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ARBORICULTURAL IMPACT ASSESSMENT & METHOD STATEMENT

The Scout Hut, Victoria Road, Worthing, Bn11 XB

On Behalf of: Adur and Worthing Council

Client:	Adur and Worthing Council			
Project:	The Scout Hut, Victoria Road, Worthing, Bn11 XB			
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1.0 INTRODUCTION

1.1 Lizard Landscape Design and Ecology (LLDE) has been commissioned by Adur and Worthing Council to undertake an Arboricultural Impact Assessment & Method Statement for the proposed development at The Scout Hut, Victoria Road, Worthing, Bn11 XB (hereinafter referred to as the site).

1.2 The principal aim of this report is to detail construction control measures to protect retained trees and tree groups (including hedgerows) within, and adjacent to, the site in accordance with British Standard (BS) 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'.

1.3 This report, and accompanying Tree Schedule and Tree Retention and Protection Plan, sets out the arboricultural impacts of the proposals using the following considerations as a framework:

- Trees to be removed and trees to be retained.
- Remedial tree work to retained trees to allow development to take place.
- Suitable measures to protect retained trees.
- Special construction or engineering measures are required to enable trees to be integrated into the proposed development where impacts are unavoidable.

Existing Site Information

1.4 The survey area covers c. 0.1 (ha) and lies adjacent to Victoria Road. The site was previously used as a Scout hut and sits within the residential area of Worthing. The Richmond Road Conservation Area covers the west of the site and the land immediately adjacent to the south, therefore **T01** – **T04** are considered protected trees under The Town and Country Planning (Tree Preservation) (England) Regulations 2012.

Existing Site Vegetation

1.5 The majority of the site is a sealed or broken Tarmac surface. The site has a small area of modified grassland to the north, with species present such as green alkanet *Pentaglottis sempervirens,* creeping buttercup Ranunculus repens and thistle Cirsium sp. A line of grade B lime Tilia sp. trees form the western boundary; there are scattered sycamore Acer pseudoplatanus and lime Tilia sp. along the southern and eastern boundaries.

Development Proposals

1.6 It is understood that the development proposals are as follows; The scheme proposals include the demolition of the existing buildings on site and the erection of a block of 11 residential flats, with associated garages, parking bays and a cycle store. Access to the site would remain the same, via Victoria Road.

2.0 ARBORICULTURAL IMPACT ASSESSMENT

2.1 This impact assessment is intended to evaluate the direct and indirect impacts on the trees on the site in relation to the proposed development. Any potential tree impacts below have been identified as per BS5837:2012 section 5.4, and details are given of proposed mitigation.

Removal of Trees and Vegetation

2.2 All trees on site will be retained within the scheme and will be protected using Tree Protective Barriers to prevent any incursion into the root protection area (RPA). The Tree Constraints Plan (Refer to LLD2650-ARB-DWG-001) and Tree Retention and Protection Plans (Refer to LLD2650-ARB-DWG-020-/-201) were drawn using a topographical survey of the site to ensure accurate location of trees and overlay of proposals.

Tree Pruning, Canopy Reduction, or Lifting

2.3 Some minor crown lifting and / or canopy reduction shall be required to allow adequate clearance between trees and built form and / or access roads. This work will be undertaken according to industry best practice BS3998:2010. Table 4 below details works to retained trees to facilitate development, which fall within levels of good arboricultural practice:

2.4 In order to facilitate the construction of the new building and associated pathways and roadways, the following tree surgery requirements are needed. To **T01**, A reduction to the northern and western aspects of the crown of 3.5m, is required. This will require a significant reduction to a primary limb. Care must be taken to retain as many surrounding small-diameter growth points as is possible to provide for suitable regeneration. **T02**, A reduction to the eastern aspect of the crown of 2.4m, the southern aspect by 1.5m is required and a crown lift of 2.2m is required to provide long-term clearance. **T03**, a reduction to the eastern aspect of the crown of 2.3m is required and a crown lift of 2.2m is required to provide long-term clearance. **T04**, a reduction to the northeastern aspect of the crown of 1.5m is required and a crown lift of 2.2m is required to provide long-term clearance. **T06** and **T07**, a crown lift to the western aspects of 3.5m is required to provide long-term clearance. **T08**, a reduction to the eastern aspect by of the crown of 1.5m and to the southern aspect by 1m is required to provide suitable clearance.

Construction access and storage

2.5 In the absence of mitigation, vehicular access might compact soils, harming tree roots. To avoid these impacts, there shall be a defined access route to and from all construction areas, and ground protection areas where access over RPAs is required.

2.6 Inappropriate storage of liquids such as fuel, paint or cleaning chemicals might result in spillages with a significant impact upon high value and or TPO trees. All such liquids will be stored at least 5.0 m from any RPA, and outside of any RPAs. Bunded containers with spill kits will be required and used to minimise the risk of spillage. This must be present on site before any work starts including ground preparations and tree works.

Disturbance to Root Protection Areas

2.7 The development proposals have been designed to retain all trees on site. In the absence of mitigation, there will be some disturbance to the following root protection areas. T01 will receive disturbance with the construction of the pile and beam foundation within the RPA and with the careful removal of the existing surfaces and the installation of the permeable hard-surfacing with the RPA. The location and density of piles are subject to site/ ground investigation. Construction details will be to the Engineer's specification.

2.8 There will be disturbance to the RPAs of **T02, T03, T04** and **T05** with the careful removal of the existing surfaces and the installation of the permeable hard-surfacing with the RPAs of these trees. Mitigation measures include the implementation of a no-dig construction method and the use of ground protection measures which shall minimise harm to these trees and ensure their retention. It is proposed to carefully break up surfaces under arboricultural supervision, whereupon any subbase or other such materials below will be manually dug out where necessary.

2.9 There will be disturbance to the RPAs of **T06,** and **T07**, with the careful removal of the existing surfaces and the installation of the permeable hard-surfacing with the RPAs of these trees. Mitigation measures include the implementation of a no-dig construction method and the use of ground protection measures which shall minimise harm to these trees and ensure their retention. It is proposed to carefully break up surfaces under arboricultural supervision, whereupon any subbase or other such materials below will be manually dug out where necessary. There will also be minor

disturbance to the RPA of **T08** when it comes to the landscaping and installation of the soft landscaping within the RPA. Any impacts concerning **T08** are considered negligible.

New Hard Surfaces Within Root Protection Areas

2.10 The proposals shall require the construction of new hard surfaces within the RPAs of trees **T01, T02, T03, T04, T06 and T07.**

2.11 The RPA's of the above trees shall be left undisturbed for as long as possible during the construction period in order to protect the tree-rooting zone. All tree protection fencing should stay in situ at the edge of the RPA for as long as practical, and should only be repositioned when works to install the new hard surface are to begin. Additional ground protection may be required at this point, as shown on the TRPP in Appendix B. When construction work is complete, the ground protection can be removed.

