical centre adjoins the north-eastern boundary of the site. To the south the site

adjoins mature semi-natural broadleaved woodland and pasture. Land use in the surrounding areas to the east and south comprises pasture fields and wooded blocks divided by established hedgerows.

2 Method

2.1 Ecological Appraisal

2.1.1 The ecological appraisal provides a baseline of the site and is carried out in three stages:

- A desk study to collate records of designated sites, protected species and other species of conservation interest within the local area around the proposed development site;
- A site walkover survey to identify and map habitats on the site, to assess the extent and broad floristic composition of these habitats; and to assess the potential for habitats within the site to support protected species or otherwise notable flora and fauna; and,
- Collation and interpretation of the field survey results and desk study data to assess the current status of the site and its ecological context in the wider landscape.

2.1.2 The baseline survey information has also been used to determine whether there is a need for additional surveys of species or species groups to inform the development proposal.

Desk Study

2.1.3 A request was submitted to the South East Wales Biological Record Centre (SEWBReC) for the following:

- Information on non-statutory designated nature conservation sites within 2km of the survey site;
- Recent records of protected or otherwise notable species, including local and UK BAP species, Species of Principal Importance for Conservation in Wales and red data book species within 2km of the survey site.
- Recent records of horseshoe bats within 5km of the site.

2.1.4 Records older than 20 years were considered historical and were excluded from the data trawl results.

2.1.5 International nature conservation sites within 10km of the site, and national statutory designated nature conservation sites within 2km of the site were identified using the Multi Agency Geographic Information for the Countryside website (http://www.magic.gov.uk). Information about these sites identified was obtained from the Joint Nature Conservation Committee website (http://www.jncc.gov.uk).

Field Survey

2.1.6 The site walkover survey was conducted in accordance with The Handbook for Phase I Habitat Survey (JNCC, 2010) and guidelines on Ecological Appraisal (IEEM 2012) and included searches for signs of protected species, as described in Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment, 1995).

2.1.7 The site walkover survey was undertaken in May with additional botanical information obtained during site visits in June and July. During the survey, habitats within the site were classified, mapped and described, with respect to their structure and broad floristic composition.

2.1.8 The habitats within the site were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where possible, searches of suitable habitat were made for signs indicating the presence of protected species, such as droppings, burrows, tracks and evidence of feeding; although this was not a comprehensive search of all suitable on-site habitat.

2.1.9 Where species are not specifically mentioned, this indicates that no habitat of potential value for these species was identified during the survey.

2.1.10 Consideration was given to habitats and species present within the site that are listed under Section 42 of the Natural Environment and Rural Communities Act 2006. The protection of such habitats and species should be prioritised under the planning system as part of the planning objective of avoiding further biodiversity and achieving biodiversity gain.

2.1.11 The adjacent off-site habitats were viewed and assessed on-site and on aerial photographs in order to understand the wider ecological context of the features within the site.

2.1.12 During the walkover survey searches were made for invasive non-native plant species focussing on those species currently listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended in 2010). Follow up checks were made during subsequent site visits over summer 2015.

2.1.13 Botanical nomenclature in this report follows that laid out by Stace (1997) and Atherton, Bosanqeut and Lawley [Eds] - (2010).

Limitations

2.1.14 The survey offers a 'snapshot' of the site conditions and habitat potential for species at the times of the survey visits. On-site habitats have been assessed with due consideration for seasonal changes in structure and extent, but habitats will change over time and the ecological status of the site should not be seen as static.

2.2 Bat Activity Surveys

Transect Surveys and Remote Recording

2.2.1 Five bat transect surveys were undertaken on 29th May, 25th June, 6th August, 27th August and 29th September. The aim of the transect surveys was to identify which bat species utilise on-site habitats, and to assess levels of use by bats of the habitats within the application site.

2.2.2 Transect surveys also provided coverage of several large mature pedunculate oak trees around for the first 30 minutes after sunset, which is a key roost emergence period for several bat species. Each transect continued for at least 90 minutes after sunset following a route along the

woodland edges and hedgerows to provide coverage of all suitable habitats within the application site.

2.2.3 The transect routes were walked slowly. All registrations of bat activity were logged with notes on flight paths, numbers of bats, observed behaviour, social calls and feeding buzzes. Bat passes were recorded using a combination of Bat box duet detectors (heterodyne and frequency division) connected to Zoom H2 MP3 recorders and Anabat detector recorders (frequency division).

2.2.4 During some of the transect surveys remote recording detectors were positioned in fixed locations for the duration of the survey or overnight, to collect more comprehensive data on species and levels of bat activity associated with linear features (hedgerows and woodland edge) with potential to be used as key light lines.

2.2.5 The dates of transect surveys, static remote recording and survey conditions are shown in Table 2-1. Transect routes and the locations of static recorders are shown on the Bat Transect Plans (Drawing JER6565-ECO-003 to Drawing JER6565-ECO-007).

Table 2-1 Bat Activity Survey Dates, times, Recording Techniques and Conditions.

Date	Transect Survey time (sunset)	Static Recording	Min Overnight Temp	Weather
29th May	21:15-22:55 (21:16)	During Transect 21:30 to 23:20	9°C	Dry, 90% cloud cover, mild light breeze.
25th June	21:49–23:34 (21:34)	During transect and overnight	12°C	Dry, 100% hazy cloud cover, mild and still
6th August	20:45-23:00 (21:13)	During transect and overnight	9°C	Dry, clear and still
27th August	20:10-22:16 (20:10)	During transect and overnight	13°C	Dry, clear and still
29th September	18:55-20:57 (18:55)	Yes – for duration of transect	10°C	Dry clear, light breeze.

2.3 Dormouse Nest Tube Survey

2.3.1 The nest tube survey was undertaken following a methodology based on published best practice guidelines (Bright, Morris & Mitchell Jones 2006; Chanin & Woods 2003).

2.3.2 The guidelines provide a method for quantifying survey effort based on the number of nest tubes used and the likelihood of encountering dormice during. Each month between April and November (when dormice are typically active) is assigned an 'index of probability' score

reflecting the relative likelihood of dormice being detected in nest tubes in that month (Table 2-2).

Table 2-2 Dormouse Survey Months and Corresponding Index of Probability Scores

Month	Index of Probability Score
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

2.3.3 Survey effort is calculated by summing the 'index of probability' scores for all complete months the tubes are left out. A score of 20 is considered the minimum survey effort based on a minimum of 50 tubes spaced approximately 20m apart wherever practical (Chanin & Woods 2003)

2.3.4 The survey effort calculation does not take into consideration nest tube spacing / density but the survey effort score may be modified by adjusting the number of nest tubes used; for example, the survey effort score may be multiplied by 2 if using 100 tubes.

Survey Effort

2.3.5 The hedgerows and woodland edge habitat within the site varied in its suitability both as dormouse habitat and in the practicality of surveying. Areas of dense bramble thicket were avoided due to the difficulties in placing and checking tubes as the bramble grows through the season. Some areas of woodland edge also lacked suitable dense scrub growth where nest tubes could be placed in good cover. In total, 85 nest tubes were placed out giving a spacing of approximately 20-25m in suitable and practically surveyable habitat.

2.3.6 Tubes were placed in late April and left in situ for May through September to achieve a minimum survey effort score of 20 (Monthly Index of Probability Scores for May to September: 4; 2; 2; 5; and 7, giving a total of 20).

2.3.7 The nest tubes used were based on the standard design described in the published guidelines and as recommended by the mammal society and were set following the methodology described by Chanin and Woods (2003).

2.3.8 In accordance with the survey guidelines nest tubes were checked in dry weather for any signs of dormouse occupation at least bi-monthly on 28th May, 23rd July and 23rd September. The survey included checks in May and September which are key months for detecting evidence of dormouse activity. The locations of the nest tubes and nest boxes are shown in the Dormouse Survey Plan (Drawing JER6565–ECO-002).

2.4 GCN Presence / Absence

Habitat Suitability Index (HSI) Assessment

2.4.1 The two on-site waterbodies were assessed using the great crested newt Habitat Suitability Index (HSI) (Oldham et al. 2000). The HSI methodology assigns a value to each of 10 variables of the pond. The tenth root of the product of these variables is then calculated. This generates the HSI, a numerical index between 0 and 1. The HSI score gives an indication of the suitability of the pond as great crested newt habitat where a score of 1 represents optimal habitat for great crested newts.

Presence / Absence surveys

2.4.2 A presence / absence survey was carried out following guidelines set out in the Herpetofauna Workers Manual (Gent & Gibson,1998), Great Crested Newt Mitigation Guidelines (English Nature, 2001), Common Standards Monitoring Guidance for Reptiles and Amphibians (JNCC, 2004) and Froglife Advice Sheet 11: Surveying for (Great Crested) Newt Conservation (Froglife, 2001).

2.4.3 Full details are given the Great Crested Newt Survey Report (Appendix 2)

3 Results

3.1 Desk Study

3.1.1 Distances stated in the desk study are measured to the nearest 100m from the site boundary at its nearest point.

Internationally Designated Sites

3.1.2 The Severn Estuary is designated as a RAMSAR site, Specially Protected Area (SPA), Special Area of Conservation (SAC) and SSSI. The banks are designated under RAMSAR and SPA status while the SAC designation covers the entire estuary area.

3.1.3 The estuary lies 2.2km to the east of the site at the closest point. The Severn Estuary has the second largest tidal range in the world, resulting in an extensive intertidal zone comprising mudflats, sand banks, shingle, and rocky platforms; and 110 species of fish have been recorded in the river system.

3.1.4 Over 70,000 waterfowl have been recorded along the estuary during winter with important overwintering populations of:

- Bewick's Swan *Cygnus columbianus bewickii*
- Curlew *Numenius arquata,*
- Dunlin *Calidris alpina alpina,*
- Pintail *Anas acuta*,
- Redshank *Tringa totanus*, and
- Shelduck *Tadorna tadorna*,

Nationally Designated Sites

3.1.5 There are two nationally designated sites within 2km of the site boundary, Cog Moors and Cosmeston Lakes, both of which are Sites of Special Scientific Interest (SSSI).

3.1.6 Cog Moors SSSI covers 13ha and lies 1.1km to the south of the site. The area comprises a series of unimproved species-rich grassland fields separated by ditches. The fields were previously hay meadows and now have a have a distinctive damp floristic element, typically comprising amphibious bistort *Persicaria amphibia*, meadowsweet *Filipendula ulmaria* and lesser pond-sedge *Carex acutiformis*. The nationally scarce bulbous foxtail *Alopecurus bulbosus* and a large population of pepper saxifrage *Silaum silaus*, a species close to the edge of its range, are present.

3.1.7 Cosmeston Lakes SSSI covers 26ha and lies 1.4km south-east of the site. The lakes have SSSI designation as they support starry stonewort *Nitellopsis obtuse* which is nationally endangered. The area is also a Country Park and Site of Importance for Nature Conservation Interest (SINC), with species rich grasslands, scrub and woodland being the reasons for designation.

Non-statutory Designated Sites

3.1.8 There are sixteen non-statutory designated sites (SINCs) within the search radius, as described in Table 3-1.

Table 3-1 Non-Statutory Designated Sites within the 2km Search Radius

Name	Designation	Distance From Site	Description
Case Hill Wood	SINC	1.2km	Semi-natural broadleaved woodland with some mixed plantation on an ancient woodland site
Coed Clwyd-Gwyn South West of Michaelston le Pit	SINC	1.4km	An extensive complex of semi-natural broadleaved woodland with areas of mixed and coniferous plantation on an ancient woodland site and ancient semi-natural woodland
Coed Twyncyn	SINC	1.3km	Semi-natural broadleaved woodland with some mixed plantation on an ancient woodland site
Cog Moors	SSSI and SINC	0.8km	Series of species-rich rush pastures with neutral grassland and associated wet ditches
Cogan Pond	SINC	1.0km	Large pond supporting a reedbed
Cosmeston Lakes	SINC and Country Park	0.7km	Extensive country park supporting mosaic of habitats including species-rich calcareous and neutral grasslands, scrub, hedgerows, woodland, streams and lakes which all support a wide assemblage of species
Cross Common	SINC	Adjoins SW site boundary	Semi-natural broadleaved woodland, part on an ancient woodland site
Dinas Powys Castle Woodland	SINC	1.0km	Ancient semi-natural broadleaved woodland
Dinas Powys Moors	SINC	1.0km	Series of species-rich semi-improved neutral grasslands with pond
Downs Wood	SINC	1.4km	Ancient semi-natural broadleaved woodland
North of Cog Moors	SINC	1.0km	Ancient semi-natural woodland
North of Pop Hill	SINC	0.3km	Series of species-rich unimproved neutral grasslands with large anthills
Pond 11 Biglis Moors	SINC	1.1km	Pond which supports good population of great crested newts
Pop Hill	SINC	0.7km	Predominantly ancient semi-natural broadleaved woodland
Pwll Erw-naw	SINC	0.9km	Pond which supports good population of Great crested newts
Shortlands Wood	SINC	0.4km	Semi-natural broadleaved woodland, part on an ancient woodland site

Species Records

3.1.9 For each species an abbreviated reference is given to their legal and conservation status (as defined in Table 3-2). Table 3-3 provides a summary of records of legally protected species from within 2km of the proposed development, and for which there is suitable habitat on or adjacent to the site.

Table 3-2 Abbreviations for Species Legal and Conservation Status

Abbreviation	Legal/Conservation Status
EPS	European Protected Species. Fully protected under the Conservation of Habitats and Species Regulations 2012
WCA full	Fully protected under the Wildlife and Countryside Act 1981 – as amended
WCA5 Part	Protected from killing and injuring under the Wildlife and Countryside Act 1981 – as amended
WCA1	Bird species subject to special protection - listed on Schedule 1 Wildlife & Countryside Act 1981 as amended
S42	Listed under Section 42 of the Natural Environment and Rural Communities Act 2006 as species of principal importance of conservation in Wales
UK BAP	UK Biodiversity Action Plan Priority Species
LBAP	Local (Vale of Glamorgan) Biodiversity Action Plan priority species
UKBRed	RSPB UK Red List - Birds of high conservation concern in the UK
UKBAm	RSPB UK Amber List - Birds of high conservation concern in the UK
PBA	Protection of Badgers Act

Table 3-3 Summary of Legally Protected Mammal and Herptile Records

Species	Scientific Name	Species Status	No. of Records	Location of Closest Record
Bats				
Lesser horseshoe bat	*Rhinolophus hipposideros*	EPS, S42, WCA full, LBAP	1	1.9km south
Brown long-eared Bat	*Plecotus auritus*		1	1.6km south-east
Soprano pipistrelle	*Pipistrellus pygmaeus*		3	0.9km west
Common pipistrelle	*Pipistrellus pipistrellus*		11	0.9km north-east Includes two roosts (one maternity)
Noctule	*Nyctalus noctula*		3	0.9km north-east
Leisler's bat	*Nyctalus leisleri*	EPS, WCA full	1	1.9km south
Unidentified myotis bat	*Myotis sp(p)*		2	0.9km south-west
Unidentified bat	*Chiroptera sp*		7	0.5km west
Unidentified pipistrelle bat	*Pipistrellus sp.*		12	0.4km west Includes four roosts (one maternity)

Daubenton's Bat	*Myotis daubentonii*	EPS, WCA full	1	1.6km south-east
Whiskered Bat	*Myotis mystacinus*		1	1.9km east
Serotine	*Eptesicus serotinus*		1	1.9km south
Nathusius's pipistrelle	*Pipistrellus nathusii*		1	2.0km north-east
Other Mammals				
Badger	*Meles meles*	PBA	4	1.5km south-east
Herptiles				
Great crested newt	*Triturus cristatus*	EPS, WCA full S42, UK BAP, LBAP	21	0.8km west
Slow-worm	*Anguis fragilis*	WCA part, S42, UK BAP, LBAP	5	1.0km north-west

3.1.10 In addition the following species of conservation importance have been recorded within the search area:

- Brown hare *Lepus europaeus* (S42, UK BAP, LBAP)
- Polecat *Mustela putorius* (S42, UK BAP, LBAP)
- Common Toad *Bufo bufo* (S42, UK BAP, LBAP)

3.1.11 The following RSPB red and amber list bird species for which potentially suitable habitats occur within the site, have been recorded within 2km of the site:

- **Red list Species:** Common bullfinch *Pyrrhula pyrrhula* (S42, LBAP), common cuckoo *Cuculus canorus* (S42, LBAP), grasshopper warbler *Locustella naevia* (S42, LBAP), starling *Sturnus vulgaris* (S42, LBAP), tree sparrow *Passer montanus* (S42, LBAP), turtle dove *Streptopelia turtur* (S42), grey partridge *Perdix perdix* (S42, UK BAP, LBAP), dunnock *Prunella modularis* (S42, LBAP), house sparrow *Passer domesticus* (S42, UK BAP, LBAP), lesser redpoll *Acanthis cabaret* (S42, UK BAP, LBAP), lesser spotted woodpecker *Dryobates minor* (S42, UK BAP, LBAP), linnet *Carduelis cannabina* (UKBRed, S42, UK BAP), song thrush *Turdus philomelos* (S42, LBAP), spotted flycatcher *Muscicapa striata* (S42, UK BAP, LBAP), woodlark *Lullula arborea* (S42, UK BAP, LBAP), wood warbler *Phylloscopus sibilatrix* (S42, UK BAP, LBAP), yellow wagtail *Motacilla flava* (S42, UK BAP, LBAP), yellowhammer *Emberiza citrinella* (S42, UK BAP, LBAP).
- **Amber List Species:** Kestrel *Falco tinnunculus* (S42, LBAP), firecrest *Regulus ignicapillus*, and pied flycatcher *Ficedula hypoleuca* (S42, LBAP),

3.2 Habitats

3.2.1 The results of the site walkover surveys are shown on the Habitats Plan (DrawingJER6565-ECO-001). Detailed descriptions are given below.

Semi-improved grassland

3.2.2 The majority of the site consisted of species-poor semi-improved grassland. The site is broadly divided into two halves by a hedgerow running north/south. The western half of the site comprised 6 semi-improved grassland areas divided by thick hedgerows and wooded blocks (Fields A - F). The eastern half comprised one larger field (Field G), and three smaller fields all supporting semi-improved grassland (Fields H – J).

3.2.3 Typically the sward in each field was grass dominated with creeping bent *Agrostis capillaris*, Yorkshire fog *Holcus lanatus*, and perennial rye-grass *Lolium perenne* being frequent or abundant. Small cat's tail *Phleum bertolonii* was occasional to frequent with Cock's-foot *Dactylis glomerata*, and rough meadow grass *Poa trivialis* occurring rarely.

3.2.4 The fields were all species-poor but the assemblage of forbs varied between fields. Through fields A to D, ribwort plantain *Plantago lanceolata* was frequent with locally frequent common fleabane *Pulicaria dysenterica* and creeping cinquefoil *Potentilla reptans.* Rarely occurring species were common vetch *Vicia sativa*, meadow vetchling *Lathyrus pratensis* and red clover *Trifolium pratense*.

3.2.5 In the western half of the site (Fields A to F) other forbs occurred very rarely or as scattered individuals in one or more fields including dandelion *Taraxacum* agg, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, white clover *Trifolium repens* cut-leaved crane'sbill *Geranium dissectum*, meadow buttercup *Ranunculus acris* and soft rush *Juncus effusus* and hard rush *Juncus inflexus* (Plate 3-1).

Plate 3- 1, Semi-improved Grassland in Field A.

3.2.6 Hairy Sedge *Carex hirta* was frequent in field D and locally abundant at the western end of Field B (Plate 3-2) and Field C, and with localised patches in Field A.

Plate 3- 2, Semi-improved Grassland with Abundant Hairy Sedge at the Western End of Field B

3.2.7 A localised area of abundant common sedge *Carex nigra*, with frequent bird's foot trefoil and creeping bent was present at the eastern end of Field C (Plate 3-3). Red bartsia *Odontites vernus* and agrimony *Agrimonia eupatoria* were scattered along the eastern edge of Field C.

Plate 3- 3, Semi-improved Grassland with Abundant Common Sedge at the Eastern End of Field C.

3.2.8 Field F differed slightly in composition from the other fields with perennial rye-grass absent. Several forb and grass species occurred infrequently in field F, which were largely absent elsewhere in the west of the site. These were common couch *Elytrigia repens*, false oat-grass *Arrhenatherum elatius*, common mouse-ear *Cerastium fontanum*, hogweed *Heracleum*

sphondylium, dove's-foot crane's-bill *Geranium molle* agrimony and field bindweed *Convolvulus arvensis*.

3.2.9 In the eastern part of the site Fields G, H and I were species-poor with similar characteristic grass species, and a small number of forbs in common with grassland in the western half of the site.

3.2.10 Field I, had greater species diversity. The sward was dominated by grasses with Yorkshire fog, cock's-foot, perennial rye-grass, crested dog's-tail, and creeping bent all frequent or abundant throughout the sward. Timothy, and sweet vernal-grass *Anthoxanthum odoratum* were occasional with localised patches of meadow foxtail *Alopecurus pratensis*, and tall fescue *Festuca arundinacea* primarily on the eastern boundary on the lowest lying ground which was noted as being subject to waterlogging after periods of heavy rain.

3.2.11 Wildflower diversity was low with frequent meadow buttercup and creeping buttercup, and occasional cuckooflower *Cardamine pratensi*s, common mouse ear, common vetch, common sorrel *Rumex acetosa* and dandelion. A single plant of greater bird's-foot trefoil *Lotus pedunculatus* was noted on the lower lying ground on the field boundary.

3.2.12 The grassland was coarse in May at time of survey but was subsequently subject to re-instatement of mowing management in the summer of 2015. The number of grass species confirmed that the grassland has been subject to at least annual cutting in the past.

Hedgerows / Scrub / Wooded Belts

3.2.13 The fields in the western half of the site were subdivided by a series of overgrown hedgerows with some linear woodland blocks with mature trees and a woodland ground flora.

3.2.14 The western half of the site comprised three internal hedgerows (H1, H2 and H5) and three small wooded blocks (W2, W4, W5) with an additional two hedgerows (H3, and H4) and one wooded block (W3) on the western boundary. The eastern half of the site has only two internal hedgerows (H7 and H8) with two further hedgerows (H9 and H10 and two larger woodland blocks (W1 and W6) on the site boundaries.

3.2.15 The hedgerow and wooded belt features are detailed in Table 3-4 and their location and extents are shown on the Habitats Map (Drawing JER6565-ECO-001).

Table 3-4 Summary of Legally Protected Mammal and Herptile Records

Label	Position	Description
H1	Internal	Dense blackthorn *Prunus spinosa* thicket with extensive bramble *Rubus fruticosus* with occasional immature sycamore *Acer pseudoplatanus* and pedunculate oak trees *Quercus robur*. Blackthorn encroaching into the grassland with new suckering growth.
H2	Internal	Dense blackthorn hedgerow with localised bramble thicket and two large pedunculate oak trees at the southern end. A core of hazel coppice is present along the western half of the hedge.
H3	Boundary	**H3a** - 7m wide scrub thicket dominated by bramble growing with blackthorn. Small semi-mature pedunculate oaks at hedgerow intersections.
		H3b – Bramble thicket and tall ruderal vegetation with a clear cut section giving access to adjacent residential property.
		H3c A line of mature pedunculate oak trees (off-site) with a bramble understorey and immature ash trees within the site
H4	Boundary (Internal)	Dense blackthorn and bramble with hawthorn and young maturing ash *Fraxinus excelsior* trees. Low thickets of sweet briar *Rosa rubiginosa* were well established in two locations on the edge of the overgrown hedgerow. Veteran oak trees were located outside the site boundary.
H5	Internal	Scrubby hedgerow adjoining woodland to the west and comprising immature silver birch, alder *Alnus glutinosa* and blackthorn with abundant bramble.
	Internal	**H5b** - Immature ash and silver birch *Betula pendula* with abundant dense bramble thicket.
	Internal	**H5c** Gappy hedgerow with elm *Ulmus* sp and hawthorn *Crataegus monogyna* shrubs and semi-mature ash and sycamore trees over low sprawling bramble and nettle.
H6	Internal	Overgrown hedgerow comprising dense blackthorn thicket with a single large pedunculate oak tree, a semi-mature sycamore and several small elm trees.
H7	Internal	Dense scrubby hedgerow of hawthorn, blackthorn and grey willow *Salix cinerea* with immature pedunculate oak and a multi stem maturing Ash.
H8	Internal	Dense scrubby hedgerow of hawthorn, blackthorn and bramble thicket with immature pedunculate oak and a maturing sycamore.
H9	Boundary	Species-diverse tall and scrubby roadside hedgerow with hazel *Corylus avellana*, sycamore, hawthorn, elm, field maple *Acer campestre* and blackthorn.
H10	Boundary	Low road side hedge with uniform shape indicating management. Species include hazel, hawthorn, ash and dogwood *Cornus sanguinea*.
Woodland Block		
W1	Boundary	Plantation woodland of even aged ash, oak and wild cherry *Prunus avium*. . Occasional large multi-stemmed aspen *Populus tremula* occur on the western side. Cow parsley *Anthriscus sylvestris*, hogweed *Heracleum sphondylium* and ivy *Hedera helix* are abundant field/ground layer species. Occasional lesser celandine *Ranunculus ficaria*, lords-and-ladies *Arum maculatum*, hedge mustard *Sisymbrium officinale* and herb Robert *Geranium robertianum* were present locally at the eastern end.

Label	Position	Description
W2 a&b	Boundary	**W2a** 20-25m wide strip of secondary (planted?) broadleaved woodland on southern site boundary with a mix of native tree species including ash, field maple, wild cherry and birch and patches of dense scrub. The trees are young (6-8m high) with no larger trees.
		W2b Woodland widens at western end to 50m. Trees are older, up to 10m in height with oak also present in the canopy. Shrub layer comprises scattered hawthorn, spindle *Euonymus europaea*, dogwood, and young cherry. Ground flora was more diverse with wood avens, hart's tongue fern, male fern and wood dock present amongst dense ivy along with abundant tree seedlings. A single common spotted orchid was seen.
W3	Internal	Scrubby woodland to 5m high with frequent blackthorn and alder, and occasional oak, silver birch, ash elm and sycamore. Ground flora comprises sprawling bramble.
W4	Boundary	Small area of woodland with a few large oak trees and a shrub layer comprising regenerating ash and willow. Ivy is abundant and dog's mercury locally abundant. Other woodland ground flora species occur at low frequency herb Robert, enchanter's nightshade *Circaea lutetiana*, wood speedwell *Veronica montana*, false wood brome *Brachypodium sylvaticum*, traveller's joy *Clematis vitalba* and wood sedge *Carex sylvatica*. Fallen timber lies on the ground and a narrow path created by people leads into the site.
W5	Internal	**W5a and W5b** Several veteran oak trees (very wide canopies) with scattered hawthorn shrubs and woodland field layer of bramble, common nettle *Urtica dioica* and young regenerating shrubs. Dense ivy and patches of rough meadow-grass occur in gaps in the bramble cover. Woodland flora in W5a is very localised at eastern end with occasional lesser celandine *Ranunculus ficaria*, herb Robert, enchanter's nightshade, dog's mercury *Mercurialis perennis* and honeysuckle *Lonicera periclymenum.* W5b was the only woodland block to support ancient woodland indicators close to the boundary with the off-site woodland with occasional giant fescue *Festuca gigantica,* and a few plants of goldlilocks buttercup *Ranunculus auricomus*, and a small patch of wild garlic *Allium ursinum.*

Other Habitats

3.2.16 An area of concrete and brick hard standing was located in the north of the site where the buildings of the now demolished community school once stood.

