Arboricultural Method Statement

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Introduction

Eight Associates Ltd has been instructed by Swansea City and County Council to carry out an Arboricultural Method Statement (AMS) for planning purposes in relation to proposed development at Castle Square, Swansea, Wales, SA1 1DW.
The main aspects of the proposed development are summarised below:

1. The construction of 2no. pavilions.
2. Construction of new raised beds and remodelling of existing raised beds.
3. Removal of existing water feature and installation of new water feature.
4. Landscaping including new paving, wild flower and lawn areas.

A site visit was made on the 17th December 2021to survey the trees, hedges and vegetation to the British Standard. The condition of all trees on site pertinent to the proposals were assessed and a Category Rating was allocated; this information is detailed within the Tree Survey report A Tree Constraints Plan was produced following the survey, which along with the Tree Survey and Implication Assessment forms the basis of this report.

The AMS takes into consideration construction operations undertaken in relation to the trees.

Contact details

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Development Details	
Development Name	Castle Square
Development Address	Castle Square, Swansea, Wales, SA1 1DW.

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Phasing of Works

This method statement is split into sections relating to the phases or stages of works with respect to removal of trees, tree works required to accommodate the development, as well as consideration of protection and mitigation of trees to be retained on site.
These phases are identified as follows:

1. Tree works
2. Demolition and main construction
3. Stripping out of existing utility services, TV Screen and Bus Shelters.
4. Soft landscaping and installation of new lighting columns.

Supervision and Monitoring

Some aspects of the proposed development will require Arboricultural supervision and/or monitoring. Key time points for such visits are noted within this AMS. This will involve ensuring compliance with all Arboricultural conditions (as agreed) as well as advising on any issues relating to trees, tree roots or the tree rooting environment as arising. All such visits will be recorded with pertinent information logged. This information will be shared with the client, site manager and local planning authority.

It is the site manager's responsibility to ensure that the requirements set out within this Arboricultural Method Statement (AMS) are known and understood by all site personnel. The site manager will brief all personnel who may have an impact on any trees and relay all relevant tree protection requirements. Further, all pertinent documents relating to tree matters will be made readily available for Contractors. This AMS and TPP will be required to be imparted as part of any site induction procedures. (Where necessary it will be incorporated into any appropriate site management documents).

The following considerations need to be explained to all site personnel:

1. The requirement for Protective Barriers to be sufficiently robust and retained in position to prevent any incursion by any construction activity.
2. The importance of such 'exclusion zones' around retained trees to enable suitable protection to both the visible aspects of the tree as well as the non- visible consideration of the tree roots and the soil.
3. The requirement to protect soils as well as trees on the site.
4. The requirement to inform the Site Manager if damage has occurred to trees, tree roots or there is contamination to soils within areas where trees are.

Tree Works – Phase 1

Tree works to be carried out prior to the installation of Protective Barriers and Tree Protection Boxes.
The following tree works will need to be carried out prior to the installation of all Protective Barriers and Tree Protection Boxes.

Tree Number	Species	Works required
T6	London Plane	Lift crown to 4.5 metres
T7	London Plane	Fell and grind out stump.
T17	Himalayan Birch	Fell and grind out stump.
T18	Cherry	Fell and grind out stump.
T19	Sycamore	Reduce lateral spread of crown to west and south-west by 2.5 metres.
T21	Cherry (Tree has been felled to stump)	Grind out stump.
T22	Cherry	Fell and grind out stump.
T23	Cherry	Fell and grind out stump.
T24	Cherry	Fell and grind out stump.

Installation of Protective Barriers, Tree Protection Boxes and Ground Protection prior to commencement of demolition / main construction.
The areas requiring Protective Barriers, Tree Protection Boxes and Ground Protection prior to commencement of demolition and main construction are shown as of TPP Phase 1 and 2.

Arboricultural Supervision.

1. Review post tree works to ensure that all works are completed satisfactorily.
2. Review Protective Barriers, Tree Protection Boxes, Ground Protection and site storage/ welfare installation to ensure that all works are completed satisfactorily.

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Demolition and main construction – Phase 2

Methodology for removal of existing planter walls within RPAs.

