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Appendix EDP 1	Proposed Site Plan (Drawing Number: 18137(05) 1101 Rev AA, Powell Dobson, May 2022)
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Appendix EDP 3	Detailed Landscape Proposals for the Residential Plots (edp5601_d031z 12 December 2024 LCH/DR)
Appendix EDP 4	Update Habitat Survey, June 2019 (edp5601_d002a 17 July 2019 GY/EM)
Appendix EDP 5	Arboricultural Implications Assessment and Arboricultural Method Statement (Steve Ambler and Sons Tree Specialists Ltd, January 2021)
Appendix EDP 6	Tree Survey, Categorisation and Constraints Report at Former University Campus, Caerleon: Ambler SJ., February & April 2019
Appendix EDP 7	Bat Mitigation Plan (edp5601_d034b 27 September 2021 DJ/EW)
Appendix EDP 8	Enclosures Layout (includes Hedgehog Highway information) (Drawing Number: 18137(05) 1104 Rev H, Powell Dobson)

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Site Context

- 1.6 The Development Site comprises the former Caerleon Campus of the University of South Wales. It is situated at approximate Ordnance Survey Grid Reference (OSGR) ST 33496 91290 and measures approximately 12.7 hectares (ha) in size. The Development Site is situated in the town of Caerleon, circa 1.1km west and north of the River Usk, beyond which lies the city of Newport.
- 1.7 The Development Site is dominated by hardstanding and buildings which are predominantly vacant, in addition to areas of amenity grassland and ornamental shrub planting. Such areas are now largely unmanaged and subject to encroaching scrub. Landscaped areas located more centrally within the Development Site are, however, still subject to frequent mowing. The north-eastern corner and eastern boundary of the Development Site is characterised by an unmanaged, tussocky grassland sward with scattered non-native and native trees contiguous with a linear belt of semi-natural broadleaved woodland.
- 1.8 Located within the town of Caerleon, the wider landscape is dominated by residential housing. A railway line travelling north to south is circa 180m east of the Development Site, beyond which lies open countryside comprising agricultural grassland and woodland units.
- 1.9 The Proposed Site Plan is provided at **Appendix EDP 1**, with the detailed Landscape Proposals included at **Appendix EDP 2** and **3**. Habitats supported by the Development Site are illustrated at **Appendix EDP 4**.

Planning Context

- 1.10 This LEMP has been prepared to specifically support the Full Planning Application and Environmental Statement (ES) and should be read in conjunction with the Proposed Site Plan illustrated at **Appendix EDP 1** and with the detailed Landscape Proposals provided at **Appendix EDP 2** and **3**. The proposed development and associated landscaping will be undertaken in seven as illustrated at **Appendix EDP 2** and **3**.
- 1.11 This LEMP aims to provide a management framework for the conservation and enhancement of site ecology, specific to all areas of soft landscaping and mitigation areas associated with the detailed design of the development and, in so doing, incorporates those recommendations documented within the Ecology Chapter of the Environmental Statement prepared by EDP which accompanied the planning application submission (planning reference: 10/1212) and subsequent Supplementary Environmental Statement (SES) prepared during October 2020.

protected and enhanced over the long-term such that all benefits to biodiversity and visual amenity are delivered successfully throughout the lifetime of the scheme.

Responsibilities

2.5 The responsibility for carrying out the functions of this LEMP will vary throughout the duration of the management period as follows:

- Enabling and Pre-construction Phases: All management and maintenance works of those features and species of ecological importance are the responsibility of the Principal Contractor appointed by the Developer, and are to be completed by the Principal Contractor until sign-off of the relevant part by the Developer prior to the start of the Construction Works Phase of each development plot;
- Construction Works Phase: All management and maintenance works of all features and species of ecological importance are the responsibility of the Developer, and are to be continued through to practical completion;
- Long-term Management: The responsibility for the management and maintenance works of all features and species of ecological importance associated with the development post-adoption will be the responsibility of the Private Management Company appointed by the Developer; and

The Private Management Company is also responsible for arranging a landscape architect to visit and assess the success of all informal areas of grassland, meadow and bulb planting at years 1, 3 and 5 from the first spring following planting of that phase by the Landscape Architect to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease and to determine whether remedial action is required, including replacement seeding/bulb planting for any lost/damaged specimens and additional management prescriptions necessary to ensure successful development. Copies of the reports are to be provided to NCC, as a result of the phased program the last report will be issued to NCC 5 years after completion of the last phase (circa 2031).

2.6 All measures detailed within this LEMP covers provision, management, inspection, maintenance, repair and replacement measures as necessary, taking into account factors including ecological, landscape, social, wildlife and amenity use for the land.

- Non-statutory designations within the potential zone of influence of the Development Site of County level importance, including: the Afon Llwyd Site of Importance for Nature Conservation (SINC) (located circa 0.4km from the Development Site); and the Afon Llwyd Grasslands SINC, situated circa 0.6km away;
 - Priority habitats¹ within and adjacent to the Development Site comprising semi-natural broadleaved woodland;
 - Habitats of local importance comprising scattered trees, several with Tree Protection Orders (TPO's);
 - Buildings with confirmed bat roosts and trees with low-moderate bat roost potential; and
 - Habitats supporting a foraging and commuting bat assemblage.
- 3.5 In addition, a low population of slow-worm (*Anguis fragilis*) of site level importance was identified in associated with poor semi-improved grassland as well as habitats suitable for badger and a breeding bird assemblage.
- 3.6 Of further pertinence, a pre-demolition visual inspection of buildings **B12/B13** previously undertaken during August 2021 identified new evidence of roosting bats within the loft space comprising scattered pipistrelle bat droppings. A single dusk emergence survey undertaken on 31 August 2021 to characterise the new roost recorded a single common pipistrelle bat emerging from a second story window. The building was, therefore, assessed as supporting a non-breeding common pipistrelle bat roost.

Ecological Features to be Lost/Impacted

- 3.7 Land take associated with the development proposals is predominantly confined to existing development comprising hardstanding and buildings, in addition to pockets of former amenity grassland, shrub planting, dense and scattered scrub, tall ruderal vegetation and ephemeral/short perennial vegetation. Such habitats are considered to be of negligible ecological importance.
- 3.8 This is, however, in addition to the loss of several mature/semi-mature trees across the Development Site, some with TPOs and/or features suitable for roosting bats. A tree Loss/Removal Plan is provided at **Appendix EDP 5**. Of further note, poor semi-improved grassland of value to a common reptile population will be subject to minor re-levelling and excavation to facilitate reinstatement/creation of public footpaths through retained open green space.

¹ Habitats considered of key significance to sustain and improve biodiversity in Wales, as defined under Section 7 of Part 1 of the Environment (Wales) Act 2016

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- 4.6 Where proposed pre-construction and construction activities comprise licensable actions (i.e. demolition of buildings and/or works to tree confirmed to support roosting bats), a task specific briefing will be given to the Principal Contractor appointed by the Developer by a bat licensed ecologist named on the Development License. The task specific briefing will include all required sensitive working methodologies and legal obligations to be met, particularly with respect to those methodologies and timing constraints set out within any Development Licence granted by NRW, given the presence of roosting bats onsite.
- 4.7 In respect of the sensitivity of the retained tree stock onsite, including presence of trees with TPO's, task specific briefings will also be delivered by a qualified Arboricultural Contractor where necessary.
- 4.8 More generally the ECoW will supervise all pre-construction works impacting upon habitats and species, including vegetation clearance, soft demolition and habitat creation (as required), in addition to undertaking any necessary pre-commencement surveys for protected species, as discussed in further detail below.

Temporary Protective Fencing

- 4.9 Temporary protective fencing will be erected along all habitats to be retained in accordance with the measures detailed within the Tree Report compiled by Steve Ambler and Sons Tree Specialists Ltd. (**Appendix EDP 6**) and *BS5837: 2012 Trees in relation to design, demolition and construction* or similar. Such features to be retained include mature and semi-mature trees comprising a mix of non-native, ornamental and native species along the north-eastern, eastern and southern extents of the Development Site, as well as scattered throughout the site itself. Details of the extent of tree losses proposed are provided at **Appendix EDP 5**.
- 4.10 Protective fencing will incorporate the full root protection area of the feature to be retained, with fencing maintained throughout the duration of all site-enabling and pre-construction activities and remains the responsibility of the Principal Contractor appointed by the Developer.
- 4.11 No works (other than planting), including the storage of materials, plant and machinery, will be carried out within or immediately adjacent to all areas of protective fencing/areas marked for protection as described above, so as to ensure no detrimental impacts to sensitive features arising from physical damage and/or pollution.
- 4.12 Where proposed tree loss overlaps with the root protection zones of retained trees, clearance will be undertaken sensitively and will be overseen by a suitably qualified arboriculturist. Similarly, the digging of trenches and pits for new tree and scrub planting adjacent to areas of protective fencing, where this lies inside root protection areas, will also be carried out by hand only and supervised where necessary, in accordance with best practice guidance as stipulated within *BS 5837:2012*.

to potential hibernacula, with the adoption of additional precautionary measures as appropriate;

- Grassland habitat will be subject to directional cutting over two phases to passively encourage common reptiles and small mammals potentially present to move outside of the construction & demolition footprint. Specifically, an initial cut of grassland habitat will be undertaken reducing vegetation height down to a minimum of 175mm, with clearance undertaken in a direction towards adjacent retained habitat (i.e. retained vegetative boundaries). A second cut of the proposed footprint areas will be undertaken immediately thereafter, with vegetation cut to ground level and no greater than 30mm in height;
- In this instance, retained habitat includes grassland and tree/shrub planting within the north west corner of the Development Site, retained woodland along the eastern boundary of the site and grassland/shrub/tree planting along the southern boundary of the Application Site. Such habitat is contiguous with those areas where common reptiles have previously been identified during survey effort with habitats inherent therein to be enhanced through sensitive long-term management;
- During clearance any potential refugia located within the construction footprint suitable for common amphibians, reptiles and small mammals will be carefully dismantled using hand tools, hand-held machinery or untracked, light machinery to facilitate efficient supervision and relocated to reptile receptor areas/retained reptile habitat to ensure suitable refuge/hibernation opportunities are retained across the Development Site;
- All arisings will be removed from the construction footprint and vegetation will be maintained thereafter at a height no greater than 20mm through regular mowing or as bare ground to discourage common amphibians and reptiles from returning; and
- In the event any notable species are identified during site clearance these will either be captured by hand by the attending ECoW and immediately released into retained habitat adjacent or otherwise left to disperse of their own accord.

Tree, Shrub and Scrub Habitat

- 4.16 Further details pertaining to the removal of trees across the Development Site are provided within the Arboricultural Method Statement at **Appendix EDP 6**. With respect to ecological matters, however, a phased approach to the clearance of trees, shrubs and scrub will be undertaken, with above-ground vegetation clearance of woody habitats ideally confined to the period between October and February inclusive, so as to avoid bird breeding season. 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. Where this is unfeasible and clearance between March and September is unavoidable, then a pre-commencement check for active bird nests will be undertaken by a suitably qualified ecologist/ECoW immediately prior to the commencement of works. Where an active bird nest is identified, a 5m buffer (dependent on individual species

- Any cut sections with potential roosting features will be retained onsite by one of the following methods:
 - (i) Strapping to existing, retained mature trees and appropriately secured in position;
 - (ii) Retained onsite at ground level within an area of retained woodland; and
 - (iii) Retained onsite for minimum 48 hours, with potential entrances not blocked i.e. facing away from ground, before they are removed or chipped.
- 4.22 Thereafter, 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.
- 4.23 Following completion of above-ground vegetation clearance, below-ground vegetation clearance, including the removal of roots and/or stumps of shrubs and trees remaining, or of buried rubble and spoil, will be undertaken between the months of April and early October inclusive so as to avoid harm to protected/notable species during the hibernation period.
- 4.24 Below-ground vegetation clearance, including the removal of roots and/or stumps of shrubs and trees remaining, or of buried rubble and spoil, will be undertaken between the months of April and September/mid-October Inclusive (when temperatures are above 9°C) so as to avoid harm to protected species during the hibernation period. Where this is not possible, such works can only be undertaken at the discretion of the ecologist, under supervision and/or following pre-commencement checks to rule out hibernation potential.
- 4.25 The removal of large root balls will be grubbed out in a sensitive manner to ensure no significant disturbance to soil and adjacent, retained planting. Any such excavations that occur within the root protection zone of retained vegetation will be undertaken by hand and backfilled as soon as possible or temporarily lined with polyethylene sheet to reduce evaporation.
- 4.26 All arisings from any vegetation clearance will be taken away from the vicinity of the development footprint as soon as possible following vegetation clearance.
- 4.27 Should there be a delay between the completion of vegetation clearance and commencement of construction such that colonisation of the Development Site by vegetation occurs, then such vegetation will be maintained at heights less than 20mm or as bare ground through frequent mowing or disturbance to deter wildlife from the construction footprint.

Species-specific Measures: Bats

- 4.28 Buildings **B1/B2** (Dolaucothi/Camelot Student Block), **B3/B4** (Blaenavon/Abergavenny Student Block) and **B16** (Felthorpe House) are confirmed to support bat roosts and will

presence of potential roosting features (including hanging tiles) considered suitable for roosting bats. Such features will be sensitively removed prior to demolition and outside of the main bat active and hibernation periods; i.e. with works confined to (early spring (late March/early April) or autumn (September/October).

4.32 The contractor(s) will be advised to carry out all work with care and vigilance for bats and to adhere to the following procedures in the unlikely event bats are found during works:

- In the unlikely event that a bat and/or its roost is located during demolition, works will be halted and the NRW bat licenced ecologist contacted immediately for advice. Bats should be allowed to disperse of their own accord; and
- If the roost has been exposed, and especially if bats have been injured, works will be halted and the NRW bat licenced ecologist contacted immediately for advice.

Species Specific Measures: Badger

4.33 No evidence of badger was identified during ecological surveys of the Development Site completed by EDP during 2019, although amenity and poor semi-improved grassland and broadleaved woodland provides suitable foraging and sett building opportunities for this species.

4.34 Due to the mobility and widespread nature of these species, in addition to the presence of suitable foraging habitat onsite, a badger survey of the Development Site by a suitably qualified ecologist prior to the commencement of development is recommended to determine whether any setts have been established during the interim period.

4.35 If identified, development will avoid direct impacts to, and disturbance of, active badger setts through establishment of an appropriate working buffer (10-30m as advised by an ecologist), in which no vegetation clearance or movement of machinery will be permitted. Where this is not possible, sett closure will be required under licence from NRW and restricted to between the months July and November.

Other Protected/Notable Species

4.36 European hedgehog was identified on-site during ecological surveys whilst habitats inherent within and adjacent to the Development Site provide a foraging resource in addition to offering suitable refugia/hibernacula for this species. Clearance of suitable habitats will be undertaken in accordance with those measures detailed under paragraph 4.14 to avoid harm/injury to protected species that may be present. As above, any suitable refugia for common reptiles as well as European hedgehog will be carefully dismantled using hand tools, hand-held machinery or untracked, light machinery to facilitate efficient supervision. More generally, however, the following precautionary measures will be adhered to during the construction phase:

- All machinery will be operated by trained personnel only;

stored on top of the topsoil. Stored topsoil will be covered and fenced off from construction works as appropriate until reuse.

Pollution Incidents

- 4.44 To protect water quality of the Afon Llwyd and associated land drains within 200m of the Development Site, which in turn are hydrologically connected to the River Usk SAC/SSSI and Severn Estuary Ramsar/SPA/SAC, appropriate pollution control measures will be employed, with reference to available guidance including Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs) documents⁴, namely PPG1, *General guide to the prevention of pollution*, PPG5/GPP5 *Works and maintenance in or near water*, PPG6 *Pollution prevention guidance for working at construction and demolition sites* and PPG21 *Pollution incident response planning*, to ensure that detrimental impacts to the watercourse as a result of surface run-off, spillage and pollution arising throughout the construction phase are avoided.

Temporary Lighting

- 4.45 Temporary lighting, if required, will be kept to the lowest permissible level through the use of sensitive lighting design. This will include:
- The reduction in height of lighting columns employed across the construction footprint to allow for low-level lighting or, where 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 construction footprint; and
 - The programming of timed lighting to ensure adequate dark periods between dusk and dawn across the construction footprint, and particularly along site boundaries.
- 4.46 Such sensitive lighting strategies will seek to avoid light spill upon retained vegetated boundaries and scattered trees, particularly along north-eastern and eastern edge of the Development Site, thereby maintaining dark corridors along sensitive habitats to ensure minimum disturbance to notable and protected species utilising those habitats for commuting, foraging and dispersal during the pre-construction and construction phases.

⁴ PPGs were withdrawn in December 2015; however, they remain the main source of information regarding best practice with respect to pollution prevention. A replacement guidance series, comprising Guidance for Pollution Prevention (GPPs), are currently in development. Pollution advice listed at <https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg> should also be referred to.

- 5.7 Planting will be undertaken in accordance with those specifications stated therein. Additional measures are further provided as follows.

General Measures

- 5.8 All work to be carried out in accordance with the following:

- All materials and workmanship are to be to the highest possible standards in accordance with relevant good practice and British Standards;
- All work to be carried out by appropriately skilled, qualified and experienced operatives for the type and quality of the work, and in accordance with good horticultural practice and contemporary Legislation, Regulations and Codes of Practice;
- All work will be undertaken where weather conditions are suitable, avoiding moving, handling and tracking over very wet soils. Soils for planting will be warm, moist, friable and not waterlogged;
- No planting or landscape operations to be undertaken within the root protection zones for trees designated under a TPO (refer to **Appendix EDP 6** for locations of TPOs);
- Planting should be undertaken using topsoil recovered from the construction footprint, incorporating soil conditioner as required;
- Only tools suited to site conditions and work carried out are to be used. Hand tools to be used around existing and newly planted trees and shrubs. Boards to be used where required while working, to protect grass/plant beds;
- Work is only to be carried out while soil and weather conditions are suitable. Planting, turfing, seeding etc., will not be undertaken during periods of frost, strong winds, when topsoil is frozen, snow-covered or waterlogged, or in drought conditions;
- Materials will not to be stock-piled adjacent to newly planted trees or shrubs;
- All waste materials, including plant wrappings and temporary labels, will be removed off site at the contractors' own expense. No waste materials will be buried or burnt onsite;
- All hard and soft landscape materials will conform to the relevant British Standards and Codes of Practice. All plants will be true to name, type and character, and to comply with the National Plant Specification;

restoration and enhancement measures will include the supplementary seeding of species-poor areas and creation of specie-rich wildflower planting where appropriate.

5.10 Of further pertinence, the former playing field in the centre of the Development Site will be reinstated as public open space and accommodate a Local Equipped Area of Play (LEAP) whilst additional areas or amenity planting will be retained and/or created.

5.11 Grassland planting will include the following mixtures:

- Emorsgate Special General-Purpose Meadow Mixture EM3⁵, incorporating a diverse mixture of wildflower (27 species) and grass species (5 species), to be sown across areas proposed for bulb planting within open space across the western extents of the Development Site;
- Emorsgate Mixture for Hedgrows and Woodland EG9⁶, incorporating 7 grass species, to be sown within the north-east corner of the Development Site adjacent to retained trees and woodland;
- Emorsgate Wildflowers for Woodland EW1F⁷ incorporating 12 woodland to be sown within the north-east corner of the Development Site;
- Emorsgate General Purpose Meadow Grass Mixture EG1⁸, incorporating 5 grass species, to be sown within areas of public open space throughout the development;
- Emorsgate Meadow Grass Mixture for Wet Soils EG8⁹ incorporating a diverse mixture of grass species (8 species) and Emorsgate Hedgerow Mixture EH1 incorporating 19 wildflower species, each to be sown across sustainable drainage features at a 50:50 ratio;
- Emorsgate Strong Lawn Grass Mixture EG22¹⁰, incorporating 5 grass species, to be sown within areas of formal public open space including across the retained playing field; and
- Rolawn Medallion Turf¹¹ mix, comprising amenity grass proposed along the frontage of residential plots and formal open space.

5.12 Preparation of ground will include the removal of weeds and other vegetation, to reduce fertility whilst ensuring its future establishment. Weeds will be controlled by cultivation or herbicide before sowing if necessary. Where required, topsoil will also be reduced by around 150mm, so as to reduce the long-term fertility of the soil and facilitate competition within the established grassland sward aimed at achieving and sustaining

⁵ <https://wildseed.co.uk/mixtures/view/4/special-general-purpose-meadow-mixture>

⁶ <https://wildseed.co.uk/mixtures/view/42/grass-mixture-for-hedgerows-and-woodland>

⁷ <https://wildseed.co.uk/mixtures/view/33/wild-flowers-for-woodland>

⁸ <https://wildseed.co.uk/mixtures/view/36>

⁹ <https://wildseed.co.uk/mixtures/view/41/meadow-grass-mixture-for-wet-soils>

¹⁰ <https://wildseed.co.uk/mixtures/view/19/strong-lawn-grass-mixture>

¹¹ <https://www.rolawn.co.uk/turf/rolawn-medallion-turf>

- All planting and seeding is to be undertaken in accordance with the construction for that specific development area, and will conform to *BS3936-1 Nursery Stock: Specification for Trees and Shrubs*;
- 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;
- There will be no planting operations within the root protection zone for trees designated under a TPO (refer to **Appendix EDP 6**);
- Newly-planted tree and shrub plants to be protected by individual spiral/netting guards, as specified. The condition of all tree stakes, ties and guards will be checked by the Developer and all broken items will be replaced and items regularly adjusted to accommodate plant growth and prevent rubbing. Any bark damage will be cut back neatly with a sharp knife. All plants will be straightened and the ground at the base to be firmed up. All shelters will be hand weeded;
- Watering will be undertaken as necessary by the Developer to ensure the establishment and thriving of all planted areas. Typically, watering will be undertaken every week from March to October for the first year, to ensure the establishment and thriving of all planted areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so. When watered, the soil of the base of the tree/shrub should be damped but not waterlogged. During years 2-3, watering should be undertaken as required and particularly during prolonged dry weather;
- 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;
- Within the establishment phase, watering will be undertaken as necessary by the 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;
- Within the first 5 years following planting of each landscape area within each Phase of development, all areas where newly planted/translocated plants or trees have failed to thrive (through death, damage or disease), will be identified by the Developer with specimens removed and replaced with equivalent or more appropriate species to match the size of adjacent nearby plants in the next appropriate planting season, as frequent as necessary. The advice of the project Landscape Architect will be sought wherever possible;
- 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

- The control and removal of non-native and or invasive species in accordance with the advice of a specialist contractor;
- The removal of any litter on an annual basis; and
- The provision of log piles and deadwood utilising arisings from tree works undertaken onsite, to provide suitable habitat for invertebrates as well as refugia for common reptiles and European hedgehog.

Bat Boxes

- 5.23 New bat roosting features are recommended for installation to further enhance the Development Site for roosting bats. A total of 17 Schwegler bat boxes¹² will be installed upon suitable, mature trees to be retained along the peripheries of the Development Site where appropriate. Boxes will be erected with a south-east/south-west facing aspect where possible at circa 4m- 7m heights, avoiding features that would obstruct access for bats and away from sources of artificial lighting.
- 5.24 Bat box design to be installed across the Development Site will include the following or similar:
- 6 Schwegler 2F (or similar);
 - 6 Schwegler 2FN (or similar); and
 - 5 Schwegler 1FF (or similar).
- 5.25 The maintenance and repair of bat boxes installed upon across the Development Site during the pre-construction and construction phases will remain the responsibility of the Developer.
- 5.26 In addition, installation of permanent, compensatory roosting features with newly constructed residential houses comprising 12 Schwegler 1FR bat tubes (or similar) is proposed, in addition to construction of a purpose-built bat loft void provided within a proposed new garage attached to Felthorpe House (**B16**). The maintenance of the permanent bat mitigation installed onsite will be the responsibility of the Developer during the pre-construction and construction phases of development.
- 5.27 With respect to the bat loft, this feature will be subject to a final check upon completion of construction and prior to handover to the homeowner, by the bat licensed ecologist to ensure that they are incorporated correctly, with any remedial action completed as necessary.
- 5.28 The locations of bat boxes/mitigation, as agreed with NRW, are illustrated at **Appendix EDP 7**.

¹² <http://www.nhbs.com/browse/search?title-type-facet%5B%5D=&term=bat+boxes>.

- Materials that will decompose will not be placed beneath heavy components such as bricks or rocks, to avoid the risk of collapse;
- Wood chippings or loose topsoil will be incorporated into the construction, to pack some of the larger cavities;
- Hibernacula to be located within uncut areas of grassland and/or woodland edges, covered with topsoil and seeded using a wildflower seed mix;
- Hibernacula to be temporarily fenced off when situated in more accessible areas so as to avoid disturbance whilst vegetation is allowed to develop; and
- Access points for amphibians and other wildlife will be created by ensuring that some timber or rubble protrudes from the edge, creating crevices that allow reptiles and amphibians to get deep inside.

5.33 Additionally, logs and brash generated from clearance of trees and scrub will be retained where possible and used to create informal hibernacula within wooded areas along the boundaries of the Development Site. Deadwood should also be retained (taking into account any health and safety implications), to provide suitable habitat for invertebrates.

European Hedgehog

5.34 To facilitate the dispersal of European hedgehog across the Development Site during operational phases of development, boundary fences between the curtilage of new development and informal landscaping features will have a 13cm x 13cm gap in the bottom to allow hedgehogs to pass through. Locations for proposed inclusion of hedgehog gaps are illustrated at **Appendix EDP 8**.

Operational Sensitive Lighting Strategy

5.35 A lighting strategy will be implemented to ensure that retained habitats on-site (predominantly habitats along the eastern and southern boundaries of the Development Site) used by light-sensitive species such as bats will not be adversely lit. A sensitive lighting strategy should be designed with reference to those principles established in paragraph 4.41. A strategy should seek to maintain a dark corridor adjacent to retained woodland habitat and across proposed open space in the north-east corner of the Site or otherwise ensure light spill upon these boundary habitats is no greater than 0.5lux.

Long-term Maintenance, Management and Monitoring

Species-rich Grassland (Wildflower and Wetland)

- 6.7 Areas of species-rich grassland planting will be subject to the following management regime to promote a structurally and botanically diverse grassland sward. This includes grassland associated with the north-east corner and southern boundary of the Development Site in addition to drainage features and areas of wildflower and blb planting.
- 6.8 During the first year of establishment, perennial weeds within areas of species-rich wildflower or wetland grassland will be removed through repeated cutting, hand-pulling or spot-spraying. Should a first cut be necessary, this will be undertaken to promote establishment as follows:
- Grassland will be subject to a first cut in May, with a second cut undertaken between end August and October inclusive. Sward heights will not be reduced to less than 75mm height; and
 - Mowing may be undertaken using an appropriate mechanical mower or using a brushcutter/trimmer where access for larger machinery is not possible.
- 6.9 Areas of grassland with bulbs will be left un-mown in early spring. The cut will be made when the bulbs have died down (approximately six weeks after flowering). After this, the management will revert to that of the surrounding grassland.
- 6.10 Cut material will be removed and disposed of away from the grassland areas, e.g. baled as hay or sent for composting. Ideally, material will be cut and left on the ground for two to three days to allow seed and invertebrates to drop out, but it may be necessary to use a mower or collector for practical reasons.
- 6.11 Weed and scrub control by manual or chemical means will be undertaken as required, so as to prevent pernicious perennial weed species from becoming established. During the early developmental stages of the grassland sward, some 'undesirable' broadleaved species are to be expected and should become less dominant as the communities become established and stabilized. Control methods will comprise hand-pulling or spot treatment with a suitable approved selective herbicide, as appropriate; timing will be dependent on the affected species. Control of any invasive species will be carried out in accordance with the advice of a specialist contractor.
- 6.12 In second and subsequent years following initial establishment, areas of species-rich grassland will be subject to a first summer hay cut undertaken in late July to mid-August, followed by a second cut at the end of the growing season (October/November) to no less than circa 75mm heights. Cutting will avoid the months of May to early July, to enable the majority of species to have flowered and set seed. As above, cut material will be removed and disposed of away from the grassland areas, e.g. baled as hay or sent for composting. Ideally, material will be cut and left on the ground for two to three days to allow seed and

- 6.20 Bankside cutting of swale features is best carried out in late summer (mid-July to mid-September), with the flail cutters set to retain vegetation at circa 15cm heights. Variable cutting will encourage diversity, thereby increasing the ecological value of this attenuation features. In addition, the following measures will be adhered to:
- Ensure a fringe of vegetation is left along the water's edge on at least one of the swale banks;
 - Leave sections of swales uncut in any one year;
 - De-silting without interfering with banks using appropriately sized machinery where required; and
 - At least one third of the swale will remain untouched at any one time.
- 6.21 Vegetation cutting is best carried out in short sections in different years. For bank vegetation, a late autumn cut every one or two years would simulate a rich grassland sward, without affecting the drainage function of the swales.
- 6.22 With respect to attenuation features comprising a wetland grassland mix, management will be undertaken in accordance with those measures for species-rich grassland above.
- 6.23 Encroaching scrub will be removed from swales and attenuation basins on an annual basis to prevent terrestrial succession, whilst maintaining their drainage function.