3.2.17 A shallow shaded pond (Pond 1) was situated in the woodland on the southern boundary (eastern end of W2a). It measured approximately 7m x 6m, which increased to 9m x 7m after heavy rainfall. The pond supported no macrophyte plant species and the base of the pond was covered in leaf litter. Several items of refuse had been dumped in the pond and the water quality appeared very poor.

3.2.18 A second very small pond (Pond 2) with emergent vegetation was present in the east of the site comprising shallow water (less than 10-35cm cm deep) with abundant reedmace and occasional soft rush *Juncus effusus*, curled dock *Rumex crispus* and least duckweed *Lemna minuta*. A low bank encircles much of the pond and will have been created from soil dug out to create the waterbody. Dense bramble grows on the bank on the eastern side of the pond.

Plate 3- 4, Pond 2 with Emergent Vegetation

3.3 Dormouse Nest Tube Survey

3.3.1 The results of the dormouse nest tube survey are summarised in the Dormouse Survey Plan (Drawing JER6565-ECO-002). Survey record sheets are provided in Appendix 1.

Dormouse

3.3.2 A single dormouse nest was recorded during ad hoc checks of nest tubes during a site visit on 16th June 2015. The nest comprised a stash of fresh green hawthorn leaves and was found in Tube no 26 towards the centre of the central north-south hedgerow.

3.3.3 The nest was found again in July with no signs of fresh use or fresh leaves. By September the nest had disintegrated to a large degree with no fresh leaves present.

Other Rodents

3.3.4 A nest comprising largely dead brown leaves with a few dead green leaves was found in Tube no 36 During the September check. The dead green leaves were partly decomposed and not typical of freshly picked green leaves that have dried out in a nest tube. The nest was not present in July and it was considered that this was a wood mouse nest constructed of brown dead leaves with more recently fallen and partly decomposed green leaves.

3.3.5 A wood mouse nest with a wood mouse present was found in Tube no 35 at the southern end of the site during the September tube check.

3.4 Bat Activity Surveys

3.4.1 The results of the bat activity transects surveys are illustrated on the Bat Transect Survey Plans (Drawings JER65650-ECO-003 to Drawing JER6565-ECO-007), and summarised below.

29th May 2015 Dusk Survey (See Drawing JER6565-ECO-003)

Transect

3.4.2 Low levels of bat activity were detected in May with the vast majority of registrations being of common pipistrelle. The first registration was at 12 minutes after sunset with common pipistrelle observed flying south from the location of a large mature oak close to the southern site boundary. Given the time of the observation it was considered probable that the bat emerged from the oak tree. Regular passes by common pipistrelle were seen and recorded here every 1 to 4 minutes in the first 30 minutes after sunset (sunset at 21:15).

3.4.3 A brief (1 to 2 minutes) period of foraging by individual common pipistrelle was recorded in association with hedgerow H3c on the western site boundary. Occasional point registrations were made adjacent to hedgerows in the west of the site, continuing until the survey end at 23:20.

3.4.4 Two brief soprano pipistrelle passes were made on the western site boundary approximately 40 minutes after sunset, and one pass of an unidentified Myotis bat was made on the eastern boundary hedge at 10:49 (over 90 minutes after sunset).

Static Remote Recording

3.4.5 Static recording was undertaken at two locations for the duration of the transect survey between 21: 30 and 23:20.

Location A

3.4.6 Individual common pipistrelle bats were recorded flying along the hedgerow H1 in the north of the site with 34 registrations of brief passes spread evenly between 21:30 and 22:32. A single noctule was also detected at 22:05. No activity was recorded after 22:32

Location B

3.4.7 More frequent activity was recorded in the central small field bounded by mature oak trees, with 81 registrations of common pipistrelle between 21:35 and 22:36. Multiple passes were recorded each minute in the first 30-40 minutes after sunset with at least 2 bats recorded on 3 occasions. Four soprano pipistrelle registrations and one brief noctule registration were made in this period.

3.4.8 Activity dropped dramatically after 22:36 with only 3 passes of common pipistrelle registered before the end of the survey at 23:20.

25th June 2015 Dusk Survey (See Drawing JER6565-ECO-004)

Transect

3.4.9 Low bat activity, mostly common pipistrelle, was detected in June. Localised foraging by individual bats was detected at the southern and northern end of the central hedgerow (H5a and H5c) with occasional foraging passes also along the woodland edge (Woodland Block W1) in the northeast of the site. Occasional passes were also registered along hedgerows in the west of the site and the eastern boundary hedge (H9).

3.4.10 Brief passes of soprano pipistrelle were registered twice along the central north-south hedgerow. A single pass each of noctule and unidentified myotis bats were also recorded.

Static / Remote recording

Location A

3.4.11 The majority of bat activity recorded was of common pipistrelle (73 registrations) with several passes of individual bats every hour between 23:37 and 04:40. Calls were more frequent between 01:00 and 03:00, and 04:00 to 04:40.

3.4.12 Occasional soprano pipistrelle calls (5 registrations of individual bats) were registered between 00:39 and 03:31.

3.4.13 Eleven passes of serotine bat were registered between 23:45 and 01:42. Single calls of whiskered / Brandt's bat, and an unidentified myotis bat were also recorded.

Location B

3.4.14 Occasional passes of common pipistrelle (8 registrations) and soprano pipistrelle (20 registrations) were registered at intervals typically of 1-3 minutes (and up to 12 minutes).

Location C

3.4.15 Bat activity was recorded throughout the survey period between 21:49 and 04:43. Most of the activity was passes of single common pipistrelle bats (83 registrations). Activity increased gradually from 21:49 with approximately half of all registrations in a peak 2 hour period between 02:00 and 04:00 before tailing off suddenly.

3.4.16 Occasional soprano pipistrelle passes were recorded (22 registrations) between 22:16 and 03:36.

3.4.17 A single pass by a Brandt's/ whiskered bat was registered at 02:35.

6th August 2015 Dusk Survey (See Drawing JER6565-ECO-005)

Transect

3.4.18 Moderate levels of activity were registered in early August with activity spread through the survey period. Most activity centred on the woodland blocks and hedgerows towards the centre

of the site and comprised common pipistrelle with a small number of soprano pipistrelle commuting / foraging passes.

3.4.19 Five common pipistrelle bats were registered at 21:02 north of the small central field with at least 6 common pipistrelles also observed in the field at the same time. Frequent passes with some feeding were registered in these areas until 21:31 with 2 bats recorded on several occasions. The timing of the first registrations of multiple bats (12 minutes before sunset) and the observed flight patterns indicated probable emergence from mature oak trees to the north and south (in woodland blocks W5a and W5b)

3.4.20 Localised foraging by 2 common pipistrelles was registered on the western edge of the site between 21:09 and 21:15 and over the site entrance, with occasional foraging passes by a single bat between 21:57 and 23:00. Occasional common pipistrelle passes were also recorded alongside hedgerows in the west of the site

3.4.21 Soprano pipistrelles were recorded infrequently with brief foraging passes north of hedgerow H2 at 10 and 16 minutes past sunset. Single passes of soprano pipistrelle were also registered in the west and far southeast of the site.

3.4.22 *Static Remote Recording*

3.4.23 Static recording was undertaken at two locations for the duration of the transect survey between 21:05 and 22:45 (both locations) and extending overnight until dawn at Location B.

Location A

3.4.24 High levels of activity were recorded were recorded along the woodland edge on the southwest site boundary. Most of the activity was common pipistrelle (126 registrations) with frequent passes between 21:19 and 00:45 at intervals generally of less than 2 minutes, and frequently with multiple passes per minute. At least 2 bats were recorded on one occasion. Common pipistrelle activity dropped dramatically after 00.45 with only 2 further registrations at 02:30 and 05:03.

3.4.25 Twelve registrations of soprano pipistrelle were also made, the first 4 widely spaced between 21:35 and 02:04. Eight further registrations were made in quick succession between 04:45 and 04:47.

3.4.26 Other species registered rarely were unidentified Myotis (7 registrations), noctule (4 registrations) Natterer's Bat (3 registrations) and probably Leisler's bat (1 registration). Three very faint sonograms were produced which were considered to be bat calls but which could not be identified to species.

Location B

3.4.27 Bat activity at Location B was much less frequent than at Location A. Most activity was common pipistrelle with 36 registrations between 21:05 (7 minutes after sunset) and 04:43, with activity largely concentrated in the first 90 minutes or so after sunset. Individual Soprano pipistrelles

were registered 8 times through the survey period up until the last call at 05:02. Two registrations of unidentified Myotis bats were also made.

27th August 2015 Dusk Survey (See Drawing JER6565-ECO-006)

Transect

3.4.28 Low levels of bat activity were recorded during the transect, with most activity being common pipistrelle. The first bat was recorded 12 minutes after sunset, with occasional commuting and foraging passes observed along the hedgerows and woodland edge in the west of the site. Occasional foraging passes (H4, H3c and H2) were recorded but no prolonged foraging activity was noted. More prolonged foraging of a single bat was recorded along the central hedgerow (H5b/H5c) at 21:54 – 21:59 (sunset at 20:10). Brief passes of common pipistrelle were registered along most of the hedgerows and woodland boundaries in the west although activity levels were low. Rare passes were registered over the southern and eastern site boundaries.

3.4.29 Brief passes of individual soprano pipistrelles were registered along the boundary hedgerows of the two western fields (Fields A and B) with one short period of foraging on the western site boundary (Hedgerow H3c). More prolonged foraging of a single bat was recorded along the central hedgerow (H5/H5c) at 21:54 – 21:59

3.4.30 A single short burst of noctule foraging was registered over the woodland in the centre of the site, with a brief pass also registered over the western field (Field A).

3.4.31 Rare brief passes of unidentified Myotis bats were detected on the western boundary with a single bat foraging continuously along hedgerow H4 between 20:40 and 20:42.

Static / Remote recording

Location A

3.4.32 Moderate levels of activity were recorded at Location A with 77 registrations in total. Common and soprano pipistrelle were registered frequently (34 and 38 registrations respectively) between 20:21 and 21:33. Individuals of both species were often recorded simultaneously with multiple bats of both species also recorded.

3.4.33 Overnight activity was very low with a single common pipistrelle at 22:56 and a single soprano pipistrelle at 02:02. Four brief passes of individual Myotis bats (species not confirmed) and a single pass by Natterer's bat were also recorded.

Location B

3.4.34 High levels of activity were recorded at Location B on the central hedgerow with 300 registrations between 20:22 and 05:58. The large majority were common and soprano pipistrelle with almost equal numbers of registrations (143 and 149 respectively). Very occasionally 2 soprano pipistrelles were registered simultaneously and frequent social calling was recorded. Both pipistrelle species were recorded throughout the survey period with activity particularly

heavy in the 3-4 hours after sunset between 20:22 and 0:38. Activity then dropped dramatically with only 17 pipistrelle passes (both species) between 01:39 and 05:58.

3.4.35 Whiskered / Brandt's bat were registered on 5 occasions in the evening (21:30 and 21:49) and early morning (01:13). These species produce very similar sonograms and a definitive identification was not made.

3.4.36 Single passes were also registered of Leisler's bat, Noctule and an unidentified Myotis bat.

29th September 2015 Dusk Survey (See Drawing JER6565-ECO-007)

Transect

3.4.37 Generally low levels of bat activity were recorded across the site with peaks in activity at localised foraging areas. Most activity was of common pipistrelle, about a quarter of the calls were soprano pipistrelle, and a small proportion were of Myotis species and noctule.

3.4.38 Common pipistrelle activity was recorded first at 18:54 (1 minute before sunset) with a single bat flying from woodland on the southern edge of the site. Given the timing of the detection the bat was considered likely to have emerged from one of the mature oak trees in woodland block W5b. Frequent common pipistrelle activity was recorded over the central field bounded by mature oaks, in the first 20 -25 minutes after sunset. Two bats were registered several times with foraging focused around mature oak trees at the western end of the field in this period.

3.4.39 Prolonged common pipistrelle foraging was also recorded in the southern field (Field F), with sporadic foraging in the centre of the site along hedgerow H2 (1 bat), and west of hedgerow H5b (2 bats). In the east of the site sporadic foraging was also registered along hedgerow H7 (1 bat), H9 (2 bats) and around the northern end of the hardstanding area (2 bats). Spot registrations of common pipistrelle were made infrequently in the western and southern parts of the site.

3.4.40 Prolonged soprano pipistrelle foraging was recorded over the southern field between 20:22 and 20:26 with at least 2 bats present. Brief foraging passes by 2 bats were also registered west of the central hedgerow (hedgerow H5b); and by a single bat over the eastern boundary hedgerow (H9) and the northeast corner of the hard standing in the north of the site. Brief passes of soprano pipistrelle were registered rarely, and mostly along the woodland edge in the north of the site.

3.4.41 Prolonged foraging by whiskered / Brandt's bat was recorded over the southern field between 20:25 and 20:31 with occasional foraging passes also along the eastern site boundary hedge (H9) with rare brief passes recorded in the wider site.

3.4.42 A single pass by a Leisler's bat was registered at 19:42 (47 minutes after sunset) by the scrubby northern hedgerow (H1).

3.4.43 A single noctule was also observed at 18:55 flying over Field E in a south easterly direction.

Static / Remote Recording

3.4.44 The static remote recorder placed midway along the central hedgerow (H5 a–c) recorded frequent brief bat passes through the survey period from 19:29 to 21:03. The majority of passes were individual common pipistrelle (43 registrations) and soprano pipistrelle (28 registrations) at typical intervals of 1-2 minutes. Social calls of both species were recorded rarely.

3.4.45 Three passes by an unidentified Myotis species bat, and a single Natterer's bat pass were also recorded.

3.5 GCN Presence / Absence

3.5.1 The results of the HSI assessment and GCN presence absence surveys are presented in full in Appendix 2. In summary Pond 1 was assessed as being of very poor suitability (HSI score of 0.29) while Pond 2 was assessed as being of average suitability (HSI score of 0.61).

3.5.2 No great crested newts were detected during the presence / absence surveys. Common frog larvae were encountered in Pond 2.

4 Discussion

4.1 Designated Sites

4.1.1 No impact pathways have been identified between the development site and habitats or species for which the Severn Estuary SAC, RAMSAR site and SPA is designated, The site is located over 2.2km from the development, and extensive development within the settlement of Penarth lies between the development site and the designation. The fields within the site are less of typical of inland habitats that would be utilised by overwintering birds associated with the SPA, for which arable fields in the wider local area and along the coastal fringe of the SPA to the southeast, proved more suitable habitat. Given its distance from the site and the and the suboptimal character of the on-site habitats for species associated with the SPA, impacts on the Severn Estuary Designation are considered unlikely.

4.1.2 The Cog Moors SSSI 1.1km to the south of the site, Cosmeston Lakes SSSI, 1,4km south-east of the site comprise habitats (unimproved species-rich grassland, and lakes respectively) to which no direct impact pathways have been identified from the proposed development. Indirect impacts are also considered very unlikely given the distance of the sites from the development location.

4.1.3 Given their distance from the site no direct impact pathways have been identified between the development and any other nearby nature conservation designations.

4.2 Habitats

Semi-improved Grassland

4.2.1 Semi-improved grassland throughout the site was species-poor being dominated by a small number of common grasses. While the forb assemblage varied locally (most notably at the eastern end of Field C, and Field F), forb diversity was low throughout. The abundance of perennial rye-grass and low species diversity throughout most of the site indicates past nutrient enrichment of the soils and the grassland has been classified as a poor example of semi-improved grassland with low botanical value.

4.2.2 Of most botanical interest was Field I, with a greater diversity of grasses including crested dog's-tail and sweet vernal-grass indicating the lowest levels of agricultural improvement within the site. Forb diversity was low with few species indicative of high quality semi-improved neutral grassland.

4.2.3 The grassland is not sufficiently species-rich or representative of un-improved or good semi-improved grassland to qualify as lowland meadow under the UKBAP priority habitat definition or under Section 42 of the NERC Act as a Habitat of Principal Importance for conservation in Wales.

4.2.4 Overall the grassland is considered to be of ecological value at the level of the site and its immediate surrounds.

4.2.5 The extent of habitat loss will dependent on the final masterplan but it is likely that the majority of the on-site grassland would be lost as a result of the development. The loss of poor quality semi-improved grassland would be significant at the level of the site and it surrounds.

Hedgerows / Scrub

4.2.6 The majority of the hedgerows in the west of the site were species-poor with abundant or dominant blackthorn and bramble. Few other shrub species were present with hawthorn being most frequent. The dense scrub cover provides shelter for nesting birds and the hedgerows will function as wildlife corridors in the local landscape. However, the very dense cover and low diversity of woody species and ground flora significantly limits the wider biodiversity value of the hedgerows.

4.2.7 Within the west of the site Hedgerow H2 has core of hazel coppice creating more structural and woody species diversity. The central hedgerow (Hedgerows H5a-c) has a more varied structure incorporating woodland edge and several maturing trees of ash and sycamore. However the hedgerow is not species-rich and the sections not adjoining woodland are gappy.

4.2.8 The eastern boundary hedge (H9) is more typical of a good quality hedgerow being tall and densely structured with elements of spreading canopy and a moderate diversity of woody species. This hedgerow was not sufficiently species rich to be likely to qualify as Important under the 1997 Hedgerow regulations. However, along with the adjacent narrow lane and adjoining hedgerow to the east of the lane, it forms part of landscape feature which has greater ecological value than the hedgerow in isolation.

4.2.9 In summary the hedgerows are not examples of well structured and species-rich hedgerows, but they will function as wildlife corridors and they ecological value within the context of the site and its surrounds. The eastern boundary hedgerow on the side of the green lane is the most notable in terms of woody species diversity. .

4.2.10 Occasional mature pedunculate oaks within the hedgerows in the west of the site have particular ecological value in their own right as established ecological resources that cannot be easily replaced. These should be considered independently of the hedgerows within which they occur.

4.2.11 The extent of hedgerow loss will depend on the final masterplan layout. Given the poor character of the majority of the on-site hedgerows significant hedgerow loss would be significant at the level of the site and it surrounds.

Woodland

4.2.12 The woodland blocks in the centre of the site (W5a and W5b) have the highest value of the onsite woodlands. Large mature oaks were present indicating the woodlands have been

established for some time. The scrub understorey was sparse but several ancient woodland ground flora species were present and the woodland blocks are possible remnants of more extensive woodland cover. The size of the blocks limits their value of as woodland but the mature pedunculate oak trees have high ecological value and could only be replaced in the every long term.

4.2.13 To the west, woodland block W4 also supports some large pedunculate oaks indicating it has been established some time. Secondary growth of ash and willow creates dense shade which limits ground flora although the presence of some ancient woodland ground flora species indicates the woodland has been established some time.

4.2.14 These areas of woodland are of value at the level of the site at least with large mature oak trees potentially of local interest. These woodland blocks are also likely to qualify as Lowland Mixed Deciduous Woodland under the UKBAP priority habitats description.

4.2.15 The even-aged plantation woodland in the north of the site (W1) was typical of landscaping with well-spaced, even-sized trees and impoverished ground flora with grasses encroaching from adjacent grassland. Immature woodland on the southern boundary (W2b) also had a low ground flora diversity with even aged trees indicating planting or possibly secondary growth woodland.

4.2.16 Both areas lacked structural heterogeneity and ground flora diversity associated with semi-natural woodland. These woodlands provide cover for fauna and create connectivity within the landscape and therefore have ecological value in the context of the site and its surrounding. However they do not have intrinsically high ecological value and could be replaced in the short to medium term.

4.2.17 In the southeast, the boundary woodland (W2a) had a more varied age structure with a canopy of oak and sparse scrub under storey; and several ground flora species more typical of semi-natural woodland. This is more likely to be secondary woodland and has more intrinsic ecological value with a structure that would be more difficult to replace.

4.2.18 The extent of woodland loss will depend on the final masterplan layout. The loss of even aged young woodland in the east of the site would be of significant at the level of the site only. The loss of mature woodland with mature oak trees would potentially be significant locally. These areas should be seen are priority areas of habitat retention within the site given the age of the mature trees which could not be replaced.

Waterbodies

4.2.19 The small pond with emergent vegetation is very small with a low diversity of emergent vegetation, was not of sufficient size or depth sufficient to be of significant value for aquatic fauna, although the feature adds a small degree of interest and habitat diversity to the site. This pond is considered to be value at the levels of the site only.

4.2.20 The woodland pond contains very poor quality water with no aquatic vegetation and dries almost completely in summer. This pond is considered to be of negligible ecological value.

4.2.21 This feature is considered to be of ecological value at the level of the site at most.

4.2.22 It is likely that the woodland pond would be retained on the site boundary. The small pond with emergent vegetation is likely to be lost with the grassland being developed. The loss of one or both ponds would be significant at the level of the site only.

4.3 Fauna

Bats

4.3.1 All species of bats occurring in the UK receive full protection under The Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended). In addition the following eight species are listed in Section 42 of the NERC act (2006) as species of principal importance for conservation in Wales: Common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, lesser horseshoe bat *Rhinolophus hipposideros*, greater horseshoe bat *Hipposideros ferrumequinum*, barbastelle *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, and brown long-eared *Plecotus auritus* bats. All the above species are also UK BAP priority species.

Roosting

4.3.2 The larger mature trees within woodland blocks W5a and W5b have the potential to possess features that could be used by roosting bats. Due their size and age the trees may possess more sheltered features of high value for roosting bats such as larger cavities or lifted bark.

4.3.3 Common pipistrelle bats were observed flying from the location of mature oak trees in woodland blocks W5a and W5b shortly after sunset during the 29th May and 8th August dusk transect surveys and it is likely that at least one large oak tree within each block is used by roosting common pipistrelles.

4.3.4 The larger oak trees within the hedgerows in Woodland Block W4, and in the hedgerows in the west of the site, and within the mature oak woodland adjoining the site to the south of the site also have the potential to possess features that could be used by roosting bats.

4.3.5 Full coverage of all trees with bat roost potential was beyond the scope of the activity transect surveys and the likely absence of roosts in trees across the site could not be confirmed. However, all the trees within woodland blocks W1, W2a and W2b were too young to be likely to possess features such as rot holes, lifting bark etc with bat roost potential.

4.3.6 The extent of woodland loss will depend on the final masterplan. Mature trees have value in their own right, but the impact of tree loss on roosting bats would depend on whether roost are present and the species effected. Based on the findings of the activity survey the removal of mature oak trees in woodland blocks W5a and W5b would have the potential to results in the loss of one or more roosts of small numbers of common pipistrelle bats with potential local significance.

4.3.7 The removal of other mature trees in Woodland Bock W4 or in the hedgerows could result in the loss of potential roost features.

4.3.8 Specific assessment of trees for bat roost potential would be needed to fully assess the potential significance of impacts on roosting bats as a result of tree loss.

Foraging and Commuting

4.3.9 Bat activity transect surveys confirmed the hedgerows are used by at least 7 bat species. The majority of bat activity was of common pipistrelle (66% of Anabat recordings) and soprano pipistrelle (28% of recordings). Other species comprising very low proportions of recordings were Serotine (1%), Noctule (0.8%), whiskered / Brandt's bat (0.7%), Natterer's bat (0.5%) and Leisler's Bat (0.2%).

4.3.10 Unconfirmed Myotis species bats comprised 1.8% of recordings with very faint sonograms of unidentified bat species making up 0.2% or recordings.

4.3.11 Temporal variations in activity were observed over the survey period of May to September. Common pipistrelle activity was frequent throughout the surveys, while soprano pipistrelle activity was very low from May to early August but equalled or exceeded common pipistrelle in late August, and remained relatively high in September.

4.3.12 Serotine was recorded only in the June survey suggesting possible seasonal use of foraging areas close to the site. Other species were recorded infrequently on various surveys and no temporal patterns in activity were discernible.

4.3.13 Woodland blocks (W5a and W5b) and hedgerow (H6) in the centre of the site are considered to be key areas of important for bats within the site. Prolonged common pipistrelle activity was recorded on all surveys with common pipistrelle considered likely to have emerged from roosts in mature oak trees in the woodland blocks.

4.3.14 The eastern boundary hedge (H9), and the eastern side of the central hedgerow (H5a-c) are also considered important foraging an commuting routes within the context of the site. Frequent passes foraging activity of both pipistrelle species with occasional Myotis foraging were recorded here on multiple survey dates. The southern and northern ends of the central hedgerow (H5a-c) are also important foraging areas for pipistrelle bats in the context of the site.

4.3.15 In some areas high levels of activity were recorded on some but not all surveys reflecting that bat activity may vary through the season with the availability of different prey types and movement between roosts. Hedgerows H6 and H5c where they adjoin Field F were subject to high levels of activity in September by both pipistrelle species and Myotis bats suggesting that this may be a seasonally important foraging area.

4.3.16 Activity levels along the southern boundary of Field A were low during the transect surveys, but overnight recording in early August detected significant common pipistrelle activity with at least 5 other species recorded rarely including Leisler's bat. The boundary with mature oak woodland is considered to have high value as bat foraging habitat. This area may be a useful

foraging area after the initial emergence period for common pipistrelle emerging from roosts in tree in woodland blocks 5a and 5b. The number of species recorded suggests possible wider value as a commuting route for less widespread species in the local area.

4.3.17 Other areas with sporadic activity were Woodland Block W4 (brief pipistrelle foraging in early August), Hedgerow H4 (myotis sp. passes in late August) and hedgerows H2 and H7 (individual common pipistrelle foraging in September). These areas are not considered to be high value features.

4.3.18 Bat activity along the northern and southern boundaries east of the central hedge line, and along hedgerows H1, H3a, and H3b was low, largely comprising brief passes of pipistrelle species. These areas are considered to be of low value for foraging / commuting bats.

4.3.19 No significant bat activity was detected over larger open areas of grassland (Fields A to D and Fields G to J) and these are considered to be of very low importance for foraging /commuting bats.

4.3.20 The extent of loss or indirect impacts on bat foraging areas and flight lines will depend on the final masterplan. Key areas used by large numbers of bats or used consistently through the active period as foraging areas / flight lines will potentially be of local importance and the loss of these areas either through direct loss of woodland edge / hedgerows, or through indirect impacts such as artificial lighting would be significant locally. Specifically these areas are Woodland Blocks 3, 5a and 5b, Field E, Hedgerows H5a to c and H9.

4.3.21 Loss or indirect impacts on areas used more sporadically or by high numbers of species may has potential to be of local significance as these habitats are likely to be important resources at certain times through the active season. These areas are the southern boundary of Field A, and Hedgerows H6 and H5c where they adjoin Field F.

4.3.22 Loss or change in context of low value bat foraging / commuting features would result in limited impacts on very small numbers of common and widespread species and is very unlikely to significantly impact on the local conservation status of these species. Such impacts would be significant at the level of the site only.

Dormouse

4.3.23 The presence of a dormouse nest in the central hedgerow indicates that the hedgerow is utilised by dormice. Given the connectivity of the hedgerows and woodland, dormouse should be assumed to be utilising all suitable habitat throughout the site.