It is proposed to remove the existing planter walls that lie within the RPAs of retained trees T1, T2, T4, T5, T8, , T9, T10, T11, T12, T13, T14, T19 and T20.
Protective Barriers and Tree Protection Boxes must be in place prior the commencement of works.
Access to the work area will be via the existing hard-standing which is to be retained as ground protection during the demolition and main construction phase. The breaking out and removal of the existing planter is to be carried out from the hard-standing areas and not within the planters. The walls of the existing planters are to be collapsed away from the soft ground and onto the paving. Any significant tree roots (>25mm dia.) and significant root masses exposed are to be wrapped with hessian, binding a topsoil mixed with P4 crystals in contact with the exposed root. The hessian is to be periodically moistened during dry conditions.
Unless unavoidable, the foundations of the existing planter walls located in the RPAs of retained trees are to be retained in-situ. Where practicable the retained foundations are to be utilised for support of the walls of the new planter. Where this cannot be accomodated, new foundations within RPAs are to be installed as per below.

Arboricultural Supervision.

1. Arboricultural Supervision required during removal of existing walls within RPAs of retained trees and removal of foundations if it is not possible to retain them in-situ.

Methodology for installation of new planter walls within RPAs – Root Investigation.

Prior to the construction of the new planter walls it will be necessary to ascertain the extent of the root systems of the trees T3, T4, T5, T6, T8, T13 and T14. This would best be achieved by excavating trial pits down to a depth of 600mm using a combination of air spade and hand -held digging equipment to expose all roots in the areas where the piles are proposed to be installed. The use of a vacuum unit may be used subject to confirmation by the Supervising Arboriculturist.
All roots exposed under 25mm diameter maybe pruned back to allow installation except in the instance where a significant network of fine roots may be encountered. Where large areas of fine roots or roots exceeding 25mm in diameter are encountered the roots are to be left in-situ and the pile installed to avoid the severance of the roots.
This may be achieved either by physically moving the root, if it is under 40mm diameter, by digging around the root and re-positioning it. Where this is not possible it will be necessary to off- set the position of the pile.
Protection will be provided to all roots encountered from any concrete install of the pile. This will be achieved by protecting exposed roots with hessian sacking and plastic or installation of plastic root deflectors to ensure the roots are not contaminated by curing cement. (If the trial pits are left open with exposed roots, these roots will be similarly protected from frost or dry/ hot weather conditions).

Arboricultural Supervision.

1. Supervision, inspection, monitoring and recording of all roots encountered.
2. Information to be provided to LPA and those involved with the design of the piled foundation.
3. Ensure that all exposed roots are adequately protected.
4. Ensure that all back fill is carried out by hand with no damage to the root systems.

Methodology for installation of new planter walls within RPAs - Installation

The previous root investigations as to the rooting systems of T3, T4, T5, T6, T8, T13 and T14 will have established the suitable positions for the install of the small diameter piles. It is recommended that a minimum number of minimum diameter piles are used to for the foundation construction for the new wall section. The installation of Helical piles is suggested as they present less potential impact on tree roots. A mini piling rig or mounted mini-digger will need to access within the RPAs of trees T3, T4, T5, T6, T8, T13 and T14.
The access for machinery will be over the existing retained hard-standing acting as ground protection. Similarly machinery is only to be operated when located on the existing hard-standing. Working height of the machinery will be <3.5 metres.

It will be necessary to install the ground beam/ stone at or above the existing slab level to reduce excavation within the rooting zone. Ground beams/ stone should be pre-caste. Where this is not possible it will be necessary to ensure that no concrete contamination will be allowed to contact the soils within the RPAs of trees T3, T4, T5, T6, T8, T13 and T14.

Arboricultural Supervision.

1. On site supervision to ensure installation of ground beams does not interfere with soils and roots.
2. On site consideration of the need for additional ground protection in relation to the movement and positioning of the mini piling rig/ mini digger.

Methodology for Construction of Pavilion B in RPA.

Proposed new Pavilion B encroaches the RPA of T19 by 4%. Prior to commencement of works it will be necessary to carry out facilitation pruning of T19 and install Protective Barriers.
It will not be possible to retain roots located and exposed within the footprint of the new build, but are to be treated to minimise impact on the tree.
All roots exposed within the footprint of the new build are to be pruned back using a sharp tool leaving as small a wound as possible. Where practicable the excavation will be laterally extended to allow pruning cuts to be made at a suitable growth point. Any significant tree roots (>25mm dia.) and significant root masses exposed are to be wrapped with hessian, binding a topsoil mixed with P4 crystals in contact with the exposed root. The hessian is to be periodically moistened during dry conditions to prevent the exposed roots drying out. Details of roots pruned is to be recorded and entered into the Site Monitoring/ Supervision Report.

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Arboricultural Supervision.
1. On site supervision to carry out root pruning and to ensure root protection measures are implemented.
2. To record details of roots pruned to inform future management.

