

KIRKLEES COUNCIL

KNOWL PARK HOUSE, MIRFIELD

ARBORICULTURAL METHOD STATEMENT
TO BS 5837:2012



our ref: 2069 / EH / AMS001A
date: 8th July 2021
prepared by: E.C.H
checked by: T.G-W

address: 132A The Westlands, Compton Road, Wolverhampton, WV3 9QB
tel: 01902 424 950 / 01902 425 001
email: info@bealandscape.co.uk
web: www.bealandscape.co.uk

<u>Rev:</u>	<u>Date:</u>	<u>Description:</u>	<u>By:</u>
A	08/07/2021	Amendments due to revised layout and pedestrian footpath extended works	E.H

arboricultural method statement



our ref: 2069/EH/AMS001A **project:** Knowl Park, Kirklees

date: 8th July 2021

1.0 Context

- 1.1 The works included within this arboricultural method statement are part of the redevelopment of the Knowl Park Dementia Facility proposed for Kirklees Council as described within the Design & Access Statement.
- 1.2 As part of the planning application a tree survey was carried out for the area affected by the works (refer to Tree Survey 2069/EH/TR001. The tree survey includes the Tree Constraints Plans 20-69-07 and 20-69-17 which identifies the root protection areas of the surveyed trees.
- 1.3 The Arboricultural Impact Assessment (refer to 2069/EH/AIA001) identifies those trees to be removed and those to be retained (refer to the Tree Protection & removal Plan 20-69-08 and 20-69-18 including the need for special construction techniques required to mitigate for the proposed development.
- 1.4 This method statement refers to the protection of those trees in proximity of the works to be retained as part of the proposals T05, T06, T07, T08, T09, T10, T11, T12, T13, T14, T15, T19, T28, T29, T30, T31, T32, T33, T34, G36 & G37, T38, T39 & T40 and provides details of the special construction techniques outlined within the Arboricultural Impact Assessment.

2.0 Tree Protection Informative:

- 2.1 Trees that are in good health have grown and adapted to their surroundings. Any building works or construction activity which affects their surrounding could affect their vigour, future growth and safety.
- 2.2 The tree root system is the most susceptible to damage and can affect the health, growth, life expectancy and safety of the tree. Damage to the trunk and branches of a tree is not usually sufficient to kill the tree, but it can affect the shape and growth potentially making a tree unsafe.
- 2.3 Tree roots are typically concentrated within the uppermost 600mm of the existing ground level and form a network of small diameter woody roots (typically less than 1cm or pencil thickness) with mass of finer roots. These tree roots can extend for a distance much greater than the height and spread of the tree, except where prevented by unfavourable surroundings or obstructions. These fine roots are essential for the continued health and vitality of the tree and are dependent on the existing soil conditions being maintained.
- 2.4 All parts of the root system, but especially the fine roots, are vulnerable to damage from uncontrolled activities. It is also known that mature trees recover slowly, if at all, from damage to their roots, whilst younger trees with good vitality do have a chance to adapt.



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tel: 01902 424 950 / 01902 425 001 **email:** info@bealandscape.co.uk
web: www.bealandscape.co.uk

directors: T Grantham-Wright BA(Hons), DipLA, CMLI, Cert Arb. E Hobday BA(Hons), BLA, CMLI, DipArb L4, TechArborA.
consultants: Dr N E Haycock Bsc, D.Phil (Oxon) Hydrology. Registered in England as Bea Landscape Design Ltd, number 04707914.

3.0 Construction Proposals

3.1 The proposed development includes for the demolition of the existing building and the construction of a single story Dementia care facility including ancillary buildings, service access, car parking, gardens and new park access.

4.0 Tree Protection & Ground Protection

4.1 All trees that are being retained on site are to be protected by barriers and/or ground protection prior to any site activity and before any materials or machinery are brought onto the site, before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers are to be erected to create a construction exclusion zone. The default barrier specification is to be in accordance with Figure 2. of BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations' as illustrated below and identified within the Tree Protection Plans 20-69-09 & 20-69-10.

4.2 The protected area is to be regarded as sacrosanct, and, once installed, barriers and ground protection is not to be removed or altered without prior recommendation by the project arboriculturalist and, where necessary, approval from the local planning authority.

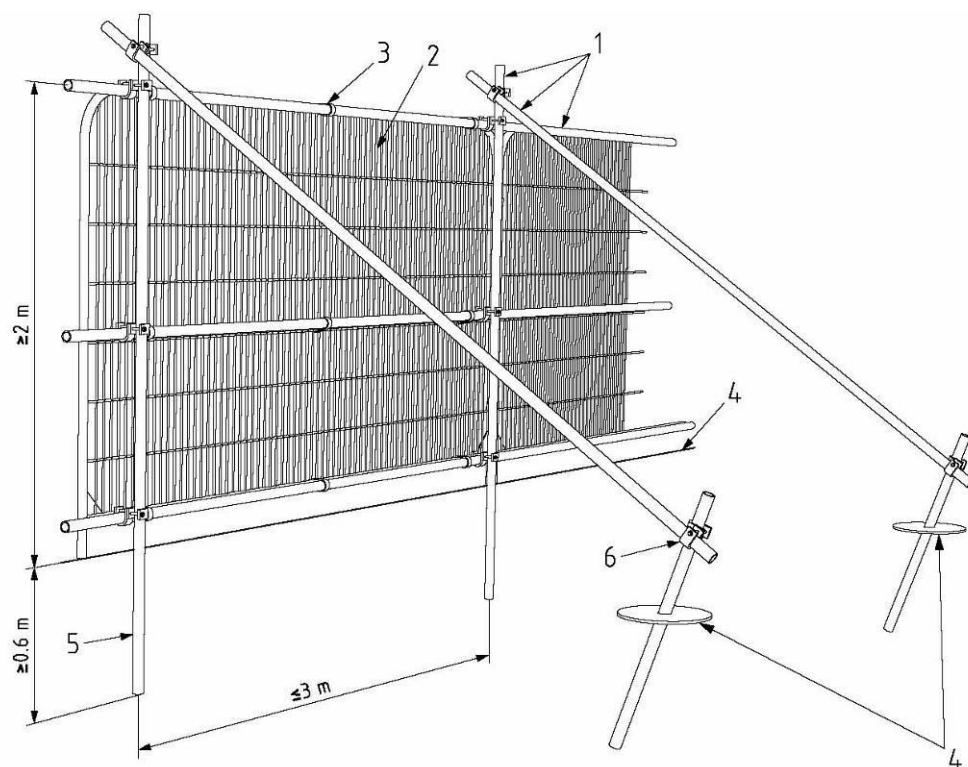
4.3 All weather tree protection posters as detailed below are to be securely fixed to the tree protection fencing at 10 metre centres in plain view.



4.4 The tree protection fencing to the retained trees T05, T06, T07, T08, T09, T10, T11, T12, T13, T14, T15, T19, T28, T29, T30, T31, T32, T33, T34, G36, G37, T38, T39 & T40 is to be erected as detailed below and on the Tree Protection plans 20-69-09 & 20-69-10 and 20-69-19 and maintained in place until the completion of the project.

4.5 In order to protect the retained trees during demolition of the existing building and the redevelopment of the site two phases of tree protection fencing are to be installed. The initial fence position, Phase 1 as illustrated on drawing 20-69-09 will protect the trees during the main activities internally to the site such as demolition works, site clearance, excavations, building foundations, general construction of the proposed buildings and courtyard hard landscaping.

4.6 On completion of these works this fencing is to be relocated to the secondary fence line, Phase 2, and temporary ground protection installed to enable the carrying out of the peripheral hard and soft landscape works including the no dig, porous hard surfacing to the frontage car park area and Eastern elevation footpaths.



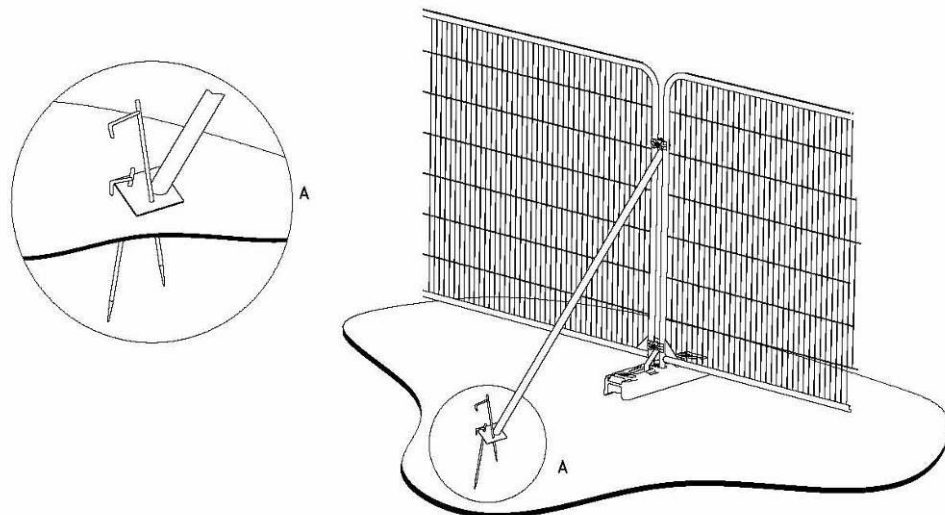
Key

- 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

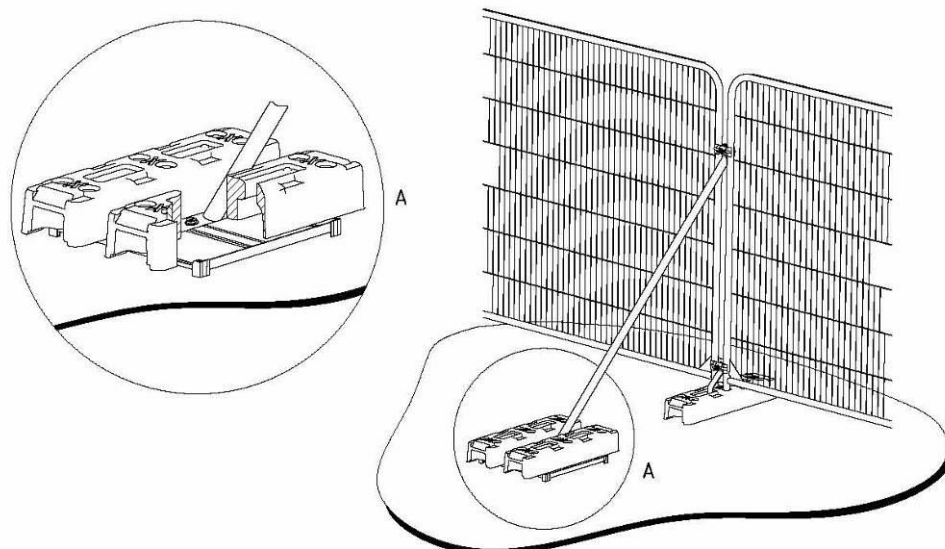
BS 5837 Figure 02; Default Specification for protective barrier

4.7 The Tree Protection fencing and ground protection to the new park access to trees T38, T39 & T40 is to be erected prior to the footpath works being undertaken and removed on their completion.

