Arboricultural Method Statement & Tree Protection Plan – In Accordance with BS 5837:2012

Project No: **12318**	**Hanover & Princess Court, Bentinck Street, Cambridge, CB2 1HG**		
Client:		Cambridge Investment Partnership	
Date of Report:	29/04/2026	Revision:	A

Hayden's Arboricultural Consultants Ltd, Units 3-5 Moseley's Farm Business Centre
Fornham All Saints, Bury St Edmunds, Suffolk IP28 6JY

Telephone: 01284 765391 Email: info@treesurveys.co.uk
www.treesurveys.co.uk

Arboricultural Method Statement & Tree Protection Plan In Accordance with BS 5837:2012

Contents

1.0 Introduction

2.0 Specific Details

3.0 Appendices

1.0 Introduction

1.1 Terms of Reference

1.1.1 Hayden's Arboricultural Consultants Limited has been commissioned by Cambridge Investment Partnership to prepare a detailed Arboricultural Method Statement and Tree Protection Plan for the proposed development at Hanover & Princess Court, Bentinck Street, Cambridge, CB2 1HG.

1.1.2 This report supersedes the submitted Tree Survey and Arboricultural Impact Assessment in accordance with BS5837: 2012 dated 14/10//2025, ref: 11003.

1.1.3 Cambridge City Council/Great Cambridge Planning requires the following information within this Arboricultural Impact Assessment, Method Statement and Tree Protection Plan in accordance with BS5837:2012 dated 19/03/2026, ref: 12318.

- Pre-Commencement Meetings
- Tree Surgery and Tree Felling to Facilitate Development
- Phased Tree Protection Measures
- Phased Ground Protection Measures
- Site Access and Storage of Materials, Equipment and Waste
- Demolition
- New Underground Service and Drainage Infrastructure Installation
- New Structures
- New Hard Surfaces
- Play Areas
- Phasing and Arboricultural Monitoring Schedule

2.0 Phasing and Arboricultural Monitoring Statement

2.1 The proposal involves the integration of several complex aspects that affect tree protection. Accordingly, Hayden's Arboricultural Consultants have produced a method statement flowchart/checklist to cover the major operations on site as they affect retained trees. This is included on drawing no. 12318-D-AMS Rev A (drawings 1 through 8). This complies with the Statement of Supervision (Arboriculture) in Appendix E.

2.2 In accordance with item 6.3 of BS 5837:2012, the site and associated development must be monitored regularly by a competent project arboriculturalist to ensure compliance with the arboricultural aspects of the planning permission. As such, the method statement flowchart/checklist included on drawing no. 12318-D-AMS Rev A (drawings 1 through 8) should be used as an auditable monitoring schedule to assess the progress of key site events/activities. This is commensurate with the Statement of Supervision (Arboriculture) in Appendix E.

2.3 In addition to the method statement flowchart/checklist, it is beneficial to identify the key arboricultural responsibilities associated with the progression of the development. Accordingly, a "Statement of Supervision (Arboriculture)" has been included at Appendix E. The purpose of this document is to identify a definite decision making and data recording structure in the monitoring process, together with providing a list of specific inspection trigger points. Prior to works commencing on site, this document should be re-issued with contact names and document reference numbers included.

3.0 Phased Arboricultural Method Statement and Tree Protection Plan (Detailed)

3.1 Pre-Demolition Preparatory Works Phase 1 – Tree felling and tree surgery. Associated drawing 12318-D-AMS Rev A (drawing 1).

3.1.1 The necessary tree felling is fully detailed in Appendix C, but is also listed below:

Feature No	Reason for Removal	BS Category*
G004	Within the necessary construction space of a new apartment block.	B
G005	Cumulative impacts of demolition, construction and the removal and replacement of underground services	A
T001	Within the footprint of a new apartment block	C
T002	Within the necessary construction space of a new apartment block	B
T011	Within the necessary construction space of two new apartment blocks	B
T012	Within the necessary construction space of two new apartment blocks	B
T013	Within the necessary construction space of two new apartment blocks	B
T014	Within the footprint of new footpaths	C
T015	Within the footprint of new footpaths	C
T016	Within the footprint of new footpaths	C
T017	Within the necessary construction space of a new apartment block	B

3.1.2 The necessary tree surgery is fully detailed in Appendix C, but is also listed below:

Feature No	Description of Works Required	BS Category*
T003	Crown lift on the northern aspect to provide 5m ground clearance over the demolition and construction access. Undertake root pruning along the edge of a new footpath as shown on drawing 12318-D-AMS Rev A.	C
T008	Undertake root pruning along the edge of a new footpath as shown on drawing 12318-D-AMS Rev A.	B
T009	Crown lift on the northern aspect to provide 5m ground clearance over the refuse access.	B

3.2 **Demolition Phase 1 – Site Set-up; installation of welfare facilities and installation of the First Major Phase of Tree Protection Measures. Associated drawing 12318-D-AMS Rev A (drawing 2 & 3).**

3.2.1 After the completion of the necessary tree surgery and tree felling to facilitate development, the first phase of tree protection will be installed on site. This must be fit for purpose and in full accordance with the requirements of BS 5837:2012 and positioned as shown on drawing no. 12318-D-AMS Rev A (Appendix G).

3.2.2 Details of temporary protective fencing are supplied in the attached Appendix F.3 – F.5.

3.2.3 All detailed tree protection measures will be installed by the relevant site contractor and then inspected by the monitoring arboricultural consultant. The tree protection measures will be evidenced by photograph and recorded in an accompanying Arboricultural Monitoring Report. This will be further detailed within Statement of Supervision (Arboriculture) Appendix E.

3.2.4 The location of the Demolition Site Offices and Contractor Parking coincides with an existing car park which will be retained to act as ground protection at this stage, as detailed on the supplied 'Hill Demolition Only Traffic Management Plan' Ref T20008. The Demolition Site Offices will be supplemented by temporary protective fencing to create an exclusion zone around the soft earth surrounding G003, T003 and T004. The site cabins will be orientated to be single storey where they are to be sited below the crown of G003, and double storey where they are outside of the crown of G003, and can be rolled into position from Union Road, thus avoiding conflict with the crown of G003. The lowest point of the crown of G003 is 4m above ground level, providing adequate clearance above a single-stack arrangement. Other than the installation of temporary fencing (Appendix F3-F5) to segregate each of the site office and welfare facilities from physical access to retained trees, no specialised tree protection systems will be required. The site will be inspected by the project Arboricultural Consultant to check and confirm the location of the temporary protective fencing, as detailed in the appended Statement of Supervision (Appendix H).

Image 1 – The existing car park to be used for the Demolition Site Office and parking. T003 is on the left side of the image and G003 is on the right side of the image. Temporary protective fencing to be installed at the kerb edges (annotated with pink arrows).

3.2.5 The existing car park adjacent G002 will also be used for Demolition access, with the hard surfacing retained as ground protection, and temporary protective fencing forming an exclusion zone around the soft earth surrounding G002.

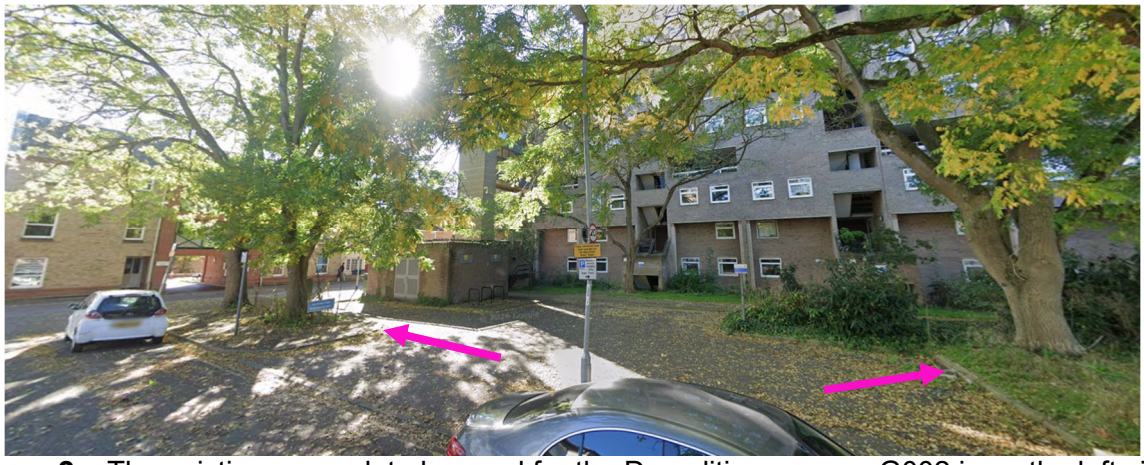


Image 2 – The existing car park to be used for the Demolition access. G002 is on the left side of the image and T003 is on the right side of the image. Temporary protective fencing to be installed at the kerb edges.

3.2.6 Temporary protective fencing will be installed to encapsulate the Root Protection Areas of T006 – T010 as shown on drawing 12318-D-AMS Rev A-2, with a Banksman controlling all on site Traffic movement around these trees.

3.2.7 There is one further point of access during the demolition phase, which is to utilise an existing vehicle maintenance access off Coronation Street on the south boundary. This is beyond the crown of the tree, and thus other than the provision of temporary protective fencing to protect the soft earth within the RPA, no other special measures will be required in relation to tree protection.

Image 3 – The demolition phase point of access off Coronation Street.

3.2.8 The temporary protective fencing may require re-alignment as the project moves through its various phases. This Arboricultural Impact Assessment, Method Statement and Tree Protection Plan covers the major anticipated phases of the project. All required re-alignments of tree protection measures between these must first be communicated to and approved by the project Arboricultural Consultant. The tree protection measures will be evidenced by photograph and recorded in an accompanying Arboricultural Monitoring Report. This will be further detailed within Statement of Supervision (Arboriculture) Appendix E.

3.2.9 During the construction process, Root Protection Areas must not be exposed to compaction or contamination. Where they cannot be enclosed by fencing (for practical site access reasons), or safeguarded by existing hard surfacing, it will be necessary to provide temporary ground protection that is fit for purpose. Examples of light weight and heavy-duty ground protection measures are supplied in Appendix F7 – F.8.

3.2.10 Due to the complexities of construction, it is not possible to predict at this stage which type of ground protection will be necessary. This must therefore be agreed on site by the project arboriculturalist.

3.2.11 The ground protection measures will foreseeably require re-alignment as the project moves through its various phases. This Arboricultural Impact Assessment, Method Statement and Tree Protection Plan cover the major phases of the project. All required re-alignment of ground protection measures between must first be communicated to and approved by the project Arboricultural Consultant.

3.2.12 All detailed ground protection measures will be installed by the relevant site contractor and then inspected by the monitoring arboricultural consultant. The ground protection measures will be evidenced by photograph and recorded in an accompanying Arboricultural Monitoring Report. This will be further detailed within Statement of Supervision (Arboriculture) Appendix E.

3.2.13 Physical protection of the crown spread of retained trees such as G002, G003, T003, T004 and T006 – T010 cannot be pragmatically achieved by temporary protective fencing alone, by virtue of the size and scale of the crown spreads. Instead, the principal contractors engaged in the site works must implement safe systems of work relating to the presence of the crown spread of retained trees. This can be achieved with tree-specific portions within the required site induction, daily briefings, the presence of banksmen, heigh restrictor bars and programmed ‘no-oversail’ zoning software for equipment such as cranes.

3.3 **Demolition Phase 2 – Demolition of the Existing Structures. Associated drawing 12318-D-AMS Rev A (drawing 2 & 3).**

3.3.1 With the tree surgery and felling complete, and the site set-up and first phase of Tree Protection in place, the demolition of the two apartment blocks and the garage structure (including the concrete ramp on the east side) will proceed in line with the submitted Demolition Management Plan (superimposed into 12318-D-AMS Rev A (drawing 3). Prior to commencing demolition, it will be necessary to have a site meeting between the demolition contractor, site manager and project arboricultural consultant to discuss and confirm the working methods and tree protection measures. The project arboriculturalist shall record minutes of the meeting with copies issued to all members of the development team.

3.3.2 This Arboricultural Method Statement makes provision for ad-hoc Arboricultural Monitoring site visits to discuss, guide or documents demolition works near retained trees, in addition to the structured routine Arboricultural Monitoring site visits.

3.3.3 The existing hard surfaces within the RPA of G002, G003, T003 and T004 will be retained for the purpose of acting as ground protection during Demolition and through the main phases of Construction (erection of the new structures), and supplemented with a system of load-bearing temporary track-matting to join up the areas of existing hard surfacing into a working area on the east side of the new structures and west side of G002, G003, T003 and T004.

3.4 **Construction Phase 1 – Installation of Drainage Infrastructure and new Underground Services. Associated drawing 12318-D-AMS Rev A (drawing 4).**

3.4.1 Upon the completion of demolition, and prior to commencing construction, it will be necessary to have a site meeting between the principal contractor (including any relevant sub-contractors), site manager and project arboricultural consultant to discuss the working methods and tree protection measures.

3.4.2 Installation of new underground drainage and electrical infrastructure does not encroach within the RPA of trees to be retained. Therefore, and purely from an Arboricultural perspective, no specialist working methods will be required other than the installation of tree protection as shown in drawing 12318-D-AMS Rev A (drawing 4).

3.5 **Construction Phase 2 – Installation of Construction Haul Road and Construction Site Offices. Associated drawing 12318-D-AMS Rev A (drawing 5 & 6).**

3.5.1 The location of the Construction Site Offices coincides with an existing vehicle access and small car park which will be retained to act as ground protection at this stage, as detailed on the supplied ‘Hill Demolition Only Traffic Management Plan’ Ref T20008. The Construction Site Offices will be supplemented by temporary protective fencing to create an exclusion zone around the soft earth surrounding G003. Other than the installation of temporary fencing (Appendix F3-F5) to segregate each of the site office and welfare facilities from physical access to retained trees, no specialised tree protection systems will be required. The site will be inspected by the project Arboricultural Consultant to check and confirm the location of the temporary protective fencing, as detailed in the appended Statement of Supervision (Appendix H).