2.12 A 'no-dig' construction method will be utilised to allow the construction of new hard surfaces with the RPAs of the above trees without change of existing ground levels, in accordance with BS 5837:2012. The Arboricultural Method Statement describes the installation of a typical no-dig surface, such as Cellweb three-dimensional cellular confinement system. This follows the recommendations set out in Section 7.4 of British Standard 5837:2012. The final design of the no-dig construction shall be undertaken by the appointed engineer to ensure that it is suitable for the anticipated loading of the surface, however, any design shall be approved in writing by the project arboriculturist.

Building Construction within Root Protection Area's

2.13 The construction of the proposed main building into the RPA of **T01**. To allow the retention of these tree, the proposed building within the shall be constructed using pile and beam methods, designed to a suitable specification by the engineer. This shall allow for minimal disturbance to the soil beneath and therefore minimal impact on the roots of the adjacent tree, as advised in BS5837:2012 section 7.5. The adopted design shall be approved for use by the project arboriculturist. Proposed areas of pile and beam construction are shown in Appendix B, and detailed within the below Arboricultural Method Statement. Tree Protection Zone - 'Pile and Beam' Construction. Additional ground protection will be required here, an Operation Zone to enable construction work within the Root Protection Area is to be secured within the

RPA of existing trees with a ground protection layer, fit for the expected level of traffic, above a compression resistant layer for the duration of the construction period in accordance with BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'.

Installation of services

2.14 There will be potential significant negative impacts to multiple high-quality trees when it comes to the installation of services due to the proximity of proposed dwellings and gardens to trees and tree groups. Trenching will not be possible without significant negative impacts and disturbance. All services installation will need to avoid RPAs as this normally involves an amount of trenching. Should any service installation be required in the RPA a specialist method statement would need to be provided.

Future Pressures to Retained Trees and Hedges

2.15 The resulting proximity of the new structures to retained trees and hedgerows may result in the following pressures;

- the ongoing need to prune the canopy back to prevent damage to the building and facilitate maintenance of the building façade and glazing;
- altered soil conditions including access to water and gas exchange, resulting from proposed surfacing and construction of foundations;
- shading of the canopy of existing trees.

2.16 The majority of future pressures have been avoided through the layout of the scheme which ensures adequate clearance between retained trees and the development. There are no undue tree shading or canopy encroachment issues anticipated from retained trees towards the proposed buildings and amenity spaces (such as gardens). This has been achieved by suitable development buffers from retained trees which also allows for future canopy development. Retained trees will not be located within private gardens to ensure that their long-term management remains favourable.

2.17 There will be moderate ongoing pressures to prune back the northern aspect of the crown of **T01**. This would likely be limited to minor pruning to maintain a suitable distance between the building and the canopy. **T01** is located within The Richmond Road Conservation Area, therefore any such works would need prior approval. The will also be ongoing minor pressures to prune back the canopies of **T02, T03, T04,**

T05, T07 and T08 to provide suitable long-term clearance to the new paths and roadways.

2.18 The no-dig construction measures would ensure the soil conditions would not be majorly impacted through the construction of the development on site.

2.19 Leaf litter will be a minor issue providing that the surfacing takes note of the potential for leaf litter and is designed as such that it does not easily clog. The footpath beneath the tree is within the site itself therefore the general public would not have access to it, limiting the risk of slips and falls.

Tree and Hedgerow Loss Mitigation Measures

2.20 With the current proposals, no trees are proposed for removal and mitigation is in place to protect the trees on site.

2.21 It is recommended that a scheme of soft landscaping is submitted, this should include tree planting details which address any visual public amenity issues. The tree selection should be appropriate to the site conditions and species should be selected in accordance with any recommendations provided in the PEA and any subsequent ecology reports. Ideally, the species selected should be native and of proven ecological value to the local environment.

2.22 The locations and positioning of mitigation planting in relation to new or existing buildings should take full account of the final canopy height and spread of all trees included within the scheme. All planting should be located a sufficient distance from the predicted canopy line and rooting zones to avoid future pressures to undertake remedial works.

2.23 Provided that mitigation planting is in line with current guidelines and all other protection measures are properly enacted, the loss of trees from the site would be adequately compensated and the proposals would accord with the requirements of BS5837.

Conclusion

2.24 The protection, compensation and enhancement detailed herein have been designed to ensure the ongoing favourable status of retained trees and vegetation, and the species which use these. Additionally, adherence to the methods detailed will ensure that all works accord with the relevant wildlife legislation and planning conditions.

3.0 ARBORICULTURAL METHOD STATEMENT

Pre-Construction Meeting

3.1 A pre-construction meeting will take place between the Construction Manager and Project Arboriculturalist to discuss the programme of works and the timing and implementation of control measures.

Phasing of Operations

3.2 Implementation of tree protection shall be carried out as follows:

1) Tree surgery
2) Tree protection fencing set out by the surveyor in accordance with approved plans.
3) Tree protective fencing installed and any ground protection installed as required.
4) Fencing and ground protection are to be inspected by the project arboriculturist.
5) Site set up including haulage routes and site compound.
6) Demolition / Site clearance followed by construction.
7) Inspection of any areas of construction within RPA's by project arboriculturist.
8) Removal of tree protective fencing.
9) Remedial tree surgery works (if required).

Contractor Induction

3.3 The key requirements of this method statement will be explained during site inductions for contractors. Trees and tree groups that are to be retained and protected will be identified before works commence. A copy of the AMS and TTP will be retained in the site offices for reference.

Arisings should not be disposed of by burning on site unless:

- other options are impracticable, or the material is affected or likely to become affected by a disease or pest for which sanitation is a necessary form of control.

- NOTE: Attention is drawn to regulations made under: The Clean Air Act 1993, The Plant Health Act 1967, The Weeds Act 1959, and the Wildlife and Countryside Act 1981, in respect of the prevention of the spread of plant and soil pests.

Tree Surgery

3.4 All tree work as detailed within the Tree Retention and Protection Plan shall be undertaken by an approved and qualified tree surgeon in accordance with *BS 3998: 2010 'Tree Work: Recommendations'*. Care should be taken to avoid damage to neighbouring trees to be retained. Branches in confined spaces shall be removed and taken down in sections.

3.5 Stumps to be removed should be cut away so that the top of the stump shall be at least 450 mm below the final topsoil level in order for the site can be reinstalled in accordance with the existing site levels. Where the depth is greater than 450 mm the areas shall be backfilled with topsoil to the required level.

3.6 Options for retention of and management of stumps, particularly those arising from dead trees should be considered as these subterranean deadwood habitats are of great ecological benefit. These stumps should not be treated with any form of pesticide or chemical application as this can be detrimental to the remaining trees, and local ecology.

3.7 The height of stumps for retention should be determined by management objectives and or site-specific conditions. Stumps should be left in a safe condition and or location that does not pose a hazard.

