

**LAND AT BAYARDS, LEVEL MARE LANE,
EASTERGATE
ARBORICULTURAL IMPACT ASSESSMENT
27th AUGUST 2021**



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Landscape Design and Ecology

ARBORICULTURAL IMPLICATIONS ASSESSMENT AND METHOD STATEMENT

LAND AT BAYARDS

LEVEL MARE LANE, EASTERGATE

Reside Developments Limited

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Appendix A – Site Parameter Plan

1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned to undertake a dendrological survey and produce arboricultural documentation for the proposed development at Bayards, Level Mare Lane, Eastergate.
- 1.2 The Arboricultural Implications Assessment and Method Statement report provides assessment of the direct and indirect effects of the proposed design and where necessary recommends mitigation.
- 1.3 The Arboricultural Implications Assessment and Method Statement report for the development at Bayards has been prepared by George Sayer(MCIEEM MArborA); Senior Ecologist at Lizard Landscape Design and Ecology, Worthing.
- 1.4 This written Arboricultural Implications Assessment and Method Statement should be read in conjunction with the associated tree survey documentation, including *LLD2327-ARB-DWG-001 – Tree Constraints Plan*, *LLD2327-ARB-SCH-001 – Existing Tree Schedule* and *LLD2327-ARB-DWG-002 – Tree Retention and Protection Plan*.

Existing Site Information

- 1.5 The site consists of a field formed of horse grazing paddocks, surrounded by a large treeline/wooded shaw to the east and sparse treelines / hedges to all other aspects. The red-line boundary covers a total area of approximately 2.1 hectares (Ha).
- 1.6 The site is bounded by Level Mare Lane to the north; the approved Northfields/Fontwell Avenue site to the east; the Bayards stables to the north-west and a track with residential dwellings to the south-west.

Existing Site Vegetation

- 1.7 The site consists of paddocks, with the only vegetation within these paddocks being a small, well-maintained hedge and a large ornamental pine tree of moderate value.
- 1.8 The eastern boundary of the site contains a tall mixed treeline/wooded shaw, formed of both native species such as beech, ornamental species such as Monterey cypress, and a number of large poplar and sycamore. Beneath the trees are areas of dense ivy and hawthorn scrub
- 1.9 The northern boundary is lined with deciduous trees, a mixture of beech, horse chestnut, maple and line. The trees are of varied form and moderate-high value.

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- 1.10 The northern part of the western boundary is devoid of trees. The south-western boundary is lined with a mixture of self-seeded sycamore, occasional large conifers, and scrubby patches of bramble and hawthorn.

Development Proposal

- 1.11 It is understood that the development proposals are for the development of c.69 no. new dwellings. Access would come from the approved site to the east, apart from 6no. dwellings which would have access from Level Mare Lane. It is likely that construction access would also come through this point. The houses would be accompanied by gardens, parking, open space and play areas.
- 1.12 An indicative proposal layout has been included within the Tree Retention and Protection Plan. The exact detailed layout shall be determined at a later Conditions / Reserved Matters stage, with all of the following protection measures being subject to further detailed design. Any site meetings and supervision shall also be determined at this later stage.

2.0 ARBORICULTURAL IMPACT ASSESSMENT

Impacts of Development Proposals on Existing Vegetation

- 2.1 In the absence of mitigation, proposed development could have an adverse impact on the existing trees by removing them to facilitate the development, or in the future, by adversely affecting their potential for retention through disturbance in Root Protection Areas (RPAs) or through post development pressures to prune or remove.
- 2.2 The development proposals would involve the following site operations that could impact upon the existing trees:
- Contractor movements; site access and operations;
 - Storage and compound;
 - Plant, vehicle and material cleaning;
 - Installation of construction elements; ground work / general site operations;
 - Construction in proximity to trees;
 - Installation of services and underground apparatus;
 - Future maintenance;
 - Removal of protective measures.
- 2.3 The proposals have been designed around the existing vegetation on-site, to enable the retention of the majority of the trees. An indicative layout has been appended to this report to demonstrate how this might be achieved. The LPA have requested that a number of high-value trees be protected with a 2m buffer around their RPAs. These trees have recently been proposed for protection through Tree Preservation order; the proposed order is currently being challenged. These buffers have been achieved with just some very minor incursions of footpaths in several buffers.
- 2.4 The proposals require removal of small discrete areas of vegetation, and only where its retention is not feasible, generally at the access points and with removal of a small hedge and overhanging tree canopy.
- 2.5 New services are likely to route through the new access roads into the site and would not have a significant impact upon RPAs.