Woodland, Tree, and Shrub Planting

- 6.24 All newly planted tree and shrub planting will be managed to ensure the stock establishes and thrives in accordance with the detailed landscape scheme provided at **Appendix EDP 2** and **3**. New planting will be watered as required, particularly during the first three years of establishment.
- 6.25 Where management works including pruning are required for TPO trees/tree groups, TPO consent will be applied for and agreed with the LPA prior such works being carried out.
- 6.26 All planting will be maintained in such a way as to exclude aggressively competitive plants from around the base of each plant for a period of three years from the end of the season in which the stock was planted. Any herbicides should avoid areas of newly established grassland.
- 6.27 Weeding will be undertaken during the main growth period (April to June, inclusive) for three years, achieving and maintaining a weed-free area around each of a minimum of 1m radius. Weed control will be by strimming (using appropriate guards to avoid damage to the plant) and/or herbicide application. Care will be taken to avoid damage to trees themselves.

qualified and NRW bat licensed ecologist, an arboricultural contractor with an NRW bat survey licence, or with experience of working with bats and under the supervision of an NRW bat survey licence holder. Thereafter, works will only progress in accordance with the advice of the suitably qualified and NRW bat licensed ecologist.

- 6.36 All tree works are to be undertaken in accordance with BS3998:2010 *Tree Work*. Retained trees will be allowed to develop naturally where feasible, subject to Health and Safety considerations.
- 6.37 With respect to proposed hedgrows these will, management will be undertaken in accordance with those measures above during the construction phase of development (to ensure establishment), until conveyed the residential property. For those hedgrows associated with formal open space responsibility for management will remain with the Developer and/or appointed Managing Agent. In addition to the above, hedgrows will be cut annually to maintain a maximum 1.2m height.
- 6.38 All management and remedial work should avoid the main bird nesting season (March to August inclusive). Where this is not possible, a pre-commencement check for nesting birds to be undertaken by a suitably qualified operative will be required prior to commencement of management/remedial works. Minor works required during this period should otherwise follow the advice of a suitably qualified ecologist, landscape architect or arboriculturalist.

Bird and Bat Boxes

- 6.39 Bird and bat boxes will be checked two years following installation. In the case of the latter, boxes will need to be inspected by a bat licensed ecologist, with damaged boxes repaired/replaced where necessary. The maintenance and repair of bat boxes installed across the Development Site will remain the responsibility of the Developer, or any appointed Management Company. Five-yearly replacement checks will continue long term.
- 6.40 With respect to Schwegler 1FR bat tubes (or similar) maintenance will be the responsibility of the Developer during the pre-construction and construction phases of development. Thereafter, no further maintenance is proposed or required. With respect to the bat loft, this feature will be subject to a final check upon completion of construction and prior to handover to the homeowner, by the bat licensed ecologist to ensure that they are incorporated correctly, with any remedial action completed as necessary.

Overarching Maintenance Objectives for Sustainable Drainage Features

- 6.41 Contribute to an attractive setting for the development through the provision of a range of landscape features that control the flow, volume and frequency of water leaving the development area to minimise impacts downstream.

- Inspect infalls and outfalls and remove litter/leaves to prevent blockages.

6.49 Occasional tasks to comprise the following:

- Where wildflower grass is sown to base, cut annually;
- Where marsh conditions establish in the base of a grassed swale due to wet conditions, cut annually or as required removing to wildlife piles on-site; and
- Where there is a build-up of silt on the swale at 50mm or above the design level, remove (through gentle scraping of surface) and spread on-site to the agreed area to top of banks in accordance with Environment Agency (EA) waste exemption guidance. Undertake when the ground is damp in autumn or early spring, and transplant turf and overseed to the original design levels.

Detention Basin

6.50 One detention basin has been included within the areas of public open space, as attenuation features for larger storm events. These are generally dry but will be inundated with surface water run-off and hold water for a short period before releasing at a slower rate to the final discharge point. The basin is seeded with a matrix of grasses including areas of amenity grass to allow banks of basins and wildflower turf to bases. Marginal species have been included to the base of the basin to encourage colonisation.

Management Objective

6.51 To maintain open areas for the storage of surface water run-off whilst providing amenity and biodiversity.

Management Prescriptive

6.52 Regular (monthly or as stated), to comprise the following:

- Grasses within the basin to be maintained as per the management prescriptive for various vegetation typologies in the soft landscape section;
- Maintain grass banks and access areas around the basin through regular cutting (approximately fortnightly through the growing season) to keep grass at 35-50mm minimum and 75mm maximum;
- Remove any litter from banks/base of the basin; and
- Inspect infalls and outfalls and remove litter/leaves to prevent blockages.

6.53 Occasional (annually or as required), to comprise the following:

- Remove sediment, litter and debris build-up from around inlets or from forebays.

6.57 Occasional (quarterly) to comprise the following:

- Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary;
- Check operation of underdrains by inspection of flows after rain;
- Assess plants for disease infection, poor growth, invasive species, etc., and replace as necessary;
- Replace any plants, to maintain planting density; and
- Infill any holes or scour in the filter medium, improve erosion protection if required.

6.58 Remedial actions to comprise the following:

- Remove and replace filter medium and vegetation above storage layer - as required but likely to be >20 years.

- 7.8 The proposed development and associated landscaping will be undertaken in seven as illustrated at **Appendix EDP 2** and **3**. Soft landscaping works will be undertaken within the first available season following completion of the construction period for each specific phase, where appropriate.
- 7.9 **Table EDP 7.1** illustrates optimal times of year to undertake site clearance and habitat creation. **Table EDP 7.2** illustrates optimal times of year to undertake subsequent monitoring and management of created/enhanced habitats.

Task	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Species-rich Grassland Management (including attenuation basins)	Year 1: Single cut in May, excluding areas of grassland with bulbs (delay till circa 6 weeks after flowering). Second cut between end August and October inclusive.												
Species-rich Grassland Management (including attenuation basins)	Years 2-5: First cut during late July to mid-August; second cut during October/November.												
Amenity Grassland Management	Regular cutting during the growing season; cutting likely required on a fortnightly basis during summer, except in periods of drought.												
Sustainable Drainage Features (Swales)	Annual inspections with rotational cutting each year following establishment.												
Inspection of bat boxes	Maintenance inspection to be undertaken 2 years post-installation, with subsequent inspections undertaken every 5 years.												
Inspection of bird boxes	Maintenance inspection to be undertaken 2 years post-installation, with subsequent inspections undertaken every 5 years.												

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Appendix EDP 2
Detailed Soft Landscape Plan
(edp5601_d025ac 12 December 2024 LCH/DR)

Planting Schedule

Trees					
Number	Common Name	Species	Girth	Height	Specification
12	Common Maple	Acer campestre		175-200cm	B-2x Feather: 5 brks
49	Common Maple	Acer campestre		60-80cm	BR :1+1 : Transplant
22	Field Maple 'Streetwise'	Acer campestre 'Streetwise'	12-14cm	400-450cm	Half Standard : Clear Stem min. 200 : 3x : RB
4	Common Horse Chestnut	Aesculus hippocastanum	12-14cm	400-450cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
5	Common alder	Alnus glutinosa	12-14cm	350-400cm	RB : Heavy Standard : Clear Stem min. 200
10	White-barked Himalayan Birch	Betula utilis jacquemonti		300-350cm	RB : Multi-Stemmed : 3/5 brks
36	Hornbeam 'Frans Fontaine'	Carpinus betulus 'Frans Fontaine'	16-18cm	400-450cm	BR : Extra Heavy Standard : Clear Stem min. 200
39	Common Hawthorn	Crataegus monogyna		60-80cm	BR : Transplant
12	Common Beech	Fagus sylvatica	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem 175-200 : 5 brks : 3x
10	Common Beech	Fagus sylvatica		175-200cm	B-2x Feather: 5 brks
13	American sweetgum	Liquidambar styraciflua	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
2	Liquidambar styraciflua 'Lane Roberts'	Liquidambar styraciflua 'Lane Roberts'	12-14cm	400-450cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
3	Tulip tree	Liriodendron tulipifera	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
4	Southern magnolia	Magnolia grandiflora	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200 : Trees to be translocated as per drawing edp5601
4	Apple	Malus domestica esp.	8-10cm		RB : 3 brks : Bushy
2	Dawn Redwood	Metasequoia glyptostroboides	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
1	Parrotia persica 'Vanessa'	Parrotia persica 'Vanessa'	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200 : Trees to be translocated as per drawing edp5601
8	Double Glean	Prunus avium 'Plena'	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200 : 5 brks : 3x : RB
4	Plum 'Victoria'	Prunus domestica 'Victoria'	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200
5	Bird Cherry	Prunus padus	12-14cm	350-425cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
3	Chanticleer Pear	Pyrus calleryana 'Chanticleer'	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem 175-200 : 5 brks : 3x : RB
1	Holly oak	Quercus ilex	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
1	Pin oak	Quercus palustris	min. 400cm		RB : Extra Heavy Standard : Clear Stem 175-200
10	Common Oak	Quercus robur		175-200cm	BR : 2x : Feather: 5 brks
29	Common Oak	Quercus robur		60-80cm	BR : 1+1 : Transplant
4	Cypress Oak	Quercus robur 'Fastigiata'	12-14cm	350-425cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
7	Goat Willow	Salix caprea	12-14cm	350-425cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
7	Whitebeam	Sorbus aria	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
7	Green Spire Lime	Tilia cordata 'Green Spire'	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
13	Small-leaved Lime 'Winter Orange'	Tilia cordata 'Winter Orange'	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem 175-200 : 5 brks : 3x : RB

Total :330

Shrubs						
Number	Common Name	Species	Height	Pot Size	Specification	Density
209	Japanese Laurel 'Rozannie'	Aucuba japonica 'Rozannie'	30-40cm	3L	Bushy : C	3/m²
83	Mexican Orange Blossom 'Aztec Pearl'	Choisya 'Aztec Pearl'	40-60cm	5L	Bushy : 5 brks	4/m²
209	Mexican Orange Blossom 'Aztec Pearl'	Choisya 'Aztec Pearl'	40-60cm	5L	Bushy : 5 brks	3/m²
16	Common Dogwood	Cornus sanguinea	60-80cm		1+2 : 3 brks : B	1/Ctr
467	Common Dogwood	Cornus sanguinea	40-60cm	3L		3/m²
234	Red Osier Dogwood 'Kelsey'	Cornus stolonifera 'Kelsey'	30-40cm	2L	Several shoots : 3 brks	3/m²
39	Common Hazel	Corylus avellana	60-80cm		BR : Transplant	1.5/Ctr
15	Common Hazel	Corylus avellana	60-80cm		Branched : 1+1 : BR	1/Ctr
30	Eucynurus 'Silver Queen'	Eucynurus fortunei 'Silver Queen'	20-30cm	5L	Bushy : 7 brks	4/m²
30	Shrubby Veronica 'Great Orme'	Hebe 'Great Orme'	30-40cm	5L	Bushy : 5 brks	4/m²
17		Hebe albicans 'Red Edge'	40-60cm	2L	Bushy : 3 brks	3/m²
209	a Shrubby Veronica	Hebe rakaiensis	40-60cm	5L	Bushy : 5 brks	3/m²
165	a Shrubby Veronica	Hebe rakaiensis	40-60cm	5L	Bushy : 5 brks	4/m²
209	St John's Wort 'Midcote'	Hypericum 'Midcote'	30-40cm	3L	Bushy : C	3/m²
124	English Lavender	Lavandula angustifolia	40-60cm	5L	Branched : 5 brks	4/m²
42	Privet Honeysuckle	Lonicera pileata	30-40cm	7.5L	Bushy : 6/9 brks	4/m²
209	Privet Honeysuckle	Lonicera pileata	30-40cm	7.5L	Bushy : 6/9 brks	3/m²
15	Oregon Grape 'Apollo'	Mahonia aquifolium 'Apollo'	20-30cm	3L	Branched : 2 brks	4/m²
15	Purple-osier Willow	Salix purpurea	60-80cm		Branched : 1+1 : BR	1/Ctr
15	Common Osier	Salix viminalis	60-80cm		Branched : 1+1 : BR	1/Ctr
215	Sweet Box	Sarcococca confusa	40-60cm	4L		4/m²
163	Japanese Spiraea 'Snowmound'	Spiraea nipponica 'Snowmound'	40-60cm	3L		4/m²
30	Viburnum	Viburnum davidii	30-40cm	5-7.5L	Bushy : 4 brks	4/m²
15	Wayfaring tree	Viburnum lantana	60-80cm		Branched : 1+1 : BR	1/Ctr
8	Gaulther Rose	Viburnum opulus	40-60cm		BR : Transplant	1.5/Ctr

Total :2782

Herbaceous						
Number	Common Name	Species	Height	Pot Size	Specification	Density
234		Crocossia 'Emily McKenzie'		2L	Full Pot	3/m²
272		Crocossia 'Emily McKenzie'		3L	Full Pot	5/m²
278	Tufted Hair Grass	Deschampsia cespitosa		3L	Full Pot	4/m²
124	Globe Thistle	Echinops ritro		3L	Full Pot	6/m²
180		Epidemum 'Amber Queen'		2L	Full Pot	3/m²
12		Euphorbia martini		2L	Full Pot	3/m²
184	Balkan Cranesbill	Geranium macrorrhizum		3L	Full Pot	6/m²
17	Cranesbill Rozanne	Geranium Rozanne		2L	Full Pot	3/m²
620	Snowy Wood Rush	Luzula nivea		3L	Full Pot	6/m²
234	Snowy Wood Rush	Luzula nivea		2L	Full Pot	3/m²
12		Penicaria simplexcaulis 'Tiretail'		2L	Full Pot	3/m²
63		Polemonium caeruleum		3L	Full Pot	6/m²
124	Black-eyed Susan 'Goldsturm'	Rudbeckia fulgida sultivanti 'Goldsturm'		3L	Full Pot	6/m²
12	Black-eyed Susan 'Goldsturm'	Rudbeckia fulgida sultivanti 'Goldsturm'		2L	Full Pot	3/m²
8		Sisyrinchium striatum		2L	Full Pot	2/m²
48	Giant Feather Grass	Stipa gigantea		3L	Full Pot	3/m²

Total :2422

Ferns					
Number	Common Name	Species	Pot Size	Specification	Density
163	Common Male Fern	Dryopteris filix-mas	3L	Full Pot	3/m²
180	Common Male Fern	Dryopteris filix-mas	2L	Full Pot	3/m²
12	Common Polypody	Polypodium vulgare	2L	Full Pot	3/m²

Total :355

Marginal / Aquatics				
Number	Common Name	Species	Specification	Density
150		Apium nodiflorum	Well Rooted	0.4/Ctr
198		Carex acutiformis	Well Rooted	0.4/Ctr
101	Common Spika Rush	Eleocharis palustris	Full Pot : June to Sept planting: British Native-origin: C	0.4/Ctr
150	Meadowswet	Filipendula ulmaria	Full Pot : Sept to April planting: British Native-origin: C	0.4/Ctr
245	Yellow flag iris	Iris pseudacorus	Plug: Well Rooted	0.4/Ctr
150	Water mint	Mentha aquatica	Full Pot: C	0.4/Ctr

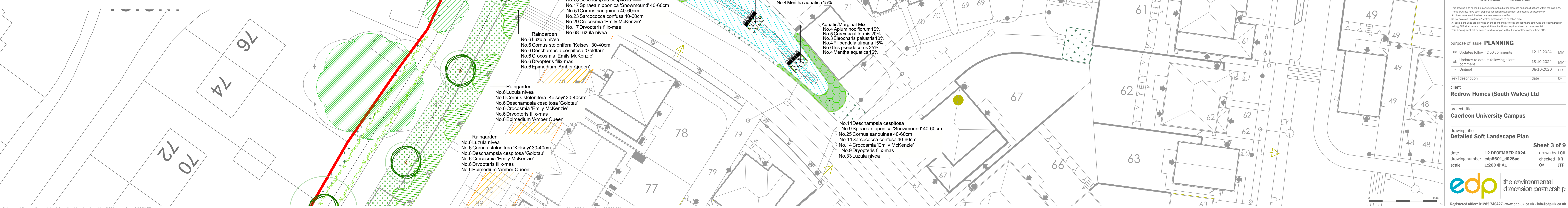
Total :994

Grasses				
Number	Common Name	Species	Specification	Density
234	Tufted Hair Grass 'Goldtau'	Deschampsia cespitosa 'Goldtau'	Full Pot	3/m²
17	Mexican Feather Grass	Stipa tenuissima	Full Pot	3/m²

Total :251

Hedges						
Number	Common Name	Species	Height	Pot Size	Specification	Density
142	Common Maple	Acer campestre	80-100cm		1+1: Transplant - seed raised: B	0.5/Ctr Double Staggered at 0.5m offset
188	Common Hazel	Corylus avellana	80-100cm		1+2: Transplant - seed raised: Branched: 4 brks: B	0.5/Ctr Double Staggered at 0.5m offset
283	Common Hawthorn	Crataegus monogyna	80-100cm		1+2: Transplant - seed raised: B	0.5/Ctr Double Staggered at 0.5m offset
142	Common Spindle Tree	Euonymus europaeus	60-80cm		1+2: Transplant - seed raised: Branched: 5 brks: B	0.5/Ctr Double Staggered at 0.5m offset
188	Common Holly	Ilex aquifolium	60-80cm	3L	Leader with Laterals: C	0.5/Ctr Double Staggered at 0.5m offset
143	Common Privet	Ligustrum vulgare	80-100cm	B	1+2: Transplant - seed raised	0.75/Ctr Double Staggered at 0.5m offset
717	Box Honeysuckle	Lonicera nitida	60-80cm	10L	Bushy: 7 brks :C	0.75/Ctr Double Staggered at 0.5m offset

Total :1803



Site Boundary

Existing Vegetation to be Retained
Refer to the Arboricultural Report for details

Existing Grass to be Retained and
Enhanced with Species Rich Grass
Product: EGR - Lawn Mixture to improve wet weather
Supplier: Strongtree

Proposed Trees
(Please Check Green Sheet)

Proposed Translocated Trees

Proposed Turf
Product: Stratton Turf
Supplier: Strongtree

Proposed Amenity Grass
Product: EGR - Strong Lawn Grass Mixture
Supplier: Strongtree

Proposed Species Rich Grass
Product: EGR - Flowering Lawn Mixture
Supplier: Strongtree

Proposed Meadow Grassland within
Rain Garden
Product: EGR - Meadow Grass Mixture for Wet Soil/Slopes
Supplier: Strongtree

Proposed Meadow Grass Mixture
to Ponds and Swales
EGR - Meadow Grass Mixture for Wet Soils
Supplier: Strongtree/Strongtree - Strongtree (see page 10)

Proposed Wildflower Turf to base
of Swales
Supplier: Wildflower Turf

Proposed Aquatic Mix

Proposed Aquatic-Edge Structural Planting

Proposed Ornamental Planting

Proposed Structural Planting

Proposed Planting Bed

Proposed Rain Garden Planting

Proposed Hedgerow

Proposed Wildflower Grassland
Product: EGR - Special General Purpose Meadow Mixture
Supplier: Strongtree

Proposed Shade Tolerant Wildflower
Grassland and Bubs Planting
Product: EGR - Meadow for Wet Weather
Supplier: Strongtree

Proposed Gravel Footpath
Bresford Golden Amber Gravel or similar approved
For location location and levels refer to
Engineering Information

Proposed Location for the Trim Trail
Equipment
Details of Trim Trail Equipment subject to planning

Proposed Location for the Local
Equipped Area for Play (LEAP)
Details of Local Equipped Area for Play subject to
planning conditions

Proposed Gravel to Front Gardens
Golden Chippie 20mm or similar

Proposed Boundary Treatments
Refer to Architects and Engineers drawings for
Boundary Treatments

Proposed Lighting Columns
Refer to engineers plans for details

Location of Underground Services
Refer to engineers plans for details

Easement
Refer to engineers plans for details

NOTE:

No planting operations to be
undertaken within RPA for trees
designated under a TPO. Refer to
arboricultural report and plans for
details on locations of such trees.

CAUTION

A risk assessment has been carried out on this
design. The design is not a final design. The design
is subject to change. The design is not a final
design. The design is not a final design.

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For further guidance, refer to HSE Construction (Design and Management) Regulations 2015.

overview

3

purpose of issue

PLANNING

at: Updates following LG comments

12-12-2024

MM

at: Updates to details following client

18-10-2024

MM

comment

Original

08-10-2020

DR

rev

description

date

by

client

Redrow Homes (South Wales) Ltd

project title

Caerleon University Campus

drawing title

Detailed Soft Landscape Plan

Sheet 3 of 9

date

12 DECEMBER 2024

drawn by

LEH

drawing number

edp5601_d025ac

checked

DR

scale

1:200 @ A1

QA

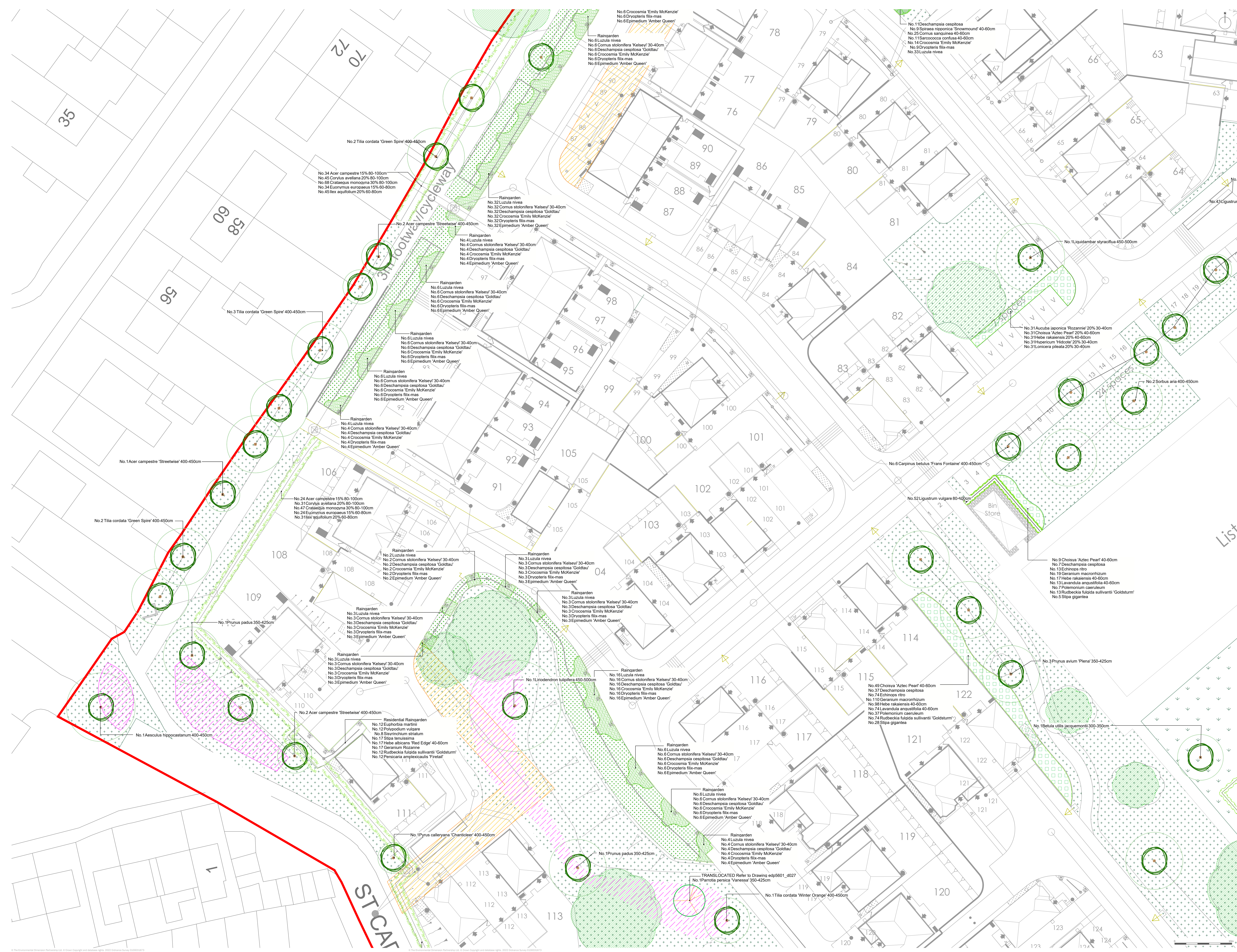
JTF

edp

the environmental
dimension partnership

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- Site Boundary**
- Existing Vegetation to be Retained
Refer to the Arboricultural Report for details
- Existing Grass to be Retained and
Enhanced with Species Rich Grass
Product: E202 - Strong Lawn Grass Mixture
Supplier: Strongtree
- Proposed Trees
Refer to the Arboricultural Report for details
- Proposed Translocated Trees
- Proposed Turf
Product: E202 - Strong Lawn Grass Mixture
Supplier: Strongtree
- Proposed Amenity Grass
Product: E202 - Strong Lawn Grass Mixture
Supplier: Strongtree
- Proposed Species Rich Grass
Product: E21 - Flowering Lawn Mixture
Supplier: Strongtree
- Proposed Meadow Grassland within
Rain Garden
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Meadow Grass Mixture
to Ponds and Swales
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Wildflower Turf to base
of Swales
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Aquatic Mix
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Aquatic-Edge Structural Planting
- Proposed Ornamental Planting
- Proposed Structural Planting
- Proposed Planting Bed
- Proposed Rain Garden Planting
- Proposed Hedgerow
- Proposed Wildflower Grassland
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Shade Tolerant Wildflower
Grassland and Bulb Planting
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Gravel Footpath
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Location for the Trim Trail
Equipment
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Location for the Local
Equipped Area for Play (LEAP)
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Gravel to Front Gardens
Product: E20 - Meadow Grass Mixture for Wet Soil
Supplier: Strongtree
- Proposed Boundary Treatments
Refer to the Arboricultural Report for details
- Proposed Lighting Column
Refer to the Arboricultural Report for details
- Location of Underground Services
Refer to the Arboricultural Report for details
- Easement
Refer to the Arboricultural Report for details

NOTE:
No planting operations to be undertaken within RPA's for trees designated under a TPO. Refer to arboricultural report and plans for details on locations of such trees.

5

overview

purpose of issue **PLANNING**

rev	description	date	by
01	Updates following LO comments	12-12-2024	MM
02	Updates to details following client comment	18-10-2024	MM
03	Original	08-10-2020	DR

client
Redrow Homes (South Wales) Ltd

project title
Caerleon University Campus

drawing title
Detailed Soft Landscape Plan

date
12 DECEMBER 2024

drawing number
edp5601_d025ac

scale
1:200 @ A1

drawn by
LEH

checked
DR

checked
JTF

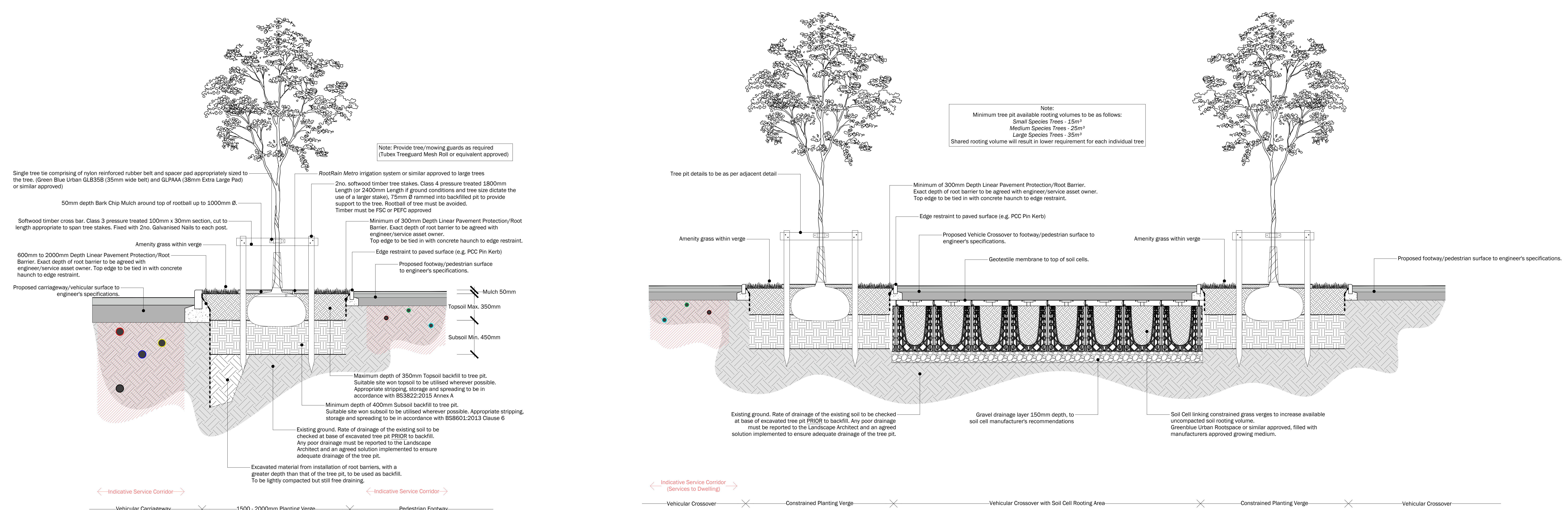
Sheet 5 of 9

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- Site Boundary
 - Existing Vegetation to be Retained
 - Existing Grass to be Retained and Enhanced with Species Rich Grass
 - Proposed Trees
 - Proposed Translocated Trees
 - Proposed Turf
 - Proposed Amenity Grass
 - Proposed Species Rich Grass
 - Proposed Meadow Grassland within Rain Garden
 - Proposed Meadow Grass Mixture to Ponds and Swales
 - Proposed Wildflower Turf to base of Swales
 - Proposed Aquatic Mix
 - Proposed Aquatic-Edge Structural Planting
 - Proposed Ornamental Planting
 - Proposed Structural Planting
 - Proposed Planting Bed
 - Proposed Rain Garden Planting
 - Proposed Hedgerow
 - Proposed Wildflower Grassland
 - Proposed Shade Tolerant Wildflower Grassland and Bulb Planting
 - Proposed Gravel Footpath
 - Proposed Location for the Trim Trail Equipment
 - Proposed Location for the Local Equipped Area for Play (LEAP)
 - Proposed Gravel to Front Gardens
 - Proposed Boundary Treatments
 - Proposed Lighting Column
 - Location of Underground Services
 - Easement
- NOTE:
No planting operations to be undertaken within RPAs for trees designated under a TPO. Refer to arboricultural report and plans for details on locations of such trees.



