WEST SUSSEX COUNTY COUNCIL.

THE MARTLETS
EAST PRESTON, WEST SUSSEX

ARBORICULTURAL IMPACT ASSESSMENT
TREE PROTECTION – METHOD STATEMENT

Approved By:	Joe Jackson
Signed:	.....
Position:	Principal
Date:	09th January 2015
Rev:	00

January 2015 – Planning Issue

LLD792/TB /09.01.15.Rev 00

Lizard Landscape Design, 19 Broadwater Street East, Worthing, West Sussex, BN14 9AA

ARUN DISTRICT COUNCIL EP/2/15/RES

LLD792 – THE MARTLETS, EAST PRESTON, WEST SUSSEX
RESIDENTIAL DEVELOPMENT - ARBORICULTURAL METHOD STATEMENT
Planning Issue - Rev 00; 09.01.15

1.0 Introduction

1.1 The residential development proposals are located to the existing site of The Martlets, East Preston. There are 5 no. proposed residential units in total. The residential development proposals consist of 2 no. buildings, 1 no. located to the east of the site area comprising of 2 no. semi-detached properties and 1 no. to the west comprising of 3 no. terrace properties, including access, gardens, car parking and bin and bike storage. The development scheme would require the relocation of the existing site access and entrance with the proposed entrance remaining on the Sea Road to the east of the site area. There are 5 no. proposed parking spaces with a space located adjacent to each of the residential plots.

1.2 The existing site area forms a parcel of land to the centre of East Preston with several retail outlets and public amenities situated in close proximity. The existing site area consists of a disused non-residential unit to the centre of the site with one separate outbuilding to the west. There is an area of concrete hard standing along the southern boundary leading from the entrance to the east and two parcels of amenity lawn either side of the existing building to the north-eastern and north-western corner of the site. There are several different habitats within and adjacent to the site boundary including trees of varying quality, mixed species shrub and a conifer hedge row.

1.3 The existing site area is enclosed to the northern, western and southern site boundary by an existing flint wall with a Leylandii hedge line along the eastern site boundary. The flint walls are proposed to be retained and protected within the development scheme proposals. To the northern and western edge of the site within the boundary are areas of mixed native species shrub (SH09) which is predominantly Bramble, Elder and Ivy. To the southern edge of the site there are areas of self-seeded shrub (SH06), which includes Cotoneaster, Honeysuckle and Pyracantha. To the south-eastern corner there is a mixed ornamental species shrub border (SH04) adjacent to the existing site entrance. 2 no. mature Yew trees (T15 and T16) and 1 no. mature Scots Pine (T14) over hang the site to the north with Root Protection Areas encroaching onto the site. Part way along the eastern boundary there is a tall Leylandii hedge (H13) with a Caucasian Lime (T10) tree growing in the northern corner of the site. Within the south eastern corner of the site within the shrub border there is a group of C grade trees.

1.3 The existing trees, hedge line and shrub within and adjacent to the The Martlets site development boundary have been surveyed in detail for tree condition, and are recorded within the attached report; *LLD792 – Existing Tree Schedule and Schedule of Tree Works;* and indentified on the following drawings; *LLD792 / 01 – Tree Constraints Plan; and LLD792 / 02 – Tree Retention and Protection Plan.* The Tree Retention and Protection Plan illustrates the impact of the proposed development upon the existing trees and setting out where vegetation is to be removed and specifically measures for tree and root protection wherever existing trees and vegetation are to be retained and protected.

1.4 Following the proposed removal of existing vegetation from the site in accordance with the drawing *LLD792 / 02 – Tree Retention and Protection* Plan and accompanying Existing Tree Schedule, there are a number of existing trees within the vicinity of the development proposals that would remain and would be directly impacted upon by the development proposals. The existing retained trees are to be protected where possible in accordance with the guidance contained within *BS 5837; 2012 – 'Trees in Relation to Design, Demolition and Construction – Recommendations'.*

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1.5 The status, impact, and protective measures upon the existing trees and vegetation within the site affected by the development proposals are subject to the protective measures and construction method statement detailed in the following Arboricultural Method Statement.

