

LIZARD

Landscape Design and Ecology

LOOK DESIGN AND BUILD LIMITED

**5 CENTRAL DRIVE, ELMER
BOGNOR REGIS, WEST SUSSEX**

Arboricultural Impact Assessment and Method Statement

Prepared by	JJ
Checked by	KM
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Contents

1.0	Introduction	3
2.0	Existing Site Information	4
3.0	Development Proposal.....	7
4.0	Arboricultural Impact Assessment	7
5.0	Arboricultural Method Statement.....	12

Appendix No. 01 – Site Photographs

1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned by Look Design and Build Limited to undertake a detailed tree survey and arboricultural impact assessment for the proposed residential redevelopment of No. 5 Central Drive, Elmer, Bognor Regis, West Sussex.
- 1.2 The initial tree survey visit to the site was undertaken on the 14th March 2019 to appraise the existing trees within the site area.
- 1.3 The Arboricultural Impact Assessment and Method Statement provides evaluation of the direct and indirect effects of the proposed design intent on the existing vegetation and trees and recommends mitigation where necessary. The report has been produced in accordance with the provisions of *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'*.
- 1.4 The Arboricultural Impact Assessment and Method Statement report for the No. 5 Central Drive, Bognor Regis site area has been prepared by Joe Jackson (*BA (Hons) LA DipLA CMLi; Director; Lizard Landscape Design and Ecology*) and reviewed by Keith Miller (*BA (Hons) MALA; Technical Director Landscape; Lizard Landscape Design and Ecology*).
- 1.5 This Arboricultural Impact Assessment and Method Statement should be read in conjunction with the associated arboricultural documentation including *LLD1671-ARB-DWG-001 – Tree Constraints Plan; LLD1671-ARB-DWG-002 – Tree Retention and Protection Plan; and LLD1671-ARB-SCH-001 – Existing Tree Schedule and Schedule of Tree Works*.
- 1.6 The redevelopment of the site area at No. 5 Central Drive with the proposed demolition of the existing property on the site and replacement with a new-build dwelling house can be supported in the context of the existing tree cover and street tree planting 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.

2.0 EXISTING SITE INFORMATION

The Site

- 2.1 The site area is located to the south-eastern edge of Bognor Regis at Elmer overlooking the shingle beach at Elmer Beach. The surrounding area is entirely sub-urban in this seafront context and is focused around a private sea estate of Elmer Beach Estate. The estate road is private and is not a particularly tree-lined street like other areas of Bognor Regis / Aldwick. The properties on Central Drive have large rear garden areas either side of the access driveway. No. 05 Central Drive has a large rear garden area enclosed with evergreen hedge lines which extends down to the beach edge.
- 2.2 The site area is the existing property of No. 5 Central Drive which is a rendered / plastic clad detached property over two storeys with an 'A' framed roof and a garage to the western property elevation. The property has a small hedged front garden area with driveway access. The front garden area is predominantly laid to concrete and hard landscape paving materials with a small area of lawn to the north-eastern edge.
- 2.3 There is a large rear garden area which is laid entirely to grass / paving enclosed with mixed-species hedge lines suited to the coastal location. The site is approximately 4.00 metres above sea-level and measures in total approximately 0.09 hectares.
- 2.4 There are no landscape or ecological designations or any UK Priority Habitats covering the site area or in close proximity. There are no *Tree Preservation Orders* covering the site area; nor is the site located with a *Conservation Area*.
- 2.5 The site is bounded to all sides by evergreen and deciduous hedge lines which contain the residential dwelling and garden area. There is a mature Monterey Cypress tree to the north-western front garden boundary of the property located within the adjacent property. There are small deciduous feathered tree species to the western edge of the front garden; and the rear garden is enclosed with evergreen hedge lines. Soils on site are described as '*Loamy soils with naturally high groundwater; Texture: Loamy; Habitats: Wet acid meadows and woodland*'.