Methodology for installation of new drainage within RPAs
It is proposed to install new foul and new surface water drainage pipes within the RPA of tree T6 at depths of approximately 2.0 metres. The foul pipe is to be connected into the existing inspection chamber. Works are to be conducted to minimise impact on the tree T6. This would be best achieved by excavating the top 1.0 metre for the new pipework using a Vacuum unit with air spade and hand -held digging equipment.
Excavated soils are to be stored outside the RPAs of retained trees.
All roots exposed under 25mm diameter maybe pruned back to allow installation except in the instance where a significant network of fine roots may be encountered. Any significant tree roots (>25mm dia.) and significant root masses exposed are to be wrapped with hessian, binding a topsoil mixed with P4 crystals in contact with the exposed root. The hessian is to be periodically moistened during dry conditions.
Shoring required to stabilise excavations are to be located to avoid the retained roots.

Arboricultural Supervision.
1. On site supervision to carry out root pruning and to ensure root protection measures are implemented.

Methodology for installation of new paving within RPAs
New and re-used paving is proposed within the RPAs of retained trees. This must be conducted with minimal impact on trees. Avoidance of such impact will necessitate that any new paving does not require excavation beneath the existing sub-base materials. Where possible any existing sub-base materials are to be retained in-situ to prevent potential disturbance of roots.

Arboricultural Supervision.
1. On site supervision during installation.

Stripping out of existing utility services, removal of existing TV screen and Bus shelters – Phase 3

Methodology for stripping out of existing utility services.
It is proposed to remove the existing Water Service and LV Cables from the within the RPAs of retained trees T2, T10, T14, T19 and T20. The extent of encroachment that would be required within the RPAs of T10, T14, T19 and T20 is significant and would negatively impact on these trees. It is therefore important that the services within the RPA are retained in-situ to avoid unnecessary disruption to the root system.
The extent of encroachment within the RPA of T2 is <20% and thus would be acceptable provided that methods are adopted to minimise impact on roots. This would be best achieved by excavating using air spade and hand -held digging equipment. A vacuum unit may be used subject to confirmation by the Supervising Arboriculturist. Excavated soils are to be stored outside the RPAs of retained trees.
All roots exposed under 25mm diameter may be pruned back to allow installation except in the instance where a significant network of fine roots may be encountered. Any significant tree roots (>25mm dia.) and significant root masses exposed are to be wrapped with hessian, binding a topsoil mixed with P4 crystals in contact with the exposed root. The hessian is to be periodically moistened during dry conditions.

Arboricultural Supervision.
1. On site supervision to carry out root pruning and to ensure root protection measures are implemented.

Methodology for removal of existing TV screen.
There is a large existing TV screen at the site that encroaches the RPA of T10 which is proposed to be removed. Any lifting equipment used to remove the screen is to be located to the north and east, entirely outside of the RPAs of retained trees.
The Contractor removing the screen is to provide a method statement for review by the Arboriculturist prior to implementation. This will establish whether additional ground protection will be required to be laid over RPAs of retained trees.
The foundations supporting the screen, whether they be pads or piles, should where possible be retained in-situ within the RPA to prevent root disturbance. If that cannot be accommodated removal below ground should be achieved using hand operated tools.

Arboricultural Supervision.
1. On site supervision of works within RPA.

Methodology for removal of existing Bus Shelters and installation of in-fill railings.
2no existing bus shelters to be removed and in-fill railings encroach RPAs of trees T3 and T4.
The Protective Tree Boxes are to be in place around T3 and T4 prior to the commencement of the removal of the Bus Shelters. The structures are to be removed carefully using hand tools only. Where possible the new in-fill railings should utilise, and be supported by, existing foundations. Where that cannot be accommodated holes for the new posts and foundations will be of smallest dimensions suitable and excavated using an air-spade/ hand tools. Protection will be provided to all roots encountered from any concrete install of the pile. This will be achieved by protecting exposed roots with hessian sacking and plastic to ensure the roots are not contaminated by curing cement.

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Arboricultural Supervision.
1. On site supervision of works within RPA.

Soft Landscaping and Installation of Light columns – Phase 4

Methodology for lowering of levels within RPAs.
Proposed new lowering of levels encroaches the extents of the RPAs associated with trees T1, T8, T9 and T11. Pavilion B encroaches the RPA of T19 by 4%. All roots exposed under 25mm diameter maybe pruned back to allow installation. Significant sized roots over 25 – 40mm diameter will be preferentially physically moved downwards and retained. Where this is not possible roots exposed are to be pruned back to allow installation using a sharp tool leaving as small a wound as possible. Where practicable the excavation will be laterally extended to allow pruning cuts to be made at a suitable growth point. Any significant tree roots (>25mm dia.) and significant root masses exposed are to be wrapped with hessian, binding a topsoil mixed with P4 crystals in contact with the exposed root. The hessian is to be periodically moistened during dry conditions. Details of roots pruned is to be recorded and entered into the Site Monitoring/ Supervision Report.