4.3.24 Nest tube surveys are not intended to provide an assessment of population numbers, but the occurrence of a single nest through the summer of 2015, despite the appropriate survey method and effort, suggests that dormouse are active within the site in very low numbers. This is supported by the almost absence of signs of other rodent activity within the nest tubes (such as wood mouse). Wood mouse in particular has less specific habitat requirements than dormouse and typically lives at much higher densities. The survey findings would suggest the on-site

hedgerows and woodland blocks have limited value for dormouse and other small rodents. The species-poor character of the majority of the hedgerows would potentially explain this with dense blackthorn thicket providing a limited autumn food resource and probably only supporting a poor assemblage of invertebrates.

4.3.25 It is unlikely that the on-site hedgerows and woodland would be able to support a self-sustaining dormouse population given their limited quality and extent. Extensive broadleaved woodland providing more suitable dormouse habitat adjoins the site to the south, and the dormice utilising the site are therefore likely to belong to a population distributed throughout suitable habitats in the wider local area including the on-site woodland and hedgerows.

4.3.26 The extent to which hedgerows and woodland will be removed will be confirmed in the final masterplan. Given the use of the hedgerows and woodland by dormouse, removal of significant lengths of hedgerows or extents of woodland will have the potential to harm individual animals and potentially to impact on dormouse use do the site through reduction in extent of suitable habitat or severance of movement corridors.

4.3.27 It is likely that a European Protected Species (EPS) mitigation licence would need to be obtained to allow the development to proceed lawfully. The licence would need to be obtained in advance of any construction related activity which could impact on dormice or their habitats.

Badger

4.3.28 Badger setts are protected from disturbance and damage or obstruction of access under the Protection of Badger Act 1992.

4.3.29 No setts were identified within or adjacent to the site, and no evidence of badger activity was recorded during the ecological appraisal site walkover or subsequent site visits for protected species surveys.

4.3.30 Badger are likely to be resident in the wider rural area. The off-site woodland to the south would be expected to provide suitable locations where setts could be established. The absence of field signs strongly suggests the site does not currently form part of a badger social group territory.

4.3.31 In the absence of setts or any noticeable badger activity within the site, the development will not result in impacts on badger.

Birds

Breeding Assemblage

4.3.32 All nesting birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.

4.3.33 In additional, some species including kingfisher are protected under Schedule 1 of the WCA Act 1981 which confers a higher level of protection to nest sites.

4.3.34 Ground nesting birds can utilise large areas of open ground with limited cover. Species such as skylark are particular associated with arable fields and short but tussocky grassland. The grassland management regime reduces habitat quality and the likelihood of nesting.

4.3.35 The hedgerows would be expected to be used by a range of bird species typically associated with arable landscapes. Dense bramble and blackthorn cover provides good nesting habitat for some species such as dunnock, wren and bullfinch. Cavity features on the larger trees could be used by other nesting birds, such as tit species, treecreeper and nuthatch.

4.3.36 Depending on the extent of loss, removal of woodland and hedgerows, and the change in the context of retained habitat there will be a reduction of the extent of suitable bird nesting habitat. Ground nesting habitat would be lost and the site would be potentially less likely to support species of conservation concern less typically associated with gardens and sub-urban areas such as bullfinch.

Reptiles

4.3.37 All native British reptiles are protected under the WCA 1981 (as amended). The four most widespread reptile species (grass snake, slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara* and adder *Vipera berus*) are protected from intentional killing or injury.

4.3.38 Intensively managed agricultural landscapes are not typically associated with good reptile populations. The semi-improved grassland within the site is uniform in structure and regularly cut which will limit its value and the likelihood of reptiles being present. The value of these areas is also limited by the absence of more substantial shelter where reptiles could take refuge in cool / wet weather, or hibernate.

4.3.39 Field boundaries comprising bramble scrub grading into grassland, and small clearings within the central woodland blocks provide a mix of cover and open herbaceous vegetation that could be used by slow-worm.

4.3.40 Overall the site is not considered to be of high value for reptiles given the uniform an frequently cut character of the grassland. The absence of slow-worm within the grassland field margins could not be ruled out.

4.3.41 The development of the site will likely result in the loss of most of the grassland within the site. Depending on the final masterplan layout there is the potential for loss of hedgerows and field margins with encroachment into the woodland edge habitat with the risk of killing or injuring slow-worm.

Amphibians

4.3.42 Great crested newts *Triturus cristatus* are fully protected under The Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010. Great crested newt is a UK BAP species.

4.3.43 No great crested newts were encountered during presence absence surveys of the on-site ponds, and no offsite ponds were identified within 500m of the site. The development will therefore not result in impacts on great crested newts.

Invertebrates

4.3.44 The semi-improved grassland is unlikely to support a diverse assemblage of invertebrates due to low forb diversity and regularly cutting creating a structurally uniform sward. The hedgerows will also have limited vale for invertebrates due to the lack of species-diversity in the scrub layer and ground flora. Bramble which is present throughout the hedgerows will support a reasonable assemblage of common invertebrates. The mature oak trees and associated woodland blocks with bramble and some dead wood are of higher value for invertebrates.

4.3.45 The range of invertebrate habitats is consistent with the surrounding area and the assemblage of species would be expected to have conservation interest in the context of the site or local area.

4.3.46 Loss of the grassland and hedgerows and woodland habitats would be expected to reduce the abundance and diversity of invertebrates that the site can support. Given the absence of high value invertebrate habitats with the site, the impacts on invertebrates is likely to be significant at the level of the site only.

5 Conclusion

5.1 Designated Sites

5.1.1 No impact pathways have been identified between the development site and nearby nature conservation designations.

5.2 Habitats

Semi-improved Grassland

5.2.1 Semi-improved grassland throughout the site was species-poor and considered to be of ecological value at the level of the site. The grassland would not qualify as a UKBAP priority habitat or Habitat of Principal Importance for conservation in Wales.

5.2.2 The loss of poor quality semi-improved grassland would be significant at the level of the site.

Hedgerows / Scrub

5.2.3 The majority of the hedgerows were species-poor with limited biodiversity value of the hedgerows. None of the hedgerows are likely to qualify as Important under the 1997 Hedgerow regulations.

5.2.4 Hedgerow H2, Hedgerows H5a-c and Hedgerow 9 are considered to be of most interest in the context of the site but are not of high ecological value.

5.2.5 Occasional mature pedunculate oaks within the hedgerows in the west of the site have particular ecological value independently of the hedgerows within which they occur.

5.2.6 Given the poor character of the majority of the on-site hedgerows significant hedgerow loss would be significant at the level of the site and it surrounds.

Woodland

5.2.7 The woodland blocks W5a and W5b and W4 have the highest value of the on-site woodlands. Due to the presence of large mature oak trees. These woodland blocks are likely to qualify as the UKBAP priority habitat ‘Lowland mixed deciduous woodland’

5.2.8 Woodland blocks W1, W2a, W2b and W3 are of lower ecological value.

5.2.9 Woodland loss as part of the development would be significant at the level of the site at least with the loss of large mature oak trees potentially of local interest.

Waterbodies

5.2.10 The small pond with emergent vegetation is pond has very little floral or faunal interest and is considered to be of value at the levels of the site only. The woodland pond is considered to be of negligible ecological value.

5.2.11 The loss of one or both ponds would be significant at the level of the site only

5.3 Fauna

Bats

Roosting

5.3.1 One or more large mature trees within woodland blocks W5a and W5b is likely to support a common pipistrelle roost.

5.3.2 The larger oak trees in Woodland Block W4, in the hedgerows in the west of the site, and in the woodland to the south of the site also have the potential to possess features that could be used by roosting bats.

5.3.3 Trees within woodland blocks W1 and W2a are unlikely to be of value for roosting bats.

5.3.4 Removal of mature oak trees in woodland blocks W5a and W5b would likely result in the loss of one or more common pipistrelle roost of potentially potential local significance.

5.3.5 The removal of other mature trees in Woodland Bock W4 or in the hedgerows could result in the loss of potential roost features.

Foraging and Commuting

5.3.6 The hedgerows and woodland are used by at least 7 bat species, mostly common pipistrelle and soprano pipistrelle with very small numbers of serotine, noctule, whiskered / Brandt's bat, Natterer's bat, Leisler's Bat. There were also records of unconfirmed Myotis sp and unidentified bat species.

5.3.7 Key area of bat activity were:

High Value Areas

- Woodland blocks W3, W5a and W5b and hedgerow H6 – foraging and flight lines close to roosts. Hedgerow H9 and the eastern side of the Hedgerows H5a-c - foraging an commuting routes within the context of the site.
- The southern and northern ends of the Hedgerows H5a-c - foraging areas for pipistrelle bats in the context of the site.
- Hedgerows H6 and H5c – key pipistrelle and myotis foraging areas in September
- Southern boundary of Field A – potential important flight line (at least 6 species recorded)

Low Value Areas with Sporadic Activity

- Woodland Block W4 (brief pipistrelle foraging in early August),
- Hedgerow H4 (Myotis sp. passes in late August)
- Hedgerows H2 and H7 (individual common pipistrelle foraging in September).

5.3.8 Loss or indirect impacts on high value areas would potentially be of be of local significance.

5.3.9 Loss or change in context of low value bat areas would be significant at the level of the site only.

Dormouse

5.3.10 The central hedgerow is utilised by dormice and this species assumed to be utilising woodland and hedgerows throughout the site.

5.3.11 Dormouse are considered likely to be active in very low numbers within the site.

5.3.12 Dormice utilising the site are likely to belong to a population distributed throughout suitable habitats in the wider local area including the on-site woodland and hedgerows.

5.3.13 It is likely that a European Protected Species (EPS) mitigation licence would need to be obtained to allow the development to proceed lawfully.

Badger

5.3.14 The absence of setts or badger field signs strongly suggests the site does not currently form part of a badger social group territory and the development will not result in impacts on badger.

Birds

Breeding Assemblage

5.3.15 Ground nesting birds could utilise on-site habitats.

5.3.16 The hedgerows would be expected to be used by a range of bird species typically associated with arable landscapes. Features on the larger trees would be used by cavity nesting species

5.3.17 Development of the site would result in the loss of ground nesting habitat and a reduction in the extent of other nesting habitats and the suitability of the site for species less typically associated with gardens and sub-urban areas.

Reptiles

5.3.18 Overall the site is not considered to be of high value for reptiles given the uniform an frequently cut character of the grassland. The absence of slow worm within the grassland field margins could not be ruled out.

5.3.19 There is the potential risk of killing or injuring slow worm as a result of hedgerow loss and encroachment into field margins.

Amphibians

5.3.20 No great crested newts were encountered during presence absence surveys of the on-site ponds, and no offsite ponds were identified within 500m of the site. The development will therefore not result in impacts on great crested newts.

Invertebrates

5.3.21 The semi-improved grassland and hedgerows are unlikely to support a diverse assemblages of invertebrates. Mature oak trees and associated woodland blocks are of higher value for invertebrates in the context of the site.

5.3.22 Potential impacts on invertebrates are likely to be significant at the level of the site at most.

6 Recommendations

6.1 Habitat Retention and Protection

6.1.1 In order to be consistent with planning policy, the site layout will need to demonstrate that the scheme does not result in a net loss of biodiversity. In this context, opportunities should be sought to retain key habitats of highest ecological value.

6.1.2 Where at all possible hedgerows and woodland should be retained, with the site layout designed to minimise indirect impacts (such as artificial light spill from street lighting etc) on retained habitats.

6.1.3 All hedgerows classify as UK BAP priority habitat and hedgerow retention should be maximised. Some hedgerow loss is likely to be unavoidable and retention should focus on the higher value hedgerows, specifically hedgerows H2 (western end), H5a-c H9 which are the most species-diverse and structurally diverse hedgerows within the site. Mature pedunculate oak trees in Hedgerows H2 and H4 should also be retained

6.1.4 Woodland blocks W5a and W5b are a UK BAP habitat. These woodlands along with woodland block W4 contain large oak trees and should be retained.

6.1.5 To protect the health of the retained trees, protection measures should be implemented in the root protection areas to ensure retained hedgerows and trees are protected in accordance with BS 5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations”’.

6.2 Habitat Enhancement and Creation

6.2.1 To minimise impacts and avoid net loss of biodiversity, opportunities for habitat creation and enhancement of retained habitats should be incorporated into the development. Some level of hedgerows loss is likely to be necessary to create a viable layout. Given the low species diversity of many of the hedgerows, enhancement and improved management of retained hedgerows would be a relevant option for the site. Selective thinning and planting up of blackthorn scrub with a diverse mix of native shrubs would enhance the species diversity of retained hedgerows.

6.2.2 Appropriate management with infrequent cutting retained hedgerows with alternative sides cut in different years would promote better structure and would promote hedgerows with better diversity of woody specie and with higher value for fauna by promoting flowering and fruiting of hedgerow shrubs.

6.2.3 Other relevant options would include native wildflower seeding along hedge bases, buffer strips adjoining retained hedgerows, and the use of native shrub species in new landscape planting.

6.2.4 Water attenuation is likely to form part of the development Given the loss of a very small pond, any water attenuation features in the final layout will provide opportunities to create ecologically

valuable aquatic and margins habitats. Such features should be designed to maximise biodiversity gains using elements including, aquatic macrophyte planting, marginal vegetation planting / sowing, associated tree / shrub planting, and management of newly created habitats.

6.3 Protected Species

6.3.1 Specific measures will be needed to avoid potential impact son protected species, or to mitigate impacts where they are unavoidable.

Bats

6.3.2 Key areas of bat activity and mature trees with the potential to contain bat roost should be retained. Specifically these are:

- Woodland blocks W5a and W5b – mature trees likely to support a common pipistrelle roost.
- Woodland blocks W3, W5a and W5b and hedgerow H6 – bat foraging and flight lines close to roosts.
- Hedgerow H9 and Hedgerows H5a-c – bat foraging and commuting routes
- The southern and northern ends of the hedgerow H5a-c – pipistrelle bat foraging areas
- Hedgerows H6 and H5c – key pipistrelle and myotis foraging areas in September
- Southern boundary of Field A – potential important flight line (at least 6 species recorded)
- Woodland Block W4 (brief pipistrelle foraging in early August),
- Hedgerow H4 (myotis sp. passes in late August)
- Hedgerows H2 and H7 (individual common pipistrelle foraging in September).

6.3.3 Trees in woodland Blocks W5a and W5b with suspected bats roosts would need to be retained and protected with sufficient stand off to ensure that there will be no direct or indirect impact on bat roosts either during construction or occupation of the completed development.

6.3.4 Any works resulting in impacts on bat roosts would require an NRW EPS mitigation licence to be obtained in advance for the work to be lawful. Emergence surveys of the roosts undertaken during the period of May to August inclusive, would be required to provided sufficient information to characterise the roosts and assess impacts for the EPS mitigation licence.

6.3.5 It is recommended that mature trees within the site are inspected to confirm the locations of suspected bat roosts, and to identify potential roost features in other trees and assess their likelihood to be used by roosting bats.

6.3.6 A daytime tree inspection should be undertaken by a skilled tree climber who also holds an NRW bat survey licence. The tree climber would inspect all larger trees from the ground to identify potential features such as rot holes, loose bark, callus rolls, cavities etc that could be used by roosting bats. The tree climber would also be able to inspect the tree at height for features not visible from the ground. Any features identified would be closely inspected for signs of bats use. When features can be fully inspected and no signs of bats use are found the features the absence of a roost can normally be confirmed unless the feature is of particularly

high quality. Where absence cannot be confirmed or where features of very high quality are found. Additional dusk / dawn surveys are likely to be needed to confirm roost absence.

Dormouse

6.3.7 Given the presence of dormice in the hedgerows and woodland on-site, any significant removal of these habitats will require an NRW EPS mitigation licence to be obtained prior to work commencing, in order for the work to be lawful. The licence would need to be informed by the results of the nest tube survey would require appropriate mitigation to be implemented to ensure that individual animals are not harmed and that the favourable conservation status of the population is not adversely affected. A detailed method statement would be prepared and submitted as part of the licence application. Once issued the licence would need to be undertaken in accordance with the details of the method statement which would become a legally binding condition of the licence. The method statement would broadly include the following elements:

- Demonstration of no net loss of suitable dormouse habitat through a combination of replacement of habitat loss, and enhancement of retained habitat;
- Maintaining connectivity for dormouse through retained habitat and into off-site habitat;
- Controlled removal of dormouse habitat (if required) through appropriate timing and ecological supervision to avoid harm to animals;
- Protection of retained habitats through stand-offs, fencing, avoidance of light spill etc to minimise post development impacts;
- Enhancement of retained habitats through appropriate native shrub planting, provision of nest boxes etc;
- Management of retained habitats to promote enhancement such as low intensity hedgerow cutting with alternate sides cut in rotation.
- Post construction survey and monitoring

Birds

6.3.8 Removal of trees hedgerows or scrub, and clearance of open areas where ground nesting birds may be present, should be undertaken outside of the nesting bird season (March to August inclusive). If this is not possible then as a precaution an ecologist should undertake a nesting bird check of these area to confirm the absence of active nests immediately prior to clearance or removal. In the unlikely event that a nest is found, it would need to remain undisturbed until any young birds have fledged.

Reptiles

6.3.9 Depending on the final Masterplan layout, it may be necessary to mitigate for potential impacts on reptiles.

6.3.10 Retention of the majority of hedgerows and woodland would reduce the level of impacts and potentially avoid the need to undertaken presence / absence surveys.

6.3.11 For impacts on field margins / woodland edged, slow worm should be assumed to be present at least in small numbers and appropriate mitigation implemented to avoid injury or killing of animals. Depending on the extent of habitat loss, supervised and systematic habitat removal during the active period (March to September) and in mild dry conditions may be sufficient to avoid harm to individual animals. If more extensive habitat loss is proposed with the loss of most of the field margins / woodland edge habitats, the use of reptile fencing and trapping is likely to be required to removed animals from the working areas in advance of clearance. Reptile fencing would be installed around areas of suitable habitats. Artificial refuges (1m x 0.5m rectangles heavy duty roofing felt) would be placed in the fenced area and checked over a period of several days or weeks. Any reptiles found would be removed to suitable adjacent habitat off-site. Once reptiles are removed, degradation of habitats within the site would deter animals returning. Degraded habitats would be maintained in an unsuitable condition during construction.

References

Atherton, Bosanqeut and Lawley [Eds]- (2010). Mosses and Liverworts of Britain and Ireland – a field guide. British Bryological Society.

Institute of Ecology and Environmental Management (2012). Guidelines for Preliminary Ecological Appraisal.

Institute of Environmental Assessment (1995) *Guidelines for Baseline Ecological Assessment*. IEA

Joint Nature Conservation Committee (2010). *The Handbook for Phase I Habitat Survey*. JNCC

Stace C. (1997). *New Flora of the British Isles* 2nd Edition. Cambridge University Press

Drawings

© Crown copyright, All rights reserved. 2015 License number 0100031673

© 2015 RPS Group

Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Site Boundary
- A — Field Label
- H1 — Hedgerow Label
- W1 — Woodland Label
- Amenity Grassland
- Bramble Thicket
- Dense Scrub
- Emergent Vegetation
- Hardstanding
- Intact Species-poor Hedgerows
- Plantation Broad-leaved Woodland
- Semi-natural Broadleaved Woodland
- SI — Species-poor Semi-improved Grassland
- Fence
- Intact Species-poor Hedgerow
- Intact Species-rich Hedgerow
- Broadleaved Tree

Rev	Description	Date	Initial	Checked

RPS

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client: BARRATT HOMES SOUTH WALES

Project: LOWER ST CYRES SCHOOL

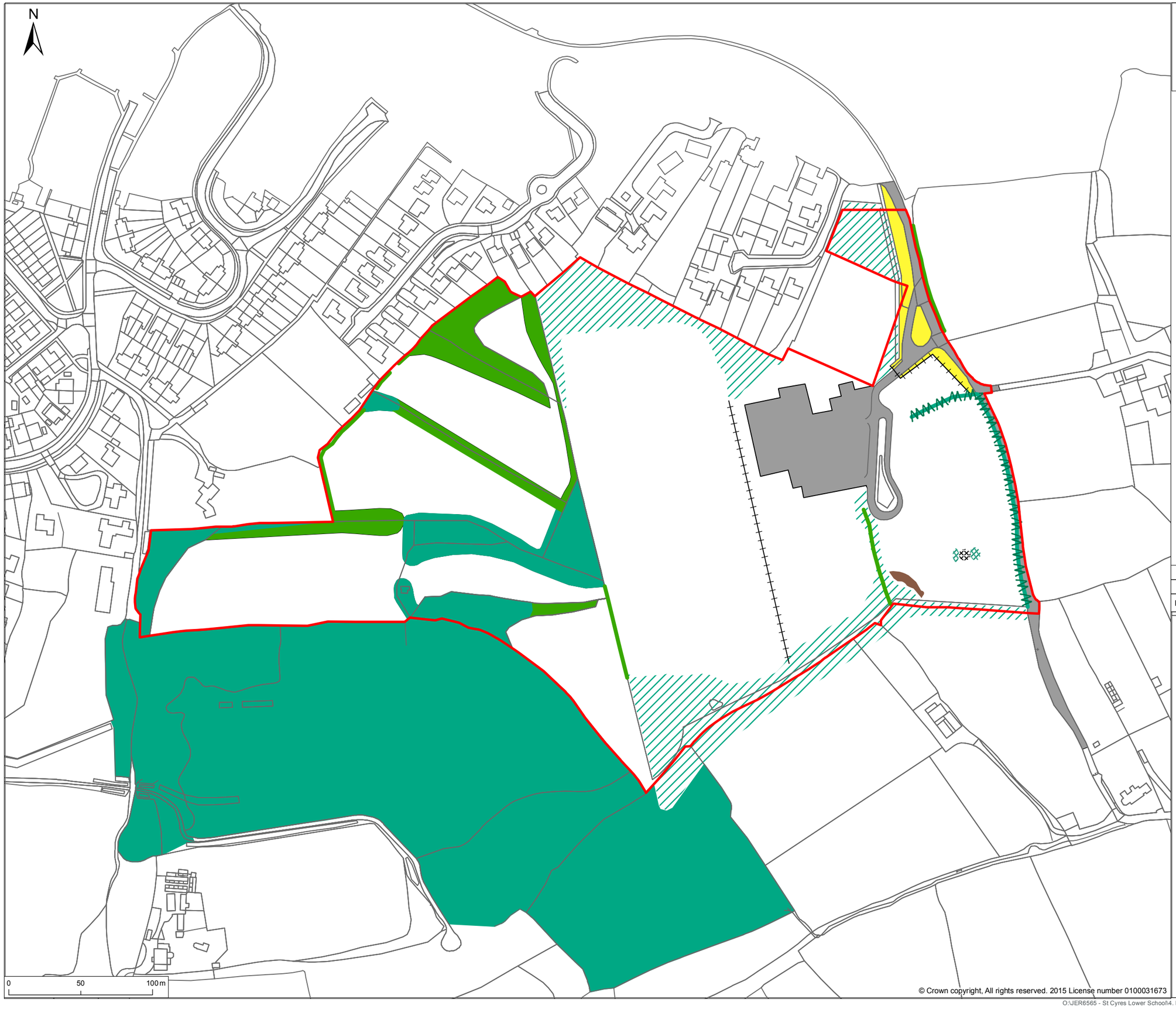
Title: HABITATS MAP

Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	TO
Job Ref	**Scale @ A3**	**Date Created**
JER6565	1:2,500	JAN 16

Drawing Number: **JER6565-ECO-001** Rev: **-**

rpsgroup.com/uk

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-001_D_150929_HabitatsMap.mxd



© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

Site Boundary

Dormouse Survey

- Nest Tube Locations
- Nest Tube with Dormouse Nest & Data - Nest Was First Recorded
- Nest Tube with Other Rodent Nest (Not Dormouse) & Data - Nest Was First Recorded

Rev	Description	Date	Initial	Checked

RPS

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client BARRATT HOMES SOUTH WALES

Project LOWER ST CYRES SCHOOL

Title DORMOUSE SURVEY PLAN

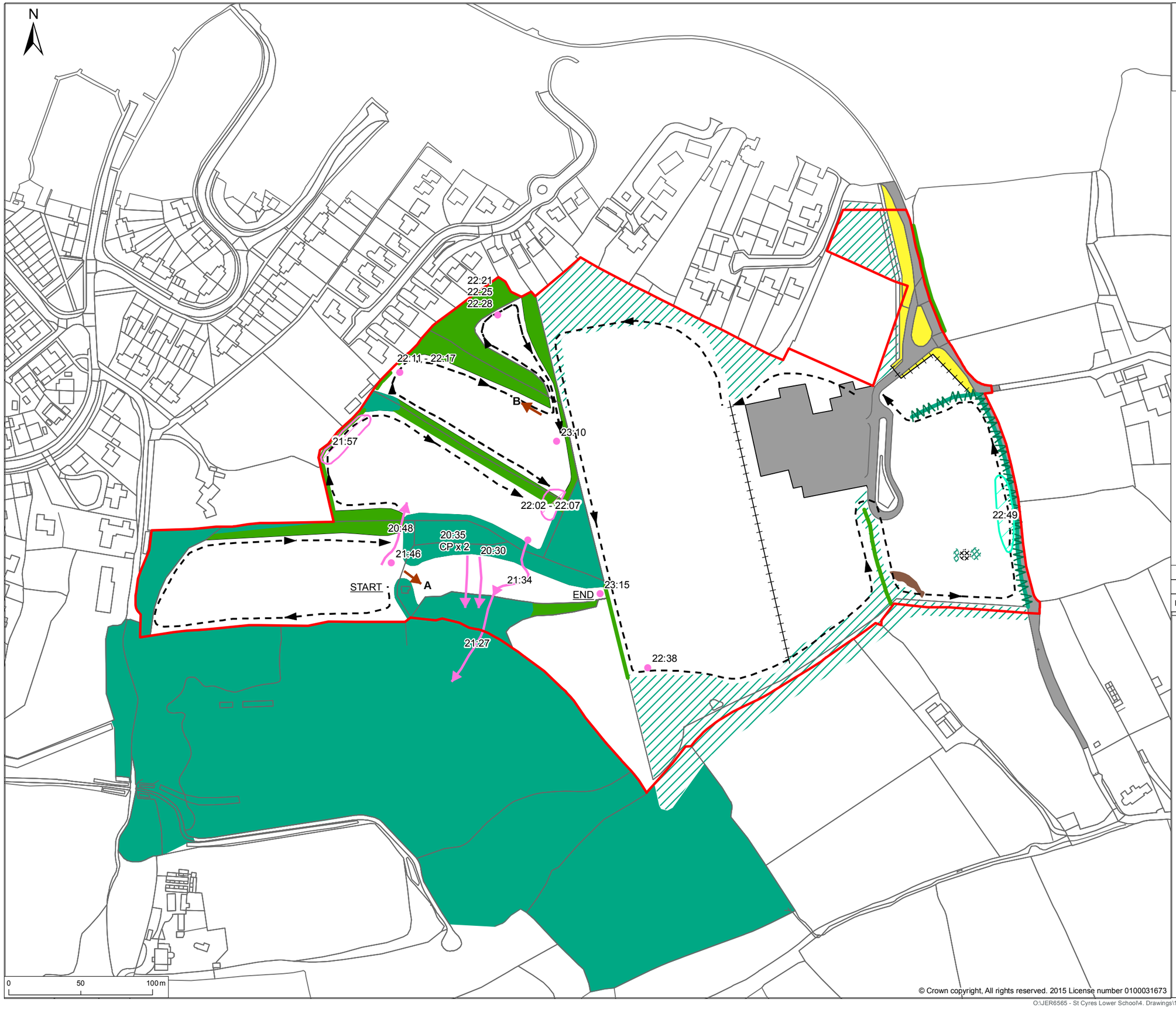
Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	PT
Job Ref	**Scale @ A3**	**Date Created**
JER6565	1:2,500	JAN 16