2.0 Arboricultural Impact Assessment

2.1 The development proposals comprise a residential layout with a mix of housing, parking, garden plots with adjoining vehicle access road. The proposals affect a number of the existing trees on site; a number shall require removal and others shall require detailed protection to enable their retention within the proposed scheme. All existing trees to be retained shall be protected where possible in accordance with *BS 5837; 2012 – Trees in Relation to Design, Demolition and Construction – Recommendations*.

2.2 The following trees and vegetation shall require removal in order to accommodate the development proposals. The majority of the trees and shrub are of low quality and condition;

- *T 02 – Salix caprea; Category C;*
- *T 03 – Prunus sp. - Category C;*
- *SH 04 – Mixed Shrub Group – Category C;*
- *TG 05 – 2 no. Cupressocyparis Leylandii – Category C;*
- *TG 05 – 1 no. Chamaecyparis pisifera – Category C;*
- *SH 06 – Mixed Shrub Group - Category C;*
- *SH 08 – Mixed Shrub Group - Category C;*
- *SH 09 – Mixed Shrub Group - Category C;*
- *T 10 – Tilia x euchlora - Category B;*
- *T 11 – Prunus sp. - Category U;*
- *T 12 – Ilex aquifolium - Category C;*
- *H 13 – Cupressocyparis leylandii – Category C;*

Northern Boundary – T14 – Scots Pine (Pinus sylvestris) T 15 and T16 – Yew (Taxus baccata)

2.3 These mature Scots Pine (Category A) and Yew trees (Category B) are on the adjacent highway verge outside of the property boundary to the north of the site. The tree root protection areas (RPA) and canopies of these existing trees extend beneath the existing flint wall several metres into the site. The trees are in good condition and add considerable amenity value to the area. T14 and T16 have fairly large tree root protection areas of 8.70 and 9.00 metres radius extending within the site development scheme proposals. 15 % of the tree root protection area (10% of T 16 and 5% of T 14) is covered within the site area by the existing building which is proposed to be removed. All existing construction materials are to be removed manually by hand within the trees RPAs. The construction area / existing ground beneath the existing tree canopies shall be overlain with a geo-textile membrane and granular fill Type 3 compression protection layer for ground protection during construction.

2.4 The car park and bike store area is proposed to be surfaced with a permeable surface treatment to assist with water percolation to the tree roots. The car park surface treatment would be reinstated with a no-dig permeable construction method within the trees RPAs. The existing areas of tarmacadam surface treatment and hard standing should be used for site access purposes during the construction process for as long as is possible to protect the existing tree root protection areas throughout the works.

2.5 The large mature Scot Pine (T 14) and Yew (T 16) tree is located within the adjacent highway verge to the boundary wall. The tree root protection areas are 8.70 and 9.00 metres radius respectively and overlays the development area and the proposed building footprint. 12 % of the Yew tree root protection area falls within the adjacent proposed western dwelling property footprint and 4 % of the Scots Pine tree root protection area falls within the adjacent proposed eastern dwelling property footprint. The proposed residential dwellings are proposed to be constructed within the site area using a pile and beam foundation design and construction which avoids the use of trench excavated foundations into the adjacent existing Tree Root Protection Areas.

2.6 The pile and beam foundations would be constructed above existing ground levels and above the adjacent existing tree roots. The proposed properties would require structural engineers to locate the piles and steel beams to support the proposed dwellings above the existing ground levels. The initial pile location shall be a hand excavated trial pit to avoid major tree roots. This ensures that major tree roots are not severed and are retained intact beneath the foundations.

2.7 The remainder of the tree root protection area within the site shall need to be retained and protected with both ground protection measures and 'no-dig' paving construction method where applicable and specified or with interlocking metal plates 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'.*

2.8 The canopies of T 15 and T 14 would have crown reduction to their southern aspect to make more room for the proposed bin and bike store. The reduction would remove a maximum of 1.0m to the southern aspect. All tree pruning and crown reduction would be carried out in accordance with *BS3998: 2010 – 'Tree Work: Recommendations'*

South-western Boundary – T07 – Betula pendula (Silver Birch)

2.9 The RPA and canopy of T 07 extends into the proposed development site boundary from the adjacent property. The tree would require tree protective fencing to be installed and in place for the duration of construction.