4.8 Care is to be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification that provides an equal level of protection is to be prepared in conjunction with the project arboriculturalist as illustrated within Figure 3 of BS 5837:2012 below.



a) Stabilizer strut with base plate secured with ground pins



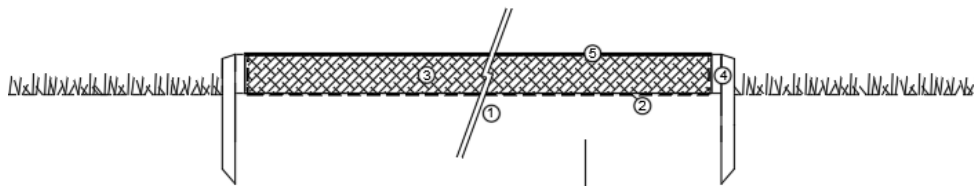
b) Stabilizer strut mounted on block tray

BS 5837 Figure 03; Examples of above-ground stabilising systems

4.9 Where the Phase 2 protection fencing is set back (within the RPA) to allow for construction access on previously unpaved or hardstanding areas, temporary ground protection as detailed below and on the drawing 20-69-09 is to be installed as part of the implementation of physical tree protection measures prior to work starting on site.

- 4.10 Temporary ground protection is to be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.
- for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;
 - for pedestrian-operated plant up to a gross weight of 2t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;

1.0 TEMPORARY TREE GROUND PROTECTION: Pedestrian operated plant < 2 tonnes (Scale 1:20)



NOTES:

- EXISTING GROUND:** existing ground / soil within root protection area to be undisturbed. Area to be cleared of vegetation (i.e. brambles, perennial weed growth, scrub) by hand prior to installation.
- GEOTEXTILE:** terram T1000 geotextile to be laid to existing on existing ground.
- COMPRESSION RESISTANT LAYER:** minimum layer of 150mm woodchip from site tree work arisings or contract grade bark mulch.

- TIMBER EDGE:** pressure treated 50mm x 150mm pegged timber edging boards. Pegs 50mm x 50mm x 450mm at 500mm centres.

- GROUND PROTECTION BOARDS:** steel road plates pegged in position or proprietary inter-linked ground protection boards such as Grounds Guards 'Multi Track' system.

5.0 Excavations within the RPA

- To avoid damage to tree roots, existing ground levels are to be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is not acceptable, and topsoil within it is to be retained in situ.
- Where indicated on the Tree Protection drawings 20-69-10 excavations within the Root Protection Zone are to be excavated by hand-held tools and preferably by compressed air soil displacement.
 - Exposed roots are to be immediately wrapped or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping are to be removed prior to backfilling, which is to take place as soon as possible.
 - Roots smaller than 25 mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw), except where they occur in clumps.

- c) Roots occurring in clumps or of 25 mm diameter and over are to be severed only following consultation with an arboriculturalist.
- d) Prior to backfilling, retained roots are to be surrounded with topsoil or uncompacted sharp sand (builders' sand is not be used), or other loose inert granular fill.
- e) Soils or other suitable material are then to be replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots and approved by the project arboriculturalist.

6.0 Site Access & Haul Routes

- 6.1 Access to the site for all visitors and construction traffic for the main construction works is to be from the existing site entrance off Crowlees Road. The route for the haulage of materials and deliveries within the site is to be along the line of the existing and / or proposed internal site roads.
- 6.2 The planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without coming into contact with retained trees. Any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is maintained at all times.
- 6.3 Access for the construction of the new pedestrian footpath is to be from the existing Knowl Park maintenance access to the junction with Crowlees Road and Knowl Road.

7.0 Site Compound and Working Area

- 7.1 As illustrated on the Tree Protection drawings the works are to be restricted to within the site boundary which incorporates an area to the site frontage (excluding the No dig, porous paved parking area) for the site compound (refer to 20-69-09).
- 7.2 All contractors staff car parking is to be contained within the site boundary on areas of existing / or proposed hard standing and outside of the construction exclusion zones of the retained trees.
- 7.3 A localised site compound for the storage of materials and mobile welfare facilities is to be provided for the construction of the new footpath facilities within the park and outside of the construction exclusion zones of the retained trees.

8.0 Temporary Topsoil Storage

- 8.1 The stripped topsoils are to be stored in temporary mounds outside of the construction exclusion zones of the retained trees. In accordance with BS 4428 topsoil heaps should not exceed 3m in height.

9.0 Demolition

- 9.1 The proposals require the demolition of the existing buildings in close proximity to the root protection zone of the retained protected trees T19, T29, T30, T31, T32, T33 and T34.

- 9.2 Prior to the demolition works, access facilitation pruning is to be carried out to the protected trees T30, T31, T32 & T33 as listed within the Schedule of Tree Works 2069-EH-STW001 (as appended) to prevent damage to the tree canopies by demolition plant during the works. In some cases, working space may be provided by temporarily tying back tree branches. NB local authority approval will be required to any works to trees protected by a Tree Preservation Order.
- 9.3 Prior to the demolition works the Phase 01 tree protection fencing is to be erected as specified above and detailed on the Tree Protection Plan 20-69-01. All plant and vehicles engaged in demolition works are to operate outside the construction exclusion zones.
- 9.4 During the demolition of a structure (including underground structures) within the RPA, barriers are to be erected, and ground protection installed as described above to protect the underlying soil to the edge of the existing structure.
- 9.5 All plant and vehicles engaged in demolition works are to either operate outside the RPA, or run on the specified ground protection. Ground protection is to be installed prior to commencement of operations.
- 9.6 Where trees stand adjacent to structures to be removed, the demolition should be undertaken inwards within the footprint of the existing building (often referred to as "top down, pull back").
- 9.7 The project arboriculturalist is to be informed and consulted where underground structures are present within the RPA are, or will become redundant. In general it is preferable to leave such structures in situ, as their removal could damage adjacent tree roots.

10.0 Removal of Existing Hard Surfacing

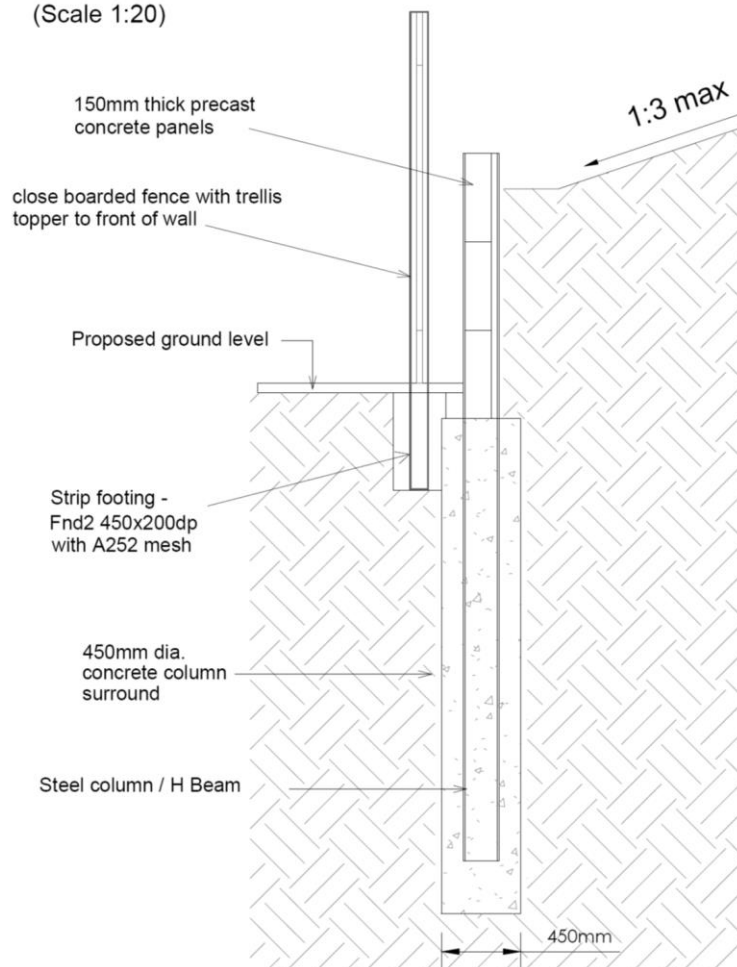
- 10.1 Prior to the removal of the pcc slab paving and tarmac footpath appropriate tree protection fencing and ground protection is to be installed to protect the existing trees in accordance with BS 5837:2012.
- 10.2 Care is to be taken not to disturb tree roots that might be present beneath the existing surfacing. Hand-held tools or appropriate pedestrian operated machinery is to be used (under arboricultural supervision) to remove the existing surface, working backwards over the area, so that the machine is not moving over the exposed ground
- 10.3 Exposed tree roots are to be treated in accordance with section 7.2 of BS5837:2012 and as detailed above.
- 10.4 The sections of the existing tarmac footpath subbase that are within the RPA's of the retained trees and fall within the proposed resin bound gravel areas are to be removed to negate the need for a no dig surface and allowing for an even transition of levels between proposed path and the existing pavement to Crow Lees Lane

11.0 King Post Retaining Wall Construction:

- 11.1 The proposed development requires the construction of retaining walls at the edge of the root protection zone of the trees T28, T29, T30, T31, T32, T33, G36 and G37.

- 11.2 The proposed retaining walls and associated foundations therefore require careful consideration including how the existing trees are to be protected during construction and how the retaining walls are to be constructed whilst causing minimal damage to the tree.
- 11.3 The retaining wall to the Northern and Eastern boundaries is to be a king post piled retaining wall as designed by the project engineers (as per the typical detail below) to the minimum required width and depth of foundations to prevent the need for changes of level / excavations within the RPA of the retained trees.

