



LIZARD

Landscape Design and Ecology

ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT

**HAILSHAM COMMUNITY COLLEGE
BATTLE ROAD, HAILSHAM, EAST SUSSEX**

HAILSHAM COMMUNITY COLLEGE ACADAMEY TRUST

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1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned to undertake a tree inspection survey and produce arboricultural documentation for the proposed development at Hailsham Community College, Battle Road, Hailsham, East Sussex.
- 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 Hailsham Community College has been prepared by Keith Miller (CMLI) at Lizard Landscape Design and Ecology, Worthing.
- 1.4 This written Arboricultural Impact Assessment and Method Statement should be read in conjunction with the associated tree survey documentation, including *LLD2040-ARB-DWG-001 & 002 – Tree Constraints Plans*, *LLD2040-ARB-SCH-001 – Existing Tree Schedule* and *LLD2040-ARB-DWG-003 & 004 – Tree Retention and Protection Plans*.

Existing Site Information

- 1.5 The site is situated approximately 0.2km west of Hailsham High Street, situated within the catchment of Wealden District Council (*Grid Reference: TQ587099 – hereafter referred to as ‘the site’*). Land surrounding the site is formed of residential properties and associated gardens. The Cuckoo Trail (*14-mile footpath and cycleway which runs from Hampden Park to Heathfield, East Sussex*) runs north to south along the western boundary of the site.
- 1.6 The site comprises a number of large buildings which form the main body of the college; the ground cover within the site is comprised of tarmacked parking areas, play areas and walkways, recreational playing fields and a soft outdoor sports pitch.

Existing Site Vegetation

- 1.7 With reference to habitat descriptions within the Preliminary Ecological Appraisal (*LLD2040-ECO-REP-001 – PEA*), the site to the north is dominated by large expanses of amenity grassland maintained for a range of sports activities. Other fragmented areas of amenity grassland are dispersed throughout the site in relief to hard landscaped play areas, paths and vehicular access.
- 1.8 Native mixed species vegetation dominated by Oak (*Quercus robur*), Field Maple (*Acer campestre*), Hawthorn (*Crataegus monogyna*) and occasional Cypress (*Cupressus × leylandii*) to the north, east and west of the sports fields is heavily fragmented by residential garden fencing. A section of well maintained hedging is present to the school frontage and provides screening from Battle Road (A295). A small number of intermittent trees are noted dispersed within the boundary hedgerow vegetation, typically Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*).
- 1.9 Further scattered trees throughout the site provide amenity interest and screening between the college buildings, include Birch (*Betula pendula*), mature Horse Chestnut (*Aesculus hippocastanum*), and Oak (*Quercus robur*). A small plantation of trees north of the vehicular access provides a green amenity space. Associated with the tree group plantation to the east of the existing all weather pitch, is a remnant over-mature Oak undergoing managed decline, previously topped out at only a few metres height, with regenerative stems issuing from the truncation.
- 1.10 A singular isolated standard Oak (*Quercus robur*) of substantial mature form is situated within the recreational playing fields and offers local amenity within the school grounds and surrounding properties.
- 1.11 Edging the south-western site boundary is a mixed species mature tree line which provides definition between the site and the adjacent Cuckoo Trail with a variable understory vegetation of bramble and young scattered trees. The treeline canopy merges with that of the adjoining tree group trees edging the surfaced Cuckoo Trail within immediate proximity to the west and includes occasional Ash (*Fraxinus excelsior*), and Oak (*Quercus robur*) within the wooded vegetation. The treeline edging the school boundary principally comprises a number of Pine (*Pinus sp.*) and White Poplar (*Populus alba*) of variable maturity, form and condition. A small series of pollarded Hybrid Poplar are also locally prominent within the boundary treeline to the school edge.