Surrounding Landscape

- 2.6 The surrounding landscape is entirely urban dominated by linear streets running predominantly east to west along the seafront edge. The age of the properties appears to be 1930s to 1950s and these are of a low density within this sub-urban area of Bognor Regis. The streets are not particularly tree-lined, and the properties have large sized rear gardens with small urban front gardens accessed from the private road of the Elmer Sea Estate. No. 5 Central Drive is typical of the existing properties in this suburban area with garden views and access to the shingle of Elmer Beach to the southern garden edge.

Existing Site Vegetation

T 02 – *Cupressus macrocarpa* (Monterey Cypress)

- 2.7 An over-mature Monterey Cypress tree is located to the western frontage of the existing property. The existing tree is completely surrounded to all sides with areas of existing hard standing; concrete driveway; and highway; and existing buildings / garages to the southern aspect of the tree. The tree has an extremely wide bole to the base with raised and splayed tree roots above existing ground levels to the southern aspect at the base of the tree. There are hard landscape elements; kerb edges / paving materials amongst the exposed tree roots above ground. It is anticipated that due to the vigour of this tree species, that the roots of this Monterey Cypress tree shall be located beneath the existing hard landscape materials of the existing driveways and the adjacent highway to the north. It is not envisaged or anticipated that the tree roots shall have penetrated beneath the existing foundations of the existing property and the adjacent garage and shall otherwise have run along the edge of these existing structures and foundations.
- 2.8 There are signs of major tree surgery works to the north-western aspect of the tree bole and canopy to the mid-trunk on the north side of the tree. The tree is densely ivy clad into the tree canopy. There are major signs of dead wood within the tree canopy which is typical of a mature specimen of this species. The tree has an accentuated horizontal branching structure which is accentuated away from the coastal edge to the north and east and the adjacent structures. The tree has a reasonable form but is showing signs of over-maturity and recession; branch drop; dead wood; and dense ivy colonisation into the tree canopy. The tree should ideally be cleared and cleaned of all dead wood material over the proposed property and the driveway access.

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BOGNOR REGIS, WEST SUSSEX

LLD1671-ARB-REP-001 /JJ /REV 01 / 27.03.19

T 04 – *Fagus sylvatica* (Common Beech)

- 2.9 A semi-mature feathered common beech tree is located to the eastern property frontage to the eastern edge of the front garden area. The tree has a feathered open tree form adjacent to the ornamental tree to the south. The tree is ivy clad into the tree canopy and has been left unmaintained.

T 05 – *Laburnum* sp. (Laburnum)

- 2.10 Located to the southern edge of the Beech tree there is an ornamental garden tree to the eastern garden edge of the front garden boundary. The tree is of a feathered tree form and smaller than the adjacent beech tree immediately adjacent to the north.
- 2.11 The front and rear garden areas are enclosed with evergreen and deciduous mixed-species hedge lines of coastal species suited to the local environment.
- 2.12 Through reference to *arun.gov.uk*; the site / trees are not covered by any TPO's (*Tree Preservation Orders*) and as such no specialist requirements regarding tree removal or alterations are required. The site area is also not located in a *Conservation Area*; the setting of which would be a planning consideration.
- 2.13 The existing trees and tree species on and surrounding the site have been identified and recorded with their tree conditions on; *LLD1671-ARB-SCH001 - Existing Tree Schedule*; and identified on the following drawings alongside their tree Root Protection Areas (*RPA*s) and canopy spreads; *LLD1671-ARB-DWG-001-Tree Constraints Plan*; and *LLD1671-ARB-DWG-002 – Tree Retention and Protection Plan*.

3.0 DEVELOPMENT PROPOSAL

Development Proposals

- 3.1 It is understood that the development proposals include the redevelopment of the site area; with demolition of the existing building footprint and development of a new-build 2 no. storey family dwelling house with integrated garage to the north-western elevation. The development shall cover predominantly the same building footprint with the exception of the western building elevation where side access shall be provided along this boundary moving the building edge further east into the site; and the property frontage shall include a slightly enlarged porch area to the northern elevation. The front driveway shall be laid to loose gravel. The southern elevation of the proposed property shall include a paved patio area.