3.0 TYPICAL KING POST PILE RETAINING WALL DETAIL:
(Scale 1:20)



- 11.4 Prior to commencement of the retaining wall construction, the extent of the RPA of trees T28, T29, T30, T31, T32, T33, G36 and G37 and the line of the proposed retaining wall are to be demarcated onsite and the surplus soils outside of the retaining wall location are to be removed by machine to the natural angle of repose.
- 11.5 The excavations for the soldier piles are then to be bored using a machine mounted auger drive to a diameter of 450mm to the required depths, filled with insitu concrete and reinforced with a steel H beam. The remaining soils at the edge of the RPA are to be removed / excavated using hand-held tools or compressed air soil displacement in accordance with clause 7.2 of BS 5837:2012 with exposed roots severed as per section 5.0 above prior to installation of the concrete panels.

11.6 In accordance with clause 5.5.6 BS 5837:2012 all construction operations undertaken in the vicinity of trees need to be planned to avoid disturbance to the physical protection and the tree. The planning of site operations should take sufficient account of overhanging tree canopies in order that the auger drive can operate without coming into contact with retained trees. Any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from tree canopies is maintained at all times.

12.0 Existing Wall Extension

12.1 The proposed development also requires the extension of the existing retaining wall within the outer edge RPA of T05.

12.2 The retaining walls are to be designed by the project engineers to the minimum required width and depth of foundations to minimise and where possible prevent the need for changes of level / excavations within the RPA of the retained trees.

12.3 In accordance with clause 5.5.6 BS 5837:2012 all construction operations undertaken in the vicinity of trees need to be planned to avoid disturbance to the physical protection and the tree. Additional precautions outside of the construction exclusion zone include planning site operations to ensure that wide or tall loads or plant with booms or jibs and counterweights can operate without coming into contact with the retained trees. This is of particular relevance to the pouring of the insitu concrete foundations.

12.4 Reference is also made to materials whose accidental spillage would cause damage to a tree or contaminate soils. These materials e.g. concrete mixings, concrete washings and mortar should be handled well away from the outer edge of the RPA.

13.0 Underground Services & Drainage

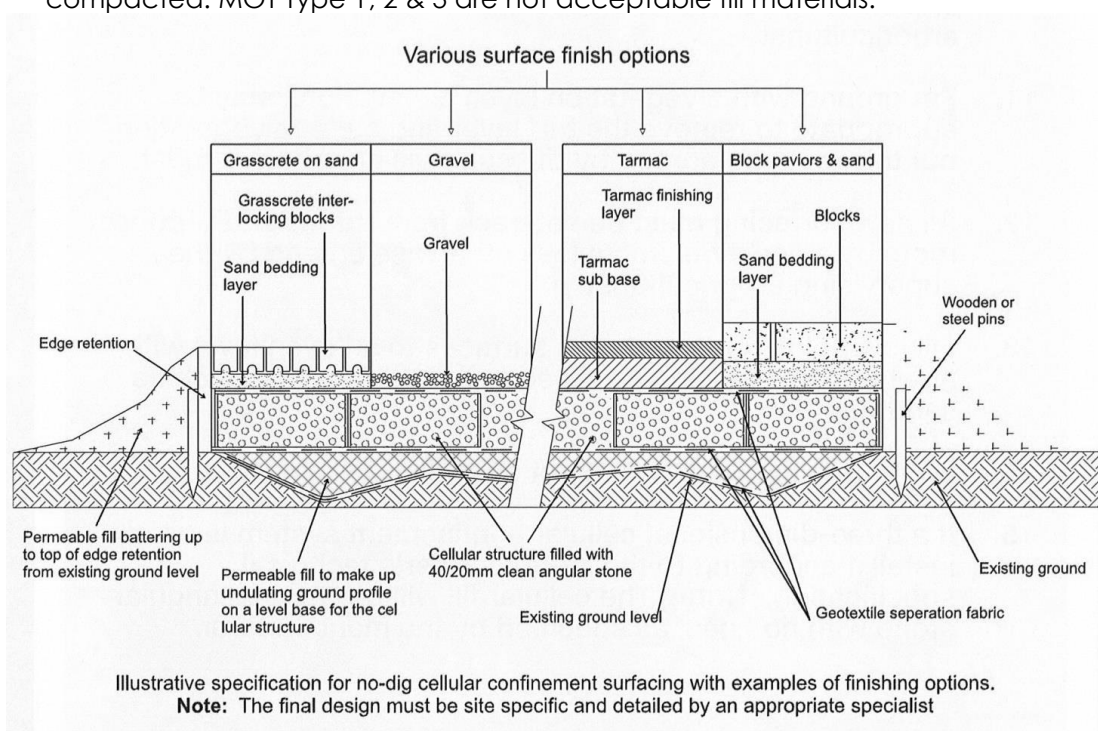
13.1 Underground services are to be routed outside of the construction exclusion zone generally and outside of the root protection areas or trees to be retained specifically as demarcated on the Tree Protection Plans 20-69-09 & 20-69-10 connecting with the existing below ground services internally to the site.

13.2 The underground drainage pipes are to be routed outside of the construction exclusion zone generally and outside of the root protection areas or trees to be retained specifically as demarcated on the Tree Protection Plans 20-69-09 & 20-69-10 connecting with the existing below ground drainage internally to the site.

13.3 The proposed drainage pipe to the Eastern elevation of the building at the edge of the RPA of trees T31, T32, T33 and T34 is to be routed between the edge of the building and the proposed retaining wall to avoid the RPAs of the retained trees.

14.0 New Permanent Hard Surfacing Construction

- 14.1 The construction of new permanent block paved and hard surfacing (i.e resin bound gravel, porous block paving) within the root protection area of the retained trees is to be of design that does not require excavation into the soil, including through lowering of levels and/or scraping, other than the removal, using hand tools, of any turf layer or other surface vegetation in accordance with Clause 7.4.2 of BS5837:2012. If it is intended to use the new surface for construction access, it is essential that the extra loading and wear arising from this are taken into account during the design process
- 14.2 The structure of the hard surface is to be designed to suit the CBR of the existing ground, the proposed usage and to avoid localized compaction by evenly distributing the loading over the width of the paved area or the wheelbase of any vehicles. The subbase is therefore to incorporate a three dimensional cellular confinement system such as 'Cellweb' to a depth suitable for the proposed use.
- 14.3 The Cellweb is to be laid on a needle punched polypropylene or polyester geotextile with a CBR puncture resistance of 4000N and infilled with 40/20mm clean angular fill i.e Granite, Basalt or Limestone to act as a load suspension layer. The infill is to be rolled without vibration (maximum weight 1000kg/m) and not compacted. MOT Type 1, 2 & 3 are not acceptable fill materials.



No Dig, porous hard surface – typical section

- 14.4 For roads or other new surfaces is likely to be subject to de-icing salt application, an impermeable barrier is to be incorporated to prevent contamination of the rooting area. Run-off is to be directed away from the RPA. In addition where a permeable surface is to be used by vehicular traffic, a geotextile is to be installed beneath the sub base to help prevent pollution contamination of the rooting area below.

- 14.5 Account is to be taken of finished levels in relation to adjacent structures, including damp-proof courses, garage slabs and links to existing vehicular cross-overs.
- 14.6 If a permeable surface is to be used by construction traffic, this is to be protected with a temporary sacrificial surface laid over a geotextile separator to ensure that its permeability is retained (i.e. interstices should not become blocked during construction).
- 14.7 The materials and edgings are to conform with clause 7.4 and Annex A1.5 of BS5837:2012 to local authority approval. Hard surfaces above the granular material are to be permeable and gas porous and include; plastic grids system with gravel infill, resin bound gravel laid on permeable asphalt and proprietary infiltration system block pavers.
- 14.8 The edgings are to be non invasive ground contact structures such as pegged timber boards, pinned timber sleepers, PCC kerbs set in concrete (at the edge of geocells or on top of concrete filled geocells) or other proprietary metal or plastic edging strip products. Topsoil backfill at the edge of no dig areas is to be no deeper than 250mm.

15.0 Soft Landscape Implementation

- 15.1 The proposals require the installation of native tree and shrub planting within and at the edge of the RPA of trees T19, T29, T30, T31, T32, T33 and G37 and therefore careful consideration is required to ensure the existing trees are protected during implementation including how the trees and transplants are to be planted whilst causing minimal damage to the trees.
- 15.2 To limit the risk of ground compaction, access to the planting areas is to be from the existing hard standing to the with the preparation, cultivation and planting works carried out after the completion of the main construction activities.
- 15.3 To avoid unnecessary root damage, no cultivation of the topsoil is to be carried out within the Tree Protection Areas of the retained trees. Tree and shrubs are to be pit planted. No tree pits are to be excavated within the root protection areas of retained trees.
- 15.4 The soft landscape areas outside of the construction exclusion zones / RPAs of the retained trees are to be set out, cultivated and planted as required prior to the removal of the tree protection fencing. The landscape works within the construction exclusion zones area to be carried out by hand only.
- 15.5 Prior to planting within the RPA the proposed locations of the transplants / whips are to be set out in advance and trial pit investigations using handheld tools to a maximum depth of 150 mm are to be carried out. Where large roots (greater than 25mm in diameter) are exposed the planting locations are to be changed to avoid damaging the roots.
- 15.6 During planting the following guidance should be followed:
 - 1) Exposed roots are to be immediately wrapped or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping are to be removed prior to backfilling, which is to take place as soon as possible.

- 2) Roots smaller than 25 mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw), except where they occur in clumps.
- 3) Roots occurring in clumps or of 25 mm diameter and over are to be severed only following consultation with an arboriculturalist.
- 4) Prior to backfilling, retained roots are to be surrounded with topsoil or uncompacted sharp sand (builders' sand is not to be used), or other loose inert granular fill.
- 5) Soils or other suitable material are then to be replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots and approved by the project arboriculturalist.

16.0 Arboricultural Supervision

Pre Start Meeting

- 16.1 Prior to the commencement of the construction works a meeting (or attendance at the prestart meeting) is to be arranged between the main contractor and the project arboriculturalist to confirm and agree the locations of the protective fencing and methods to be employed during the works within the construction exclusion zones and in proximity to the existing trees.