Image 4 – The existing hard surfacing will be used for the Construction Site Offices and Pedestrian Turnstile. G003 is on the left side of the image. Temporary protective fencing to be installed at the kerb edges.

3.5.2 Construction access will be gained from George IV Street, as shown in the supplied Construction Traffic Management Plan and superimposed onto drawing 12318-D-AMS Rev A-4. In this case the RPA is safeguarded by existing hard surfaces and therefore, and from a purely arboricultural perspective, it will not be necessary to install a proprietary temporary load bearing road to protect tree roots until a later phase whereby the existing hard surfaces are removed.

3.5.3 Preferentially, all materials, equipment and waste will be stored outside the Root Protection Area (RPA) of the retained trees, with the temporary protective fencing sited at the edge of the RPA or Crown Spread (whichever is larger). The supplied Demolition and Construction Traffic Management Plans detail a material storage area encroaching in the RPA of T006 – T009. Where storage is necessary within the RPA of these trees, the materials must be lightweight and stored on a proprietary Ground Protection system with an appropriate cushioning sub-base. Furthermore, no liquids or materials that could leach into the soil may be stored within the RPA of these retained trees.

3.6 **Construction Phase 3 – Main Phase of Construction (Erection of New Structures). Associated drawing 12318-D-AMS Rev A (drawing 5 & 6).**

3.6.1 Construction of foundations or structural supports for new structures do not encroach within the Root Protection Area (RPA) of any trees to be retained. Therefore, from an arboricultural perspective, no specialised construction or foundation techniques will be required to protect tree roots.

3.6.2 Temporary protective fencing will be installed as shown on drawing 12318-D-AMS Rev A-5. Where this cannot encapsulate the entirety of the RPA of trees to be retained, the ground will be safeguarded by a combination of the retention of existing hard surfaces and the installation of temporary load-bearing track-matting as detailed in Appendix F.7 & F.8.

3.7 **Construction Phase 4 – External Works (Hard and Soft Landscaping), including the Removal of Existing Hard Surfaces. Associated drawing 12318-D-AMS Rev A (drawing 7 & 8).**

3.7.1 Upon the completion of the construction of the structures, the next phase will be the external hard and soft landscaping, which will include the breaking up and removal of the wearing surface of the existing hard surfaces within the RPA of trees G002, G003, T003, T004 & T010. These works must only be completed under arboricultural supervision and primarily by hand (supported with appropriate lightweight machinery only if agreed by the supervising arboriculturalist) within the calculated RPA. The project arboriculturalist will oversee, guide, and record the process as detailed within the Statement of Supervision (Arboriculture) Appendix E.

3.7.2 In the case of T003, T004 and T010, the existing hard surfacing will not be replaced by new hard surfacing and will be restored to soft earth. Any roots exposed during the process of removing the existing hard surface must be immediately covered with fresh imported topsoil to prevent the roots drying out.

3.7.3 The MOOWD Hard Landscape Plan (LD SK 002) indicates the installation of low railings within the Root Protection Area of the following tree to be retained – G003, T003, T004, T006, T007 and T008. Hand-digging under Arboricultural Supervision will be implemented to allow the installation of the post footings, which must be sited to avoid major roots (diameter of 25mm or greater). Scope must be allowed for the pruning of lesser roots, and for the position of the posts to be of variable distance to one another to achieve this working specification.

3.8 **Construction Phase 6 – External Works. Associated drawing 12318-D-AMS Rev A (drawing 7 & 8).**

3.8.1 Upon completion of the breaking up and removal of the wearing surface in the RPA of G002 and G003, installation of a new hard surface will commence. This must work with all finished levels and required load bearings not cutting into the ground or existing retained or replaced sub-base, or by using a ‘No Dig’ construction method and product. A sample design of “no dig” surfacing is included in Appendix F.6, but the exact specification (adhering to the principles of Appendix F.6) must be designed by a Civil Engineer. This process requires further investigation of the existing levels, presence of tree roots, and the existing varying hard surface types prior to the formulation of the detailed design of the proposed new hard surfaces and their construction types. It is anticipated that this study will be undertaken as the next design stage. Root Radar technology may be implemented to better clarify the position and depth of existing roots, to inform this design process, and it is expected that further submission of information to Greater Cambridge Planning will be required.

3.8.2 Installation of new hard surfaced footpaths encroaches within a small portion of the RPA of the following trees to be retained – T003 and T008. Given the minor extent of the intrusion in these locations it is considered appropriate to undertake linear root pruning as part of the access facilitation pruning (AFP) works. This operation will obviate the need for “no dig” construction methods in this situation.

3.8.3 All linear root pruning work will be undertaken with the project arboriculturalist in attendance to oversee the work. The work will be evidenced by photograph and recorded in an accompanying Arboricultural Monitoring Report. This will be further detailed within Statement of Supervision (Arboriculture) Appendix E.

3.8.4 The installation of new children's play areas are detailed on the submitted soft landscaping plan. It is understood that these are incidental 'play on the way' pieces of equipment which sit on ground level with no required footings. It is also understood that these will be sited outside the crown spread of retained trees to reduce the potential for an ongoing safety issue comprising the potential for falling branches. As such, it is not expected that further Arboricultural appraisal will be required.

3.0 Appendices

Appendix **A** Species List

Appendix **B** Schedule of Trees

Appendix **C** Schedule of Works to Allow Development

Appendix **D** Explanatory Notes

Appendix **E** Statement of Supervision (Arboriculture)

Appendix **F** Advisory Information & Sample Specifications

1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care
2. European Protected Species and Woodland Operations Checklist (v.4)
3. BS 5837:2012 Figure 2 - Default specification for protective barrier
4. BS 5837:2012 Figure 3 - Examples of above-ground stabilising systems
5. Figure 4 Detail of protective barrier where construction encroaches within BS5837:2012 Root Protection Area
6. Method Statement for 'No Dig' Construction in line with Arboricultural Practice Note 12 '*Through the Trees to Development*'
7. GroundGuards Multitrack Ground Protection
8. Supa-Trac Ground Protection
9. Air Spade/Air Excavation Specification
10. Trunk Protecta by Green Grid Systems

Appendix **G** Drawing No 12318-D-AMS Rev A (drawings 1 through 8)

Appendix A - Species List

Species List:

Cherry	*Prunus sp*
False Acacia	*Robinia pseudoacacia*
London Plane	*Platanus x hispanica*
Norway Maple	*Acer platanoides*
Pagoda tree	*Styphnolobium japonica*
Pine	*Pinus sp*
Portugal (Portuguese) Laurel	*Prunus lusitanica*
Silver Birch	*Betula pendula*
Silver Maple	*Acer saccharinum*
Sycamore	*Acer pseudoplatanus*
Tibetan Cherry	Prunus serrula
Winter Flowering Cherry	*Prunus subhirtella 'Autumnalis'*

Appendix B

Schedule of Trees

SCHEDULE OF TREES (AIA)

Hanover & Princess Court, Bentinck Street, Cambridge,

Surveyed By: Alex Garnham Date: 05/03/2025
Managed By: Alex Garnham

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
G001	Norway Maple	610	14.5		Moderate	N6, E6, S6, W6	Mar 2025: No significant change since previous survey. Dec 2021: Three Norway Maple located in small bare earth pits surrounded by hard surfaced car parking, footpaths and highway. The northern specimen is largest, the central specimen is suppressed and the southern specimen is growing over a lamp column. Each specimen has been subject to some pruning, mainly crown lifting over the surrounding infrastructure. Good amenity value but located in a setting where growth space and nutritional resources are limited.	B2	No work required.	4		
		7.32	3		EM	Moderate						
No		168.3			20+ years	Mixed soft/hard surface						
G002	Chinese Scholar Tree	650	18.5		High	N10.5, E10.5, S10.5, W10.5	Mar 2025: No significant change since previous survey. Dec 2021: Two mature Chinese Scholar trees located in a footpath between the apartment blocks to the east, parking to the north and west and highways to the east and south. Despite a tough extra urban growing environment, both trees appear to be doing very well. Each is twin-stemmed from approx. 3 metres with a strong naturally formed union. Both display good physiological condition. The southern specimen has two large dead branches on the southern aspect which overhang a footpath and should be removed urgently. The northern specimen has a dead pruning stub gradually absorbing into the live western limb. Recommend a climbing inspection to examine the extent of residual healthy sapwood in relation to the wound.	A2	Undertake aerial inspection. Remove major deadwood over path.	1		
		7.8	4		M	Moderate						
Yes		191.1			40+ years	Mixed soft/hard surface						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
G003	Chinese Scholar Tree	510	18.5		High	N8, E8, S8, W8	Mar 2025: No significant change since previous survey. Dec 2021: Two mature Chinese Scholar trees located in small bare earth beds between parking to the north and south, with a vehicle access between them. Despite a tough extra urban growing environment, both trees appear to be doing quite well. Each is twin-stemmed from approx. 3 metres with a cup union forming from a previous bark included union. Both display good physiological condition and both have stubs from previous pruning. Overhead lines pass through the crowns. The surrounding hard surfaces are being lifted by the roots. Exposed and damaged surface roots, caused by vehicles when parking.	B2	No work required.	4	Crown lift to provide 1.5m clearance over the site offices.	0
		6.12	4		M	Moderate						
Yes		117.7			20+ years	Mixed soft/hard surface						
G004	Sycamore	610	15.5		High	N5.5, E5.5, S5.5, W5.5	Mar 2025: No significant change since previous survey. Dec 2021: Group of 6 Sycamore stems located in the northern terminus of a communal garden, west of an apartment block, east of Bentinck Terrace and south of a footpath. Specimens form one homogeneous crown. One stem is twin-stemmed with a bark included union that is gradually strengthening as evidenced by the early formation of elephant ear bulges. Good amenity value but of limited long term value.	B2	No work required.	4	Fell to allow development.	0
		7.32	3.5		EM	Moderate						
Yes		168.3			20+ years	Mixed soft/hard surface						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover						
G005	London Plane	990	23		High	N11, E11, S11, W11	Mar 2025: No significant change since previous survey. Dec 2021: Three fine specimens of London Plane at the northern terminus of a communal garden. Garage structure and footpath located to the north. Each tree is in good structural and physiological condition and are specimens of high quality.	A2	No work required.	4	Fell to allow development.	0
		11.88	5		M	Moderate						
Yes		443.4			40+ years	Mixed soft/hard surface						
T001	Cherry Sp	100	5		Low	N2.5, E2.5, S2.5, W2.5	Mar 2025: No significant change since previous survey. Dec 2021: Young Cherry in bare earth landscape area surrounded by structures and hard surfaces. Good form and condition. Good future potential, though clearly there will be a requirement to prune the crown to maintain clearance from the stair core, structures and surfaces as the specimen matures.	C1	No work required.	4	Fell to allow development.	0
		1.2	2		Y	Moderate						
Yes		4.5			40+ years	Mixed soft/hard surface						
T002	False Acacia	410	15		High	N8.5, E7.5, S9, W4	Mar 2025: No significant change since previous survey. Dec 2021: Early mature False Acacia in bare earth landscape area surrounded by structures and hard surfaces. Specimen has two pendulous low lateral limbs that appear to have had some end weight previously pruned out. The western crown has clearly been reduced clear of the apartment block to the west. The unions of the two low laterals are cup shaped, likely having adapted from bark included unions. Good overall condition and high amenity.	B2	No work required.	4	Fell to allow development.	0
		4.92	4		EM	Moderate						
Yes		76			20+ years	Mixed soft/hard surface						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
T003	Chinese Scholar Tree	600	20		High	N11.5, E8.5, S12, W9.5	Mar 2025: No fungal fruiting bodies present at the time of inspection, though it is out of season and they may appear late summer or early autumn. Dec 2021: Mature Chinese Scholar tree located in a narrow shrub bed between car parks to the north and south. There are exposed and damaged surface roots where cars and Van's frequent scrape the roots as the edge of the vehicle passes over the kerb as they park. There are two fungal fruiting bodies of Pholiota squarrosa at the base on the west side. The specimen comprises three stems from approx. 3 metres, with strong naturally formed unions. The crown is tall and broad, giving high amenity value. There is deadwood over the parking areas. Recommend decay investigation of the buttress roots and base of stem, which will inform future management or categorisation of safe useful life expectancy and BS5837 2012 Category.	C1	Undertake decay analysis (Picus Tomograph/Micro-drill).	1	Crown lift on the northern aspect to provide 5m ground clearance over the demolition and construction access. Undertake root pruning along the edge of a new footpath as shown on drawing 12318-D-AMS Rev A.	0
		7.2	4		M	Moderate						
Yes		162.9			10+ years	Mixed soft/hard surface						
T004	Chinese Scholar Tree	480	16		High	N9.5, E9.5, S10, W2.5	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Chinese Scholar tree located in a narrow shrub bed between car parks to the north and south. The specimen is asymmetric to the east due to competition with the adjacent mature tree to the west. There are exposed and damaged surface roots where vehicles scrape the roots as they park. Evidence of previous surgery. There is a branch abutting a lamp column on the southern aspect. Good amenity value, but of lesser individual quality than the surrounding Chinese Scholar trees.	B2	No work required.	4		
		5.76	4.5		SM	Moderate						
Yes		104.2			20+ years	Mixed soft/hard surface						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
T005	Cherry Sp	280	7.5		Moderate	N5, E4, S6, W2	Mar 2025: No fungal fruiting bodies present at the time of inspection, though it is out of season and they may appear late summer or early autumn. Dec 2021: Semi-mature Cherry in bare earth landscape area surrounded by structures and hard surfaces. Twin-stemmed from 3 metres with two pendulous stems emanating away from one another north and south. Appears to have been pruned on the west side, clear of the structure. There is a bracket of Ganoderma at the base on the south side, which appears to have been snapped off, and the point of attachment covered over by post mix concrete. When tapping the stem, it sounds dull and decayed. Option 1, fell and replace. Option 2, undertake decay detection testing and develop management plan thereafter.	U	Fell and remove stump.	1		
		3.36	3.5		SM	Moderate						
Yes		35.5			<10 years	Mixed soft/hard surface						
T006	Cherry Sp	270	7.5		High	N5, E3.5, S4.5, W6	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Cherry in shrub bed on western edge of communal garden between apartment block to the east and Bentinck Terrace to the west. Good amenity value. Good structural and physiological condition. A tree of moderate quality.	B2	No work required.	4		
		3.24	3		SM	Moderate						
Yes		33			20+ years	Bare earth						
T007	Cherry Sp	340	7.5		High	N5.5, E5, S6, W6	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Cherry in shrub bed on western edge of communal garden between apartment block to the east and Bentinck Terrace to the west. Good amenity value. Good structural and physiological condition. A tree of moderate quality.	B2	No work required.	4		
		4.08	3		SM	Moderate						
Yes		52.3			20+ years	Bare earth						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover						
T008	Cherry Sp	340	6.5		High	N5.5, E5, S6, W6.5	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Cherry in shrub bed on western edge of communal garden between apartment block to the east and Bentinck Terrace to the west. Good amenity value. Good structural and physiological condition. A tree of moderate quality.	B2	No work required.	4	Undertake root pruning along the edge of a new footpath as shown on drawing 12318-D-AMS Rev A.	0
		4.08	3		SM	Moderate						
Yes		52.3			20+ years	Bare earth						
T009	Silver Maple	620	17		High	N8, E8, S8, W8	Mar 2025: No significant change since previous survey. Dec 2021: Mature Silver Maple located in shrub bed in south west corner of communal garden between an apartment block to the east and Bentinck Terrace to the west. Good structural form and condition. Unable to inspect base of tree due to tall vegetation. High amenity value.	B2	No work required.	4	Crown lift on the northern aspect to provide 5m ground clearance over the refuse access.	0
		7.44	3.5		M	Moderate						
Yes		173.9			20+ years	Shrub bed						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
T010	Chinese Scholar Tree	690	13.5		High	N9, E10.5, S10, W10	Mar 2025: No significant change since previous survey. Dec 2021: Mature Chinese Scholar tree located in a shrub bed between Coronation street to the south and the hard and soft landscaped communal garden of Hanover and Princes Court to the north. Good structural and physiological condition. A pruning wound at 3.5 metres on the west aspect is bleeding down the stem, but should naturally close up over time. The large limb to the south bifurcates at 2 metres along its length with both subsequent stems sharing a bark included union and the twist and rub together. This may be problematic in future, so management of the crown on the south side to limit end weight is recommended. There is a piece of major deadwood over the footpath of Coronation Street to the south which should be removed urgently. Otherwise a fine specimen with high amenity value. No fungal fruiting bodies or indicators of disease at the time of inspection.	A2	No work required.	4		
		8.28	3.5		M	Moderate						
Yes		215.4			40+ years	Mixed soft/hard surface						
T011	Portugal Laurel	400	6.5		Moderate	N4, E4, S4, W4	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Portugal Laurel in a mixed soft and hard surfaced communal garden. Specimen has been well maintained to globular ornamental shape. Good structural and physiological condition.	B2	No work required.	4	Fell to allow development.	0
		4.8	2.5		SM	Low						
Yes		72.4			20+ years	Mixed soft/hard surface						
T012	Silver Birch	240	15		Moderate	N4, E4.5, S4.5, W4	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Dalecarlican Birch in a soft landscape area of communal garden. Specimen is of good structural and physiological condition and high amenity.	B2	No work required.	4	Fell to allow development.	0
		2.88	3.5		SM	Low						
Yes		26.1			20+ years	Grass						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
T013	Winter Flowering Cherry	240	6.5		Moderate	N4, E4.5, S4.5, W4.5	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Winter Flowering Cherry in a soft landscape area of communal garden. Good structural and physiological condition.	B2	No work required.	4	Fell to allow development.	0
		2.88	3		SM	Moderate						
Yes		26.1			20+ years	Grass						
T014	Tibetan Cherry	110	8.5		Moderate	N2, E2, S2, W2	Mar 2025: No significant change since previous survey. Dec 2021: Young but tall and well formed Tibetan Cherry located close to Princes Court apartment block to the west.	C1	No work required.	4	Fell to allow development.	0
		1.32	2		Y	Moderate						
Yes		5.5			20+ years	Mixed soft/hard surface						
T015	Pine Sp	70	3		Low	N1.5, E1.5, S1.5, W1.5	Mar 2025: No significant change since previous survey. Dec 2021: Young Pine in grass communal garden. Good future potential but limited wider landscape value at present.	C1	No work required.	4	Fell to allow development.	0
		0.84	0		Y	Moderate						
Yes		2.2			40+ years	Grass						
T016	Silver Birch	150	11		Moderate	N2, E2, S2, W2	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Dalecarlican Birch in grass communal garden. Good future potential but limited wider landscape value at present.	C1	No work required.	4	Fell to allow development.	0
		1.8	3		SM	Low						
Yes		10.2			40+ years	Grass						
T017	Winter Flowering Cherry	210	7.5		Moderate	N1.5, E4.5, S5, W5	Mar 2025: No significant change since previous survey. Dec 2021: Semi-mature Winter Flowering Cherry in a soft landscape area of communal garden. Bark wounds on stem. Asymmetric crown. Crown reduction pruning evident on east side over ancillary structure. Good structural and physiological condition.	B2	No work required.	4	Fell to allow development.	0
		2.52	3		SM	Moderate						
Yes		20			20+ years	Grass						