3.8 The removal of shrub or scrub material within the Root Protection Area of any tree to be retained shall employ a Manual Removal method; the use of hand tools shall be used in order to maintain the ground surface of the Root Protection Area and reduce any damage to existing tree roots within the protected root zone. Adjacent trees shall not be utilised as anchors or levers to facilitate the removal of adjacent vegetation.

3.9 Vegetation clearance should take place outside the bird nesting season (*nesting season: March-September inclusive*) or alternatively under a watching brief from an ecologist or suitability-qualified professional.

Tree Surgery and Removal Works– Arisings

3.10 The disposal, utilisation and retention of arisings must be in line with BS 3998: 2010 'Tree Work: Recommendations'. Retaining arisings on or near the site can have conservation benefits and allows the gradual recycling of the mineral nutrients and carbon that they contain. Effective financial gains can be achieved with efficient arisings management planning.

3.11 Before any work on a tree commences, it should be agreed on what is to happen to the arisings (such as retained or removed from the site). Any arisings remaining on the site should be stored safely in locations agreed with the client. The following should be taken into account when deciding what is eventually to be done with the arisings:

- Site usage: access, space, and safety;
- Scope for utilisation (such as use of woodchip for mulch, weed suppressant, etc.)
- Wildlife and habitat, particularly where veteran trees are present and invertebrate colonisation is likely.
- The disposal, utilisation and retention of arisings must be in line with BS 3998: 2010 'Tree Work: Recommendations'. Retaining arisings on or near the site can have conservation benefits and allows the gradual recycling of the mineral nutrients and carbon that they contain.

Tree Protection Fencing

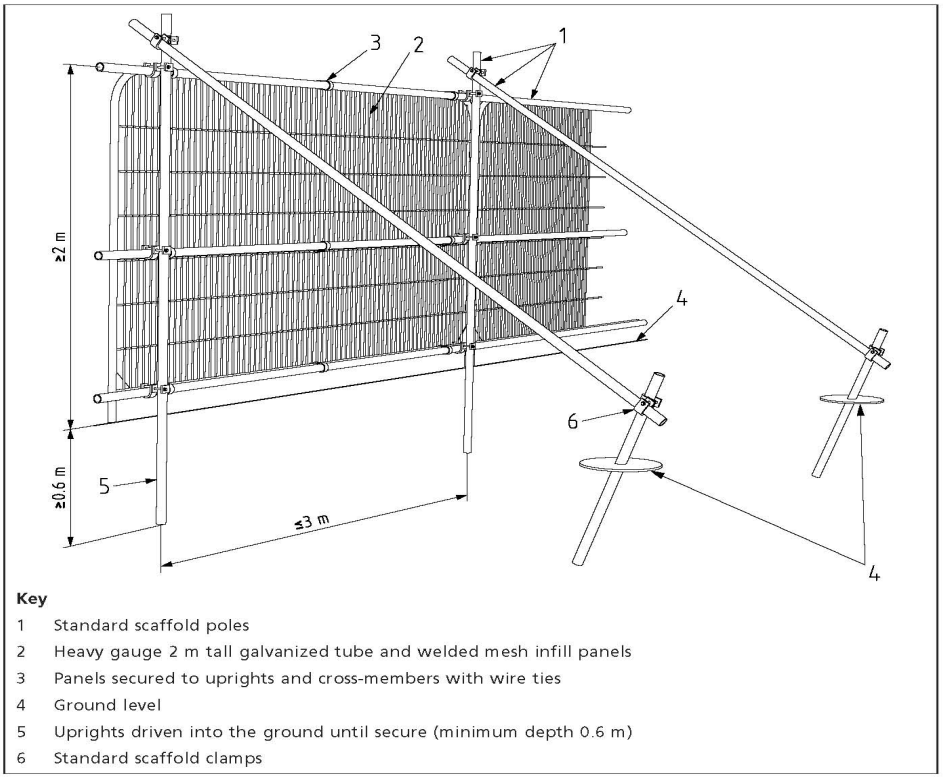
3.12 All trees to be retained on site shall be protected with barriers installed at the location as shown in the TRPP in Appendix B. The barrier shall be installed, protected and maintained during the main works by the appointed contractor.

3.13 The installed protective barrier shall be 2.0 metres minimum height 'Heras' Welded Wire Mesh Fencing secured to a scaffolding framework, set into the existing ground, and positioned to the outside edge of the existing Tree Root Protection Area. Where existing ground conditions do not allow for the above method, the Welded Wire Mesh Fencing Panels may be mounted on concrete or rubber feet, supported on the inner side with stabilizer struts fixed on a block tray or secured with ground pins, and positioned as specified. The barrier should be strained, and fixed to fences, walls, and knee rails where possible to provide a completely protected area *(refer to Figure 2 and Figure 3 below; © British Standards Institute 2012)*. All tree protection is to be in

accordance with *BS 5837: 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'*.

3.14 Any requirement for modifications to the prescribed protection fencing specification, for example where installation space is restricted, will be discussed and agreed upon with the Project Arboriculturist before being implemented.

Figure 2 **Default specification for protective barrier**



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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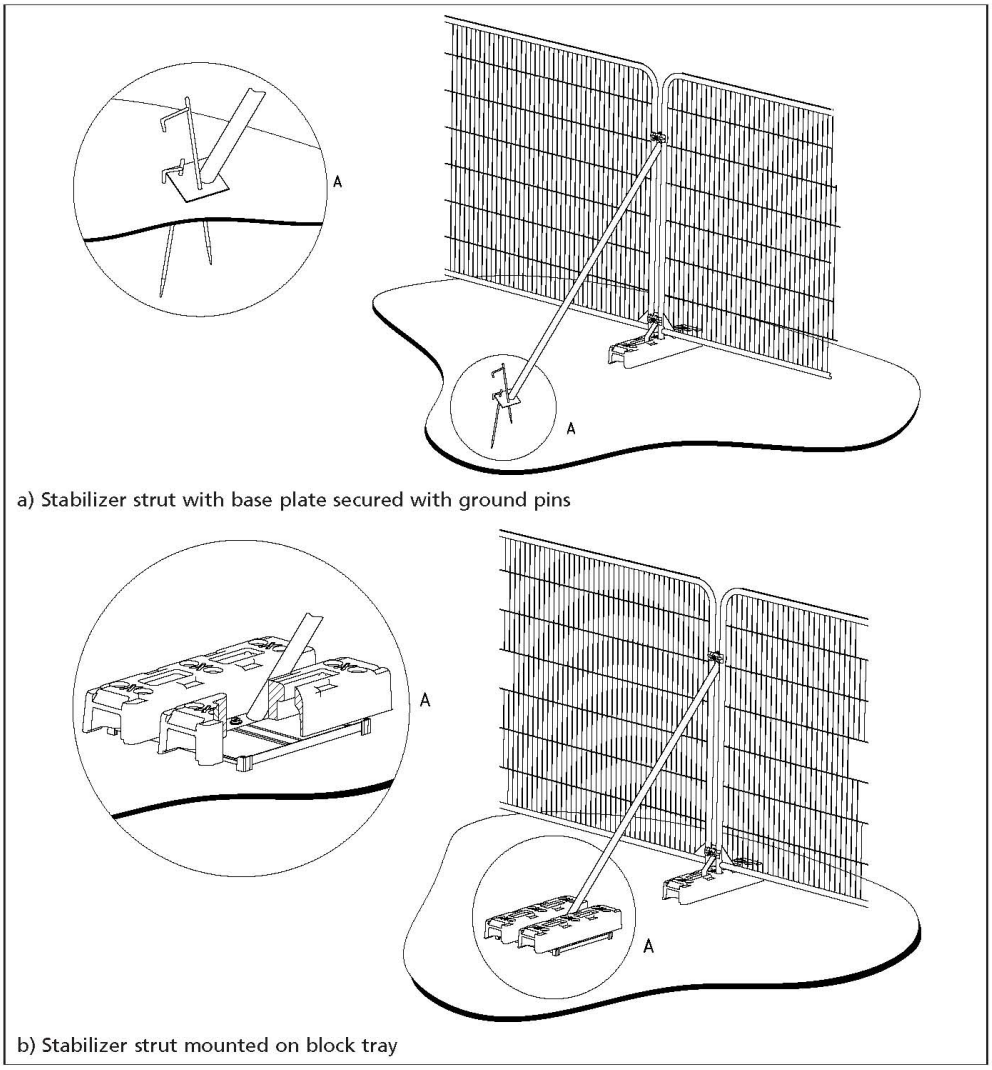
Figure 3 **Examples of above-ground stabilizing systems**