TREE PIT DETAIL
TREE IN GRASS VERGE, ADJACENT SERVICES
ABOVE GROUND STAKING
1:20 @ A0

TREE PIT DETAIL WITHIN PHASE 1
TREE IN CONSTRAINED GRASS VERGE, ADJACENT SERVICES
ABOVE GROUND STAKING
1:20 @ A0

Redrow Homes (South Wales) Ltd

purpose of issue **PLANNING**

atc	Updates following LO comments	12-12-2024	MM
adp	Updates to details following client comment	18-10-2024	MM
rev	Original	08-10-2020	DR

client **Redrow Homes (South Wales) Ltd**

project title **Caerleon University Campus**

drawing title **Detailed Soft Landscape Plan**

date **12 DECEMBER 2024** drawn by **LGH**
drawing number **edp5601_d025ac** checked **DR**
scale **1:200 @ A1** QA **JTF**

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Issues

- Site Boundary
- Existing Vegetation to be Retained
- Proposed Trees
- Proposed Specimen Shrub Planting
- Proposed Turf
- Proposed Planting Bed
- Proposed Ornamental Planting
- Proposed Rain Garden Planting
- Proposed Ground Cover Planting with Bank Stabilisation
- Proposed Hedgerow
- Proposed Gravel
- Boundary Treatments
- Proposed Lighting Column
- Location of Underground Services
- Easement

For proposed Public Open Space landscape proposals refer to drawing edp5601_0025.

NOTE: No planting operations to be undertaken within 10% for trees designated under a TPO. Refer to arboricultural report and plans for details on locations of such trees.

overview

This drawing is to be read in conjunction with all other drawings and specifications within the project.

Head drawings have been prepared by the design team and are the responsibility of the design team.

On site staff off this drawing, written instructions to be given only.

All design and construction work must be carried out in accordance with the design team's instructions.

Any changes to the design must be approved by the design team and the client.

Any changes to the design must be approved by the design team and the client.

purpose of issue

PLANNING

updates following LO comments

12-12-2024

updates to details following client comment

18-10-2024

Original

14-08-2020

rev

description

date

by

client

Redrow Homes (South Wales) Ltd

project title

Caerleon University Campus

drawing title

Proposed Landscape Proposals for the Residential Plots

Sheet 2 of 8

date

12 DECEMBER 2024

drawing number

edp5601_00312

scale

1:200 @ A1

checked

DR

QA

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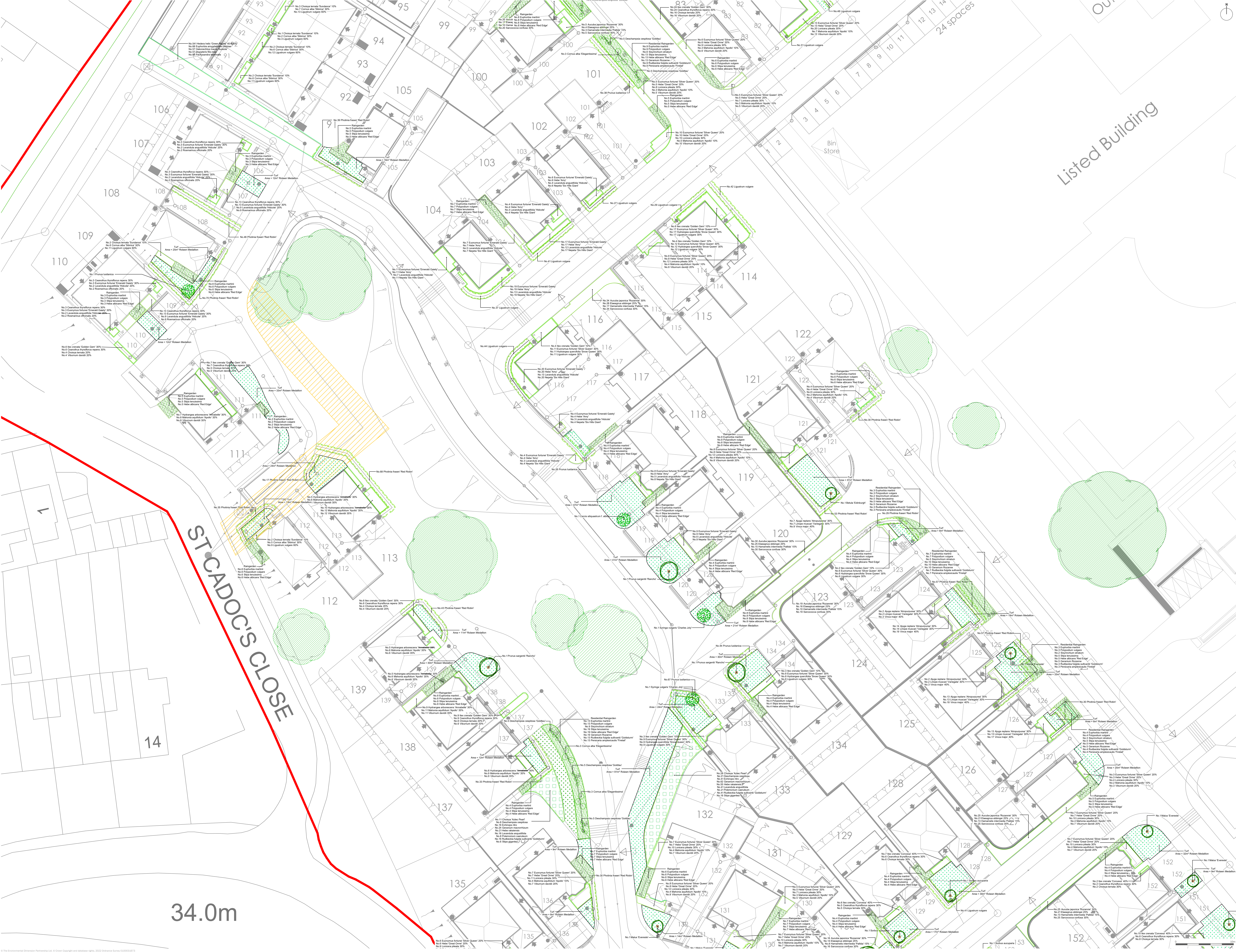
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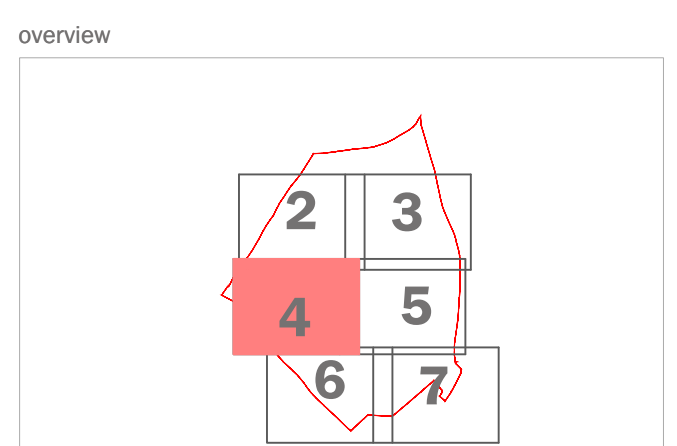
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- Site Boundary
- Existing Vegetation to be Retained
- Proposed Trees
- Proposed Specimen Shrub Planting
- Proposed Planting Bed
- Proposed Ornamental Planting
- Proposed Rain Garden Planting
- Proposed Ground Cover Planting with Bank Stabilisation
- Proposed Hedgerow
- Proposed Gravel
- Boundary Treatments
- Proposed Lighting Column
- Location of Underground Services
- Easement

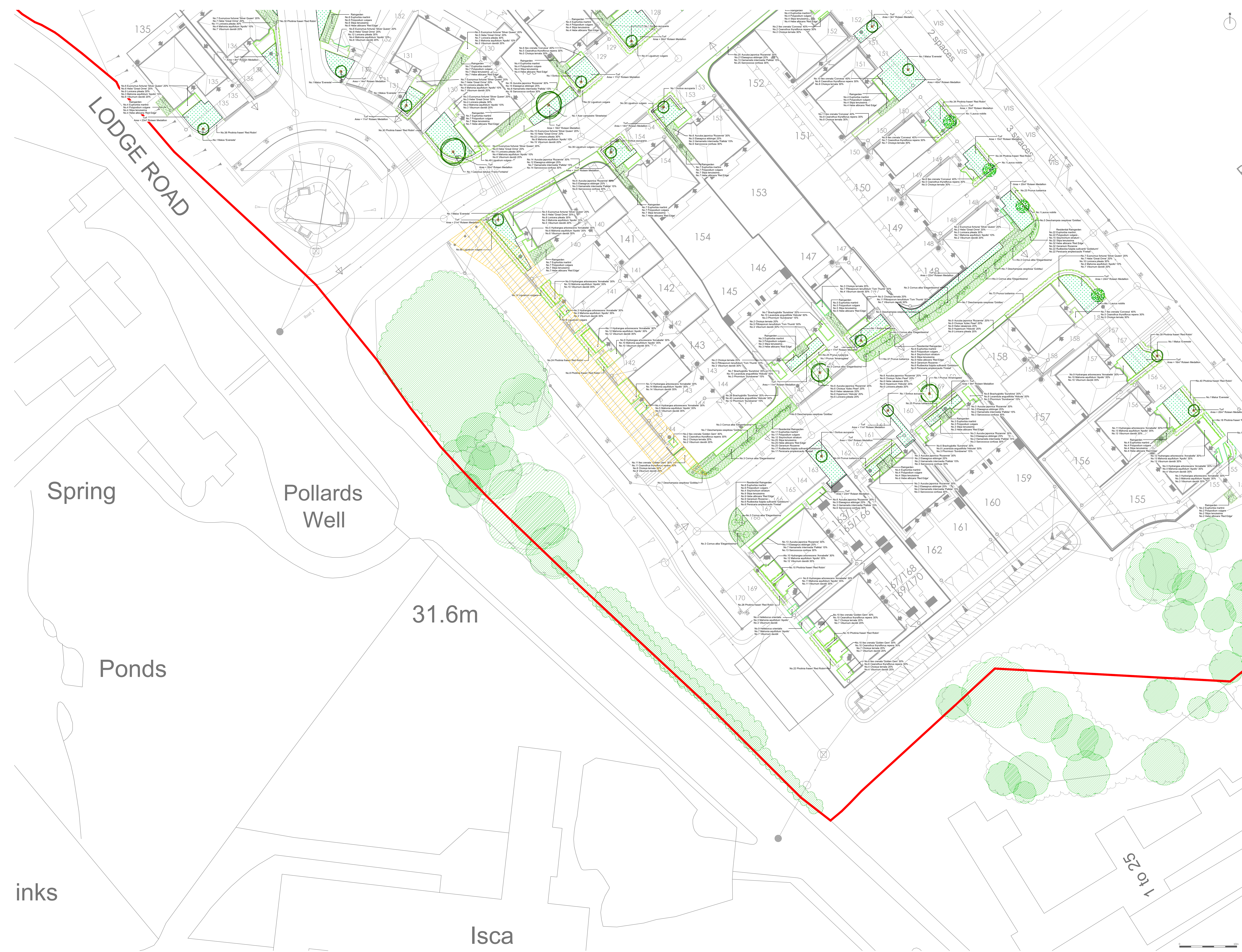
For proposed Public Open Space landscape proposals refer to drawing edp5601_0025.

NOTE: No planting operations to be undertaken within 10m of trees designated under a TPO. Refer to arboricultural report and plans for details on locations of such trees.



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purpose of issue			PLANNING
updates following LO comments	12-12-2024	MM	
updates to details following client comment	18-10-2024	MM	
Original	14-08-2020	DR	
rev	description	date	by
client			
Redrow Homes (South Wales) Ltd			
project title			
Caerleon University Campus			
drawing title			
Detailed Landscape Proposals for the Residential Plots			
date	12 DECEMBER 2024	drawn by	LCH
drawing number	edp5601_00312	checked	DR
scale	1:200 @ A1	QA	JTF
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Site Boundary

Existing Vegetation to be Retained

Proposed Trees

Proposed Specimen Shrub Planting

Proposed Turf

Proposed Planting Bed

Proposed Ornamental Planting

Proposed Rain Garden Planting

Proposed Ground Cover Planting with Bank Stabilisation

Proposed Hedgerow

Proposed Gravel

Boundary Treatments

Proposed Lighting Column

Location of Underground Services

Eastment

For proposed Public Open Space landscape proposals refer to drawing edp5601_0205.

NOTE:

No planting operations to be undertaken within 10% for trees designated under a TPO. Refer to arboricultural report and plans for details on locations of such trees.

overview

2

3

4

5

6

7

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purpose of issue

PLANNING

Updates following LO comments

Updates to details following client comment

Original

12-12-2024

18-10-2024

14-08-2020

rev

description

date

by

client

Redrow Homes (South Wales) Ltd

project title

Caerleon University Campus

drawing title

Detailed Landscape Proposals for the Residential Plots

date

12 DECEMBER 2024

drawing number

edp5601_0332

scale

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Sheet 6 of 8

drawn by LCH

checked DR

QA

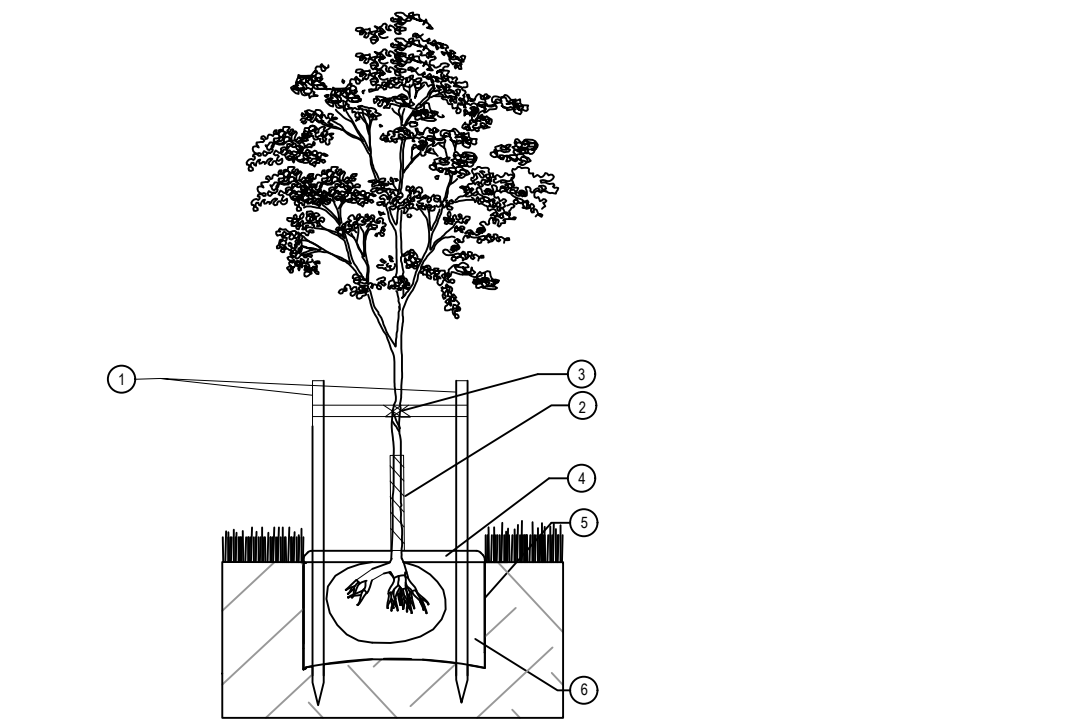
JTF

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Tree Pit Detail

1. 2x tarasised timber tree stakes 2m, 75mm Ø and crossbar driven into backfilled pit to provide support to the tree. Where trees are to be installed within navigational/bioretention features, stakes to be installed to a maximum depth of 750mm to ensure the liner is not compromised.
2. Clear spiral guard to be fitted to trunk to protect against animal browsing.
3. Use 2x Tree Ties GLB25A with GLPFA spacer sleeves or similar to secure tree to support post.
4. 75mm deep bark mulch layer to be spread evenly over a circular area 1000mm Ø around the tree to prevent weed growth and retain moisture. Alternatively, a suitable mulch mat can be used covering the same area.
5. Excavate tree pit to sufficient size to accommodate tree root ball. Loosen any compaction in base of excavated pit to aid drainage. Tree to be planted at a depth where the root flare is still visible, just breaching the soil surface, following backfilling.
6. Backfill tree pit with subsoil and topsoil excavated from pit if this is regarded as of sufficient quality to promote the healthy establishment of the tree. If either the top soil or sub soil excavated from the pit is of poor quality, then soil amendments may be used sparingly or imported topsoil compliant with BS3882 should be used. Immediately after planting, water the tree, saturating the tree pit to field capacity.

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

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

Tree Maintenance and Management During 5 Year Establishment Period

Immediately following planting, the tree will be watered thoroughly. Following this, and with regard to prevailing weather conditions, newly planted trees are to be watered regularly during periods of dry weather. If the tree pit has been specified with an irrigation pipe, this will be used as the primary method of watering. If no irrigation pipe is specified, the square metre of ground around the tree will be soaked to field capacity (refer to BS8545:2014 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 are to 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 will be required.

A formal assessment of young tree health and development must be carried out annually by a qualified arborist who will be able to advise on problems should any problems be picked up. During this assessment, any stakes and ties will 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 will be re-firmed and stakes and ties adjusted accordingly.

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

Tree stakes and ties are to be removed once the tree has established a strong enough root system to support itself, likely to be 1-2 years after planting. Tree guards, are 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 will be carried out in accordance with BS3998 as required throughout the 5 year establishment period.

For further guidance on tree maintenance during establishment refer to BS8545:2014 Section 11.

Native Hedgerow Planting Detail

1. Clear spiral guard to be fitted to trunk to protect against animal browsing with supporting cane or stake.
2. 2m wide biodegradable weed mat roll pegged down with biodegradable pegs along line of hedgerow to prevent weed growth and retain moisture.
3. Whip to be notch planted following clearance of any existing vegetation.

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

The notes above are intended as a basic guide only. For further general guidance on planting refer to BS8545:2014 Section 10 and BS4226:1989 Section 5.

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

Whip Maintenance and Management During 5 Year Establishment Period

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

All whips are fitted with protective guards to prevent animal damage. These are to 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 will be required.

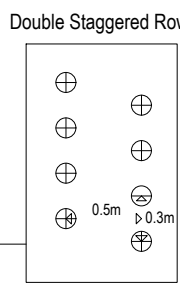
A formal assessment of areas of whip planting must be carried out annually by a qualified arborist who will be able to advise on solutions should any problems be picked up. During this assessment any guards and cane/stakes will be checked to ensure they are providing protection but not damaging the developing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

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

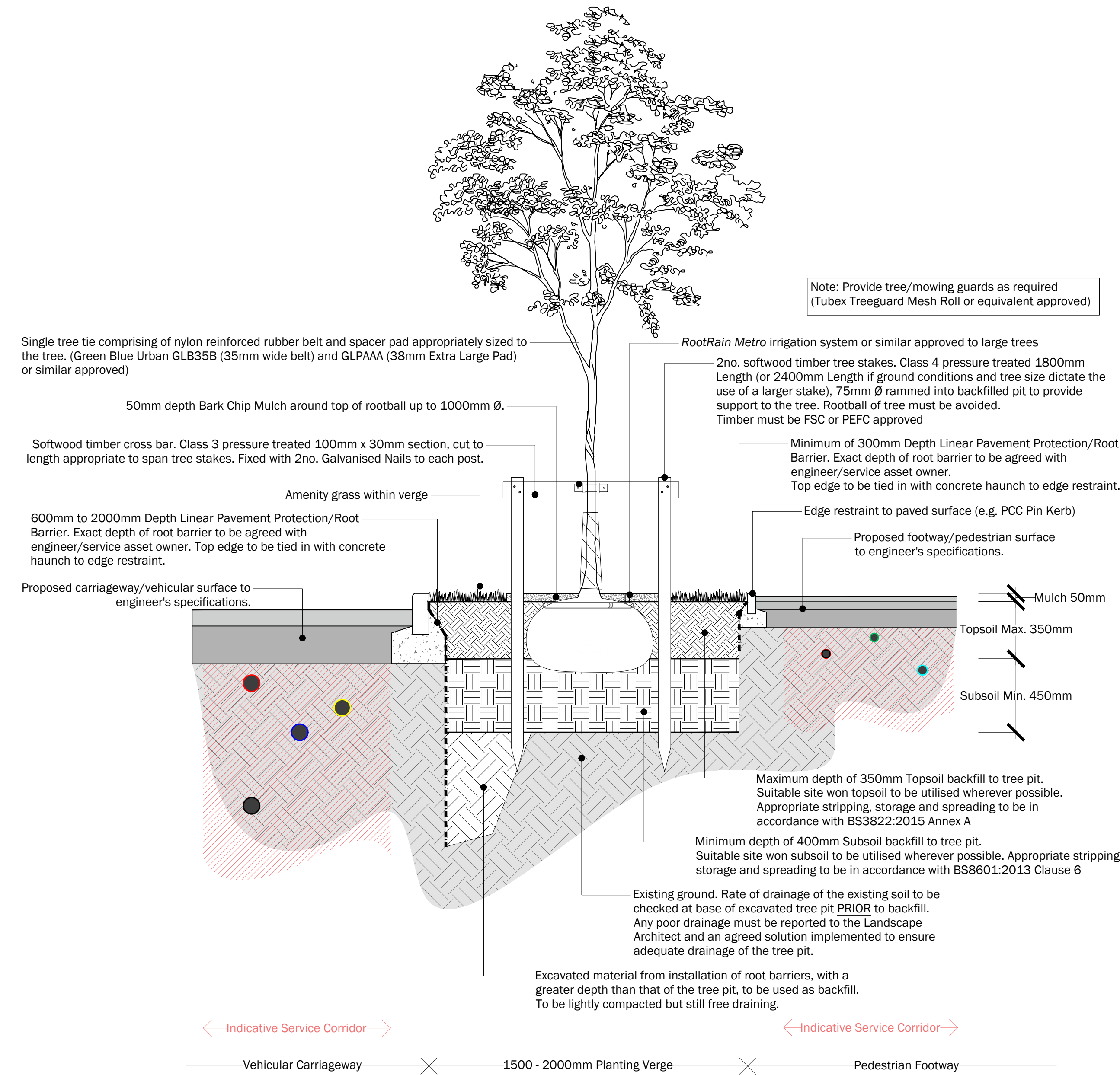
The shrub shelter/guard will be removed once the whip has established a strong enough root system to support itself and has begun to grow strongly clear of the top of the shelter/guard, likely to be 1-2 years after planting. Biodegradable mulch mats can remain in place indefinitely.

Formative pruning will be carried out in accordance with BS3998 as required during the first 5 years to ensure the desired form is achieved.

For further guidance on whip and tree maintenance during establishment refer to BS8545:2014 Section 11.



Double Staggered Row



TREE PIT DETAIL TREE IN GRASS VERGE, ADJACENT SERVICES ABOVE GROUND STAKING 1:20 @ A1

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purpose of issue: PLANNING

z	Updates following LO comments	12-12-2024	WM
y	Updates to details following client comment	18-10-2024	MM
x	Original	14-08-2020	DR

rev / description / date / by

client
Redrow Homes (South Wales) Ltd

project title
Caerleon University Campus

drawing title
Detailed Landscape Proposals for the Residential Plots
date
12 DECEMBER 2024
drawing number
edp5601_00312
scale
1:200 @ A1
drawn by
LWH
checked
DR
QA
JTF
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Appendix EDP 5
Arboricultural Implications Assessment and Arboricultural Method
Statement
(Steve Ambler and Sons Tree Specialists Ltd, January 2021)

Arboricultural Implications Assessment & Arboricultural Method Statement

In accordance with
BS: 5837:2012

At

Caerleon Former University Campus

On the instructions of
Redrow Homes

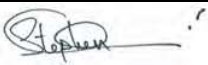
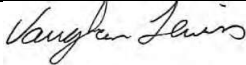
Dated: January 2021 (Revision 3)



Inspected by Mr.V.Lewis. Tech.Cert.Arbor.A, MArborA
Assessed & approved by Mr. S J Ambler. Tech.Arbor.A, Dip.Arb. (RFS). FARBORA.
Of

Steve Ambler and Sons Tree Specialists Ltd.

Tel/Fax- 01495 310826. Mobile- 07813 310826 Email- steve@steveamblerltrees.com Web- www.steveamblerltrees.com

Signed Steve Ambler		Signed Vaughan Lewis	
Date	27 th January 2021	Date	27th Jan 2021

INTRODUCTION, SCOPE AND BACKGROUND

This assessment is undertaken by our senior Consultant Vaughan Lewis who has worked within the arboricultural and forestry sectors for 25 years, most recently as a principal arboricultural and woodlands officer for a local authority. Vaughan holds the following arboricultural qualifications:

- a) Professional Technician in Arboriculture (Arboricultural Association)
- b) Professional Member of the Arboricultural Association
- c) Landscape Science, Higher National Diploma -Distinction. (Pencoed College (University of Glamorgan)
- d) Woodland Management, National Diploma - Distinction (Hereford College of Agriculture)
- e) Rural Studies, Btec First Diploma – Distinction (Pencoed College)
- f) Lantra Award, “Bats and Arboriculture – A Guide for Practitioners” developed by The Bat Conservation Trust.
- g) Professional Tree Condition Certificate (Lantra Awards)

This assessment is approved by Stephen Ambler, the Company founder, a professional arboriculturalist and a Fellow of the Arboricultural Association. Having over 40 years’ experience in the arboricultural industry, serving 19 of those years in local government as a principal arboricultural and woodlands officer. His Consultancy Practice was established in 1999 and later expanded in 2006 with the launch of a specialist ‘Tree Contracting Unit’ under the revised name - Steve Ambler & Sons Tree Specialists Ltd. Stephen holds the relevant qualifications: -

- a) Certificate in Arboriculture (Royal Forestry Society)
- b) Professional Technician in Arboriculture (Arboricultural Association)
- c) Professional Diploma in Arboriculture (Royal Forestry Society)
- d) Fellow Member of the Arboricultural Association.

This Arboricultural Implications Assessment (AIA) and Arboricultural Method Statement (AMS) is a study to identify, evaluate and mitigate the extent of direct and indirect impacts on existing trees because of the current development proposal. It follows on to an earlier Tree Survey, Tree Categorisation, and Tree Constraints Plan¹ in which the trees were scored and assessed for their suitability for retention within the proposed development. The trees are clearly marked on the Tree Protection Plan with Tree Removal & Retention, within the Appendices.

The Arboricultural Method Statement element of this Report sets out to consider the physical and structural requirements of retained trees to maintain their good health and stability in relation to the pending construction works through identifying and reducing any conflict between them.

This revision (v3 January 2021) of the AIA / AMS has been produced following feedback from the Local Planning Authority, discussions with the design team and updated engineering sectional drawings which includes the swales. Revised sections from version 2 are highlighted in blue to help aid the reader to identify them.

This assessment is carried out using information provided on drawings –

- 18137(05) 1101N Proposed Site Plan
- 200922 - 19399 Engineering Layouts
- Levels Plan. 19399_C-300 - Draft - WIP - Engineering Layout-C-300-5
- Existing Utilities (Drawing Numbers : MU-001, 2 & 3; B-001, 2 & 3; E-001, 2 & 3; G-001, 2 & 3; S-001; W-001, 2 & 3; MU-002; B-002;)

¹ S. Ambler - Tree Survey, Tree Categorisation, and Tree Constraints Plan at Former Caerleon Campus. Feb_April 2019.

The development shall be carried out in accordance with the approved Tree Protection Plan and the fencing shall be retained for the full duration of the development, and shall not be removed or repositioned without the prior written approval of the Local Planning Authority.

Reason: To protect important landscape features within the site and in accordance with policy GP2 and GP5 of the adopted Local Development Plan.

07 Notwithstanding the details submitted, no operations of any description, (this includes all forms of development, tree felling, tree pruning, temporary access construction, soil moving, temporary access construction and operations involving the use of motorised vehicles or construction machinery), shall commence on site in connection within the development until a detailed Arboricultural Method Statement (i.e. revision 3) has been submitted to and approved in writing by the Local Planning Authority.

The development shall be carried out in full compliance with the revised and approved Arboricultural Method Statement.

Reason: To protect important landscape features within the site and in accordance with policy GP6 and GP5 of the adopted Local Development Plan.

08 Prior to the commencement of works to the swales affected by the plots identified below, full details of specific construction methods of the swale to deal with and set appropriate measures for any overhanging tree branches and preventing any drainage and/or oxygen change to existing tree roots. The cross-sectional details shall demonstrate the levels set out of the engineering layout (19399_C-300-7 Rev 3) with sections through the nearest tree, the swale and through to the nearest property at plots 15, 17, 18, 24, 35, 39, 75 and 76 and also section from nearest tree and relationship with plots 82, 104, 120, 139, 141 and 155.