South-eastern Boundary – T01 – Laurus nobilis (Bay)

2.10 The mature Bay tree situated in the adjacent property to the south-eastern corner of the site area is proposed to be retained and protected to the site frontage. The RPA and canopy extends within the site development boundary. The RPA extends within the proposed site development access and entrance to the eastern boundary and onto the highway. No-dig construction methods are proposed for the acces driveway within the site boundary. On the public highway manual dig construction is proposed to retain the existing levels of the pedestrian access and grade the access down to the level of the vehicular public highway. The tree shall be protected with tree protective fencing for the duration of construction.

3.0 Stages of Work / Programme

3.1 The Martlets residential development proposals shall involve the following site operations that could impact upon the existing tree cover;

- *Contractor movements; site access and operations; storage and compound;*
- *Removal of existing vegetation not for retention;*
- *Construction of dwelling houses; car park construction; and ground work operations;*
- *Implementation of services and utilities;*

4.0 Arboricultural Method Statement

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

4.1 The contractosr site compound shall be located outside of the defined tree root protection areas as indicated on drawing; *LLD792 / 02 – Tree Retention and Protection Plan.*

4.2 The contractors site compound shall be located so as to not incur damage or injury to the tree 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.* All 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.

4.3 Access to the site area shall be made at all times via the existing access point and entrance from Sea Road. Pre-construction vehicular movement to facilitate the removal of existing vegetation and undertake tree surgery works shall be limited to the minimum requirement in order to fulfil the vegetation removal works and no vehicular access shall be permitted over unmade ground within the tree root protection area of existing trees to be retained and protected. Once the tree removal and tree surgery works have been completed the tree protective fencing works shall be put in place. Vehicular movements during the construction period shall be limited to the areas of existing hard standing or newly protected ground only.

4.4 Demolition of the existing buildings shall be undertaken once the tree protective fencing measures have been put in place in order to protect existing tree canopies and tree root protection areas from vehicle movements and material storage.

4.5 All site operations and construction procedures for the duration of the construction period shall seek to protect the existing site vegetation and tree root protection areas in accordance with *BS 5837; 2012 – Trees in Relation to Design, Demolition and Construction.*

Removal of Existing Vegetation

4.6 All existing trees designated for removal are to be removed in accordance with the Tree Protection and Retention Drawing *LLD792 / 02 - Tree Retention and Protection Plan.* All tree work and removal shall be carried out in accordance with *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations' and BS3998: 2010 – 'Tree Work: Recommendations'.* 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, and tree surgery works undertaken 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 and protected.

4.7 Stumps shall be removed and cut away so that the top of the tree stump shall be at least 450 mm below the final topsoil level in order that the site can be reinstalled in accordance with the existing site levels. Stumps are to be treated with an approved herbicide to be agreed with the Landscape Architect / Arboricultural Consultant. Where the depth is greater than 450 mm the areas shall be backfilled with topsoil to the required level.

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4.8 The removal of shrub or scrub material within the tree 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 tree root protection area, and reduce any damage to existing tree roots within the protected tree root zone. Adjacent trees shall not be utilised as anchors or levers to facilitate the removal of adjacent vegetation.

Tree Surgery

4.9 Tree surgery measures and works have been identified with the attached *Existing Tree Schedule and Schedule of Tree Works*. 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 *BS3998: 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.

Tree and Vegetation Management

4.10 For tree and vegetation retention and removal proposals refer to the attached *Existing Tree Schedule*. For tree and vegetation management proposals refer to the tree surgery works and management prescriptions contained within the *Existing Tree Schedule and Schedule of Tree Works.*

Protection and Retention of Existing Vegetation

4.11 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 at all times damage to the roots, trunk and branches of existing trees proposed to be retained.

4.12 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.

4.13 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.

4.14 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 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 Drawing *LLD792 / 02 – Tree Retention and Protection Plan*.

4.15 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*'.