- 2.6 A new highway access to the north of the site onto Level Mare Lane is proposed to provide permanent access for a small number of dwellings. In addition, this access would be the main construction access to the entire site, to avoid the need for construction vehicles and materials to travel through the adjacent site. The proposed access does not require any significant incursion into RPAs.
- 2.7 The proposals convert the land from open space grazed frequently by horses to a mixture of lawns, open space, buildings and hard surfaces. This would alter the hydrology and nutrient status of the site somewhat. The levels of nutrient runoff currently present are very high with piles of manure present to the eastern treeline, and vegetation dominated by vigorous species such as sycamore, with dense nettle beneath. Reduction of these nutrients would likely result in an improvement to the site, allowing other species to establish.

Tree Retention and Protection

- 2.8 The vast majority of trees are proposed for retention. In most cases the trees' entire RPAs are being retained, in addition to a further 2.0 m buffer for a further 14no. trees which are currently proposed for TPO protection (with the order currently being challenged). The RPAs and buffer zones will be protected using tree protective barriers. Where minor incursions into buffer zones or RPAs are required, operation zones with ground protection measures would be used to prevent soil compaction. These measures accord with the recommendations set out within the *Arun District Council Supplementary Planning Document: Open Space, Playing Pitches, Indoor And Built Sports Facilities (January 2020)*. Any incursions will be below the maximum 20% of unsurfaced RPA as recommended within the British Standard.

Disturbance to Root Protection Areas

- 2.9 The only notable disturbance to a root protection area is where the main access is proposed to run through the woodland shaw/treeline. The location of the access is within a sparse section of the treeline, and once trees are removed to enable access, no significant disturbance to surrounding RPAs is envisaged.

- 2.10 Several very minor incursions are present within RPAs and buffer zones. Some of these such as the main footpath into the site would be hard surfaced, whereas those running through open spaces would be more informal. In the absence of mitigation, these footpaths might result in cutting of roots, compaction of soil and the decline of trees. To minimise these impacts, the footpaths shall be constructed using appropriate 'no-dig' construction techniques, with construction and wearing layers appropriate to the footpath requirements. Any incursions will be below the maximum 20% of unsurfaced RPA as recommended within the British Standard.
- 2.11 The development area would encroach slightly into the RPA of the wooded shaw to the north-east. The trees are young and vigorous here and likely to withstand the encroachment, provided ground protection is used to prevent compaction nearer to the woodland. Any incursions will be below the maximum 20% of unsurfaced RPA as recommended within the British Standard.
- 2.12 The proposal area encroaches slightly into the RPA of the high value Monterey Cypress to the east, and slightly into the wooded shaw's RPA. The encroachment is minor and would be unlikely to result in the failure of the trees, but would reduce the rooting area here and likely cut roots. No-dig construction shall avoid harm to the tree and maintain the integrity of the rooting environments. Any incursions will be below the maximum 20% of unsurfaced RPA as recommended within the British Standard.

Construction in Proximity to Existing Trees

- 2.13 The proposals include significant buffers to the boundary trees, allowing them space for future growth and reducing the significance of shading and leaf litter. The local area has a high groundwater level and as such, whilst changes to hydrology and drainage may slightly reduce surface water availability, this would not be highly significant to the vitality of the trees. The potential reduction in nutrients would likely be a positive change for native vegetation.
- 2.14 Public open space within the proposals has been designed such that it encompasses all trees except for the small hedgerow, as demonstrated within the indicative layout. The wooded shaw to the east has been given a generous RPA to protect the trees and avoid significant shading issues. Any increased longer-term pressures upon trees can be managed and restrained, with management for the benefit of trees being undertaken.

- 2.15 The large, moderate-value pine tree to the west is proposed to be incorporated into the public open space/ local area for play, as demonstrated within the indicative layout. This has been designed to avoid the need to remove the tree. The open space incorporates the entire RPA and 2m buffer, and canopy of the tree, providing significant room for growth. The proximity to play areas may increase the risk of children climbing on the tree, potential damage from vandalism and perceived risk from the tree. Given the tree's good form, any safety risks would be minimal. The tree is very visible from houses and play areas and as such, the risk of vandalism or damage is considered to be very low. All other trees shall be set within open space to ensure their retention, survival and future growth.