Reason: To ensure that the retained trees are not adversely impacted from the development and in accordance with policy GP6 and GP5 of the adopted Local Development Plan.

09 No development, to include demolition, shall commence until an Arboriculturalist has been appointed, as first agreed in writing by the Local Planning Authority, to oversee the project (to perform a Watching Brief) for the duration of the development and who shall be responsible for -

- (a) Supervision and monitoring of the approved Tree Protection Plan;
- (b) Once the barrier fencing is erected, the approved Arboricultural Consultant must inspect and "sign off" in writing and submit a copy of this to the Local Planning Authority stating that the protective fencing is in the correct location and is fit for purpose .
- (c) Ensuring that all tree work is carried out in accordance with the approved Arboricultural Implications Assessment & Arboricultural Method Statement (to be Revision 3) required by condition 07 of this permission.
- (d) Supervision and monitoring of the approved tree felling and pruning works;
- (e) Supervision of the alteration or temporary removal of any Barrier Fencing;
- (f) Oversee working within any Root Protection Area;
- (g) Reporting to the Local Planning Authority;
- (h) The Arboricultural Consultant will provide site progress reports to the Council's Tree Officer at intervals to be agreed by the Councils Tree Officer.

Reason: To protect important landscape features within the site and in accordance with policy GP5 of the adopted Local Development Plan.

10 Prior to their extraction from ground, full details of the methodology for pruning, lifting, guying and replanting of the Japanese Maples and Magnolia Grandiflora and their proposed location and future maintenance of each tree(s) to be translocated (as shown on the approved Tree Protection Plan – Steve Ambler and Sons) shall be submitted to and approved in writing by the

The site comprises of a hugely diverse age range and species mix of trees, groups, woodland/parkland, an orchard and hedges (both formal and informal).

ARBORICULTURAL IMPLICATIONS ASSESSMENT

The following matters are considered under this Arboricultural Implications Assessment with remedial measures offered within the Arboricultural Method Statement element -

- A) Site Designation - Tree Preservation Order and Conservation Area protection
- B) The above and below ground constraints
- C) The construction of the proposed development
- D) Whether design can be modified to accommodate tree retention
- E) Infrastructure requirements, easements for above or below ground services; highway safety and visibility splays and other infrastructure provisions such as lighting, CCTV and signage.
- F) The end use of the space
- G) Whether tree losses from the development proposal can be mitigated
- H) A realistic assessment of the probable impact of the proposed development on the trees and vice versa with due allowances for their future growth and maintenance requirements.
- I) The relationship of windows to trees which may obstruct light taken into account
- J) Large trees can sometimes cause apprehension to occupiers of nearby buildings especially during windy weather
- K) Leaves of some species may cause problems, particularly in autumn by blocking gullies and gutters. Fruit can cause slippery patches and the accumulation of honeydew may be damaging to surfaces and vehicles.
- L) The effects that development proposals may have on the amenity value of the trees both on and near the site

TREE PRESERVATION ORDER AND CONSERVATION AREA PROTECTION

A **Tree Preservation Order** provides legal protection for certain trees and groups on site and these are held in high regard by the Local Planning Authority, primarily in terms of their amenity value and in some instances their rarity as a species found in Newport. E.g. 2 No Foxglove Tree (*Paulownia tomentosa*) a Fern-leaved beech (*Fagus sylvatica* "Aspleniifolia") and a Common walnut (*Juglans regia*).

TPO 5 of 2016 was made on the 18th January 2017 and was confirmed with no objections 27th February 2017 - TPO 5/2016 protects 37 individual trees, a group of 23 trees and a woodland.

NOTE - Where trees have been recorded individually within the Tree Survey there is on occasion some uncertainty as to whether or not they may be included within a protected (TPO) group or woodland. The client is advised to consult with the Local Planning Authority for confirmation when considering trees protected under the Tree Preservation Order. Any felling or remedial works on trees subject to a Tree Preservation Order must have written approval from the Local Planning Authority either through the TPO Works Application process or Full Planning Permission that accepts the recommendations of this report. The exception are those trees considered to be in a dangerous condition that are deemed exempt under the 'dead, dying or dangerous' clause, whereupon 5 days written notice should be given prior to works commencing.

It must be recognised that during the construction phase, should injury or damage occur to any protected tree then an offence would have been committed which could result in prosecution. All parts of the tree are protected including the roots. If any person is found guilty upon prosecution of an offence, then fines of up to £20,000 can be implied and in some circumstances, sums in excess of this.

Table 1. Summary of Trees Lost and Retained by Retention Category.

NOTES. A group is recorded as a single entity.

Retention Category	Key in table	Key in Tree Protection Plan	Numbers Lost to Development	Numbers Retained
A category		Green crown outline & stem	0	9
B category		Blue crown outline & stem	19	40
C category		Grey crown outline & stem	39	34
U category		36		

Table 2. Findings Table.

NOTES.

- Trees lost to development are highlighted in red text.

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
						<i>Kretzschmaria deusta</i> present. <i>K. deusta</i> is a soft rot decay fungi that leads to brittle fractures of the base and roots.					
5	5045	Common lime	19	550	M	Protected by Tree Preservation Order. Tree of good form near frontage.	Remove basal epicormics and inspect base and lower stem. Arrange for a qualified arborist to re-inspect paying particular attention for signs of <i>K. deusta</i>	10-20	B 1	137	6.60
6	463	Pedunculate oak	16	850	M	Protected by Tree Preservation Order. Tree of reasonable form and somewhat squat in appearance. There is decay present within the south and east buttresses with notable reaction wood with the broadening of the stem base and affected buttresses. The type of decay in the two buttresses and sapwood to the west may be indicative of Honey fungus (<i>Armillaria mellea</i>) but this is not confirmed. The structural faults are within acceptable levels and as such remedial works are not required. However, the condition of this tree near a well-used road merits a regular condition inspection.	Access facilitation pruning may be required. Place into a cyclical tree inspection regime every 18 months. The next inspection should be undertaken whilst in full leaf to assess for any crown symptoms.	40+	B 2,3	327	10.20

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
						T128 (371) Elder (<i>Sambucus nigra</i>) -Multi-stemmed specimen with crown dieback by 30%. 129 (5055) Apple - Root-plate failure with tree resting on boundary fence and overhanging Isca Court. 130 (5053) Apple- <i>Ganoderma applanatum</i> fungal bracket noted which causes a white rot with associated basal decay and a fractured and failed main stem.	T129 (5055) T130 (5053)				
9	466	Silver birch	18	350	M	Twin-stemmed tree of fair form, subordinate to tree 10.	None	20-40	B 2,3	55	4.20
10	467	Silver birch	18	650	M	Dominant tree of the two (9) and of good form.	None	20-40	B 2,3	191	7.80
11	5056	Cotoneaster sp	7	175	EM/ M	Insignificant small tree/shrub	None	10-20	C 2	14	2.10
12	5057	Goat willow	11	125	M	Protected by Tree Preservation Order. Mature stool with early mature growth. Multi-stemmed specimen from base. Inherently weak structurally and not deemed suitable for retention near high target occupancy housing.	Fell to ground level	10-20	U	0	0.00

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
						fractured limbs/primary branches, crossing branches, congested crowns & decay cavities. T124 (367) Apple - Basal wound to north at 100 degrees of stem circumference. Congested crown with multiple crossing branches. Fractured and partially attached wind damaged branches at 6-m AGL to the south, that have been pruned and shortened to the boundary. 125 (368) Plum -Tree forks at 1.5-m AGL to become bifurcated. Three pruning stubs occur in this union effectively acting as wedges when they were live. Reaction wood to this previous force has widened the stem at the union. An elongated narrow decay cavity to the north between 1.8-m - 3-m AGL. Fractured and partially attached limb at 3-m AGL. 126 (369) Apple - Elongated narrow decay cavity between 0.3-m – 1.1-m AGL to a depth of 50-mm. Congested crown with multiple crossing branches. 127 (370) Apple - Small tree with crown dieback by 60%. Small but deep decay cavity at 300-mm AGL to south.	T124 (367) Target prune crossing, damaged branches. 125 (368) Remove fractured limb. Monitor linear cavity on east stem every 18 months. 126 (369) Target prune crossing branches. Monitor cavity every 18 months. 127 (370) Fell to ground level.				
16	5060	Ornamental flowering cherry	6	300	EM/ M	Protected by Tree Preservation Order. Tree of below average form	Consider removal	<10	C 2	41	3.60

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
21	1385	Beech	13	150	Y/EM	Tree of reasonable form.	Consider removal of tree 20 to provide space for this tree's crown to develop	40+	B 1,3	10	1.80
G10	NA	Lawson cypress	16	300	EM/M	Multi-stemmed specimen with butt sweep.	Consider removal in light of issues in relation to High Hedges Act	10-20	C 2	41	3.60
22	1386	Holly	12	275	EM/M	Tree of reasonable form, with a bifurcated stem at 1-m AGL.	None	40+	B 2,3	34	3.30
G11	NA	Goat willow, cherry laurel, Himalayan honeysuckle, hazel	12	150	Y/EM	Unremarkable group, located near lodge entrance	Consider removal	10-20	C 2	10	1.80
G12	NA	Yew	2	75	Y	Young hedge along roadside boundary. Has potential, but could also be easily replaced through mitigation planting	Prune leaders to promote dense lower growth. Remove adjoining shrubs to improve light levels.	40+	C 2,3	3	0.90
23	1387	Pear	7	250	EM/M	Tree of poor form. Scaffold limbs are 'dog legged' with acute changes of angle	If retained, undertake renovation pruning and remove deadwood	10-20	C 2,3	28	3.00
24	471	Pedunculate oak	15	475	Y/EM	Protected by Tree Preservation Order. Long lived species of good form near frontage.	Remove deadwood	40+	A 2,3	102	5.70

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
28	1392	Red oak	16	225	EM/ M	Twin stemmed specimen leaning with an asymmetric crown, predisposed to the south and road.	Reduce crown by 3-m distally	40+	C 2	23	2.70
29	1391	Red oak	16	275	EM/ M	Twin stemmed specimen of reasonable form.	None	40+	B 2	34	3.30
G15	475	Lawson cypress	18	525	M	Multi-stemmed specimens of average form located on low mound. Consider issues in relation to High Hedges Regulations. Several compression forks present.	Monitor structural issues annually, if retained	20-40	B 2	125	6.30
30	473	Pedunculate oak	20	475	M	Protected by Tree Preservation Order. Twin stemmed specimen subordinate to tree 31. Tree of fair form with a dominant east stem	Reduce crown by 2-m distally	40+	B 2,3	102	5.70
31	474	Common lime	20	550	M	Protected by Tree Preservation Order. A single dominant stem remains with 3 x stems to the north, having been poorly removed to accommodate the nearby student block. Decay developing in the three large diameter pruning wounds.	Monitor structural issues annually, if retained	40+	B 2	137	6.60
32	476	Lawson cypress	18	600	M	Tree of fair form soon forking to become multi-stemmed.	If retained, install a two-way cable bracing systems	20-40	B 2	163	7.20

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G17	NA	Lime sp	10	250	Y/EM	Row of well-spaced and well-formed trees planted on top of bank within Cherry laurel shrub bed. Most easterly tree has a developing compression fork.	Monitor compression fork on tree, to east end of row	40+	B 2	28	3.00
39	1399	Tulip tree	14	275	EM	Protected by Tree Preservation Order. Tree of good form in planting grill in paved seating area, adjoining the car park.	Built up area that would require very careful demolition and then the use of a large tree spade and guying system to support it. Likely to cause too much root disturbance. Fast growing species that could be replaced through planting several elsewhere in wider open spaces. Use at least extra heavy standards 14-16cm	40+	B 1,2	34	3.30
G18	1400, 2281, 2282, 2283	Himalayan birch	10	200	Y/EM	Protected by Tree Preservation Order. Group of 4 trees in the corner of a quadrant. Trees of reasonable form. Several crossing branches and developing compression forks.	May require access facilitation pruning	20-40	B 2	18	2.40
G19	NA	Norway maple	5	100	Y	Planted in narrow raised strips demarking parking bays. Located in grills and stone setts. Can easily be replaced through mitigation planting.	Investigate rooting pit and improve rooting space if required and retained.	40+	C 2	5	1.20
40	2284	Ornamental flowering cherry	5	125	Y/EM	Unremarkable tree	None	20-40	C 2	7	1.50

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
48	2294	Sessile oak	19	600	EM/ M	Protected by Tree Preservation Order. Tree of good form. Lateral limbs on site side likely to be subject to increased torsional loading that closer development will cause.	Remove deadwood and reduce lateral limb formed at 4-m AGL to the site side by 3-m distally.	40+	B 2,3	163	7.20
49	2295	Sessile oak	16	600	EM/ M	Protected by Tree Preservation Order. Forms a pair with T50. Tree soon becomes lateral at 2.5-m AGL predisposed towards the site. Notable fibre buckling under compression on stems and limbs	End weight reduction pruning to reduce loading, by 5-m distally	40+	B 2,3	163	7.20
50	2296	Sessile oak	16	525	EM/ M	Protected by Tree Preservation Order. Forms a pair with T49. Tree soon becomes lateral at 6-7-m above ground level, predisposed towards the road.	End weight reduction loading by 3-m distally	40+	B 2,3	125	6.30
51	2297	Ash	18	350	EM	Protected by Tree Preservation Order. Tree of good form located on edge of low stone retaining wall, with some signs of soil disturbance.	Monitor effect on wall every 2 years	20-40	B 2,3	55	4.20

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G23	NA	Ash, oak, sycamore, holly, hawthorn, goat willow, Norway spruce, hazel, lime, mulberry, European larch, Lawson cypress, black pine, Douglas fir, beech, cedar, wellingtonia, birch, coastal redwood, weeping willow	20	1000	M	Protected by Tree Preservation Order. Mixed broadleaved woodland and parkland further north. Comprising of predominantly native and naturalised species with the occasional planted exotics and some fine specimens. Issues include but not exclusively - windblown trees, small and medium diameter deadwood, phytophthora, fractured & failed stems / limbs and primary branches. Woodland canopy cover thins further northwards and conversely bramble increases, as light levels improve. Individual trees and sub-groups in this wider group have been recorded where they occur within influencing distance of the PRow (trees 121-123, G39 & G40)	Woodland management plan required. Identify and plot / tag specimen trees. Undertake detailed tree condition inspection. Potential planting but not at the cost of overplanting around the specimen parkland trees.	40+	A 1,2,3	452	12.00
G24	NA	Chanticleer pear	11	225	EM	Planted in paved area within tree grills.	Investigate rooting pit and improve rooting space if required and retained	20-40	B 2	23	2.70
G25	NA	Hornbeam, ornamental flowering cherry, pear	4	150	Y	Young trees within tree pits/trenches within paviour car park.	Investigate rooting pit and improve rooting space if required and retained	20-40	C 2	10	1.80

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
59		Lawson cypress var. (with juvenile foliage)	5	100	Y/EM	Unremarkable conifer in grounds of old stone house	None	20-40	C 2	5	1.20
60	429	Common lime	20	800	M	Protected under Tree Preservation Order Specimen tree of good form in grounds of historic house.	May require access facilitation pruning	40+	A 2	290	9.60
61	430	Silver birch	14	325	EM/ M	Tree of fair form located between buildings	May require access facilitation pruning	20-40	C 2,3	48	3.90
62	1644	Silver birch	15	425	EM/ M	Tree of good form located between buildings	None	20-40	B 2,3	82	5.10
63	432	Silver birch	12	225	EM	Tree of below average form located between buildings	None	20-40	C 2,3	23	2.70
64	434	Young' s weeping birch	6	275	EM	Tree of average form located between buildings	None	20-40	C 2	34	3.30
65	1645	Young' s weeping birch	4	250	EM	Tree of average form located between buildings	None	20-40	C 2	28	3.00
66	428	Lawson cypress var	10	400	EM	Thinning crown with possible root damage and broadening base and buttress roots to south and east.	Consider removal if its near housing	<10	C 2	72	4.80

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
76	1651	Small-leaved lime	20	700	M	Protected under Tree Preservation Order Tree of good form.	May require access facilitation pruning	40+	A 2	222	8.40
G26	NA	Italian cypress var.	6	100	Y	Located in shrub beds within courtyard	None	40+	C 2	5	1.20
G27	NA	Ornamental flowering cherry, Himalayan birch, hornbeam	4	75	Y	Located in paved areas within car park. Several have had their leader snapped and/or pruned	None	20-40	C 2	3	0.90
77a, 77b	NA	Weeping cherry	4	125	Y	Trees of average form	Investigate rooting pit and improve rooting space if required	20-40	C 2	7	1.50
G28	NA	Hornbeam	5	150	Y	Located in paved areas within car park.	Investigate rooting pit and improve rooting space if required	20-40	C 2	10	1.80
78a	451	Hybrid black poplar	/	/	/	Cankered with crown dieback by 15%. Inherent structural weakness and not deemed suitable for retention near housing	Fell to ground level and replace with better performing species	10-20	U	0	0.00
78b	450	Hybrid black poplar	/	/	/	Cankered with crown dieback by 10%. Inherent structural weakness and not deemed suitable for retention near housing	Fell to ground level and replace with better performing species	10-20	U	0	0.00
79	449	Small-leaved lime	10	325	EM/ M	Tree of reasonable form with some lower stem epicormic growth	Remove lower stem epicormics.	40+	B 2	48	3.90

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G31	417, 1653, 1654, 1657	Horse chestnut, Norway maple, false acacia, cherry-crab	10	150	Y	Even aged group, planted in a row surrounding the grass verge of car park bays	None	40+	C 2	10	1.80
83	416	False acacia			Y	Extensive dysfunctional bark and cambium with low vitality. Tree of poor form.	Fell to ground level	<10	U	0	0.00
84	415	Poplar sp			M	Twin stemmed, having been poorly reduced 'topped' at 8-m AGL. Inherently structurally weak and not deemed suitable for retention near housing.	Fell to ground level	10-20	U	0	0.00
G32	NA	Hornbeam, cherry	5	125	Y	Located in paved areas within car park.	Investigate rooting pit and improve rooting space if required and retained	20-40	C 1	7	1.50
85	411	Apple	10	350	M	Tree of below average form with poorly pruned limb leaving a decaying peg.	If retained undertake renovation pruning	10-20	C 2,3	55	4.20
86	414	Apple	6	200	EM	Tree of poor form with decaying pruning wound at 2-m AGL	Consider removal	10-20	C 2,3	18	2.40
87	412	Apple	10	250	EM/ M	Tree of average form.	If retained undertake renovation pruning	10-20	C 1,3	28	3.00
88	413	Apple	10	325	EM/ M	Tree of below average form with fractured and partially failed limb at 2-m above ground level	Renovation pruning and target prune fractured limb	10-20	C 2,3	48	3.90

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
						further diagnostic investigation required. Cyclic surgery interventions will also be necessary to control crown size, depending on stem residual wall strength and thickness. Its retention category has been downgraded due to condition issues and reduced amenity value with the required remedial works.	NCC FAVOUR FELLING DUE TO CONDITION ISSUES IN HIGH TARGET OCCUPANCY LOCATION. Ecologist to inspect for bats prior to works commencing.				
91	405	Black mulberry	11	550	M	The tree has a failing compression fork at 1.5-m AGL with a 1-m long split in the union. A ratchet strap has been used to brace the failure and is under tremendous tension. Refer to Photograph 15, in Appendices	Not deemed suitable for retention in a high target occupancy setting. Fell to ground level	<10	U	137	6.60
92	404	Common walnut	16	625	M	Protected under a Tree Preservation Order. Specimen tree of good form. Large diameter lateral limb to the south at 2-m distally. Small cavity with notable reaction wood immediately around the opening at 2-m proximal to the parent stem on the west side. A climbing inspection finds the cavity to be structurally insignificant, being no wider than the narrow opening and only 100-mm deep. Use of a sounding hammer finds the decay to be localised.	Branches may need to be temporarily tied up or back for access of machinery.	40+	A 1,2	177	7.50

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
98	439	Apple			EM/M	Tree of poor form poorly pruned with coalescing decay cavities and wounds on the lower stem.	Fell to ground level	<10	U	0	0.00
99	4543	Himalayan birch	11	150	Y	Tree of good form on edge of bank	None	40+	C 2	10	1.80
100	4544	Foxglove tree	16	850	M	Protected under a Tree Preservation Order. Specimen tree and infrequent within the UK. The retention category has been downgraded due to significant structural issues and deemed unsafe to retain. The stem does not have the required minimum sound wall thickness within the stem cylinder, and it fails by a reasonable margin in all directions. In addition, the two and only significant buttresses and structural roots have decay at 200-mm depth. Given the increased exposure that this tree will be subjected to when the three storey buildings are demolished and its location within a small open space within a proposed housing development, it is not deemed practical or safe to retain. A replacement tree will need to be planted, to be advised by the Local Planning Authority.	Fell to ground level. Ecologist to inspect for bats prior to works commencing.	20-40	U	327	10.20

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
107	NA	Lawson cypress	10	200	EM	Tree of reasonable form slightly subordinate to T108, in garden of former nursery	None	40+	C 2	18	2.40
108	4546	Norway maple	15	300	EM	Tree of good form in garden of former nursery	None	40+	B 2	41	3.60
109	NA	Rowan	6	125	Y	Tree of reasonable form in garden of former nursery	None	40+	C 2,3	7	1.50
110	447	Lawson cypress	9	200	EM	Tree of average form on boundary with road, in garden of former nursery. Twin-stemmed forking from base under slight compression.	Consider removal	20-40	C 2	18	2.40
111	NA	Lawson cypress	8	200	Y/EM	Tree of average form on boundary with road, in former garden of nursery. Subordinate to T112.	None	40+	C 2	18	2.40
112	4548	Ash	16	400	EM/ M	Tree of below average form on boundary with road, in garden of former nursery. Forks under tension at 1.2-m AGL and several times again to form an open broad crown. Likely to outgrow its position and damage the boundary wall in time as secondary stem thickening occurs and cell turgor pressure of its roots disturb the wall.	Consider removal	20-40	C 2,3	72	4.80
113	4547	Sycamore			EM	Twin-stemmed specimen from base, forking under compression, at 4-m AGL.	Fell to ground level	40+	U	0	0.00
114	4549	Sycamore	15	325	EM	Tree of below average form on boundary with road, in garden of former nursery.	Consider removal	40+	C 2	48	3.90

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G35 a, b, c	NA	Ash, hawthorn, field maple, elder, hazel	10	250	EM/ M	Remnant unkempt native banked hedge. Occasionally sporadic. In the case of G35c an open narrow woodland abuts with a public open space further afield. Larger individual trees have been recorded if their RPA exceeds that of the remnant hedge. Open deep banked stream to west of hedge, which is culverted to the southern end. Larger trees on far side of stream are not considered as their roots and crowns do not pose a constraint.	Subject to ownership, fell dead hawthorn to south of G35a. Tip back overhanging branches to give 2.4-m clearance along path. Note - Potential mitigation opportunity to plant up gaps with native hedge species.	40+	B 2,3	28	3.00
117	NA	Sessile oak	16	750	M	Tree of good form in remnant banked hedge.	Remove deadwood	40+	B 2,3	254	9.00
118	NA	Ash	11	150	Y	Twin stemmed tree of poor form	None	40+	C 2,3	10	1.80
119	NA	Sessile oak	19	950	M	Dominant tree located in scrub wood beyond G35c. Small basal decay cavity to west. Small and medium diameter deadwood.	Subject to ownership, remove deadwood over target only	40+	A 2,3	408	11.40
G36	NA	Ash, field maple	13	300	EM	Four trees of fair form in close proximity to boundary fence.	None	40+	C 2,3	41	3.60

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
121	NA	Sycamore	10	175	Y/EM	Multi-stemmed specimen in G23, derived from a stool abutting boundary fence and Public Right of Way. Already in contact with fence and some signs of rooting under the Public Right of Way.	Consider felling and treat stump with herbicide to cease regrowth in accordance with manufacturer' s instructions.	40+	C 2	14	2.10
122	NA	Pedunculate oak	14	450	EM/ M	Tree of good form in G23, within influencing distance of Public Right of Way, with an overhanging crown but is unlikely to be rooting under the tarmac path.	None	40+	B 2,3	92	5.40
G39	NA	Ash, hawthorn	10	150	Y/EM	Two ash in group adjoin the boundary fence in G23, whereas the more mature hawthorn is set back. The ash will be rooting under the Public Right of Way but it' s unlikely the hawthorn will be.	Consider felling the two ash trees and treat stump with herbicide to cease regrowth in accordance with manufacturer' s instructions.	10-20	C 2,3	10	1.80
123	NA	Sycamore	16	500	EM/ M	Tree of reasonable form on boundary fence within G23. Becomes bifurcated at 2.5-m AGL with the fork union formed under slight compression. The crown overhangs Public Right of Way and roots seemingly occur underneath the tarmac surface.	Remove ivy on main fork and inspect.	40+	B 2	113	6.00

Tree Felling and Surgery

Under normal circumstances, the 'approved'² tree surgery and felling works should be completed in full prior to the erection of the Tree Protective Barrier Fencing and must come within the Watching Brief element.

Any additional access facilitation pruning to that already recommended and deemed necessary to prevent injurious contact between demolition plant and the tree(s) should be listed and presented to the LPA for approval. In some cases, working space may be provided by temporarily tying back tree branches. Pruning or tying should be undertaken in accordance with a specification prepared by an arboriculturist.

All approved tree works should only be undertaken by a competent arboricultural contractor who shall be made known to the LPA in writing 5 days prior to commencement for their approval.

Tree works shall be supervised by the Project Arborist through the Watching Brief element.

All trees approved for felling (shown on the 'approved' Tree Protection Plan with Tree Retention / Removal) should be clearly marked by the Project Arborist on-site beforehand.

Tree felling should be undertaken with caution to prevent damage to retained trees and particularly their roots underground. Crush injuries will occur to roots of retained trees if felled within their RPA. In such instances, crash-matts should be used. No vehicles are permitted within the RPA of any retained tree, without the use of load spreading material.

All contractors and site operatives should be made aware of planning conditions relating to trees within and adjacent to the site and of any Tree Preservation Order or other site designation which may be relevant, through the provision of 'toolbox talks' .

NOTE - Legal issues relating to tree felling should also be observed. Refer to Section 'Legal Constraints' .

ANY LANDOWNER OR LAND MANAGER SHOULD BE AWARE THAT - Trees must receive regular tree inspections by persons with adequate specialist arboricultural qualifications. A landowner has a duty of care imposed by statute and common law to do so and keep records of such (see legal constraints below). For further advice contact www.trees.org.uk

Tree felling and surgery works should only be undertaken by trained, competent and appropriately certificated personal with adequate experience and public, third party and employers liability insurance to £5,000,00. Always ask for proof from the contractors prior to engagement and seek references where necessary.

Translocated Trees.

As identified within Planning Condition 10.0 and labelled on the Tree Protection Plan, the proposed translocation of the *Magnolia grandiflora* (x4) , Japanese maple (*Acer palmatum*) glade and the singular Persian ironwood (*Parrotia persica*) must be undertaken prior to any demolition activities.

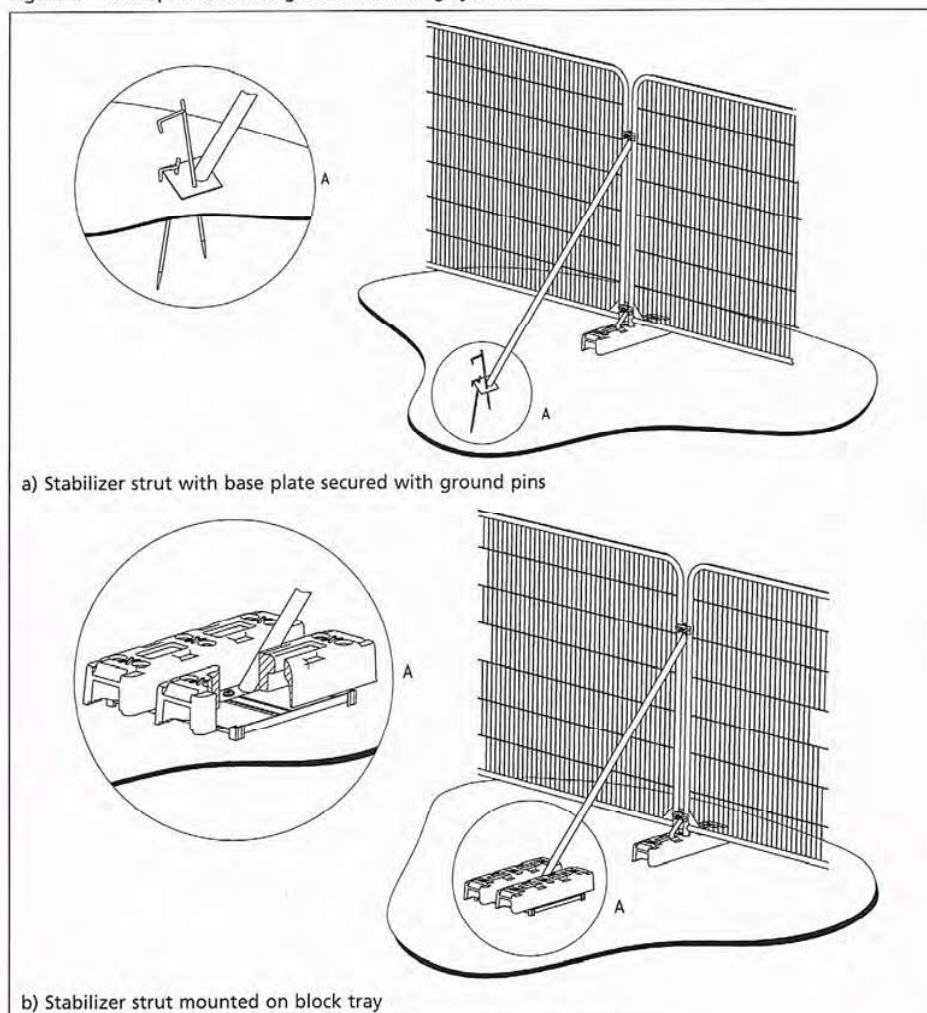
This requires a specification that should form part of the sites overall landscape plan to ensure their new planting positions, are best suited to their climactic and site requirements, and that their maintenance ensures they thrive.