Tree Protection Inspections

- 16.2 The erection of the Tree Protection fencing and ground protection as illustrated on the Tree Protection Plans 20-69-09, 20-69-10, 20-69-19 is to be inspected and approved by the project arboriculturalist prior to the commencement of the construction phases.
- 16.3 The local authority are to be informed when the fence and ground protection has been inspected and comply with this method statement and BS5837 including a report and site photographs.
- 16.4 Subsequent site inspections are to be carried out on a monthly basis during construction works to ensure that the tree protection fencing is maintained and the construction exclusion zones

Construction Works within the RPA

- 16.5 All construction works i.e no dig, porous hard surfacing within the construction exclusion zones (CEZ) / root protection areas (RPA) of those trees to be retained are to be monitored and inspected by the project arboriculturalist.

A minimum of 10 days or two week notice is required prior to the commencement of these works.

Excavations within the CEZ/RPA

- 16.6 Excavations within the construction exclusion zone and RPA are to be approved in advance by the project arboriculturalist and executed in accordance with section 5.0 of this report under arboricultural supervision / monitoring.

A minimum of 10 days or two week notice is required prior to the commencement of these works.

Tree Surgery

- 16.7 Tree surgery recommendations to TPO trees are to be approved with the local authority tree officer and carried out prior to construction. Where listed with the Schedule of Tree Works access facilitation pruning is to be carried out to trees T30, T31, T32 & T33 to prevent any damage during construction.
- 16.8 Tree works are to be carried out by an Arboricultural Association registered Tree Surgeon in accordance with BS 3998: 2010.

Appendix A: Technical Definitions

Access Facilitation Pruning:	One off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Arboricultural Impact Assessment	An evaluation of the direct and indirect effects of the proposed design on the trees identified within the Tree Survey, where necessary recommending mitigation or amendments to the design.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Construction Exclusion Zone	An area based on the root protection area from which access is prohibited for the duration of a project
Root Protection Area (RPA)	The minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is considered a priority
Tree Protection Plan	A scale drawing informed by descriptive text where necessary, based upon finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

Appendix B: References

1. BSI (2012) '*British Standard 5837:2012 Trees in relation to design demolition and construction – recommendations*' British Standards Institution, London
2. NJUG Volume 4 (2007) '*Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.*' The National Joint Utilities Group
3. BSI (2010) '*Tree work – Recommendations*' British Standards Institution, London
4. AA (2020) '*The Use of Cellular Confinement Systems Near Trees: A Guide to Good Practice*' Guidance Note 12. Arboricultural Association.

schedule of tree works

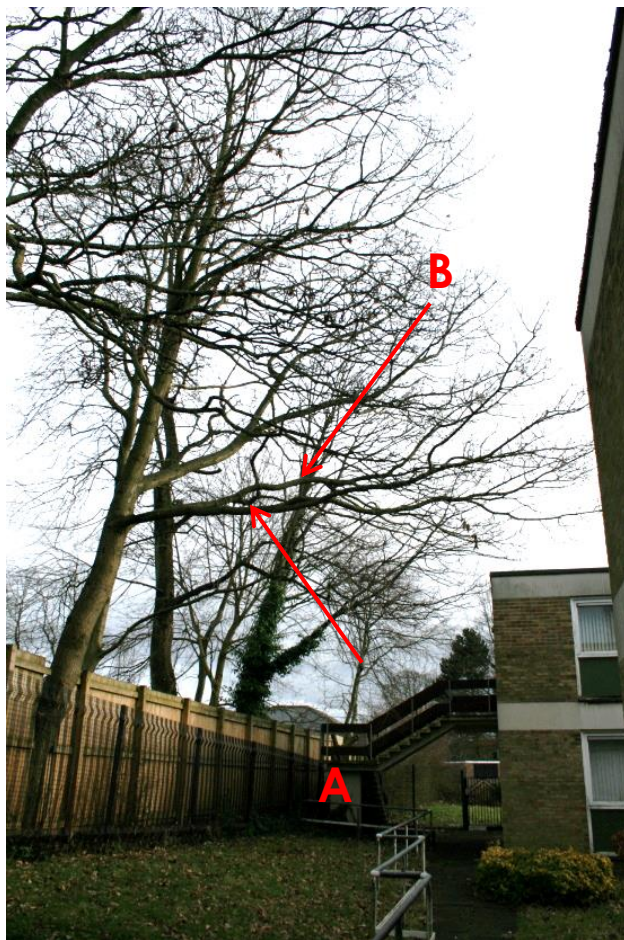
OUR REF: 2069/EH/STW001

PROJECT: Knowl Park House, Dementia Care Facility

DATE: 8th July 2021

Tree Ref	TPO	Species	Description of Tree Work
T10	N/A	Sycamore	Remove deadwood. Sever Ivy.
T14	N/A	Lime	Remove deadwood. Sever Ivy.
T30	23/92/A2	Common oak	A & B Remove two lower limbs back to main stem.

Illustrative Photograph- T30

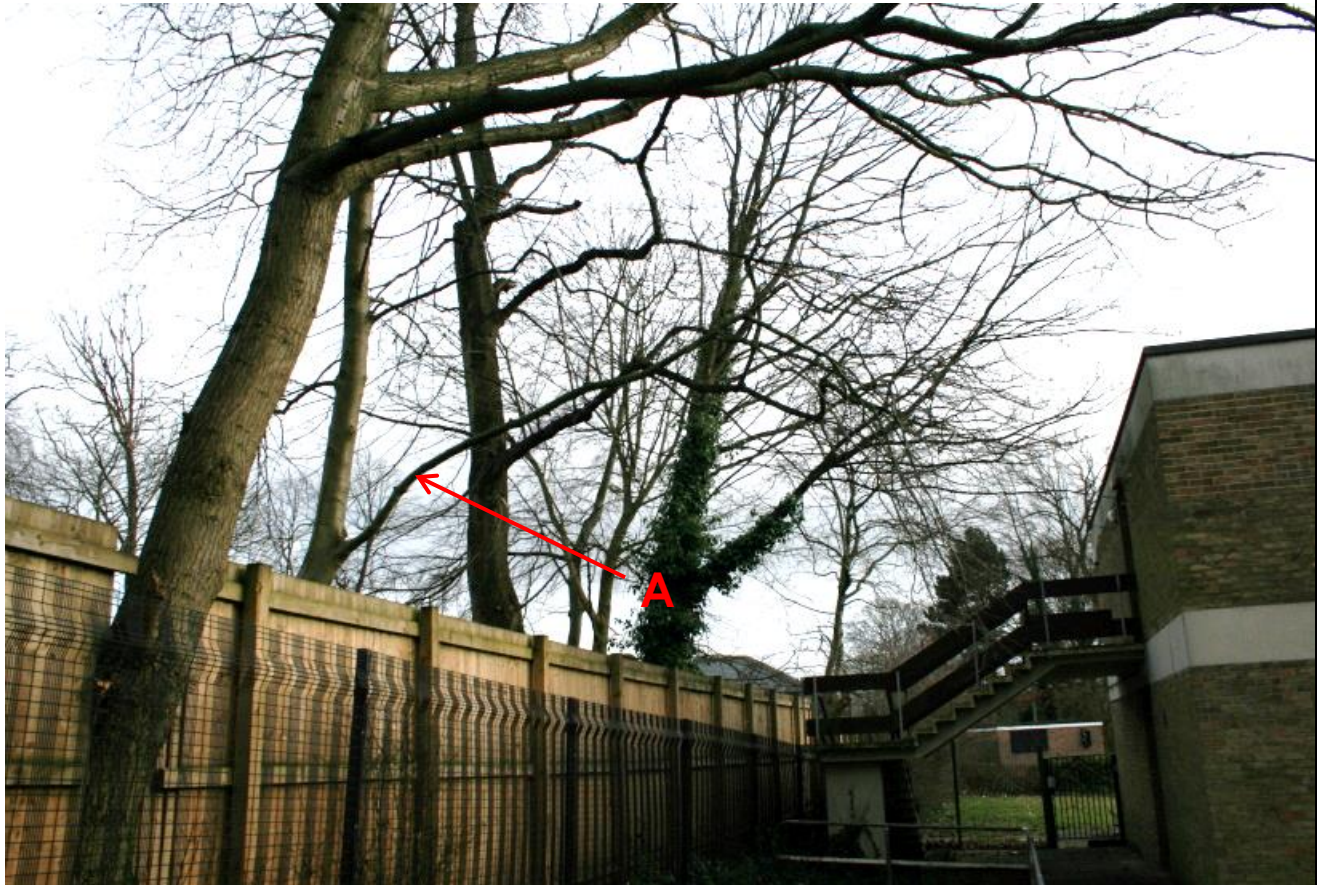


Justification for Tree Work:

Access facilitation pruning to prevent damage to the tree during the demolition of the existing building and the construction of the replacement building and king post retaining wall.

Tree Ref	TPO	Species	Description of Tree Work
T31	23/92/A2	Whitebeam	A. Remove lower limb to South back to main stem.