Development Proposal

- 1.12 It is understood that the development proposals for the site will include the partial demolition of the existing craft block teaching building, which will be replaced with a new building. The proposals also comprise the development of a new car park, east of the existing artificial pitch. The provision of a new all weather sports pitch is proposed to the north of the proposed car park.
- 1.13 The development proposals also include new pedestrian access about the school boundary as a 'daily mile' exercise path; further pedestrian access is proposed as a new connection linking through the western boundary onto the Cuckoo Trail to promote pedestrian and cycle use of the trail as a sustainable route to the school.
- 1.14 As part of the enabling works, a series of temporary classrooms would be installed as provision for the loss of existing teaching space during the demolition and construction phase. The temporary classrooms are located within the school grounds to the hard surfaced playground to the south of the site and more centrally immediately south of the sport hall and to an area immediately south of the existing craft block.

2.0 ARBORICULTURAL IMPACT ASSESSMENT

Impacts of Development Proposals on Existing Vegetation

- 2.1 Any development has the potential to adversely impact existing trees, through removal to facilitate the proposals; by adversely affecting their potential for long term retention due to excessive disturbance in Root Protection Areas (RPAs); or through post development pressures to prune or remove such as due to conflict of proximity.
- 2.2 The proposed school development would involve the following site operations that could impact upon the existing trees:
- Contractor movements; site access and operations;
 - Siting of materials storage and site 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 following section sets out description of the impacts of development proposals on existing trees and vegetation, taking into account any potentially damaging activities proposed in the vicinity of trees to be retained. Such activities might include the installation of new construction or hard surfacing, the installation of services, proposed excavations or changes in ground level.
- 2.4 The implementation of the recommended mitigation measures are described following appraisal of the scheme including for access, adequate working space and provision for the storage of materials.
- 2.5 A method statement accompanies the Arboricultural Impact Assessment.

Tree Retention and Protection

- 2.6 Existing vegetation has been surveyed on site and is illustrated within the accompanying Tree Constraints Plans, supported by an Existing Tree Schedule. The development proposals are set out and the details of the existing trees to be retained or removed from the site have been incorporated within a Tree Retention and Protection Drawings. The drawing illustrates impacts resulting from the development proposals and means for mitigation where required.
- 2.7 The development proposals comprise a number of elements that shall likely impact upon the arboricultural resource of the site:
- Enabling Works – Installation of temporary classrooms;
 - Construction of pedestrian access; ‘Daily Mile’ exercise path;
 - Construction of pedestrian access; ‘Cuckoo Trail Entrance Link’;
 - Construction of proposed car park area;
 - Construction of proposed all weather sports pitch;
 - Demolition of existing building;
 - Construction of new building;
 - Siting of materials storage and site compound for the above works.
- 2.8 Specific impacts arising from the above proposals and methods of mitigation are described below, in accordance with the Tree Retention and Protection Plan.

Removal of Trees and Vegetation

- 2.9 The following trees are proposed for removal to accommodate the development proposals:
- TG19 Mixed Species Tree Group; Category C – (Partial removal; 4 no. trees) to accommodate construction of proposed car park;
 - T20 Oak (*Quercus robur*); Category C – to accommodate construction of proposed car park;
 - T27 Oak (*Quercus robur*); Category C – (Enabling Works) Installation of temporary classrooms.

- 2.10 The following trees have been categorised as Category U – unsuitable for long term viability, and are recommended for removal due to poor condition:
- TL45 (v), (vi) Pine (*Pinus sp.*); Category U – trees are of poor quality and limited viability, damaged by heavy inclination of off-site TG51 (i) White Poplar (*Populus alba*);
 - TG51 (i) White Poplar (*Populus alba*); Category U – off site tree, heavily inclined over site boundary, impacting TL45 (v), (vi) Pine (*Pinus sp.*). Potential for long term collapse due to loading.
- 2.11 The following trees have been categorised as Category U – unsuitable for long term viability, but maybe retained in short term:
- T34 Rowan (*Sorbus sp.*); Category U – tree of poor quality and limited viability, but of low risk in short term due to lack of maturity;
 - T37 Ash (*Fraxinus sp.*); Category U – off-site tree of poor quality, low vigour and limited viability, of limited risk in short term; monitor condition with view to crown reduction or removal.