4.0 ARBORICULTURAL IMPACT ASSESSMENT

Operations on Site

- 4.1 Works to be completed within but not directly affecting the trees calculated root protection areas shall be completed with ground protection and operation zones in place to protect the existing and remaining trees. Trees not under direct affect or impact from the development proposals shall have appropriate tree protective fencing in place prior to the commencement of development (*as indicated in LLD1671-ARB-DWG-002 – Tree Retention and Protection Plan*).
- 4.2 The development proposals would involve the following site operations in close proximity to the existing trees:
- *Removal of existing vegetation not for retention;*
 - *Tree surgery works;*
 - *Tree protection works;*
 - *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 protective measures.*

Construction in Proximity to Existing Trees

4.3 The proposed redevelopment of the site area is immediately adjacent to some 'low' quality (*Category C*) domestic trees to the north-west and north-eastern proposed building elevations. The resulting proximity of new structures could result in pressures on the existing trees without mitigation measures put in place. This could include:

- *Ongoing need to prune the canopy back to prevent damage to the building and facilitate maintenance of the building elevations; and access to footpaths / highway;*
- *Manual excavation / ground protection zones during construction to protect retained tree roots;*
- *'No-dig' construction techniques for the hard landscape materials to the frontage of the property;*
- *Altered soil conditions including surfacing and installation of foundations.*

4.4 The 'low' quality trees and hedge lines adjacent to the site are likely to contribute to the existing visual amenity on site and within the existing street; and are likely to have some value for local wildlife, providing food and shelter and should be retained and protected accordingly where possible.

Effects of Development Proposals on Existing Vegetation

T 02 – *Cupressus macrocarpa* (Monterey Cypress)

4.5 The Monterey Cypress tree is proposed to be retained within the scheme proposals to the north-western aspect of the proposed new dwelling house. The existing tree is already entirely surrounded by existing structures and hard landscape paving treatments within the urban environment. There are hard landscape elements; kerb edges / paving materials amongst the exposed tree roots above ground. It is anticipated that due to the vigour of this tree species that the roots of this Monterey Cypress tree shall be located beneath the existing hard landscape materials of the existing driveways and the adjacent highway to the north. It is not envisaged or anticipated that the tree roots shall have penetrated beneath the foundations of the existing property and the adjacent garage and shall otherwise have run along the edge of these existing structures.

- 4.6 The proposed dwelling house shall occupy predominantly the same building footprint as the existing to the property frontage with the exception of a slightly extended porch structure to the northern elevation. The existing building structure shall need to be carefully demolished within close proximity to the Monterey Cypress tree. The foundations of the existing structure shall need to be removed manually using hand tools within the calculated tree root protection area of the existing tree under arboricultural supervision to ensure that no major tree roots are damaged within the process.
- 4.7 Whilst the new-build dwelling is being constructed the existing hard landscape materials surrounding it should be retained and used as hard standing for as long as possible in order to protect the existing tree root protection area of the existing tree beneath the existing hard landscape materials. These existing materials shall be retained until the end of the works when the proposed hard landscape areas surrounding the property are required to be renewed. In order to implement the proposed loose gravel driveway to the frontage of the property the existing hard landscape materials should be removed carefully and by hand using hand tools and taken down to the base level of the existing sub-base make-up in order to ensure that no damage is caused to the existing root zone of the adjacent existing Monterey Cypress tree. The proposed loose gravel driveway surface material proposed to the property frontage should be constructed with a no-dig construction technique.
- 4.8 The existing Monterey Cypress tree shall require tree surgery works and overall crown reduction to the south-eastern edge of the tree canopy by 2.5 metres immediately adjacent to the proposed northern elevation of the proposed dwelling in order to allow for the construction of the dwelling and also to protect the tree canopy / branches during construction.