Tree Pruning, Canopy Reduction or Lifting

- 2.16 A small section of overhanging canopy is proposed to be pruned back to the north-east of site to accommodate the development area. The canopy reduction is relatively minor in extent and the trees will have ample space to regrow post-construction without significant issue.

Removal of Trees and Vegetation

- 2.17 The proposal required the removal of the following trees and hedges:
- *H03 – Crataegus monogyna Hedge; Category C;*
 - *TL34 - Mixed Species Native Tree Group; Category B; Removal of c.10m, consisting of 3no. ash, 2no. tall sycamore, 1no. cypress, 2no. hawthorn shrubs, 2no. regrowing sycamore stumps;*
 - *T35 - Castanea sativa; Category U; Remove due to condition.*
- 2.18 H03 is a small hedge offering limited ecological value and no real amenity value.

- 2.19 It is unavoidable that a section of TL34 must be removed to allow access from the adjacent site. The location has been selected at a point where the treeline thins significantly, with T35 a nearly-dead tree which requires removal due to condition. The location of the access is relatively optimal in terms of arboriculture. The section of treeline requiring removal includes 3no. ash, 2no. tall sycamore, 1no. cypress, 2no. hawthorn shrubs, 2no. regrowing sycamore stumps. None of these trees offer any significant value in themselves with their value stemming from being part of the treeline feature. The loss of the section of treeline can be compensated through replacement native planting. This will reconnect the tree canopy above the road as far as possible, to minimise impacts upon bats. New, fast growing native trees shall be planted to each side to speed up canopy closure
- 2.20 The above removals are considered supportable given the scale of the site and the value the trees provide.

Tree Loss Mitigation Measures

- 2.21 The removal of trees and hedge shall be compensated through their replacement with native and ornamental trees throughout the site. Over and above this compensation, a significant number of new trees are proposed. Trees within the moderate-value wooded shaw/treeline will be replaced at a ratio of well over the 2:1 usually recommended for such tree loss.
- 2.22 The eastern wooded shaw/treeline shall be enhanced through better management, planting of new native trees and shrubs, and removal of manure piles, followed by seeding of native woodland wildflower. This shall increase the distinctiveness, amenity and ecological value of the feature.
- 2.23 The existing sparse and scrubby boundary vegetation to the west shall be enhanced through infill-planting of native hedge and tree species, to create a more continuous feature useful for screening and wildlife.
- 2.24 The proposed measures are considered to result in a significant arboricultural gain at the site.
- 2.25 The proposals accord fully with the recommendations provided both within the BS:5827 and within the *Arun District Council Supplementary Planning Document: Open Space, Playing Pitches, Indoor And Built Sports Facilities (January 2020)*.