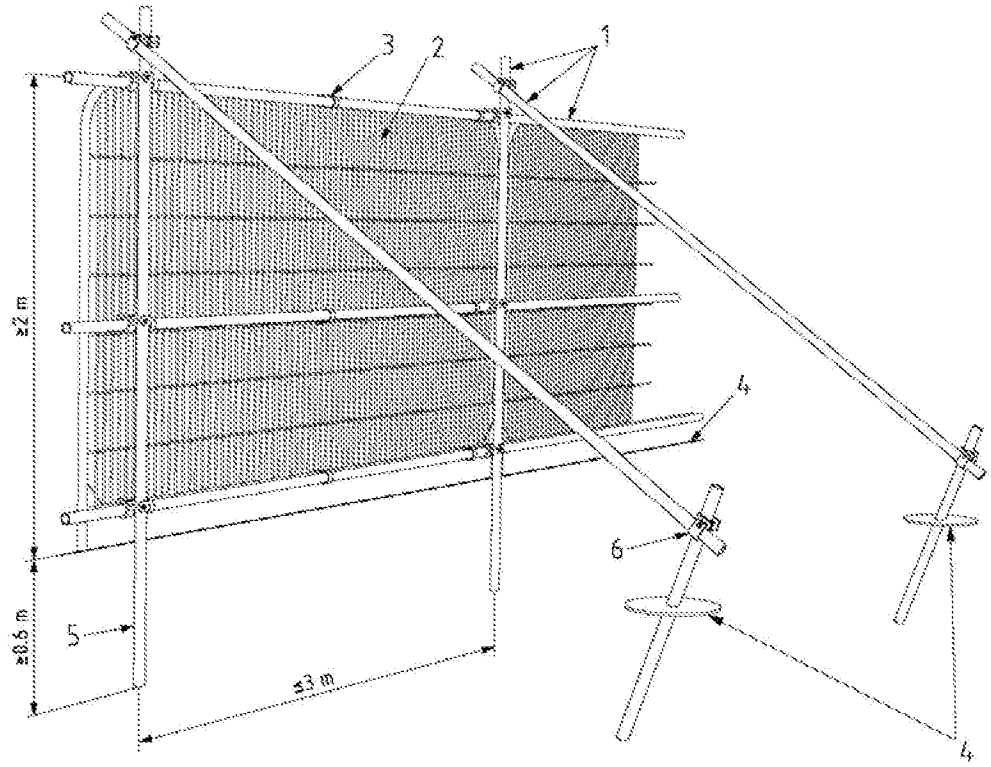
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4.16 All such fencing shall be maintained for the full contract period. All necessary excavations, earthworks, and cultivation beneath the canopy spread of any existing tree; shrub or hedge shall be undertaken by hand. No commencement of construction 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.