Drawing Number **JER6565-ECO-002** Rev **-**

rpsgroup.com/uk

© Crown copyright, All rights reserved. 2015 License number 0100031673

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-002_D_151126_DormouseSurvey.mxd



© Crown copyright, All rights reserved. 2015 License number 0100031673

© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

Site Boundary

Bat Foraging

Common Pipistrelle

Myotis Species

Static Detector

Static Detector Location & Orientation

A 21:37 - 23:20

B 21:30 - 23:20

Bat Observed Flight Line

Common Pipistrelle

Bat Point Registration

Common Pipistrelle (Cp)

Bat Transect Route

Bat Transect Route (Start/End)

NOTE

Sunset - 21:16

Rev	Description	Date	Initial	Checked

RPS

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client BARRATT HOMES SOUTH WALES

Project LOWER ST CYRES SCHOOL

Title BAT TRANSECT PLAN 29TH MAY 2015

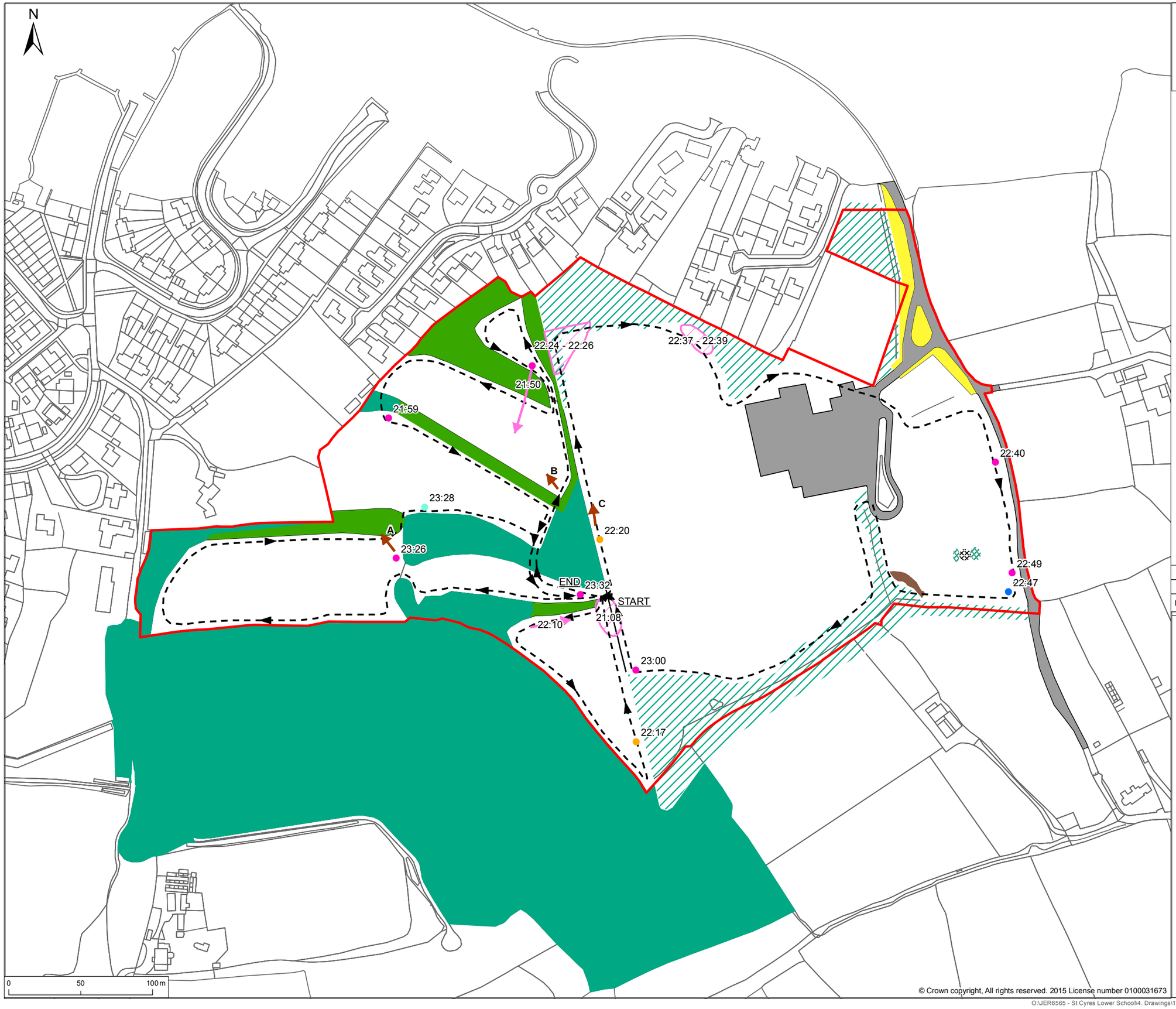
Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	PT

Job Ref	Scale @ A3	Date Created
JER6565	1:2,500	JAN 16

Drawing Number **JER6565-ECO-003** Rev **-**

rpsgroup.com/uk

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-003_D_151130_BatTransectPlan29thMay15.mxd



© Crown copyright, All rights reserved. 2015 License number 0100031673

© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

Site Boundary

Bat Foraging

Common Pipistrelle

Static Detector

Static Detector Location & Orientation

A 23:25 - Dawn

B 21:49 - 22:58

C 23:27 - Dawn

Bat Observed Flight Line

Common Pipistrelle

Bat Point Migration

Common Pipistrelle (Cp)

Soprano Pipistrelle (Sp)

Myotis Species (My)

Noctule (No)

NOTE

Sunset - 21:34

Rev	Description	Date	Initial	Checked

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client: BARRATT HOMES SOUTH WALES

Project: LOWER ST CYRES SCHOOL

Title: BAT TRANSECT PLAN 25TH JUNE 2015

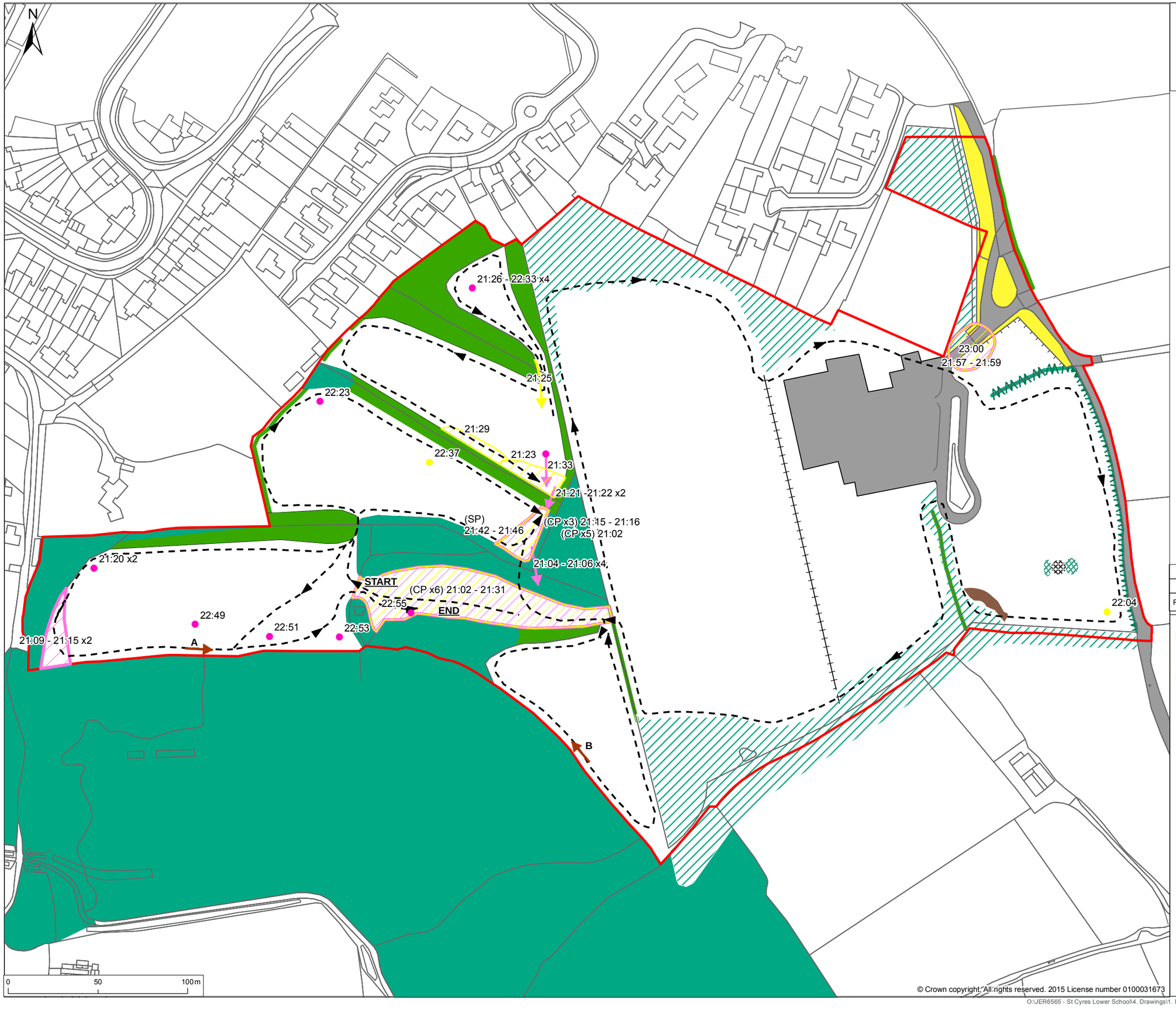
Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	PT

Job Ref	Scale @ A3	Date Created
JER6565	1:2,500	JAN 16

Drawing Number: **JER6565-ECO-004** Rev: -

rpsgroup.com/uk

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-004_D_151126_BatTransectPlan25thJune15.mxd



© Crown copyright. All rights reserved. 2015 License number 0100031673

© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

Site Boundary

Bat Foraging

Common Pipistrelle

Soprano Pipistrelle

Static Detector

Static Detector Location & Orientation

A Overnight

B Overnight

Bat Point Migration

Common Pipistrelle (Cp)

Soprano Pipistrelle (Sp)

Bat Transect Route

Bat Transect Route (Start/End)

NOTE

Sunset - 21:13

Rev	Description	Date	Initial	Checked

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client BARRATT HOMES SOUTH WALES

Project LOWER ST CYRES SCHOOL

Title BAT TRANSECT PLAN 6TH AUGUST 2015

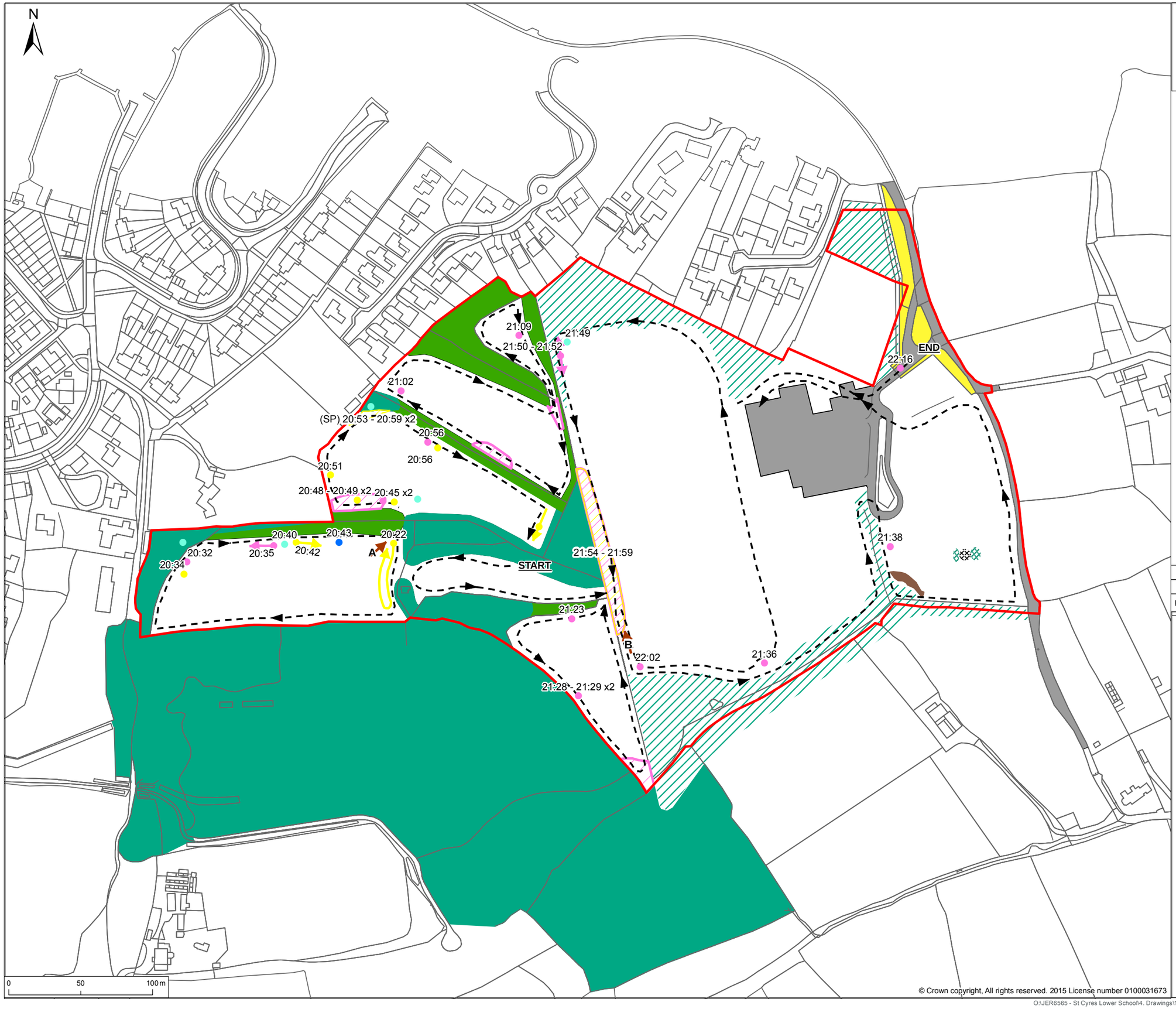
Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	PT

Job Ref	Scale @ A3	Date Created
JER6565	1:2,000	JAN 16

Drawing Number **JER6565-ECO-005** Rev **-**

rpsgroup.com/uk

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-005_D_151209_BatTransectPlan6thAugust15.mxd



© Crown copyright, All rights reserved. 2015 License number 0100031673

© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

Site Boundary

Bat Foraging

Common Pipistrelle

Soprano Pipistrelle

Static Detector

Static Detector Location & Orientation

A Overnight

B 22:05 - Dawn

Bat Observed Flight Line

Common Pipistrelle

Soprano Pipistrelle

Bat Point Migration

Common Pipistrelle (Cp)

Soprano Pipistrelle (Sp)

Myotis Species (My)

Noctule (No)

Bat Transect Route

Bat Transect Route (Start/End)

NOTE

Sunset - 20:10

Rev	Description	Date	Initial	Checked

RPS

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client BARRATT HOMES SOUTH WALES

Project LOWER ST CYRES SCHOOL

Title BAT TRANSECT PLAN 27TH AUGUST 2015

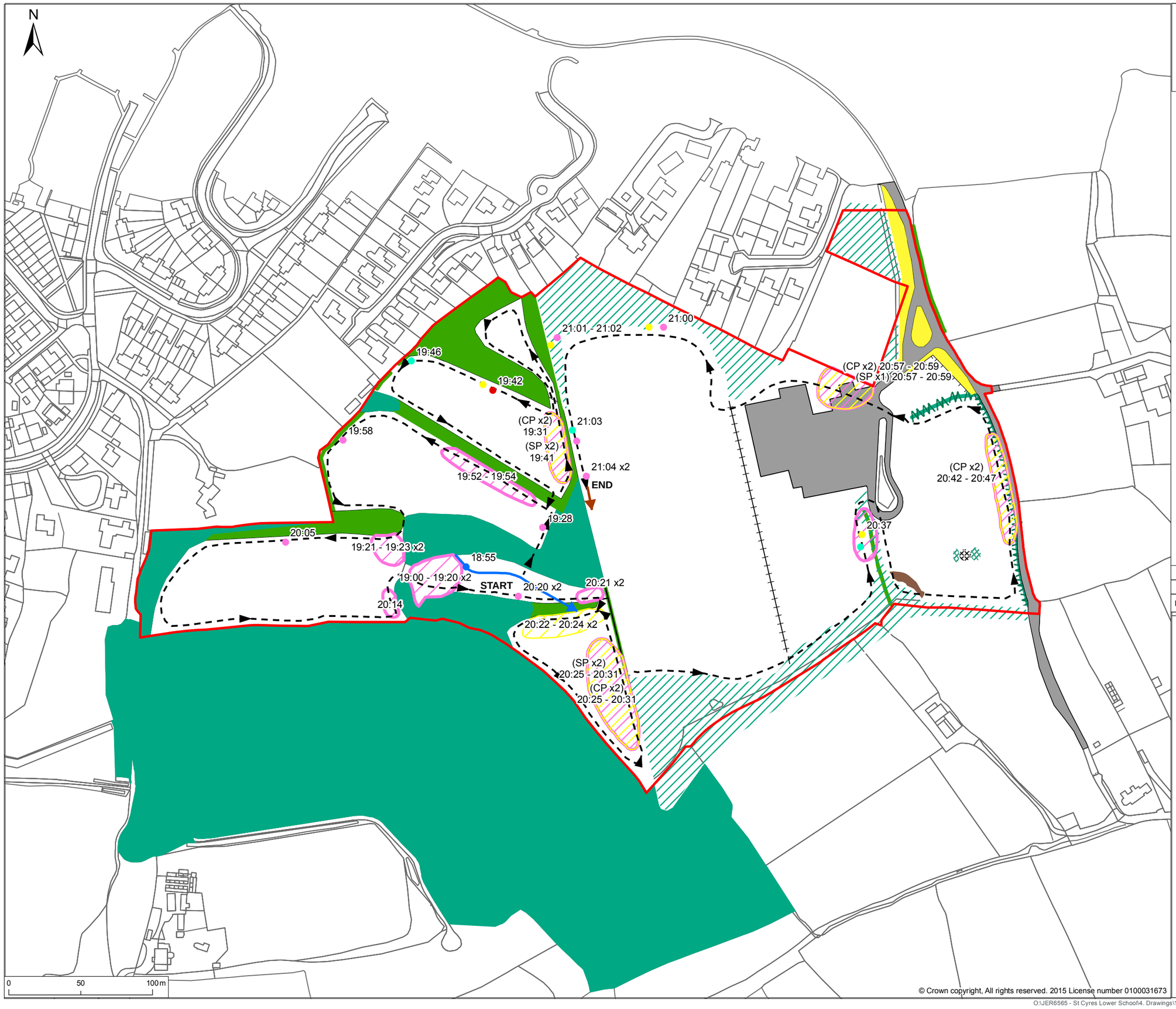
Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	PT

Job Ref	Scale @ A3	Date Created
JER6565	1:2,500	JAN 16

Drawing Number **JER6565-ECO-006** Rev -

rpsgroup.com/uk

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-006_D_151207_BatTransectPlan27thAug15.mxd



© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

Site Boundary

Bat Foraging

Common Pipistrelle

Soprano Pipistrelle

Static Detector

Static Detector Location & Orientation

Bat Observed Flight Line

Noctule

Bat Point Migration

Leisler's Bat (Le)

Common Pipistrelle (Cp)

Soprano Pipistrelle (Sp)

Myotis Species (My)

Noctule (No)

Bat Transect Route

Bat Transect Route (Start/End)

NOTE

Sunset - 18:55

Rev	Description	Date	Initial	Checked

RPS

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client: BARRATT HOMES SOUTH WALES

Project: LOWER ST CYRES SCHOOL

Title: BAT TRANSECT PLAN 29TH SEPTEMBER 2015

Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	PT

Job Ref	Scale @ A3	Date Created
JER6565	1:2,500	JAN 16

Drawing Number: **JER6565-ECO-007**

Rev: -

rpsgroup.com/uk

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-007_D_151207_BatTransectPlan29thSep15.mxd

© 2015 RPS Group

Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Site Boundary
- Emergent Vegetation
- Intact Species-poor Hedgerows
- Plantation Broad-leaved Woodland
- Semi-natural Broadleaved Woodland
- Other Habitat

Rev	Description	Date	Initial	Checked

RPS

2420 The Quadrant, Aztec West, Almondsbury,
Bristol, BS32 4AQ
T: +44(0)1454 853 000 E: rpssw@rpsgroup.com F: +44(0)1454 205 820

Client BARRATT HOMES SOUTH WALES

Project LOWER ST CYRES SCHOOL

Title HABITATS MAP (SIMPLIFIED)

Status	Drawn By	PM/Checked By
PRELIMINARY	JGB	TO
Job Ref	**Scale @ A3**	**Date Created**
JER6565	1:2,000	JAN 16

Drawing Number **JER6565-ECO-008** Rev **-**

rpsgroup.com/uk

© Crown copyright. All rights reserved. 2015 License number 0100031673

O:\JER6565 - St Cyres Lower School\4. Drawings\1. RPS Drawings\MXD\-ECO-\JER6565-ECO-008_D_151208_HabitatsMap(Simplified).mxd

Appendices

Appendix 1

Dormouse Survey Results

Table Key

E = Empty

NF = Nest tube / box not fond

Nest = Rodent nest

FR = Feeding remains (non dormouse)

= Confirmed new occupation by dormouse

= Previously recorded signs of dormouse still present

Tube No	Survey Date		
	28th May 2015	23rd July 2015	23rd September 2015
1	E	E	E
2	E	E	E
3	E	E	E
4	E	E	E
5	E	E	E
6	E	E	E
7	E	E	E
8	E	E	E
9	E	E	E
10	E	E	E
11	E	E	NF
12	E	E	E
13	E	E	E
14	E	E	NF
15	E	E	E
16	E	E	E
17	NF	E	E
18	E	E	E
19	E	E	E
20	E	E	E
21	E	E	E
22	E	E	E
23	E	E	E
24	E	E	E
25	E	E	E
26	E	**OLD Dormouse nest of green**	**OLD Dormouse nest of green**
27	E	E	E
28	E	E	E
29	E	E	E
30	E	E	E
31	E	E	E

Tube No	Survey Date		
	28th May 2015	23rd July 2015	23rd September 2015
32	E	E	E
33	E	E	E
34	E	E	E
35	E	E	**Nest (with live woodmouse)**
36	E	E	E
37	E	E	E
38	E	E	NF
39	E	E	E
40	E	E	E
41	E	E	E
42	E	E	NF
43	E	E	NF
44	E	E	NF
45	E	E	E
46	E	E	E
47	E	E	E
48	E	E	E
49	E	E	E
50	E	E	E
51	E	E	E
52	E	E	E
53	E	E	E
54	E	E	E
55	E	E	E
56	E	E	NF
57	E	E	E
58	E	E	NF
59	E	E	E
60	E	E	E
61	E	E	E
62	E	E	NF
63	E	E	E
64	E	E	NF
65	E	E	E
66	E	E	E
67	E	E	E
68	E	E	E
69	E	E	E
70	E	E	E
71	E	E	E
72	E	E	E
73	E	E	E
74	E	E	E
75	E	E	E
76	E	E	NF
77	E	E	E
78	E	E	E
79	E	E	E
80	E	E	NF
81	E	E	NF
82	E	E	E
83	E	E	E
84	E	E	E
85	E	E	E

Appendix 2

Great Crested Newt Survey

St Cyres, Penarth
Great Crested Newt Survey

Presented to RPS.

17 June 2015

Draft

biocensus
The Malt House, 17 – 20 Sydney Buildings, Bath, BA2 6BZ
Tel: 0845 459 4810
E-mail: enquiries@biocensus.co.uk
Website: www.biocensus.co.uk
Biocensus is a limited liability company registered in England. Registration number 4364279, registered office address 260-8 Chapel St, Salford, Manchester, M3 5JZ.

Your contact:

Dr Gavin Wilson

Biocensus Ltd

The Malthouse,

17-20 Sydney Buildings

Bath

BA2 6BZ

Tel. 0845 459 4810

Mob. 07411 771781

gavin.wilson@biocensus.co.uk

www.biocensus.co.uk

Biocensus is a limited liability company registered in England. Registration number 4364279, registered office address 260-8 Chapel St, Salford, Manchester, M3 5JZ.

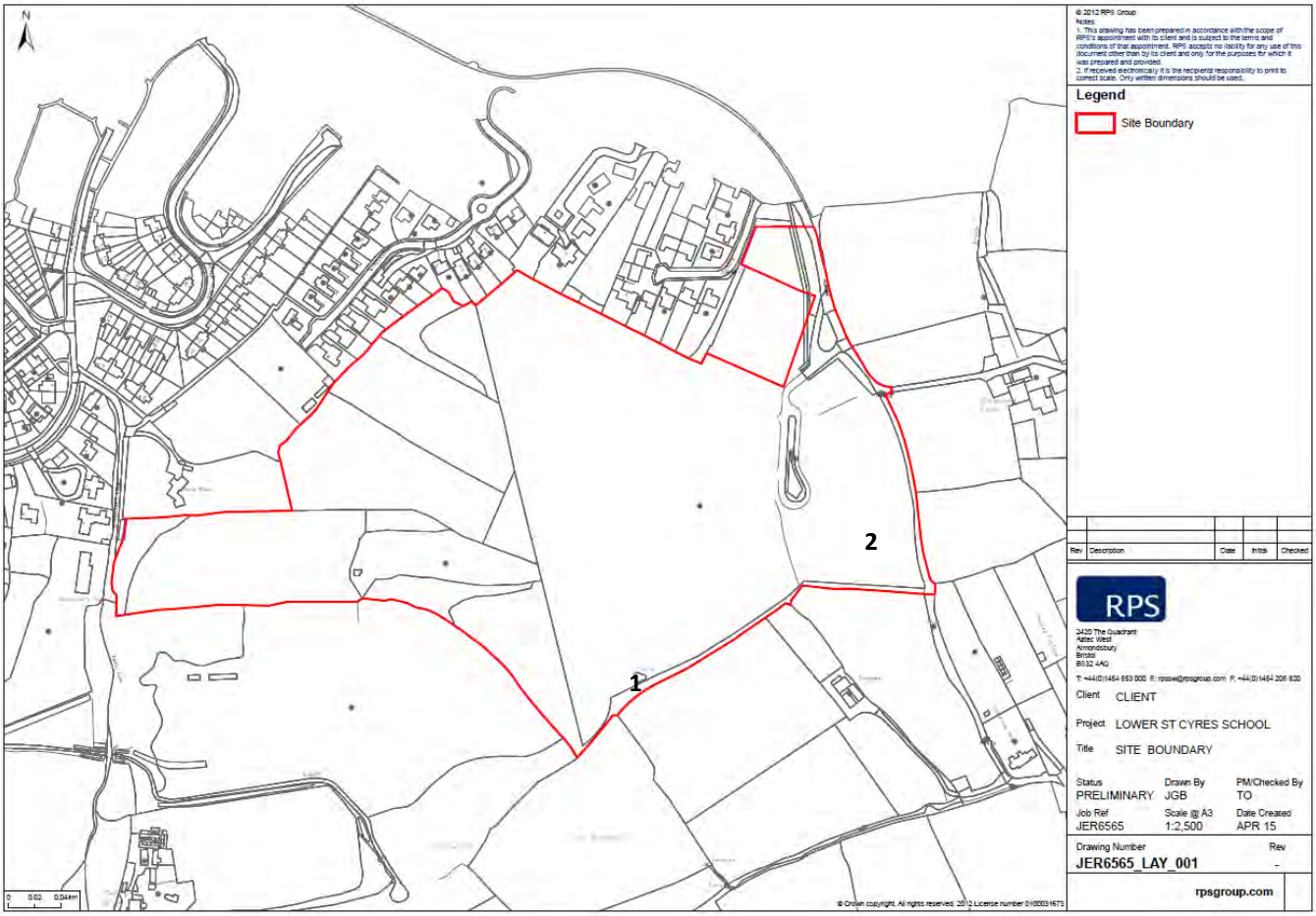
Introduction

This report describes the details of great crested newt (*Triturus cristatus*) (GCN) surveys of two ponds in the grounds of the St Cyres School sports fields in Penarth. The site is situated at Murch Road in Penarth (GBOS ST 16543 70748). The proposed works involve site clearance, groundworks and construction of new school buildings.