- 4.9 Proposed services and utilities are proposed to come into the site from Central Drive into the existing property to the northern edge of the proposed dwelling house and then run around the northern and western building elevations to service the property. These required services shall use the existing service routes into the existing site where possible. New service routes shall need to be excavated manually using hand tools within the calculated tree root protection area of the existing tree to ensure that no major tree roots are damaged within the process. This excavation should be undertaken under arboricultural supervision.

T 04 – *Fagus sylvatica* (Common Beech) and T 05 – *Laburnum* sp. (*Laburnum*)

- 4.10 These feathered semi-mature trees are proposed to be removed from the front garden area to extend the existing driveway along the front of the property.

H01 and H03 – *Euonymus japonicus* (Japanese Spindle)

- 4.11 The evergreen hedge lines to the property frontage are proposed to be removed along the northern aspect of the existing property. The hedge lines to the rear garden boundaries are proposed to be retained and protected on site.

Tree Retention and Protection

- 4.12 The existing vegetation encompasses domestic tree planting of mature and semi-mature tree species. The retained trees and measures for their protection have been indicated on the drawing; LLD1671-ARB-DWG-002 – *Tree Retention and Protection Plan*.

Disturbance to Tree Root Protection Areas

- 4.13 In accordance with principles of BS 5837; 2012; '*Trees in Relation to Design, Demolition and Construction - Recommendations*', existing ground levels should be retained within the RPA to avoid damage to tree roots. Intrusion into soil within the RPA is generally not acceptable. However, limited manual excavation within the RPA might be acceptable, subject to careful specification and workmanship. This should be undertaken carefully, using hand-held tools, and preferably by compressed air soil displacement.

Development Proposals - Arboricultural Impact

- 4.14 All of the existing trees within the site area and to the site boundaries shall be protected with tree protective fencing as specified below and as indicated on the Tree Retention and Protection Plan. The tree protection works and tree surgery specification for each tree is scheduled below;
- 4.15 T 02 – *Cupressus macrocarpa* (Monterey Cypress)
- *Tree Protection Measures; Tree Protective Fencing; 2.0 metre height Heras Fencing to enclose the existing tree trunk / tree root protection area where possible during construction;*
 - *Ground Protection Zone; operation zone during construction for pedestrian and light plant access surrounding the existing tree and the proposed construction of the new-build dwelling house;*
 - *Manual Excavation Method for removal of the existing building foundations and existing driveway materials down to the base of existing sub-base materials when required within the tree root protection area of the existing tree;*
 - *No-Dig Construction Technique for the implementation of the proposed loose gravel driveway and other hard landscape paving areas; footpaths and patios above existing ground levels;*
 - *Manual Excavation Method under arboricultural supervision of proposed and existing service / utility routes into the existing property within the tree root protection area of the existing tree;*
 - *Tree Surgery Works to the existing tree canopy in order to crown reduce the canopy of the tree prior to construction in order to facilitate construction access and also protect the canopy of the existing tree whilst construction is in progress.*

5.0 ARBORICULTURAL METHOD STATEMENT

Removal of Existing Vegetation

- 5.1 All existing trees to be designated for removal are to be removed in accordance with the *LLD1671-ARB-DWG-002 - 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 *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.
- 5.2 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 *Arboricultural Consultant*. Where the depth is greater than 450 mm the areas shall be backfilled with topsoil to the required level.
- 5.3 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.
- 5.4 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.

Protection and Retention of Existing Trees and Habitats

5.5 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. 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 tree Root Protection Areas;*
- *Roots exceeding 25 mm in diameter must not be severed. If unintentionally severed; notice shall be given, and specialist arboricultural advice sought;*
- *Changes to the level of the ground within the specified tree Root Protection Areas;*
- *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.*