Tree Removal - Recommendations

- 2.12 A total of 6 no. low quality trees are proposed to be removed to accommodate the development proposals. The trees are of limited public amenity value, all located centrally within the college grounds. The trees are of mixed maturity and have been categorised as C condition; T20 Oak (*Quercus robur*) is over-mature and stands as remnant living ‘dead wood’ having been topped out as part of managed decline. T20 has been determined as having ‘low’ bat roost potential, the tree shall require soft felling under ecological supervision in accordance with best practice (*BCT, 2016*). T27 Oak (*Quercus robur*) Category C is of low quality, poor form and lacking maturity.
- 2.13 Due to the low quality and condition of the above trees it is recommended that compensatory planting would provide sufficient mitigation for loss. The removal of the above trees should be mitigated within a new planting scheme, with new tree planting preferably of mixed native species.
- 2.14 A total of 3 no. low quality trees are recommended to be removed due to condition and limited viability, including a single off-site tree. Should the removal of the above trees be undertaken, mitigatory native species tree planting should be implemented.

Tree Pruning, Canopy Reduction or Lifting

- 2.15 The following trees shall require crown lifting, canopy reduction or facilitation pruning to accommodate the development proposals:
- 2.16 To accommodate installation of the proposed all weather sports pitch, tree T09 Oak (*Quercus robur*) is proposed to have a lower crown reduction by maximum 4.0m to eastern canopy edge. The crown clearance would be lifted to accommodate 3.0m height sports pitch fence-line. The tree is a substantial high quality, A category field Oak, offering local amenity value within the immediate vicinity.
- 2.17 The crown reduction is likely to necessitate the reduction of the lowermost limb only to the eastern aspect by less one third of its full extent. The tree, while fully mature, is of substantial volume and of vigour throughout the extensive crown. The % reduction of the overall crown and the associated physiological impact through defoliation is considered to be acceptable relative to vigour, canopy area and crown volume.
- 2.18 Continued crown management would be ongoing to this aspect and should be anticipated as part of programmed or scheduled works. As continued works would be limited to outer canopy pruning of the easternmost canopy it is anticipated that impact would be minimised through adaptive growth. Initial and ongoing tree works operations shall be in accordance with *BS 3998:2010 - 'Tree Works - Recommendations'* prior to protection measures being implemented.
- 2.19 To accommodate the proposed positioning of two temporary classrooms to the south of the existing craft block school building, T25 Weeping Willow (*Salix x sepalcralis*) and T26 Horse Chestnut (*Aesculus hippocastanum*) shall require crown reduction as specified to facilitate the installation. The trees are B category trees of moderate condition and value.
- 2.20 The crown reductions shall amount to approx. 4.25 – 4.5 m reduction of the southern canopy extent of both trees, aligning with the existing pedestrian access below. T25 is a weeping willow pollard subject to ongoing pruning management. The tree is anticipated to remain adaptive to the proposed crown reduction. The tree's condition should however be monitored as part of continued management.

- 2.21 T26 is a Horse Chestnut of fair to good physiological condition, though some stem inclusion is noted to the southern crown bole. Horse Chestnut is potentially more susceptible to infection following pruning and less adapted to rejuvenation. It is anticipated therefore that the tree shall be more prone to the effect of pruning. There may be some longer-term benefit in reducing loading upon included stems through the canopy reduction. The tree's condition should be regularly monitored as part of continued management.
- 2.22 All the above tree work operations proposed to facilitate the development proposals are to be in accordance with *BS 3998:2010 - 'Tree Works - Recommendations'*.
- 2.23 Localised vegetation clearance and minor basal pruning of regenerative stems to facilitate the pedestrian link to the Cuckoo Trail and adjoining fence installation shall be required to the western boundary. The anticipated works are minor and considered non-invasive to the significant mature vegetation of Category C, Hybrid Poplar pollards TG46 (*Populus canadensis*). All tree work operations shall be in accordance with *BS 3998:2010 - 'Tree Works - Recommendations'*.
- 2.24 Distinct to the proposals, tree T23 (i) Birch (*Betula sp.*) Category C, is recommended to have a crown reduction of approx. 1.0 m maximum to the eastern canopy edge, to prevent conflict with the adjacent building roofline. The canopy of the Birch is light. It is anticipated that impact will not be of significantly detrimental to the health of the tree. Ongoing pressure to manage the crown is noted due to proximity to the building.