Appendix C

Schedule of Works to Allow Development

SCHEDULE OF WORKS (AIA)

Hanover & Princess Court, Bentinck Street, Cambridge,

Surveyed By: Alex Garnham
Surveyed: 05/03/2025
Managed By: Alex Garnham

Tree No.	Species	Work required	Priority
G003	Chinese Scholar Tree	Crown lift to provide 1.5m clearance over the site offices.	**0**
G004	Sycamore	Fell to allow development.	**0**
G005	London Plane	Fell to allow development.	**0**
T001	Cherry Sp	Fell to allow development.	**0**
T002	False Acacia	Fell to allow development.	**0**
T003	Chinese Scholar Tree	Crown lift on the northern aspect to provide 5m ground clearance over the demolition and construction access. Undertake root pruning along the edge of a new footpath as shown on drawing 12318-D-AMS Rev A.	**0**
T008	Cherry Sp	Undertake root pruning along the edge of a new footpath as shown on drawing 12318-D-AMS Rev A.	**0**
T009	Silver Maple	Crown lift on the northern aspect to provide 5m ground clearance over the refuse access.	**0**
T011	Portugal Laurel	Fell to allow development.	**0**
T012	Silver Birch	Fell to allow development.	**0**
T013	Winter Flowering Cherry	Fell to allow development.	**0**
T014	Tibetan Cherry	Fell to allow development.	**0**
T015	Pine Sp	Fell to allow development.	**0**
T016	Silver Birch	Fell to allow development.	**0**
T017	Winter Flowering Cherry	Fell to allow development.	**0**

Appendix D

Explanatory Notes

Explanatory Notes

HAYDEN'S Arboricultural Consultants

Categories

Below is an explanation of the categories used in the attached Tree Survey.

No Identifies the tree on the drawing.

Species Common names are given to aid understanding for the wider audience.

BS 5837 Main Category Using this assessment (BS 5837:2012, Table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing:

Category A - Those of high quality with an estimated remaining life expectancy of at least 40 years;

Category B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years;

Category C - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

Category U - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

BS 5837 Sub Category Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:

Sub Category 1 - Mainly arboricultural qualities;

Sub Category 2 - Mainly landscape qualities;

Sub Category 3 - Mainly cultural values, including conservation .

Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.

DBH (mm) Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

Age Recorded as one of seven categories:

Y Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.

S/M Semi-mature. An established tree, but one which has not reached its prospective ultimate height.

E/M Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.

M Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.

O/M Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.

D Dead.

Height	Recorded in metres, measured from the base of the tree.
Crown Base	Recorded in metres, the distance from ground and aspect of the lowest branch material.
Lowest Branch	Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.
Life Expectancy	Relates to the prospective life expectancy of the tree and is given as 4 categories: 1 = 40 years+; 2 = 20 years+; 3 = 10 years+; 4 = less than 10 years.
Crown Spread	Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.
Minimum Distance	This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).
RPA	This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as "a layout design tool indicating 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 treated as a priority". The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority's tree officer.
Water Demand	This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 "Building Near Trees".
Visual Amenity	Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows: Low — An inconsequential landscape feature. Moderate — Of some note within the immediate vicinity, but not significant in the wider context. High — Item of high visual importance.
Problems/ Comments	May include general comments about growth characteristic, how it is affected by other trees and any previous surgery work; also, specific problems such as deadwood, pests, diseases, broken limbs, etc.
Work Required (TS)	Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the "Problems/comments" category.

Work Required (AIA)	Identifies the tree work specifically necessary to allow a proposed development to proceed.
Priority	This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey. **1** Urgent – works required immediately; **2** Works required within 6 months; **3** Works required within 1 year; **4** Re-inspect in 12 months, **0** Remedial works as part of implementation of planning consent.

BS 5837:2012 Terms and 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 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.
Arboriculturist	Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Competent Person	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. *NOTE - a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.*
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	Area based on the root protection area from which access is prohibited for the duration of a project.
Root Protection Area (RPA)	Layout design tool indicating 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 treated as a priority.
Service	Any above or below ground structure or apparatus required for utility provision. **NOTE** - examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
Stem	Principal above ground structural component(s) of a tree that supports its branches.
Structure	Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Tree Protection Plan	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Veteran Tree	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. **NOTE** - these characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem.

Appendix E

Statement of Supervision

Hanover & Princess Court, Bentinck Street, Cambridge, CB2 1HG
Statement of Supervision (Arboriculture)

Introduction

Hill intend to undertake the development of the above site.

The purpose of this document is to ensure that all works that have an impact on retained trees are undertaken in accordance with the approved Method Statement and Tree Protection Plan. As such, the purpose of the Statement is to identify the following arboricultural issues:

- Associated documents (currently within a live application ref. 25/04187/FUL);
- Key staff and contacts;
- Critical phases of pre-commencement, demolition and construction.

Approved Documents

The following documents must be available to all those with responsibility for arboricultural matters during construction:

- BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.
- Preliminary Arboricultural Method Statement & Tree Protection Plan for this project – Ref 11003 produced by Hayden's Arboricultural Consultants dated 14/10/2025. This document is now superseded by the one listed below.
- Arboricultural Method Statement & Tree Protection Plan for this project – Ref 12318 produced by Hayden's Arboricultural Consultants dated 28/04/2026.

Key Staff

The following have or are to be appointed responsible for arboricultural matters at the site:

- Developer: Hill (or their representative).
- Arboricultural Consultant: Hayden's Arboricultural Consultants Ltd. Contact Mr David Carmichael (Practice Manager) – 01284 765391, info@treesurveys.co.uk, (or his representative).
- Site Manager/Agent – TBC, (or their representative).

Critical phases of pre-commencement, induction, construction & completion

REF	ACTIVITY	ONE OFF /REPEAT	ATTENDEES	ACTION
1	Pre-commencement meeting (to discuss working methods, timescales and tree protection schemes)	One for Demolition and one for Construction	Developer, Arboricultural Consultant, Site Manager/Agent, Ground Works Contractor	Arboricultural Consultant to record minutes – copies to be submitted to attendees
2	Inspection of completed tree surgery & erection of fencing (1st Phase of Tree Protection)	One off	Arboricultural Consultant, Site Manager/Agent	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
3	Inspection of specific tasks during construction (e.g. breaking up and removal of existing hard surfaces in RPA, root pruning, realignment of fencing, final arb monitoring visit prior to removal of last phase of tree protection)	One off (for each instance of each identified item). Multiple phases of tree protection.	Arboricultural Consultant, Site Manager/Agent, Contractors (as required)	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
4	Final tree assessment – after fencing removal	One off	Developer, Arboricultural Consultant, Site Manager/Agent, Ground Works Contractor	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
5	Additional inspections (if necessary) to ensure periods not greater than two months elapse between any of above listed monitoring events	Dependent on progress of the project	Arboricultural Consultant, Site Manager/Agent	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer

Variations and Incidents

Any proposed variations to the proposed working method (relating to arboricultural matters) will be referred by the on-Site Manger/Agent to the Developer who will seek advice from the Arboricultural Consultant. The Arboricultural Consultant shall advise on minor amendments (e.g. realignment of fencing etc) and will subsequently report these to the Arboricultural Officer by e mail or minutes. Issues directly relating to tree surgery or tree retention will be forwarded by the Arboricultural Consultant (with recommendations) to the Arboricultural Officer for approval. Except in an emergency **and** when the Arboricultural Officer is unavailable, no such actions will occur without the written approval of the Arboricultural Officer.

Alex Garnham
Practice Manager
Hayden's Arboricultural Consultants Ltd

Tuesday 28th April 2026

HAYDEN'S
Arboricultural Consultants

Head Office
5 Moseley's Farm
Business Centre
Fornham All Saints
Bury St Edmunds
Suffolk IP28 6JY
T: 01284 765391
E: info@treesurveys.co.uk
www.treesurveys.co.uk

Reasons for a Qualified Monitoring Arboriculturalist

It is essential that the works are monitored by a qualified and experienced Arboriculturalist for the following reasons.

1. An Arboriculturalist has the skill and expertise to identify if the approved tree surgery specification has been complied with and the knowledge to provide appropriate remedial advice.