3.15 Day-Glo ribbons shall be maintained during the main works by the Main Contractor attached to the top of the barrier to ensure that the fencing is clearly visible during the works. The tree protection barrier shall display all-weather notices starting '*Construction Exclusion Zone – NO ACCESS*'.

3.16 Once installed the protection fencing will be inspected by the Project Arboriculturalist before any construction works begin;

3.17 All such barriers shall be maintained for the full contract period. The Construction Manager will be directly responsible for ensuring the protection fencing remains rigid and complete during the entire works programme. Repairs will be acted upon immediately to ensure continued protection.

3.18 Within the protected areas the following activities must not take place;

- No vehicles are to be used in the fenced-off areas;
- No materials are to be stockpiled or stored;
- No chemicals are to be stored;
- No excavation or increase in the soil level shall occur;
- No fires shall be lit on site.

Site Compound, Haulage Routes and Car Parking

3.19 All site compounds, car parking and haul routes will be located outside of tree protection fencing. The compound area shall be located to not incur damage or injury to the root systems or canopy of any existing trees or vegetation within or adjacent to the site, in accordance with BS 5837:2012 – 'Trees in Relation to Design, Demolition and Construction – Recommendations'. All site operations associated with the usage of the compound area shall be undertaken with due care and attention to negate damage to the surrounding environment.

Protection and Retention of Existing Trees and Habitats

3.20 The Contractor shall exercise due care when performing operations beneath the canopy of existing mature trees and vegetation designated for protection and avoid at all times damage to the roots, trunk and branches.

3.21 The Contractor shall train all members of the construction workforce operating within the proximity of valued habitats and make such persons aware that there shall not be, without having sought prior notification, the following operations undertaken within the protected areas:

- Dumping of spoil or rubbish, excavation or disturbance of topsoil, parking of vehicles or plant, storing of materials or placing of temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk, and within the specified Root Protection Areas;
- Severance of roots exceeding 25 mm in diameter. If unintentionally severed; notice shall be given, and specialist arboricultural advice sought;
- Changes to the level of the ground within the specified Root Protection Areas;

- Vegetation clearance to site boundaries during the bird nesting season (nesting season: March-September inclusive). Any clearance must be undertaken outside nesting season or alternatively under a watching brief from a suitability-qualified ecologist.

Ground Protection Measures

3.22 Where construction operations require activity within the exposed unmade ground of any existing tree Root Protection Area, temporary ground protection measures should be implemented as shown on the TRPP. The ground protection measures should be accurately laid out by a surveyor, and implemented before the main construction works.

3.23 Ground protection must be fit for the purpose of supporting the level of traffic entering or using the site within RPAs without being distorted or causing compaction of the underlying soil. The appropriate solutions include:

- For pedestrian movements or the erection of scaffolding within the RPA – a single layer of scaffold boards either on top of a driven scaffold frame, to form a suspended walkway, or on top of a compression-resistant layer, e.g., 100 mm depth of woodchip laid onto a geotextile;
- For pedestrian-operated plant (up to a gross weight of 2 t) – proprietary, inter-linked ground protection boards or panels laid on top of a compression-resistant layer, e.g., 150 mm depth of woodchip laid onto a geotextile membrane;
- For vehicular access (exceeding a gross weight of 2 t) – an alternative system subject to the engineer's specification appropriate for expected loads, is designed in consultation with the project Arboriculturist.

3.24 The process for installation of ground protection is as follows:

1) Discuss the procedure with the project arboriculturist.

2) Dismantle primary protection fencing and re-erect in secondary location as shown in Appendix B.

3) Any shrubs, saplings, or trees to be removed, are to be cut, or ground out to just below ground level rather than grubbed or winched out, which can damage the roots of retained trees.

4) Lay woven geotextile over existing ground surface by hand.

5) Cover the area with a compressible layer, woodchip, for example, using hand tools only.

6) Cover the compressible layer with side butting scaffold boards or plywood boards.

7) Confirm surface is acceptable for use with the project arboriculturist.

8) Area ready for construction access.

Manual Excavation

3.25 Where the development proposals necessitate the tying in and re-grading of existing and proposed levels for vehicular access or include the implementation of underground services such as services, cables, and pipe work; a *'Manual Excavation Method'* must be assumed using handheld tools to minimise the impact on existing trees. The excavation should be executed with due care and attention not to disturb exposed unmade ground and any existing tree roots present within it.

3.26 Roots over 25mm in diameter or those occurring in clumps must not be severed without Arboricultural advice. Tree roots below such size should be cut cleanly using specialised hand tools only and to the minimum extent to allow provision. All exposed roots should be immediately wrapped in dry Hessian to avoid drying. On completion of the excavation and at the earliest opportunity the wrapping should be removed, and the roots surrounded and protected with a loose granular fill (clean washed sharp sand or topsoil free of contaminants or matter injurious to rooting systems) prior to backfilling the excavation to the desired levels.

Demolition in Proximity to Trees

3.27 Sensitive demolition of buildings and structures within RPA's will occur under supervision from the project arboriculturist. Any existing tree protection fencing shall be removed to allow access to the demolition area. Buildings shall be demolished in such a way that the building folds in on itself. Debris may be removed by plant machinery provided appropriate ground protection is in place and no incursion into unprotected soft ground occurs.