Arboricultural Supervision.
1. On site supervision to carry out root pruning and to ensure root protection measures are implemented.
2. To record details of roots pruned to inform future management.

Methodology for raising of levels within RPAs – Soil Decompaction.
It is proposed to raise levels within the RPAs of most of the retained trees. With the exception of tree T14, the extent of soil raising of 100mm and above has been limited to <20% of the Root Protection Areas. The proposed encroachment within T14 is 51%.
Given these encroachments, improvement of the existing soils is recommended. This would be best achieved by decompaction of the soils associated with the RPAs of trees T10, T11, T12, T13, T14 and T15 after main build works and prior to the soft landscaping. Decompaction using a system to aerate the existing soils and to increase pore space to maintain aeration is recommended. The use of the Vogt Soil Aerator is suggested. Prior to decompaction it will first be necessary to remove the existing hard-standing slabs within the RPAs of trees T10, T11, T12, T13, T14 and T15. The soils located within the RPAs of these tree should be de-compacted at 1.0 metre centres (subject to check of utility services) to a depth of at least 0.6 metres and ideally 1.0 metre. A supporting aggregate and biochar is to be added (as per manufacturer guidance) to improve pore space. It will be necessary to lay local ground protection during works to prevent additional soil compaction.

Methodology for raising of levels within RPAs – Installation.
Prior to installation of new soils within RPAs it will be necessary to remove existing vegetation including grass. This must be planned for in advance and involve treatment using a suitable herbicide that will not damage trees. On no account will the existing grass be removed by the cutting out of turfs. Soils utilised to raise levels within RPAs must be sufficiently granular to maintain water percolation and aeration. It is suggested that for those areas to receive <100mm of soil raising a 50/50 mix of clean topsoil and sharp sand (not builders sand) is to be used. For those areas for which raising is to exceed 100mm in height a soil with a higher granular content will be required, such as tree structural soil. Where necessary for stability, this soil is to be installed in a cellular confinement system, which may be cut to suit the topography and area required for coverage. Such a cellular confinement system is to be installed in accordance with manufacturers guidelines. Soils are to be installed by hand, using for example wheelbarrows and ground protection is to be laid within RPAs where deemed to be required by the Supervising Arboriculturist.

Arboricultural Supervision.
1. On site monitoring of soil installation and to advise of laying of Ground Protection where deemed to be required.

Methodology for establishment of new vegetation.
Impact on retained trees will be minimised by utilising seeding rather than planting within the RPAs of retained trees. There should be no planting or associated excavations within 2.0 metres of the retained tree stems. Outside of this 2.0 metre zone, where seeding is not appropriate, planting pits will be of smallest dimensions possible and excavated using hand tools only. Care must be taken to prevent any damage to tree roots including the protective bark during excavations.
Prior to installation of new soils and seeding/ planting within RPAs it will be necessary to remove existing vegetation including grass. This must be planned for in advance and involve treatment using a suitable herbicide that will not damage trees. Once the grass and ground vegetation has died it is to be cleared using a rake without excavation . On no account will the existing grass be removed be cutting out turfs.

Arboricultural Supervision.
1. On site monitoring to advise of Ground Protection required.

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Methodology for installation of new lighting columns.

It is proposed to install new lighting columns close to, but outside the crowns and RPAs of trees T1 (column 4), T10 (column 3), T11 (column 2) and T13 (column 1). It is proposed to install new lighting columns that abut the crowns of T19 and T20 (7, 8 and 12) and encroach within their RPAs.
Prior to the installation of the new foundations for the columns it will be necessary to ascertain the extent of the root system of the trees T19 and T20. This would best be achieved by excavating trial pits down to a depth of 600mm using a combination of air spade and hand -held digging equipment to expose all roots in the areas where the foundations are proposed to be installed. A vacuum unit may be used subject to confirmation by the Supervising Arboriculturist.
All roots exposed under 25mm diameter maybe pruned back to allow installation except in the instance where a significant network of fine roots may be encountered. Where large areas of fine roots or roots exceeding 25mm in diameter are encountered the roots are to be left in-situ. Installation of the foundation may be achieved either by physically moving the root, if it is under 40mm diameter by digging around the root and re-positioning it or where this is not possible it will be necessary to off- set the position of the foundations.
Protection will be provided to all roots encountered from any concrete install of the foundation. This will be achieved by protecting exposed roots with hessian sacking and plastic or installation of plastic root deflectors to ensure the roots are not contaminated by curing cement. (If the trial pits are left open with exposed roots, these roots will be similarly protected from frost or dry/ hot weather conditions).
The Contractor is to provide a method statement for review by the Arboriculturist detailing how the columns are to be lifted in to place, whilst avoiding damage to tree crowns.