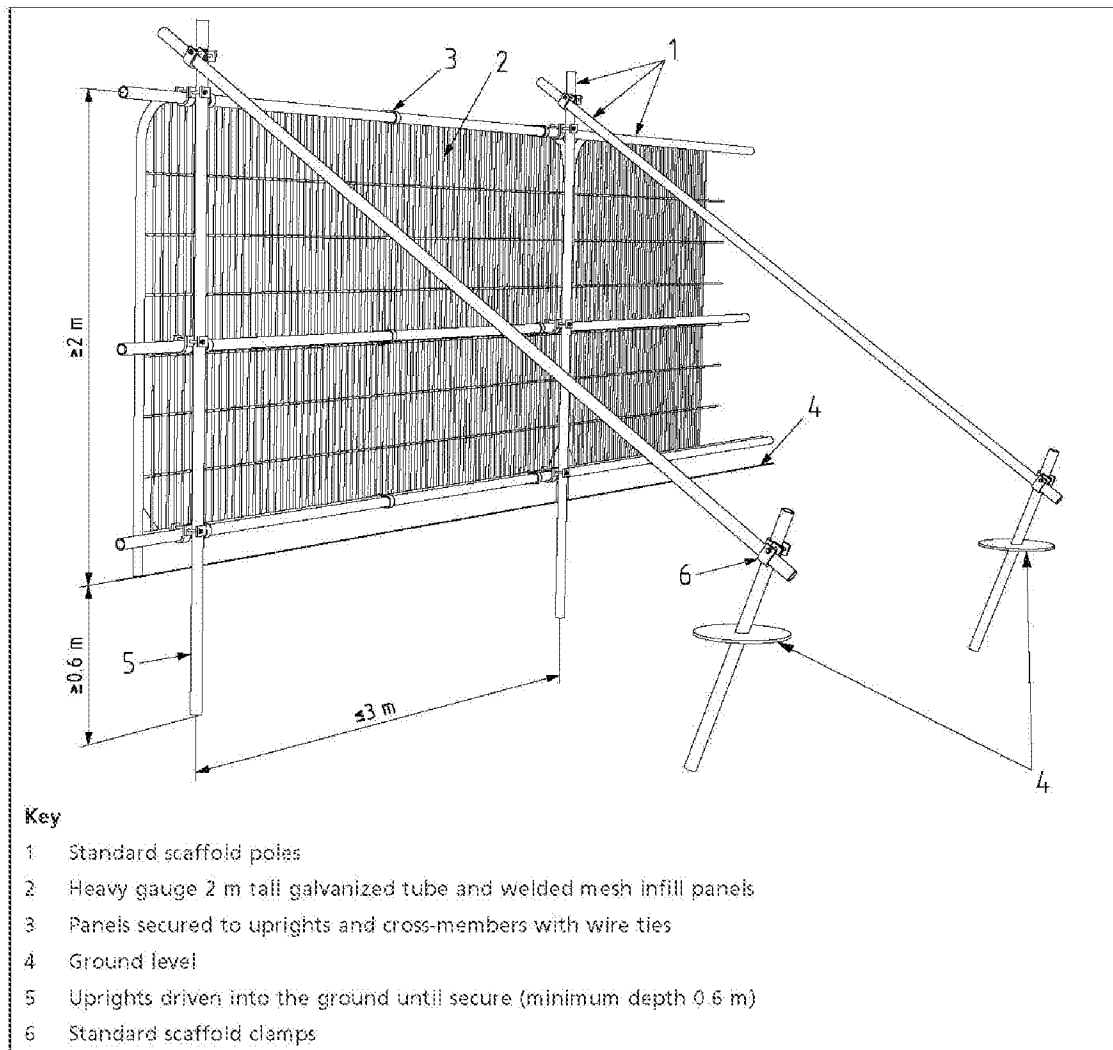
Tree Protection Barriers

5.6 The contractor shall exercise extreme care when performing operations beneath the canopy of existing mature trees and vegetation and within the specified tree root protection areas designated for protection and avoid always damage to the roots, trunk and branches of existing trees proposed to be retained.

5.7 All excavations, cultivation, and grading beneath the canopy of existing mature trees and within the specified tree root protection areas of the existing trees and vegetation shall be carried out using hand tools, taking care not to damage or disturb any existing tree roots.