Disturbance to Root Protection Areas – All Weather Sports Pitch

- 2.25 The route of the proposed 'Daily Mile' exercise path has been designed and adjusted where possible to avoid encroachment of RPAs of existing trees to be retained within the scheme proposals. Where impingement occurs a 'No Dig' Permeable Construction shall allow for construction to be implemented without intrusion or change of existing ground levels, in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'*.
- 2.26 The footpath impinges the RPA of TG07 (iii) Oak (*Quercus robur*), Category C, by a margin of 5%; the footpath would be implemented as a permeable open graded asphalt construction.

2.27 The construction footprint of the proposed all weather sports pitch impinges the RPA of tree T09 Oak (*Quercus robur*) by approx.17%, within the guidelines of *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations*. The pitch orientation and alignment has been adjusted as part of the design process to minimise impact on the RPA of the above tree.

2.28 In accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'* the all-weather sports pitch would be constructed with a 'No Dig' Permeable Construction above existing ground levels, utilising a permeable free-draining construction. In accordance with the SAPCA '*Code of Practice for the Construction and Maintenance of Synthetic Turf Sports Pitches*', the proposed engineered build-up would comprise a 2 course bound system of:

- Sub-base capable of supporting loads of all vehicles, plant, machines and materials to be used in the construction, without causing deformation of the site, ideally contained within a supportive geocell system.
- Sub-base capable of supporting and transmitting all loads on the playing surface without permanent or long-term deformation.
- Sub-base that allows water to drain freely through the sub-base material into the natural subsoil or into the drainage system.
- Porous asphalt surface courses of open textured base and binder to BS EN 13108-7 below a porous shockpad and synthetic turf playing surface.
- Construction membranes / root barriers shall comprise permeable geo-textiles.

2.29 The total above ground permeable construction depth would not exceed 400mm within the RPA. The proposed all weather pitch construction would be supported locally with minimal above ground grading (30° max. 900mm projection) to the western edge. There would be no excavation within the RPA associated with the construction of the sports pitch. The total combined extent of the 'No-Dig' pitch construction and supportive batter would amount to approx. 21% of the RPA, 1% above the recommended guidance of *BS 5837:2012*.

2.30 It is considered that due to the location of the tree situated within a grassed playing field, with the surrounding RPA being entirely of open ground, that the proposal would be acceptable in accordance *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'*.

2.31 The proposed all weather pitch construction would be illuminated with specialist sports pitch lighting. The proposed lighting columns have been designed to be located outside of the RPA in order to avoid excavation impact upon the root environment.

Ground Protection - Construction Operation Zone - All Weather Sports Pitch

2.32 An Operation Zone to enable construction of the proposed all-weather sports pitch within the Root Protection Area of T09 Oak is to be secured upon ground protection, fit for the expected level of loading, 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'*.

2.33 Ground Protection specified to the western edge of the sports pitch footprint, shall allow a restricted operation zone for pedestrian based operations only. There shall be no tracking of heavy plant machinery across the unprotected rootplate, which would potentially destroy soil structure and roots present within it. All other construction activity shall be made from upon appropriate ground protection as part of the pitch installation or manoeuvred by plant sited outside of the RPA.

2.34 The ground protection – operation zone shall be restricted and secured with Tree Protection Fencing, installed as specified, in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'*.