3.0 ARBORICULTURAL METHOD STATEMENT

Protection and Retention of Existing Trees and Habitats

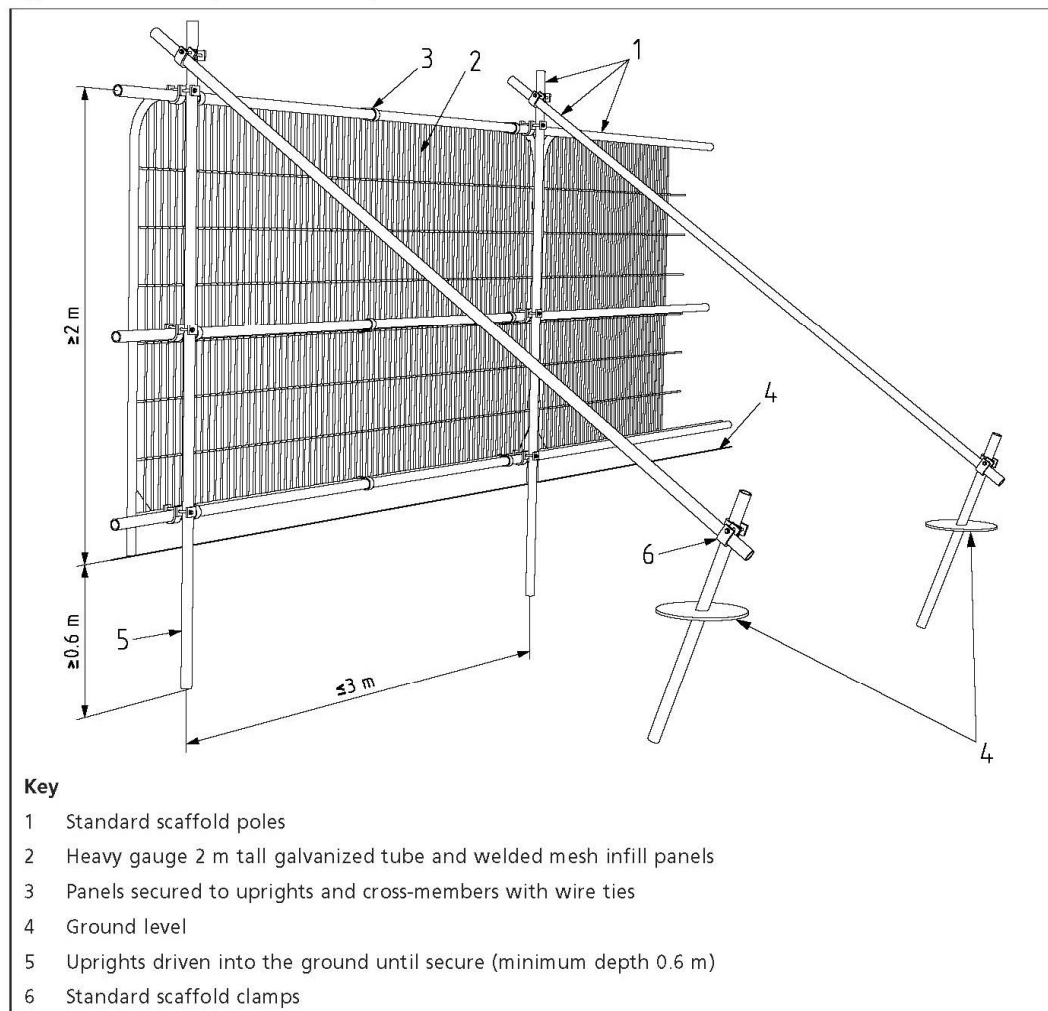
- 3.1 The Contractor shall exercise due care when performing operations beneath the canopy of existing mature trees and vegetation designated for protection and avoid at all times damage to the roots, trunk and branches.
- 3.2 The Contractor shall train all members of the construction workforce operating 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.

Tree Protection Barriers

- 3.3 The Contractor shall exercise due care when performing operations beneath the canopy of existing mature trees and vegetation and within the specified Root Protection Areas designated for protection and avoid at all times damage to the roots, trunk and branches of existing trees proposed to be retained.
- 3.4 All trees to be retained on site shall be protected with barriers erected around the area of mature vegetation in accordance with *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. The barrier shall be installed, protected and maintained during the main works by the Contractor who shall be responsible for protecting any area beneath the canopy of the existing trees and within the specified Root Protection Areas.