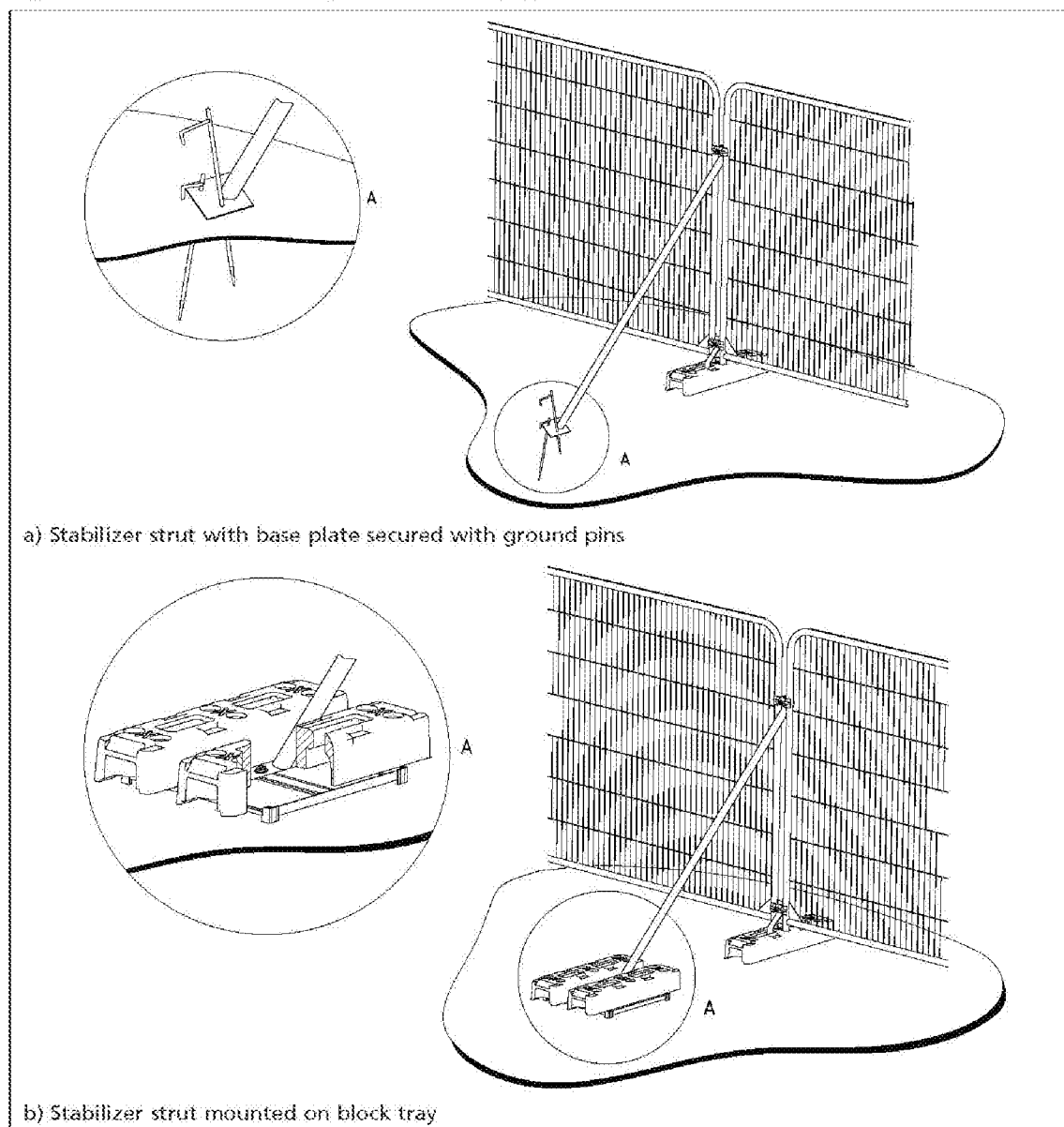
- 5.8 All trees to be retained on site shall be protected with fencing erected around the area of mature vegetation in accordance with *BS5837: 2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. The fencing shall be installed, protected, and maintained during the main works by the contractor who shall be responsible for protecting any area beneath the canopy of the existing trees and within the specified tree root protection areas.
- 5.9 The installed protective fencing shall be 2.0 metres 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. The fencing should be strained, and fixed to existing fences, walls, knee rails where possible to provide a complete protected area (*Refer to Figure No. 2 and Figure No. 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 the *Tree Retention & Protection Plan*.
- 5.10 The installed protective barrier shall be 2.0 metres minimum height Heras fencing system secured into the ground enclosing the tree trunk and the tree canopy in order to protect the tree during the construction phase of the development within this sub-urban environment as specified within drawing *LLD1671-ARB-DWG-002 – Tree Retention and Protection Plan*.
- 5.11 Day-glo ribbons shall be maintained during the main works by the contractor attached to the top of the fencing to ensure that the fencing is clearly visible during the works. The tree protection fencing shall display all-weather notices stating, '*Construction Exclusion Zone – NO ACCESS*'.