Proposed Development Site

The site is situated on Murch Rd in Penarth. The proposed development site boundary is shown in Figure 1. An initial survey identified two ponds, both within the site boundary.

Figure 1. St. Cyres site boundary and the locations of the two ponds (Locations 1 and 2)



Pond 1 (Woodland Pond)

Pond 1 was situated in an area of semi-natural deciduous woodland at the south end of the site, and is entirely shaded by the woodland canopy. The pond measured approximately 7m x 6m, which increased to 9m x 7m after heavy rainfall. The pond and its banks has a shallow gradient and in its

deepest sections measures 35cm in depth (extending to 37cm after heavy rainfall). The pond supported no emergent or macrophyte plant species, although ash saplings have established in the base of the pond which is lined by several seasons of leaf fall.

The pond contained litter, including two plastic school chairs, a tractor tyre and an opened, unlabelled 5 litre chemical bottle.

Pond 2 (Field Pond)

Pond 2 was situated in the southeast of the site within the grassland field and appears to have been deliberately constructed. The pond is circular with vertical sides, measuring 4m x 4m and is 10-35cm deep. The pond supports bulrush and duckweed, and is fringed by bramble scrub along the eastern edge.

Draft

Methodology

Habitat Suitability Assessment

The two ponds onsite were assessed following the great crested newt Habitat Suitability Index (HSI) (Oldham et al. 2000). The HSI is given by assigning a value to each of 10 variables (Appendix) including the size of pond area, water quality and level of shading. The tenth root of the product of these variables is then calculated. This generates the HSI, a numerical index between 0 and 1. The HSI score is used to ascribe the suitability of the pond where a score of 1 represents optimal habitat for great crested newts. The system is insufficiently predictive to allow the conclusion that a pond with a high score will definitely support great crested newts whilst those with a low score will not, and therefore such assessments are generally supported by field surveys.

Presence / Absence surveys

Surveys for the presence of great crested newts require a minimum of 4 visits per year, with at least 2 visits between mid-April and mid-May to record peak numbers of GCN (English Nature, 2001).
Standard survey methodologies of torch survey, egg search and bottle trapping were used in this survey. Descriptions of the methods are given in Table 1:

Table 1. Great crested newt survey methods

Torch Survey	Ponds illuminated using a high powered torch, in order to detect presence of great crested newts in the ponds. Particularly targets males during courtship and display behaviour.
Egg Search	A direct search of emergent and submerged vegetation for great crested newt eggs. Egg surveys can must be undertaken during late spring and early summer (April to June) when eggs are present.
Bottle Trapping	Live-trapping. Bottle traps are placed at edge of pond each survey evening, and checked for newts before 10 am the following morning (Gent and Gibson, 1998).

Survey Conditions

The dates of the survey visits, and the environmental conditions during each survey are given in Table 2.

Table 2: Summary of Survey Conditions.

	Visit 1 **04/05/15**	**Visit 2** **05/05/15**	**Visit 3** **12/05/15**	**Visit 4** **18/05/15**

Biocensus is a limited liability company registered in England. Registration number 4364279, registered office address 260-8 Chapel St, Salford, Manchester, M3 5JZ.

Air temperature (°C) *Evening* *Morning*	 11 10	 10 9	 9 8	 12 7
Water temperature (°C) *Evening* *Morning*	 9 9	 8 8	 8 8	 9 9
Precipitation and wind	Heavy Rain 1-2 Bf	Light Rain 1-2 Bf	Clear 0 Bf	Clear 3-4 Bf

Table 3: Summary of Pond Conditions.

	Visit 1 04/05/15	Visit 2 05/05/15	Visit 3 12/05/15	Visit 4 18/05/15
Pond 1				
Vegetation cover (Low, medium or high)	Low	Low	Low	Low
Turbidity (Low, medium or high)	Low	Low	Low	Low
Water quality (Good, moderate, poor)	Poor	Poor	Poor	Poor
Pond 2				
Vegetation cover (Low, medium or high)	High	High	High	High
Turbidity (Low, medium or high)	Low	Low	Low	Low
Water quality (Good, moderate, poor)	Good	Good	Good	Good

Draft

Results

Habitat Suitability Index (HSI)

Summary HSI results for the two ponds are shown in Table 3. Pond 1 was considered to have poor suitability for great crested newts. Pond 2 was considered to have average suitability. The full scoring for each pond is presented in Appendix 1.

Table 4: Summary HSI Results.

Waterbody	Score	Suitability for GCNs
P1	0.29	Very Poor
P2	0.61	Average

Presence/Absence Survey

No great crested newts were detected with any of the survey techniques. This indicates a likely absence of a breeding population in the survey ponds.

Invertebrate species noted in Pond 1 were rat-tailed maggots *Eristalis tenax*, the larvae of the drone fly. This species is associated with poor quality, low oxygenated, often polluted water bodies.

In Pond 2, common frog *Rana temporaria* larvae (tadpoles) and a relatively diverse invertebrate community including dragonfly nymphs, whirligig beetles, hoglouse *Asellus aquaticus* and leeches were detected.

Draft

Evaluation and Potential Impacts

Great Crested Newts

On the grounds that the presence of great crested newts onsite is unlikely, the proposed works are not considered to have an impact on any populations of great crested newts.

Other Amphibians

The proposed development will involve the loss of Pond 2. This will reduce the available breeding habitat for common frog on the site.

Recommendations

Great Crested Newts

No further consideration for great crested newts required.

Other Amphibians

On the basis that breeding habitat for common frog may be lost as part of the proposed development, it is recommended that efforts are made to improve the water quality of Pond 1. This will involve removal of the submerged material.

Draft

References

English Nature (2001) *Great Crested Newt Mitigation Guidelines*. ISBN 1 85716 568 3.

Gent, A. and Gibson, S. (1998). *Herpetofauna Workers' Manual*. Peterborough, UK. Joint Nature Conservation Committee.

Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal*, **10**, 143–155.

Appendix1 : Habitat Suitability Index Form

Great Crested Newt HSI Summary of Scoring System & Scores				
Pond Feature (Bold) and Options	**Potential Field Scores**	**Notes on Criteria**	**Pond 1 (Woodland Pond) Scores**	**Pond 2 (Field Pond) Scores**
SI_1 Geographic Location				
A (optimal)	1			
B (marginal)	0.5		0.5	0.5
C (unsuitable)	0.01			
SI_2 Pond area	SI			
Pond surface area (m^2)			0.05	0.05
SI_3 Pond drying				
Never	0.9	Never dries		
Rarely	1.0	Dries no more than two years in ten or only in drought		
Sometimes	0.5	Dries between three years in ten to most years	0.5	0.5
Annually	0.1	Dries annually		
SI_4 Water quality				
Good	1.0	Abundant and diverse invertebrate community		
Moderate	0.67	Moderate invertebrate diversity		0.67
Poor	0.33	Low invertebrate diversity, few submerged plants		
Bad	0.01	Polluted, pollution-tolerant inverts, no submerged plants	0.01	
SI_5 Shade				
Estimate percentage perimeter shaded to at least 1m from shore			0.2	1
SI_6 waterfowl				
Absent	1	No evidence	1	1
Minor	0.67	Waterfowl present, but little sign of impacts		
Major	0.01	Severe impact of waterfowl		
SI_7 Fish				
Absent	1	No records of fish stocking & no fish revealed during survey	1	1
Possible	0.67	No evidence, but local conditions suggest fish may be present		
Minor	0.33	Small numbers of crucian carp, goldfish or stickleback known to be present		
Major	0.01	Dense populations of fish known to be present		
SI_8 Ponds	SI			
Ponds within 1km of survey pond, not separated by major barriers (total number divided by 3.14)			0.69	0.69

Draft

SI_9 Terrestrial habitat				
Good	1		1	1
Moderate	0.67			
Poor	0.33			
None	0.01			
SI_{10} Macrophytes	SI		0.3	0.8
Score			**0.29**	**0.61**

Draft

Appendix 2

Great Crested Newt Legislation and Licensing

GCNs and their terrestrial habitat are protected by the Wildlife and Countryside Act 1981 (as amended) and are classified as European Protected species under The Conservation of Habitats and Species Regulations 2010. This makes it an offence to kill, injure or disturb GCNs and to destroy any place used for rest or shelter by a newt.

Development work can only be permitted to affect GCNs and their habitat under a European Protected Species (EPS) licence from Natural England.

Licences in respect of European Protected Species affected by development can be granted under Section 53(3) (e) of The Conservation of Habitats and Species Regulations 2010, for the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature, and beneficial consequences of primary importance for the environment.

Under The Conservation of Habitats and Species Regulations 2010 licences can only be issued if Natural England are satisfied that: (i) there is no satisfactory alternative and (ii) the action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

The implications for the proposed development work are that any construction activities should not result in the death, injury or disturbance of individual GCNs should they be found to occur on the site. This means that if they are present on site then measures will need to be put in place to provide for their individual protection. In addition, the development should not result in the destruction or damage of breeding habitat or terrestrial habitat of great crested newts. A licence from Natural England would be required to permit development works to proceed should GCNs be found and harm or injury to individual newts and/or destruction/ damage of habitat are likely.

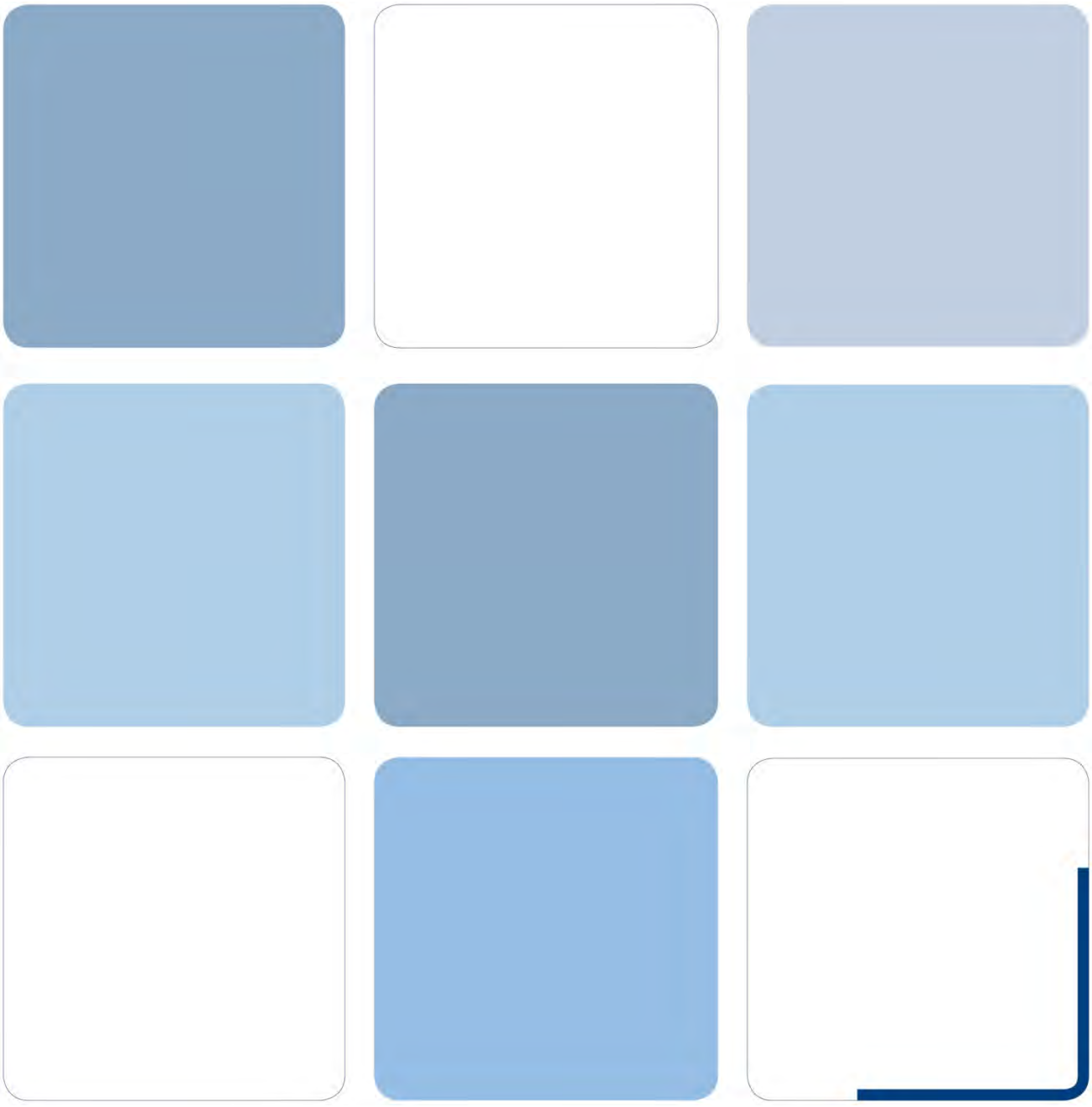
Draft

Appendix EDP 3
Tree Survey Report
(RPS, Report Reference JSL-2735_770A, March 2017)

This page has been left blank intentionally

FORMER ST CYRES SCHOOL SITE, DINAS POWYS

TREE SURVEY REPORT



1st March 2017

Our Ref: JSL2735_770A

RPS
Lakesbury House
Hiltingbury Road
Chandlers Ford
Hampshire
S053 5SS

Tel: 02380 810440
Email: rpsso@rpsgroup.com

QUALITY MANAGEMENT

Prepared by:	**Chris Chambers**
Authorised by:	**David Cox**
Date:	**March 2017**
Project Number/Document Reference:	**JSL2735_770A**
Status:	**For information**

COPYRIGHT © RPS

The material presented in this report is confidential. This report has been prepared for the exclusive use of Barratt Homes and shall not be distributed or made available to any other company or person without the knowledge and written consent of RPS or Barratt Homes.

CONTENTS

APPENDICES:

TREE SURVEY SCHEDULE JSL2735_750

TREE SURVEY DRAWINGS JSL2735_701 & 702 (AS AMENDED)

ARBORICULTURAL GLOSSARY

1 INTRODUCTION

1.1 This tree survey report was commissioned by Barratt Homes. A series of tree surveys were undertaken towards the end of January 2017. In the main the weather conditions were bright and clear.

1.2 This Tree Survey Report is a qualitative survey of the existing trees and woodland in the grounds of the former St Cyres School and additional land adjacent to the old school.

1.3 The purpose of the survey is to assess the landscape and visual amenity value of the existing trees and to identify the constraints associated with the trees prior to any potential redevelopment of the site. An assessment of the quality of the trees has been made, with reference to the categories and sub-categories listed within Table 1 - BS5837:2012[1].

2 SITE INFORMATION

2.1 The survey covered the grounds of the former St Cyres School and an area of additional land adjacent to the old school. The survey site is located in Dinas Powys, Penarth in the Vale of Glamorgan roughly 5 miles south west of central Cardiff and lying on the north shore of the Severn Estuary at the southern end of Cardiff Bay. The survey site is centred on OS grid reference ST163707.

2.2 Access is to the east of the site via Murch Road.

2.3 The survey site comprises the remnant footprint of the demolished school and a large rectangular area of semi- improved grassland formerly the school playing fields. To the west of the sports fields a series of smaller rectangular grassed areas are enclosed by trees and vegetation.

2.4 To the north and the further west the land is the residential housing of Dinas Powys. The southern boundary is formed by treed areas and hedgerows borders, beyond which further trees, woodland and semi- improved grass pasture are located.

3 SURVEY METHODOLOGY

3.1 This report was authorised by Chris Chambers, a Chartered Forester, Chartered Landscape Architect and Senior Arborist of RPS Group.

3.2 The report and survey were carried out in general accordance with the requirements set out in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations”.

3.3 The tree survey involved a visual inspection from the ground of individual specimens and groups of trees in order to record their amenity value, management recommendations and dimensions. Where observed, the general condition of all the trees has been noted. The survey does not constitute a full arboricultural condition assessment involving the detailed inspection of trees in relation to their structural condition, decay, and any other physical and pathogenic defects.

3.4 Trees were not climbed or inspected below ground level and inaccessible trees will have best estimates made about the location, physical dimensions and characteristics.

3.5 The locations of the trees were based upon topographic survey produced by Zenith Land Surveys Limited in Nantgarw, December 2016

3.6 The survey assesses individual trees and groups of trees for quality and benefits within the context of proposed development. The quality of each tree or group of trees has been recorded by allocating it to one of four categories as described in table 3.1. These categories have been differentiated on the tree survey plans (JSL2735_701-702) by colours.

3.7 The survey information was recorded on the attached schedule (Appendix 1) in general accordance with the guidance contained within Section 4 of BS 5837:2012 “Trees in Relation to Design, Demolition and Construction - Recommendations".

3.8 The information recorded is detailed in Table 3.1.

Table 3.1 Tree characteristics recorded during survey

Tree Ref No:	Sequential reference number of trees or groups of trees. Avenues, woodlands and hedgerows were also recorded on the tree survey plan. # - denotes inaccessible trees (best estimates are made about the location, physical dimensions and characteristics.)
Species	Species listed by common name, with scientific names (italic lettering).
Height (m)	Estimated height of canopy to nearest metre.
Branch Spread	branch spread, taken as a minimum at the four cardinal points, to derive an accurate representation of the crown
Stem diameter @ 1.5 m (m)	Measured diameter of trunk at 1.5 m above ground level in metres unless otherwise indicated, multi-stemmed trees being measured in accordance with Annex C: BS5837
Existing height above ground level	To inform on ground clearance, crown/stem ratio and shading the estimated height of the first significant branch and direction of growth and canopy above ground level.
Stem No.	Number of stems (if necessary) of individual tree.

Life Stage	Expressed as:-	Y SM EM M	(Young) (Semi-mature) (Early-mature) (Mature)	OM V D	(Over-mature) (Veteran) (Dead)
Physical Condition	Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:-				Good Fair Poor Dead
Comments / Management Recommendations	General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations and potential for wildlife habitats (not exhaustive).				
Estimated remaining contribution (years)	Estimated remaining contribution, in years (<10, 10+,20+,40+)				
Tree Quality Assessment Value: **Category**	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-	**A** (Trees/Vegetation of high quality and value) **B** (Vegetation of moderate quality and value) **C** (Trees/Vegetation of low quality and value) **U*** (Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years)			
	* Category U trees can have existing or potential conservation value which might be desirable to preserve.				
Tree Quality Assessment Value: Sub - Category	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-	**1** (Trees with mainly *arboricultural* value) **2** (Trees with mainly *landscape* value) **3** (Trees with mainly *cultural / conservation* value)			

3.9 It is recommended that further arboricultural assessments be undertaken in order to assess the full health and safety of all trees which may possess structural or pathogenic conditions.

3.10 A glossary of arboricultural terms is included in Appendix 3.

Limitations

3.11 The findings of this survey are not valid following adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events.

3.12 Trees and woody vegetation were not assessed for their potential impact upon future construction issues such as foundation designs (refer.: NHBC chapter 4.2[2]). Whilst this report may assist in assessing likely future impacts, it should not be classed as a comprehensive vegetation survey in relation to impact upon future designs.

4 APPRAISAL AND RECOMENDATIONS

Generally

4.1 The site is well treed, native rich, with numerous prominent individual trees, mostly pedunculate oaks that provided significant amenity both to the local site and the wider landscape.

4.2 With some exceptions, generally trees were in fair to good physiological condition, with the majority exhibiting full crowns and good new shoot growth/ length consistent with expectations for age, management and species.

Surveyed Trees

4.3 There were a large number of pedunculate oaks that were identified as category 'A' of the BS5837: 2012 tree grading criteria. These were located throughout the site with concentrations to the peripheries of the site and within the tree belts bounding the grass areas. These trees were mature to veteran with indicatively wide spreading root systems (see Tree Survey Plans JSL2735_700/701 for predicted RPAs) and should be considered during the design stage to ensure the wellbeing of and continued provision of high amenity by these trees.

4.4 The survey identified numerous fine field maple and ash of high amenity value which with other native species, holly, cherry, birch, alder, hawthorn and blackthorn that complimented the climax oak canopy character of the site.

4.5 The tree cover was predominantly native but a number of ornamental trees were identified. The surveyed Corsican Pine stand provides evergreen interest and at a great height is visible from some distance.

4.6 There were some trees such as the large poplar to the north of the and certain willows (BS5837 category B2) where structural faults were noted; however, these trees still provide good amenity to the site and it is reasonable to assume they will continue to do so for a number of years, if undisturbed. Disturbances within the RPA of such trees may cause further declines in the structural condition of these trees and this should be considered in the design stage of any proposed development.

4.7 Generally trees were in good structural condition however a number of the larger mature trees display typical structural defects – inner rot, altered wood, poorly attached limbs deadwood and decay. Consideration should be given to routine monitoring of the structural condition of these trees particularly within the context of increased pedestrian traffic associated with the re-development of the site. Should a decline in condition be noted remedial tree surgery works should be undertaken as a matter of urgency.

4.8 Poplar species were identified northern part of the site can also be particularly problematic to incorporate into re-development proposals. They have a vigorous and expansive root systems that often stretch out from the tree to considerable distances. Furthermore, when the roots become damaged they often produce vigorous suckers.

4.9 The vegetation bounding the demolished footprint of the former school of consists of smaller ornamental trees and trees in mixed condition. These were likely planted to relate to layout of the school grounds and in the context of possible redevelopment are are of limited value.

Veteran Trees

4.10 The tree survey identified a few larger oak and field maple of great stature. These may be classified as veterans by fulfilling the BS criteria of "… features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned".

4.11 In recognition of this and given the abundance of potential wildlife habitats associated with veteran trees, these trees should be managed and conserved to maximise their habitat value and life span.

4.12 Veteran tree management should accord with the current environmental legislation, primarily the Wildlife and Countryside Act 1981 and renowned publications such as "Ancient and Other Veteran Trees: Further Guidance on Management"[3]. Reference should also be made to advances in environmental arboriculture for example coronet-cuts, natural fracture techniques and deadwood management many of which are demonstrated in BS3998:2010 "Tree Works-Recommendations" [4].

Planning considerations

4.13 New tree planting opportunities should be considered as part of any potential redevelopment; this will help to broaden the age diversity and arboricultural interest of the tree cover within the area. Sufficient space should be provided for species with significant stature to grow out into maturity.

4.14 The Vale of Glamorgan Council confirmed by telephone (01-03-2017) that there are *no* Tree Preservation Orders (TPOs) in place on the site and the site is not within a Conservation Area.

4.15 The initial phone call was followed up by an email (21-03- 2017) from Vale of Glamorgan Council which provided information on Tree Preservation Orders closely bounding the site to the west and a treed area on the northern tip of the survey site.

4.16 Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is taken into account in dealing with planning applications.

4.17 Trees can offer many benefits, including the provision of visual amenity, softening or complementing the effect of the built environment, and adding maturity to new developments by making places more comfortable in tangible ways e.g. contributing screening and shade, reducing wind speed and turbulence, intercepting snow and rainfall, and reducing glare.

4.18 Particular care is needed regarding the retention of large, mature trees which become enclosed within the new development. Where such trees are retained, adequate space should be allowed for their long-term physical retention and future maintenance. The majority of trees on this site were located at the borders, however consideration should still be given to their RPAs during the design phase, see below.

Design and Site Layout Considerations

4.19 A tree survey plans define the Root Protection Area (RPA) for each tree shown as a circle. This area may be adjusted should physical constraints or topographical features limit root activity in a particular area, however the total area should remain the same. Prior to any adjustment of the tree's RPA zones the changes should be assessed by an arboriculturalist. During any site planning exercises the current and future growth potential of the trees should be considered.

4.20 The RPA for single stem trees broadly equates to a radius 12 times the stem diameter of the tree at 1.5m above ground level or the extent of canopy spread, whichever is the greater. For multi-stemmed, low branching trees or those with trunks with an irregular girth the point of stem diameter measurement is adjusted in consideration of these factors and in accordance with the illustrations in BS5837:2012 (Annex C).

4.21 The RPA should become an exclusion zone during construction works and for any development. It should be fenced-off and protected in accordance with BS5837:2012. The canopy is likewise susceptible to damage during construction work and requires similar protection.

4.22 No activities that result in excavations, changes in level or soil compaction should take place within the RPA of any retained trees, especially older mature trees. This would include the storage of materials, any construction work, trafficking by vehicles or even excessive trafficking by pedestrians.

4.23 If some form of construction has to take place within the RPA then certain measures need to be adopted to avoid disturbance or damage to the roots and to maintain moisture infiltration and gaseous diffusion into the soil.

4.24 Services likewise should be routed outside the existing or potential root zone of trees. Where it is unavoidable, then certain measures should be employed to avoid damage to the trees larger roots.

4.25 The location and siting of new facilities near trees should consider the potential impact on and conflict with both tree roots and canopy. This should take into account the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree on the activities should also be considered with regard to obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.

Trees and Management of Health and Safety

4.26 It is recommended that a programme of periodic arboricultural assessments be undertaken in order to regularly assess the full health and safety of all trees both in full leaf and bare stemmed. The assessments should prioritise areas based on levels of access and presence of target (i.e. exposure of people to hazard) and accord with arboricultural advice, taking account of relevant factors (where known) that affect safety such as the age class, condition, size and species of the trees.

5 REFERENCES

[1] British Standards Institute. *British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations*. 2012.

[2] NHBC. 'Chapter 4.2- Building Near Trees'. *NHBC Standards 2016.* 2016.