Illustrative Photograph – T31

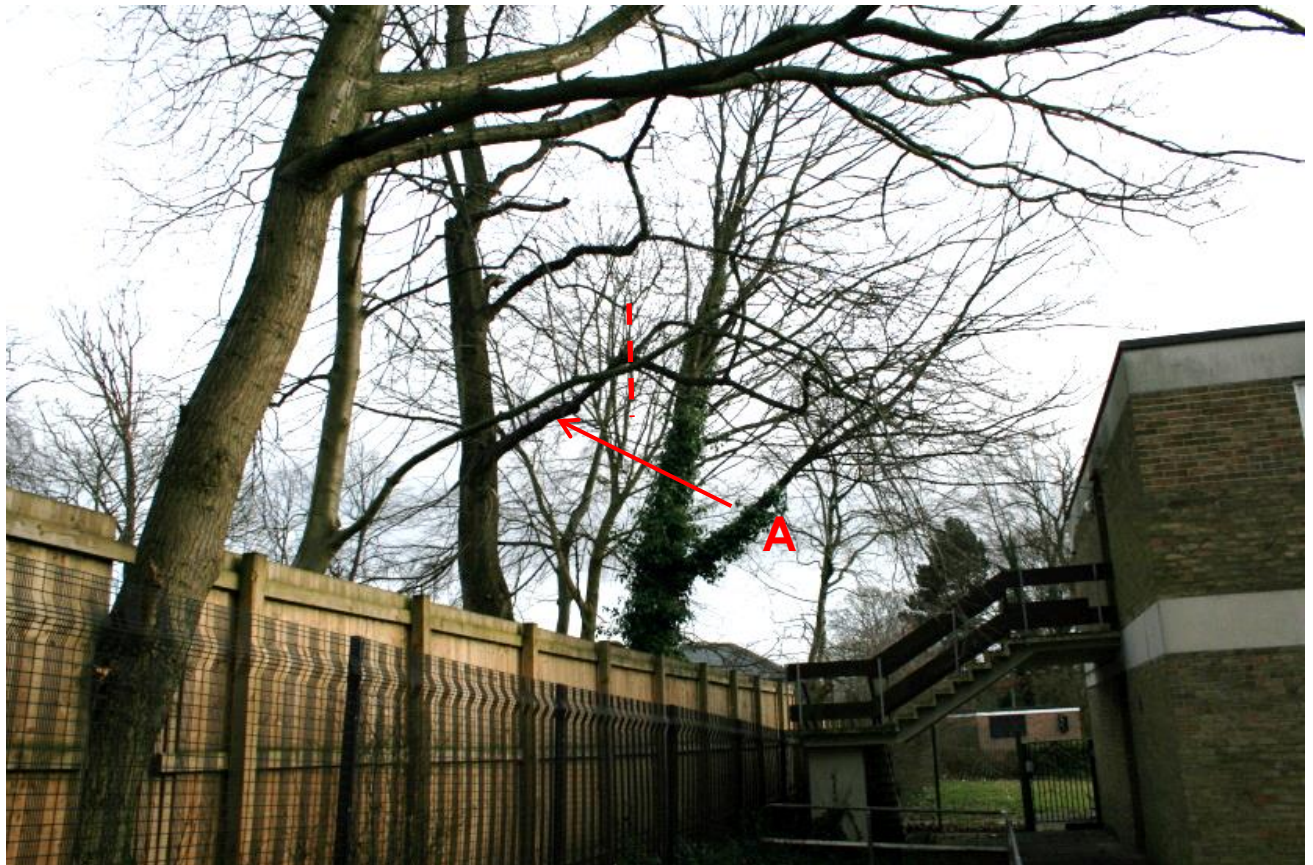


Justification for Tree Work:

Access facilitation pruning to prevent damage to the tree during the demolition of the existing building and the construction of the replacement building and king post retaining wall.

Tree Ref	TPO	Species	Description of Tree Work
T32	23/92/A2	Lime	A. Reduce lower southern limbs by 2 metres Remove / reduce deadwood.

Illustrative Photograph – T32

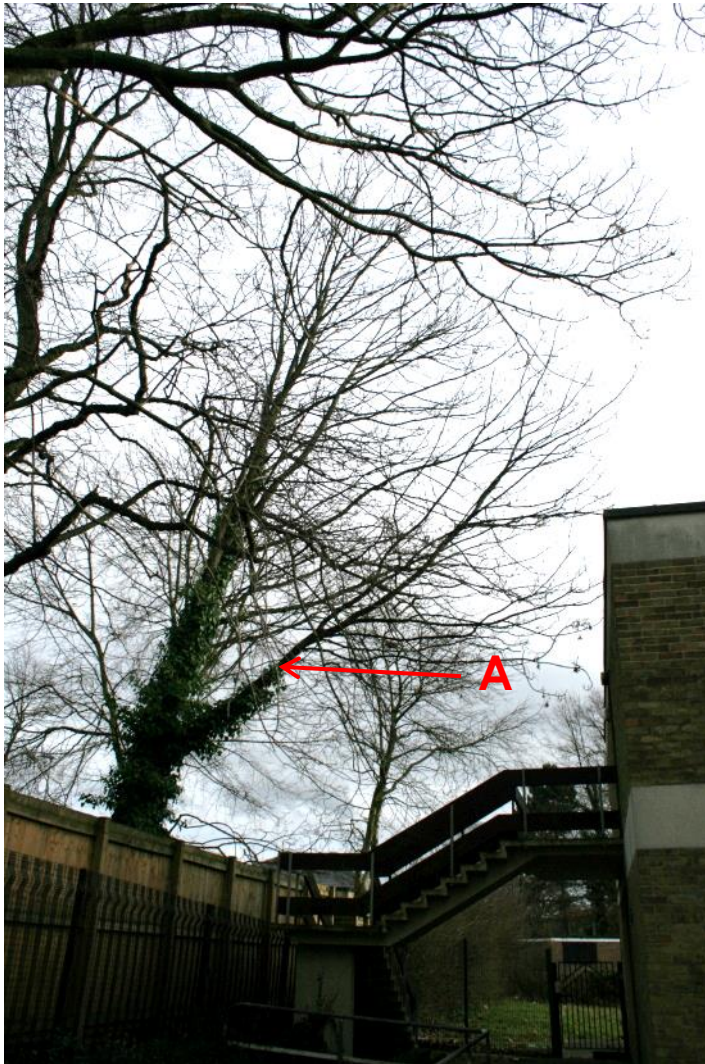


Justification for Tree Work:

Access facilitation pruning to prevent damage to the tree during the demolition of the existing building and the construction of the replacement building and king post retaining wall.

Tree Ref	TPO	Species	Description of Tree Work
T33	23/92/A2	Sycamore	A. Remove lower limb to South back to main stem. Sever Ivy

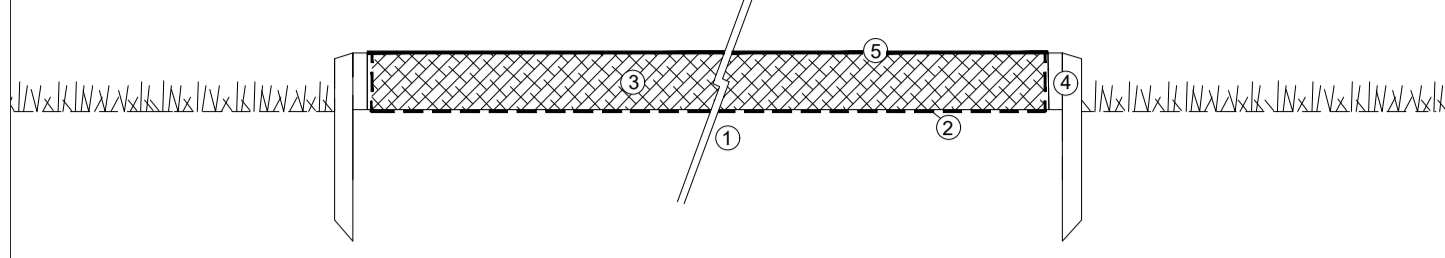
Illustrative Photograph – T33



Justification for Tree Work:

Access facilitation pruning to prevent damage to the tree during the demolition of the existing building and the construction of the replacement building and king post retaining wall.

1.0 TEMPORARY TREE GROUND PROTECTION:
Pedestrian operated plant < 2 tonnes
(Scale 1:20)



NOTES:

- EXISTING GROUND: existing ground / soil within root protection area to be undisturbed. Area to be cleared of vegetation (i.e. brambles, perennial weed growth, scrub) by hand prior to installation.
- GEOTEXTILE: terram T1000 geotextile to be laid to existing on existing ground.
- COMPRESSION RESISTANT LAYER: minimum layer of 150mm woodchip from site tree work arisings or contract grade bark mulch.
- TIMBER EDGE: pressure treated 50mm x 150mm pegged timber edging boards. Pegs 50mm x 50mm x 450mm at 500mm centres.
- GROUND PROTECTION BOARDS: steel road plates pegged in position or proprietary inter-linked ground protection boards such as Grounds Guards Multi Track system.

TREE PROTECTION NOTES:

'Trees in relation to design demolition and construction' BS5837:2012

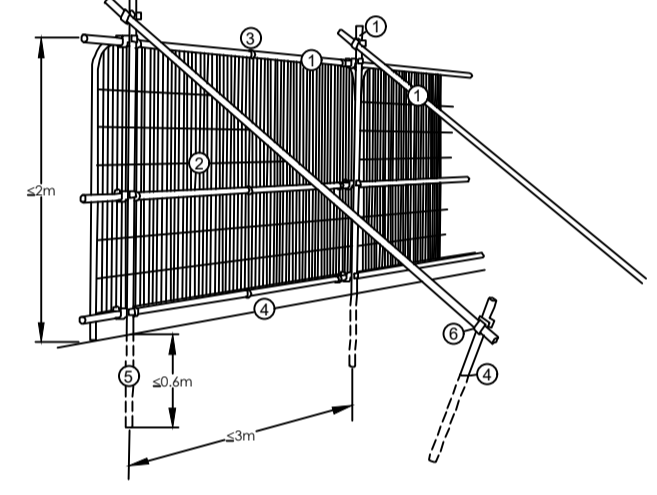
1.0 PRIOR TO COMMENCEMENT OF WORKS:

1.1 PRIOR TO COMMENCEMENT: all trees that are being retained onsite shall be protected by barriers and / or ground protection before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. The Root Protection Area (RPA) associated with existing trees designated for retention shall be protected from damage by erection of scaffold framework barriers in accordance BS 5837:2012 Figure 2 including where specified appropriate ground protection.

1.2 EXTENT OF ROOT PROTECTION AREA (RPA): as shown on the Tree Protection Plan (TPP) the RPA is generally to be in accordance with Annex D, Table D.1 'Root Protection Area', as an area equivalent to a circle radius 12 times the stem diameter (single stem trees) or based on the combined stem diameter for multistem trees (trees with more than one stem arising below 1.5m above ground level) refer to Clause 4.6.

1.3 TREE PROTECTION BARRIER: a vertical and horizontal scaffold framework well braced to resist impacts as illustrated below (refer to Figure 2 of BS5837:2012). The vertical tubes should be spaced at a maximum interval of 3 metres and driven securely into the ground. Care should be taken to avoid underground services and contact with structural roots. In the presence of underground services, retained hard surfacing or where special circumstances dictate an alternative specification as illustrated in Figure 3 of BS5837:2012 may be acceptable subject to agreement with the project arboriculturist and the local planning authority.

All weather site notices should be attached to the barrier with words such as CONSTRUCTION EXCLUSION ZONE - NO ACCESS. Once installed, barriers and ground protection shall not be removed or altered without prior approval of the project arboriculturist and where necessary approval from the local planning authority.