4.17 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.*

Figure 2 **Default specification for protective barrier**



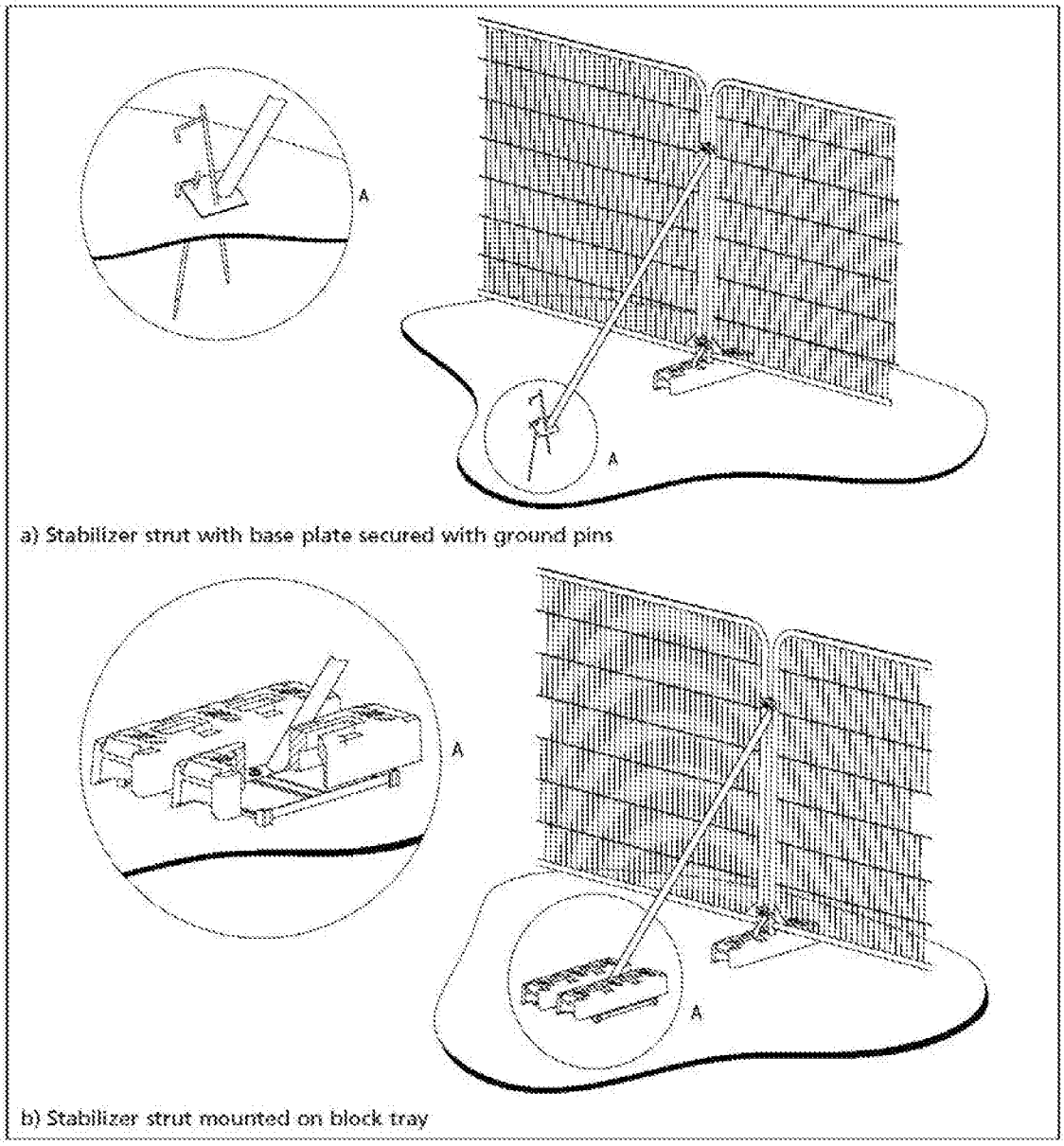
Key

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

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(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 below).

Figure 3 Examples of above-ground stabilizing systems



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4.18 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.

Ground Protection; Tree Protection Zone
- Pile and Beam Foundations

4.19 The proposed residential dwellings are proposed to be constructed within the site area using a pile and beam foundation design and construction which avoids the use of trench excavated foundations into the adjacent existing Tree Root Protection Areas. The pile and beam foundations would be constructed above existing ground levels and above the adjacent existing tree roots. The properties would be piled according to the structural engineers specifications to support the proposed dwellings above existing ground levels. The initial pile location shall be excavated by hand to avoid major tree roots. This ensures that major tree roots are not severed and are retained intact beneath the foundations. If necessary the location of the piles can be adjusted to suit the location of major tree roots. Positions of piles would be agreed on site with the arboricultural consultant / Local Planning Authority.

Ground Protection; Tree Protection Zone
- Operation Zone during Construction

4.20 Where construction operations require activity within the exposed unmade ground of any existing tree root protection area, a temporary protection zone shall be implemented allowing for construction operations only, but no vehicular access close to existing trees during the construction period. The temporary ground protection measures are to be set out in accordance with drawing *LLD792 / 02 – Tree Retention and Protection* and shall remain in place for the duration of the construction period. The temporary ground protection for construction operations only, but no vehicular access, shall comprise a single thickness of metal plates secured and supported upon a scaffold framework driven into the ground or by a retained non-compressible layer *(woodchip / Type 1)* of 150mm depth placed above a geo-textile separation membrane in order to protect existing tree roots.

Ground Protection; Tree Protection Zone – 'No-Dig' Construction

4.21 In accordance with B*S 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'* ground levels should not be raised or lowered within the existing tree root protection areas. A *'no-dig' Construction* method shall be employed in order to avoid damage to existing tree roots and localised compaction of subsoil within the tree root protection area.