General Methodology and Tree Protection Measures

Protective Barriers and Tree Protection Boxes

Before the commencement of any works on site (other than those set out in the schedule of tree works, contained in this document), protective vertical barriers and tree protection boxes must be erected. The location of the barriers and boxes is illustrated on the Tree Protection Plan – Phase 1, 2 and 3. The barriers and boxes will remain in place until completion of the installations and then only removed with the agreement with the Supervising Arboriculturist.
Other than works detailed within this method statement or approved in writing by the local planning authority, no works shall take place within the exclusion zones defined by the Protective Barriers. No vehicles will be allowed to enter areas to be protected by the barriers.

Ground Protection

Due to the need for access within the RPA of trees, ground protection must be installed prior to the commencement works. Ground protection must be appropriate for the intended use and in accordance with the specifications in the appendices.

Where concrete/ slab hard-standing is already existent it must be retained during demolition and main construction to act as ground protection.

Access to the area of proposed works

There is an existing vehicular access point into the site from the south via Caer Street, which it is assumed will be utilised for main access into site. In addition it is considered that vehicular access will be required in the vicinity of trees T10 and T14. In these areas the existing slabs are to be bolstered by ground protection if accessed by vehicles. There are secondary access points for pedestrians from the north-west, east and south-west.

Storage of Materials and Welfare Facilities

There is a large area at the centre of the site that may be utilised for the storage of materials and establishment of welfare facilities. Areas considered potentially suitable and outside of Root Protection Areas and crowns of retained trees are shown on the Tree Protection Plan (TPP). It is recognised that the use of these suggested areas may not be practical throughout the entire construction process. The Supervising Arboriculturist must be consulted if areas utilised for the storage of materials and welfare varies to that shown on the TPP.

Discharge of Contaminants

No materials that are likely to have an adverse effect on tree health, such as oil, bitumen or cement will be discharged within the RPA of any of the trees to be retained. It is advised that the disposal of all waste materials is carried out in an appropriately sustainable fashion.

Contingency Plans

Should there be any contamination of soils either within or adjacent to a RPA these should be dealt with as quickly as possible with a proprietary emergency clean up kit. An Arboriculturist should then be consulted on mitigation methods to be undertaken.

Cranes and Lifting Equipment

All lifting equipment, including cranes if utilised, should be so positioned that they operate without contact with the retained trees. Care must be taken so that the arc of the boom fitted to the lifting equipment is sufficiently clear of the retained trees.

Further Considerations

This Arboricultural Method Statement and the associated Tree Protection Plans will require review and updating if any details pertaining to the design are amended.

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Appendix A: Protective Barriers and Protection Boxes

Specification of Protective Barriers

The barriers should be fit for purpose of excluding construction activity. At this site, it is considered sufficient to install two-metre-tall welded mesh or solid panels on concrete feet (please refer to figures 1a and 1b. The fence panels (Heras type) should be joined together using a minimum of two anti-tamper couplers and installed so they can only be removed from the inside. The distance between the fence couplers should be at least 1 metre and should be uniform throughout the protective barrier.
The panels should be supported on the inner side by angled stabilizer struts installed every 3.5 metres at the join of the fence panels. Both the concrete feet and the stabiliser strut base plates should be secured with ground pins. Where fencing is to be erected on retained hard surfaces or it is otherwise unfeasible to use ground pins stabilizer struts should be mounted on a block tree.
Notices will be affixed to all protective fencing 'Construction exclusion zone - Keep Out' (please refer to figure 2.

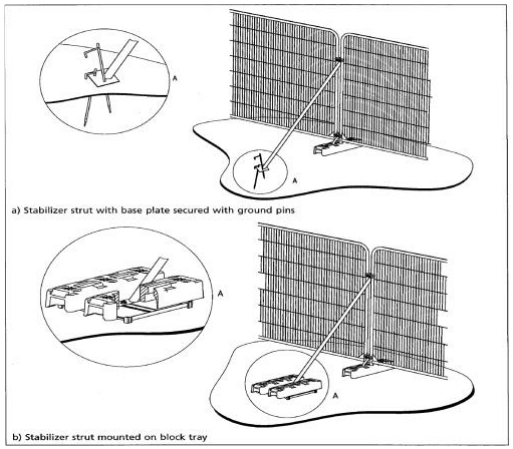

Figure 1a and 1b - Diagram of protective barrier taken from BS 5837 (2012

Figure 2 - Example of suitable warning sign affixed to protective barrier

Specification of Tree Protection Boxes

Tree boxes will be approx. 1m x 1m or approaching a similar area of coverage dependent upon surrounding environment. Their construction must ensure the following principles are adhered to:

1) All main stems are protected up to a height of at least 2.5m.
2) That all exposed ground and buttress root to the base of the tree is protected by the installation.
3) That the tree box provides sufficient space around the stem of each tree, does not touch any part of the tree and has a minimum 100mm gap between the box and any part of the tree.
4) That the access between the tree box and the boundary wall allows a minimum of 1.2m for access on the footpath,
5) That the tree protection box will be used solely for the purpose of protecting the tree stem, will act as a stand-alone system of protection and will not be incorporated into any other hoarding, protection or gantry.

To this end each tree box will need to be constructed specifically for each tree in situ.
All specifications relating to the public footpath and road will required to be verified with the Local authority by the contractor installing the protection prior to their installation.

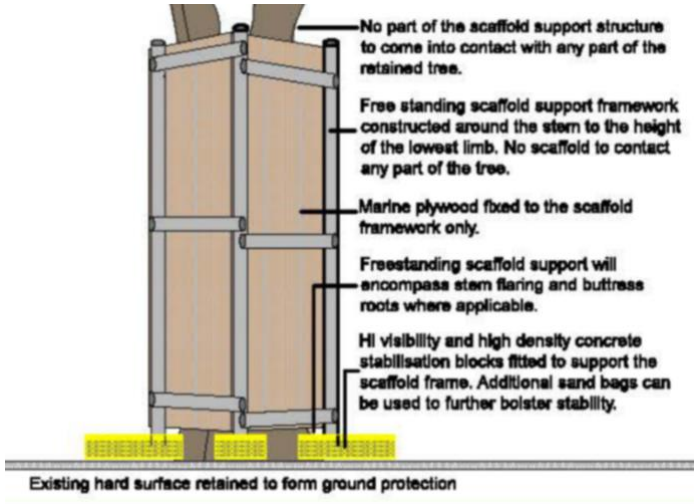

Figure 3

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Appendix B: Examples of Ground Protection

Ground Protection will be installed in areas as indicated on the TPP according to the level of use, as follows.

Vehicular access over existing slab surfacing

Based on the anticipated frequency of access, heavy duty, proprietary interlinking ground protection mats such as Ground Guard/ TuffTrack are considered adequate to be laid over the existing slabs which must be retained to act as ground protection.

Figure 4 – Example – 'Ground Guard'

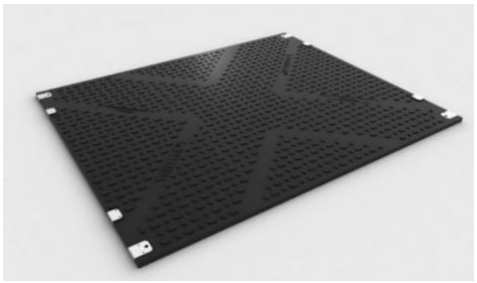


Figure 5 – Example –TuffTrack

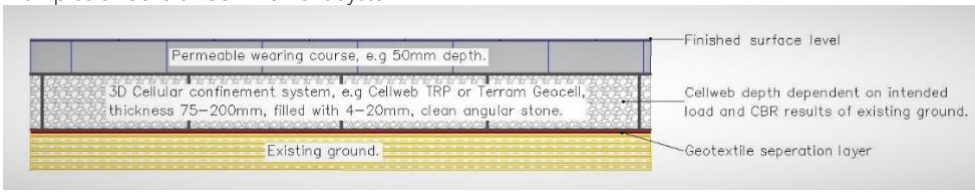
Pedestrian and pedestrian-operated machinery up to a gross weight of 2 tonnes

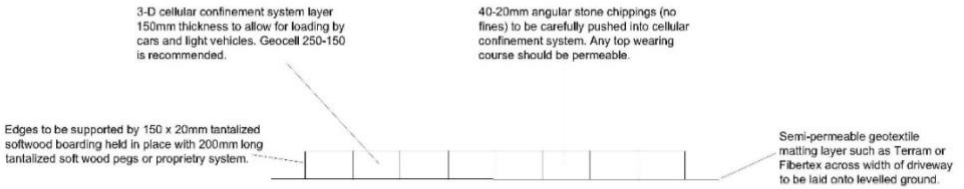
Lay an impermeable geo-textile matting directly onto the soft ground, onto which will be installed a layer 150 millimetres thick of a compressible material such as woodchip, capped with a finished surface of interlinked ply-board sheets or proprietary ground protection boards.