Disturbance to Root Protection Areas – Cuckoo Trail Entrance Link

2.35 The proposals seek to establish a connective link path to the western site edge, suitable for pedestrian usage, between the college grounds and the adjoining Cuckoo Trail. The implementation of the entrance link shall be formalized and secured through the proposed installation of a small section of new boundary fencing and gates.

2.36 The proposed path would be installed within the RPA of the adjacent Poplar trees (TG46 and T47) as a *'No Dig' Permeable Construction* to allow implementation, in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'*.

2.37 It is anticipated that a limited *Manual Excavation* method shall be implemented to tie in the proposed pedestrian access with the adjacent existing footpath, and to determine the installation of the proposed boundary fencing posts.

- 2.38 The limited excavation shall be undertaken with due care with hand-held tools under *Arboricultural Supervision* only, in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'*.

Off-Site Improvement Works - 'No Dig' Construction

- 2.39 It is noted that the adjacent off-site footpath construction has deteriorated. Should off-site improvement works of the adjacent footpath be necessary, reinstatement shall be undertaken as a *'No Dig' Permeable Construction* within the RPA of surrounding trees, in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - recommendations'* without intrusion of underlying ground levels.
- 2.40 It is recommended that improvement works should make advantage of the opportunity to notionally raise construction surface levels of the existing footpath to better equate with those of the proposed entrance and pedestrian access link, thereby minimising the requirement for Manual Excavation.
- 2.41 It is considered that, subject to the above precautionary methods being implemented, the Poplar trees are of sufficient vigour and maturity to accommodate the relative minor scale of the proposed pedestrian link footpath within the associated root protection areas.

Tree Protection Mitigation Measures

- 2.42 All trees to be retained are to be protected with Tree Protection Barriers, set out as specified and illustrated within the Tree Retention and Protection Plans. There shall be no construction activity or storage of materials within the defined, protected areas.
- 2.43 The following section outlines the required mitigation methods defined and described above.