2. It is necessary for informed decisions to be made regarding the impact of tree surgery, particularly root pruning. The location of roots is assessed via a calculation, but in reality, roots may grow in a more unpredictable fashion dependent on topographic and historic features. Under CDM it is essential that expert individual knowledge is available and can advise on the inevitable unforeseen circumstances that arise.

3. An Arboriculturalist provides the point of liaison and information exchange with the Local Planning Authority's Tree Officer who is also normally a qualified Arboriculturalist. This allows fellow professionals to discuss the technical matters that inevitably arise and agree appropriate and balanced solutions. Having an Arboriculturalist engaged on the supervision of a project provides comfort to the Local Planning Authority that tree protection measures are complied with and hence it is much more likely that there will be less direct scrutiny from the Local Planning Authority (regarding tree matters) during the build of the project than would otherwise be the case.

4. Arboricultural input is essential to confirm that tree protection measures are adequate and fit for purpose. This can often save the client time (and therefore money) by identifying working methods and systems that are site efficient.

5. As living entities sensitive to their environment, the condition of trees changes, and over the course of a project it may be necessary to advise on additional tree surgery or felling as a result of, for example disease or storm damage.

6. An Arboriculturalist will provide detailed briefing notes and "toolbox talks" to site staff to ensure their compliance with conditions and prevent arboricultural breaches of conditions arising which can have severe consequences for project progression.

7. Close liaison between the Site Manager and the Arboriculturalist will ensure that the retained trees are protected but as minimal an inconvenience to construction as possible. This leads to the final outcome which is the completion of the project with retained healthy trees complementing the buildings in the manner that the designers and planners envisaged.

David M Carmichael
Practice Manager

HAYDEN'S
Arboricultural Consultants

Head Office
5 Moseley's Farm
Business Centre
Fornham All Saints
Bury St Edmunds
Suffolk IP28 6JY
T: 01284 765391
E: info@treesurveys.co.uk
www.treesurveys.co.uk

South West Office
Unit 7, Enterprise House
Cherry Orchard Lane
Salisbury
Wiltshire
SP2 7LD
T: 01722 657423
E: Nick@treesurveys.co.uk
www.treesurveys.co.uk

Tree Protection Briefing Note

Introduction:

The trees that are to remain as part of the development are important and must not be harmed. They have been carefully selected as part of an extensive appraisal, design and planning process and therefore are legally protected by a combination of Tree Preservation Orders and Planning Conditions. This means that any damage caused to retained trees is a serious offence, as is the undertaking of any work to trees that has not been authorised in writing by the Local Planning Authority. Contravention of this legislation is liable to lead to heavy personal or corporate fines together with the imposition of stop notices, expensive mitigation measures and replacement planting instructions. Given this, it is vital that all development staff are familiar with the approved Tree Protection Plan (TPP).

Typical Forms of Construction Damage to Trees:

1. **Physical Injury to Trunk and Crown**. Construction equipment can injure the above-ground portion of a tree by breaking branches, tearing the bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal.

2. **Root Cutting*.** Excavation, grading and trenching associated with construction and underground service installation can be very damaging to tree roots which are vital for both anchoring the tree in the ground and gathering moisture and nutrients. Unacceptable levels of damage to the roots will lead to a tree losing vitality, dropping branches, dying or becoming unsafe – either immediately or in the future.

3. **Soil Compaction.** An ideal soil for root growth and development contains about 50% pore space for water and air movement. Tracking by construction equipment and the storage of materials can compact soil and dramatically reduce pore space. Compaction inhibits root growth, limits water penetration, and decreases oxygen needed for root survival. If the compaction is too severe, in addition to preventing effective root growth, it will cause physical injury to both anchor and feed roots.

4. **Smothering Roots by Adding Soil*.** The majority of fine moisture and nutrient absorbing roots are within the top 30 cm of soil. Even a few centimetres of soil piled over the root system to change the grade can smother fine roots and eventually lead to the death of larger roots.

5. **Rooting Zone Contamination*.** Many materials used on development sites (e.g. salt, lime, concrete, cement, oil) are toxic to trees. If such contaminants are spilled or allowed to leach into the RPA, they can quickly kill the roots, thus causing the same effects as root cutting, soil compaction and smothering.

***** As the location of tree roots cannot be seen, each retained tree close to a developable portion of the site has a designated Root Protection Area (RPA) as shown on the approved TPP. No excavation, grading, trenching, storage of materials nor any other activity may take place within the designated RPA unless it is in accordance with the approved Tree Protection Plan and completed under the supervision of Hayden's Arboricultural Consultants.

Preventing Damage to Trees During Construction:

The approved TPP provides specific instruction on the tree protection measures required across whole site in order to prevent damage. The primary methods of protection are as follows: -

1. **Installation of Protective Fencing**. The alignment and specification of this is shown to scale on the approved TPP. It must be erected prior to any demolition or development commencing on site and must not be moved or altered without prior written agreement of the Hayden's Arboricultural Consultants or the Local Planning Authority. No activities may take place within the fenced area, and no materials may be stored within the fenced area. The fencing may not be removed until ALL construction activities in the vicinity have been completed and only then with the written agreement of Hayden's Arboricultural Consultants or the Local Planning Authority.

2. **Ground Protection.** Where fencing is impractical the TPP provides instruction on other forms of effective ground protection. An example of this would be the provision of a temporary load bearing surface to prevent soil compaction and contamination. This must be of bespoke design for each situation so as to ensure it is fit for purpose. As with the fencing, this must be installed prior to any demolition or development commencing on site and must not be moved or altered without prior written agreement of the Hayden's Arboricultural Consultants or the Local Planning Authority. The temporary ground protection may not be removed until ALL construction activities in the vicinity have been completed and only then with the written agreement of Hayden's Arboricultural Consultants or the Local Planning Authority.

3. **Monitoring Visits from Hayden's Arboricultural Consultants.** Under the terms of the planning permission the development must be monitored by an Arboriculturalist on a suitably frequent basis. The purpose of this is twofold: -
    a. To ensure that the above tree protection measures are complied with and report findings to the developers AND the Local Planning Authority.
    b. To be available to provide help and advice regarding the inevitable requests for changes and supervision when working around retained tree.

4. **Operational Planning.** Whilst it is understood that trees are far from the only issue to be managed on site, they do represent a significant and potentially costly constraint if the protection measures required in the TPP are not strictly adhered to and as a result construction damage to trees occurs. Therefore, if problems in terms of work space conflicting with tree protection measures are identified, early liaison with Hayden's Arboricultural Consultants is essential so as to agree supervised works, alternate working methods or if necessary seek additional approval from the Local Planning Authority. Failure to identify these matters at an early stage may lead to significant delays as it can be a lengthy procedure in gaining a response from the Local Planning Authority.

Conclusion:

- Tree Protection Measures are there to protect the environment. They are also there to protect you. If they are complied with, trees will not be harmed. Therefore, DO NOT amend the protection unless you have written consent from Hayden's Arboricultural Consultants or the Local Planning Authority.

- If you are unsure on any tree related matter, seek advice before you act. Hayden's Arboricultural Consultants will discuss your concerns and help find practical and timely solutions (where possible).

- Hayden's Arboricultural Consultants, in conjunction with the Local Planning Authority, may change the frequency of Arboricultural Monitoring Inspections if it is deemed necessary to ensure the approved standards of tree protection are adhered to.

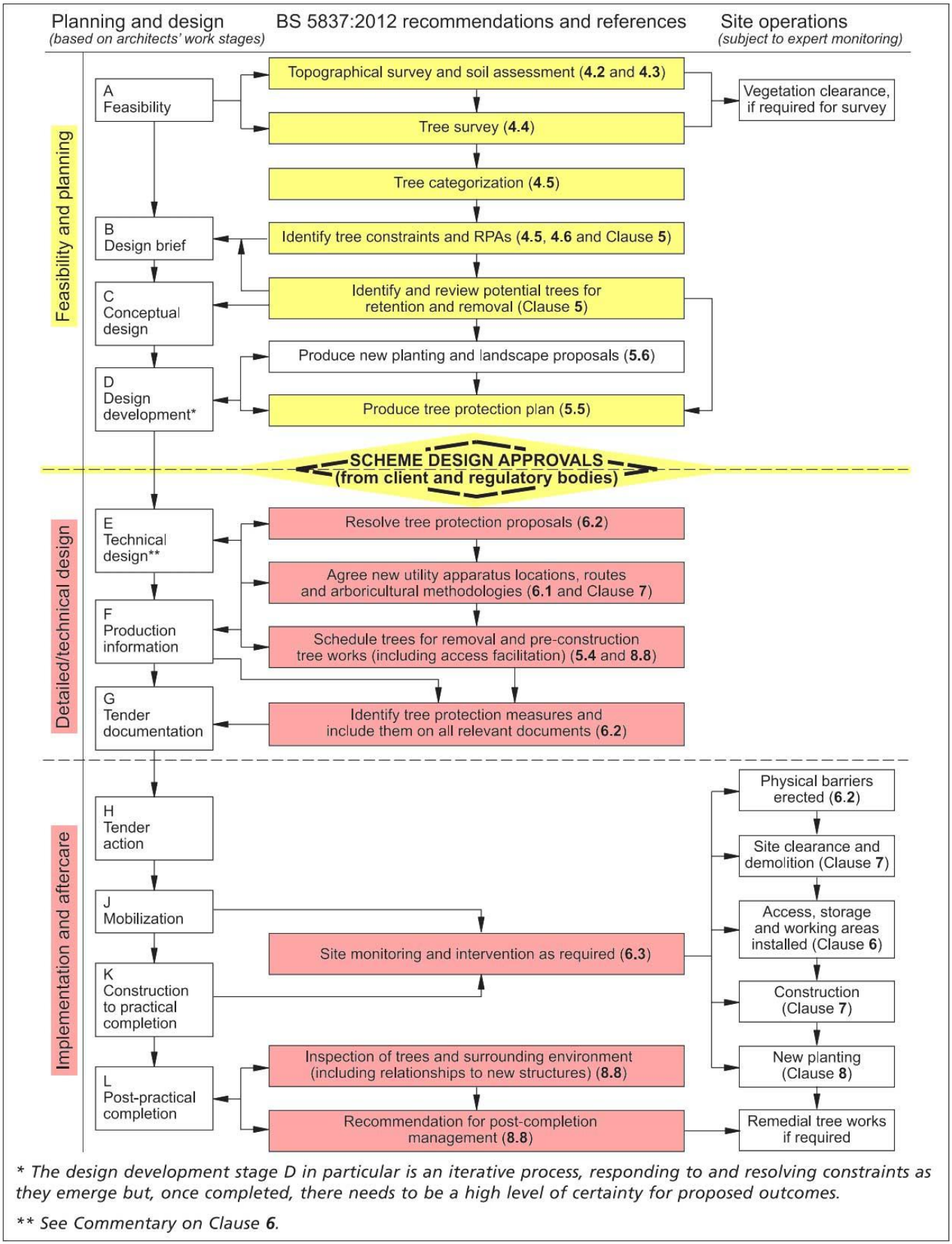
- Hayden's Arboricultural Consultants can be contacted in the first instance at the Head Office on 01284 765391.

David M Carmichael
Practice Manager

Appendix F

Advisory Information & Sample Specifications

1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

*** See Commentary on Clause **6**.*

2.

European Protected Species and woodland operations. (V4)

Complete all sections of the Checklist

✔

Checklist

1 **Are you within, or close to, the known mapped range of any of the protected species OTHER THAN BATS which are potentially everywhere? Tick any that apply.**
See distribution maps in the Good Practice Guidance for each species -

- ☐ Dormice
- ☐ Otters
- ☐ Great crested newts
- ☐ Sand lizards
- ☐ Smooth snakes

YES ☐ NO ☐

2 **Does your wood contain any of the following habitats? Tick any that apply.**

- ☐ Old trees with holes and crevices which might be used bats
- ☐ Species rich scrub/coppice, early growth stage plantations and forest interfaces
- ☐ Rivers on which otters might be found
- ☐ Ponds which might be occupied by great crested newts
- ☐ Open areas on heathy soils

YES ☐ NO ☐

3 **Have any of the protected species been recorded in this wood or on adjoining sites? Tick any that apply.**
Indicate which sources of information you have checked:

- ☐ National Biodiversity Network (www.nbn.org.uk)
- ☐ Local Biological Records Centre
- ☐ Local Wildlife Trust
- ☐ Other

Specify Other:

YES ☐ NO ☐

4 **Have your inspections or any expert surveys found any of the following signs or evidence? Tick any that apply.**

- ☐ Signs (e.g. otter spraint, nuts gnawed by dormice, leaves folded by newts)
- ☐ Sightings (or echo-location)
- ☐ Potential breeding or roosting sites (e.g. veteran trees, old trees with crevices, riverside hollow trees, ponds, timber stacks, large fallen deadwood)
- ☐ Confirmed breeding or roosting sites (i.e. evidence of sites actually being used)

Details:

YES ☐ NO ☐

CHECK POINT

If you have answered NO to ALL of the above then only bats need to be considered in your operations.

If you have answered YES to any of the above then the species concerned must be considered as well as bats.

5 **Do the operations comply with Good Practice for bats and any other species found (or likely to be found in your wood) or can the operations be modified to do so?**
Details: Use reverse of form to expand as required:

YES ☐ A licence is not required but continue to sections 6 and 7 below

NO ☐ You will need to obtain a licence BEFORE carrying out the work (see EPS Licence Application Forms and Notes)

6 **Whether or not a licence is required...**
Has the information been communicated to operators (including the location of breeding sites and sensitive areas)? Tick any that apply.

- ☐ Included in documentation (e.g. contract, letter of instruction, site assessment or other management plan)
- ☐ Shown to operators and/or their supervisor
- ☐ Marked with paint or hazard tape
- ☐ Shown on the site plan

Other means:

YES ☐

NO ☐ You may commit an offence if you do not tell your operators about the protected species in your wood.

