

LIZARD

Landscape Design and Ecology

ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT

**RYEFIELDS FARMHOUSE
OAK TREE LANE, WOODGATE**

Domusea Developments Limited

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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 Ryefields Farmhouse, Oak Tree Lane, Woodgate.
- 1.2 The Arboricultural Impact 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 Impact Assessment and Method Statement report for the development at Ryefields Farmhouse has been prepared by Joshua Harwood (*Assistant Ecologist; Lizard Landscape Design and Ecology*). The report has been reviewed by Joe Jackson (*Director at Lizard Landscape Design and Ecology*).
- 1.4 This written Arboricultural Impact Assessment and Method Statement should be read in conjunction with the associated tree survey documentation, including *LLD2289-ARB-DWG-001 – Tree Constraints Plan; LLD2289-ARB-SCH-001 – Existing Tree Schedule* and *LLD2289-ARB-DWG-002 – Tree Retention and Protection Plan*.

Existing Site Information

- 1.5 Ryefields Farmhouse (*Grid Reference: SU 9400 0425 – hereafter referred to as ‘the site’*) is situated just to the east of Woodgate and south of Westergate. The site is one of the easternmost parts of the Woodgate village with further arable fields immediately east of the site until the Barhnam. The site is located c.10.0 metres above sea level. Soils on site are described as *‘loamy soils with naturally high groundwater’*.

Existing Site Vegetation

- 1.6 The site consists of amenity grassland with scattered trees to all boundaries, small areas of hard standing / bare ground are present to the eastern aspect of the site. A small building and caravan are located to the south east of the site. The northern and southern boundaries are formed of species poor hedgerows. Trees are typically semi-mature and native of low quality and value. The most significant tree on site is **T15** a mature Oak tree under Tree Preservation Order *TPO/AL/1/19/T2*.

Development Proposal

- 1.7 It is understood that the proposals include the construction of 4 no. residential dwellings, with associated access road and parking spaces.

2.0 ARBORICULTURAL IMPACT ASSESSMENT

Impacts of Development Proposals on Existing Vegetation

- 2.1 Trees may be adversely impacted with new proposals/ works in close proximity. The below report addresses how any potential risks or impacts to the trees, both directly and indirectly as immediate and future impacts have been mitigated.
- 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;
 - Demolition/ removal of existing structures;
 - Installation of services and underground apparatus;
 - Future maintenance;
 - Removal of existing vegetation not for retention;
 - Removal of protective measures.
- 2.3 The development proposals have been designed around the existing trees where possible; with particular care taken around **T15** a mature TPO'd Oak tree to which significant considerations have been requested as part of previous applications.
- 2.4 The proposals still have some limited potential to damage site vegetation and tree roots if mitigation is not considered. The proposed dwellings and associated parking could cause significant damage to tree roots and impaction of soils if the appropriate mitigation measures outlined below are not in place. A number of trees would require removal to accommodate the proposals.

- 2.5 The development of the site area in terms of arboriculture can be supported on the basis that the tree protection and mitigation measures outlined in this report are put in place within the development scheme and the construction phase to avoid any risk of impacts outlined above.

Tree Retention and Protection

- 2.6 The majority of the existing trees on site are proposed for retention with two moderate category trees; two low category trees; and one low category tree line proposed for removal / partial removal. All trees proposed for retention will be protected with tree protective barriers and ground operation zones where RPA's are encroached.

Disturbance to Root Protection Areas

- 2.7 The development proposals have been designed to retain as many existing trees on site as possible. Proposals have been located wherever possible outside of tree RPA's. Minor RPA encroachment of **T04** (1.6%) is noted.
- 2.8 Roots are at risk of severance, compaction of soils and loss of soil permeability as a result of developments within RPAs. The protection plan and this report have identified appropriate mitigation of Ground protection zones and No-dig construction to protect the soils and roots within, from soil compaction and loss of soil permeability, no areas identified for tree roots to be at risk of cutting.

Construction in Proximity to Existing Trees

- 2.9 Given the distance between the proposed dwellings and the retained trees it is considered unlikely to have any degrading effect on the trees. The trees are semi-mature and their growth into maturity will not vastly increase their size or overshadowing.
- 2.10 The resulting proximity of the new structure is likely to result in pressures on the existing trees. This would include:
- 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.