3.0 ARBORICULTURAL METHOD STATEMENT

Protection and Retention of Existing Trees and Habitats

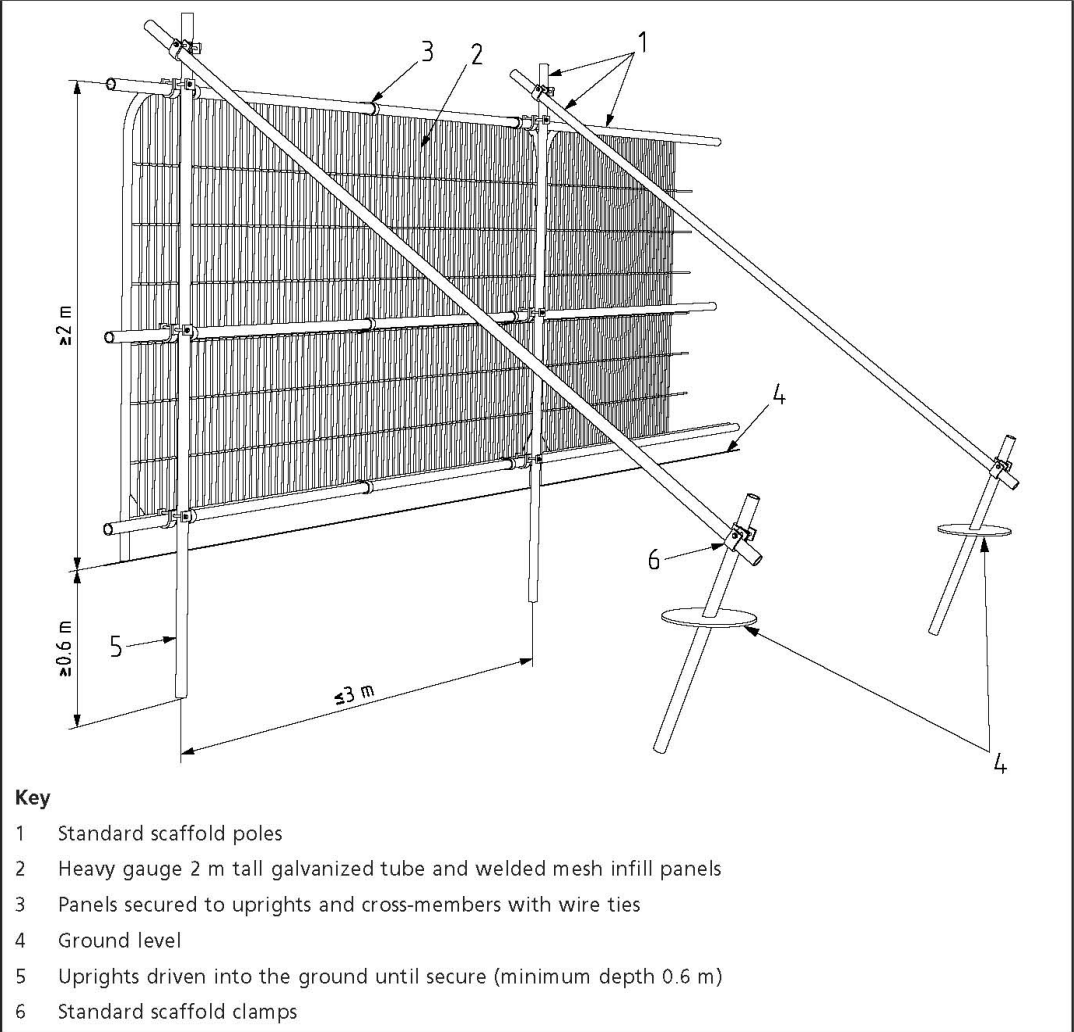
- 3.1 The Contractor shall exercise due care when performing operations beneath the canopy of existing mature trees and vegetation designated for protection and avoid at all times damage to the roots, trunk and branches.
- 3.2 The Contractor shall train members of the construction workforce operating within proximity of valued habitats and make such persons aware that there shall not be, without prior notification, the following operations 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 existing ground level within 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.