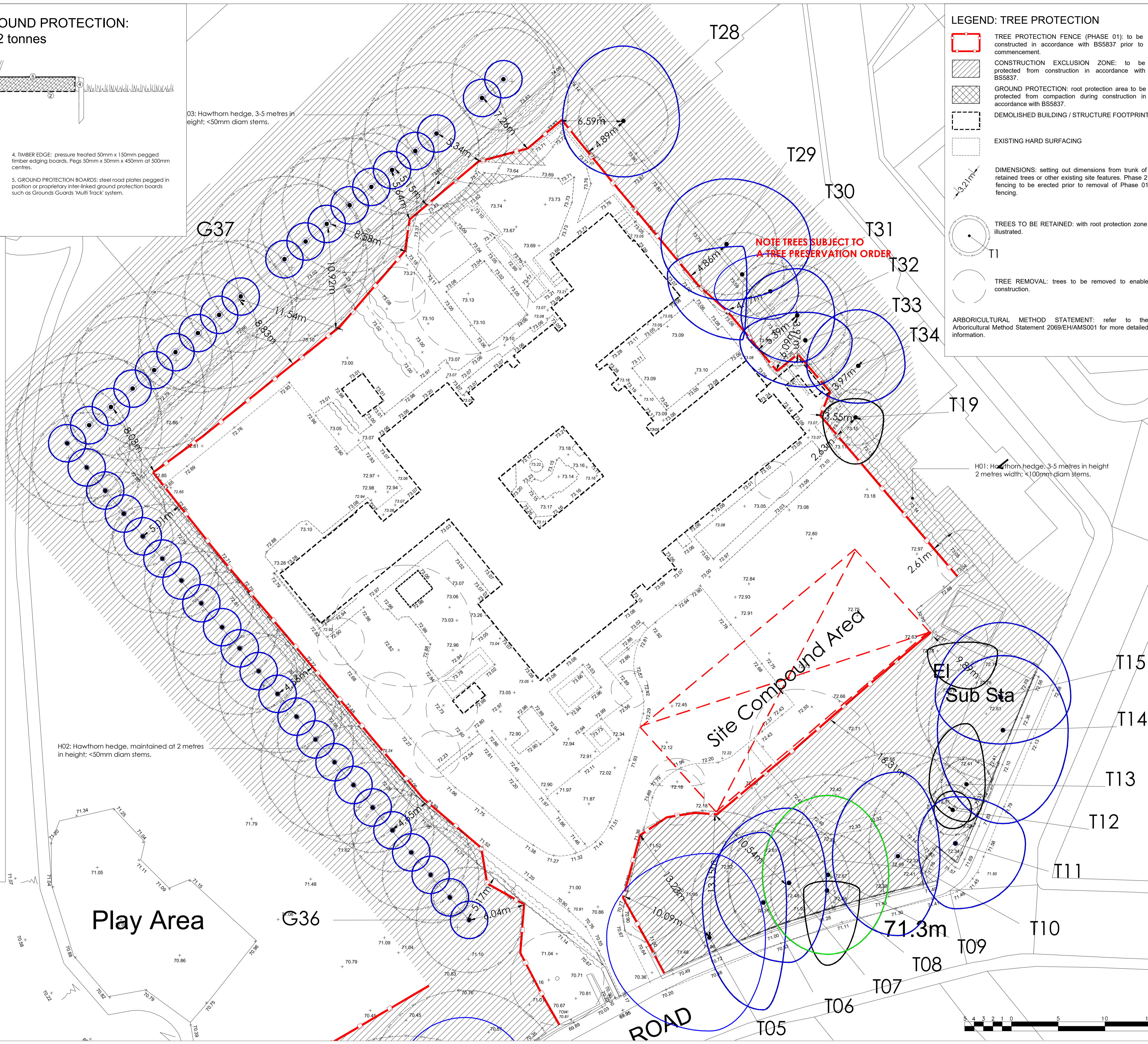
- Standard scaffold poles
- Heavy gauge 2m tall galvanised tube and weld mesh infill panels
- Panels secured to uprights and cross members with wire ties
- Ground Level
- Uprights driven into ground until secure (minimum depth 0.6m)
- Standard scaffold clamps

2.0 ADDITIONAL PRECAUTIONS:

- Planning of site operations should take sufficient account of wide or tall loads, or plant with booms, jibs or counterweights (including drilling & piling rigs) in order that they can operate without coming into contact with retained trees. The transfer or reverse of plant in proximity to trees shall be conducted under supervision of a bankman to ensure adequate clearance from trees is maintained at all times. Access facilitation proving as agreed with the project arboriculturist and/or local authority should be undertaken where necessary to maintain clearance. NB Works to trees protected by a Tree Preservation Order or within a Conservation Area will need approval by the local authority.
- Any materials whose accidental spillage would cause damage to a tree should be stored and handled well away from the outer edge of its RPA e.g. concrete mixings, diesel oil and vehicle washings. Allowances shall be made for sloping ground to avoid damaging materials running towards retained trees.
- Fires on sites should be avoided. Where they are unavoidable, they should not be lit in a position where heat could affect foliage or branches. The potential size of a fire and wind direction should be taken into account when determining its location, and should be attended at all times until safe to leave.
- Trees are not to be used as anchorages for equipment, or for other purposes. Notice boards, telephone cables, or other services should not be attached to any part of the tree.
- The dumping of spoil or rubbish, placing of temporary accommodation and storage of materials within the root protection area is prohibited.
- The change of ground level, excavating, slipping or disturbing topsoil within the RPA is prohibited.

3.0 GROUND PROTECTION DURING DEMOLITION & CONSTRUCTION

- Where construction working space or temporary construction access is specified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.
- Where the set-back of the tree protection barrier exposes unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.
- New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil, for example:
 - for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;
 - for pedestrian-operated plant up to a gross weight of 2.1 tonnes, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;
 - for wheeled or tracked construction traffic exceeding 2.1 gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected. If necessary sand should be laid on the ground as a compressible layer.



LEGEND: TREE PROTECTION

- TREE PROTECTION FENCE (PHASE 01): to be constructed in accordance with BS5837 prior to commencement.
- CONSTRUCTION EXCLUSION ZONE: to be protected from construction in accordance with BS5837.
- GROUND PROTECTION: root protection area to be protected from compaction during construction in accordance with BS5837.
- DEMOLISHED BUILDING / STRUCTURE FOOTPRINT
- EXISTING HARD SURFACING
- DIMENSIONS: setting out dimensions from trunk of retained trees or other existing site features. Phase 2 fencing to be erected prior to removal of Phase 01 fencing.
- TREES TO BE RETAINED: with root protection zone illustrated.
- TREE REMOVAL: trees to be removed to enable construction.

ARBORICULTURAL METHOD STATEMENT: refer to the Arboricultural Method Statement 2089/EH/AMS001 for more detailed information.

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rev	date:	amendments:	alt:
A	08/01/2021	Tree Protection phase drawings.	E,H
B	18/03/2021	Site compound area added.	E,H
C	06/07/2021	New layout	DR

client:
KIRKLEES

project:
KNOWL PARK DEMENTIA FACILITY

title:
TREE PROTECTION PLAN PHASE 1

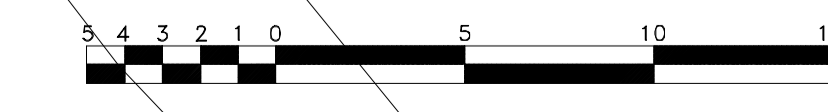
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PLANNING

date: DEC: 20
scale@A1: 1:200

drawn: DR
checked: ECH



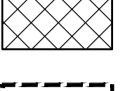


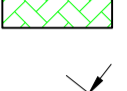
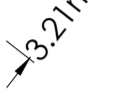





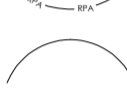
number: 20-069-09
revision: C

Bea Landscape Design Ltd
 132A 'The Westlands', Compton Road,
 Wolverhampton, WV3 9QB
 T: 01902 424 950 / 01902 425 001
 E: info@bealandscape.co.uk
 W: www.bealandscape.co.uk