[3] Lonsdale, D (2013) *"Ancient and Other Veteran Trees: Further Guidance on Management"*

[4] British Standards Institute, (2010); *'British Standard (BS3998)'- "Trees Work – Recommendations"*

APPENDIX 1

Tree Survey Schedules JSL2735_750

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
1	Salix cinerea Grey Willow	8.0	4.0	7.0	4.0	2.0	0.15 0.15 0.20 0.37	4.00	-	E	M	Fair	Multi-trunked. Ivy. Could lapse long in the limb.	+ 15	C2
2	Salix cinerea Grey Willow	8.0	4.5	3.0	6.0	5.0	ave 0.17	M	-	W	M	Fair	Multi-trunked with Ivy into mid-crown.	+ 15	C2
3	Salix cinerea Grey Willow	10.0	7.0	7.0	7.0	7.0	ave 0.24	M	-	N	M	Fair	Ivy into mid crown. Dead wood.	+ 15	C2
4	Fraxinus excelsior Common Ash	12.0	8.0	7.0	7.0	7.0	0.3 0.28 0.22 0.18	5.00	0.50	N	M	Fair	Appears to be an established low hedge bank group or a grown out coppice.	+ 20	B2
5	Acer campestre Field Maple	9.0	1.0	5.0	4.0	4.0	0.29 0.22 0.15 0.16	4.00	0.50	E	M	Fair	Suppressed to the north by neighbouring Ash. Ivy on bole.	+ 20	B2
6	Fraxinus excelsior Common Ash	12.0	6.0	7.0	6.0	7.0	ave 0.24	M	-	-	M	Fair	Limbs lost/collapsed and regrowing vigorously. Ivy.	+ 20	B2
7	Acer campestre Field Maple	11.0	1.0	4.0	4.0	4.0	ave 0.17	M	-	-	M	Fair	Former mult bole/fused limbs. Ivy and dead wood.	+ 20	B2
8	Acer campestre Field Maple	4.0	3.0	3.0	3.0	3.0	ave 0.11	M	-	-	M	Fair	Supressed. Multi-trunked.	+ 15	C2
9	Fraxinus excelsior Common Ash	14.0	5.5	5.5	5.5	5.5	0.20 0.26 0.22	3.00	0.50	-	MA	Fair	Three closely estalished trunks. Typically vigorous.	+ 15	B2
10	Quercus robur Pedunculate Oak	16.0	8.0	9.0	10.0	8.0	0.92	1.00	2.00	N	M	Fair	Evidence of storm damage. Dead wood in crown.	+ 35	A2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
11	Fraxinus excelsior Common Ash	12.0	4.0	0.5	4.0	4.0	0.38	1.00	3.50	-	M	Fair/Poor	On edge of sunken lane, somewhat precariously on a limestone shelf. Damage to bole. Ivy.	+ 20	B2
12	Fraxinus excelsior Common Ash	12.0	7.0	2.0	2.0	2.0	0.29 0.23 0.22	3.00	3.50	-	M	Fair/Poor	On sunken lane steep side.	+ 20	B2
13	Quercus robur Pedunculate Oak	11.0	6.0	4.0	4.0	4.0	0.44	1.00	3.50	N	M	Fair	Ivy on bole. Tree has established on side of a sunken lane. Abrasion damage to bole.	+ 20	A2
14	Acer campestre Field Maple	9.0	1.5	1.5	1.5	1.5	0.28	1.00	3.50	-	EM	Fair	Ivy to the tips. Strong apical growth/flailed.	+ 20	B2
15	Fraxinus excelsior Common Ash	9.0	4.0	1.0	4.0	6.0	0.36	1.00	2.00	W	M	Fair	Strong bias to the east. Vigorous.	+ 15	C2
16	Quercus robur Pedunculate Oak	9.0	3.0	3.0	3.0	3.0	0.62	1.00	3.50	-	OM	Poor	Moribund with occasional living branches. Ivy clad.	-5	U
17	Fraxinus excelsior Common Ash	12.0	4.0	3.0	4.0	4.0	ave 0.22	M	2.00	N	M	Fair	Multi-trunked tree.	+ 20	B2
18	Fraxinus excelsior Common Ash	10.0	6.0	3.0	3.0	1.0	ave 0.21	M	2.00	N	M	Fair	Multi-trunked tree.	+ 20	C2
19	Fraxinus excelsior Common Ash	9.0	5.0	4.0	4.0	4.0	0.34 0.32	2.00	2.50	N	M	Fair	Twin-trunked tree. Weak union. Ivy may conceal defects.	+ 15	C2
20	Quercus robur Pedunculate Oak	8.0	4.0	3.5	3.5	3.5	0.32	1.00	2.50	N	M	Fair	Ivy into mid crown. Fair form.	+ 25	B2
21#	Fraxinus excelsior Common Ash	14.0	8.0	5.0	7.0	7.0	ave 0.32	M	2.00	N	M	Fair	Damage noted on bole. Ivy. Spreading form.	+ 25	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
22#	Quercus robur Pedunculate Oak	13.0	5.0	5.0	5.0	2.0	0.32 0.28	2.00	2.00	-	M	Fair	Ivy. Fair, upright form.	+ 20	B2
23#	Acer campestre Field Maple	7.0	2.5	2.5	2.5	2.5	0.10 0.12 0.29 0.13	4.00	2.00	N	M	Fair	Multi-trunked. Ivy with a slightly stunted appearance.	+ 15	C2
24#	Quercus robur Pedunculate Oak	9.0	4.0	4.0	4.0	4.0	0.39	1.00	2.00	E	M	Fair	Fair form, off site.	+ 20	B2
25#	Quercus robur Pedunculate Oak	9.0	4.5	4.5	4.5	4.5	0.36	1.00	2.00	-	M	Fair	Fair form, off site.	+ 20	B2
26#	Quercus robur Pedunculate Oak	9.0	4.5	4.5	4.5	4.5	ave 0.32	3.00	2.00	-	M	Fair	Fair form, off site.	+ 20	B2
27	Quercus robur Pedunculate Oak	6.5	6.0	5.0	4.0	4.0	0.30	1.00	1.25	S	EM	Fair	Fair form with potential. Leans to the north-east.	+ 20	C2
28	Acer campestre Field Maple	5.5	2.5	2.5	2.5	2.5	0.20	1.00	2.50	-	EM	Fair	In fair general condition.	+ 25	C2
29	Acer saccharinum Silver Maple	16.0	10.0	10.0	10.0	10.0	0.85	1.00	2.00	-	M	Fair	Wide-spreading crown. Damage to bark on trunk and scaffold limbs with bark loss and infected sap. Dead wood in crown, otherwise in good vigorous condition.	+ 20	A2
30	Acer saccharinum Silver Maple	14.0	3.5	4.0	7.0	4.0	0.35	1.00	2.50	S	M	Fair	Slightly one-sided. Southern bias.	+ 20	C2
31	Prunus avium Wild Cherry	11.0	1.0	4.5	7.0	4.5	0.29	1.00	3.00	S	M	Fair	Typically vigorous. Bias to the south.	+ 20	C2
32	Prunus avium Wild Cherry	13.0	4.0	4.0	4.0	4.0	0.22 0.22	2.00	3.00	-	M	Fair	Ivy into mid-crown.	+ 20	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
33	Acer pseudoplatanus Sycamore	12.0	7.0	5.0	5.0	6.0	0.38	1.00	>4	E	M	Fair	Ivy on bole. Typically vigorous.	+ 20	C2
34	Pinus nigra 'Maritima' Corsican Pine	19.0	1.0	4.0	7.0	4.0	0.42	1.00	>4	S	M	Fair	Lean/ growth bias to the south. Evergreen presence.	+ 20	B2
35	Acer campestre Field Maple	13.0	5.0	5.0	7.0	5.0	0.32 0.24 0.17	3.00	>2	-	M	Fair/Good	Multi-trunked native. Rot pockets noted.	+ 20	B2
36	Acer campestre Field Maple	12.0	5.0	5.0	5.0	5.0	0.3 0.24 0.10	3.00	?2	-	M	Fair/Good	Multi-trunked native. Rot pockets noted.	+ 20	B2
37	Fraxinus excelsior Common Ash	11.0	7.0	7.0	9.0	7.0	0.50	1.00	>2	-	M	Fair	Heavily Ivy clad.	+ 20	B2
38	Populus x canescens Grey Poplar	17.0	7.0	11.0	8.5	4.0	0.68	1.00	3.00	E	M	Fair	Dead wood in crown. Large sprawling form, visually of significance to the properties to the north of the survey site.	+ 25	B2
39	Populus x canescens Grey Poplar	17.0	10.0	10.0	11.0	10.0	0.71	1.00	>3	N	M	Fair	Dead wood in crown. Large sprawling form, visually of significance to the properties to the north of the survey site.	+ 25	B2
40	Populus sp. Poplar sp.	24.0	9.0	9.0	9.0	9.0	0.72	1.00	2.50	-	M	Fair	Large wide-spreading crown. Dead wood noted with Ivy on bole.	+ 25	B2
41	Populus sp. Poplar sp.	22.0	9.0	12.0	9.0	9.0	0.74	1.00	2.50	E	M	Fair	Leans to the east.	+ 25	B2
42	Populus sp. Poplar sp.	22.0	9.0	9.0	8.0	9.0	0.43 0.39	2.00	2.50	S	M	Fair	Large wide-spreading crown. Dead wood noted with Ivy on bole.	+ 25	B2
43	Populus sp. Poplar sp.	21.0	7.0	9.0	12.0	11.0	0.66	1.00	-	-	M/OM	Fair/Poor	Strong bias to the south. Significant dead wood in crown with lower scaffold limbs practically devoid of bark. Storm damage noted.	+ 15	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
44	Populus sp. Poplar sp.	22.0	10.0	10.0	10.0	10.0	0.72	1.00	2.50	-	M	Good	Large wide-spreading crown. Dead wood noted with Ivy on bole.	+ 25	B2
45	Betula pendula Silver Birch	9.0	3.0	4.4	4.0	4.0	0.29	1.00	2.00	E	OM	Fair/Poor	Rot pockets on large limb scar on the main trunk. Off-kilter.	-10	C2
46	Prunus avium Wild Cherry	4.0	3.0	3.0	1.0	2.0	0.14	1.00	1.25	N	OM	Poor	Severe damage to bole. Practically moribund. Remove.	-5	U
47	Betula pendula Silver Birch	9.0	2.5	2.5	2.5	2.5	0.22	1.00	1.25	-	OM	Poor	Damage to bole. Dead wood. Trunk twins at 1.25m.	-10	C2
48	Betula pendula Silver Birch	10.0	3.0	3.0	3.0	3.0	0.24	1.00	1.25	-	OM	Poor	Damage to bole and dead wood.	-15	C2
49	Betula pendula Silver Birch	8.0	2.0	3.5	2.0	2.0	0.18	1.00	1.25	-	OM	Poor	Poor condition.	-15	C2
50	Betula pendula Silver Birch	6.0	2.5	1.5	1.5	1.5	0.12	1.00	1.25	-	OM	Poor	Poor condition, dead wood.	-15	C2
51	Betula pendula Silver Birch	7.0	4.0	3.0	3.0	3.0	0.24	1.00	1.25	-	OM	Poor	Poor condition, dead wood.	-15	C2
52	Prunus avium Wild Cherry	8.0	4.5	4.5	4.5	4.5	0.34	1.00	2.00	S	M	Fair	Dead wood. Fair general condition.	+ 10	C2
53	Prunus avium Wild Cherry	6.0	2.5	3.0	2.5	2.5	0.18	1.00	2.00	E	M	Fair/Poor	Bias to the east. Dead wood.	+ 10	C2
54	Salix babylonica Weeping Willow	12.0	6.0	7.0	6.0	6.0	0.34 0.29	2.00	2.00	-	M	Fair	Fair form. Dead wood stubs. Minor rot pockets.	+ 15	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
55	Quercus robur Pedunculate Oak	10.0	6.0	6.0	5.0	6.0	0.39	1.00	1.25	E	MA	Fair	Established on edge of building footprint. Dead wood. Roots high and visible.	+ 20	B2
56	Fraxinus excelsior Common Ash	7.0	1.0	1.5	1.0	1.0	0.15	1.00	1.50	-	EM	Poor/Fair	Trunk divides to three at 1.5m which may have impications for future structural condition - monitor.	+ 10	C2
57	Fraxinus excelsior Common Ash	5.0	0.5	0.5	0.5	0.5	0.09	1.00	-	-	Y/EM	Fair	Suckers. Immature.	+ 10	C2
58	Fraxinus excelsior Common Ash	8.0	3.0	3.0	2.0	2.0	0.19	1.00	2.00	-	EM	Fair	Slightly easterly bias. Vigorous.	+ 15	C2
59	Acer saccharinum Silver Maple	14.0	8.0	6.5	4.0	5.0	0.36 0.19	2.00	1.75	N	M	Fair/Poor	Twin-trunked with the third trunk cut and part healing, part robbing creating a poor main union at 0.75m.	-15	C2
60	Acer saccharinum Silver Maple	14.0	8.0	8.0	7.0	6.0	0.43	1.00	1.75	N	M	Fair	Dead wood in crown. Fair general condition.	+ 20	C2
61	Quercus robur Pedunculate Oak	16.0	8.0	4.0	8.0	10.0	0.68	1.00	2.00	W	M	Fair	Off site tree with a strong growth bias to the west. The branches to the east are display dieback.	+ 35	A1/2
62	Fraxinus excelsior Common Ash	14.0	6.0	7.0	7.0	7.0	0.44	1.00	1.25	W	M	Fair	Ivy on bole. Dead wood in crown. Vigorous.	+ 25	B2
63	Fraxinus excelsior Common Ash	13.0	5.0	7.0	6.0	7.0	0.28	1.00	1.25	W	M	Fair	Ivy on bole. Dead wood in crown. Vigorous.	+ 25	B2
64	Fraxinus excelsior Common Ash	12.0	4.0	6.0	6.0	7.0	0.36	1.00	1.25	N	M	Fair	Ivy on bole. Dead wood in crown. Vigorous.	+ 25	B2
65	Fraxinus excelsior Common Ash	9.0	5.0	5.0	5.0	5.0	0.37	1.00	1.25	N	M	Fair/Poor	Ivy on bole. Dead wood in crown. Vigorous. Canker noted on scaffold branches.	+ 25	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
66	Fraxinus excelsior Common Ash	11.0	5.0	6.0	3.0	5.0	0.32	1.00	1.25	N	M	Fair	Ivy on bole. Dead wood in crown. Vigorous.	+ 25	B2
67	Acer pseudoplatanus Sycamore	11.0	6.0	6.0	6.0	6.0	0.36	1.00	-	-	M	Fair	Vegetated to the ground. Typically vigorous.	+ 25	B2
68	Acer pseudoplatanus Sycamore	14.0	7.0	7.0	7.0	7.0	0.54	1.00	-	-	M	Fair	Vigorous. Ivy on bole. Cluttered main union.	+ 25	B2
69	Acer pseudoplatanus Sycamore	13.0	7.0	7.0	6.0	7.0	0.44	1.00	0.50	E	M	Fair	Ivy on bole. Damage noted on scaffold limb possibly squirrel. Forms … boundary.	+ 25	B2
70	Acer pseudoplatanus Sycamore	13.0	5.0	6.0	7.0	6.0	0.46	1.00	0.50	E	M	Fair	Ivy on bole. Damage noted on scaffold limb possibly squirrel. Forms … boundary.	+ 25	B2
71	Quercus robur Pedunculate Oak	14.0	9.0	8.0	8.0	8.0	0.64	1.00	0.50	S	M	Good	Dead wood noted, otherwise in good general condition.	+ 40	A1/2
72	Quercus robur Pedunculate Oak	17.0	10.0	8.0	11.0	10.0	1.10	1.00	3.00	N	M	Good	On hedgebank. Large well formed Oak. Excellent skyline amenity. Snags and dead wood.	+ 40	A1/2
73	Quercus robur Pedunculate Oak	11.0	6.0	8.0	6.0	6.0	0.72	1.00	2.00	E	M	Fair/Good	Ivy into tips. Gnarled form with character. Dead wood.	+ 35	A1/2
74	Quercus robur Pedunculate Oak	11.0	5.0	7.0	5.0	4.0	0.95	1.00	2.00	E	M/V	Fair	Significant epicormic growth. Dead wood. Veteranising.	+ 40	A1/2
75	Quercus robur Pedunculate Oak	12.0	5.0	8.0	6.0	7.0	0.68	1.00	2.00	W	M	Good/Fair	Large wide spreading crown. High in skyline amenity.	+ 45	A1/2
76	Acer campestre Field Maple	11.0	2.0	4.0	7.0	4.0	0.3 0.34	2.00	3.00	S	M	Fair	Twin-trunked tree. Heavily Ivy clad.	+ 30	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
77	Quercus robur Pedunculate Oak	12.0	6.5	6.5	6.5	6.5		1.00	2.00	W	M	Fair/Good	Large wide spreading crown. High in skyline amenity.	+ 45	A1/2
78	Quercus robur Pedunculate Oak	8.0	3.0	3.0	3.0	6.0	0.63	1.00	3.00	W	M/V	Fair/Poor	Heavily cloaked in Ivy. Practically moribund.	#-10	C3
79	Quercus robur Pedunculate Oak	12.0	7.0	7.0	8.5	7.0	0.64	1.00	3.00	W	M	Fair/Good	Ivy on bole. Dead wood. Twisting, asymmetrical form, typical of Oak.	+ 35	A1/2
80	Crataegus monogyna Common Hawthorn	6.0	3.0	1.0	1.0	1.0	0.26	1.00	-	-	M	Fair/Poor	Heavily Ivy clad.	-10	C2
81	Quercus robur Pedunculate Oak	11.0	7.0	7.0	7.0	8.0	0.52	1.00	3.00	W	M	Good	Wide spreading, attractive form.	+ 35	A1/2
82	Crataegus monogyna Common Hawthorn	7.0	1.5	1.5	1.5	1.5	0.21 0.20	2.00	-	-	M	Poor	Heavily Ivy clad. Suppressed.	-10	C2
83	Quercus robur Pedunculate Oak	17.0	12.0	10.0	11.0	10.0	1.35	1.00	1.50	SW	M/V	Good	Large, well formed tree. Low sweeping scaffold to south west.	+ 50	A3
84	Quercus robur Pedunculate Oak	16.0	1.0	4.0	11.0	4.0	0.52	1.00	1.50	SW	M	Fair	Bias to the south-west. Damage noted on northern side of main trunk. Dead wood snags.	+ 45	A1/2
85	Quercus robur Pedunculate Oak	16.0	7.0	7.0	7.0	7.0	0.53	1.00	-	-	M	Fair/Good	Dead wood snags. Well formed.	+ 45	A1/2
86	Quercus robur Pedunculate Oak	7.0	4.0	4.0	1.0	1.0	0.54	1.00	-	-	M	Poor	Remaining trunk likely high in ecological value.	+ 15	B2
87	Quercus robur Pedunculate Oak	14.0	7.5	7.5	7.5	7.5	0.52	1.00	3.00	S	M	Fair/Good	Closely established to T88. Ivy on bole.	+ 40	A1/2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
88	Quercus robur Pedunculate Oak	9.0	4.0	2.0	4.0	8.0	0.51	1.00	3.00	W	M	Fair	Bias to the west, suppressed by closely neighbouring tree.	+ 40	A1/2
89	Quercus robur Pedunculate Oak	11.0	3.0	3.0	7.0	3.0	0.44	1.00	4.00	S	M	Fair	Bias to the south. Fair form.	+ 35	B2
90	Quercus robur Pedunculate Oak	12.0	6.0	6.0	5.0	6.0	0.47	1.00	3.00	-	M	Fair	Ivy on bole. Dead wood and stubs. Rot in trunk/buttresses - enlarged.	+ 35	A1/2
91	Quercus robur Pedunculate Oak	15.0	7.0	6.0	8.0	6.0	0.87	1.00	3.00	S	M	Fair/Good	Large well formed tree. High in skyline amenity.	+ 45	A1/2
92	Quercus robur Pedunculate Oak	12.0	7.0	6.0	11.0	8.0	0.88	1.00	3.00	N	M	Fair/Good	Rot pockets and dead wood typical of a tree of this age and stature. Large, well formed tree. High in skyline amenity.	+ 45	A1/2
93	Quercus robur Pedunculate Oak	16.0	10.0	10.0	10.0	10.0	0.98	1.00	3.00	N	M	Fair/Good	Rot pockets and dead wood typical of a tree of this age and stature. Large, well formed tree. High in skyline amenity.	+ 45	A1/2
94	Quercus robur Pedunculate Oak	16.0	10.0	9.0	11.0	7.0	1.40	1.00	3.00	N	M/V	Fair	Large bole with cavity and likely columnar rot into heartwood. Tree divides into four large upright scaffold limbs. An impressive sight with high skyline amenity. Nearing the beginning of gradual senescnce.	+ 50	A3
95	Quercus robur Pedunculate Oak	11.0	5.0	5.0	9.0	3.0	0.47	1.00	2.00	E	M	Fair/Good	Forms part of a line of trees.	+ 40	A1/2
96	Quercus robur Pedunculate Oak	11.0	7.0	5.0	4.0	3.0	0.51	1.00	3.00	N	M	Fair/Good	Altered wood/ rot in bole and heartwood. Heavily Ivy clad.	+ 40	A1/2
97	Quercus robur Pedunculate Oak	12.0	7.0	6.0	7.0	5.0	0.52	1.00	2.00	N	M	Fair/Good	Ivy clad.	+ 40	A1/2
98	Quercus robur Pedunculate Oak	13.0	6.0	7.0	6.0	3.0	0.61	1.00	2.00	E	M	Fair/Good	Closely established to T99.	+ 40	A1/2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
99	Quercus robur Pedunculate Oak	14.0	6.0	3.0	6.0	7.0	0.54	1.00	2.00	W	M	Fair/Good	Closely abuts T98, possibly a large twin trunk.	+ 40	A1/2
100	Quercus robur Pedunculate Oak	10.0	1.0	1.0	11.0	11.0	0.34 0.58	2.00	-	SW	M	Fair/Good	Large scaffold limb in south-westerly direction.	+ 40	A1/2
101	Quercus robur Pedunculate Oak	10.0	6.0	2.0	5.0	7.0	0.61	1.00	2.00	S	M	Fair/Good	Heavily Ivy clad.	+ 40	A1/2
102	Quercus robur Pedunculate Oak	11.0	6.0	5.0	7.0	7.0	0.61	1.00	2.00	S	M	Fair/Good	Ivy clad.	+ 40	A1/2
103	Quercus robur Pedunculate Oak	11.0	5.0	3.0	5.0	8.0	0.48	1.00	2.00	N	M	Fair/Good	Westerly bias.	+ 40	A1/2
104	Quercus robur Pedunculate Oak	11.0	7.0	8.0	4.0	9.0	0.56 0.65	2.00	2.50	W	M	Fair/Good	Large bole. Tree bifurcates at 1.5m.	+ 40	A1/2
105	Quercus robur Pedunculate Oak	11.0	3.0	7.0	7.0	8.0	0.68	1.00	2.50	S	M	Fair/Good	Ivy into upper crown.	+ 40	A1/2
106	Quercus robur Pedunculate Oak	13.0	8.0	5.0	2.0	5.0	0.43	1.00	4.00	N	M	Fair	Growth bias to the south. Dead wood and die back. Ivy on bole.	+ 40	A1/2
107	Quercus robur Pedunculate Oak	15.0	8.0	8.0	10.0	8.0	0.88	1.00	4.00	S	M	Fair	Bole leans in a southerly direction and corrects. Vigorous.	+ 45	A1/2
108	Quercus robur Pedunculate Oak	19.0	6.0	3.5	5.0	9.5	0.54	1.00	2.00	W	M	Fair/Poor	Ivy on bole. Dead wood. Crown is suppressed.	+ 30	B2
109	Quercus robur Pedunculate Oak	19.0	9.0	8.0	9.0	10.0	0.51 0.64	2.00	2.50	N	M	Fair	Twin-trunked at base. Ivy on bole. Vigorous.	+ 45	A1/2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
110	Quercus robur Pedunculate Oak	9.0	4.5	4.0	4.5	4.5	0.56	1.00	3.00	SE	M	Fair	Ivy clad. Suppressed.	+ 30	B2
111	Quercus robur Pedunculate Oak	13.0	6.0	5.0	6.0	6.0	0.78	1.00	2.00	N	M	Fair	Internal cavity in central column. Dead wood and die back, vigorous.	+ 30	B2
112	Quercus robur Pedunculate Oak	9.0	4.0	8.0	4.0	1.0	0.46	1.00	2.50	E	M	Fair/Poor	Heavily Ivy clad and suppressed.	+ 20	C2
113	Quercus robur Pedunculate Oak	17.0	9.0	12.0	12.0	12.0	0.88	1.00	2.50	E	M	Fair	Ivy into mid-crown. Large well formed boundary tree.	+ 45	A1/2
114	Quercus robur Pedunculate Oak	11.0	6.0	6.0	6.0	7.0	0.48	1.00	2.50	N	M	Fair/Poor	Heavily Ivy clad and suppressed.	+ 20	C2
115	Quercus robur Pedunculate Oak	12.0	4.5	4.5	4.5	4.5	0.49	1.00	2.00	S	M	Fair	Unusual buttress/flare. Ivy clad. Dead wood.	+ 25	B2
116	Quercus robur Pedunculate Oak	14.0	8.0	3.0	7.0	4.0	0.48	1.00	2.00	E	M	Fair	East leaning, self correcting trunk. Ivy and dead wood.	+ 25	B2
117	Quercus robur Pedunculate Oak	14.0	6.0	3.0	6.0	10.0	0.53	1.00	1.00	W	M	Fair	Bias to the west.	+ 50	A2
118	Quercus robur Pedunculate Oak	18.0	8.0	12.0	10.0	10.0	1.05	1.00	1.00	E	M/ V	Fair/Good	Evidence of storm damage with broken branches and dead wood stubs. Rot pockets. Ivy on bole. High in amenity value.	+ 45	A3
119#	Fraxinus excelsior Common Ash	17.0	6.0	3.0	5.0	7.0	0.37	1.00	4.00	NW	M	Fair	Bifurcates at 2.5m. Fair form. Suppressed to the east.	+ 30	B2
120#	Quercus robur Pedunculate Oak	16.0	8.0	9.0	9.0	9.0	0.98	1.00	3.00	W	M	Fair	Tree bifurcates at 2m. Heavily ivy clad into crown tips.	+ 40	A2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
121#	Quercus robur Pedunculate Oak	13.0	7.0	5.0	7.0	7.5	0.74	1.00	3.00	W	M	Fair	Ivy clad. Fair form.	+ 40	A2
122#	Acer campestre Field Maple	9.0	5.0	3.5	3.0	3.5	0.35	1.00	2.00	N	M	Fair	Established on hedgebanked boundary. Bias to the north.	+ 35	B2
123#	Quercus robur Pedunculate Oak	14.0	8.0	8.0	8.0	10.0	0.54	1.00	2.00	W	M	Fair	Ivy into crown tips. Fair.	+ 40	A2
124	Acer campestre Field Maple	11.0	5.5	3.0	4.0	3.0	0.36	1.00	2.50	N	M	Fair	Ivy conceals bole into crown tips.	+ 25	B2
125	Fraxinus excelsior Common Ash	13.0	6.0	7.0	7.0	8.0	0.54	1.00	3.50	W	M	Fair	Ivy into mid crown. Fair form.	+ 30	B2
126	Quercus robur Pedunculate Oak	14.0	6.0	5.0	7.0	5.0	0.68	1.00	3.50	N	M/V	Fair	Large cavity and central columnar rot. Tree displays signs of retrenchment and dieback.	+ 35	A2
127#	Crataegus monogyna Common Hawthorn	7.5	4.0	7.0	2.0	4.0	0.35	1.00	2.00	E	M	Fair	Leans east. Dead wood.	+ 15	C2
128	Acer campestre Field Maple	13.0	4.0	10.0	8.0	7.0	0.62	1.00	2.50	N	M	Fair	Heavily Ivy clad, may conceal defects. Damage noted on the scaffold limbs otherwise n fair condition.	+ 45	A2
129	Quercus robur Pedunculate Oak	17.0	4.0	4.0	7.0	7.0	0.82	1.00	>4	NE	M	Fair	Large, wide-spreading crown.	+ 45	A2
130	Quercus robur Pedunculate Oak	17.0	4.0	8.0	10.0	7.0	0.66	1.00	>4	S	M	Fair	Ivy clad Oak.	+ 45	A2
131	Acer campestre Field Maple	17.0	6.0	6.0	6.0	6.0	0.52	1.00	>4	S	M	Fair	Ivy clad, with dead wood snags.	+ 35	A2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
132#	Quercus robur Pedunculate Oak	16.0	9.0	9.0	10.0	8.0	0.74	1.00	>3	S	M	Fair	On edge of neighbouring property. Ivy into mid-crown.	+ 45	A2
133	Fraxinus excelsior Common Ash	16.0	9.0	9.0	9.0	9.0	0.72	1.00	3.00	S	M	Fair	Ivy on main bole.	+ 45	A2
134	Quercus robur Pedunculate Oak	11.0	7.5	7.5	7.5	7.5	0.62 0.68	2.00	3.00	S	M	Fair/Poor	Lower limbs cut back in management. Deadwood throughout.	+ 25	B2
135	Quercus robur Pedunculate Oak	6.0	3.5	3.0	3.5	3.0	0.35	1.00	2.00	-	MA	Fair/Poor	Trunk oddly contorted with crown overhanging to balance. No apparent defects. Minor scars on lower bole otherwise in fair condition.	+ 25	B2
136#	Quercus robur Pedunculate Oak	16.0	6.0	10.0	9.0	10.0	0.84	1.00	3.00	E	M	Fair	Heavily ivy clad, wide spreading crown. Tree is high in skyline amenity. Dead wood snags.	+ 45	A1/2
137#	Fraxinus excelsior Common Ash	11.0	0.5	4.5	6.0	4.5	0.29	1.00	3.00	S	MA	Fair/Poor	Suppressed with a strong bias to the south.	+ 15	C2
138#	Acer campestre Field Maple	15.0	9.0	9.0	9.0	9.0	0.74	1.00	3.00	S	M	Fair	Large, well formed tree. Ivy and dead wood.	+ 45	A1/2
139#	Quercus robur Pedunculate Oak	20.0	13.0	13.0	13.0	13.0	1.50	1.00	4.00	N	M/V	Good	Tree of titanic proportions. Ivy on bole, dead wood snags. High in skyline and amenity value.	+ 45	A1/2
140	Fraxinus excelsior Common Ash	7.5	0.5	2.0	4.5	2.0	0.19	1.00	2.00	S	MA	Fair	Suppressed to the south.	+ 15	C2
141#	Quercus robur Pedunculate Oak	19.0	9.5	9.5	9.5	9.5	0.79	1.00	2.00	N	M	Good	Ivy into mid-crown. Skyline amenity.	+ 45	A1/2
142	Fraxinus excelsior Common Ash	11.0	2.5	2.5	2.5	2.5	0.21	1.00	3.00	-	M	Good	Strong apical growth.	+ 15	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
143	Quercus robur Pedunculate Oak	10.0	5.5	5.5	5.5	5.5	0.34	1.00	3.00	-	M	Fair/Good	Well formed.	+ 35	B2
144	Acer campestre Field Maple	9.0	4.5	4.5	4.5	4.5	0.25 0.19	2.00	-	-	M	Fair	Ivy clad.	+ 25	B2
145#	Quercus robur Pedunculate Oak	18.0	9.0	9.0	7.0	10.0	0.84	1.00	3.00	W	M	Good	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2
146#	Quercus robur Pedunculate Oak	17.0	6.0	7.0	2.0	6.0	0.42	1.00	2.00	E	M	Fair/Good	Suppressed by 145.	+ 35	B2
147#	Quercus robur Pedunculate Oak	15.0	4.0	3.0	4.0	8.0	0.54	1.00	2.00	W	M	Good	Bias to the west.	+ 35	B2
148#	Quercus robur Pedunculate Oak	17.0	6.5	6.5	6.5	6.5	0.49	1.00	2.00	W	M	Fair	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2
149#	Quercus robur Pedunculate Oak	17.0	8.0	8.0	8.0	8.0	0.51	1.00	4.00	E	M	Fair/Good	Dead wood in crown. Strong upright growth.	+ 35	A1/2
150#	Quercus robur Pedunculate Oak	19.0	9.5	9.5	9.5	9.5	0.54	1.00	2.50	N	M	Fair/Good	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2
151#	Quercus robur Pedunculate Oak	17.0	8.0	7.0	8.0	9.0	0.49	1.00	2.50	W	M	Fair	Bias to the west.	+ 40	A1/2
152#	Quercus robur Pedunculate Oak	18.0	10.0	10.0	10.0	10.0	1.15	1.00	2.50	E	M	Fair	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity. Large root flare and rot pockets.	+ 45	A1/2
153#	Quercus robur Pedunculate Oak	17.0	8.0	7.0	8.0	9.0	0.95	1.00	2.50	E	M	Fair	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
154#	Acer campestre Field Maple	13.0	5.0	2.0	5.0	6.0	0.45	1.00	2.50	W	M	Fair	Ivy into mid crown. Dead wood.	+ 35	B2
155#	Quercus robur Pedunculate Oak	11.0	0.5	2.5	7.0	4.0	0.45	1.00	2.50	S	M	Fair	One sided. Rot in buttresses likely columnar heart decay.	+ 25	B2
156	Quercus robur Pedunculate Oak	17.0	10.0	8.0	8.0	8.0	0.89	1.00	3.00	-	M	Fair	Previous storm damage noted comprising loss of lower scaffold limb. Rot in root flare/buttress likely inner decay. Impressive nonetheless.	+ 40	A2
157	Quercus robur Pedunculate Oak	13.0	6.0	10.0	6.0	0.0	0.75	1.00	0.50	-	M	Fair	Strong bias to the east and acute lean. Dead wood, snags.	+ 30	B2
158	Acer pseudoplatanus Sycamore	13.0	7.0	7.0	7.0	7.0	ave 0.22	M	-	-	M	Poor	Typically vigorous, non-native.	+ 20	C2
159	Quercus robur Pedunculate Oak	12.0	6.0	1.0	6.0	6.0	0.35	1.00	3.00	W	M	Fair	Established on lower hedge bank.	+ 30	B2
160	Quercus robur Pedunculate Oak	7.0	2.0	3.0	7.0	4.0	0.35	1.00	3.00	S	M	Fair	Established on lower hedge bank.	+ 30	B2
161	Quercus robur Pedunculate Oak	11.0	7.0	4.0	4.0	4.0	0.32	1.00	2.00	N	M	Fair/Good	Established on lower hedge bank.	+ 30	B2
162	Quercus robur Pedunculate Oak	11.0	6.0	7.0	6.0	2.0	0.36	1.00	2.00	E	M	Fair/Good	Established on lower hedge bank.	+ 30	B2
163	Quercus robur Pedunculate Oak	16.0	7.0	7.0	7.0	7.0	0.38	1.00	2.00	E	M	Fair/Good	Established on lower hedge bank.	+ 30	B2
164	Quercus robur Pedunculate Oak	8.0	3.0	8.0	7.0	2.0	0.56	1.00	2.00	E	M	Fair	Strongly leaning tree.	+ 35	A2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
165	Quercus robur Pedunculate Oak	17.0	7.0	7.0	7.0	7.0	0.68	1.00	2.00	-	M	Fair/Good	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2
166	Quercus robur Pedunculate Oak	17.0	9.0	9.0	9.0	9.0	0.72	1.00	2.00	-	M	Fair/Good	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2
167	Quercus robur Pedunculate Oak	16.0	7.0	7.0	7.0	7.0	0.59	1.00	2.00	-	M	Fair/Good	Large, well formed tree, minor dead wood and stubs. Provides enclosure and skyline amenity.	+ 45	A1/2
G1	Salix caprea, Fraxinus excelsior, Prunus spinosa, Quercus robur Goat Willow, Common Ash, Blackthorn, Pedunculate Oak	7.0	as shown				-	-	-	-	-	Fair	Linear mid-storey shrub group. Mixed species with a Bramble and Ivy ground layer.	+ 15	C2
G2	Acer campestre Field Maple	7.0	as shown				-	-	-	-	MA	Fair	Line of trees bounding the grass area. Vegetation to the ground, these form a transition between the woodland and possible enclosure.	+ 15	C2
G3	Prunus spinosa, Fraxinus excelsior, Ulmus sp., Crataegus monogyna Blackthorn, Common Ash, Elm, Common Hawthorn	>4.5	as shown				-	-	-	-	M	Fair	Mixed understory group. Partly over-run by Bramble.	+ 15	C2
G4	Fraxinus excelsior, Quercus robur, Crataegus monogyna, Acer campestre Common Ash, Pedunculate Oak, Common Hawthorn, Field Maple	6.5	as shown				-	-	-	-	M	Fair	understory edge, multi-trunked.	+ 25	C2
G5	Acer saccharinum Silver Maple	11.0	as shown				-	-	-	-	M	Fair	Group on edge of school ground. Effective deciduous screen.	+ 20	B2
G6	Prunus avium, Fraxinus excelsior, Acer campestre, Acer pseudoplatanus Wild Cherry, Common Ash, Field Maple, Sycamore	11.0	as shown				0.22 0.22	-	-	-	M	Fair	Forms edge of wooded area on a low ditch/depression. Many are heavily ivy clad and lapsed.	+ 20	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
G7	Prunus avium, Prunus spinosa, Fraxinus excelsior, Salix caprea, Betula pendula Wild Cherry, Blackthorn, Common Ash, Goat Willow, Silver Birch	8.0	as shown				-	-	-	-	EM/Y	Fair	Fringed with Sloe, the group comprises vigorous Ash regeneration.	+ 15	C2
G8	Pinus nigra 'Maritima' Corsican Pine	22.0	as shown				ave 0.4	-	-	-	M	Fair	Established with woodland area. Evergreen tops visible from afar. In some instances trees have co-dominant forks.	+ 20	B2
G9	Acer pseudoplatanus, Acer campestre Sycamore, Field Maple	14.0	as shown				-	-	-	-	M	fair	Ivy clad. Forming a screen/green massing.	+ 20	C2
G10	Populus x canescens, Prunus avium Grey Poplar, Wild Cherry	9.0	as shown				ave 0.2	-	-	-	EM/y	Fair	Typically vigorous Poplar regeneration and to a lesser extent, Cherry.	+ 15	C2
G11	Prunus avium, Fraxinus excelsior Wild Cherry, Common Ash	6.0	as shown				-	-	-	-	Y/EM	Fair	In various stages of regeneration.	+ 15	C2
G12	Betula pendula Silver Birch	11.0	as shown				ave 0.25	-	-	-	EM	Fair	Typically vigorous. Bias to the south.	+ 15	C2
G13	Populus sp., Betula pendula, Acer campestre Poplar, Silver Birch, Field Maple	9.0	as shown				-	-	-	-	EM	Fair	Vigorous regeneration.	+ 15	C2
G14	Acer campestre Field Maple	8.0	as shown				-	-	-	-	MA	Fair	Shrubby, multi-trunked trees on the edge of wood.	+ 5	B2
G15	Quercus robur, Fraxinus excelsior, Betula pendula, Acer campestre, Corylus avellana Pedunculate Oak, Common Ash, Silver Birch, Field Maple, Common Hazel	12.0	as shown				-	-	-	-	MA	Fair	The wooded area is formed of Ash and Birch with an understory of Hazel. Open character likely managed - cleaned out regularly.	+ 20	B2
G16	Populus sp., Prunus avium, Fraxinus excelsior Poplar, Wild Cherry, Common Ash	12.0	as shown				-	-	-	-	MA	Fair	Wood has established on slope. The upper canopy is dominated by the large Poplar with much shrub layer regeneration.	+ 20	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
G17	Betula pendula, Fraxinus excelsior Silver Birch, Common Ash	8.0	as shown				-	-	-	-	M	Fair	Established on boundary fence line. Provides some enclosure.	+ 20	B2
G18	Alnus sp., Betula pendula, Fraxinus excelsior Alder, Silver Birch, Common Ash	9.0	as shown				-	-	-	-	M	Fair	Established on boundary fence line. Provides some enclosure.	+ 20	B2
G19	Pinus sp., Acer campestre, Fraxinus excelsior, Crataegus monogyna, Quercus robur Pine, Field Maple, Common Ash, Common Hawthorn, Pedunculate	18.0	as shown				-	-	-	-	M	Fair	Pine rich woodland with a mid storey containing Field Maple, Oak and Ash. Bound by Hawthorn.	+ 25	B2
G20	Quercus robur Pedunculate Oak	24.0	as shown				-	-	-	-	M	Good	Off site group formed of large Oak trees.	+ 40	A2
G21	Fraxinus excelsior, Crataegus monogyna Common Ash, Common Hawthorn	15.0	as shown				-	-	-	-	M	Fair/Poor	Scrappy group in grass.	+ 15	C2
G22	Crataegus monogyna, Prunus spinosa, Quercus robur Common Hawthorn, Blackthorn, Pedunculate Oak	7.0	as shown				-	-	-	-	EM	Fair	Largely regenerated, vigorous, dense with occasional Oak.	+ 15	C2
G23	Fraxinus excelsior, Quercus robur, Crataegus monogyna, Euonymus europaeus Common Ash, Pedunculate Oak, Common Hawthorn, Spindle Tree	7.0	as shown				-	-	-	-	EM	Fair	Largely regenerated, vigorous, dense with occasional Oak on hedgebank.	+ 15	C2
G24	Crataegus monogyna, Acer campestre, Fraxinus excelsior, Euonymus europaeus Common Hawthorn, Field Maple, Common Ash, Spindle Tree	8.0	as shown				-	-	-	-	M	Fair	Group of mid-storey trees beneath larger climax Oak. Regeneration at ground level Ash and Spindle Tree.	+ 20	B2
G25	Quercus robur Pedunculate Oak	17.0	as shown				-	-	-	-	M	Fair/Good	Off site group of large, well formed Oak.	+ 45	A1/2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
G26	Ilex aquifolium, Quercus robur, Euonymus europaeus, Fraxinus excelsior, Corylus avellana Common Holly, Pedunculate Oak, Spindle Tree, Common Ash, Common Hazel	11.0	as shown				-	-	-	-	M	Fair/Good	Understory boundary group. Native rich.	+ 30	B2
G27	Cornus sanguinea, Corylus avellana, Fraxinus excelsior, Prunus spinosa Common Dogwood, Common Hazel, Common Ash, Blackthorn	3.0	as shown				-	-	-	-	Y/EM	Fair	Vigorous regeneration on … boundary edge; species rich.	+ 20	C2
G28	Salix sp., Prunus spinosa, Corylus avellana Willow, Blackthorn, Common Hazel	5.0	as shown				-	-	-	-	Y/EM	Fair	Regenerated vegetation forming the woodland edge.	+ 15	C2
G29	Fraxinus excelsior, Quercus robur, Prunus laurocerasus, Crataegus monogyna, Corylus avellana, Euonymus europaeus, Salix sp. Common Ash, Pedunculate Oak, Cherry Laurel, Common Hawthorn, Common Hazel, Spindle Tree,	12.0	as shown				-	-	-	-	M	Fair	Species-rich group under larger climax Oak and running on the slope down to sunken lane.	+ 25	B2
G30	Acer campestre Field Maple	7.0	as shown				-	-	-	-	OM	Fair/Poor	Small group, in some instances collapsing under the weigh of overgrown ivy.	+ 15	C2
G31	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2
G32	Corylus avellana, Acer campestre, Quercus robur, Crataegus monogyna Common Hazel, Field Maple, Pedunculate Oak, Common Hawthorn	8.0	as shown				-	-	-	-	MA	Fair	Dese, Ivy clad. Hazel coppice stools.	+ 20	C2
G33	Chamaecyparis lawsoniana Lawson Cypress	11.0	as shown				-	-	-	-	MA	Fair/Good	Line of trees - remnant outgrown boundary vegetation.	+ 15	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
G34	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2
G35	Fraxinus excelsior Common Ash	>9	as shown				-	-	-	-		Fair	Regenerated Ash. Typically vigorous.	+ 20	C2
G36	Corylus avellana, Acer campestre, Quercus robur Common Hazel, Field Maple, Pedunculate Oak	9.0	as shown				-	-	-	-	M/MA	Good	Mid-sized trees and coppice established on low hedge bank.	+ 30	B2
G37	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2
G38	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2
G39	Alnus sp., Populus sp., Salix sp., Acer campestre Alder, Poplar, Willow, Field Maple	8.0	as shown				-	-	-	-	EM	Good	Vigorous linear group of dense likely rapidly establishing pioneer trees.	+ 20	C2
G40	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2
G41	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