3.28 The floor of the building / surrounding hard standing is to be broken up and carefully removed from the RPA. Underlying ground levels are to be retained and any exposed roots and newly exposed areas of soft ground are to be covered with up to 100mm of topsoil (to BS3882:2015). Soil must be spread by hand to avoid compaction of the RPA. Tree protection fencing must be re-installed at the agreed location on completion of demolition works.

3.29 Best practice must be adhered to at all times to avoid any contamination of the soil by fuel or other chemicals. If such a situation arises the project arboriculturist must be notified to assess the situation and prescribe remedial measures.

Pile and Beam Construction

3.30 The use of traditional strip footings can result in damage to roots and subsequent failure of trees and should therefore be avoided. For the purpose of retention of good quality trees, the application of specially engineered structures and solutions that would minimize impact on the existing trees are acceptable alternatives. A site-specific and specialist advice regarding foundation design should be sought from the Project Engineer.

3.31 In shrinkable soils, the foundation design should take into account the risk of indirect damage.

3.32 Root damage can be minimised by the implementation of pile and beam construction techniques. The following aspects of the design should be accounted for:

3.33 Piles – optimal location determined through site investigation, to avoid damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement (air lance), to a minimum depth of 600 mm. The smallest practical pile diameter should be used to minimize the risk of striking a major root. The smallest

practical pile rig should be used to facilitate works within the canopy spread of existing trees. To protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, the use of sleeved bored pile or screw pile should be accounted for;

3.34 Beams – laid at or above ground level and cantilevered as necessary to avoid tree roots identified by site investigation.

New Hard surfacing within Root Protection Areas

3.35 Where new surfacing and means of access within Root Protection Areas have been proposed, the construction method should be implemented to avoid intrusion into or change of existing ground levels within the tree Root Protection Areas of existing trees.

3.36 A 'No Dig' Construction should allow for the paving of specified areas within or adjacent to tree Root Protection Areas to be constructed without disturbance to root systems.

3.37 Ground levels should not be raised or lowered within the existing tree Root Protection Areas. A permeable surface treatment should be laid over the existing ground allowing water to permeate and allow for nutrient access and gaseous exchange.

3.38 The construction area / existing ground within the existing tree RPA is to be overlain with a geo-membrane and covered with a granular fill of no fines - open-graded aggregate incorporated within a 3-dimensional cellular confinement system. This should ensure a minimum supportive depth of 200mm for vehicular access/ 100mm for pedestrian footpaths, above which a permeable surface treatment should be laid. The pH of the aggregate must be near neutral to avoid damage to pH-sensitive tree species.

3.39 Existing paving material overlying the RPA of existing trees should be left undisturbed during the construction period in order to protect the Root Protection Area of the tree to be retained. The existing paving/ hard standing can then be reused as a base for the proposed surfacing, subject to the Engineer's specification.

3.40 All retaining kerb restraints/edge supports are to be secured above ground and no general excavation within existing tree RPAs should be permitted.

3.41 Where stepped or ramped access has been proposed within the RPAs of existing trees, this should be constructed with limited disturbance to the existing ground. A raised frame supported upon posts concreted in the ground is recommended. The holes for footing to posts should be dug out using handheld tools. The sides of the holes should be lined with an impermeable membrane to prevent the caustic and toxic effects of wet cement in the concrete from damaging tree roots.

Services in Proximity to Existing Trees

3.42 The location and direction of new services should be designed to allow for services to be routed away from the RPAs of existing trees. Existing service runs should always be used wherever possible.

3.43 Where the proposed routing of services impinges upon the tree RPA of any existing tree to be retained; the routing should be undertaken as a minimum standard in accordance with *NJUG Volume 4, issue 2: 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'*.

3.44 A 'Manual Excavation Method' is to be followed to carefully hand-dug and route the apparatus most directly to and from the exterior of the RPA radius.

3.45 Services are to be routed together wherever possible to create the minimum impact upon the roots of the existing trees to be retained. Trench excavation across the tree Root Protection Area radius beside an existing tree should be avoided, whereby tree roots would become severed. Where services are to cross the edge of an existing RPA, they should be routed via a hand-dug ducting sleeve, avoiding damage to roots.

Installation of Fencing

3.46 Proposed new fencing to residential gardens shall be installed following the removal of tree-protective fencing and ground protection measures. Post holes within the RPAs shall be manually dug, and shall not sever any major roots. Roots over 25mm in diameter or those occurring in clumps must not be severed without Arboricultural advice. Where absolutely necessary, tree roots below such size should be cut cleanly to the minimum extent to allow works to proceed.

Hard and Soft Landscaping

3.47 The Arboricultural Consultant should review any landscape operations that involve any work within the RPAs of retained trees and input additional site-specific methodology where necessary.

3.48 The existing ground levels within the RPA of the retained trees must be retained and incorporated into the finished landscaped development. Where changes in level occur these are to be either graded into the finished levels starting outside the RPA or alternatively, retaining wall structures are to be used to differentiate between the different levels.

3.49 All soft and hard landscaping within the RPAs must be carried out manually and the soil levels must not be lowered or raised resulting in root damage to the trees. All finished surfaces are to be porous to allow the free movement of water and gaseous exchange to the roots.

Future Tree Surgery Works - Dead branches

3.50 All deadwood features should be managed in accordance with BS 3998-2010: Tree work Recommendations.

- Safety needs should be balanced against wildlife habitat protection.
- Dead branches should be shortened or if necessary, removed if they pose an unacceptable risk to people or property and if other options (e.g. diverting a footpath) are not practicable.

3.51 When deciding whether dead branches or dead trees should be retained and, if so, to what extent they might need to be pruned, a balance should be made between the mitigation of risk and the maintenance of wildlife habitats. The unnecessary loss of deadwood habitats should be avoided when specifying pruning or other works, particularly if legally protected species are using the tree. The following risk factors should be taken into account:

- the location (e.g., whether the deadwood overhangs a target that cannot be readily moved, such as a highway);
- the wood properties and decay characteristics of the species concerned.
- the size of the deadwood.

Further Ecological Enhancement Methods

3.52 Further enhancement can be/will be achieved with the utilisation of arisings resulting from vegetation removal or clearance works within the site.

3.53 Arisings will be retained for use as deadwood habitat log piles at the base of the existing trees and woodland foliage. Piles shall be made from arisings of native vegetation taken from the site or surrounding areas where possible. Piles should contain both larger logs (with gaps between), brash and branches and smaller leaf litter and cuttings/ grass clippings, to create varied conditions.

3.54 All branches and stems larger than 75mm in diameter, can/will be retained for use as deadwood habitat log piles at the base of the existing foliage. These are best left in lengths of a metre or more, but smaller sections will also be suitable. In suitable areas, these can also be pushed under the bottom of the hedgerows and areas of scrub where they will provide suitable habitat for a plethora of invertebrates and in turn suitable refuge and forage for small mammals, birds, reptiles, and amphibians.