Sports Facility

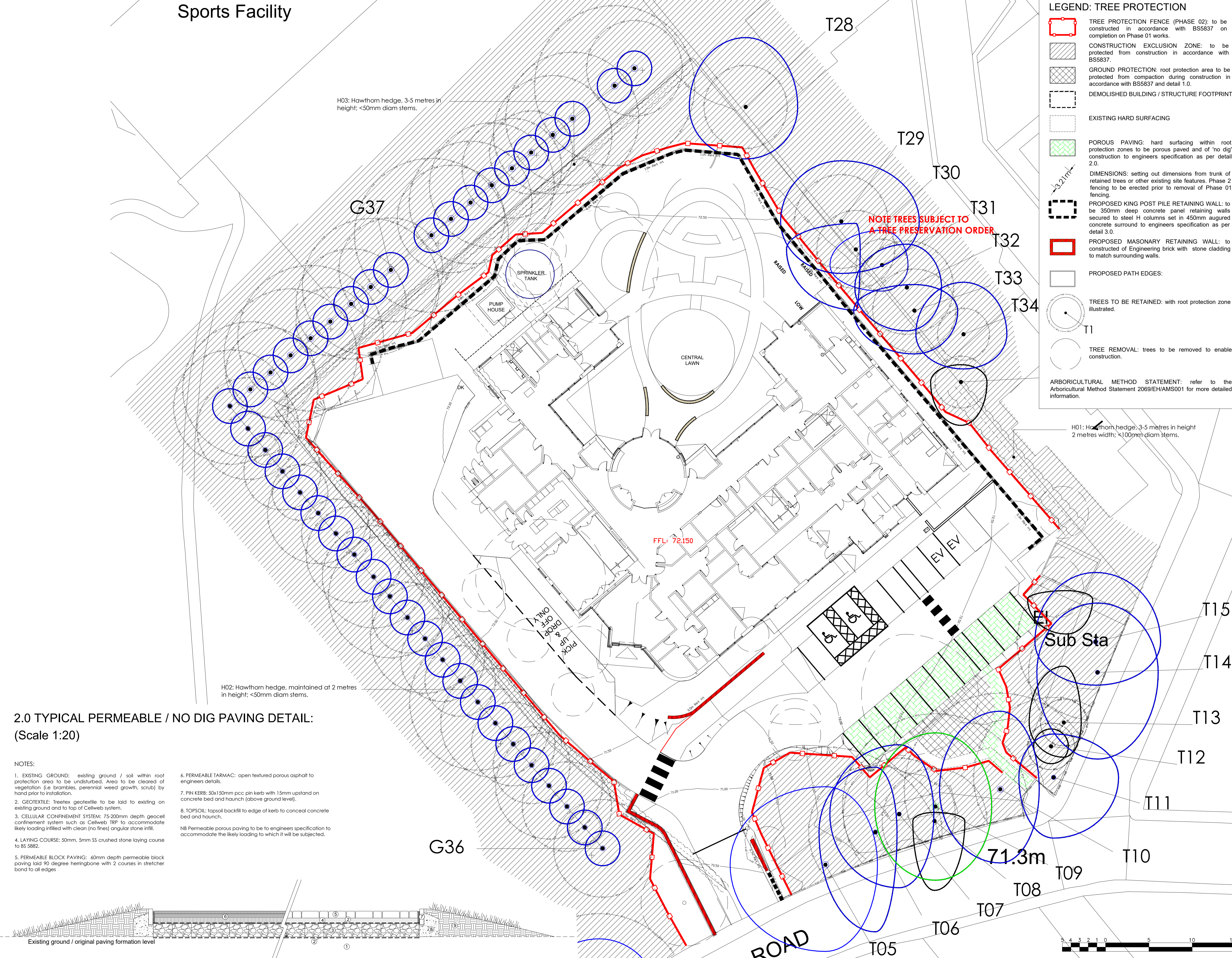
LEGEND: TREE PROTECTION

-  TREE PROTECTION FENCE (PHASE 02): to be constructed in accordance with BS5837 on completion of Phase 01 works.
 -  CONSTRUCTION EXCLUSION ZONE: to be protected from construction in accordance with BS5837.
 -  GROUND PROTECTION: root protection area to be protected from compaction during construction in accordance with BS5837 and detail 1.0.
 -  DEMOLISHED BUILDING / STRUCTURE FOOTPRINT
 -  EXISTING HARD SURFACING
 -  POROUS PAVING: hard surfacing within root protection zones to be porous paved and of 'no dig' construction to engineers specification as per detail 2.0.
 -  DIMENSIONS: setting out dimensions from trunk of retained trees or other existing site features. Phase 2 fencing to be erected prior to removal of Phase 01 fencing.
 -  PROPOSED KING POST PILE RETAINING WALL: to be 350mm deep concrete panel retaining walls secured to steel H columns set in 450mm augured concrete surround to engineers specification as per detail 3.0.
 -  PROPOSED MASONARY RETAINING WALL: to be constructed of Engineering brick with stone cladding to match surrounding walls.
 -  PROPOSED PATH EDGES:
 -  TREES TO BE RETAINED: with root protection zone illustrated.
 -  T1
 -  TREE REMOVAL: trees to be removed to enable construction.
- ARBORICULTURAL METHOD STATEMENT: refer to the Arboricultural Method Statement 2069/EH/AMS001 for more detailed information.

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rev	date:	amendments:	alt:
A	27.01.2021	T05 retained; T35 & hedge section removed.	DR
B	18.03.2021	Tree protection fencing and ground protection to G37 & T05 amended.	E.H
C	06.07.2021	New layout	DR



H03: Hawthorn hedge, 3-5 metres in height; <50mm diam stems.

H01: Hawthorn hedge, 3-5 metres in height 2 metres width; <100mm diam stems.

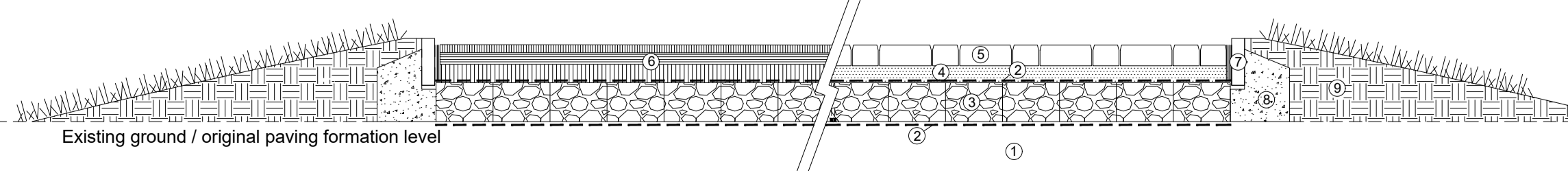
NOTE TREES SUBJECT TO A TREE PRESERVATION ORDER

FFL: 72.150

71.3m

2.0 TYPICAL PERMEABLE / NO DIG PAVING DETAIL: (Scale 1:20)

- NOTES:
1. EXISTING GROUND: existing ground / soil within root protection area to be undisturbed. Area to be cleared of vegetation (i.e brambles, perennial weed growth, scrub) by hand prior to installation.
 2. GEOTEXTILE: Treetex geotextile to be laid to existing on existing ground and to top of Cellweb system.
 3. CELLULAR CONFINEMENT SYSTEM: 75-200mm depth geocell confinement system such as Cellweb TRP to accommodate likely loading infilled with clean (no fines) angular stone infill.
 4. LAYING COURSE: 50mm, 5mm SS crushed stone laying course to BS 5882.
 5. PERMEABLE BLOCK PAVING: 60mm depth permeable block paving laid 90 degree herringbone with 2 courses in stretcher bond to all edges
 6. PERMEABLE TARMAC: open textured porous asphalt to engineers details.
 7. PIN KERB: 50x150mm pcc pin kerb with 15mm upstand on concrete bed and haunch (above ground level).
 8. TOPSOIL: topsoil backfill to edge of kerb to conceal concrete bed and haunch.
 - N8 Permeable porous paving to be to engineers specification to accommodate the likely loading to which it will be subjected.



client:
KIRKLEES

project:
KNOWL PARK DEMENTIA FACILITY

title:
TREE PROTECTION PLAN PHASE 2


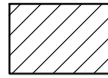

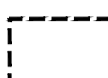
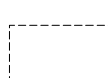
status:
PLANNING

date: DEC' 20	drawn: DR	number: 20-069-10
scale@A1: 1:200	checked: ECH	revision: C

Bea Landscape Design Ltd
132A 'The Westlands', Compton Road,
Wolverhampton, WV3 9QB
T: 01902 424 950 / 01902 425 001
E: info@bealandscape.co.uk
W: www.bealandscape.co.uk



LEGEND: TREE PROTECTION

-  TREE PROTECTION FENCE (PHASE 01): to be constructed in accordance with BS5837 prior to commencement.
-  CONSTRUCTION EXCLUSION ZONE: to be protected from construction in accordance with BS5837.
-  GROUND PROTECTION: root protection area to be protected from compaction during construction in accordance with BS5837.
-  DEMOLISHED BUILDING / STRUCTURE FOOTPRINT
-  EXISTING HARD SURFACING

DIMENSIONS: setting out dimensions from trunk of retained trees or other existing site features. Phase 2 fencing to be erected prior to removal of Phase 01 fencing.

TREES TO BE RETAINED: with root protection zone illustrated.

TREE REMOVAL: trees to be removed to enable construction.

ARBORICULTURAL METHOD STATEMENT: refer to the Arboricultural Method Statement 2069/EH/AMS001 for more detailed information.

TREE PROTECTION NOTES:

'Trees in relation to design demolition and construction' BS5837:2012

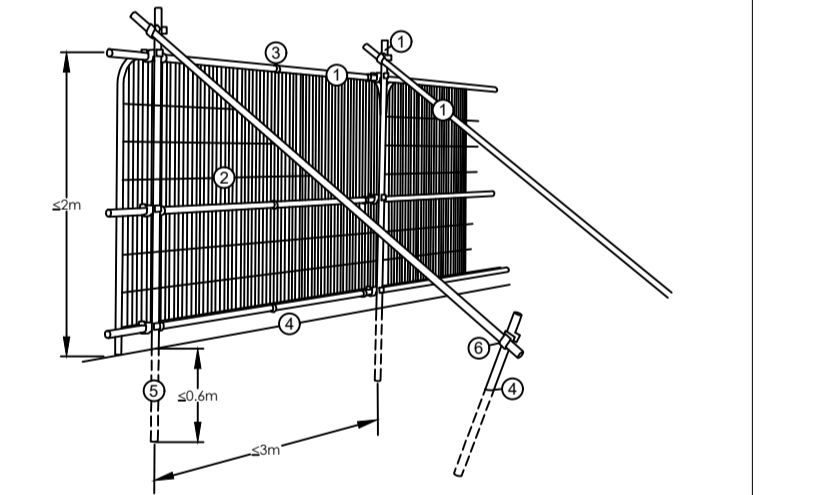
1.0 PRIOR TO COMMENCEMENT OF WORKS:

1.1 PRIOR TO COMMENCEMENT: all trees that are being retained onsite shall be protected by barriers and / or ground protection before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. The 'Root Protection Area' (RPA) associated with existing trees designated for retention shall be protected from damage by erection of scaffold framework barriers in accordance BS 5837:2012 Figure 2 including where specified appropriate ground protection.

1.2 EXTENT OF ROOT PROTECTION AREA (RPA): as shown on the Tree Protection Plan (TPP) the RPA is generally to be in accordance with Annex D, Table D.1 'Root Protection Area', as an area equivalent to a circle radius 12 times the stem diameter (single stem trees) or based on the combined stem diameter for multistem trees (trees with more than one stem arising below 1.5m above ground level) refer to Clause 4.4.

1.3 TREE PROTECTION BARRIER: a vertical and horizontal scaffold framework, well braced to resist impacts as illustrated below (refer to Figure 2 of BS5837:2012). The vertical tubes should be spaced at a maximum interval of 3 metres and driven securely into the ground. Care should be taken to avoid underground services and contact with structural roots. In the presence of underground services, retained hard surfacing or where special circumstances dictate an alternative specification as illustrated in Figure 3 of BS5837:2012 may be acceptable subject to agreement with the project arboriculturalist and the local planning authority.

All weather site notices should be attached to the barrier with words such as "CONSTRUCTION EXCLUSION ZONE - NO ACCESS". Once installed, barriers and ground protection shall not be removed or altered without prior approval of the project arboriculturalist and where necessary approval from the local planning authority.