Machinery in excess of 2 tonnes gross weight

The area shall be protected by the laying of an impermeable membrane onto the site surface. Any levelling off of the ground surface prior to laying the impervious membrane surface shall be made using soil or aggregate infill of hollows to build up to a general site level, no excavation or grading of surfaces will be allowed. Onto this base shall be laid a geotextile pocketed mat, in-filled with inert coarse aggregate to a depth of 150 millimetres spread and levelled to form a wearing surface. Onto which proprietary interlinking ground protection boards can then be installed.

Examples of Cellular Confinement System





Figures 6 and 7 - Typical cross-sections through 3-d cellular confinement system.

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Appendix C: Utility Service Provision

Installation of new trenches for services, including water, sewerage, electricity etc. must be conducted in accordance with National Joint Utilities Group (2007) Publication Volume 4: Issue 2 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.

Where possible existing infrastructure should be utilised and new trenches for services located outside of the RPA's of retained trees.

If trenching is to be carried out within the RPA of any trees Arboricultural advice must be sought to ensure that minimum impact is caused to the rooting area. In this instance areas should be cleared with the use of an air spade to reveal existing roots.

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Appendix D - Limitations

Limitations of the tree survey and scope of the report
The report is based on information provided by third parties and the specifications and recommendations is dependent upon information provided therein.

This report does not consider the possible implications to any present or future built structures other than those considered within the report.

Findings of the survey and the report
Validity, accuracy and findings of the report will directly relate to the accuracy of information provided at the time of the survey. No checking of independent data provided will be undertaken.

Timing of the survey and the report
The considerations/findings in this tree report and tree survey are only valid for one year. Such considerations/findings will become invalid if any building works are undertaken, soil levels are altered, or tree work is undertaken. If there are any alterations to either the property or soil levels, or if tree works are carried out, it is recommended that a new tree survey/report is undertaken.

Trees in relation to subsidence, heave and direct damage
This report does not deal with issues relating to subsidence or heave in relation to any built structures and surrounding vegetation. However, it may be prudent to consider the effects of heave on any property if trees are removed. Similarly, the issue of direct damage (when the roots of a tree have physical contact with a structure) is not considered within this report.

Trees in relation to other properties
This report/survey only considers the trees in relation to the site as identified. It does not comment on possible effects of trees on neighbouring properties, including in relation to subsidence or heave, or with regard to possible hazards presented by trees surveyed. Neighbouring owners of trees that are identified as posing a possible risk to the property/site in question should seek their own advice as to possible effects of the recommendations given within this report. Damage to, or the possibility of damage to, any other structure that is not referred to within the report is not considered unless otherwise specified. This includes both neighbouring structures and any other structure on the property, built structures and surrounding vegetation.

Trees subject to statutory controls
If the trees are covered by a Tree Preservation Order or are located in a conservation area it will be necessary to consult the local authority before any pruning works, other than certain exemptions, can be carried out.

The works specified above are necessary for reasonable management and should be acceptable to the local authority. However, tree owners should appreciate that the local authority may take an alternative point of view and have the option to refuse consent.

Trees are subject to changes outside man's control
Trees are living organisms subject to changes outside man's control. Changes to groundwater conditions will affect the root growth of a tree. Such changes are not always the result of man's influence and other factors may be involved.