3.55 Retaining arisings on or near the site can have conservation benefits and allows for the gradual recycling of the mineral nutrients and carbon that they contain which will further enrich the trees on site.

Ongoing Management of Tree, Hedges and Native shrubs

3.56 To ensure the trees and/ or hedges continue to be a useful ecological feature, they shall not be cut overly frequently and shall be allowed to become relatively dense and tall. Any hedges on site shall be cut outside of the bird nesting season (which generally runs March-August inclusive) and not more than once every three years. Minor trimming of stray branches over paths etc. can be carried out more regularly if required.

3.57 Any sections of new planting or failed newly planted trees will need to be replaced and species and sizes will have to be matched with what has been lost.

4.0 SCHEDULE OF SUPERVISION

4.1 To ensure works accord with the recommendations and the British Standard, works shall proceed as per the below schedule of supervision. Photographic evidence shall be taken at each stage such that a final completion report can be provided.

Table No. 05 – Schedule of Supervision

Works	Responsibility	Notes	Sign off & Date
Pre-commencement Meeting	Construction Manager and Project Arboriculturist	To discuss the programme of works, the timing and implementation of the tree works and the tree protection measures.	
Tree Surgery works	Construction Manager and Project Arboriculturist	Project Arboriculturist to mark trees for removal and/or surgery works.	
Installation of tree protective fencing and ground protection	Construction Manager and Project Arboriculturist	Set out as per TRPP. Fencing and ground protection measures are to be inspected by the project arboriculturalist.	
Monthly inspection of protective fencing	Construction Manager	Construction manager to inspect fencing. Any issues are to be reported to the project arboriculturalist.	
Demolition within RPA's	Construction Manager	All works are conducted as per the method statement. Photographic record to be sent to project arboriculturalist to evidence works.	
Trial Pits	Construction Manager and Project Arboriculturist	Trail pits are to be dug at an agreed location under arboricultural supervision.	
Manual excavation within RPA's	Construction Manager	Works undertaken in accordance method statement. Project arboriculturalist to be contacted should roots larger than 25mm diameter be encountered.	

Installation of hard surfaces within RPA's.	Construction Manager, Engineer and Project Arboriculturist	All works are conducted as per the method statement. Specification of no-dig construction is to be agreed upon with the engineer and arboriculturalist. Photographic record to be sent to project arboriculturalist to evidence works.	
Building Construction within RPA's	Construction Manager, Engineer and Project Arboriculturist	All works are conducted as per the method statement. Specification of foundation design to be agreed with engineer and arboriculturalist. Photographic record to be sent to project arboriculturalist to evidence works.	
Removal of tree protective fencing	Construction Manager and Project Arboriculturist	Only to be removed at the end of the construction period and following authorisation from the project arboriculturalist.	

Appendix A – Tree Survey Schedule

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EXISTING TREE SCHEDULE

Prepared	GO
Approved	JJ
Date	21/08/2024
Project Reference	LLD2650
Revision	2
Status	PLANNING

Tree No.	*Species*	*Diameter @1.5m*	*Height (approx.)*	*Spread (approx.)*	*Age*	*Condition/Preliminary Recommendations*	*Category*	*Status*
T 01	*Acer pseudoplatanus* (Sycamore); **(7.8m Radius of nominal circle; RPA 191m²)**	637 mm	14.0 m Clear Stem Height 5.0 m	N: 5.0 m E: 6.0 m S: 6.0 m W: 6.0 m	Mature Estimated Remaining Contribution 20 + Years	Upright form with a relatively even crown. Growing next to the wall, the main union is a compression union at 2.5m. Overall displaying normal vitality. *** Recommendations; Tree surgery requirements. A reduction to the northern and western aspects of the crown of 3.5m, is required. This will require a significant reduction to a primary limb. Care must be taken to retain as many surrounding small diameter growth points as is possible to provided for suitable regeneration.	B 1	**Retain**
T 02	*Tilia sp.* (Lime sp.); **(3.9m Radius of nominal circle; RPA 48m²)**	318 mm	10.0 m Clear Stem Height 1.5 m	N: 3.0 m E: 4.0 m S: 3.0 m W: 3.0 m	Semi-Mature Estimated Remaining Contribution 20 + Years	Within the row of 3, set along the western boundary within modified grassland. Overall displaying normal vitality. *** Recommendations; Tree surgery requirements. A reduction to the eastern aspect of the crown of 2.4m, the southern aspect by1.5m is required and a crown lift of 2.2m is required to provide long term clearance.	B 2	**Retain**
T 03	*Tilia sp.* (Lime sp.); **(3.6m Radius of nominal circle; RPA 41m²)**	286 mm	10.0 m Clear Stem Height 1.0 m	N: 3.0 m E: 4.0 m S: 4.0 m W: 4.0 m	Semi-Mature Estimated Remaining Contribution 20 + Years	Within the row of 3, set along the western boundary within modified grassland. Overall displaying normal vitality. *** Recommendations; Tree surgery requirements. A reduction to the eastern aspect of the crown of 2.3m is required and a crown lift of 2.2m is required to provide long-term clearance.	B 2	**Retain**

Tree No.	*Species*	*Diameter @1.5m*	*Height (approx.)*	*Spread (approx.)*	*Age*	*Condition/Preliminary Recommendations*	*Category*	*Status*
T 04	*Tilia sp.* (Lime sp.); **(2.4m Radius of nominal circle; RPA 18m²)**	178 mm	8.0 m Clear Stem Height 2.0 m	N: 2.0 m E: 2.0 m S: 2.0 m W: 2.0 m	Semi-Mature Estimated Remaining Contribution 10 + Years	Within the row of 3, set along the western boundary among modified grassland. This is the smallest and most northern tree in the group. Overall displaying normal vitality. *** Recommendations; Tree surgery requirements. A reduction to the northeastern aspect of the crown of 1.5m is required and a crown lift of 2.2m is required to provided long term clearance.	C 2	**Retain**
T 05	*Acer pseudoplatanus* (Sycamore) **(7.8m Radius of nominal circle; RPA 191m²)**	637 mm (Estimated)	14.0 m Clear Stem Height 3.0 m	N: 6.0 m E: 6.0 m S: 6.0 m W: 5.0 m	Mature Estimated Remaining Contribution 20 + Years	Off-site tree growing directly next to wall. Even round crown. No access for detailed inspection. Overall displaying normal vitality.	B 1	**Retain**
T 06	*Tilia sp.* (Lime sp.); **(3.9m Radius of nominal circle; RPA 48m²)**	318 mm (Estimated)	12.0 m Clear Stem Height 2.5 m	N: 4.0 m E: 3.0 m S: 3.0 m W: 4.0 m	Mature Estimated Remaining Contribution 20 + Years	An off-site tree growing directly next to the wall. Old ivy is present and evidence of previous pollarding. The lower crown is reduced to the south over the adjacent garden. No access for detailed inspection. Overall displaying normal vitality. Tree surgery requirements. A crown lift to the western aspect of 3.5m required to provide long term clearance. Tree Surgery operations to be in accordance with BS 39998:2010 'Tree Works - Recommendations.'	B 1	**Retain**