Figure 2 Default specification for protective barrier



© The British Standards Institution 2012

Figure 3 Examples of above-ground stabilizing systems



© The British Standards Institution 2012

- 5.12 Care should be taken to avoid damage to unseen tree roots and underground services; a secondary fencing support system may be implemented to accommodate these as outlined in Figure No. 3 above.
- 5.13 At the end of the contract period the contractor shall remove the tree protective fencing from the site. All retained vegetation shall be healthy and thriving at the handover date.

- 5.14 All such fencing 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 may occur prior to the inspection of the installed tree and ground protection by the Landscape Architect / Arboricultural Consultant. Repositioning of the protective fencing during the course of the contract as the contract works progress shall need prior agreement with the Landscape Architect / Arboricultural Consultant.
- 5.15 Within the protected area 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.*
- 5.16 At the end of the contract period, the contractor shall remove the tree protective fencing from the site. All retained vegetation shall be healthy and thriving at the handover date.

Heras – Anti-climb Smart Weld Panel Fencing

- 5.17 Specification: Galvanised anti-climb mesh; 2.0m height x 3.5m width; 13.8kg weight.

Ground Protection Measures

- 5.18 All existing hard landscape / highway materials shall be retained to be base of the existing trees for as long as possible within the construction phase of development. The root zones of the existing trees shall be shored up where necessary immediately adjacent to excavations required for building foundations to prevent any impact upon the integrity of the tree root zones.
- 5.19 Where construction operations require activity within the exposed unmade ground of any existing *Tree Root Protection Area*; temporary ground protection measures should be implemented allowing for access, limited traffic and operations during the construction period.

- 5.20 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.
- 5.21 The temporary ground protection measures should remain in place for the duration of the construction period.
- 5.22 Ground protection measures 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; such as 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; such as 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 Arboriculturist.*
- 5.23 The surface material should be contained with timber edging boards and spikes 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 tree Root Protection Areas.

Manual Excavation

- 5.24 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 implemented 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.

- 5.25 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.

Tree Protection Zone - No-Dig Construction - Proposed Driveway

- 5.26 A 'No-Dig' Construction method shall be employed over existing ground levels and the root plate of existing Monterey Cypress tree in order to avoid damage to existing tree roots and localised compaction of subsoil within the tree root protection areas of the tree to the property frontage.
- 5.27 Existing surfacing materials shall be left undisturbed and retained during the construction period for as long as physically possible in order to protect the tree root protection area of the existing trees to be retained; existing soft ground layers; grass sward and loose topsoil shall be removed carefully by hand within the existing tree root protection areas.
- 5.28 A ground stabilising geo-mesh (*'TDP SN20 GeoGrid' or equal and approved*), shall be rolled out over the existing ground level and evenly covered with a No Fines - Open Graded Aggregate (*in accordance with Highways Agency Specification; Clause 805 (Type 3) or equal and approved.*) The granular fill shall be incorporated within a 3-dimensional GeoCell (*Terram Geocell 250/100 or equal and approved*) and shall ensure a minimum supportive construction depth of 100 mm. A geo-textile filter membrane is to be laid over the granular fill construction (*Geotextile filter membrane to be TDP 115 Non-woven Geotextile Fabric or equal and approved.*)
- 5.29 A permeable system and construction method shall be installed over the prepared sub-base layers. A bedding layer of crushed aggregate (*to BS EN13242; range size; 4 - 14 mm*) is to be laid level and compacted above the Geotextile filter membrane to a depth of 25 mm. A permeable top layer; such as loose gravel or permeable block-paving shall then be installed above the bedding layer to create the access driveway.