7 **Have arrangements for supervision been made to ensure Good Practice guidance is complied with during the operations?**
Details:

YES ☐

NO ☐ You may commit an offence if you do not take steps to ensure that your operators comply with the Good Practice guidance.

Details

Name of Wood:

Grid Reference: ☐☐ ☐☐☐☐☐☐

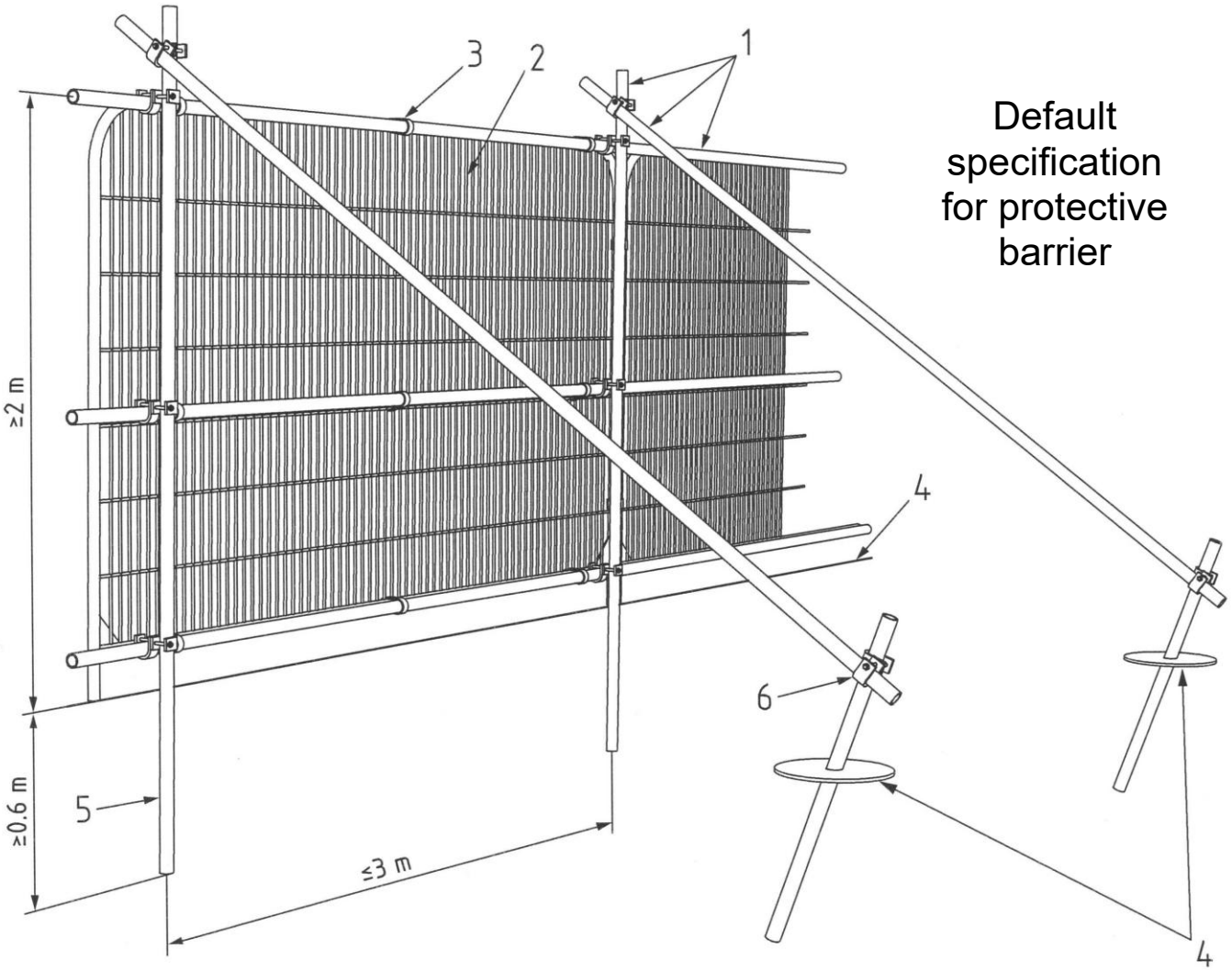
Area: (ha) ☐☐☐☐.☐☐

Date of Assessment: ☐☐ ☐☐ ☐☐☐☐

Name of Assessor:

Notes

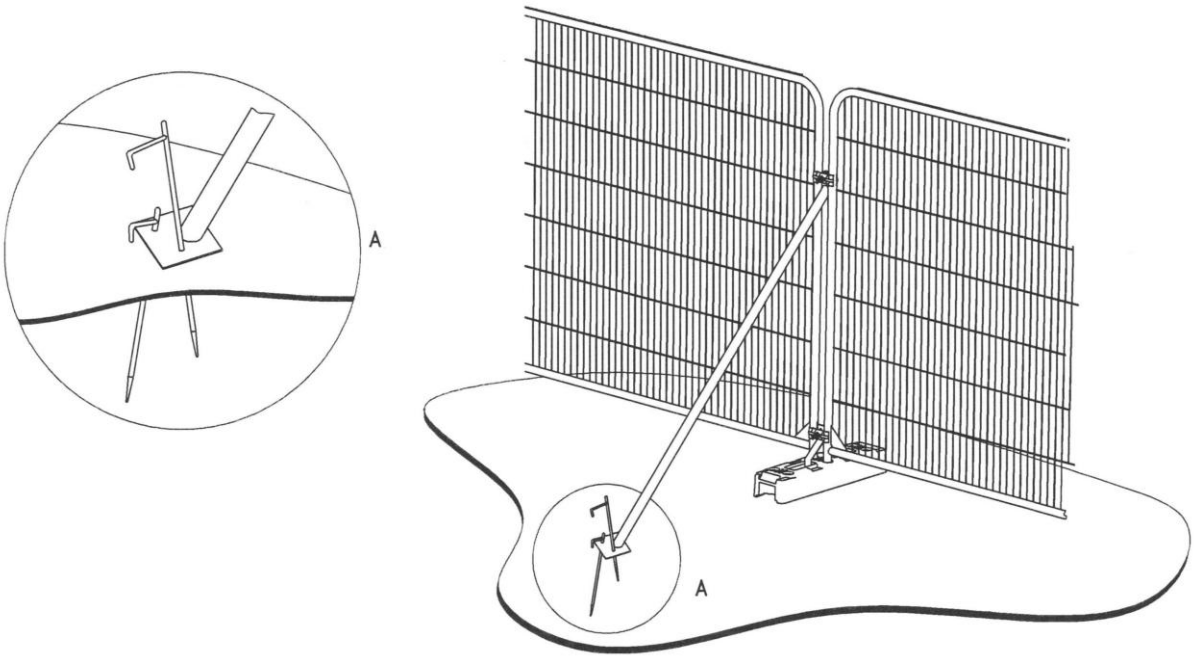
3. BS 5837:2012 Figure 2: Default specification for a protective barrier



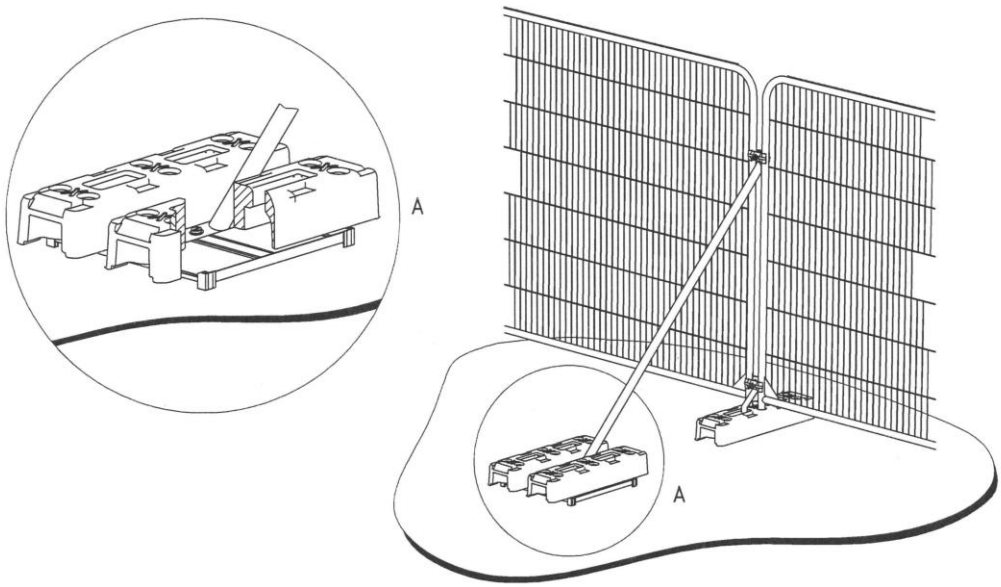
Key

1	Standard scaffold pole
2	Heavy gauge 2m tall galvanised 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 0.6m
6	Standard scaffold clamps

4. BS 5837:2012 Figure 3: Examples of above-ground stabilizing systems

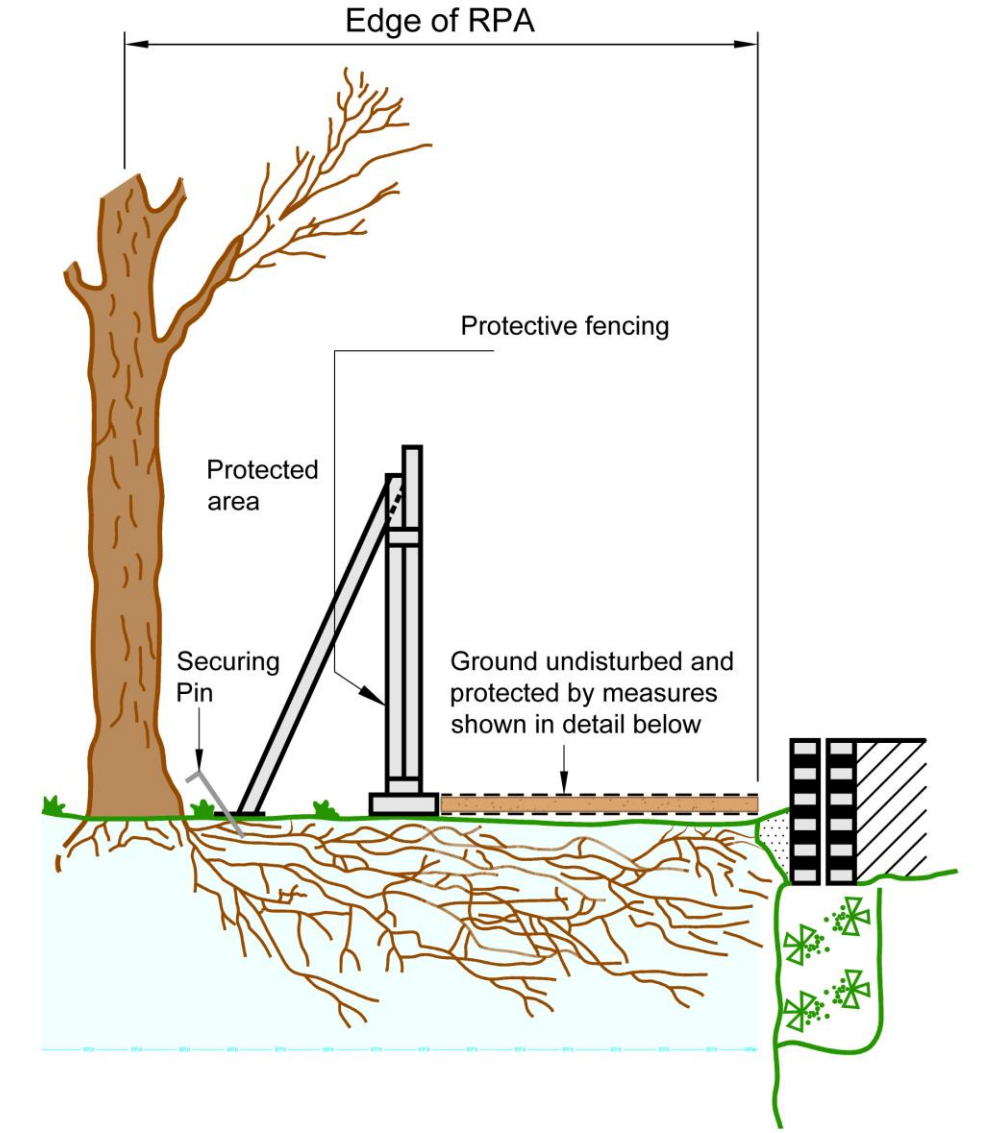


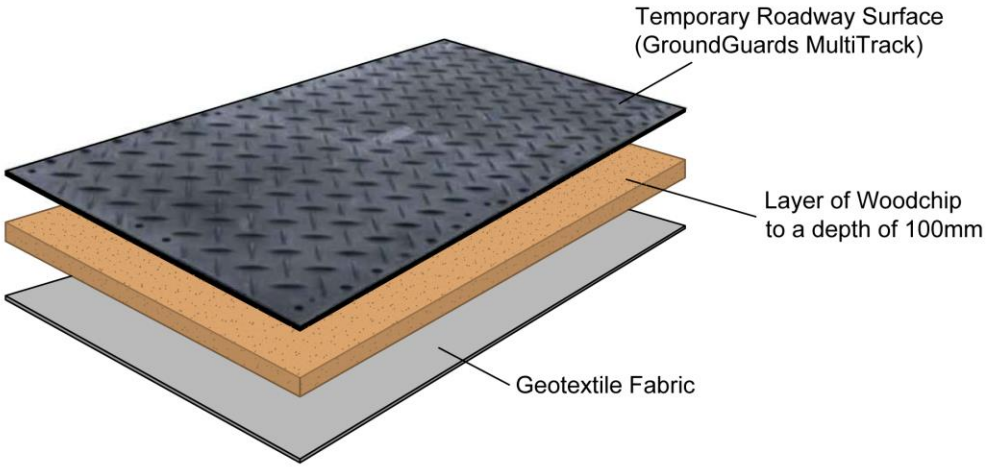
a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

5. Figure 4 Detail of protective barrier where construction encroaches within BS5837:2012 Root Protection Area





6. METHOD STATEMENT FOR "NO-DIG" CONSTRUCTION IN LINE WITH ARBORICULTURAL PRACTICE NOTE 12

"*Through the Trees to Development"*

Prior to commencing any demolition or construction on site, erect protective fencing around trees to form an exclusion zone (see attached plan).