Tree No.	*Species*	*Diameter @1.5m*	*Height (approx.)*	*Spread (approx.)*	*Age*	*Condition/Preliminary Recommendations*	*Category*	*Status*
T 07	*Acer pseudoplatanus* (Sycamore); **(3.6m Radius of nominal circle; RPA 41m²)**	286 mm (Estimated)	12.0 m Clear Stem Height 3.0 m	N: 4.5 m E: 4.0 m S: 4.0 m W: 4.5 m	Early Mature Estimated Remaining Contribution 20 + Years	Off-site tree growing adjacent to boundary wall. Hawthorn to base. Crown growth is held to the north away from surrounding vegetation. No access for detailed inspection. Overall displaying normal vitality. Tree surgery requirements. A crown lift to the western aspect of 3.5m required to provide long term clearance. Tree Surgery operations to be in accordance with BS 39998:2010 'Tree Works - Recommendations.'	B 1	**Retain**
T 08	*Prunus sp.* (Cherry sp.); **(2.4m Radius of nominal circle; RPA 18m²)**	188 mm (Estimated)	4.5 m Clear Stem Height 1.0 m	N: 2.0 m E: 4.0 m S: 3.0 m W: 2.0 m	Young Estimated Remaining Contribution 10 + Years	One main stem. One-sided form with the crown leaning to the east. Overall displaying normal vitality with a scrappy form. *** Recommendations; Tree surgery requirements. A reduction to the eastern aspect by of the crown of 1.5m and to the southern aspect by 1m is required to provide suitable clearance.	C 1	**Retain**

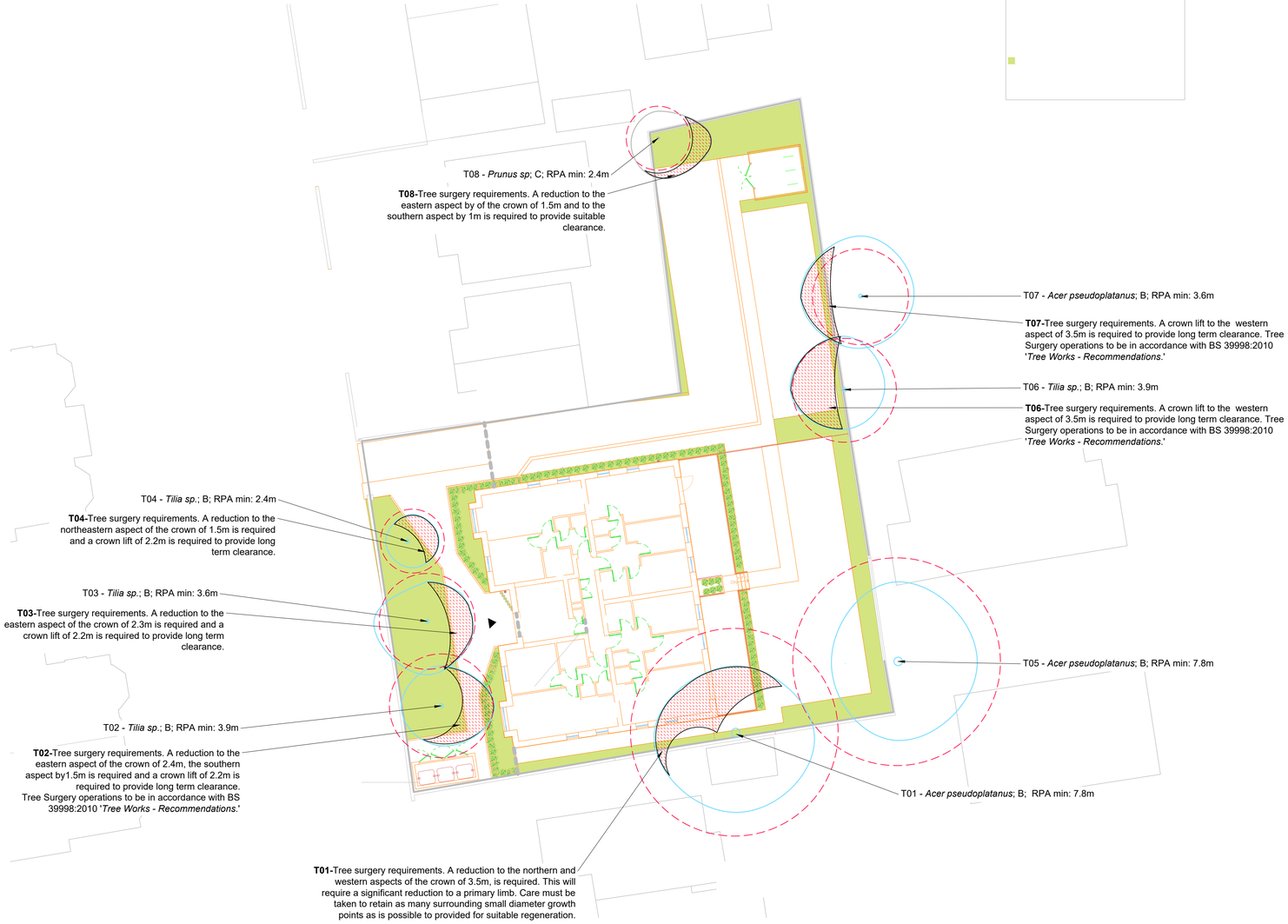
CATEGORY DIVISION - *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'*

Trees to be considered for retention	***1.*** *Mainly Arboricultural Qualities*	***2.*** *Mainly Landscape Qualities*	***3.*** *Mainly cultural values, including conservation*
Category A - *Trees whose retention is most desirable to include; trees of high quality having an estimated longevity of over 40 years;*	- Trees that are particularly good examples of their species, especially if rare or unusual	- Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	- Trees of significant historical, commemorative or other value, or good specimens of rare or unusual species
Category B - *Trees where retention is desirable to include; trees of moderate quality having an estimated longevity of over 20 years;*	- Trees that might be included in the higher category, but because of significant impaired but remediable condition are downgraded	- Trees present in numbers offering a higher collective categorisation than as individually rated; trees occurring in groups but due to situation, offering little contribution in the context of the wider locality	- Trees having some material conservation or cultural value
Category C - *Trees of low quality having an estimated longevity of over 10 year, or young trees with a stem diameter below 150mm;*	- Trees in adequate or impaired condition, or those which can be retained with minimal tree surgery, but not worthy for inclusion in the high or moderate category	- Trees present in numbers without having significant landscape value	- Trees having no material conservation or other cultural value

Trees unsuitable for retention ***Category U*** *- Trees not for retention within the context of existing land use;*	- Trees that are unviable due to serious, irremediable structural defect; early loss is expected due to collapse; - Trees that are dead or showing signs of significant, immediate, irreversible decline; - Trees infected with pathogens of significance to health and subsequent safety, and threat thereof to trees nearby; - Trees of very low quality suppressing the development of those of greater quality; - Trees that will become unviable after the removal of other trees for reasons above.