- 2.11 Care has been taken to avoid the roots of **T15**, some small areas of encroachment will incur through the installation of the closed board fencing. The fencing is to be installed manually under arboricultural supervision with trial pits to ensure no roots are to be severed.
- 2.12 The above potential future pressures identified on the sites trees are considered to be of limited proportion, the design proposals have been designed to minimise as many potential future pressures as possible, the buildings locations are considered to significantly reduce the risks of shading on trees and pruning requirements. Altered soil conditions risks are limited to small sections of the development proposals comprising small areas of RPA's to be protected as best as possible.

Tree Pruning, Canopy Reduction or Lifting

- 2.13 Due to the distance between the development proposals and retained trees, some minor tree surgery works are required to allow for the development proposals including the construction of the proposals. Trees requiring surgery works are as follows;
- **T04** – *Betula pendula* - Category B; Canopy lifting to 2.5m and canopy reduction of 2.5m to the east to allow construction of associated hard standing/parking area during development. Works will leave 4.5m eastern canopy;
 - **T06** – *Betula pendula* - Category C; Canopy lifting to 3.0m and canopy reduction of 2.0m to the east to allow construction of proposed dwelling. Works will leave 3.0m eastern canopy;
 - **T07** – *Fagus sylvatica* - Category C; Canopy lifting to 3.0m and canopy reduction of 2.0m to the east to allow construction of proposed dwelling. Works will leave 3.0m eastern canopy;
- 2.14 Several trees are to be retained to the rear of the garden plots, due to their maturity it is considered likely that several trees will require tree works in the future to ensure their longevity within the site. **T04** is considered likely to require future canopy lifting to maintain its longevity within the area above the car parking spaces for the proposed dwellings.

Removal of Trees and Vegetation

- 2.15 A low number of existing trees are proposed for removal as a result of the development proposals;
- **T01** – *Acer pseudoplatanus* - Category B; Removed to accommodate pedestrian footpath;
 - **T02** – *Acer pseudoplatanus* - Category B; Removed to accommodate pedestrian footpath;
 - **T05** - *Betula pendula* - Category C; Removed to accommodate the proposed dwelling and access.
 - **T14** – *Acer pseudoplatanus* - Category C; Removed to accommodate proposed access road and visitor parking;
 - **T16** – *Crataegus monogyna* - Category C; Removed to accommodate proposed access road;
 - **TG18** – *Cupressus x leylandii* - Category C; Partial removal to accommodate rear garden of proposed dwelling.

Tree Loss Mitigation Measures

- 2.16 A small number of trees are proposed for removal; two of the existing trees are considered to be of moderate quality and value; whilst the other tree is of low quality and value; and the partial removal of the tree line to the south east is both considered to be of low quality and value and a non-native species. The development proposals seek to remove 5 no. trees with the replacement mitigation planting of 4 no. moderate sized vegetation parcels; 2 small sized vegetation parcels; and the enhancement of 1 no. hedgerow (**H19**); and 1 no. tree group (**TG17**). With the replanting and enhancement of native, pollinating species, and mixed species hedgerow, the development proposals will be considered acceptable in arboricultural terms.