Tree Survey Schedule

Site: Former St Cyres, Dinas Powys, Penarth
Project schedule ref: JSL2735_750
Drawing reference: JSL2735_700
Survey date: 13/01/2017 - 20/01/2017

Surveyor: C Chambers
Status: For information
Revision: .
Notes:

Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W									
G42	Prunus spinosa, Crataegus monogyna, Euonymus europaeus, Fraxinus excelsior Blackthorn, Common Hawthorn, Spindle Tree, Common Ash	5.0	as shown				-	-	-	-	EM	Fair	Regenerated edge to fields. Dense, vigorous.	+ 15	C2
W1	Acer campestre, Betula pendula, Fraxinus excelsior, Prunus avium, Salix sp., Quercus robur Field Maple, Silver Birch, Common Ash, Wild Cherry, Willow, Pedunculate Oak	12.0	as shown				-	-	-	-	EM	Fair	Fairly mature, vigorous wooded area. Ivy. Ground layer and much young regeneration, chiefly Ash. Part of the woodland to the south and off site contains larger climax specimens.	+ 15	B2
H1	Quercus robur, Acer campestre, Corylus avellana, Cornus sanguinea, Pedunculate Oak, Field Maple, Common Hazel, Common Dogwood	4.5	as shown				-	-	-	-		Fair	Vigorous, sided-up/flailed hedge to the sunken lane. 1.25m above lane.	+ 25	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated / offsite tree

APPENDIX 2

Tree Survey Drawings JSL2735_701 and 702

© 2016 RPS Group

Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2016 All rights reserved. Licence number 0100031673

Key

- Survey boundary.
- T1 — Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.
- T1# — Tree (in off-site or estimated location) with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- G1 — Vegetation group with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
- H1 — Hedge with numbered reference. Width and BS5837:2012 tree quality category as shown below.

BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

- T1 — Tree/ vegetation protected by Tree Preservation Order
- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by Zenith Land Surveys Limited in Nantgarw, December 2016.

N

CHERRY CLOSE

MURCH ROAD

G20 G20 G19 G5 G4 G3 G2 G2 G1 W1 W1 W1

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21# T22# T23# T24# T25# T26# T27# T28 T29 T30 T31 T32 T33 T34 T35 T36 T37 T38 T39 T41 T45 T46 T47 T48 T49 T50 T51 T52 T53 T54 T55 T56 T57 T58 T59 T60 T61 T134 T135 G7 G6 G8 G9 G10 G11 G12 G13 H1

Key Plan NTS

701 702

Rev	Description	Date	Initial	Checked
A	TPO information added	22/ 03/ 2017	JB	CC

RPS

Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire. SO53 5SS
T: 02380 810 440 **E:** rpsso@rpsgroup.com **F:** 02380 810 449

Client: Barratt Homes South Wales Division

Project: Lower Cyres School Dinas Powys

Title: Tree Survey Sheet 1 of 2

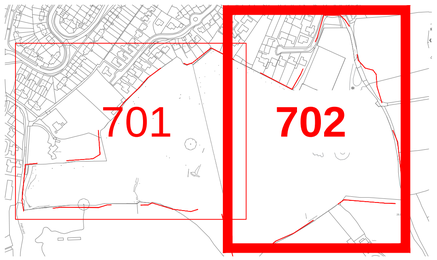
Status	Drawn By	PM/Checked by
For information	JB	CC

Job Ref	Scale @ A1	Date Created
JSL2735	1:500	31/01/2017

Drawing Number	Rev
701	A

rpsgroup.com/uk

P:\2700 Series\JSL2735 - St Cyres\Tech\Acad\Current\JSL2735_700A.dwg



Key Plan NTS

© 2016 RPS Group

Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2016 All rights reserved. Licence number 0100031673

Key

- Survey boundary.
- T1 — Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.
- T1# — Tree (in off-site or estimated location) with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- G1 — Vegetation group with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
- H1 — Hedge with numbered reference. Width and BS5837:2012 tree quality category as shown below.

BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

- T1 — Tree/ vegetation protected by Tree Preservation Order
- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by Zenith Land Surveys Limited in Nantgarw, December 2016.

Rev	Description	Date	Initial	Checked
A	TPO information added	22/ 03/ 2017	JB	CC

RPS

Lakesbury House, Hiltingbury Road, Chandlers Ford. Hampshire SO53 5SS
T: 02380 810 440 **E:** rpsso@rpsgroup.com **F:** 02380 810 449

Client: Barratt Homes
South Wales Division

Project: Lower Cyres School
Dinas Powys

Title: Tree Survey
Sheet 2 of 2

Status	Drawn By	PM/Checked by
For information	JB	CC

Job Ref	Scale @ A1	Date Created
JSL2735	1:500	31/01/2017

Drawing Number: 702

Rev: A

rpsgroup.com/uk

P:\2700 Series\JSL2735 - St Cyres\Tech\Acad\Current\JSL2735_700A.dwg

APPENDIX 3

Arboricultural Glossary

Age-class - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

Arboriculturalist – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

Arboricultural Implications Assessment (AIA) – Study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

Arboricultural Method Statement (AMS) – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

Basal – Referring to the bottom part of a tree's stem.

Basifugal mortality – A natural process seen in trees in an advanced life stage whereby the trees extremities die back and the inner crown expresses new growth, in order to conserve energy reserves.

Bifurcated - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Brown Rot- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

Buttress flares – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood. AKA root flare.

Bifurcated- A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Compaction - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange, and inhibits root growth.

Competent person – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

Condition – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

Conservation dead- wooding- Removal of deadwood using 'coronet cuts' that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Form - A general assessment of the shape and position of the tree within its environment.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure. .

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Invertebrate tower – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immoveable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m^2.

Scaffold limbs - The main structural branches within the crown.

Tree braces – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

Tree protection plan – scale drawing prepared by an arboriculturalist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

U.L.E – 'Useful Life Expectancy' is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA 'Estimated remaining contribution'.

Veteran tree – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

White Rot - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.

Appendix EDP 4
Detailed Soft Landscape Strategy - Plans 1 to 7
(EDP3927/03a 08 August 2017 AL/KH)

This page has been left blank intentionally

Planting Schedule

Trees

Number	Species	Girth	Height	Specification
995 No.	Crataegus monogyna		60-80cm	B :1+1 :Transplant: Seed Raised
21 No.	Malus sylvestris		60-80cm	1+1 :Transplant: Seed Raised
137 No.	Carpinus betulus		40-60cm	B :1u1 :Seedlings: Undercut
17 No.	Acer campestre	12-14cm	175-200cm	B :Light Standard :Clear Stem 175-200
8 No.	Prunus subhirtella 'Autumnalis'	10-12cm	250-300cm	Light Standard :Clear Stem 150-175 :3/5 brks
8 No.	Pyrus communis 'Concorde'		175-200cm	Half Standard :Clear Stem 100-125 :3 brks :C
9 No.	Malus sylvestris	10-12cm	250-300cm	Light Standard :Clear Stem 150-175 :3 brks
10 No.	Pyrus calleryana 'Chanticleer'	10-12cm	250-300cm	Light Standard :Clear Stem 150-175 :3 brks
28 No.	Acer campestre 'Elsrijk'	10-12cm	300-350cm	Selected Standard :Clear Stem min. 200 :4 brks
2 No.	Malus domestica 'Sunset'			Half Standard :Clear Stem 100-125 :4 brks :C
428 No.	Acer campestre		60-80cm	B :1u1 :Seedlings: Undercut
467 No.	Euonymus europaeus		60-80cm	B :1+2 :Transplant: Seed Raised Branched :5 brks
929 No.	Malus sylvestris		60-80cm	C :1+1 :Transplant: Seed Raised
853 No.	Quercus robur		60-80cm	B :1+1 :Transplant: Seed Raised

Shrubs

Number	Species	Pot Size	Height	Specification	Density
21 No.	Cornus sanguinea	2L	40-60cm	Branched :3 brks	1/m
35 No.	Corylus avellana		60-80cm	B: 1+2: Transplant: Seed Raised :3 brks	1/m
51 No.	Ilex aquifolium	2L	40-60cm	Leader With Laterals	1/m
51 No.	Prunus spinosa		40-60cm	B: :1+1 :Branched :2 brks	1/m
51 No.	Rosa canina		60-80cm	B:Transplant: Seed Raised :3 brks	1/m
35 No.	Viburnum lantana		60-80cm	B: 1+2: Transplant: Seed Raised: :Branched :3 brks	1/m
21 No.	Viburnum opulus	3L	40-60cm	Branched :4 brks	1/m
230 No.	Buxus sempervirens	5L	30-40cm	Bushy; 8 breaks	4/m²
230 No.	Lonicera nitida	2L	30-40cm	Bushy; 3 breaks	4/m²
154 No.	Salvia officinalis 'Tricolor'	1L	30-40cm	Full Pot	4/m²
290 No.	Lonicera nitida 'May Green'	3L		Bushy :4/6 brks	5/m²
167 No.	Sarcococca humilis	3L	20-30cm	Bushy :4/6 brks	5/m²
180 No.	Choisya 'Aztec Pearl'	3L	30-40cm	Bushy :5/6 brks	3/m²
189 No.	Euonymus fortunei 'Emerald Gaiety'	3L	20-30cm	Bushy :5/6 brks	3/m²
303 No.	Viburnum davidii	3L	20-30cm	Bushy :3 brks	3/m²
87 No.	Hebe 'Red Edge'	3L		Bushy :5 brks	5/m²
87 No.	Lavandula angustifolia 'Hidcote'	3L	20-30cm	Bushy :5 brks	5/m²
79 No.	Salvia officinalis 'Tricolor'	2L	20-30cm		5/m²
80 No.	Hebe rakaiensis	3L		Bushy :5 brks	3/m²
87 No.	Lonicera nitida 'Baggesen's Gold'	3L	30-40cm	Bushy :3 brks	3/m²
65 No.	Phormium 'Sundowner'	3L	30-40cm	7 leaves	3/m²
177 No.	Lavandula angustifolia 'Hidcote'	10L	30-40cm	Bushy: 9 brks: C	3/m²
130 No.	Lavandula x intermedia 'Alba'	2L	15-20cm	Bushy: 5 brks: C	3/m²
59 No.	Viburnum davidii	10L	30-40cm	Bushy: 5 brks: C	3/m²
97 No.	Vinca major	5-7.5L		Several Shoots: 5 brks: C	5/m²
144 No.	Euonymus fortunei 'Emerald Gaiety'	10L	30-40cm	Bushy: 11 brks: C	3/m²
126 No.	Lonicera pileata	3L		Bushy :5/6 brks	5/m²
126 No.	Vinca minor	2L		Several shoots :3 brks	5/m²
114 No.	Mahonia aquifolium 'Apollo'	3L	20-30cm	Branched :2 brks	3/m²
25 No.	Berberis thunbergii	3L	40-60cm	Branched :5 brks	3/m²
25 No.	Ilex aquifolium	5-7.5L	60-80cm	Leader With Laterals	3/m²
25 No.	Lonicera nitida 'Baggesen's Gold'	5-7.5L	40-60cm	Bushy :5 brks	3/m²
25 No.	Mahonia x media 'Winter Sun'	10L	60-80cm	Bushy :3 brks	3/m²
52 No.	Vinca major	1.5-2L		Several shoots :3 brks	3/m²
41 No.	Euonymus fortunei 'Emerald Gaiety'	10L	30-40cm	Bushy: 11 brks: C	4/m²
34 No.	Hebe 'Amy'	2L	20-30cm	Bushy: 3 brks: C	4/m²
34 No.	Lavandula angustifolia 'Hidcote'	10L	30-40cm	Bushy: 9 brks: C	4/m²
29 No.	Vinca major	3L		Several Shoots: 3 brks: C	6/m²
13 No.	Hebe 'Amy'	2L	20-30cm	Bushy: 3 brks: C	3/m²
8 No.	Lavandula angustifolia 'Hidcote'	7.5L	30-40cm	Bushy: 9 brks: C	3/m²
8 No.	Lonicera nitida	3L	30-40cm	Bushy: 4 brks: C	3/m²
13 No.	Vinca major	1.5-2L		Several Shoots: 3 brks: C	5/m²
467 No.	Cornus sanguinea	2L	40-60cm	Branched :3 brks	1/m²
929 No.	Corylus avellana		60-80cm	B: 1+2: Transplant: Seed Raised :3 brks	1/m²
467 No.	Ilex aquifolium	2L	40-60cm	Leader With Laterals	1/m²
929 No.	Prunus spinosa		40-60cm	B: :1+1 :Branched :2 brks	1/m²
929 No.	Rosa canina		60-80cm	B:Transplant: Seed Raised :3 brks	1/m²
467 No.	Viburnum lantana		60-80cm	B: 1+2: Transplant: Seed Raised: :Branched :3 brks	1/m²
467 No.	Viburnum opulus	3L	40-60cm	Branched :4 brks	1/m²

Herbaceous

Number	Species	Pot Size	Specification	Density
185 No.	Nepeta nervosa	3L		4/m²
167 No.	Bergenia 'Rotblum'	2L	Full Pot	5/m²
80 No.	Nepeta 'Six Hills Giant'	5L	Full Pot: C	3/m²
243 No.	Bergenia 'Bressingham White'	5L	Full Pot: C	5/m²
161 No.	Salvia officinalis 'Purpurascens'	5L	Full Pot: C	5/m²
77 No.	Mentha spicata	3L	Full Pot: C	5/m²
109 No.	Bergenia 'Rotblum'	3L	Full Pot	5/m²
104 No.	Helleborus orientalis	3L	Full Pot	3/m²
41 No.	Nepeta 'Six Hills Giant'	5L	Full Pot: C	6/m²
41 No.	Tiarella cordifolia	5L	Full Pot: C	6/m²
13 No.	Mentha spicata	1L	Full Pot: C	5/m²
69 No.	Salvia officinalis 'Purpurascens'	2L	Full Pot: C	5/m²

Climbers

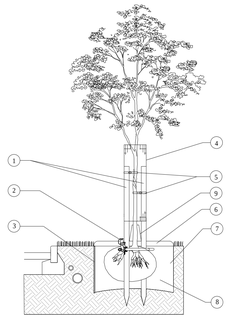
Number	Species	Pot Size	Specification	Density
154 No.	Hedera helix	0.5L	Several shoots; 2 breaks	4/m²
1042 No.	Lonicera periclymenum	3L	Several Shoots :3/4 brks :Caned	1/m²

Bulbs

Number	Species	Bulb Size	Density
264 No.	Allium cristophii	10/+ (Topsize)	5/m²
29 No.	Hyacinthoides non-scripta	8/9	6/m²
8 No.	Allium 'Globemaster'	20/+	5/m²
53 No.	Hyacinthoides non-scripta	8/9	5/m²

Ferns

Number	Species	Pot Size	Specification	Density
40 No.	Dryopteris filix-mas	1.5-2L	Full Pot: C	3/m²



Tree Pit Detail

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 off 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).