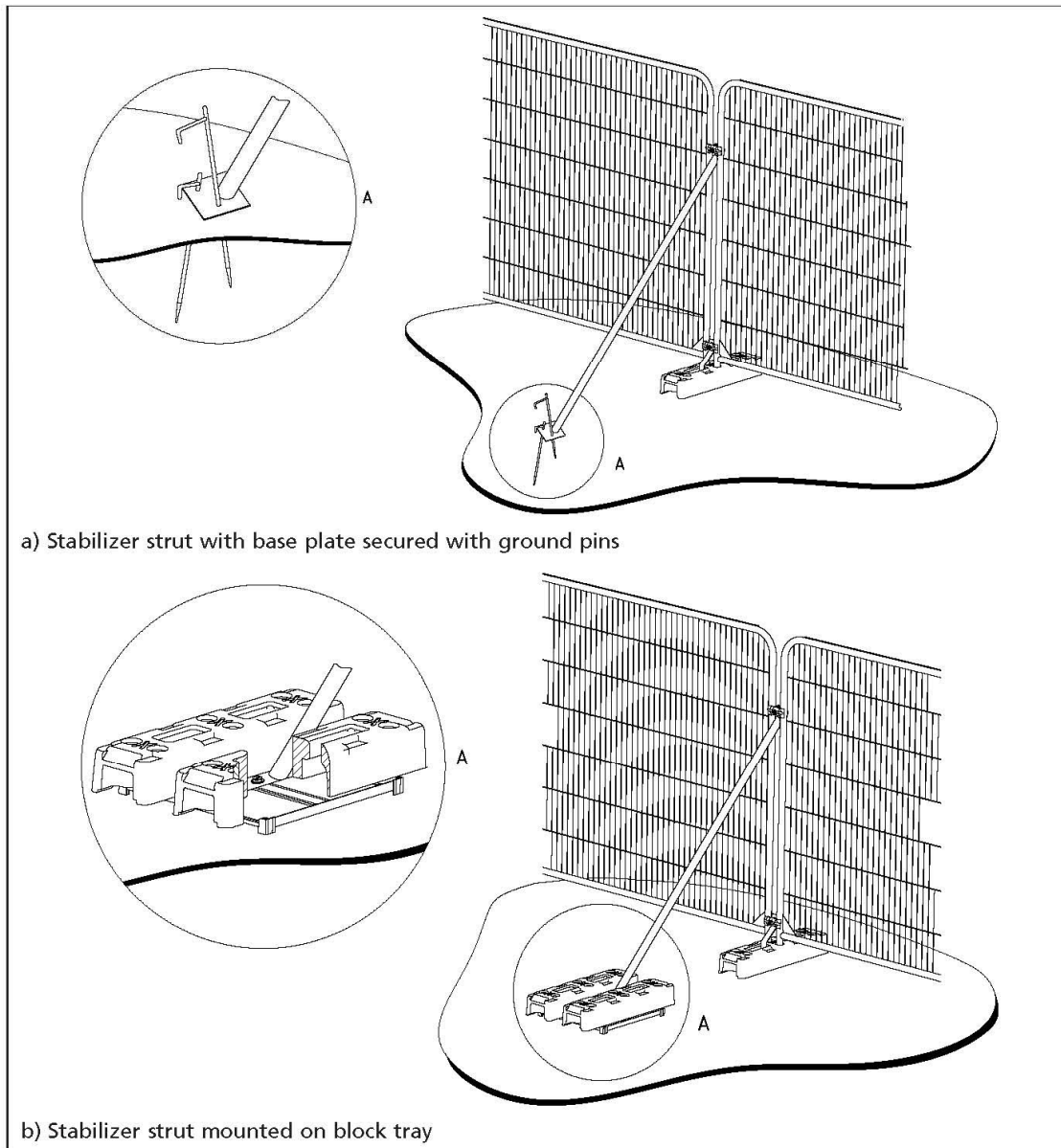
- 3.5 The installed protective barrier shall be 2.0 metres minimum height 'Heras' Welded Wire Mesh Fencing secured to a scaffolding framework, set into the existing ground, and positioned to the outside edge of the existing Tree Root Protection Area. Where existing ground conditions do not allow for 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, knee rails where possible to provide a complete protected area (*refer to Figure 2 and Figure 3 below; © British Standards Institute 2012*). All tree protection to be in accordance with *BS 5837: 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'* set out as specified within drawings *LLD2327-ARB-DWG-002 – Tree Retention and Protection Plan*.

Figure 2 Default specification for protective barrier



© The British Standards Institution 2012

Figure 3 Examples of above-ground stabilizing systems



- 3.6 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*'.
- 3.7 All such barriers shall be maintained for the full contract period. All necessary excavations, earthworks and cultivation beneath the canopy spread of any existing tree; shrub or hedge shall be undertaken by hand. *No commencement of construction operations should occur prior to the inspection of the installed tree and ground protection by the Landscape / Arboricultural Consultant.* Repositioning of the protective barrier during the course of the contract as the contract works progress shall need prior consultation with the Landscape / Arboricultural Consultant.
- 3.8 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.

Ground Protection Measures

- 3.9 Where construction operations require activity within the exposed unmade ground of any existing tree Root Protection Area, a temporary ground protection measures should be implemented allowing for access, limited traffic and operations during the construction period.
- 3.10 A temporary '*Ground Protection Zone*' shall allow for the passage of construction vehicles to the site and should be implemented without intrusion or change of existing ground levels within the defined tree Root Protection Areas of existing trees. The ground protection measures should be implemented prior to the main construction works.
- 3.11 The temporary ground protection measures should remain in place for the duration of the construction period.