This will ensure that roots will not be severed during the construction work and the soil in the area of the exclusion zone will not be compacted thus enabling oxygen to continue to diffuse into the soil beneath.

Construction of the driveway, path or other hard surface should be undertaken in dry weather between May and October when the ground is driest and least prone to compaction.

1 Kill ground vegetation using a translocated herbicide (glyphosate), ensuring that the selected herbicide doesn't damage the root of the tree(s) below the surface of the path.

2 Remove the dead or organic material from the site and ensure that large stones and shrub stumps are removed from the proposed route.

3 Any tree stumps should be ground out rather than excavated to minimize soil disturbance.

4 The resulting hollows and any other holes along the route driveway, path or other hard surface should be filled with sharp sand.

5 Lay *Terram Geotextile* matting across the full width of the driveway, path or other hard surface. This will prevent the intrusion of roots into the sub-base whilst still allowing nutrients and gaseous exchange.

6 Lay *Terram 150 Geocell* (cellular confinement system). (This is available from the Terram Ltd, tel: 01495 757722, fax: 01495 762393, and can be cut with a Stanley knife on site to the length, width and profile of the path required).

7 The driveway, path or other hard surface is to be supported against 150 x 20mm tanalised softwood boarding and 200mm long tanalised soft wood pegs driven into the ground at 1500mm centres.

8 Carefully push 20mm – 40mm gravel chippings (no fines) into the *Geo 150 Geocell* matting to form an aggregate sub-base.

9 The chippings should be placed at one end of the matting and pushed/spread across the matt to prevent compaction of the soil, working on either side of the driveway, path or other hard surface.

10 Compact the sub base to ensure binding with the *Geocell* and to minimise future wheel rutting.

11 Lay second layer of *Terram Geotextile* matting across the full width of the driveway, path or other hard surface. This will prevent the intrusion of fines into the gravel chippings.

12 Add layer of 'no fines, sharp sand and compact if using pavers as surface treatment.

13 Place proposed surface treatment (e.g. Pavers) on top of the compacted sub-base to form the finished surface to the path and 'bank up' the edging with topsoil, which is to be grass seeded in spring/autumn. This will form a gentle slope from the edging to the existing ground level.

1) Tanalised softwood pegs at 1500mm centres

2) Top soil banked up to edging

3) Softwood boards / Concrete edging 'tiles'

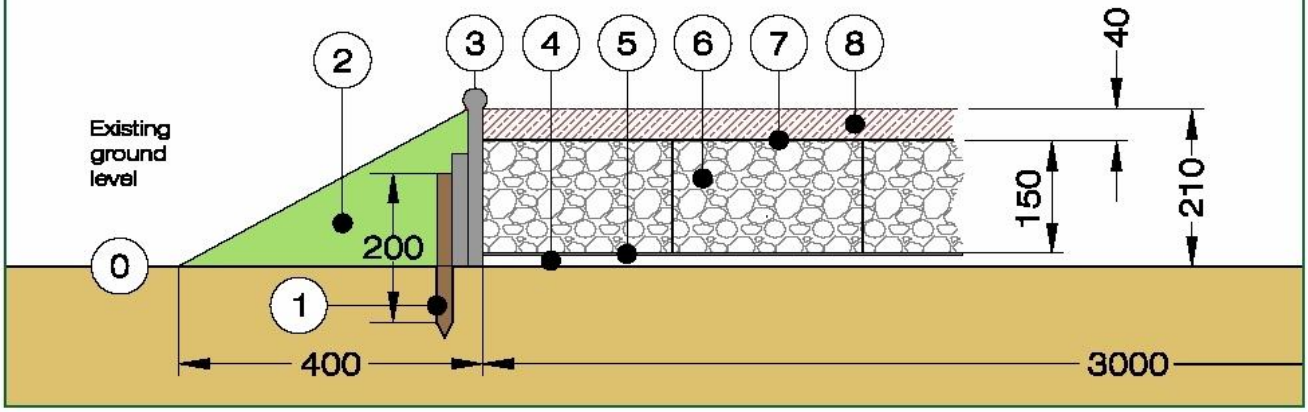
4) Existing surface to be cleared of ground vegetation using a translocated herbicide such as glyphosate

5) Geo-textile matting "Terram" laid on top of footpath

6) "Geocell" Cellular Confinement System (150mm deep) with gravel chippings

7) Geo-textile matting "Terram" laid on top of cellular confinement system

8) Gravel or paving laid on top of permeable sub-base



2) Top soil banked up to edging

3) Softwood boards / Concrete edging 'tiles'

4) Existing surface to be cleared of ground vegetation using a translocated herbicide such as "glyphosate"

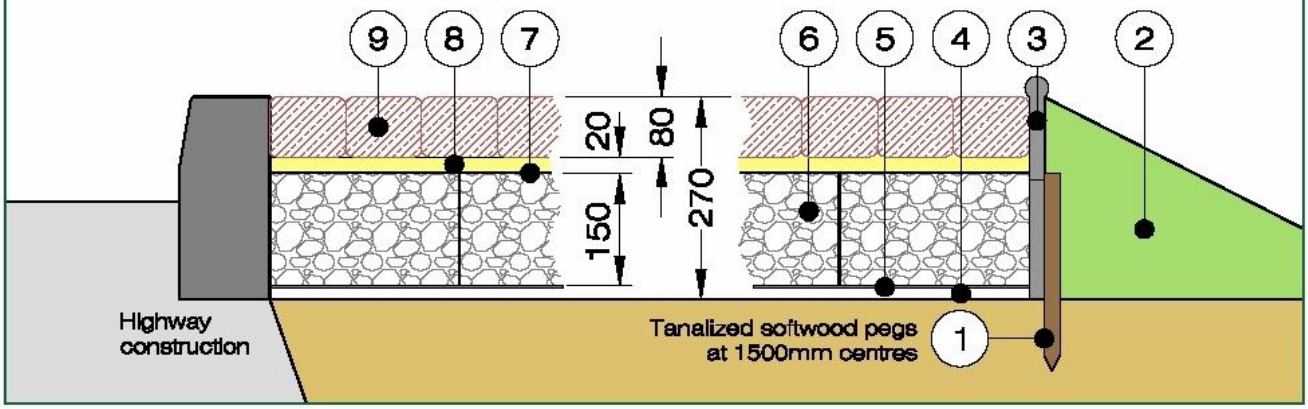
5) Geo-textile matting "Terram" laid on top of footpath

6) "Geocell" Cellular Confinement System (150mm deep) with gravel chippings

7) Geo-textile matting "Terram" laid on top of cellular confinement system

8) 'No fines' sand laid on top of geo-textile matting

9) Aquaflow permeable paving laid on top of no fines sharp sand and permeable sub-base



HAYDEN'S
Arboricultural Consultants

5 Moseley' Farm
Business Centre
Fornham All Saints
Bury St Edmunds
Suffolk IP28 6JY

Tel: 01284 765391
Fax: 01284 765181
Mob: 07850167400
info@treesurveys.co.uk
www.treesurveys.co.uk

'No Dig' Driveway & Parking Specification

Scale
1:10 (A4)

Drg No.
Hayden's.ND

2) Top soil banked up to edging

3) Softwood boards / Concrete edging 'tiles'

4) Existing surface to be cleared of ground vegetation using a translocated herbicide such as glyphosate

5) Geo-textile matting "Terram" laid on top of footpath

6) "Geocell" Cellular Confinement System (150mm deep) with gravel chippings

7) Geo-textile matting "Terram" laid on top of cellular confinement system

8) ' No fines' sand laid on top of geo-textile matting

9) Gravel or paving laid on top of permeable sub-base

HAYDEN'S
Arboricultural Consultants

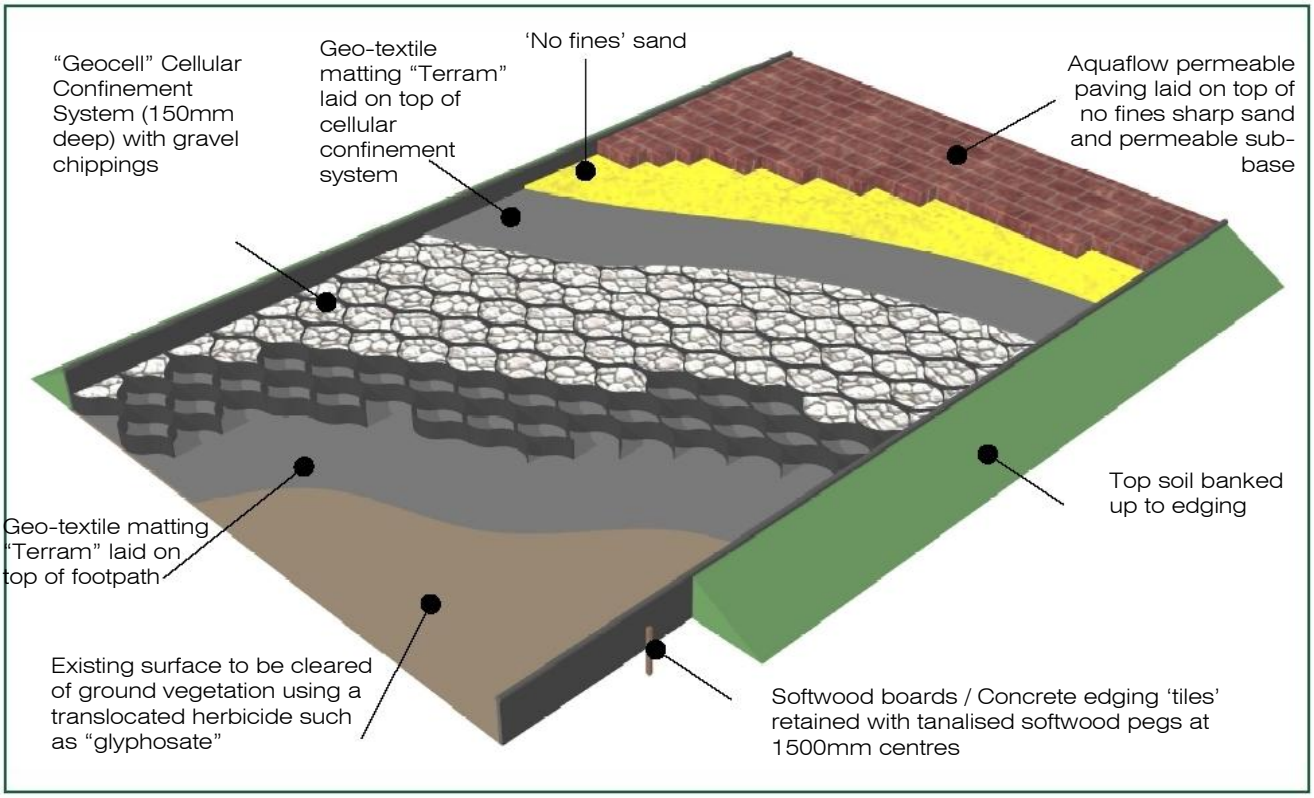
5 Moseley' Farm
Business Centre
Fornham All Saints
Bury St Edmunds
Suffolk IP28 6JY

Tel: 01284 765391
Fax: 01284 765181
Mob: 07850167400
info@treesurveys.co.uk
www.treesurveys.co.uk

'No Dig' Footpath & Driveway Specification

Scale
1:10 (A4)

Drg No.
Hayden's.ND



The 3D drawing above may not accurately depict the construction to be carried out and should be taken as indicative only. Use the section drawings on the previous page for full details on the required construction method

'No Dig' system during construction (right)

"Geocell" Cellular Confinement System (100mm deep) with gravel chippings (below)

HAYDEN'S
Arboricultural Consultants

5 Moseley' Farm
Business Centre
Fornham All Saints
Bury St Edmunds
Suffolk IP28 6JY

Tel: 01284 765391
Fax: 01284 765181
Mob: 07850167400
info@treesurveys.co.uk
www.treesurveys.co.uk

The Aquaflow® range of permeable paving

Aquaslab®

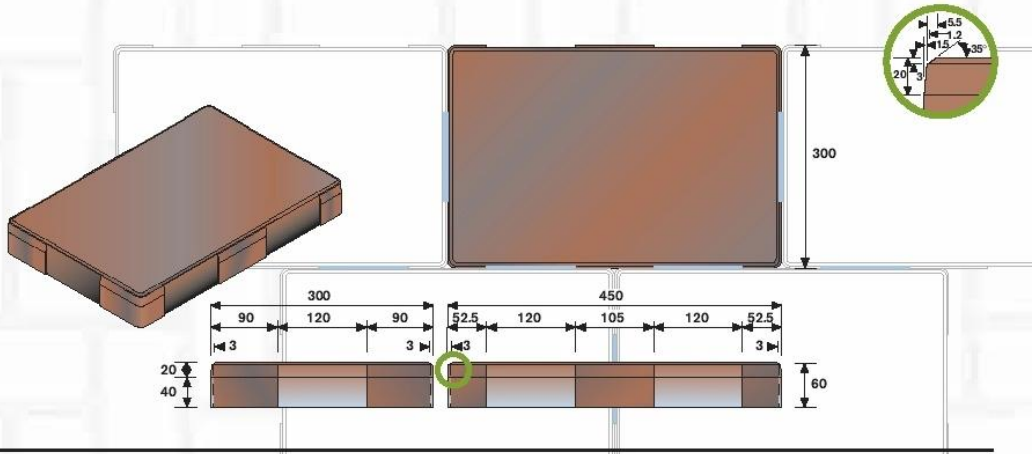
For use on Pedestrian areas

Size
300 x 450 x 60mm

Laying pattern
Staggered stretcher bond

Colours*
Natural, Burnt Red, Red brindle, Golden brindle and Charcoal

Finish
Standard
Bush hammered to special order



Aquasett®

For use on footpaths, domestic drives and roads (80mm)

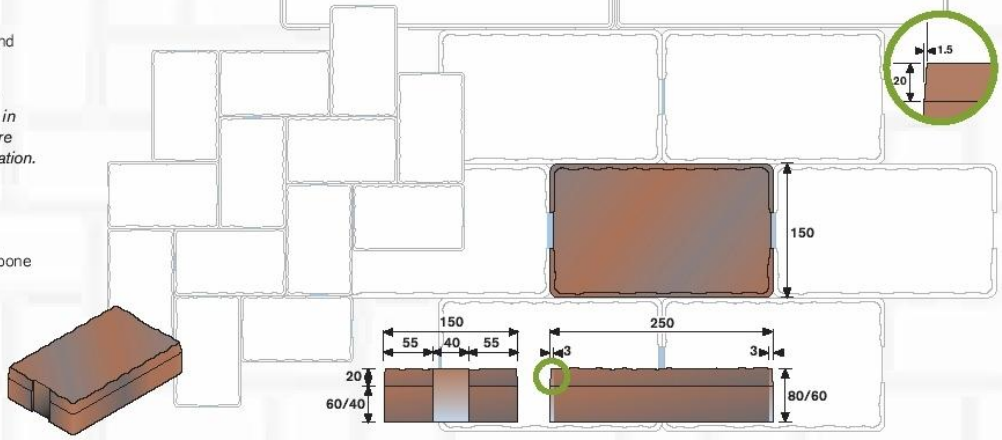
Range of colours and the Olden finish make the Aquasett appropriate for use in conservation areas or on projects where architectural heritage is a major consideration.