² Approved by the Local Planning Authority

Groups & Hedges – Protected using the Alternate Specification

Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification can be applied. Erect 2-metre-tall, welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 metre and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray.

Figure 3 Examples of above-ground stabilizing systems



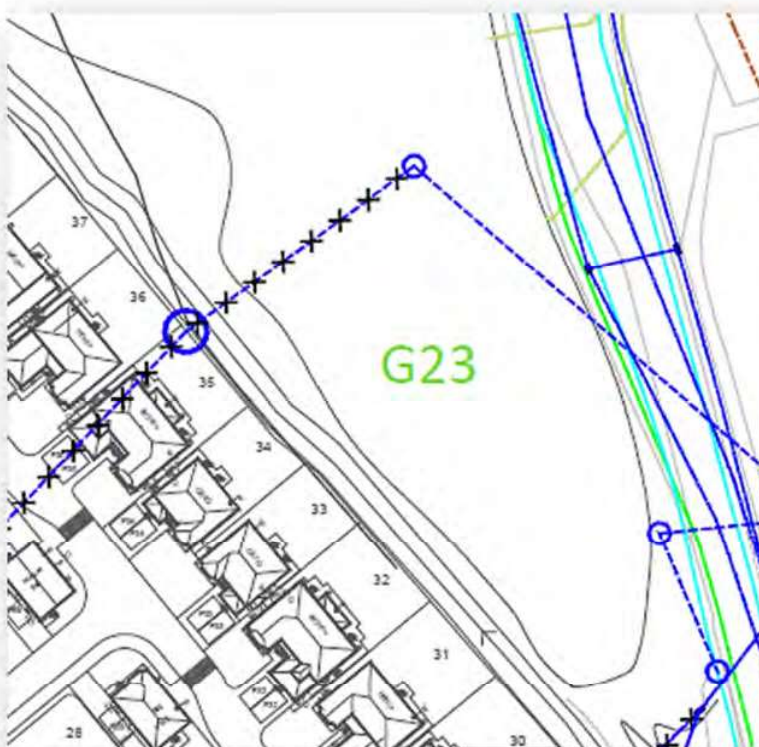
NOTES

- It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.
- All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE - NO ACCESS".

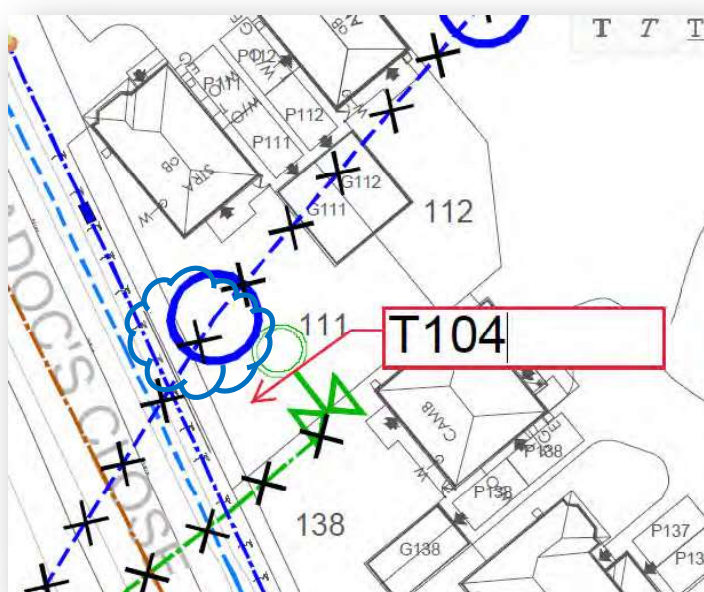
protection fencing may only be offset to expose some of the RPA in consultation and under supervision of the Project Arborist providing : -

- It is covered by an approved ³ Arboricultural Method Statement.
 - Suitable ground protection is installed.
 - Stems are protected where necessary.
 - Low branches are tied back or pruned back if part of an approved schedule of works, prior to commencement of operations, all to the satisfaction of the Project Arborist / LPA.
5. The advice of an Arboriculturist should be sought where underground structures are present within the RPA (none known at this time) which are, or will become, redundant. In general, it is preferable to leave such structures in situ, as their removal could damage adjacent tree roots.
 6. When removing existing hard surfaces above RPA' s – all plant and equipment should operate whilst positioned on the existing hard surface. Plant and equipment should not encounter any unprotected ground surface and where the existing hard surface being removed is not strong enough or of sufficient width to offer support, then load spreading ground plates shall be necessary. Care should be taken not to disturb tree roots that might be present beneath it.
 7. Demolition and removal of hard surfaces must be undertaken in a way that does not cause soil compaction within an RPA or an area highlighted for planting or physically encounter and injure above ground parts of any retained tree.
 8. Great care should be taken not to damage the trunk or branch framework and additional protection may be necessary e.g. trunk protection and tying back branches.
 9. Hand-held tools or appropriate machinery should be used (under arboricultural supervision) to remove the existing surface, working backwards over the area, so that any plant or machinery is not moving over exposed ground.
 10. Where any tree stands adjacent to a structure scheduled for demolition, levels of dust are likely to build up on the trees. This can have a damaging effect on the health of a tree where it becomes particularly heavy during the summer months when trees are in full leaf and actively growing. Where this occurs, it should be monitored and removed through hosing down when deemed necessary by the Project Arborist.
 11. Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without encountering the RPA, trunks stems or branches of any retained trees. Such contact can result in serious damage to the trees and might make their safe retention impossible. Consequently, any movement of plant or machinery in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is maintained at all times.

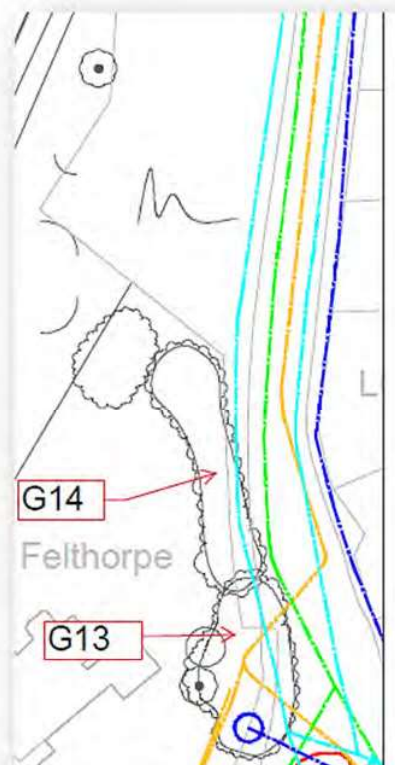
Plan Extract 2. Group 23 (southern section) Intermittent blue line are overhead BT Cables.



Plan Extract 3. Tree 104 with gas mains and apparatus (green lines)



Plan Extract 6. Water mains at toe of bank, north of Lodge entrance (pale blue line)



Generic Arboricultural Method Statement – Services.

NOTE.

The National Joint Utilities Guidance 4 (NJUG), which is a guide for utility companies when installing services, is not relevant under Planning Conditions and the more stringent protection measures under Section 7.7. of BS5837 Trees in relation to design, demolition and construction – Recommendations (2012), apply. Utility companies must be instructed accordingly and follow the aforementioned British Standard.

Services to be disconnected in the vicinity of trees (G1, G23 (TPO), T53 (TPO), T76 (TPO), T104) will not involve the removal of any apparatus as this has the potential to disrupt and damage tree roots or crowns. A number of the trees affected are afforded protection under a Tree Preservation Order. Should this change and any apparatus needs to be removed within the Root Protection Area or crown spread of retained trees then a method must be agreed in consultation with the Project Arborist and under their supervision.

Although no services are currently shown to conflict with an RPA, it is recognised that occasionally further connections or diversions may be required or when pegging-out, service runs may be altered slightly due to drawing to ground discrepancies or to suit local conditions. Where this is the case, detailed plans showing the proposed re-routing and conflict should be drawn up in conjunction with the Project Arboriculturist for approval and will require their supervision.

Mechanical trenching for the installation of underground apparatus and drainage severs any tree roots present and can change the local soil hydrology in a way that adversely affects the health of the tree/s. In such cases, trenchless insertion methods should be used (See Table 3, below), with entry and retrieval pits being sited outside the RPA. If roots can be retained and protected in accordance with item 7.2.2 of the relevant British Standard, excavation using hand-held tools might be acceptable for shallow service runs. Such works must be under the supervision of the Project Arborist.

overlay during the design and consultation process in order to accurately assess the potentially significant constraints posed by trees in such a location.

As the ground level / engineering plans are in draft format, any changes to the ground level plans and proposed retaining structures should they occur in close proximity to trees, will require consultation with the Project Arborist beforehand, and may require written approval via the Local Planning Authority, if they infringe upon any Root Protection Areas.

Generic Specialist Engineering for Foundations within the Root Protection Area.

There are no strip foundations proposed within the Root Protection Area of trees, and the following would only apply if this changed:-

The use of traditional strip footings can result in extensive root loss and should be avoided. The insertion of specially engineered structures within RPAs may be justified if this enables the retention of a good quality tree that would otherwise be lost (usually categories A or B).

Designs for footings that would minimize adverse impact on trees should include particular attention to existing levels, proposed finished levels and cross-sectional details. In order to arrive at a suitable solution, site-specific and specialist advice regarding design should be sought from an engineer and assessed by the project arboriculturist in relation to tree health. In shrinkable soils, the foundation design should take account of the risk of indirect damage.

Light structures can be disrupted by tree roots through cell turgor pressure and through the secondary thickening process of tree stems. This requires consideration when placing such structures near trees. Refer to Table A1, found later in this report in Section Impact Assessment of Development on Trees. The use of root barrier proprietary products such as ReRoot (Green Blue Urban Products) may be required.

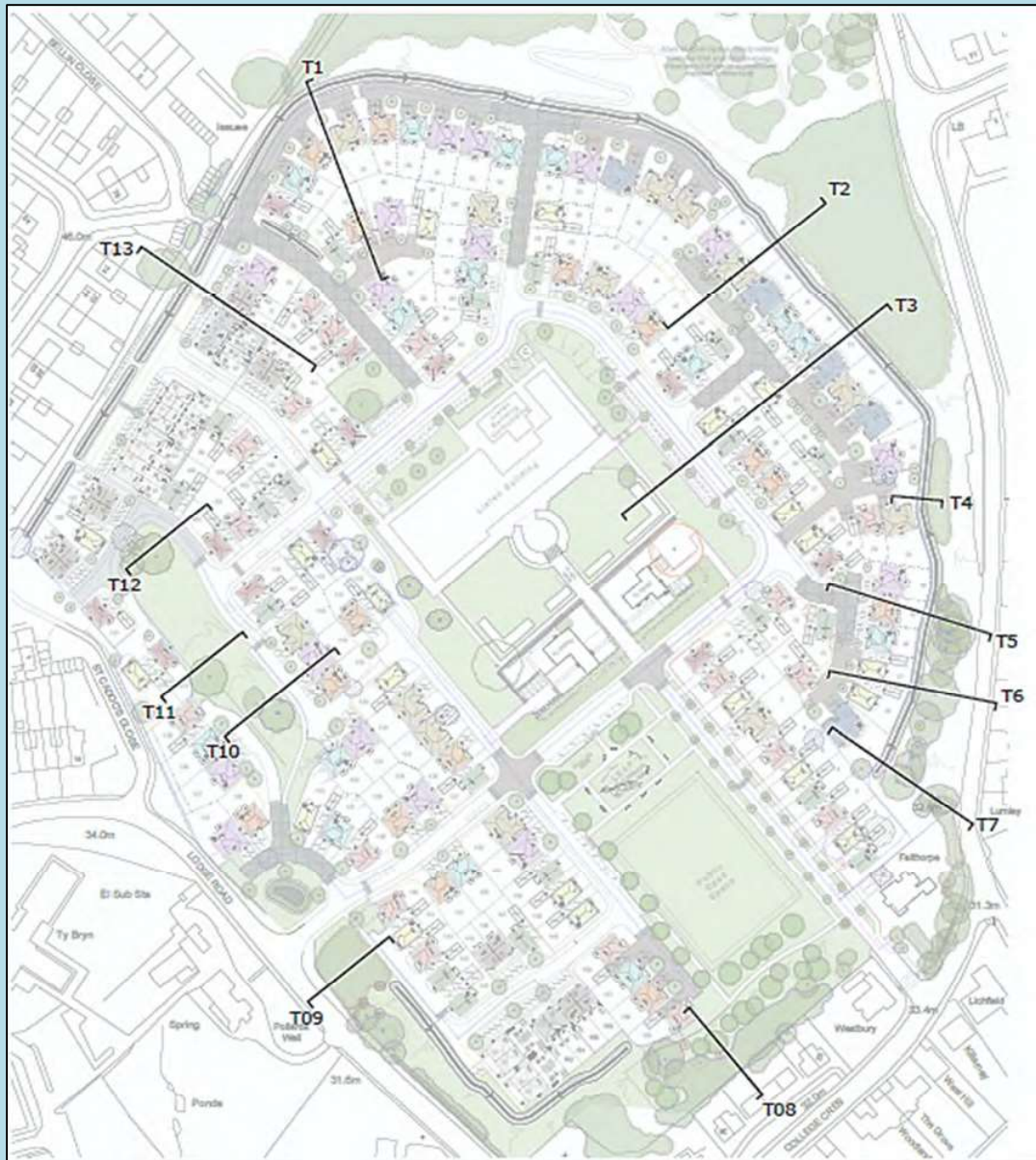
Root damage can be minimized by using:

- Piles, with site investigation used to determine their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600 mm;
- Beams/lintels, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.

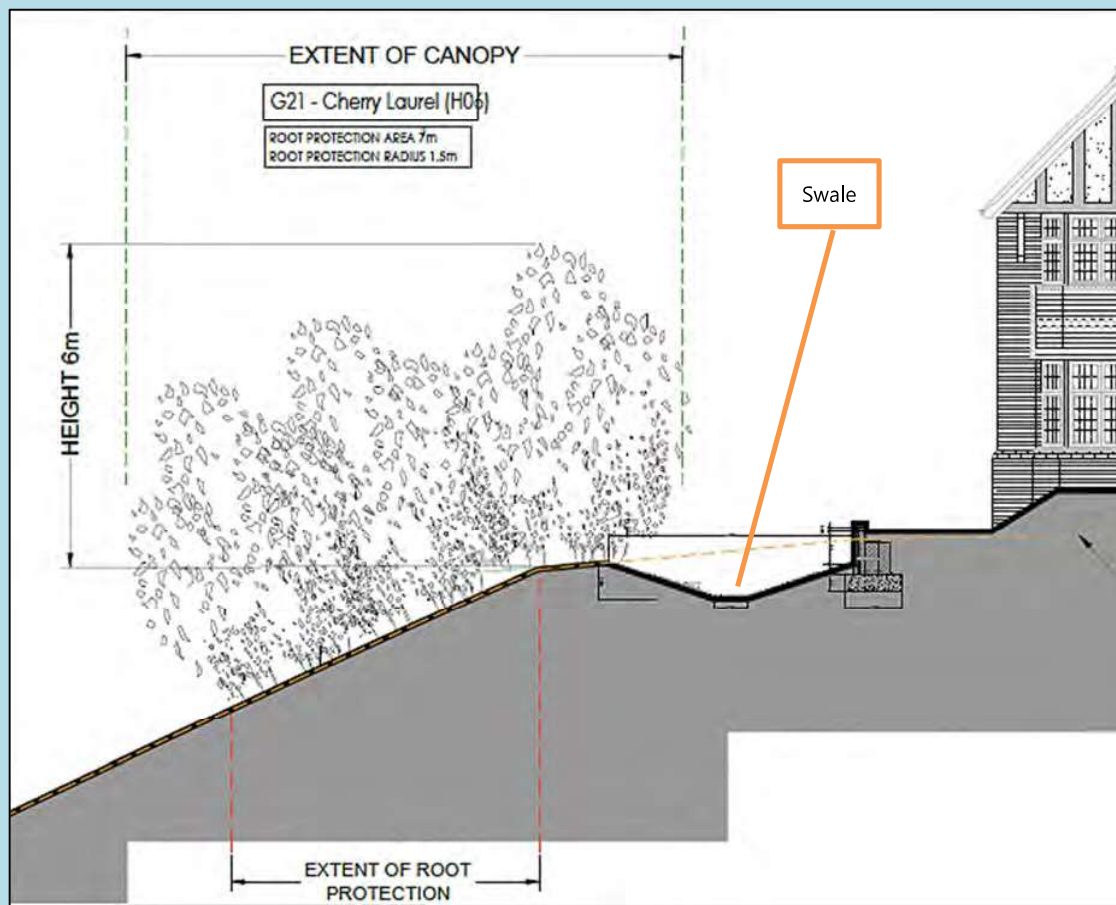
Whilst alternative solutions should be found wherever possible, it is in principle plausible to build above the RPA of a retained tree providing it can be achieved with no digging. This is often possible using a raft concrete slab or the use of stone gabions etc, positioned above the existing ground levels and can be implemented with no digging, scrapping, compacting or pollution of the soil. Such designs must include consultation with the Project Arborist. The availability of water for trees or where a structure retains or diverts water requires consideration in order to avoid issues in relation to soil erosion, waterlogging, reduced water availability or pollution.

The following Arboricultural Method Statement principals will apply and must be undertaken with the supervision of the Project Arborist. This may be amended to suit specific operations.

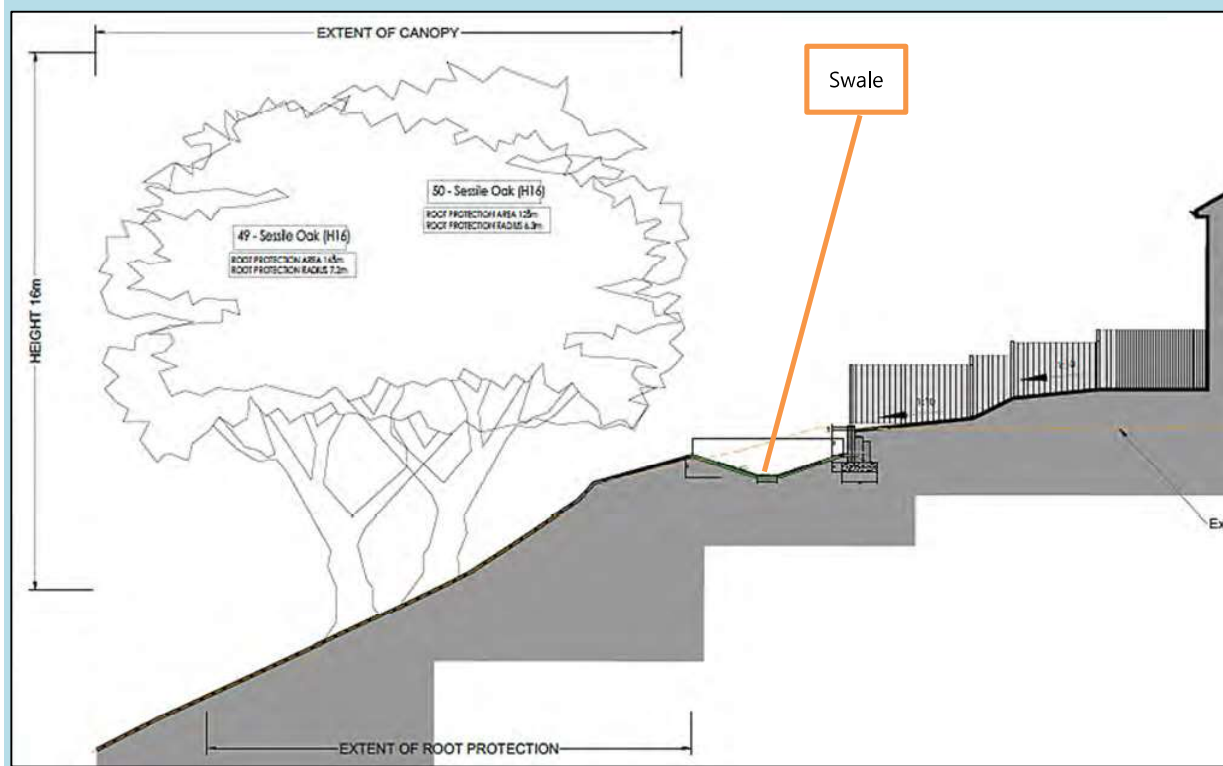
Engineering Cross Sections Plan



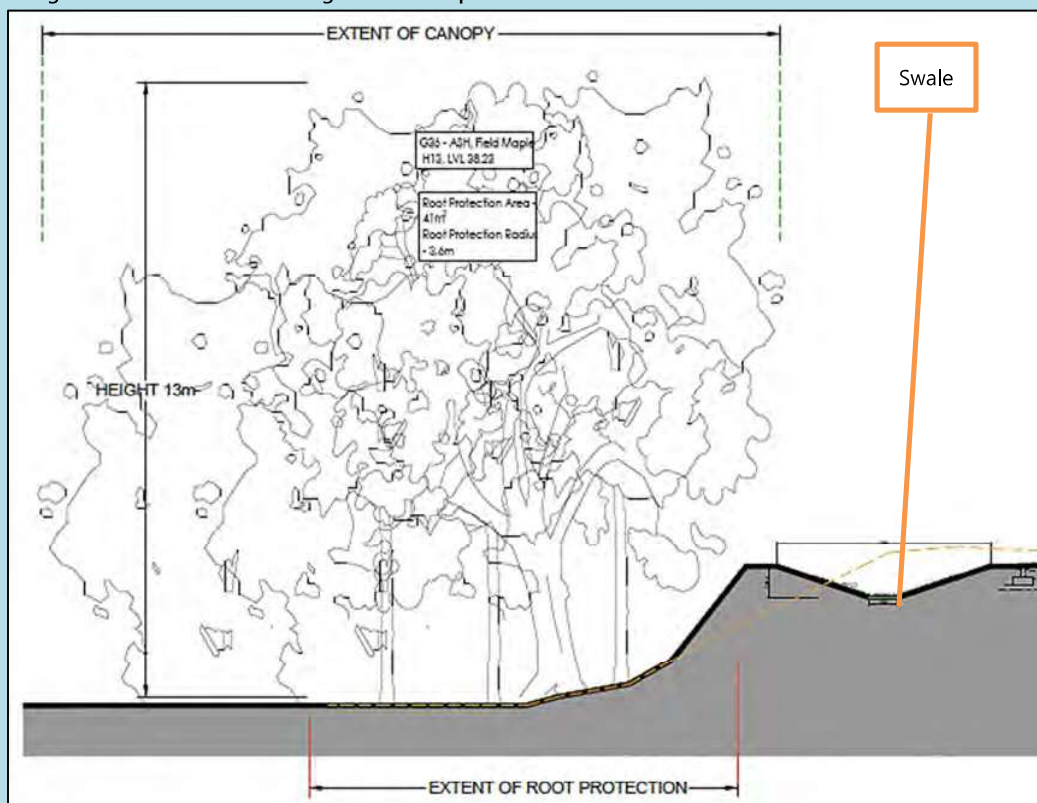
Plan Extract 7c. Section T3 - Swale abutting west of G21.



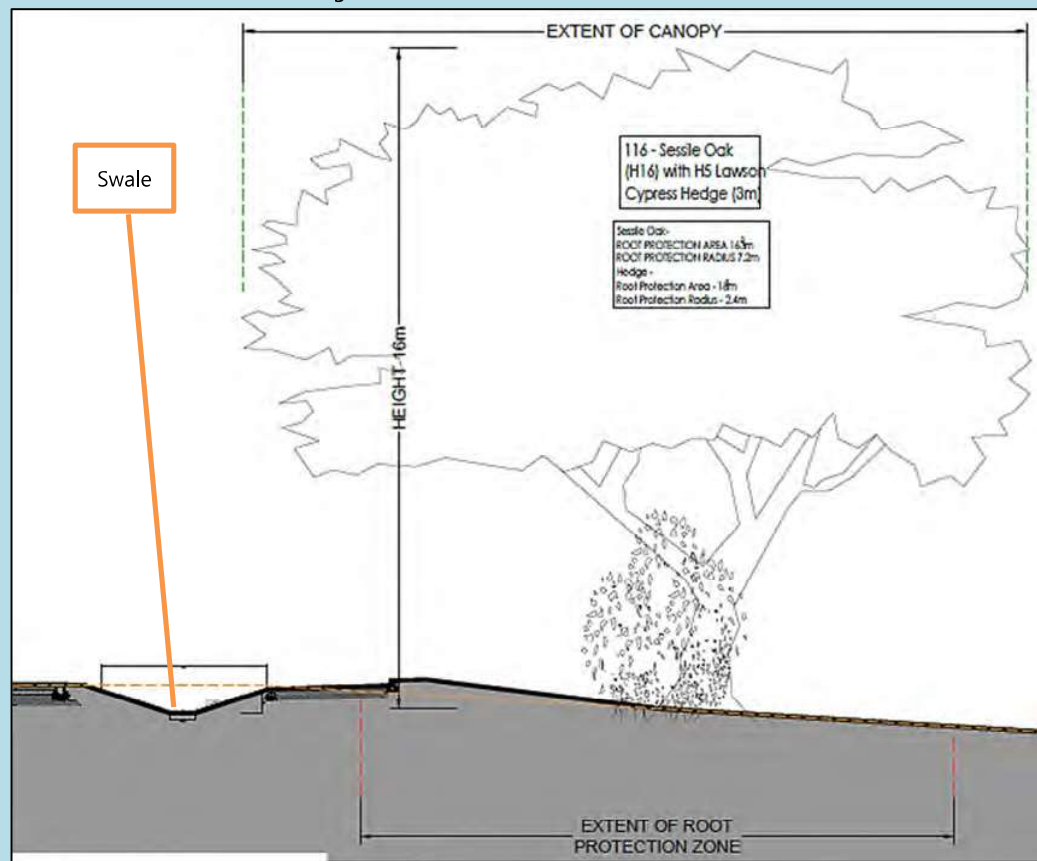
Plan Extract 7d. Section T4 - Swale abutting west of Tree 49 & 50.



Plan Extract 7g. Section T7 - Swale abutting east of Group 36.



Plan Extract 7h. Section T13 - Swale abutting east of Tree 116.



The upgrade should be of a no dig tree friendly construction ideally utilising the existing surface as a sub-base (refer to Arboricultural Method Statement – Footpath/Cycle-path below).

Arboricultural Method Statement – Footpaths & Cycle-path.

Laying of footpaths and cycle-paths across or through RPA's is particularly damaging to trees.

In the case of the path proposed within G23, the detailed Tree Survey⁶ for its north-east section should be used to define constraints. The Tree Constraints Plan for this specific section can also be found in the Appendices.

Tree friendly construction techniques are acceptable providing the existing ground levels are not lowered and the following design principals and working method are engaged. The detailed specifications should involve consultation with the Project Arborist in order to devise a specific Arboricultural Method Statement. However, the following principals will apply:-

Design Recommendations

1. The design recommendations should not require excavation or soil stripping into the ground, within the RPA – in other words, **NO DIGGING**. Scraping is not permitted unless using hand tools to remove turf or vegetation layers.
2. The structure of the hard surface should be designed to avoid localised compaction by evenly distributing the loading over the path /cycle-path width.
3. If the new surface is expected to be subject to de-icing salt application, an impermeable barrier should be incorporated to prevent contamination of the rooting area. Run-off should be directed away from the RPA.
4. Permeable hard surfacing can result in soil volume moisture content remaining at or near field capacity for long periods. Where there is a risk of waterlogging, the design should incorporate appropriate land drainage.
5. Land drainage within the RPA should be designed to avoid damage to the tree and the soil structure, e.g. sand slitting formed by compressed air soil displacement with the slits set radially to the tree.
6. The hard surface should be resistant to or tolerant of deformation by tree roots and should be set back from the stem of the tree and its above-ground root buttressing by a minimum of 500-mm to allow for future growth and movement. Resulting gaps may be filled using appropriate inert granular material.

NOTE- Appropriate sub-base options for this type of new hard surfacing include two-dimensional load suspension systems. Alternatively ,elevated beams etc. can be used to support surfaces to bridge over the RPA or, following exploratory investigations to determine location, to provide support within the RPA while allowing the retention of roots greater than 25-mm in diameter.