3.0 ARBORICULTURAL METHOD STATEMENT

Protection and Retention of Existing Trees and Habitats

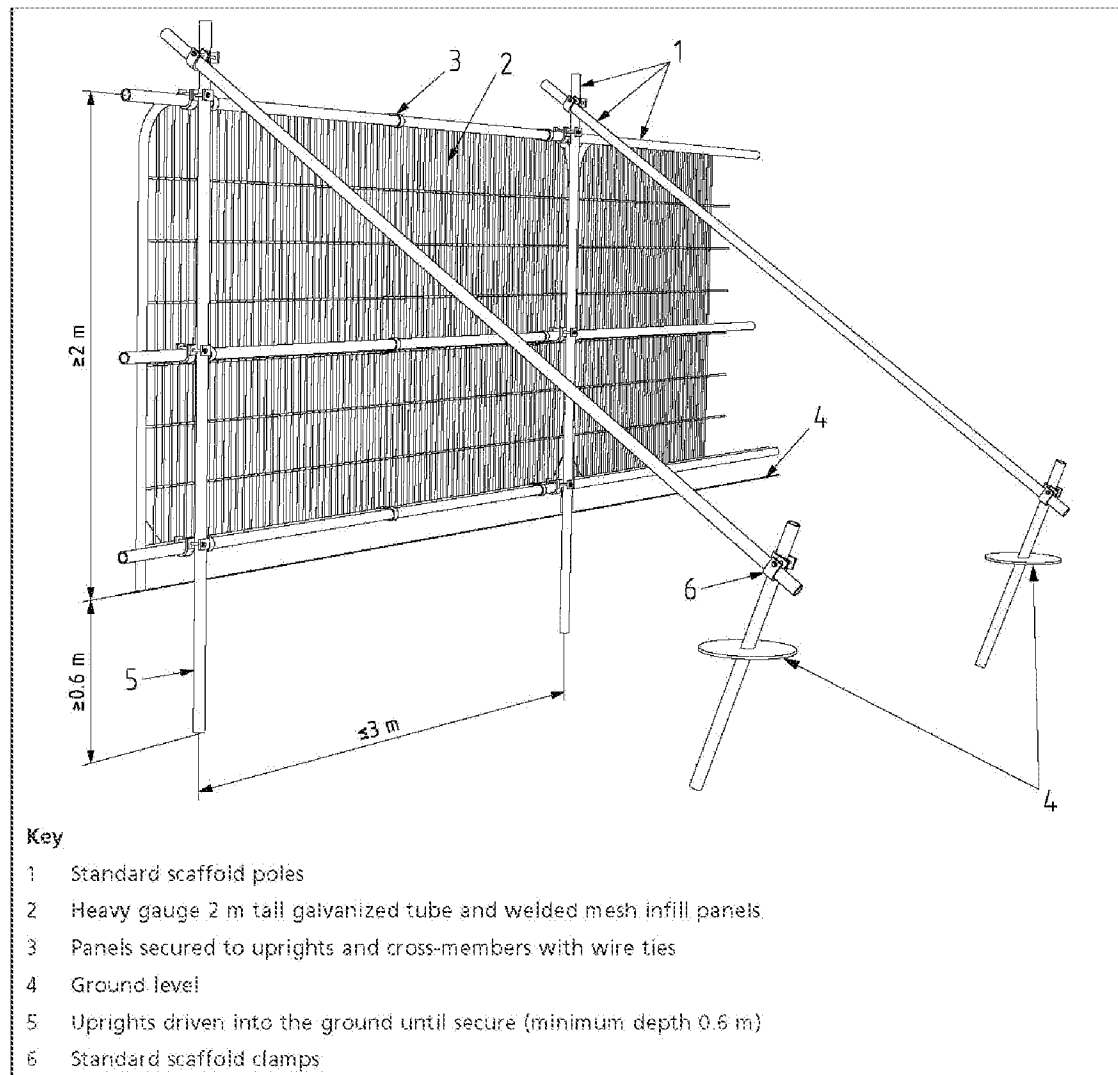
- 3.1 The Contractor shall exercise due care when performing operations beneath the canopy of existing mature trees and vegetation designated for protection and avoid at all times damage to the roots, trunk, and branches.
- 3.2 The Contractor shall train all members of the construction workforce operating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