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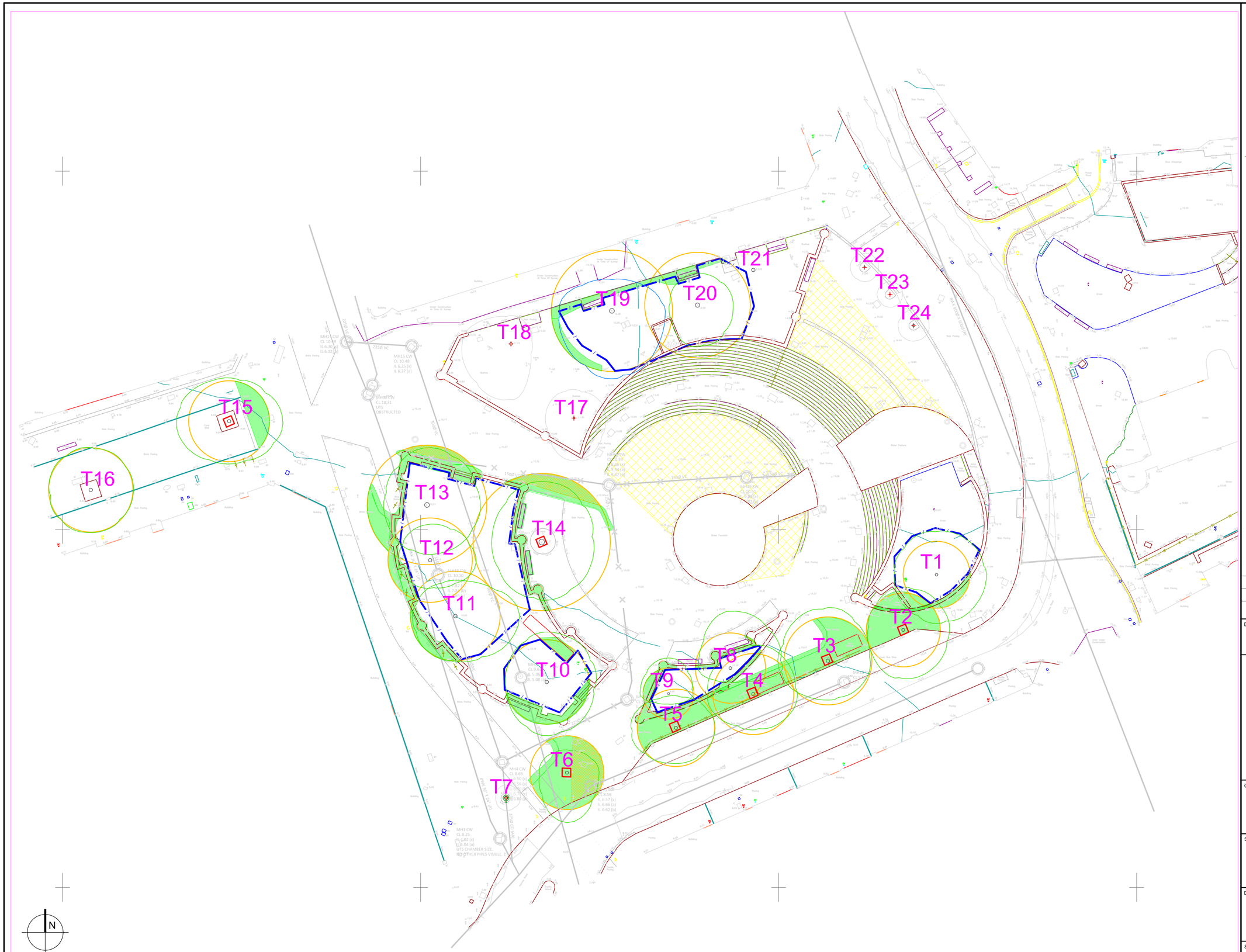
Appendix E – Tree Protection Plan



KEY: Tree Protection Plan

T1 — Identifier reference number
Tree (T) / Group (G) / Woodland (W) / Hedge (H)

- Tree to be retained
- Tree to be removed
- Protective Barrier
- Tree Protection Box
- Suggested Temporary Storage Areas
- Tree to be pruned
- Root Protection Area in accordance with BS5387:2012
- Ground protection
- Below ground mitigation

Rev.	Date	Description	By	Chk'd
A	25/04/22	Planning	JM	

Drawing status
Planning

Writtle Forest Consultancy
Redindyke Farm, Ivy Barns Lane
Margaretting, Ingatestone, Essex CM4 0PU
tel: 01277 355970
email: info@writtleforest.co.uk
web: www.writtleforest.co.uk

Client / *(WFC project no.)*
Swansea City and County Council
(211135)

Site
Castle Square, Swansea.

Drawing title
Tree Protection Plan - Phase 1, 2 and 3

Scale	Dwg size	Date	Drawn	Checked
1:250	A1	25/04/22	JM	

Drawing no.
211135 - TCP1

Rev.
A

KEY: Tree Protection Plan

T1 — Identifier reference number
Tree (T) / Group (G) / Woodland (W) / Hedge (H)

- Tree to be retained
- Tree Protection Box
- Suggested Temporary Storage Areas
- Root Protection Area in accordance with BS5387:2012
- Ground protection
- Below ground mitigation

Rev.	Date	Description	By	Chk'd
A	25/04/22	Planning	JM	

Drawing status
Planning

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email: info@writtleforest.co.uk
web: www.writtleforest.co.uk

Client / *(WFC project no.)*
Swansea City and County Council
(211135)

Site
Castle Square, Swansea.

Drawing title
Tree Protection Plan - Phase 4

Scale	Dwg size	Date	Drawn	Checked
1:250	A1	25/04/22	JM	

Drawing no.
211135 - TCP2

Rev.
A