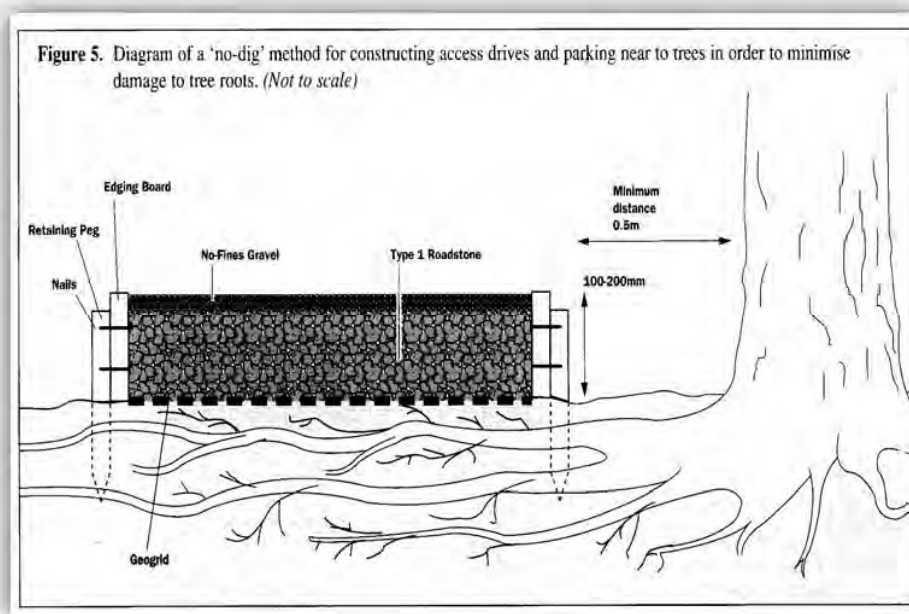
7. When designing the hard surface, account should be taken of finished levels in relation to adjacent structures, including existing paths crossovers and end links with roads.
8. If a permeable surface is to be used by construction traffic, this should be protected with a temporary sacrificial surface laid over a geotextile separator to ensure that its permeability is retained (i.e. interstices should not become blocked during construction).
9. The excavation needed for the placement of kerbs, edgings and their associated foundations and haunchings can damage tree roots. Within the RPA, this should be avoided either by the use of alternative methods of edge support or by not using supports at all.

NOTE - For example, where kerbing is required for light structures, such as footpaths, above-ground peg and board edging might be acceptable. Where areas of hard surface require greater edge support, the use of sleepers (pinned in place where

⁶ Caerleon Uni_G23_BS5837 Tree Survey_TCP_August 202. S. Ambler

16. The granular sub-base material should have a 'no-fines' content which means that even when it is compacted it should be freely draining and will allow oxygen to diffuse into, and damaging gases (e.g. carbon dioxide and methane) out of the soil.
17. An example of a no dig path construction is offered in Figure 5.

NOTE - For site-specific prescriptions and material specifications, advice should be sought from a qualified geotechnical or civil engineer who should work in consultation with an arboriculturalist.



Method for Constructing Access within RPA

Working Method

- 1) Kill ground vegetation using a translocated herbicide such as glyphosate⁷. After some time, gather up the dead organic material; this will prevent the build-up of anaerobic conditions beneath the construction, which might otherwise occur as vegetation begins to decompose.
- 2) Construction should ideally be undertaken between May and October when the ground is driest and least prone to compaction.
- 3) Take care when constructing not to compact the soil or cause root damage. There **must not** be any movement within the root protection area before the ground is protected by the load spreader and the sub-base. Then movement must only be along the line of construction.
- 4) Begin construction at the entrance to the site and 'roll-out' the path in front of the machinery which always remains over the sub-base.
- 5) Remove major protrusions such as rocks and tree or shrub stumps (stumps should be ground out rather than excavated to minimise soil disturbance).
- 6) Fill major hollows with sharp sand. DO NOT GRADE-OFF HIGH SPOTS
- 7) If necessary, for example when using two-dimensional grid, as a 'load spreader', a geotextile should be laid underneath and over the no fines sub-base.

⁷ Pesticides can be dangerous...refer to manufactures instructions and follow the advice on the label carefully. Pesticides should only be used by competent personnel.

As certain trees on site are likely to pose a significant constraint to development, there is scope on this site to undertake mitigation planting particularly along the somewhat open north-east boundary abutting the Public Right of Way and within the woodland / parkland grouping of G23, thereby improving habitat connectivity.

Group 23 would also benefit from a wider management plan to consider tree condition, access facilities, interpretation and woodland management. The tree condition survey element is due to be undertaken in Autumn 2020 by Steve Ambler & Sons Tree Specialists Ltd.

Some of the proposed landscaping activities will need to be undertaken in accordance with the generic Arboricultural Method Statement detailed below:-

Generic Arboricultural Method Statement – Landscaping.

- Estate fencing (close board timber fencing) is often located on the far side of swales potentially in close proximity to tree groups when viewed on plans. However, the swales occur on the top of banks with the trees falling away, and the fencing located often on the top of existing retaining structures. Therefore, these ground level changes will protect the trees,. However, should pinch points occur i.e. near plots 15-20, on-site measurements should be taken by the Project Arborist to ascertain if a conflict actually exists. in order to alleviate any issues. Given these level changes, the risk is deemed low.

Fencing – general.

The erection of fencing within a Root Protection Area has the potential to damage tree roots, their stability, and long-term survivability. Damage may be caused in several ways although the most common is during excavations for the support posts, which can sever structural roots, the larger, non woody roots that occur within several metres of the tree. To sever these can cause immediate stability and physiological issues and certainly provide entry points for decay organisms which later may become an issue affecting their stability.

Where possible, excavations should not occur within the Mechanical Effective Root-plate Radius (MERR). The MERR is a radial measurement established during work undertaken by Claus Mattheck⁸ and refers to the critical distances required to maintain the structural roots and stability of a tree. Structural roots differ from the finer feeding roots protected by the somewhat larger Root Protection Area. The MERR of any tree directly correlates to its trunk diameter when measured just above the root buttress flare. Such measurements will need to be undertaken by the Project Arborist and marked out on site to define the route of the fencing.

Excavations for post holes should not occur within the MERR or exceed 200-mm in diameter, be cut cleanly with a posthole borer and must be carefully positioned. They should not be spaced any closer than 1 metre apart when working within the RPA . Where feasible (subject to the fencing specification) panels or section should be shortened or elongated as required, in order to avoid post holes and the damage to structural roots.

If working in the MERR is unavoidable, it may only proceed using hand tools and under the supervision of the Project Arborist and the agreement of the Local Planning Authority and where the positioning of the fencepost is adjusted to avoid any large roots. These are often visible just along the surface close to the trunk and they should not be damaged during expletory works.

A posthole auger will be necessary to drive the postholes and care should be taken when using any mechanical driven rig within the Root Protection Area.

⁸ Mattheck. C. & Breloer. H. The Body Language of Trees. A Handbook for Failure Analysis

should also be taken to avoid the risk of damage to the stems of young trees from future strimming or mowing operations. An area with a radius of at least 500-mm from the stem of newly planted trees should therefore be kept free from competing vegetation by chemical weed control or by the more environmentally friendly option of mulching.

NOTE. Soft landscape finishes including mulch and cultivated beds will generally provide more favourable conditions for young tree establishment than most hard surfaces or highly competitive grass. The use of ground-cover shrubs with an appropriate organic mulch is particularly beneficial: this treatment suppresses weeds, reduces maintenance, discourages intrusion, and maintains a permeable open soil structure.

Soil Compaction and Remediation Measures

Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth. The risk of soil compaction is greatest in soils with significant clay content and in wet conditions. It can result from temporary or short-term loadings, such as the passage of a single vehicle, or from longer-term construction activities, including materials storage. The positioning of the Tree Protection Fencing (Appendices) on the Tree Protection Plan with Tree Retention / Removal often incorporates proposed planting areas beyond the retained trees, it does not however show protection for areas of new planting away from existing trees.

Soil compaction should be avoided in RPAs and areas where new planting or seeding is proposed which contain suitable ground conditions (fertile soil). Where soil compaction has occurred in RPAs or proposed planting areas, arboricultural advice should be taken before carrying out any remedial works. Remedial works may include sub-soil aeration using compressed air, and the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure.

Use of Mulch

Open soil and shrub planting areas around newly planted trees should be mulched to inhibit weed growth, reduce groundwater evaporation, resist and mitigate soil compaction and reduce maintenance requirements, whilst allowing gas exchange and water penetration to roots. The mulch material should be weed-free, easy to apply, containable within the area of application and readily available. The choice of material will be informed by local availability of materials, site characteristics and aesthetic requirements. The mulch should be periodically replenished as it decomposes so that it does not become depleted, and ideally when the soil is warm and moist.

The materials that may be used for mulching include coarsely divided plant matter, such as well-composted wood chip, pulverized bark, leaf mould or green waste conforming to PAS 100, and these may be combined with well-rotted animal manure. If the sole intention is to conserve moisture, a layer of gravel or well-secured sheets of material such as permeable geotextile fabric may be used and may be covered for cosmetic purposes. Any such sheets should be maintained to avoid damage to the tree (e.g. by clogging, weed growth, restriction of air movement or constriction of the stem).

The mulched area should extend over as much of the root system as can be allowed by other site-usage requirements. The depth of organic mulch should not be so much as to inhibit aeration of the root system (normally no more than 100-mm depth). The area around the tree should be well-watered prior to the application of mulching material and the mulch should be periodically replenished as it decomposes, so that it does not become depleted.

Mulches should be kept away from direct contact with the bark of the stem, or of major roots, since this might encourage infection by pathogens by maintaining wet conditions.

- c) **Displacement, lifting or distortion.** This can occur where lightweight structures are within influencing distance of trees and annual incremental growth of roots and buttresses have the ability to disturb paving, walls, porches, and garages. Advice in Table A1 should be followed (see below) when planting new trees or controlling seedling growth. This is not deemed likely to be an issue as the layout allows space for retained trees and newly planted ones.
- d) **The impact of branches on the super structure.** Where development occurs close to trees and branches interfere or have the ability to interfere at a later date due to their growth, can cause the LPA problems with repeated requests for trees to be trimmed. Here, the development appears to be mainly of sufficient distance away from any retained trees. Furthermore, woodland management operations will be required regularly and during these operations, problematic trees may be selected for removal to address any minor issues. This is not deemed likely to be an issue as the layout allows space for retained trees. The only trees in close proximity would be trees near existing buildings due for retention, namely T53, T60 and those near Felthorpe Lodge. Conversely the privacy screening they provide may be welcomed by resident/s.
- e) **Wind Dynamics.** As far as wind dynamics are concerned, the following matters are noted. Air deflected over or around such solid structures will be locally accelerated to create turbulence. The proposed development is within influencing distance of the trees as buildings or solid structures can have an effect on leeward wind patterns for a distance in excess of 30 times their height⁹, although the effects of the more damaging wind turbulence in respect of trees is much shorter than this with the more dramatic influence being at least twice the height of the structure. It is usually a problem where retained trees have thin stems without adequate stem taper, and which have usually resulted where they have developed at close spacing¹⁰ and under mass shelter and particularly where a number of those trees have been removed. This is not deemed likely to be a significant issue as the layout allows space for retained trees and new housing is often replacing existing built structures. The only exception may be trees 89, 89, 92, 101 and 102 which have in the last 25 or so years been afforded protection from the elements by the three storey residential flats due for demolition and will now occur within an open space. As with the remainder of this site annual tree condition inspections are advised and any safety issues should be identified with recommendations actioned under the given priority rating (this also relates to point F below).
- f) **Large trees can sometimes cause apprehension to occupiers of nearby buildings especially during windy weather.** Whilst this is true in some instances, structural failure amongst trees is most common where a specimen is diseased or structurally defective or a stand is undermanaged. Well managed trees offer little risk to residences where under routine arboricultural inspections and providing any remedial works recommended during such an inspection are carried out by a competent tree surgeon.

The current site designation will afford tree protection for many trees, under statute law and all perspective purchases will be advised of any TPO's through the Land Search process. The LPA are able to consider applying further TPO's at any time where trees are considered under threat.

The level of risk exposure (target occupancy) for these trees will increase and impose a¹⁰ duty upon landowners to manage the trees. However, this is a reasonable expectation of any perspective landowner and should not be seen as detrimental to the health or long-term future of the trees or to the outcome of the application. Appropriate tree management under the guidance of an Arboriculturalist should be beneficial; it may however

⁹ Patch.D. Trees, Shelter and Energy Conservation. Arboricultural Research and Information Note 145/ARB/98

¹⁰ Failure Criteria for Solitary non-decayed trees Arboricultural Journal Volume 26 Number 1 April 2002.

THE EFFECTS THAT DEVELOPMENT PROPOSALS MAY HAVE ON THE AMENITY VALUE OF THE TREES

Relates to both trees on and near the site.

The loss of trees on the site has been considered earlier in the Report and a significant proportion of tree cover remains especially to the periphery of the site giving it a mature landscaped setting. This is further enhanced by the proposed planting under the landscaping scheme.

Trees often come under pressure when placed directly against housing or gardens and can come under pressure for pruning and /or tipping of garden waste and household rubbish, however space and buffers are often in place.

The location of trees to the south of house Plots 15-20, 81, 155, 112 & Felthorpe Lodge may come under the greatest pressure for pruning or removal via the Tree Preservation Order process, which most of the trees are protected under. However, there will be level changes with houses being in a slightly elevated position that will somewhat ease this pressure. Potential house buyers will be advised of the protection afforded to the trees under the Tree Preservation Order, during land searches. Also, these trees are in maturity and an obvious feature when viewing such houses.

THE END USE OF THE SPACE

The site is already extensively developed with buildings and car parks, and the proposed development mimics this developed footprint. The historic buildings are often associated with the trees of greatest amenity value and with both being retained, their status quo is maintained.

The investment in mitigation planting often of large planting stocks will enhance the groups of the greatest amenity value (G23, G6, G7 and the open spaces to the south-west), with an opportunity to introduce and replace unusual species and large species trees at maturity. These will grow in plentiful space, allowing them to reach maturity as an open grown specimen.

GENERAL COMMENTS AND OBSERVATIONS

Any construction work can have a negative effect on tree health and stability if their underground parts, which are frequently ignored, are damaged or severed. Above ground parts may become injured or broken through impact/collision damage. Retained trees will require physical protection from such injury during the development phase from the onset. Barrier fencing must be installed to create an exclusion zone around the trees and enclose the necessary Root Protection Area. its location and design must follow an approved ¹¹ Tree Protection Plan. The type of barrier fencing recommended for this proposal is produced below in Figure 2 below and is taken from the British Standard. The positioning and suitability of the protective fencing must be assessed and signed off by the Project Arborist prior to all works commencing (enabling tree works may be excluded).

Providing the needs of the trees are catered for and that care is taken during construction to protect their roots and stems, it is reasonable to predict that no long-lasting disruption to the retained trees physiology is perceived.

The Arboricultural Method Statement (AMS) element of this report along with Tree Protection Plan (TPP) **must** be followed rigorously during construction. It is strongly recommended that a 'Project Arborist' is engaged for the duration of the demolition and construction period, to oversee tree protection matters and be on hand to provide any arboricultural advice and maintain a level of communications between the client and Local Planning Authority's Tree Officer through submission of monthly progress reports. As discussed consultation at the detailed design stage will be required with the Project Arborist throughout the project.

¹¹ Approved by the Local Planning Authority

AUDITABLE SYSTEM OF ARBORICULTURAL SITE MONITORING, INCLUDING A SCHEDULE OF SPECIFIC SITE EVENTS REQUIRING INPUT OR SUPERVISION.

Successfully retaining trees on any development site depends on several controls being in place. A determination and willingness by all parties is required but primarily the Site Manager will have overall responsibility to ensure that control measures are observed. Communication early in the procedure between the client, site manager, Arborist and Local Authority Tree Officer or other appointed staff, which is fundamental in maintaining a level of arboricultural care.

The engagement of a Project Arborist is probably the single most essential component towards ensuring success. This should involve regular 'drop-in' visits by an appointed Arborist who will be responsible for monitoring tree protection measures and offer advice when needed.

A line of communications must be in place between the Project Arboriculturalist, Site Manager, and Local Planning Authority Tree Officer as a minimum requirement. Details are provided below. Should any queries arise in relation to the protection of trees on this development site then please contact the Arborist on call, during normal office hours.

Such visits must be recorded to form an auditable trail and regular Reports submitted to the Local Planning Authority. The number of visits will be dependent on the type and density of the development and the matters requiring arboricultural input. The number of visits required may also be stated within planning conditions or altered by the LPA at any time during the permitted development.

Schedule of Watching Brief Visits

- The Project Arborist should attend site on a weekly basis given the statutory protection afforded to many trees on site, their quality and quantity.
- Watching Brief Reports must be submitted to the LPA and the developer at the end of each month.
- The Report will include details of the visit, list any concerns, recommend remedial actions to protect trees where necessary and will include photographs.
- Where applicable arboricultural works over and above those listed in the AIA/AMS and requiring the written permission of the Local Planning Authority may be sought via the Arboricultural Watching Brief report.
- The suitability of the root protection fencing will be assessed to ensure it remains fit for purpose.
- The Project Arborist must supervise all approved works that occur within any Root Protection Areas.
- The Project Arborist must be consulted and /or supervise all those items listed as 'Site Specific, Arboricultural Events' , below.

Communications List (all to be confirmed)

Mr. Vaughan Lewis (Principal Project Arborist)

Sunnydale Bungalow

28a Intermediate Road

Brynmawr

Ebbw Vale

NP23 4SF

Email – vaughan@steveambler-trees.com

Telephone – 07961 322908

Ms. Katie. Partington & Scott Ambler (Project Arborist)

Steve Ambler & Sons Tree Specialists Ltd

Sunnydale Bungalow

28a Intermediate Road

Brynmawr

Ebbw Vale

REPORT LIMITATIONS

It must be stressed that this arboricultural impact assessment is not a risk assessment or a detailed report on the health and condition of the trees. It has been produced as a desktop review.

Every attempt has been made to provide a realistic and accurate assessment of the impact of the development on the trees. No liability can be accepted for any tree related issue or tree and building interactions in the absence of information or where information is unclear or misleading.

This report is based on the tree circumstances and condition at the time of the original tree survey. It must be recognised that the circumstances may be altered radically over the course of time and any development process and that such changes cannot be accurately predicted. The report does not provide any specific long-term tree management recommendations.

The effect this new development may have on localised wind turbulence has not been assessed during this inspection. As trees grow, they respond and mechanically adapt to their surroundings and exposure limits. With the erection of dwellings in close proximity to existing trees, new turbulence is created. The author accepts no liabilities to any failure subsequent upon such new imposed, artificial conditions.

This report does not consider indirect damage resulting from the extraction of moisture from shrinkable clay soils by tree roots causing subsidence or by heave occurring through soil rewetting following removal of trees on this site. Such problems are almost entirely restricted to areas of shrinkable clay soils and as I have *not* considered a soil analysis as part of my present brief, this aspect is *not* addressed at this time.

LEGAL CONSTRAINTS

The legal constraints of any site should be considered in early planning and well before any work commences on site. Such legal constraints should be fully considered from the outset to avoid time delays. The legal constraints referred to here are general constraints relating to arboriculture only and not any other legal matter that may arise.

Tree Preservation Orders and Conservation Area Status

The law on TPOs is in Part V111 of the Town and Country Planning Act 1990 Town and Country Planning (Trees) Regulations 1999. When any tree/s are protected by a TPO or are situated within a Conservation Area, it is an offence (1) cut down (2) uproot (3) top (4) lop (5) wilfully damage or (6) wilfully destruct a tree without the express written permission from the Local Planning Authority (LPA), there are exceptions. An LPA may grant permission if considered reasonable following the submission of an application for consent to undertake the works or where in accordance with an Approved Planning Application or under the exemptions within the Town and Country Planning Act 1990 of dead, dying, or dangerous. It is advisable to consult the LPA and an Arborist prior to conducting any tree works under these exemptions.

Statute and Common Law.

A landowner or land manager should be aware that both statute and common law dictates regular inspections of trees on land in their control are necessary where such trees could cause injury or damage in the event they should fall or shed any parts. A person suitably qualified in arboriculture should undertake such routine inspections and any remedial tree works recommended should be carried out within the time constraints specified, to prevent injury or damage occurring. A landowner should retain records of all inspections and any remedial tree works that have resulted from such inspections. The Arboricultural Association at Ampfield House, Ampfield, near Romsey, Hampshire. Telephone 01794 368717 are able to provide advice on suitably qualified persons or indeed suitable qualifications a person should hold to undertake qualified inspections.

GLOSSARY OF TERMS

Adventitious; Latent or dormant bud on stem or root often invisible until stimulated into growth which occurs from an unusual place i.e. not a twig, leaf or bud.

Arboriculture: the culture and management of trees as groups and individuals, primarily for amenity and other non-forestry purposes.

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

Architecture: in a tree, a term describing the pattern of branching of the crown or root system.

Arboricultural Implication Assessment (AIA) study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impact on existing trees that may arise as a result of the implementation of the site layout.

Arboricultural Method Statement; methodology for the implementation of any aspects of development that has the potential to result in loss of or damage to a tree.

Assessment: in relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property (THIS INVOLVES A VISUAL INSPECTION FOR DEFECTS AND CONTRIBUTORY SITE FACTORS, AND SOMETIMES ALSO A DETAILED INVESTIGATION OF SUSPECTED DEFECTS)

Bole; (trunk) the main stem of a tree below its first major branch

Branch: a limb extending from the main stem or parent branch of a tree

Buttress zone: the region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper sides of the junctions

Canopy: the topmost layer of twigs and foliage in a woodland, tree or group of trees

Construction Exclusion Zone; this is an area established where construction is not permitted and usually correlates to the Root Protection Area.

Crown: in arboriculture the main foliage-bearing portion of a tree

Defect: in relation to tree hazards, any feature of a tree that detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

Diameter (DBH) The diameter for each tree is in millimetres based on the diameter or circumference of the trunk measured at a height of approximately 1.5 metres above ground level, unless otherwise stated. All measurements are approximate

Dysfunction: in woody tissues, the loss of physiological function, especially water conduction.

Energy: the capacity to do work (THROUGH PHOTOSYNTHESIS, GREEN PLANTS ABSORB ENERGY FROM SUNLIGHT AND STORE IT IN THE FORM OF CHEMICAL COMPOUNDS WHICH ARE USED IN ENERGY-DEPENDANT PROCESSES SUCH AS GROWTH)

Failure: in connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil. (IN TOTAL FAILURE THE AFFECTED PART SNAPS OR TEARS AWAY COMPLETELY. IN PARTIAL FAILURE, THERE IS A CRACK OR DEFORMATION WHICH RESULTS IN AN ALTERED DISTRIBUTION OF MECHANICAL STRESS)

Group; the term 'group' is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture).

FLOW DIAGRAM – PLANNING FOR TREES IN DEVELOPMENT.

BS 5837:2012

BRITISH STANDARD

**Annex B
(informative)**

Trees and the planning system

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. Where trees are statutorily protected, it is important to contact the local planning authority and follow the appropriate procedures before undertaking any works that might affect the protected trees.

The nature and level of detail of information required to enable a local planning authority to properly consider the implications and effects of development proposals varies between stages and in relation to what is proposed. Table B.1 provides advice to both developers and local authorities on an appropriate amount of information. The term "minimum detail" is intended to reflect information that local authorities are expected to seek, whilst the term "additional information" identifies further details that might reasonably be sought, especially where any construction is proposed within the RPA.

Table B.1 Delivery of tree-related information into the planning system

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions) Tree retention/removal plan (finalized) Retained trees and RPAs shown on proposed layout Strategic hard and soft landscape design, including species and location of new tree planting Arboricultural impact assessment	Existing and proposed finished levels Tree protection plan Arboricultural method statement – heads of terms Details for all special engineering within the RPA and other relevant construction details
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method Dimensioned tree protection plan Arboricultural method statement – detailed Schedule of works to retained trees, e.g. access facilitation pruning Detailed hard and soft landscape design	Arboricultural site monitoring schedule Tree and landscape management plan Post-construction remedial works Landscape maintenance schedule

TREE PROTECTION PLAN WITH TREE RETENTION / REMOVAL

Appendix EDP 6
Tree Survey, Categorisation and Constraints Report at Former University
Campus, Caerleon: Ambler SJ., February & April 2019



Tree Survey, Categorisation & Constraints Report
in accordance with
BS 5837:2012 (Survey Phase 4.2, 4.4 & 4.6)

At
Former University Campus – Caerleon

On the instructions of
Redrow Homes Ltd

Dated
February & April 2019



Inspected by Mr.V.Lewis. Tech.Arbor.A.
Approved by Mr. S J Ambler. Cert.Arb.(RFS), Tech.Arbor.A., Dip.Arb. (RFS), F.ARBOR.A.
Of
Steve Ambler and Sons Tree Specialists Ltd.
Tel/Fax- 01495 310826. Mobile- 07813 310826 Email- steve@steveamblytrees.com Web- www.steveamblytrees.com



1. INTRODUCTION

I am instructed by Mr. Dafydd Andrews (Land Manager) Redrow Homes Limited), to undertake an arboricultural survey at Former University Campus – Caerleon to assist in the submission of a planning application to the Local Planning Authority.

The survey will be in accordance with the standards set out in BS 5837:2012¹ (items 4.2, 4.4, & 4.6) to gather information to assist the Local Planning Authority in their decision-making process in respect of existing and proposed trees, in the context of design, demolition and construction.

I have been provided with a full technical pack which included but not exclusively, the following information -

- Tree Preservation Order Schedule and Plan
- Topographical Survey (Drawing No- 4252-30MAR15-01-07)

I understand there is a proposal to redevelop the site, however, the trees have been assessed objectively and without reference to any site layout proposals.

It should be noted that a few trees recorded in the Findings Table were not included in the original topographical survey and their positions as indicated on the Tree Constraints Plan are plotted approximately only.

Trees are a material consideration in the UK planning system and the survey and report were prepared in consideration of Planning Policy Wales 10 with regard to the general provision, in relation to the value accorded to trees and their protection (contained within paragraphs 6.4.24 – 6.4.27).

- Local authorities have a duty to ensure that adequate provision is made for the planting or preservation of trees by imposing conditions when granting planning permission and/or by making Tree Preservation Orders (TPOs).
- Local authorities have a general power to make TPOs if it appears it is expedient to do so in the interests of amenity. They can make a provisional TPO which takes effect immediately, and it can remain effective for six months or until the TPO is confirmed."

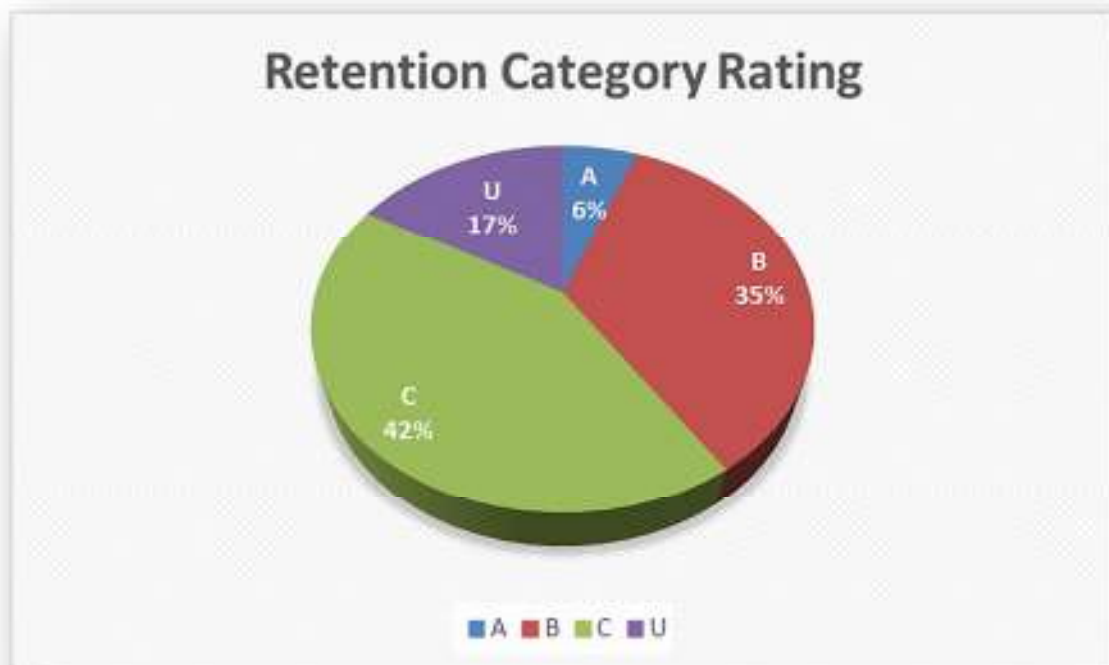
The weather conditions were favourable for a survey of this nature although fog was present on one of the survey days. Surveying was conducted from ground level on the 23rd, 24th & 26th February 2019 with tree condition inspections undertaken on the 10th & 11th April. The surveys were undertaken by Company Director Vaughan Lewis (Arboricultural and Woodland Consultant) who has worked within the arboricultural and forestry sectors for 21 years. Vaughan holds the following arboricultural qualifications:

- a) Professional Technician in Arboriculture (Arboricultural Association)
- b) Landscape Science, Higher National Diploma -Distinction. (Pencoed College (University of Glamorgan)

¹ British Standards Institute Publication 'Trees in Relation to Design, Demolition and Construction - Recommendations' 2012

NOTE - Where trees have been recorded individually within the Tree Survey there is on occasion some uncertainty as to whether or not they may be included within a protected (TPO) group or woodland. The client is advised to consult with the Local Planning Authority for confirmation when considering trees protected under the Tree Preservation Order. Any felling or remedial works on trees subject to a Tree Preservation Order must have written approval from the Local Planning Authority either through the TPO Works Application process or Full Planning Permission that accepts the recommendations of this report. The exception are those trees considered to be in a dangerous condition that are deemed exempt under the 'dead, dying or dangerous' clause, whereupon 5 days written notice should be given prior to works commencing.