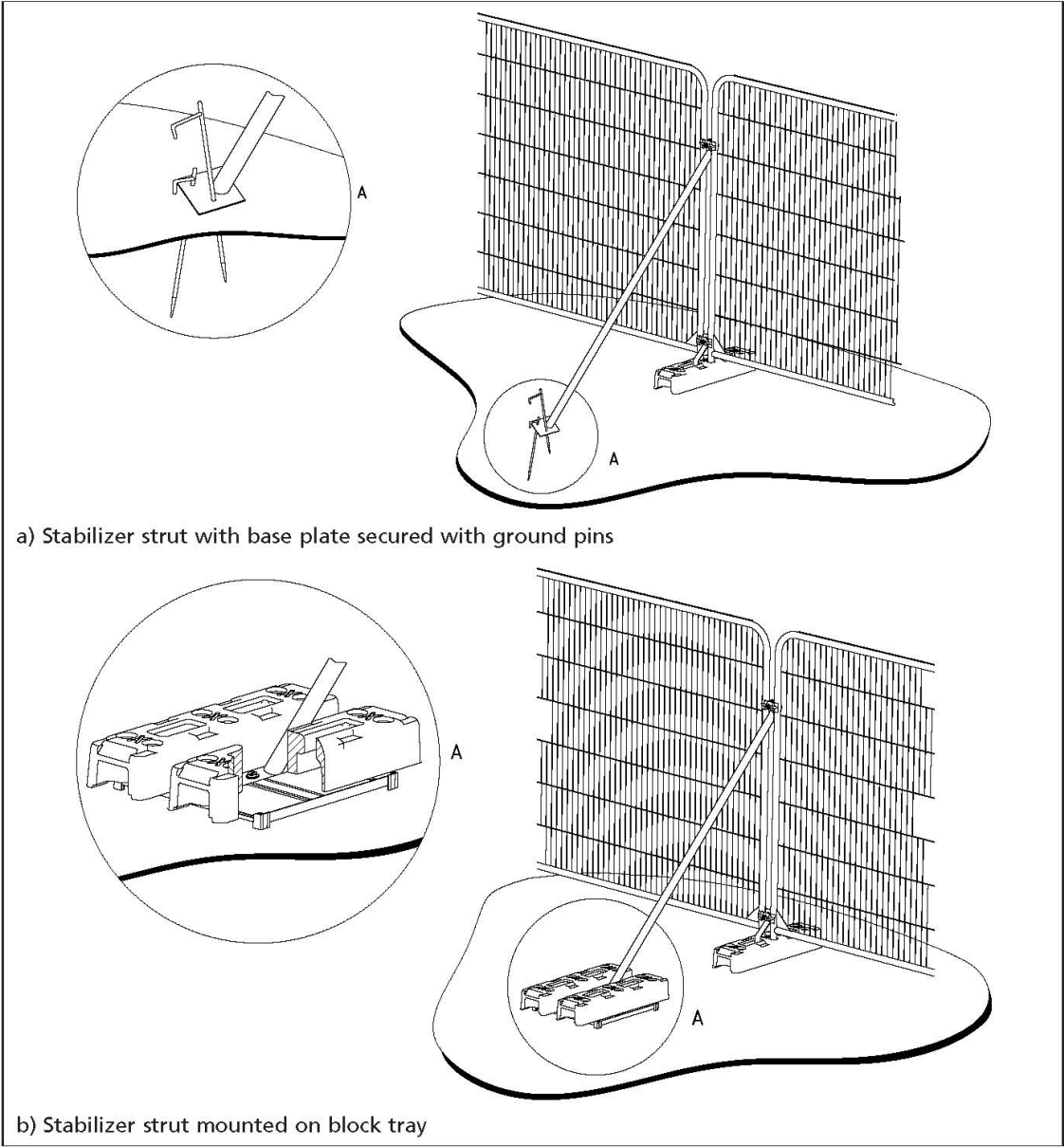
3.5 The installed protective barrier shall be 2.0 metres minimum height 'Heras' Welded Wire Mesh Fencing secured to a scaffolding framework, set into the existing ground, and positioned to the outside edge of the existing Tree Root Protection Area. Where existing ground conditions do not allow for the 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.

Figure 2 Default specification for protective barrier



3.6 The barrier should be strained, and fixed to fences, walls, knee rails where possible to provide a complete protected area (refer to Figure 2 above 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 LLD2040-ARB-DWG-003 / 004 – Tree Retention and Protection Plans.

3.7 Figure 3 Examples of above-ground stabilizing systems



- 3.8 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*'.
- 3.9 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.
- 3.10 Within the protected areas the following activities must not take place;
- No vehicles are to be used in the fenced off areas;
 - 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

- 3.11 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.
- 3.12 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.
- 3.13 The temporary ground protection measures should remain in place for the duration of the construction period.

- 3.14 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.
- 3.15 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:
- 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.

Manual Excavation

- 3.16 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 hand held 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.
- 3.17 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.

- 3.18 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 Surfacing and Means of Access within Root Protection Areas

- 3.19 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.
- 3.20 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.
- 3.21 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.
- 3.22 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.
- 3.23 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.
- 3.24 All retaining kerb restraints / edge supports are to be secured above ground and no general excavation within existing tree RPAs should be permitted.

- 3.25 Where posts are to be concreted in the ground, the holes for footings 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

- 3.26 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.
- 3.27 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'*.
- 3.28 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.
- 3.29 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 & operations. Storage & Compound Areas

- 3.30 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.
- 3.31 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.
- 3.32 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

- 3.33 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

- 3.34 All existing trees to be designated for removal are to be removed in accordance with the *LLD2040-ARB-DWG-003 / 004 – Tree Retention and Protection Plans*. 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.
- 3.35 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.
- 3.36 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.
- 3.37 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.



LIZARD

Landscape Design and Ecology

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