Tree Maintenance and Management During 5 Year Establishment Period

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

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

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

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

Tree stakes and ties should be removed once the tree has established a strong enough root system to support itself, likely to be 1-2 years after planting. Strimmer guards should remain in place until the end of the five 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.

Protective Fencing for Dormouse Habitat

All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.

client
BDW (South Wales)

project title
St. Cyres, Dinas Powys

drawing title
Soft Landscape Strategy - Sheet 1 of 7

date 08 AUGUST 2017 drawn by AL
drawing number EDP3027-03a checked RH
scales 1:200 at A0 QA ER

the environmental dimension partnership
info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211590

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673

N

- Site Boundary
- Existing Vegetation
- Amenity Grass/ Maintenance Strip
- Native Structure Planting/ Dormouse Habitat
- Meadow Grass (Germinal WFGB) For Hedgerows and Shaded Areas
- Native Hedgerow
- Ornamental Hedgerow
- Proposed Tree
- Proposed Fence Line

Protective Fencing for Dormouse Habitat

All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.

client

BDW (South Wales)

project title

St. Cyres, Dinas Powys

drawing title

Detailed Soft Landscape Plan - Sheet 2 of 7

date	08 AUGUST 2017	drawn by	AL
drawing number	EDP3027_03a	checked	KH
scale	1:200 at A0	QA	ER

the environmental dimension partnership

info@edp-uk.co.uk www.edp-uk.co.uk

Cirencester 01285 740427 Cardiff 02392 671300 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights 2017 Ordnance Survey 0100031673

N

- Site Boundary
- Existing Vegetation
- Amenity Grass/ Maintenance Strip
- Native Structure Planting/ Dormouse Habitat
- Meadow Grass (Germinal WFGB) For Hedgerows and Shaded Areas
- Native Hedgerow
- Ornamental Hedgerow
- Proposed Tree
- Proposed Fence Line

Protective Fencing for Dormouse Habitat

All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.

client
BDW (South Wales)

project title
St. Cyres, Dinas Powys

drawing title
Detailed Soft Landscape Plan - Sheet 3 of 7

date	06 AUGUST 2017	drawn by	AL
drawing number	EDP3027/03a	checked	KH
scale	1:200 at A0	QA	EK

the environmental dimension partnership
info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671300 Shrewsbury 01939 211190

0 10m

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673

Protective Fencing for Dormouse Habitat

All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.

client
BDW (South Wales)

project title
St. Cyres, Dinas Powys

drawing title
Detailed Soft Landscape Plan - Sheet 4 of 7

date	08 AUGUST 2017	**drawn by**	AL
drawing number	EDP3927/03a	**checked**	KH
scale	1:200 at A0	**QA**	ER

the environmental dimension partnership

info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673

🟥	Site Boundary
▨	Existing Vegetation
	Amenity Grass/ Maintenance Strip
	Native Structure Planting/ Dormouse Habitat
	Meadow Grass (Germinal WFG8) For Hedgerows and Shaded Areas
	Native Hedgerow
	Ornamental Hedgerow
●	Proposed Tree
■ ■ ■	Proposed Fence Line

Protective Fencing for Dormouse Habitat

All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.

client

BDW (South Wales)

project title

St. Cyres, Dinas Powys

drawing title

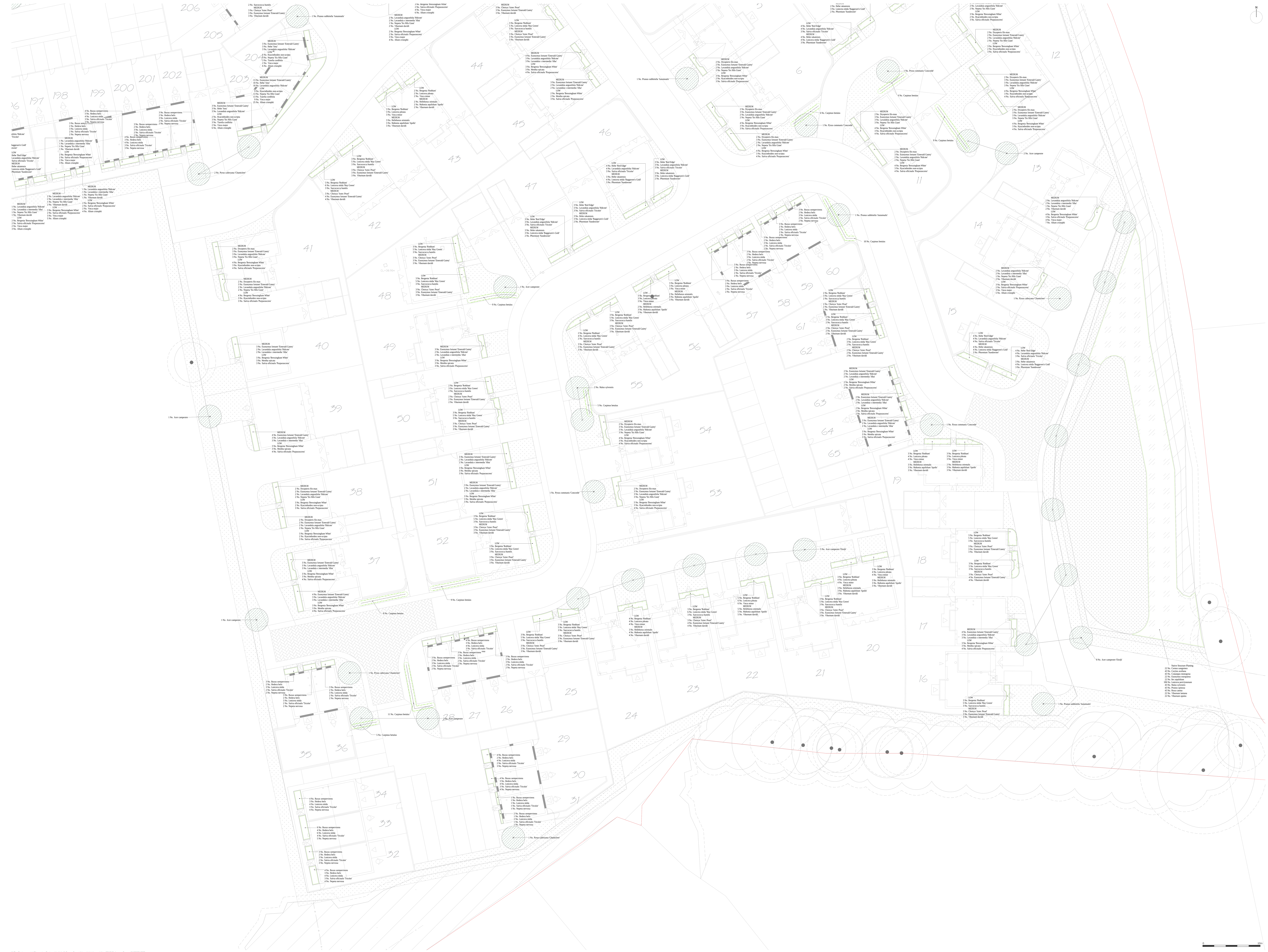
Detailed Soft Landscape Plan - Sheet 5 of 7

date 08 AUGUST 2017
drawing number EDP3927/03a
scale 1:200 at A0
drawn by AL
checked KH
QA ER

the environmental dimension partnership

info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673



N

- Site Boundary
- Existing Vegetation
- Amenity Grass/ Maintenance Strip
- Native Structure Planting/ Dormouse Habitat
- Meadow Grass (Germinal WFG8) For Hedgerows and Shaded Areas
- Native Hedgerow
- Ornamental Hedgerow
- Proposed Tree
- Proposed Fence Line

Protective Fencing for Dormouse Habitat

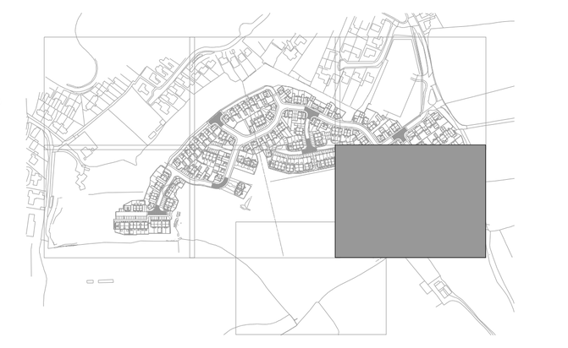
All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.



10m

client

BDW (South Wales)

project title

St. Cyres, Dinas Powys

drawing title

Detailed Soft Landscape Plan - Sheet 6 of 7

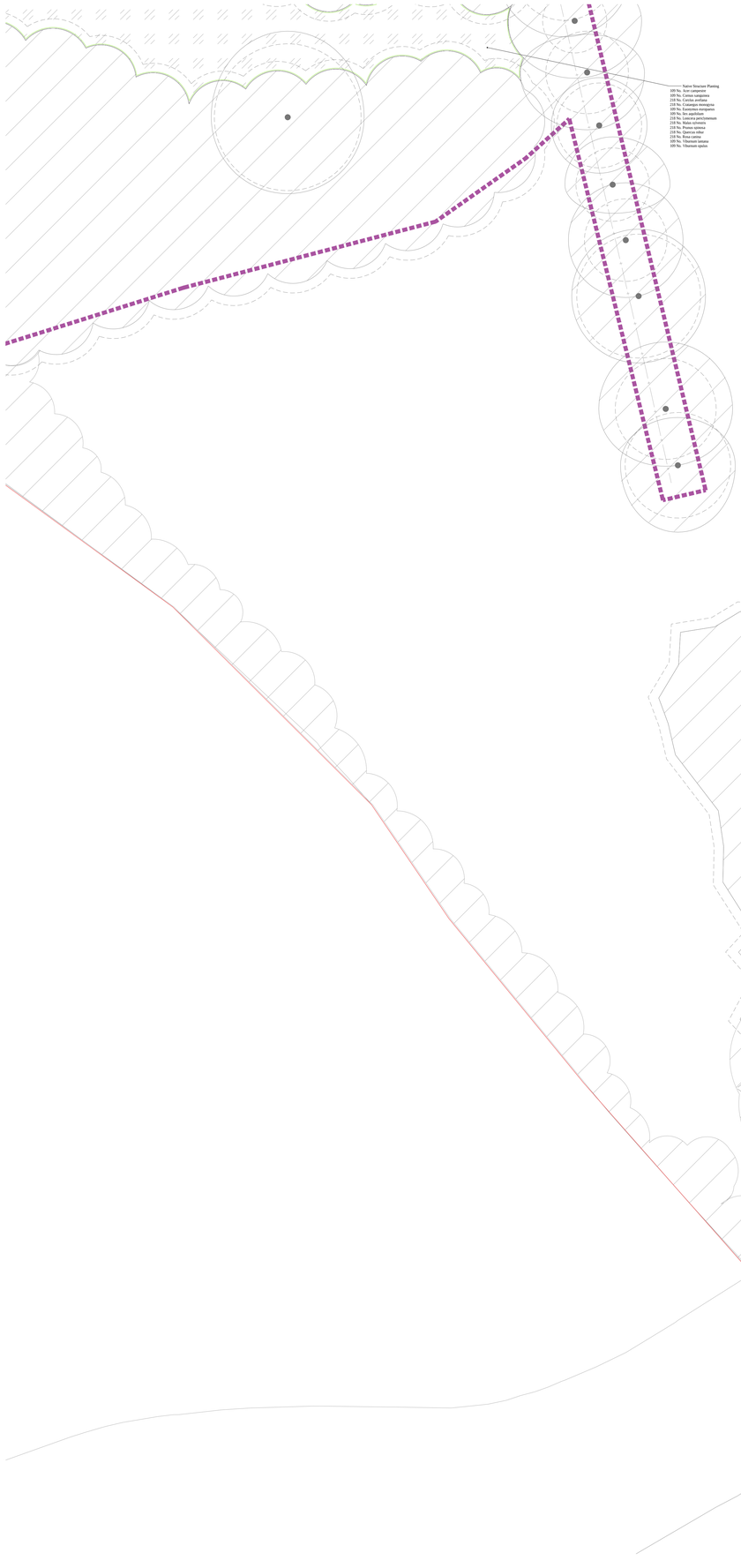
date	08 AUGUST 2017	**drawn by**	AL
drawing number	EDP3927/03a	**checked**	KH
scale	1:200 at A0	**QA**	ER

the environmental dimension partnership

info@edp-uk.co.uk www.edp-uk.co.uk

Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673



Site Boundary

Existing Vegetation

Amenity Grass/
Maintenance Strip

Native Structure Planting/
Dormouse Habitat

Meadow Grass (Germinal WFGB)
For Hedgerows and Shaded Areas

Native Hedgerow

Ornamental Hedgerow

Proposed Tree

Proposed Fence Line

Protective Fencing for Dormouse Habitat

All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

Dormouse Habitat and Native Structure Planting Areas

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.

0 10m

client
BDW (South Wales)

project title
St. Cyres, Dinas Powys

drawing title
Detailed Soft Landscape Plan - Sheet 7 of 7

date	08 AUGUST 2017	**drawn by**	AL
drawing number	EDP3071/03	**checked**	KH
scale	1:200 at A0	**QA**	ER

the environmental dimension partnership
info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673

Appendix EDP 5
BDW South Wales Biodiversity Action Plan

This page has been left blank intentionally

			Actions to AchieveTarget					
Key Species/habitat	Target	KPIs	During Construction	After Construction				
				Year 1	Year 2	Year 3	Year 4	Year 5
Domice	Maintain or increase habitat quality and connectivity to ensure no deitrmental 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 Site.	All sensitive working methodologies, management and monitoring prescriptions to be implemented as described within the Dormouse Mitigation Strategy (EDP Report Reference **C_EDP3927_02**) and future EPS licence to be followed.	Ensure EDP's Dormouse Mitigation Strategy (Report Reference **C_EDP3927_02**) and future EPS licence methodologies and requirements are correctly followed. Any monitoring data to be collected and submitted to PTES.	Ensure EDP's Dormouse Mitigation Strategy (Report Reference **C_EDP3927_02**) and future EPS licence methodologies and requirements are correctly followed. Any monitoring data to be collected and submitted to PTES.	Ensure EDP's Dormouse Mitigation Strategy (Report Reference **C_EDP3927_02**) and future EPS licence methodologies and requirements are correctly followed. Any monitoring data to be collected and submitted to PTES.	Ensure EDP's Dormouse Mitigation Strategy (Report Reference **C_EDP3927_02**) and future EPS licence methodologies and requirements are correctly followed. Any monitoring data to be collected and submitted to PTES.	Ensure EDP's Dormouse Mitigation Strategy (Report Reference **C_EDP3927_02**) and future EPS licence methodologies and requirements are correctly followed. Any monitoring data to be collected and submitted to PTES.
Reptiles & Hedgehog	Maintain or increase habitat quality and habitat connectivity to benefit the local reptile and hedgehog population.	Slow-worm recorded utlising habitats across the Application Site. Hedgehogs potentially utilising habitats across the Application Site.	Inclusion of hedgehog friendly close-board fence to be installed around curtilages adjacent to retained and newly created habitat, as per External Layouts (Hammond Yates Limited Drawing Nos. **1540_102-1 - 102-3**).	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"
Bats and Breeding Birds	Maintain or increase habitat quality to encourage a diverse assemblage of bats and breeding birds to be established over the long term.	Generalist bat and bird assemblage recorded utilising habitats across the Application Site.	Native hedgerow, tree and shrub planting as per detailed Soft Landscape Strategy prepared by EDP (**Plan EDP3927/03**) submitted.	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 site contractors.	n/a	n/a	n/a	n/a	n/a
		Successful establishment of native trees, hedgerow and shrub habitat onsite to required species diversity or greater.	Native hedgerow, tree and shrub planting as per detailed Soft Landscape Strategy prepared by EDP (**Plan EDP3927/03**) submitted.	Ensure hedgerow, tree and shrub management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference **C_EDP3927_02**) and Soft Landscape Strategy (**Plan EDP 3927/03**) are correctly followed.	Ensure hedgerow, tree and shrub management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference **C_EDP3927_02**) and Soft Landscape Strategy (**Plan EDP 3927/03**) are correctly followed.	Ensure hedgerow, tree and shrub management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference **C_EDP3927_02**) and Soft Landscape Strategy (**Plan EDP 3927/03**) are correctly followed.	Ensure hedgerow, tree and shrub management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference **C_EDP3927_02**) and Soft Landscape Strategy (**Plan EDP 3927/03**) are correctly followed.	Ensure hedgerow, tree and shrub management prescriptions as detailed within the Dormouse Mitigation Strategy (EDP Report Reference **C_EDP3927_02**) and Soft Landscape Strategy (**Plan EDP 3927/03**) are correctly followed.

Plans

Plan EDP 1 Dormouse Habitat Features
(EDP3927/07a 08 August 2017 HS/KH)

Plan EDP 2 Habitat Calculations
(EDP3927/05a 08 August 2017 JG/KH)

This page has been left blank intentionally

Trees with Bat Roost Potential

- High
- Moderate
- Low

N

T44 T39 G13(T1) SI H5 H4 SI T73 SI T93 T91 T90 T88 T83 T85 T95 T78 T94 T100 T81 H3 SI G22 SI T113 T105 T107 SI T134 SI A A A A H2 T16 H1 P2 W1(T2) P1 W1(T1)

0 30 60 90 120 150 m

Site Boundary

Habitats Considered Suitable for Dormouse

- Ancient Semi-natural Woodland
- Cross Common SINC
- Broadleaved Woodland - Semi-natural
- Broadleaved Woodland - Plantation
- Dense Continuous Scrub
- Intact Hedge - Native Species-rich
- Intact Hedge - Species-poor

Other Habitats Present

- Scattered Tree
- SI Poor Semi-improved Grassland
- Standing Water
- A Amenity Grassland
- Hardstanding
- Fence

client

Barratt and David Wilson Homes, South Wales

project title

Land at St. Cyres, Dinas Powys

drawing title

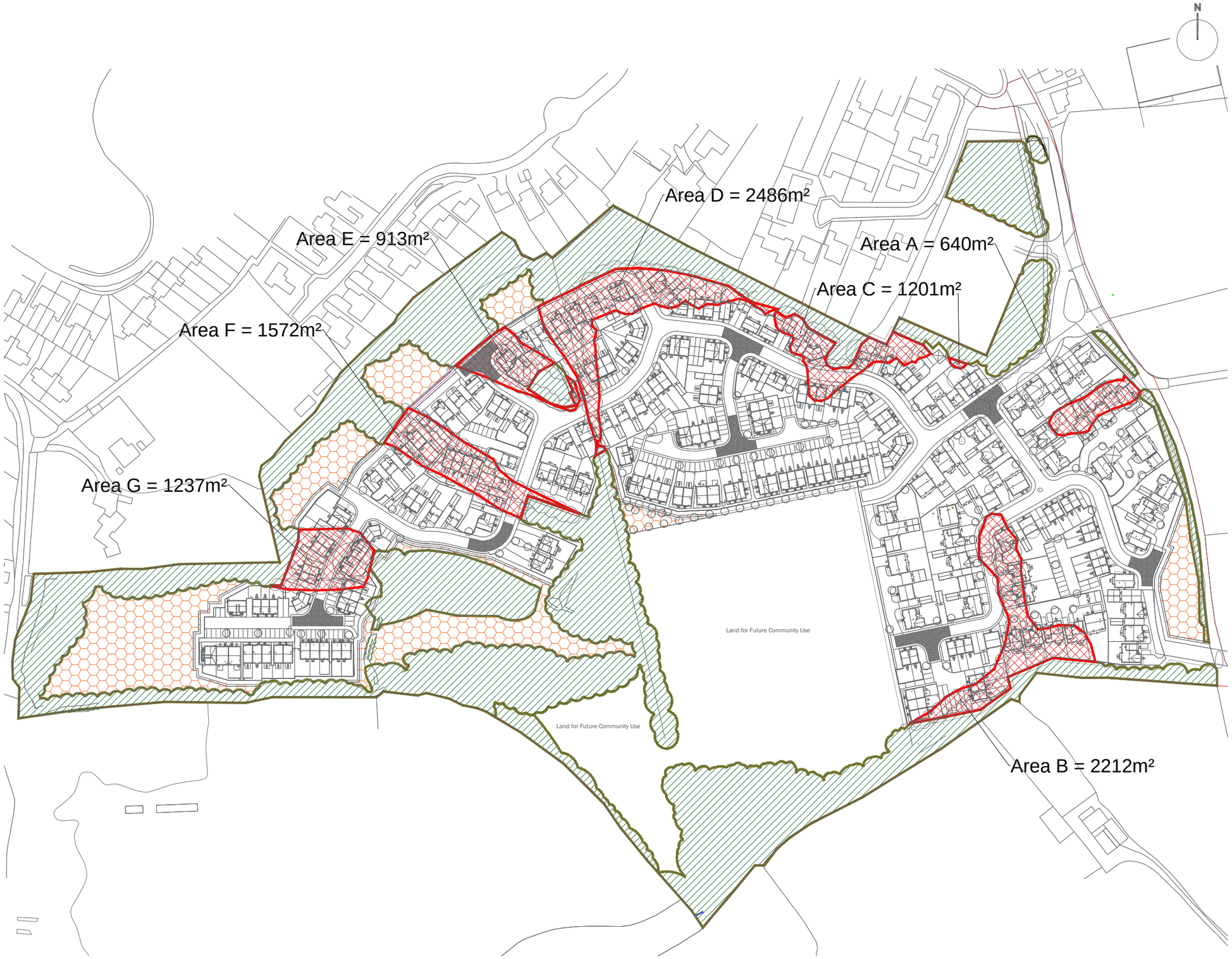
Plan EDP 1: Dormouse Habitat Features

date	08 AUGUST 2017	**drawn by**	HS
drawing number	EDP3927/07a	**checked**	KH
scale	Refer to scale bar	**QA**	LH

the environmental dimension partnership

info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown copyright and database rights 2017 Ordnance Survey 0100031673



Site Boundary
Total Area = 124,116m²

Development/Existing Amenity
Area = 80,747m²

Dormouse Habitat

Retained Habitat - Area = 33,071m²

Habitat Loss - Area = 10,263m²

Habitat Gain - Area = 10,298m²

client
BDW (South Wales)

project title
St. Cyres, Dinas Powys

drawing title
Plan EDP 2: Habitat Calculations

date	08 AUGUST 2017	**drawn by**	JG
drawing number	EDP3927/05a	**checked**	JW
scale	Refer to scale bar	**QA**	LH

the environmental dimension partnership
info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

© The Environmental Dimension Partnership Ltd. © Crown Copyright and database rights. 2017 Ordnance Survey 0100031673

edp | the environmental dimension partnership

CIRENCESTER
Tithe Barn,
Barnsley Park Estate,
Barnsley, Cirencester,
Gloucestershire GL7 5EG
01285 740427

CARDIFF
First Floor,
The Bonded Warehouse,
Atlantic Wharf,
Cardiff CF10 4HF
02921 671900

SHREWSBURY
The Stables,
Sansaw Business Park,
Hadnall, Shrewsbury,
Shropshire SY4 4AS
01939 211190

info@edp-uk.co.uk
www.edp-uk.co.uk

The Environmental Dimension Partnership Ltd. Registered as a Limited Company in England and Wales. Company No. 09102431.

LANDSCAPE
ECOLOGY
HERITAGE
MASTERPLANNING
ARBORICULTURE
EXPERT WITNESS