The site comprises of a hugely diverse age range and species mix of trees, groups, woodland/parkland, an orchard and hedges (both formal and informal) in the following retention categories:-



Due to their prominent locations, generally good health and on occasion unusual species, category A trees/groups are recorded on the site identified as numbers G23, T24, T53, T60, T76, T89, T90, T92 and T100. The structural condition of several A rated trees most notably the two Foxglove trees, requires detailed investigations and so their retention category is PRELIMINARY ONLY and subject to findings of these investigations.

The majority of category B trees are larger, more prominent specimens in good condition, or groups which have the potential to provide screening of views into or out of the site (or between parts of it). Unfortunately, a number of what would have been B category mature limes on the Lodge Road entrance have succumbed to the fungal decay pathogen *Kretzschmaria deusta* (*Ustulina deusta*) and are not deemed suitable (safe) for



According to Mattheck³, a reasonably balanced tree with a full crown and with a central decay cavity with no external cavities as is effectively the case here with the two Foxglove trees requires a minimum residual stem cylinder with a sound wall thickness of 0.30-0.35 of its radius (t/R ratio). The minimum sound wall thickness is calculated for each tree being tested using the Resistograph 500 unit within the Findings Table.

A number of stumps were noted, and these are indicated on the attached Tree Constraints Plan.

NOTE- Category C trees are of little merit and need not necessarily be a significant constraint on the site's potential as their loss may be mitigated through planting.

3. SPECIES RECORDED

Apple (<i>Malus</i> sp)	Himalayan birch (<i>Betula utilis</i>)
Ash (<i>Fraxinus excelsior</i>)	Himalayan honeysuckle (<i>Leycesteria formosa</i>)
Beech (<i>Fagus sylvatica</i>)	Holly (inc. variegated varieties) - (<i>Ilex aquifolium</i> var)
Black mulberry (<i>Morus nigra</i>)	Hornbeam (<i>Carpinus betulus</i>)
Black pine (<i>Pinus nigra</i>)	Horse chestnut (<i>Aesculus hippocastanum</i>)
Box (<i>Buxus sempervirens</i>)	Horse chestnut 'Flore Pleno' (<i>Aesculus hippocastanum 'Flore Pleno'</i>)
Chanticleer pear (<i>Pyrus calleryana 'Chanticleer'</i>)	Hybrid black poplar (<i>Populus x Canadensis</i> var)
Cherry (<i>Prunus</i> sp)	Irish yew (<i>Taxus baccata 'Fastigiata'</i>)
Cherry 'Kanzan' (<i>Prunus 'Kanzan'</i>)	Rhododendron sp
Cherry laurel (<i>Prunus laurocerasus</i>)	Italian cypress var. (<i>Cupressus sempervirens</i> var)
Common lime (<i>Tilia x europaea</i>)	Japanese cornelian cherry 'Kintoki' (<i>Cornus officinalis 'Kintoki'</i>)
Common walnut (<i>Juglans regia</i>)	Japanese maple (<i>Acer palmatum</i>)
Copper beech (<i>Fagus sylvatica 'Purpurea'</i>)	Japanese spotted laurel (<i>Aucuba japonica</i>)
Cotoneaster sp	Pittosporum (<i>Pittosporum 'Garnetii'</i>)
Deodar cedar (<i>Cedrus deodara</i>)	Judas tree (<i>Cercis siliquastrum</i>)
Douglas fir (<i>Pseudotsuga menziesii</i>)	Lawson cypress (<i>Chamaecyparis lawsoniana</i>)
Downy birch (<i>Betula pubescens</i>)	Leyland cypress (× <i>Cuprocyparis leylandii</i>)
Escallonia rubra 'Macrantha'	Mexican orange blossom (<i>Choisya ternata</i>)
European larch (<i>Larix europaea</i>)	Myrobalan plum (<i>Prunus cerasifera</i>)
False acacia (<i>Robinia pseudoacacia</i>)	Noble fir (<i>Abies nobilis</i>)
Fern-leaved beech (<i>Fagus sylvatica 'Aspleniifolia'</i>)	Norway maple (<i>Acer platanoides</i>)
Firethorn (<i>Pyracantha coccinea</i>)	Norway spruce (<i>Picea abies</i>)
Foxglove tree (<i>Paulownia tomentosa</i>)	Oval leaved privet (<i>Ligustrum ovalifolium</i>)
Goat willow (<i>Salix caprea</i>)	Pear (<i>Pyrus communis</i>)
Golden weeping willow (<i>Salix x sepulcralis 'Chrysocoma'</i>)	Pedunculate oak (<i>Quercus robur</i>)
Hawthorn (<i>Crataegus monogyna</i>)	Plum (<i>Prunus domestica</i>)
Hazel (<i>Corylus avellane</i>)	

discontinuities like open cracks, areas of severe decay, hollows and in evergreens and ring-porous broadleaves even tree ring structures can be detected up to a maximum depth of 500 millimetres". Claus Mattheck, K. Bethge and W. Albrecht. How to Read the Results of Resistograph.

³ Mattheck.C.& Breloer H. The Body Language of Trees. Department of the Environment.



Trunk diameters, accessible crown spreads, tree heights and height of the lower crowns above ground level were all estimated.

The proposed development site boundary is identified by plan and is hereafter referred to as 'the site' .

In all cases where a tree's position may be critical (e.g. in accurately determining clearances between a tree and a proposed structure) all dimensions should be checked on site.

5. TREE CONSTRAINTS PLAN

A Tree Constraints Plan accompanies this report and identifies a 'Root Protection Area' (RPA) for each tree or group of trees surveyed. The RPA is in effect a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain tree viability, and in which the protection of the roots and soil structure is treated as a priority. Where a tree is to be retained, its RPA should be respected from the initial design period and throughout the demolition works until completion of the build. The necessary RPA distances are found in Table D1 of the British Standards¹

The RPA is marked on the Tree Constraints Plan as a solid line and reflects a radial distance when measured from the centre of the tree's trunk shown as a circle, centred upon the trunk of the tree, to enclose an area equal to the required RPA. This measurement is replicated within the end column of the Findings and again in tabular format and appears in the Tree Constraints Plan.

In practice, the distribution of roots may frequently prove to be uneven due to the presence of a variety of constraining influences. These may be physical barriers such as existing foundations etc., or the existence of localised soil conditions inhospitable to root growth, such as water logging or soil compaction. Conversely, soil conditions may be particularly conducive to root development in one quarter and this might lead to an asymmetric distribution of roots around the tree. However, in most cases the nominal circular areas as indicated will provide a reasonable guide as to where special protection is needed.

Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area will be produced on the TCP to represent this. Modifications to the shape of the RPA will reflect a soundly based arboricultural assessment of likely root distribution.

Proposed new planting may be marked on the plan as a constraint and soil should be protected from compaction where this is to occur.

Trees will be coloured according to their category and the following will apply. **See Appendix 1 ...Tree Quality Assessment**

- U - Dark red
- A - Light green
- B - Mid blue
- C - Grey



patterns should also be taken into account. A minimum of 2-m should be allowed between buildings and the outer edge of fully-grown canopies to allow for building maintenance and the erection of scaffolding etc.

Proposed buildings should be designed to take account of existing trees that are to be retained, their ultimate size and density of foliage, and the effect that these will have on the availability of light. Where sufficient distances (including allowances for future growth) cannot be achieved, the removal of C category trees should be considered. Larger trees are unlikely to increase greatly in height or spread. Older trees are particularly sensitive to root disturbance and are best retained within open space where they can be managed for optimum health, amenity value, and safety, rather than within private spaces.

All trees being retained must be protected by barriers and/or ground protection before

- Site activity except for tree clearance
- Materials or machinery are brought onto site
- Demolition
- Stripping of soil

Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. Where construction activity cannot be fully or permanently excluded in this manner from all or part of a tree's RPA, appropriate ground protection should be installed (see 6.2.2 and Figure 2 of the standard) working under the guidance of an approved AMS and the supervision of the Project Arborist.

The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2 in the Appendices. The vertical tubes should be spaced at a maximum interval of 3 metres and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.

In order to prevent damage to the trees, including their roots, within the fenced area (RPA) there should be no...

- Alteration of ground levels, including soil stripping and digging.
- Installation of drainage or services using conventional open trenching methods which would not be in accordance with BS: 5837. (Any works should be in accordance with the National Joint Utilities NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees Volume 4)
- Excavation (there are exceptions when covered by an approved⁴ Arboricultural Method Statement)
- Storage of any materials or equipment, even on a temporary basis.

⁴ Approved by the Local Planning Authority



7. SCHEDULE OF FINDINGS

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
1	NA	Common lime	19	500	3	3	2	4	6	4	M	Street tree of reasonable form, adjoining the site.	None	40+	B 2	113	6.00
G1	NA	Cherry laurel, Japanese spotted laurel, Pittosporum.	5	150	3	3	3	3	0	0	M	Dense group on entrance opposite security gate.	None	20-40	C 2	10	1.80
2	5042	Common lime	20	725	5	4	6	4	4	2	M	Protected by Tree Preservation Order. Tree of reasonable form but with crown dieback by some 10%. <i>Kretschmaria deusta</i> present. <i>K. deusta</i> leads to brittle fractures of the base and roots. Refer to Photograph 1, in Appendices	Fell to ground level, with replacement planting. Species and location to be agreed with Local Planning Authority	<10	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
													Arrange for a qualified arborist to re-inspect paying particular attention for signs of <i>K. deusta</i>				
6	463	Pedunculate oak	16	850	7	8	9	9	5	1	M	Protected by Tree Preservation Order. Tree of reasonable form and somewhat squat in appearance. Refer to findings of detailed condition inspection below. Refer to Resistograph results & in Appendices	Implement recommendations below.	40+	B 2,3	327	10.20

Detailed Condition Inspection.

Remarks.

Stem diameter taken @ 1-m AGL above the basal swelling = 870-mm.

Minimum Required Sound Wall Thickness.. Safety factor @ 0.35= 152-mm.

Broadened base at 360 degrees of the stem circumference up to 1-m AGL may indicate internal basal decay, but this could not be ascertained using a sounding hammer. Decay was however noted on the underside of an enlarged south & east buttress.



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G2	NA	Holly	7	125	3	3	3	3	0	0	EM	Unremarkable group located under canopy of oak.	None	40+	C 2,3	7	1.50
G3	NA	Oval-leaved privet, hornbeam	2	75	1	1	1	1	0	0	EM	Formal roadside hedge to frontage.	Maintain shape through box pruning.	20-40	B 2	3	0.90
G4	5046 - 5051	Ornamental flowering cherry	9	175	2	2	2	2	2	2	Y/EM	Trees of fair to reasonable form, in a row, slightly offset from hedge G3. Bacterial canker of cherry present but not extensive. Occasional compression forks developing.	Monitor health and structure every 3 years.	20-40	C 2	14	2.10
G5	NA	Irish yew, rhododendron, sweet bay, holly, variegated holly, apple, plum	10	175	4	4	4	4	0	0	EM	Jointly with Group 6, 7 - 23 No trees protected under Tree Preservation Order. Dense unkempt group and possibly part of the remnant orchard (Group 7), offering screening to adjoining garden. Fruit trees tagged 5052- 5055.	Individual dominant shrubs and small trees could be selected for retention in order to improve the amenity value of the group. If retained undertake renovation pruning on fruit trees. Implement recommendations below.	10-20	C 2	14	2.10



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												Inherently weak structurally and not deemed suitable for retention near high target occupancy housing.					
13	5058	Holly	6	175	3	3	3	3	0	0	Y/EM	Protected by Tree Preservation Order. Insignificant small tree/shrub	None	40+	C 2,3	14	2.10
G6	NA	Leyland cypress, Mexican orange blossom, apple, smoke bush	10	125	2	2	2	2	2	2	Y/EM	Jointly with Group 5, 7 - 23 No trees protected under Tree Preservation Order. Sporadic trees located in adjoining gardens.	None	20-40	C 2	7	1.50
14	5059	Judas tree	5	100	1	3	4	5	2	1	EM	Protected by Tree Preservation Order. Tree of poor form with a 30% dieback	Fell to ground level	<10	U	5	1.20
15	NA	Leyland cypress	15	400	4	4	4	4	4	3	Y/EM	Protected by Tree Preservation Order. Located in adjoining garden on boundary and offers some screening	None	20-40	B 2	72	4.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M')	
126	369	Apple	Elongated narrow decay cavity between 0.3-m – 1.1-m AGL to a depth of 50-mm. Congested crown with multiple crossing branches. Refer to photograph 21c, in Appendices										Target prune crossing branches. Monitor cavity every 18 months					
127	370	Apple	Small tree with crown dieback by 60%. Small but deep decay cavity at 300-mm AGL to south.										Fell to ground level.					
16	5060	Ornamental flowering cherry	6	300	3	5	4	5	2	2	EM/ M	Protected by Tree Preservation Order. Tree of below average form	Consider removal	<10	C 2	41	3.60	
17	1381	Noble fir	11	350	3	3	3	3	4	5	EM	Protected by Tree Preservation Order. Tree of below average form becoming bifurcated with a tensile union. Offers some limited screening for adjoining house	Remove lower dead branches and sever ivy	40+	C 2	55	4.20	
G8	NA	Hazel, holly, myrobalan plum, Japanese spotted laurel	10	125	4	4	4	4	0	1	EM	Unkempt group, offering some screening to the sub-station	Remove suckers if retained	20-40	C 2,3	7	1.50	
Stump	NA	Goat willow	/	/	/	/	/	/	/	/	M	Recently felled tree with no re-growth form stump as yet.	Treat with glyphosate-based herbicide in accordance with manufacturers instruction, in order to cease regrowth	10-20	U	0	0.00	



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G11	NA	Goat willow, cherry laurel, Himalayan honeysuckle, hazel	12	150	3	3	3	3	0	0	Y/EM	Unremarkable group, located near lodge entrance	Consider removal	10-20	C 2	10	1.80
G12	NA	Yew	2	75	1	1	1	1	0	0	Y	Young hedge along roadside boundary. Has potential, but could also be easily replaced through mitigation planting	Prune leaders to promote dense lower growth. Remove adjoining shrubs to improve light levels.	40+	C 2,3	3	0.90
23	1387	Pear	7	250	4	6	5	3	3	3	EM/ M	Tree of poor form. Scaffold limbs are 'dog legged' with acute changes of angle	If retained, undertake renovation pruning and remove deadwood	10-20	C 2,3	28	3.00
24	471	Pedunculate oak	15	475	8	9	8	6	3	1	Y/EM	Protected by Tree Preservation Order. Long lived species of good form near frontage. Refer to Photograph 4, in Appendices	Remove deadwood	40+	A 2,3	102	5.70



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G14	NA	Lawson cypress	14	300	5	6	2	4	0	0	EM/M	Row of conifers close to south boundary. Consider issues in relation to High Hedges Regulations. Condition issues include incipient stem failure, decaying pruning wounds & compression forks. These trees have been poorly reduced 'topped' , at some stage in the past.	Consider removal and replacement with better performing trees more suitable to a development.	20-40	C 2	41	3.60
28	1392	Red oak	16	225	1	6	7	5	5	5	EM/M	Twin stemmed specimen leaning with an asymmetric crown, predisposed to the south and road.	Reduce crown by 3-m distally	40+	C 2	23	2.70
29	1391	Red oak	16	275	5	7	9	7	4	2	EM/M	Twin stemmed specimen of reasonable form.	None	40+	B 2	34	3.30
G15	475	Lawson cypress	18	525	9	4	6	7	2	1	M	Multi-stemmed specimens of average form located on low mound. Consider issues in relation to High Hedges Regulations. Several compression forks present.	Monitor structural issues annually, if retained	20-40	B 2	125	6.30
30	473	Pedunculate oak	20	475	7	10	6	0	6	4	M	Protected by Tree Preservation Order.	Reduce crown by 2-m distally	40+	B 2,3	102	5.70



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
33	1393	Sessile oak	19	475	7	8	6	7	5	5	EM/M	Protected by Tree Preservation Order. Tree of reasonable form by metal gates on tarmac ramp. Small grouping of early mature holly & hazel under the canopy	Remove deadwood	40+	B 2,3	102	5.70
G16	NA	Irish yew	7	75	1	1	1	1	0	0	Y/EM	Closely spaced group in small beds, with limited rooting potential	None	40+	C 2	3	0.90
34	1394	Norway maple	8	200	4	4	4	4	3	3	Y/EM	Tree of good form in quadrant	None	40+	B 2	18	2.40
35	1395	Norway maple	8	200	4	4	4	4	3	3	Y/EM	Tree of good form in quadrant	None	40+	B 2	18	2.40
36	1396	White willow	10	325	6	6	8	5	3	0	EM	Unremarkable tree which is inherently structurally weak.	Consider removal in high target occupancy housing areas.	20-40	C 3	48	3.90
37	1397	Holly	8	125	3	3	3	3	2	2	EM	Unremarkable multi-stemmed specimen with 2 x central stems, reduced at 2-m AGL.	None	40+	C 2,3	7	1.50
38	1398	Common walnut	14	200	2	3	4	4	3	2	EM	Twin-stemmed tree of reasonable form, with a dominant east stem.	Monitor health annually	40+	B 1,2	18	2.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G19	NA	Norway maple	5	100	2	2	2	2	3	3	Y	Planted in narrow raised strips demarketing parking bays. Located in grills and stone setts. Can easily be replaced through mitigation planting.	Investigate rooting pit and improve rooting space if required and retained.	40+	C 2	5	1.20
40	2284	Ornamental flowering cherry	5	125	3	3	3	3	2	2	Y/EM	Unremarkable tree	None	20-40	C 2	7	1.50
41	2288	Himalayan birch	13	175	4	4	1	5	2	1	Y/EM	Tree of fair form, but subordinate to T42.	May require access facilitation pruning	40+	B 2	14	2.10
42	2287	Himalayan birch	14	250	5	5	3	5	2	1	Y/EM	Tree of good form and the dominate one in a pair with T41	May require access facilitation pruning	40+	B 2	28	3.00
43	2289	Sessile oak	17	400	8	6	3	8	3	2	EM	Protected by Tree Preservation Order. Extensive crown dieback with notable young growth within the internal crown. Refer to Photograph 7, in Appendices	Fell to ground level	<10	U	72	4.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
48	2294	Sessile oak	19	600	12	8	9	4	4	3	EM/M	Protected by Tree Preservation Order. Tree of good form. Lateral limbs on site side likely to be subject to increased torsional loading that closer development will cause.	Remove deadwood and reduce lateral limb formed at 4-m AGL to the site side by 3-m distally.	40+	B 2,3	163	7.20
49	2295	Sessile oak	16	600	15	4	9	6	4	1	EM/M	Protected by Tree Preservation Order. Forms a pair with T50. Tree soon becomes lateral at 2.5-m AGL predisposed towards the site. Notable fibre buckling under compression on stems and limbs	End weight reduction pruning to reduce loading, by 5-m distally	40+	B 2,3	163	7.20
50	2296	Sessile oak	16	525	5	10	10	8	6	6	EM/M	Protected by Tree Preservation Order. Forms a pair with T49. Tree soon becomes lateral at 6-7-m above ground level, predisposed towards the road.	End weight reduction loading by 3-m distally	40+	B 2,3	125	6.30



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G22	NA	Ornamental flowering cherry x 4	10	150	4	4	6	6	2	2	EM	Unremarkable row of trees on bank to front of student accommodation block	None	10-20	C 2	10	1.80
G23	NA	Ash, oak, sycamore, holly, hawthorn, goat willow, Norway spruce, hazel, lime, mulberry, European larch, Lawson cypress, black pine, Douglas fir, beech, cedar, wellingtonia, birch, coastal redwood, weeping willow	20	1000	6	6	6	6	2	2	M	Protected by Tree Preservation Order. Mixed broadleaved woodland and parkland further north. Comprising of predominantly native and naturalised species with the occasional planted exotics and some fine specimens. Issues include but not exclusively - windblown trees, small and medium diameter deadwood, phytophthora, fractured & failed stems / limbs and primary branches. Woodland canopy cover thins further northwards and conversely bramble increases, as light levels improve. Individual trees and sub-groups in this wider group have been recorded where they occur within influencing distance of the PRow (trees 121-123, G39 & G40) Refer to Photograph 9, 10 in Appendices	Woodland management plan required. Identify and plot / tag specimen trees. Undertake detailed tree condition inspection. Potential planting but not at the cost of overplanting around the specimen parkland trees.	40+	A 1,2,3	452	12.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
54	2300	Himalayan birch	10	150	4	5	3	4	1	2	Y/EM	Multi-stemmed specimen of average form with multiple stems of Sawara cypress (<i>Chamaecyparis pisifera</i>)	None	40+	B 2	10	1.80
H2	NA	Box	1	75	1	1	1	1	0	0	EM	Formal border hedge at entrance to main historic house.	Continue formal pruning	40+	B 1	3	0.90
55a, 55b	NA	Box	2	100	1	1	1	1	1	1	EM	Formally pruned to an umbrella shape. Located in raised planters on entrance to main historic house.	Continue formal pruning	40+	B 1	5	1.20
56	1641	Variegated holly	7	/	/	/	/	/	/	/	EM/M	Located in grounds of old stone house. Extensive crown dieback by some 80%	Fell to ground level	<10	U	0	0.00
57	1642	Variegated holly	7	/	/	/	/	/	/	/	EM/M	Located in grounds of old stone house. Extensive crown dieback by some 80%	Fell to ground level	<10	U	0	0.00
58	1643	Variegated holly	9	350	4	3	4	3	5	4	EM/M	Located in grounds of old stone house. Early crown dieback of lower branches. Discoloured and potentially dysfunctional areas of bark / cambium.	Monitor crown health annually	10-20	B 2	55	4.20
59		Lawson cypress var. (with juvenile foliage)	5	100	2	2	2	2	0	1	Y/EM	Unremarkable conifer in grounds of old stone house	None	20-40	C 2	5	1.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
66	428	Lawson cypress var	10	400	4	5	3	4	1	0	EM	Thinning crown with possible root damage and broadening base and buttress roots to south and east.	Consider removal if its near housing	<10	C 2	72	4.80
67	1646	Weeping birch	3	325	4	4	3	5	2	1	EM	Suppressed under crown of T66 and the stem soon becomes lateral to east at 3-m AGL.	Consider removal	10-20	C 2	48	3.90
68	426	Western catalpa	11	325	4	4	5	5	2	2	EM	Tree of good form in grounds surrounding the historic building	None	40+	B 1,2	48	3.90
69	1647	Pedunculate oak	10	250	4	5	5	5	2	2	Y	Tree of good form but young for species and could be replaced with mitigation planting	None	40+	B 2,3	28	3.00
70	1648	Pedunculate oak	10	175	4	4	4	4	2	2	Y	Tree of good form but young for species and could be replaced with mitigation planting	None	40+	B 2,3	14	2.10
71	1649	Pedunculate oak	8	150	2	2	2	2	2	1	Y	Tree of good form but young for species and could be replaced with mitigation planting	None	40+	B 2,3	10	1.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
77a, 77b	NA	Weeping cherry	4	125	2	2	2	2	3	1	Y	Trees of average form	Investigate rooting pit and improve rooting space if required	20-40	C 2	7	1.50
G28	NA	Hornbeam	5	150	2	2	2	2	1	2	Y	Located in paved areas within car park.	Investigate rooting pit and improve rooting space if required	20-40	C 2	10	1.80
78a	451	Hybrid black poplar	/	/	/	/	/	/	/	/	/	Cankered with crown dieback by 15%. Inherent structural weakness and not deemed suitable for retention near housing	Fell to ground level and replace with better performing species	10-20	U	0	0.00
78b	450	Hybrid black poplar	/	/	/	/	/	/	/	/	/	Cankered with crown dieback by 10%. Inherent structural weakness and not deemed suitable for retention near housing	Fell to ground level and replace with better performing species	10-20	U	0	0.00
79	449	Small-leaved lime	10	325	4	4	5	4	3	2	EM/M	Tree of reasonable form with some lower stem epicormic growth	Remove lower stem epicormics	40+	B 2	48	3.90
80	448	Horse chestnut 'Flore Pleno'	/	/	/	/	/	/	/	/	EM	Bleeding canker of Horse chestnut (<i>Pseudomonas syringae</i> pv <i>aesculi</i>) causing coalescing cankers. Memorial tree	Fell and consider replacement and retention of memorial plaque.	<10	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
82	418	Horse chestnut		475	6	6	6	6	2	1	EM	Tree of average form with Bleeding canker of Horse chestnut (<i>Pseudomonas syringae pv aesculi</i>) and tarry black lesions	Monitor health annually	40+	B 2	102	5.70
G31	417, 1653, 1654, 1657	Horse chestnut, Norway maple, false acacia, cherry-crab	10	150	4	4	4	4	2	2	Y	Even aged group, planted in a row surrounding the grass verge of car park bays	None	40+	C 2	10	1.80
83	416	False acacia									Y	Extensive dysfunctional bark and cambium with low vitality. Tree of poor form. Refer to Photograph 14, in Appendices	Fell to ground level	<10	U	0	0.00
84	415	Poplar sp									M	Twin stemmed, having been poorly reduced 'topped' at 8-m AGL. Inherently structurally weak and not deemed suitable for retention near housing. Refer to Photograph 14, in Appendices	Fell to ground level	10-20	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
89	1658	Fern-leaved beech	18	575	9	7	9	7	1	0	M	Protected under a Tree Preservation Order. Specimen tree of an unusual variety. Forks at 1-m AGL to become bifurcated. Multiple low limbs form a deep down-swept crown giving the tree a compact appearance	None	40+	A 1,2	150	6.90
90	409	Foxglove tree	16	1025	8	9	9	10	3	1	M	Protected under a Tree Preservation Order. This is a large specimen tree and an unusual species within the UK. Its retention category has been downgraded due to condition issues and reduced amenity value with the required remedial works. Refer to findings of detailed condition inspection below. Refer to Resistograph results & Photographs 19 a – f, in Appendices	Severe ivy and remove. Ecologist to inspect for bats prior to works commencing. Implement recommended works below.	20-40	B 1, 2	475	12.30



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W	1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
The surrounding three storey buildings constructed in the 1990's, to the north, east, and south provides a micro climate and some protection from all but the prevailing wind direction (south-west). This building is proposed for demolition and exposure to the elements and particular the wind will suddenly increase. Resistograph Results Summary (Refer to test results in Appendices) North = Pass North buttress = decay occurs at 30-cm East Buttress = sound to 31-cm South = Pass West = Pass Recommendations. This tree has an eccentric cavity to the east but with adequate sound wall thickness in the three other cardinal points. The buttresses are sound to at least 30-cm depth although it appears one of the main eastern structural roots may been severed at 1.2 metres from the main stem, perhaps dating back to the construction of the surrounding student accommodation. This species has a relatively soft non-durable wood akin to poplar species, as can be seen from the low amplitude readings of sound wood in the test results. The wind loading and hollowing is having an effect as notable columns of reaction wood are forming as a result of stress and suspected fracture lines in a buttress and the stem itself. Given that this tree will be exposed following the demolition of adjoining buildings, its stem decay and lateral limbs, and its position to the eastern end of the group, if the tree is to be retained with a limited safe useful life expectancy, significant reduction work through crown modification and a close condition monitoring regime must be implemented. Close monitoring must involve an increased inspection regime annually with anticipated further diagnostic investigation required. Cyclic surgery interventions will also be necessary to control crown size, depending on stem residual wall strength and thickness. - Reduce the crown by 3-m distally and remove all deadwood - Reduce the south western lateral limb by 4-5-m distally - Permanently fence out the tree from the proposed open space with high ornamental railings to deter access. Fencing to be set back at 10-m radially from the stem. - Place on an annual condition inspection regime paying particular attention to crown physiology. - Monitor crown size versus the structural integrity of stem and buttress roots.														



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
93	479	Magnolia	/	/	/	/	/	/	/	/	EM	Tree of poor form being multi-stemmed from base. Dead north-west stem. The remaining stems are mostly lateral with compressive fork unions.	Fell to ground level	<10	U	0	0.00
G33	NA	Beech, Himalayan birch, sweet chestnut, Swamp cypress, fastigate ornamental cherry	14	250	3	3	3	3	2	2	Y/EM	Mixed group of trees, generally of good form. If retained they could be left as a group, but also individual specimens could be selected at this young age. If lost, mitigation planting with large stock is also an option due to their young age. Refer to Photograph 17, in Appendices	None	40+	B 2	28	3.00
94	4541	Lawson cypress	18	625	3	4	4	4	3	2	M	Tree of good form. Broadening of base noted to west and south	Sever 1m ivy band.	40+	B 2	177	7.50
95	436	Silver birch	17	350	3	4	3	3	4	3	EM/ M	Tree of good form, with several bark wounds and a thinning upper crown with small diameter deadwood	Consider removal	<10	C 2,3	55	4.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
												Refer to Resistograph results & Photographs 18 a - e, in Appendices					

Detailed Condition Inspection.**Remarks.**

Basal stem diameter = 940-mm.

Minimum Sound Wall Thickness @ Safety Factor of 0.35 = 165-mm.

Using a sounding hammer basal stem decay is detected up to 1.8-m AGL to north and east, equating to approximately >180 degrees of stem circumference.

There is no discernible buttress development to the north and east and what there is present, is decayed. There are suspected fractures to the east from base up to 1.5-m AGL, to the north side of a decaying buttress and to its south side up to 0.5-m AGL.

Significant reactionary buttress development occurs to the south on the tension side to the prevailing winds.

Ivy clad stem extending into lower crown.

Multiple pruning wounds, a few with small decay cavities of unknown depth.

Fractured and failed west limb at 8-m proximal to parent stem.