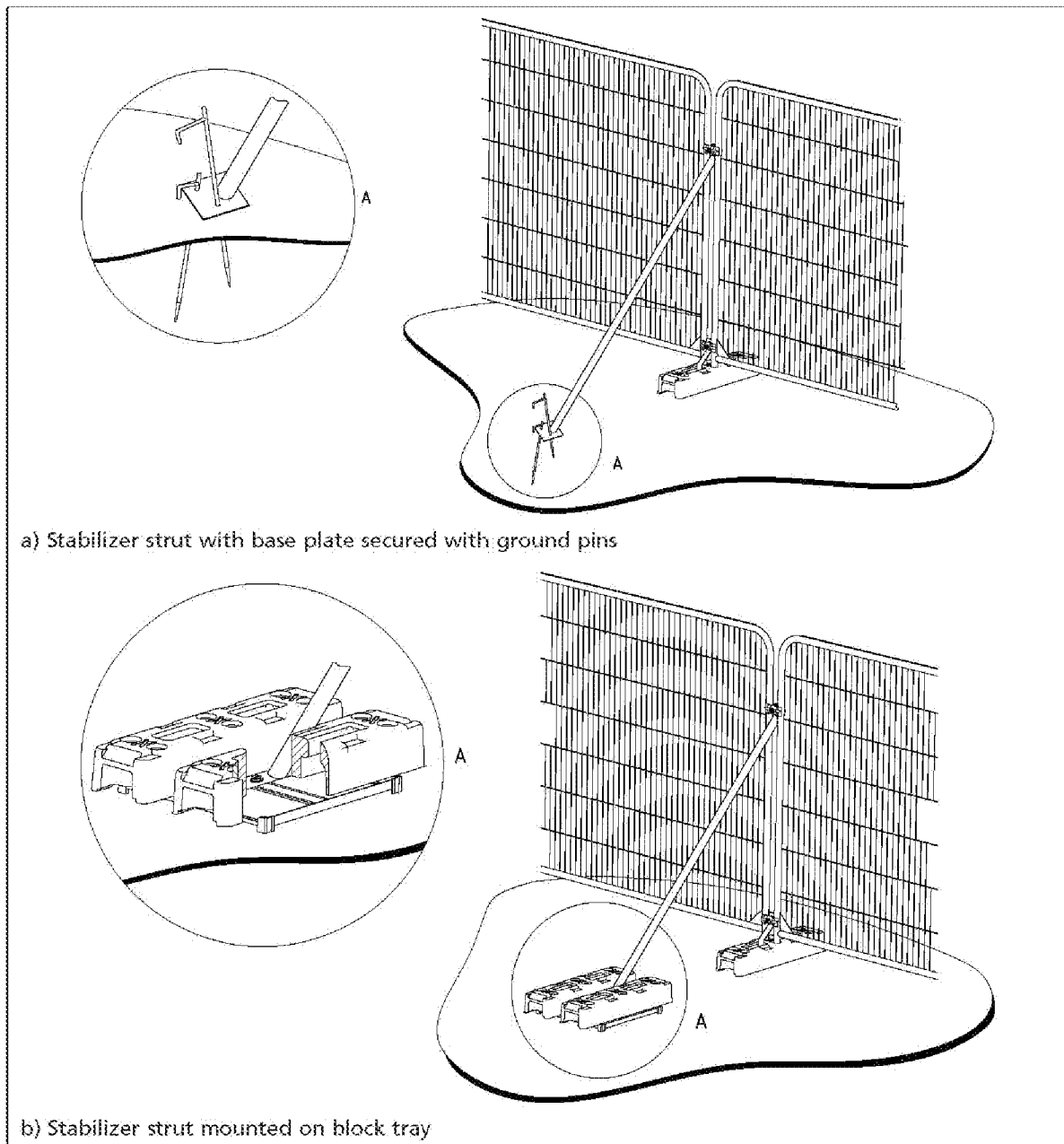
- 3.4 All trees to be retained on site shall be protected with barriers erected around the area of mature vegetation in accordance with *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. The barrier shall be installed, protected, and maintained during the main 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 *LLD2289-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:
- 3.13 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; such as 100 mm depth of woodchip laid onto a geotextile;
- 3.14 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, such as 150 mm depth of woodchip laid onto a geotextile membrane;
- 3.15 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.
- 3.16 The surface material should 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:
- 3.17 Timber edging boards and spikes would be considered appropriate for pathways;
- 3.18 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.

Manual Excavation

- 3.19 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, 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.

- 3.20 Roots over 25mm 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.

New Structures in Proximity to Trees

- 3.21 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.
- 3.22 In shrinkable soils, the foundation design should take account of the risk of indirect damage.

New Surfacing and Means of Access within Root Protection Areas

- 3.23 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.
- 3.24 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.
- 3.25 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.

- 3.26 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 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.
- 3.27 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 Engineer's specification.
- 3.28 All retaining kerb restraints / edge supports are to be secured above ground and no general excavation within existing tree RPAs should be permitted.
- 3.29 Where stepped or ramped access have 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

- 3.30 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.
- 3.31 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'*.
- 3.32 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.



- 3.33 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.

Contractor Movements; Site Access and Operations; Storage and Compound Areas

- 3.34 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.
- 3.35 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.
- 3.36 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

- 3.37 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 should 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

- 3.38 All existing trees to be designated for removal are to be removed in accordance with the *LLD2289-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.
- 3.39 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.
- 3.40 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.
- 3.41 Vegetation clearance to site boundaries should 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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