Services in Proximity to Existing Trees

- 5.30 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.
- 5.31 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'*.
- 5.32 A '*Manual Excavation Method*' shall be followed to carefully hand dug and route the apparatus most directly to and from the exterior of the RPA radius.
- 5.33 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 shall 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

- 5.34 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.
- 5.35 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.
- 5.36 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

- 5.37 Any significant defects found in the trees during the course of the scheduled work shall be reported to the *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.

APPENDIX NO. 1 - SITE PHOTOGRAPHS



Photograph No. 01 - T02 - *Cupressus macrocarpa* (Monterey Cypress) to the north-western property edge adjacent to the surrounding driveways; garages and existing properties; and the highway to the northern edge. The tree is over-mature with a horizontal branching structure.



Photograph No. 02 - T02 - *Cupressus macrocarpa* (Monterey Cypress) to the north-western property edge adjacent to the surrounding driveways; major signs of dead wood within the horizontal branching structure.

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LLD1671-ARB-REP-001-01

APPENDIX NO. 1 - SITE PHOTOGRAPHS



Photograph No. 03 - T02 - *Cupressus macrocarpa* (Monterey Cypress) to the north-western property edge; raised roots above the existing hard landscape materials surrounding the tree to all sides.



Photograph No. 04 - T02 - *Cupressus macrocarpa* (Monterey Cypress) to the north-western property edge; previous signs of tree surgery work to the north-western aspect of the tree. Dense ivy colonisation into the tree canopy. Signs of recession and over-maturity within the tree canopy.

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LLD1671-ARB-REP-001-01

APPENDIX NO. 1 - SITE PHOTOGRAPHS



Photograph No. 05 - H01 – *Euonymus japonicus* (Japanese Spindle) – Evergreen coastal hedging to the north-western property frontage.



Photograph No. 06 - H03 – *Euonymus japonicus* (Japanese Spindle) – Unmaintained evergreen coastal hedging to the property frontage.

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LLD1671-ARB-REP-001-01

APPENDIX NO. 1 - SITE PHOTOGRAPHS



Photograph No. 07 - T04 – *Fagus sylvatica* (Common Beech); T05 – *Laburnum* sp. (Laburnum) – Feathered beech tree and ornamental garden tree to the north-eastern property edge; semi-mature feathered tree form; and colonised by ivy into the tree canopy.



Photograph No. 08 - H03 – *Euonymus japonicus* (Japanese Spindle) – Unmaintained evergreen coastal hedging to the property frontage.

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APPENDIX NO. 1 - SITE PHOTOGRAPHS



Photograph No. 09 - H03 – *Euonymus japonicus* (Japanese Spindle) – Unmaintained evergreen coastal hedging to the property frontage surrounded by areas of existing hard standing.



Photograph No. 10 - H07 – *Euonymus japonicus* (Japanese Spindle) – Maintained evergreen coastal hedging to the western edge of the rear garden area.

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APPENDIX NO. 1 - SITE PHOTOGRAPHS

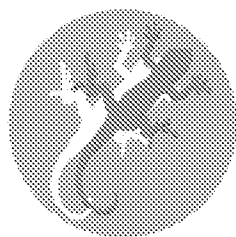


Photograph No. 11 - H06 – *Euonymus japonicus* (Japanese Spindle) – Maintained evergreen coastal hedging to the eastern edge of the rear garden area.



Photograph No. 12 - H08 – Deciduous coastal mixed-species hedging to the southern rear garden edge to the beach edge.

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