Medium diameter deadwood throughout crown in excess of normal levels associated with cladoptosis.

The surrounding tall buildings are within influencing distance (shelterbelt) and this is proposed for demolition, to the north, east, and which provides shelter in reducing wind speeds. Therefore, once demolished, this tree will be exposed to a sudden and dramatic increased wind-loading from varying directions which it has not been exposed to for some 25 years.

Resistograph Results Summary (Refer to test results in Appendices)

North = Fail

South = Fail

East = Fail



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
													May require access facilitation pruning.				
103	402	Willow-leaved pear	6	275	5	0	4	2	3	0	EM	Tree of poor form, subordinate to T101. Ivy clad. Refer to Photograph 18a, in Appendices	Consider removal but if retained, remove ivy and undertake detailed condition inspection	10-20	C 2	34	3.30
104	407	Common lime	18	475	4	4	5	4	1	1	EM/ M	Tree of good form on roadside boundary in close proximity to gas sub station	May require access facilitation pruning	40+	B 2	102	5.70
105	406	Horse chestnut									EM/ M	Basal decay with a large coalescing decay cavity on the stem. Decay wound up to 5-m AGL from base.	Fell to ground level	<10	U	0	0.00
H4	NA	Cherry laurel, oval-leaved privet.	3	75	1	1	1	1	0	0	Y/EM	Formal hedge around former nursery, near entrance.	Offers some screening	20-40	C 2	3	0.90
106	NA	Apple	5	100	2	2	2	2	1	1	Y	Insignificant tree in garden of former nursery	None	40+	C 2,3	5	1.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
												Likely to outgrow its position and damage the boundary wall in time as secondary stem thickening occurs and cell turgor pressure of its roots disturb the wall.					
113	4547	Sycamore									EM	Twin-stemmed specimen from base, forking under compression, at 4-m AGL.	Fell to ground level	40+	U	0	0.00
114	4549	Sycamore	15	325	2	6	4	6	4	5	EM	Tree of below average form on boundary with road, in garden of former nursery. Forks under compression at 3-m AGL. Crossing stems at 5-m AGL.	Consider removal	40+	C 2	48	3.90
115	4550	Leyland cypress	17	450	2	4	4	5	6	6	M	Formally twin-stemmed with the south stem having been removed. Significant butt sweep, leaning slightly eastwards with mounding of soil to the west and a notable gap formed between its roots and the wall. Refer to Photograph 20, in Appendices	Fell to ground level	10-20	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												In the case of G35c an open narrow woodland abuts with a public open space further afield. Larger individual trees have been recorded if their RPA exceeds that of the remnant hedge. Open deep banked stream to west of hedge, which is culverted to the southern end. Larger trees on far side of stream are not considered as their roots and crowns do not pose a constraint.	Tip back overhanging branches to give 2.4-m clearance along path. Note - Potential mitigation opportunity to plant up gaps with native hedge species.				
117	NA	Sessile oak	16	750	5	6	7	7	3	3	M	Tree of good form in remnant banked hedge.	Remove deadwood	40+	B 2,3	254	9.00
118	NA	Ash	11	150	2	3	4	2	3	3	Y	Twin stemmed tree of poor form	None	40+	C 2,3	10	1.80
119	NA	Sessile oak	19	950	8	12	12	12	4	9	M	Dominant tree located in scrub wood beyond G35c. Small basal decay cavity to west. Small and medium diameter deadwood.	Subject to ownership, remove deadwood over target only	40+	A 2,3	408	11.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												Slightly thinning crown with deadwood over path.					
G38	NA	Hawthorn, holly, ash, horse chestnut	10	200	3	3	3	3	2	2	Y/EM	Unremarkable group of trees on small section of land adjoining the Public Right of Way, off Ponthir road. Crowns just overhang the path in a few locations, and they are unlikely to be rooting under the Public Right of Way.	None	40+	C 2,3	18	2.40
121	NA	Sycamore	10	175	2	4	4	4	2	2	Y/EM	Multi-stemmed specimen in G23, derived from a stool abutting boundary fence and Public Right of Way. Already in contact with fence and some signs of rooting under the Public Right of Way.	Consider felling and treat stump with herbicide to cease regrowth in accordance with manufacturer's instructions.	40+	C 2	14	2.10
122	NA	Pedunculate oak	14	450	6	7	6	5	3	3	EM/M	Tree of good form in G23, within influencing distance of Public Right of Way, with an overhanging crown but is unlikely to be rooting under the tarmac path.	None	40+	B 2,3	92	5.40



8. LEGAL CONSTRAINTS

With regards trees, the legal constraints on any site should be considered early on in the planning process and well before any work commences on site. Such constraints may cause time delays and should be given full consideration from the outset. The legal constraints here are general constraints that relate to arboriculture only and do not cover any other legal matters that may be relevant on this site.

Tree Preservation Orders and Conservation Area Status in Wales

In Wales, the law on TPOs is in Part V111 of the Town and Country Planning Act 1990 Town and Country Planning (Trees) Regulations 1999. When any tree/s are protected by a TPO or are situated within a Conservation Area, it is an offence (1) cut down (2) uproot (3) top (4) lop (5) wilfully damage or (6) wilfully destruct a tree without the express written permission from the Local Planning Authority (LPA), there are exceptions. An LPA may grant permission, if considered reasonable following the submission of an application for consent to undertake the works, or where in accordance with an Approved Planning Application or under the exemptions within the Town and Country Planning Act 1990 of dead, dying, or dangerous. It is advisable to consult the LPA and an Arborist prior to conducting any tree works under these exemptions.

Felling Licence

A Felling Licence is required in certain felling operations which are administered by the Forestry Commission where more than five cubic metres of wood are felled in one calendar quarter and when selling more than two cubic metres. There are exceptions, and these are in the Forestry Act 1967 and Regulations made under this Act. Contravention of the felling licence controls can incur substantial penalties. Tree felling forming part of a Local Authority Planning Approval is exempt.

The Wildlife and Countryside Act 1981 protects nesting birds and to disturb nesting birds can be a criminal offence. Therefore, caution must be aired if tree works are programmed during the nesting season, between March and August. Should nesting birds be present then all but essential works will be postponed. If in undertaking essential works a nest or nests are found to be present, then further advice will be sought from the Countryside Council for Wales.

Bats...Summary of Current Relevant Legislation

There are some 17 species of bat which are known to breed in the British Isles, all are insectivorous and depend to some extent on habitat in which trees are a significant element. Bats are a protected species and are in decline both globally and nationally. Therefore, they are to be fully considered before any tree work commences and particularly if the trees are mature. If a bat roost is known to be in any tree that is to be removed or worked on, a license must be obtained from the Welsh Government beforehand.

The European Habitats Directive (passed in 1992) provides the principal legal protection for bats in the UK and this is currently enacted into British legislation through the Conservation of Habitats and Species Regulations 2010 in England and Wales; the Conservation (Natural Habitats &c) Amendment (No. 2) (Scotland) Regulations 2009 in Scotland; and the Conservation (Natural Habitats &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland. These regulations relate to all animals which are identified as European Protected Species (EPS) which includes all bat species.

The different countries of the UK have domestic legislation which also provides protection (by varying degrees) to bats; however, this has largely been superseded by the Regulations specified above.

Under the Regulations it is illegal to:

- kill, injure or capture a bat
- disturb bats
- damage or destroy a bat's breeding site or resting place (roost)
- possess a bat (live or dead) or offer one for sale or exchange.

This is a simplified summary of the legal position relating to bats and is intended for guidance purposes only. If further assistance is required, the primary legislation should be referred to or legal advice sought.

The legislation makes it an offence to intentionally or recklessly damage, destroy or obstruct access to a site used by bats whether bats are present at the time or not. This can include work on trees whether it is surgery, felling, the covering, or filling of cavities or the installation of rod braces and flexible cable braces, where a bat roost is present.

Where there is a risk bat roosts may be present, it is incumbent upon the owner or manager to commission a specialist bat survey to identify bat roosts before instructing tree surgery to commence. Failure to do so and in the event of disturbing a roost site or injuring any bats is an offence. Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/ 1991 (i.e. £5000 in April 2001) per roost or bat disturbed or killed, or to both.



10. TERMS AND DEFINITIONS

Number (No.) a tree number is allocated to each tree or group and provides reference to an individual. It will occur either by way of a T-number T1, T2 etc. or a series of numbers e.g. 00123 that relates to an identification tag attached to the stem of each tree. Such numbers will occur on the Tree Constraints Plan.

Species The species is the given name of the tree which is usually provided in both the common and scientific names.

Diameter (DBH) The trunk diameter for each tree is measured in millimetres at a height of approximately 1.5 metres above ground level, unless otherwise stated. All measurements are approximate.

Crown Spread The crown spread is measured as the radius from the centre of the trunk in meters and in most cases is approximate covering the four points of the compass.

Height The height of the tree is measured in metres and is usually approximate. If the abbreviation 'Clinom' appears after the given measurement, it indicates the tree has been measured with an optical measuring instrument, a Clinometer, and is accurate to within 5 metres.

Life Stage The age of the tree is given based on its life expectancy. For example, an oak tree at an age of 100-years is perceived as early mature when a hawthorn at 100 years would be considered old. Age classes are given as follows: -

Y.	Young trees (recently planted or saplings under 15 years old)
SM.	Semi mature (around 1/3 their life expectancy, still growing vigorously but not as fast as a younger tree)
EM	Early Mature (between 1/3 – 2/3 life expectancy still growing reasonably vigorously)
M.	Mature trees (above 2/3 life expectancy. Growth rates beginning to slow down at this stage)
OM.	Over Mature trees (growth rates slow and possibly beginning to display signs of decline)
V.	Veteran (decline is well set-in, but the tree may be of specific ecological value. The tree is likely to contain sufficient deadwood and decay that is a special habitat for many rare invertebrates that are considered to be at risk from extinction)

Recommendations The recommendations give the appropriate action required for the trees or groups of trees to fulfil the brief, which possibly include reducing the most blatant foreseeable risk or improve the physiology of the tree.

Target Rating

Target rating is used to consider how likely a mobile or stationary target will be present at any one moment in time, within proximity to the tree under investigation. It is often approximated after a short period on site and often with little knowledge of the site. Unless otherwise stated, no information on visitor or vehicle numbers have been provided by the client and this assessment is based on a small 'snap-shot in time', the client should consider this assessment and where it is not considered accurate, should make the Author aware immediately and certainly within 7 days of issue of the Report.

Low Target Occupancy (occasional use)

Infrequently used footpaths, isolated car parks, desire lines (permissive and non-permissive paths) through woodlands, open spaces without particular features or attractions, (such as picnic benches), and difficult to access areas due to undergrowth, perhaps the occasional jogger, dog walker or cyclist could be expected during day light and reasonable weather conditions.

Medium Target Occupancy (Intermittent use)

Target not present for any length of time i.e. low use car parks, footpaths in countryside, parkland open during normal working hours and access roadways. No stationary targets and could normally be expected during day light and reasonable weather conditions.

High Target Occupancy (Frequent use)

Target not present for 24 hours but a frequently used site such as - day use car parks, B-Class and minor roads, footpaths in towns and cities, offices operating normal working hours, excluding weekends, access roadways to a facility. Target maybe stationary for short periods of time.

Very High Target Occupancy (Constant use)

Where persons are present at all times such as a hospital building and car park, A-class roads, railways, dual carriageways, motorways and residential properties where vehicles or persons are expected during any time day or night.

Priority Coding is provided to relay the urgency in which any recommended work is required based on the hazard presented by the tree and the considered target occupancy. Whilst it highlights the most urgent works to help offset risk, it may also be helpful for budgeting purposes.

Priority 1	Top priority; to be undertaken as soon as it is practicable for reasons of offsetting foreseeable risk, injury or damage and where the likelihood of it occurring is considered high. Action should be taken diligently
Priority 2	Medium priority; attention strongly advised at your earliest convenience to deal with a problem that whilst is not as serious as priority one, carries significant concern and liability. In any event, works should be completed within 6 months.



Risk: the likelihood of the potential harm from a particular hazard becoming actual harm.

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 m²

Soil heave: *see* heave

Subsidence: in relation to soil or structures resting in or on soil, a sinking due to shrinkage when clay soils dry out, sometimes due to extraction of moisture by tree roots.

Subsidence: in relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight.

Targets: in a tree hazard assessment (and with somewhat incorrect terminology), persons or property or other things of value, which might be harmed by mechanical failure of the tree or by objects falling from it.

Tree: a woody plant, which typically has a single main stem and, in maturity, attains a height of at least four metres and a stem diameter at breast height of at least 75-mm.

Tree Constraint Plan (TCP): plan prepared by an Arboriculturalist for the purpose of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade dominance, etc.

Tree Preservation Order: in Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.

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

Trunk: the single main stem of a tree.

Vigour: in tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth (*cf.* vitality)

Visual Tree Assessment (VTA): in addition to the literal meaning, a system expounded by Mattheck & Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.

Wind exposure: the degree to which a tree or other object is exposed to wind, with regard both to duration and velocity.

Wind pressure: the force exerted by wind on a tree or other object.

Wind snap: the breaking of a tree stem by wind.

Windthrow: the blowing over of a tree at its roots.

12. REFERENCES

- **British Standard 5837: 2012 Trees in Relation to Design, Demolition and Construction - Recommendations** Arboricultural Association, Guidance Note 10, Protected Species and Arboriculture
- **British Standard Recommendations for Tree Work BS 3998; 2010**
- **Lonsdale D.** Principles of Tree Hazard Assessment and Management.
- **Mattheck C. & Breloer H.** The Body Language of Trees Department of the Environment.
- **Brown G.E. Kirkham. T.** The Pruning of Trees, Shrubs & Conifers. Timber Press 2nd Edition.

13. APPENDICES

APPENDIX A - TABLE 1 TREE QUALITY ASSESSMENT

APPENDIX B - DEFAULT SPECIFICATION FOR PROTECTIVE BARRIER

APPENDIX C - TABLE B1- TREES AND THE PLANNING SYSTEM

APPENDIX D – PHOTOGRAPHS

APPENDIX E – RESISTPGRAPH TEST RESULTS

APPENDIX F – TREE CONSTRAINTS PLAN



Category C

Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.

- ✓ 1 Mainly arboricultural qualities- Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories
- ✓ 2 Mainly landscape qualities- Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits.
- ✓ 3 Mainly cultural values, including conservation- Trees with no material conservation or other cultural value. See Table 2.

***NOTE:** the BS Standard states...Particular care is needed when evaluating young trees, especially where they occur as individual specimens. Where these are less than 150 mm stem diameter at 1.5 m above adjacent ground level, it might be acceptable and relatively straightforward to mitigate their loss, if necessary, with similar new tree planting. Alternatively, it might be practicable to relocate such trees within the site (e.g. using a tree spade). Whilst the presence of young trees of good form and vitality is generally desirable (i.e. those trees which have the potential to develop into quality mature specimens), they need not necessarily be a significant constraint on the site's potential.*

Where remaining contributory years' score is provided within the 'Findings' , and where further investigative works are required, these scores are preliminary only and based on an incomplete inspection.

BRITISH STANDARD BS 5837:2012

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APPENDIX C - TABLE B1- TREES AND THE PLANNING SYSTEM

BS 5837:2012

BRITISH STANDARD

Annex B (informative)

Trees and the planning system

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. Where trees are statutorily protected, it is important to contact the local planning authority and follow the appropriate procedures before undertaking any works that might affect the protected trees.

The nature and level of detail of information required to enable a local planning authority to properly consider the implications and effects of development proposals varies between stages and in relation to what is proposed. Table B.1 provides advice to both developers and local authorities on an appropriate amount of information. The term “minimum detail” is intended to reflect information that local authorities are expected to seek, whilst the term “additional information” identifies further details that might reasonably be sought, especially where any construction is proposed within the RPA.

Table B.1 Delivery of tree-related information into the planning system

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions)	Existing and proposed finished levels
	Tree retention/removal plan (finalized)	Tree protection plan
	Retained trees and RPAs shown on proposed layout	Arboricultural method statement – heads of terms
	Strategic hard and soft landscape design, including species and location of new tree planting	Details for all special engineering within the RPA and other relevant construction details
	Arboricultural impact assessment	
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method	Arboricultural site monitoring schedule
	Dimensioned tree protection plan	Tree and landscape management plan
	Arboricultural method statement – detailed	Post-construction remedial works
	Schedule of works to retained trees, e.g. access facilitation pruning	Landscape maintenance schedule
	Detailed hard and soft landscape design	



Photograph 3. Group 7: Orchard along south-east boundary.



Photograph 4. Tree 24: Oak of good form with potential long life.





Photograph 6. Tree 39. Well formed Star Magnolia in paved seating area.



Photograph 9 & 10. G23. Top - Specimen Wellingtonia. Bottom – northern end of woodland, as the canopy starts to thin.





Photograph 13. Group 30 a, b: Young trees of limited significance.



Photograph 14. Tree 83 (False acacia– right) & 84 (poplar – left)





Photograph 17. Group 33. Well-formed young group of mixed species trees.



Photograph 18a. Tree 100 – 103: Background - Trees surrounded by tall buildings. The group includes the U category Foxglove tree (right) and the B category Copper beech (left).





Photograph 18d. Tree 100 – Significant buttress development to the south with decay.



Photograph 18e. Tree 100 – Location of tree with protection afforded by three storey high buildings.





Photograph 19c. Tree 90 – Curving parallel suspected fractures from base and fibre buckling on lower sections.



Photograph 19d. Tree 90 – broad buttresses to south





Photograph 20. Tree 115. Tree with butt sweep and root-plate disturbance and a gap forming with the boundary wall.

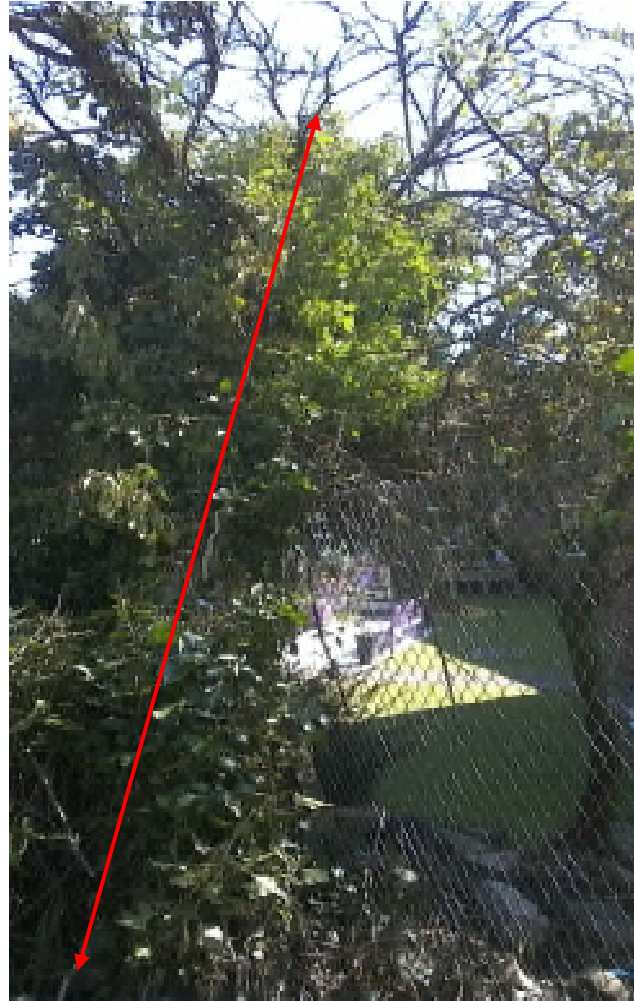


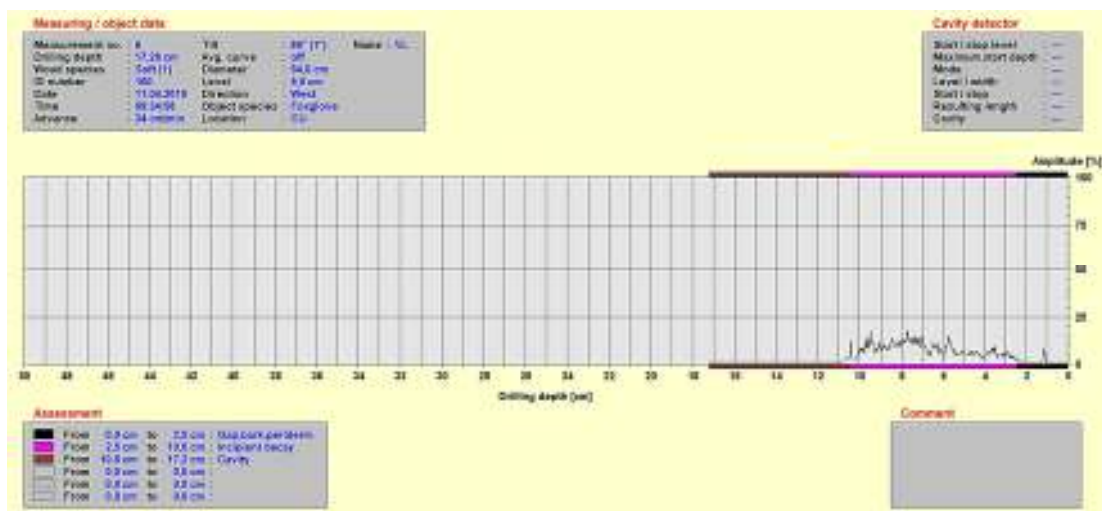
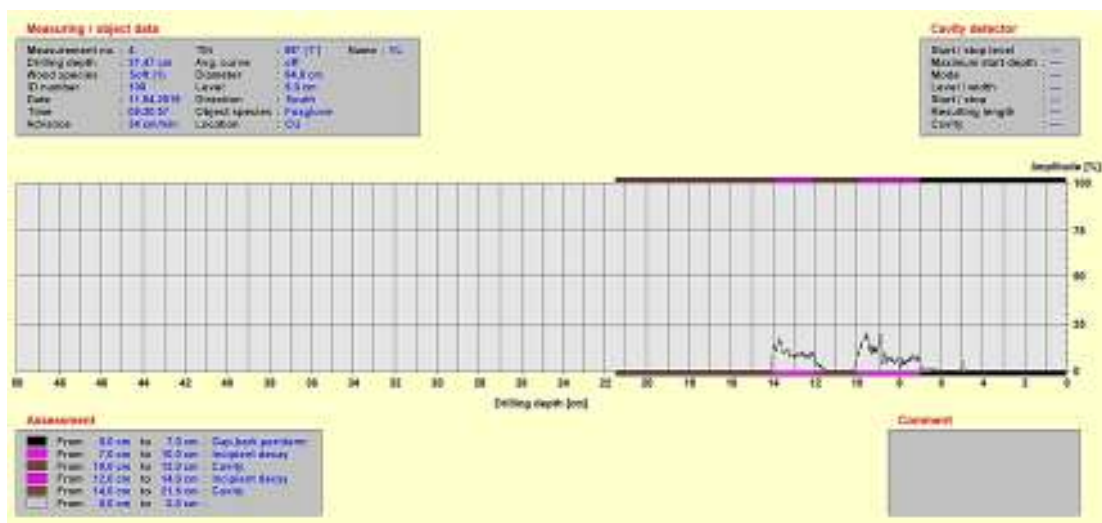
Photograph 21a. Group 7. Tree 124 – Apple with congested crown with multiple crossing branches. Fractured and partially attached wind damaged branches at 6-m AGL to the south.

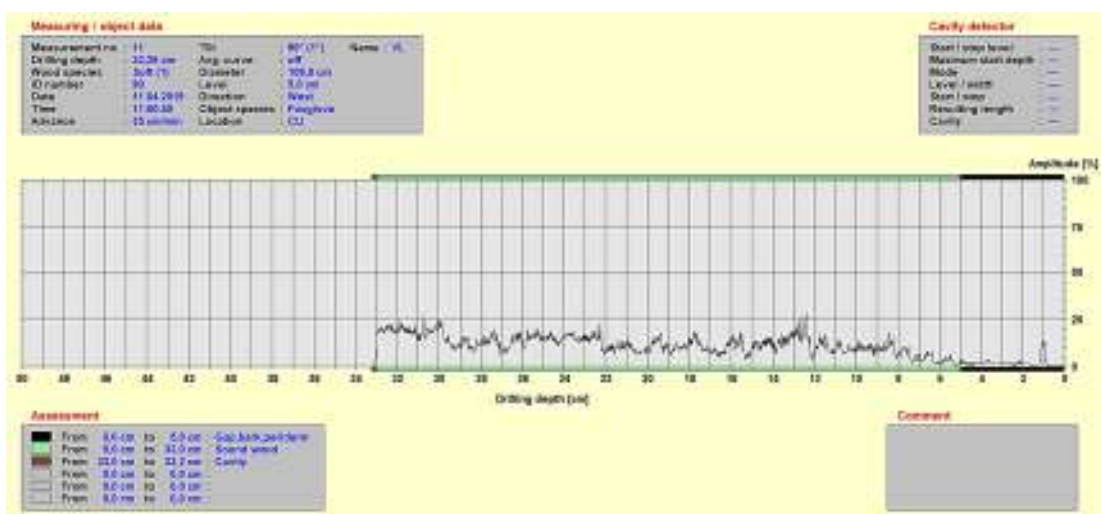
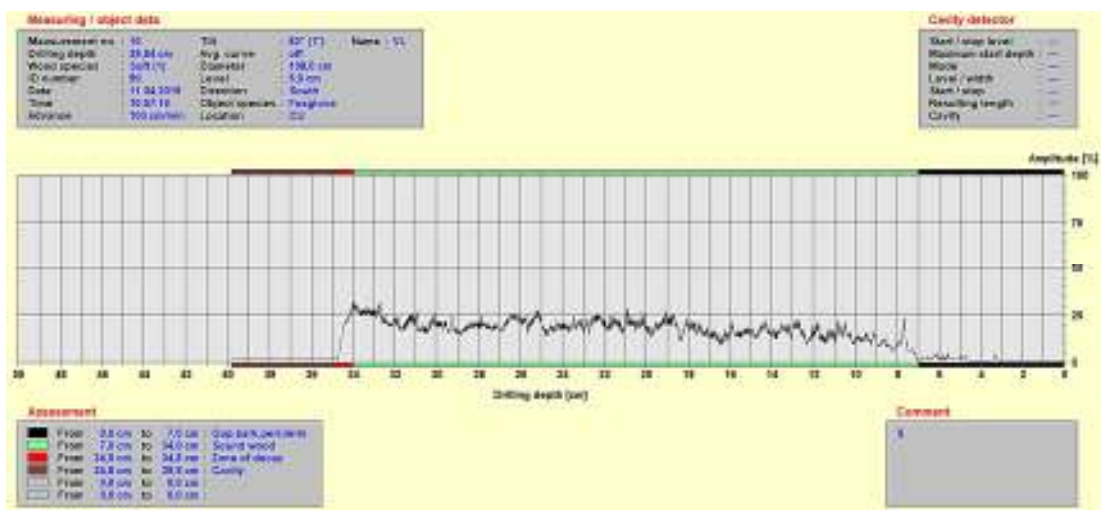




Photograph 21d. Group 5. Tree 129 – Apple with root-plate failure with tree resting on boundary fence and overhanging Isca Court.






Tree 6. Pedunculate oak (*Quercus robur*).


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Appendix EDP 8
Enclosures Layout (includes Hedgehog Highway Information)
(Drawing Number: 18137(05) 1104 Rev H, Powell Dobson)



BOUNDARY ENCLOSURE KEY

- 1.2m High Close Board Timber Fence
- 1.2m High Brick Screen Wall (to match main house brick)
- 1.2m (nom.) High Brick, tapered boarded & brick pier Wall (brick to match main house brick)
- 1.1m (nom.) High Black Ball top galv. metal vertical railing as guard barrier to retaining walls where drop exceeds 600mm
- 1.1m High 4 Bar Estate Railing
- Existing Wall
- 1.2m High Timber Close Board Gate
- Hedging Highway with location of hole and direction of travel
- Hedging Highway Boundary Enclosure Constants

NOTES:
Refer to the engineer's drawings for retaining walls heights and external steps.
Refer to the Landscape Architects drawings for landscape boundary details

Scale 1:1000



Figured dimensions and levels to be used. Any inaccuracies must be notified to the architect. Detail drawings and large scale drawings take precedence over smaller drawings.

Rev.	Chk'd:	Rev.	Chk'd:
A		G	
B		H	
C			
D			
E			
F			

Minor revisions relating to which walls are screen walls, wall & fence panel or fences following client review. 1.2m high pocket fence introduced to rear boundaries of some sites to take advantage of views.	ML 31/10/19
Redesign to accommodate water main as per client mark up. Schedule adjusted. Site plot numbers renumbered from p88 107 onwards.	ML 12/11/19
Retaining walls and external steps added. Guard railing to retaining wall added.	ML 25/11/19
Layout updated to 18137(05) 1101H	AP 26/12/2019
Layout updated to 18137(05) 1101J	ML 18/03/2020
Layout updated to 18137(05) 1101D	ML 03/04/2020

Layout updated to 18137(05) 1101K. Enclosures for plots 106-113, 135-139 & 168-170 updated to pier walls with tapered boarding.	ML 06/06/2021
Hedging highway added.	ML 03/06/2022

PRELIMINARY

PLANNING

DESIGN

TENDER

CONSTRUCTION

powelldobson
ARCHITECTS

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Contract: Redrow Homes
Caerleon Campus Redevelopment
Enclosures Layout

Drawing No. 18137(05) 1104 Rev. H

Scale: 1:1000@A1
Date: 10/10/19
Drawn: art
Checked: -