3.12 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 underlying soil. The appropriate solutions include:

- For pedestrian movements or the erection of scaffolding within the RPA – 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 engineer's specification appropriate for expected loads, designed in consultation with the project Landscape/ Arboricultural Architect.

3.13 The surface material shall be contained with edging type requiring no excavation. Where proposed levels of any new access routes do not ascertain minimum required depth for installation of traditional kerbs, other solutions should be sought:

- Timber edging boards and spikes would be considered appropriate for pathways;
- Timber sleepers should be used as a kerb edge restraint for vehicular areas and anchored with non-intrusive pinning (such as road pins) in order to maintain the existing levels within the specified Root Protection Areas.

New Surfacing and Means of Access within Root Protection Areas

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

3.15 A 'No Dig' Construction shall allow for the construction of footpaths within or adjacent to tree Root Protection Areas without disturbance to root systems.

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

- 3.17 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 Type 3 incorporated within a 3-dimensional cellular confinement system. This shall ensure a minimum supportive depth of 100mm for pedestrian footpaths and 150mm for vehicles, 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.
- 3.18 All retaining kerb restraints / edge supports are to be secured above ground and no general excavation within existing tree RPAs shall be permitted.
- 3.19 Where stepped or ramped access have been proposed within the RPAs of existing trees, this shall 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 shall be dug out using handheld tools. The sides of the holes shall be lined with an impermeable membrane to prevent the caustic and toxic effects of wet cement in the concrete from damaging tree roots.
- 3.20 All 'no-dig' construction shall be subject to final detailed design by the consultant, engineer, supplier or manufacturer prior to installation to ensure the design suits the local conditions and weight of traffic proposed.

Services in Proximity to Existing Trees

- 3.21 The location and direction of new services shall be designed to allow for services to be routed away from the RPAs of existing trees. Existing service runs shall always be used wherever possible.
- 3.22 Where the proposed routing of services impinges upon the tree RPA of any existing tree to be retained; the routing shall 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'*.
- 3.23 A 'Manual Excavation Method' to be followed to carefully hand dug and route the apparatus most directly to and from the exterior of the RPA radius.
- 3.24 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 shall be avoided, whereby tree roots would become severed. Where services are to cross the edge of an existing RPA, they shall be routed via a hand dug ducting sleeve, avoiding damage to roots.

Contractor Movements. Site access and operations. Storage and Compound Areas

- 3.25 The Contractor Site Compound shall be located outside of any prescribed tree Root Protection Area and shall be permitted for the storage and securement of materials only within a temporary compound.
- 3.26 The compound area shall be located so as 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 so as to negate damage of the surrounding environment.
- 3.27 All site operations and construction procedures for the duration of the construction period shall seek to protect the existing site vegetation and root protection areas in accordance with *BS 5837:2012*.

Tree Surgery

- 3.28 Any significant defects found in the trees during the course of the scheduled work shall be reported to the Landscape Architect / Arboricultural Consultant. All scheduled and arising tree work shall be undertaken by an approved and qualified tree surgeon in accordance with *BS 3998: 2010 'Tree Work: Recommendations'*. Care shall be taken to avoid damage to neighbouring trees to be retained. Branches in confined spaces shall be removed and taken down in sections. All arisings shall be transported and disposed of away from site to the Contractor's tip.

Removal of Existing Vegetation

- 3.29 All existing trees to be designated for removal are to be removed in accordance with the *LLD2327-ARB-DWG-001 – Tree Retention and Protection Plan*. All tree work and removal shall be carried out in accordance with *BS 5837:2012*. Trees designated for removal and felling shall be clearly marked on site with white paint. Prior to the removal and felling of trees, the required work and tree positions shall be agreed on site with the Landscape Architect / Arboricultural Consultant. Trees shall be felled prior to the erection of the Tree Protective Fencing. Care should be taken during the tree removal process to avoid any damage to any trees which are designated to be retained.
- 3.30 Stumps shall be removed and cut away so that the top of the stump shall be at least 450 mm below the final topsoil level in order that the site can be reinstated in accordance with the existing site levels. Stumps are to be treated with an approved herbicide to be agreed with the Landscape Architect. Where the depth is greater than 450 mm the areas shall be backfilled with topsoil to the required level.
- 3.31 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.
- 3.32 Vegetation clearance to site boundaries shall take place outside the bird nesting season (*nesting season: March-September inclusive*) or alternatively under a watching brief from a suitability qualified ecologist.



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