Sizes
150 x 250 x 60/80mm

Laying pattern
Staggered stretcher bond or 90° herringbone for trafficked areas.

Colours*
Traditional, Red Brindle, Vendage and Pennant.

Finish
Olden
Bush hammered to special order



Aquasett combined®

For use on footpaths and domestic drives

Range of colours and the Olden finish make the Aquasett combined appropriate for use in conservation areas or on projects where architectural heritage is a major consideration

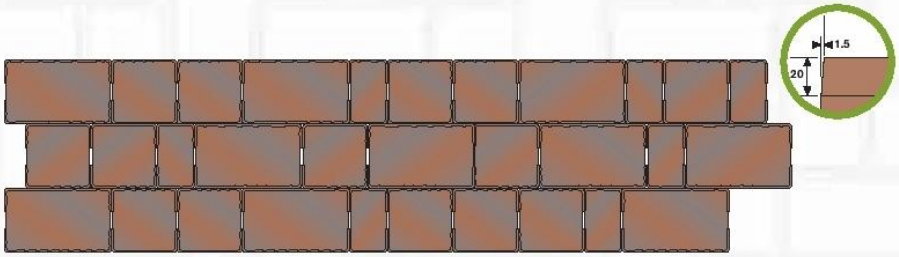
Sizes
Large 150 x 250 x 60/80mm
Medium 150 x 150 x 60/80mm
Small 100 x 150 x 60/80mm

Ratio of blocks in 0.8 square metre manufactured format: 10 large, 14 medium and 7 small.

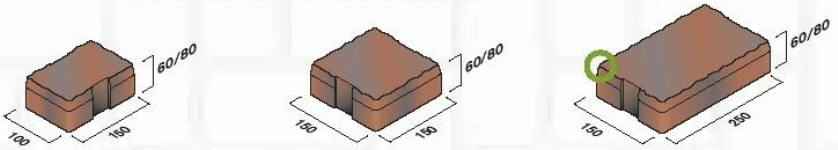
Laying pattern
Staggered stretcher bond

Colours*
Traditional, Red Brindle, Vendage and Pennant.

Finish
Olden
Bush hammered to special order



Aquasett combined (0.8 square metres-one pallet layer)



Formpave have designed a range of Aquaflow paving blocks to be used in conjunction with either tanked or infiltration systems.

The range consists of six blocks manufactured from concrete with a tensile splitting strength in accordance with BS EN 1338:2003.

Included within the range is the Aquaslab which has been designed for use on non-trafficked pedestrian areas.

All of the blocks and slabs provide drainage through vertical channels and will allow water through the surface at a rate of approximately 9000mm per hour (9000 litres per m^2 per hour). The Inbitex geotextile beneath the laying course will allow approximately 4500 litres per m^2 per hour through and this figure should be used for design purposes.

The Aquaflow ML block system consists of an interlocking block with specialist top, bottom and edge blocks and has been specifically designed for heavy duty applications.

The ML blocks can be laid by hand or by machine. Where the blocks are machine laid modules of .65m^2 are laid in one pass. Laying rates of over 600m^2 per day have been readily achieved with a three man crew.

• **Other colours and finishes such as EcoGranite are available to special order.**

Aquaflow block®

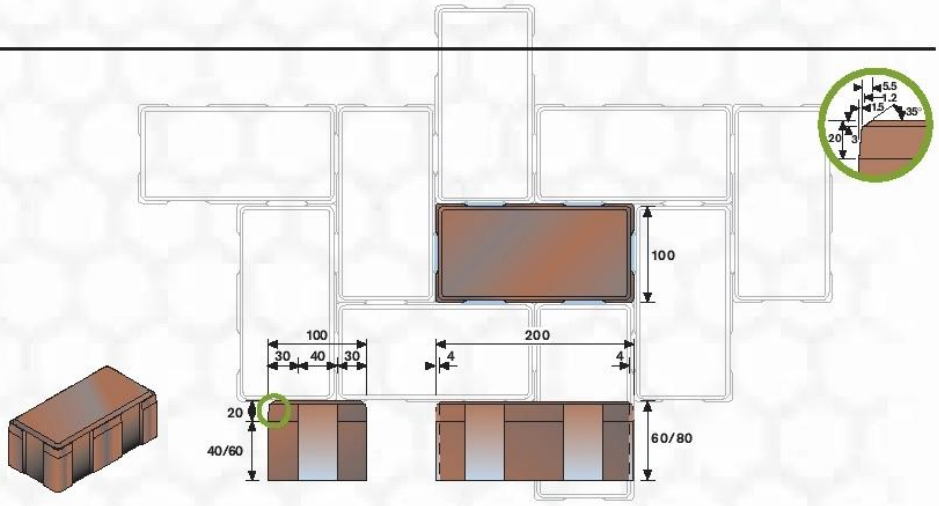
For use on car parks, drives and moderately trafficked areas

Sizes
100 x 200 x 60/80mm

Laying pattern
Must be laid in 90º herringbone

Colours*
Natural, Burnt Red, Red brindle, Golden brindle and Charcoal.

Finish
Standard
Bush hammered to special order



Aquaflow ML block®

For Roads and heavy duty use

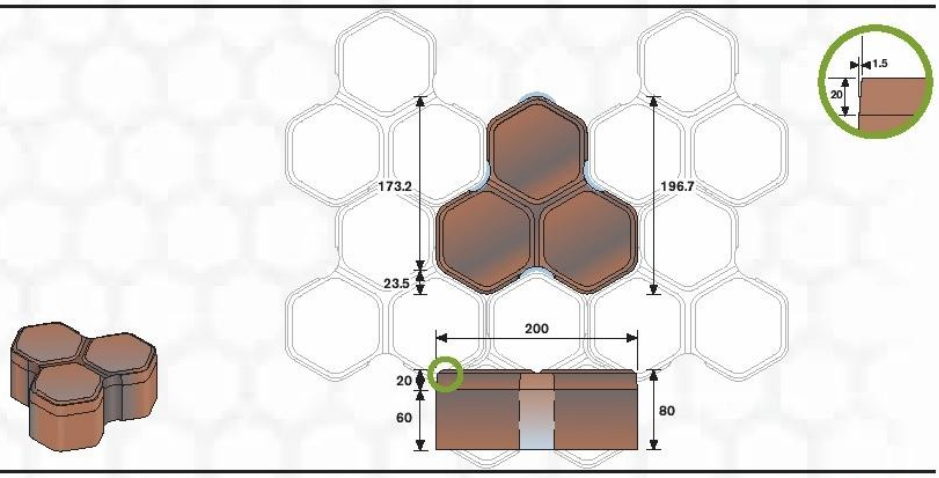
Size
80mm

Laying pattern
Include stretcher course around edge in conjunction with MLE and MLTB

Colours*
Natural, Burnt Red, Red brindle, Golden brindle and Charcoal.

Finish
Standard

Not available in EcoGranite



Aquaflow MLE® *top drawing*

End block
For use with Aquaflow ML blocks

Aquaflow MLTB® *bottom drawing*

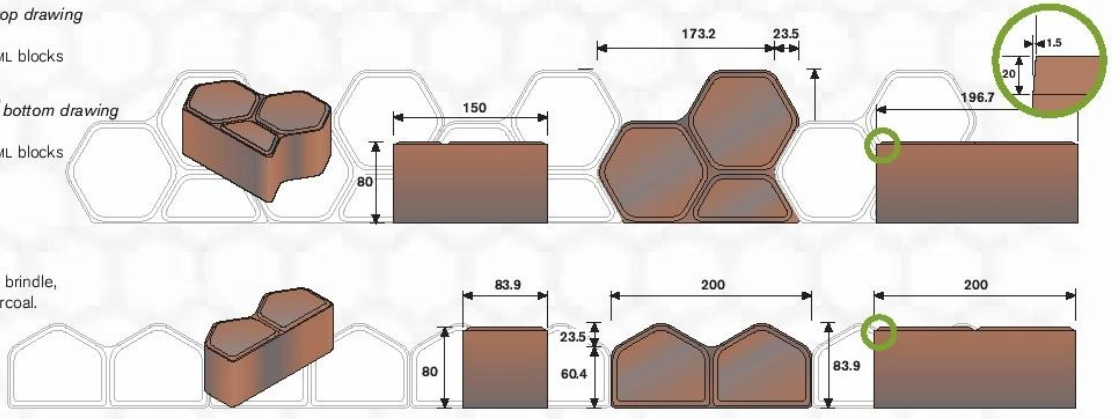
Top and bottom block
For use with Aquaflow ML blocks

Size
80mm

Colours*
Natural, Burnt Red, Red brindle, Golden brindle and Charcoal.

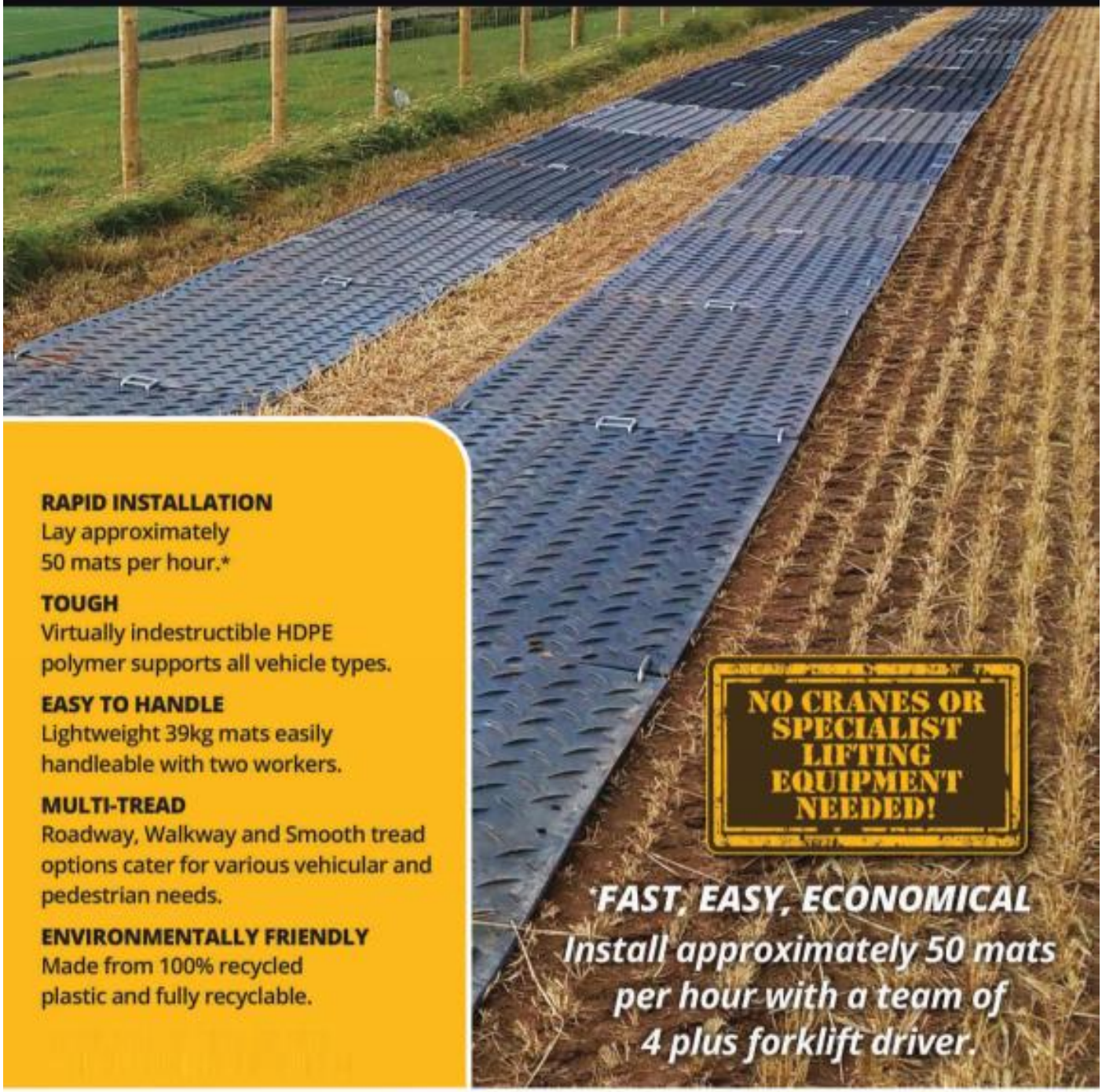
Finish
Standard

Not available in EcoGranite



7. GroundGuards MultiTrack Ground Protection

MultiTrack



RAPID INSTALLATION
Lay approximately 50 mats per hour.*

TOUGH
Virtually indestructible HDPE polymer supports all vehicle types.