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

2.0 ADDITIONAL PRECAUTIONS:

2.1 Planning of site operations should take sufficient account of wide or tall loads, or plant with booms, jibs or counterweights (including drilling & piling rigs) in order that they can operate without coming into contact with retained trees. The trunk or branches of plant in proximity to trees shall be conducted under supervision of a bankman to ensure adequate clearance from trees is maintained at all times. Access facilitation pruning as agreed with the project arboriculturalist and/or local authority should be undertaken where necessary to maintain clearance. **NB Works to trees protected by a Tree Preservation Order or within a Conservation Area will need approval by the local authority.**

2.2 Any materials whose accidental spillage would cause damage to a tree should be stored and handled well away from the outer edge of its RPA e.g. concrete mixings, diesel oil and vehicle washings. Allowances shall be made for sloping ground to avoid damaging materials running towards retained trees.

2.3 Fires on sites should be avoided. Where they are unavoidable, they should not be lit in a position where heat could affect foliage or branches. The potential size of a fire and wind direction should be taken into account when determining its location, and should be attended at all times until safe to leave.

2.4 Trees are not to be used as anchorages for equipment, or for other purposes. Notice boards, telephone cables, or other services should not be attached to any part of the tree.

2.5 The dumping of spoil or rubbish, placing of temporary accommodation and storage of materials within the root protection area is prohibited.

2.6 The change of ground level, excavating, stripping or disturbing topsoil within the RPA is prohibited.

3.0 GROUND PROTECTION DURING DEMOLITION & CONSTRUCTION

3.1 Where construction working space or temporary construction access is specified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturalist and an engineer as appropriate.

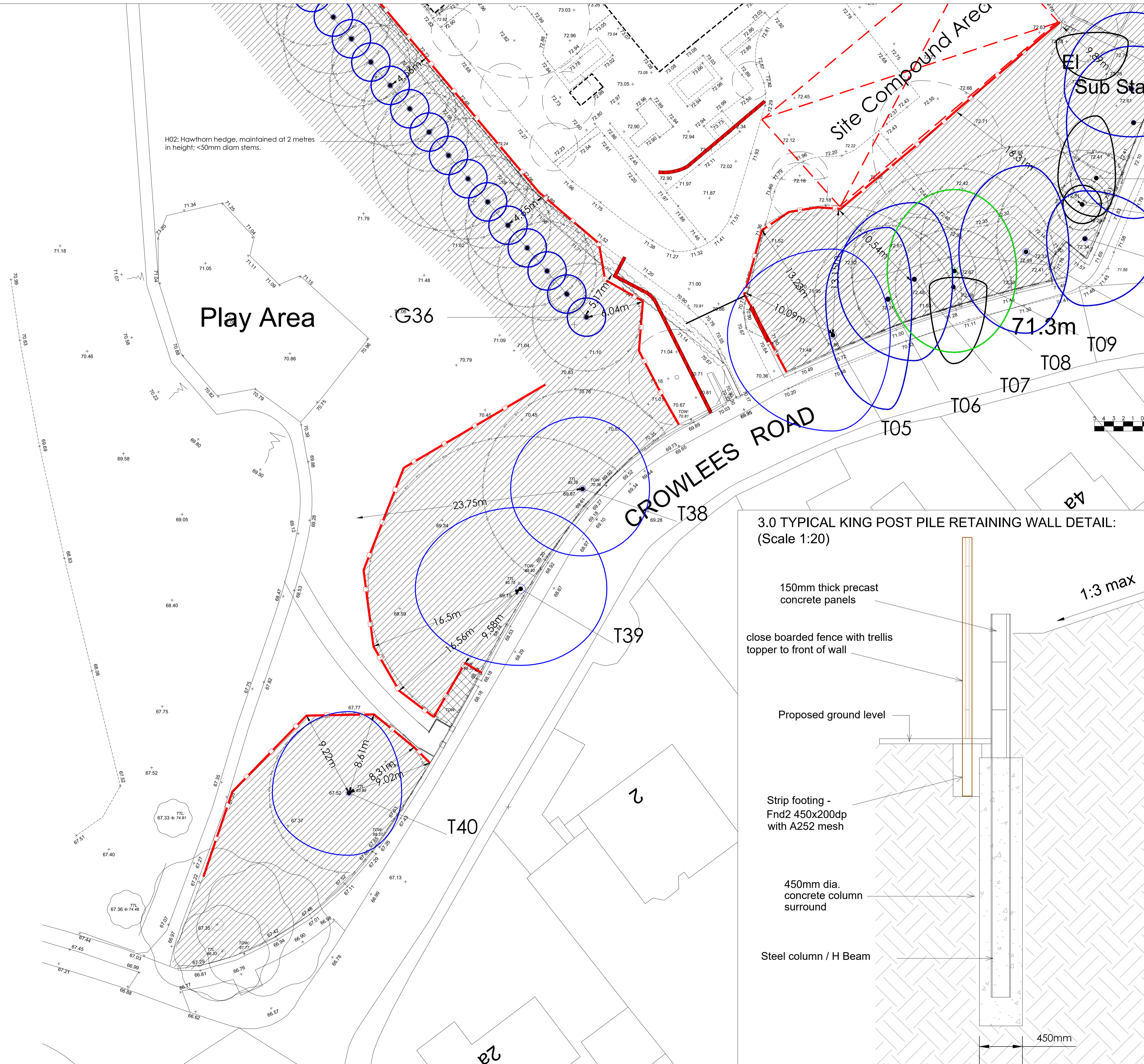
3.2 Where the set-back of the tree protection barrier exposes unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

3.3 New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil, for example:

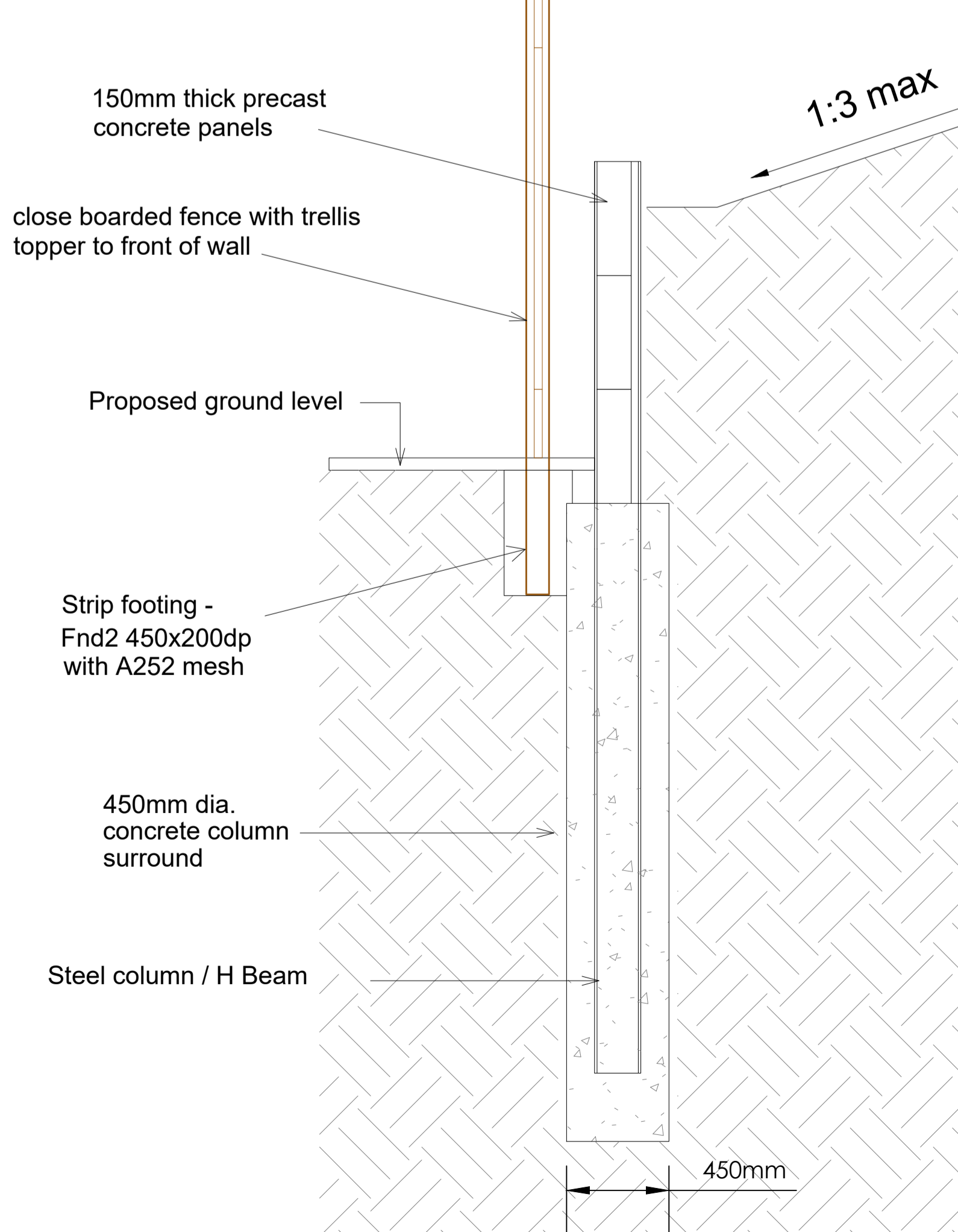
a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;

b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;

c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected. If necessary sand should be laid on the ground as a compressible layer.



3.0 TYPICAL KING POST PILE RETAINING WALL DETAIL: (Scale 1:20)



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rev	date:	amendments:	alt:
(-)			



client:
KIRKLEES

project:
KNOWL PARK DEMENTIA FACILITY

title:
TREE PROTECTION PLAN
PHASE 1 SHEET 2/2

status:
PLANNING

date: JUL' 21	drawn: DR	number: 20-069-19
scale@A1: 1:200	checked: ECH	revision: (-)

Bea Landscape Design Ltd
132A 'The Westlands', Compton Road,
Wolverhampton, WV3 9QB
T: 01902 424 950 / 01902 425 001
E: info@bealandscape.co.uk
W: www.bealandscape.co.uk

Landscape Institute Registered Practice

landscape architects - arboricultural consultants
urban designers - environmental assessors



address:

132A The Westlands
Compton Road
Wolverhampton
WV3 9QB

tel: 01902 424 950

email: info@bealandscape.co.uk

web: www.bealandscape.co.uk