CSD *– Combined Stem Diameter;*
- Root Protection Areas calculated for multiple stemmed trees based upon a combined stem diameter in accordance with *BS 5837:2012.*

Appendix B – Tree Retention and Protection Plan



N

0 1 2.5 5 10 m

Scale 1:200

Tree Works Plan
The Scout Hut, Victoria Road, Worthing

Legend

- **T02** — **Tree and Shrub Numbers.**
- **Tree Root Protection Areas** — Tree Root Protection Areas calculated and specified in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'*.
- **Category B Trees** — Trees of Moderate Quality and Value.
- **Category C Trees** — Trees of Low Quality and Value.
- **Proposed Structures**
- **Proposed Tree Surgery Works** — Existing trees to have crown reduced prior to protection measures being implemented. Tree Surgery operations to be in accordance with *BS 3998:2010 - 'Tree Works - Recommendations'*.

Notes:
1. Drawing to be read in colour.
2. For details of existing trees and vegetation refer to: *LLD2650-ARB-SCH-001 - Existing Tree Schedule;*
3. *For assessment of effects of the proposed development on existing trees refer to LLD2650-ARB-REP-001- Arboricultural Impact Assessment and Method Statement.*

PLANNING ISSUE

Rev	Description	Date	Initials
02	Planning Issue	22.08.24	GO
01	Draft Issue	21.08.24	GO
00	Draft Issue	17.11.22	HS

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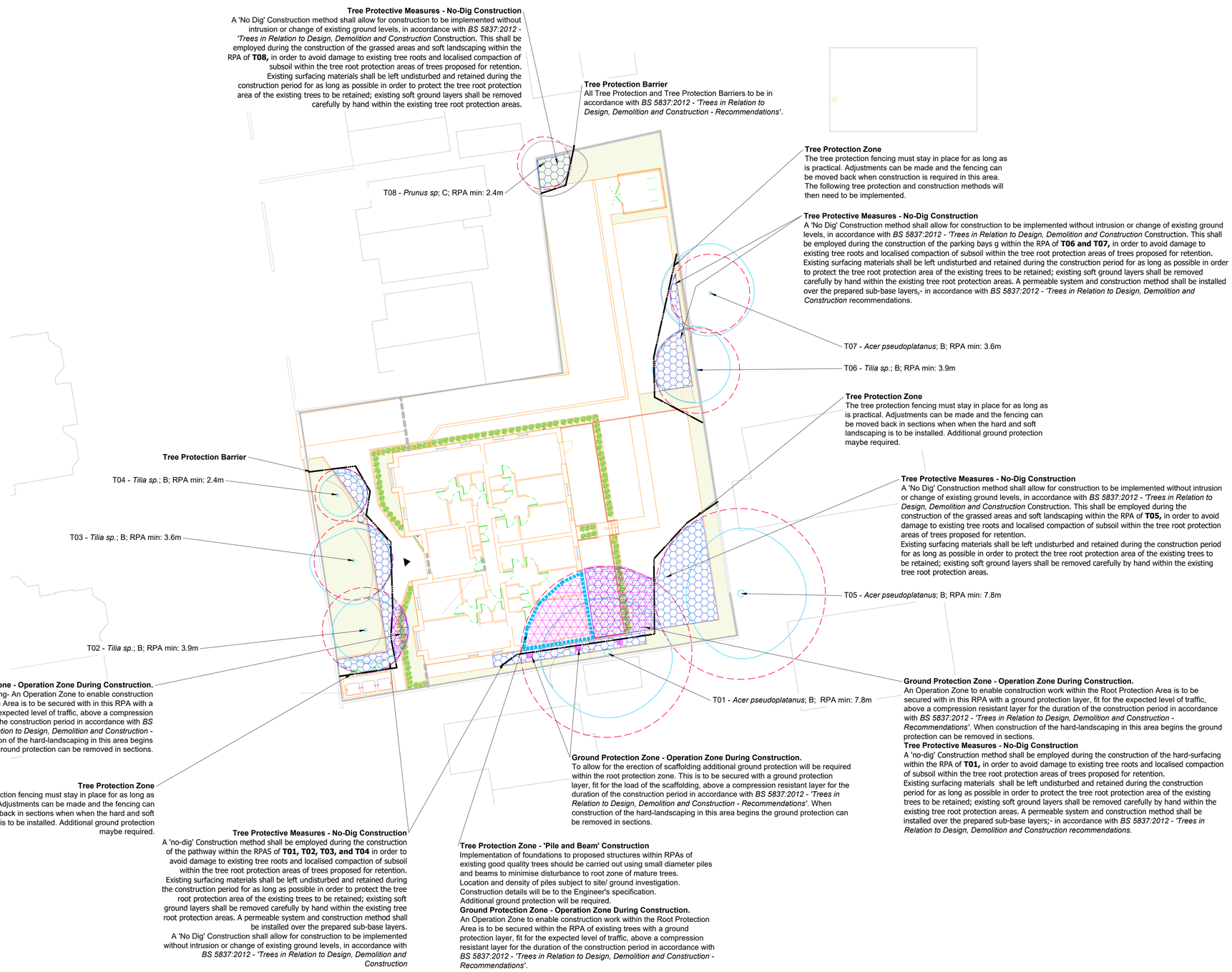
Client
Adur and Worthing Council
Project Title and Location
The Scout Hut, Victoria Road
Victoria Road, Worthing
Drawing Title
Tree Works Plan

Scale	*Drawn*	*Approved*	*Date*
A1@1:200	GO	JJ	17/11/22

Drawing No **LLD2650-ARB-DWG-020** *Revision* 02



N

0 1 2.5 5 10 m

Scale 1:200

Tree Retention Protection Plan
The Scout Hut, Victoria Road, Worthing

Legend

- **Tree and Shrub Numbers.** (T02)
- **Tree Root Protection Areas** Tree Root Protection Areas calculated and specified in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'*.
- **Category B Trees** Trees of Moderate Quality and Value.
- **Category C Trees** Trees of Low Quality and Value.
- **Proposed Structures**
- **Proposed Tree Surgery Works** Existing trees to have crown reduced prior to protection measures being implemented. Tree Surgery operations to be in accordance with *BS 3998:2010 - 'Tree Works - Recommendations'*.

Notes:
1. Drawing to be read in colour.
2. For details of existing trees and vegetation refer to: *LLD2650-ARB-SCH-001 - Existing Tree Schedule;*
3. *For assessment of effects of the proposed development on existing trees refer to LLD2650-ARB-REP-001- Arboricultural Impact Assessment and Method Statement.*

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Drawing Title
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Scale	*Drawn*	*Approved*	*Date*
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