4.22 Where new surfacing is proposed within the tree root protection areas of the existing trees it shall be installed using a *'no-dig' permeable geo-grid construction*. Existing paving material shall be left undisturbed and retained during the construction period for as long as possible in order to protect the tree root protection area of the existing trees to be retained; existing surface hard landscape materials and sub-base layers only shall be removed carefully by hand within the existing tree root protection areas and shall not exceed the depth of the existing construction. Existing subsoil / topsoil layers shall be retained and protected in place in order to protect tree roots.

4.23 A ground stabilising geo-mesh shall be installed above the existing ground levels of the proposed car park area; prior to installation, all hollows within the existing construction are to be filled and no high points of existing undisturbed / unmade ground shall be skimmed. A ground stabilising 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.*)

4.24 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.*)

4.25 A permeable blockwork paving 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 - 14mm)* is to be laid level and compacted above the Geotextile filter membrane to a depth of 25 mm. A porous paving system of permeable blockwork paving shall be installed above the bedding layer. The permeable blockwork paving shall be infilled with permeable chippings to infill large joints between permeable blocks and ensure strong jointing.

Ground Protection; Tree Protection Zone – Manual Excavation

4.26 Where the development proposals necessitate excavation of building foundations; the tie-ing in and re-grading of existing and proposed levels for vehicular access; or include the implementation of underground services such services, cables, pipe work; a manual excavation method must be implemented using hand held tools to minimise the impact on existing trees and roots. The excavation shall be executed with due care and attention not to disturb exposed unmade ground and any existing tree roots present within it.

4.27 Roots over 25mm diameter or those occurring in clumps must not be severed without arboricultural advice. Roots below such size may 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.

4.28 Existing service runs should always be used wherever possible. Where the proposed routing of services impinges upon the root protection area of any existing tree to be retained, the routing shall be undertaken in accordance with a manual excavation method; to be carefully hand dug and routed most directly to and from the exterior of the tree root protection area radius. Services are to be trenched and routed together wherever possible to create the minimum impact upon the tree 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 will become severed. Where services are to cross the edge of an existing tree root protection area, they should be routed through existing tree roots, via a hand dug ducting sleeve, avoiding damage to existing tree roots within the root protection zone.

4.29 ***Heras – Anti-climb Smart Weld Panel Fencing***

Supplier: *Safe Site Facilities*; or equal and approved
Address; *Old Selden Farm, Selden Lane, Patching, West Sussex, BN13 3UL*
Tel: *0845 463 5421*; Email: *info@safesitefacilities.co.uk*
Web: *www.safesitefacilities.co.uk*
Specifications; Galvanised anti-climb mesh; 2.0m height x 3.5m width; 13.8kg weight.

5.0 Arboricultural Method Statement – Notes; General

5.1 The principles and recommendations of *BS5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'* shall be adhered to where possible in order to prevent damage or undue stress upon the existing trees, soils and roots potentially impacted upon by the development proposals.

5.2 Destruction of soil structures through soil compaction, excavation or contamination shall be avoided at all times within the tree root protection areas. Physical damage to existing trees to be retained; roots, stems, branches shall be prevented wherever possible.

5.3 All tree protection measures are to be carried out, on site and within the development proposals, in accordance with the relevant approved drawings accompanying this method statement.

5.4 Arboricultural Supervision shall be required at the following stages of work;

- *Installation of tree protection measures;*
- *Method statement briefing for site staff;*
- *Supervision of the manual excavation of building foundations within tree root protection areas;*
- *Supervision of the 'no-dig' area prior to and for the implementation of the construction process;*
- *Removal of tree protection measures.*

5.5 The loss through development of existing trees may occasionally be unavoidable. Wherever existing trees are removed to accommodate development, contingency should be made for relocation of removed trees if possible or the replanting of young trees with suitable species for the site location where relocation of existing trees is not viable.

5.7 The phasing of works might be appropriate in order to implement the proposed development. Where the construction operations impact upon existing trees to be retained the trees shall be fully protected where possible in accordance with *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'* for the duration of the construction period. The phased retraction of construction operations may allow for tree protection measures to be withdrawn / re-sited. The re-alignment or withdrawal of any Tree Protection Measure shall only be permitted with the agreement of the Project Arboricultural Consultant / Local Planning Authority.

6.0 **Contact Details**

Landscape Consultant
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[redacted]