EASY TO HANDLE
Lightweight 39kg mats easily handleable with two workers.

MULTI-TREAD
Roadway, Walkway and Smooth tread options cater for various vehicular and pedestrian needs.

ENVIRONMENTALLY FRIENDLY
Made from 100% recycled plastic and fully recyclable.

GroundGuards®

+44 (0)113 267 6000
info@ground-guards.co.uk
www.ground-guards.co.uk

MultiTrack

MultiTrack mats are the strongest in their category

Mats are easily moved using a HandiHook

Standard no-tools joiners quickly clip the mats together

Low profile joiners for walkways plus bolted joiners

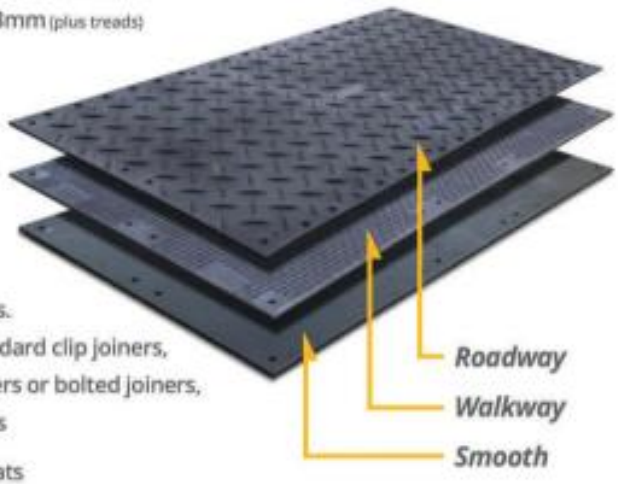
SafeStore stillages hold 25 mats

Overall Size: 2435 x 1215 x 13mm (plus treads)

Surface Area: 2.95m²

Weight: 39kg

Tread Options: Roadway, Walkway and Smooth, or a combination



Connectors: 10 joining points. A choice of standard clip joiners, low profile joiners or bolted joiners, plus anchor pins

Packed in: Stillage of 25 mats

Stillage Pack: **Weight:** 1105kg
Dimensions: 2550 x 1260 x 900mm

Slip Testing: BS7976 part 2

Deflection: Tested on varying CBR ground conditions using a 300mm diameter steel platen with 6 tonnes load to simulate the pressure of an HGV wheel

Ground CBR 11.35% : Deflection 17.68mm

Ground CBR 8.58% : Deflection 20.41mm

Ground CBR 4% : Deflection 22.00mm

Guarantee:

It is the user's responsibility to assess the load-bearing capacity of the ground, and to only operate vehicles within the weight that the ground is capable of safely supporting. Ground-Guards Ltd accepts no liability whatsoever for any damage, loss or injury arising from the ground conditions on which these products are used.

MultiTrack mats are not suitable to use for bridging purposes. Damage caused by mechanical equipment (e.g. cuts by digger buckets) or sharp protrusions beneath the mats is not covered by this guarantee.

GroundGuards®

+44 (0)113 267 6000
info@ground-guards.co.uk
www.ground-guards.co.uk

8. Supa-Trac Ground Protection

SUPA-TRAC™

TEMPORARY TRAFFICABLE EVENT SURFACE

Supa-Trac™ is suitable for medium or heavy weight use and protects the ground underneath as well as protecting the cars, vehicles or people from the ground. The **Supa-Trac™** panels are quick and easy to install with up to 70m² laid per hour and no tools are required.

The temporary flooring panels can be laid on any ground covering and can be fitted to any shape.

With super quick installation and extraction – up to 70m2 per hour – it's the simplest, fastest ground cover solution of its type on the market. No tools or expertise needed.

Additionally, the flooring panels are easy to remove and can be stacked and stored easily. If required the panels can be cleaned by hosing them down.

Supa-Trac™ creates a firm surface for walkways, roadways, temporary building and structures. Even heli-pads and car parks.

MADE IN BRITAIN

Data Sheets, Installation & Design Guidances and Case Studies can be downloaded from www.groundtrax.com/downloads

SUPA-TRAC™

TEMPORARY TRAFFICABLE EVENT SURFACE

Suitable for:

- ✓ Light Duty Roadway
- ✓ Pedestrian Walkway
- ✓ Pitch Covering
- ✓ Self Installation

Benefits:

- ✓ Pedestrian-friendly surface
- ✓ Light vehicle access
- ✓ Hi-Vis ramps
- ✓ Quick and easy to install

TECHNICAL SPECIFICATIONS

Dimensions & Materials

Panel Dimesions:	966mm x 275mm x 34mm
Panel Weight:	2.025kg (9.7kg/m²)
Material:	Nucleated Polypropylene Co-polymer
Colour:	Grey/Black/Green (Other colours available to order)
Edging Ramps:	Black/Yellow
Locks:	Black (Acetal)

Operating Conditions

Temperature:	-49c > +49c
Static Load:	80 Tons/m²
Max GVW:	3.5t (Ground dependant)
Max GVW with Geotech substrate:	40t (Ground dependant)

Resistance to sunlight and ultra violet light exposure
The product will not be detrimentally afected with regard to strength and structure for a minimum of 5 years, however over exposure could lead to slight fading of colour.

Resistance to petrol and oil derivatives
PP is impervious to the exposure of mort substances and the only effect of such contact could be slight discolouration.

Resistance to corrosion
We are not aware of any substance thal would lead to the product corroding.

External storage
The product is suitable for outside, uncavered storage - the only impact being the possibility of slight fading of colour.

Lateral inclines of 20%
The product is able to support slopes and inclines. Should it be felt the situation dictates, stakes can be used to secure the roadway.

Permeable to liquid
The product is not permeable to liquid. The panels have been designed to ensure liquid drains from the panel surface using the designed holes.

Usability in muddy conditions
The product can be used in muddy conditions. By using geotech substrate the product can successfully be deployed, adding value by improving traction and protecting the underlying surface from further deterioration. Should the surface of the roadway become too muddy through traffic movement, this can be easily removed by either pressure washing or sweeping with a hard brush.

For more information, contact us today or visit our website:

www.groundtrax.com

GROUNDTRAX
Ground Protection and Reinforcement
Telephone: 03456 800008 | Fax: 03456 800208
E-Mail: info@groundtrax.com | Website: www.groundtrax.com

9. Air Spade/Air Excavation Specification

AIRSPADE®

PNEUMATIC SOIL EXCAVATION

AIRSPADE 2000

AIR EXCAVATION TOOL

EXCAVATION USING THE POWER OF COMPRESSED AIR

Soil is an unconsolidated assemblage of solid particles including clay, sand, and rock and sometimes organic matter. Voids between the particles are occupied by air and/or water. When compressed air is directed into soil at close range, air enters the voids where it expands, thereby fracturing the soil. Stronger, non-porous materials such as metal or plastic pipes, cables, or even tree roots are unaffected.

PATENTED SUPERSONIC NOZZLE

AirSpade's patented supersonic nozzle turns compressed air into a high-speed, laser-like jet moving at twice the speed of sound – Mach 2. All of the energy and momentum of air moving at approximately 1,200 mph is focused into the soil – dislodging it in a fraction of a second.

UNFOCUSED AIR FLOW FROM IMPROPERLY DESIGNED NOZZLE

FOCUSED AIR FLOW FROM AIRSPADE SUPERSONIC NOZZLE

Air exiting from an improperly designed nozzle diffuses outward rapidly to 3 to 4 times the area versus the focused air-jet from the patented AirSpade supersonic nozzle. With AirSpade, the result is faster, safer, more efficient soil excavation.

AirSpade 2000 Arbor/Landscape Kit shown above.

AirSpade® 2000 Arbor/Landscape Kit includes:
- AirSpade® 2000 handle with universal "Chicago style" coupling
- 4 ft barrel with dirt shield and 150 scfm nozzle
- 45 degree angled adapter
- 10 ft x 1" ID lightweight air hose with universal "Chicago style" coupling
- Heavy duty locking storage case

AirSpade® 2000 Construction Kit includes:
- AirSpade® 2000 handle with universal "Chicago style" coupling
- 4 ft barrel with dirt shield and 150 scfm nozzle
- 3 ft extension and coupler
- 45 degree angled adapter
- 10 ft x 1" ID lightweight air hose with universal "Chicago style" coupling
- Heavy duty locking storage case

AirSpade® 2000 Trench Rescue Kit includes:
- AirSpade® 2000 handle with universal "Chicago style" coupling
- 4 ft barrel with dirt shield and 150 scfm nozzle
- 45 degree angled adapter
- 10 ft x 1" ID lightweight air hose with universal "Chicago style" coupling
- Additional 60 scfm nozzle
- Heavy duty locking storage case

PHONE 800-482-7324

airspade.com

THE INDUSTRY STANDARD

Today, thousands of AirSpades® are in use in arboriculture, utility, construction, and industrial applications worldwide. AirSpade is the tool of choice due to its fast, easy and non-destructive method of excavation.

APPLICATIONS

Arboriculture / Horticulture

Since its earliest trials in 1998 at Gainsborough Farms, KY, the AirSpade has become the premier air tool for advanced tree care. Leading arborists worldwide have evaluated and found multiple uses for the AirSpade including:

• Aeration • Locating roots for utility line installation • Radial trenching • Root collar excavation
• Root damage investigation • Locating roots for pruning • Soil compaction reduction • Vertical mulching
• Transplanting / bare rooting • Checking adequacy of root structure before pruning

Utility / Construction

When dealing with sensitive pipes and cables that are often punctured or damaged by traditional backhoes, the AirSpade offers an easy, fast, and non-damaging way to locate and excavate the area around them. In addition, AirSpade can create new holes or trenches to lay pipe or cable, and can be used in many other industrial and utility applications, including:

• Utility locating and repair • Keyholing • Potholing for line location
• Crack, joint, and valve box cleaning • Roadwork

Trench Rescue

The December 2005 issue of Underground Focus Magazine reports, "Every year in the United States, trenching accidents account for more than 5,000 serious injuries and between 50 and 100 deaths." According to Lt. Dave Adler of the Addison, IL Fire Department, a leading teacher of trench rescue training and safety, "When a worker is buried in a cave-in, a critical time clock starts and AirSpade can be an effective tool for their rescue."

AirSpade with AirVac

Conventional excavation of hazardous materials can be slow and harmful. AirSpade, used in conjunction with the AirVac vacuum unit, makes environmental site remediation easy, fast and non-damaging. Capabilities include:

• Uncover buried waste containers without fear of puncture
• Excavate tight places inaccessible to conventional backhoes
• Remove material in carefully controlled layers

FREQUENTLY ASKED TECHNICAL QUESTIONS

IN WHAT TYPE OF SOIL WILL AIRSPADE® WORK?

Because of the focused air-jet generated from the supersonic nozzle, AirSpade works in most soils, including compacted soils, and hard clays. In general, AirSpade will not cut through rock. However, shales may be broken apart by AirSpade if the jet is directed between the laminations of the rock. Similarly, AirSpade will not dislodge hard frozen soil which tends to behave like pavement or concrete.

WHAT SIZE AIRSPADE NOZZLE SHOULD I USE?

This depends on the desired rate of soil excavation which is in turn dependent upon the air delivered from the AirSpade nozzle. Rates are summarized in the table below.

Soil Excavation Rates

Nozzle Size (scfm)	Soil Excavation Rates (cubic ft / min)
25	0.4 to 0.9
60	0.7 to 1.1
105	0.9 to 1.5
150	1.2 to 1.8
225	1.7 to 2.3

WHAT SIZE AIR HOSE DO I NEED FOR THE AIRSPADE?

Generally a 1" ID air supply hose is recommended for use with the AirSpade.

WILL HIGHER PRESSURE MAKE THE AIRSPADE WORK BETTER?

All AirSpade nozzles are developed to operate optimally at 90 psig. Supplying higher pressure to a supersonic nozzle that has been optimized for 90 psig actually defocuses the air jet, thus degrading performance while consuming more air. For example, doubling the air pressure to 180 psig increases the air jet force by only 10%.

WHAT SIZE AIR COMPRESSOR DO I NEED TO USE THE AIRSPADE PROPERLY?

Portable air compressors have model numbers that are normally sized by the approximate air delivery in standard cubic feet per minute (scfm) at a gauge delivery pressure of 100 pounds per square inch (psig). For example, a 185 compressor will deliver 185 scfm at 100 psig. All AirSpade nozzles are rated at 90 psig and are designated by their air delivery at this pressure. Five nozzles are available to cover the size range of most portable air compressors. To size an AirSpade nozzle to a compressor simply ensure the compressor size is larger than the nozzle size.

The below table lists the minimum portable air compressor size needed to properly run a given AirSpade nozzle.

Recommended Compressor Size

Nozzle Size (scfm)	Minimum Compressor Size (scfm @ 100 psig)
25	25
60	60
105	125
150	175
225	250

HOW SHOULD I DIG WITH THE AIRSPADE?

Each pass of the AirSpade dislodges material up to several inches deep in a medium to stiff soil. Unless the soil is highly compacted, dwelling on the same spot is unnecessary and tends to increase spray. Ideally, the AirSpade should be moved laterally at a rate of about 1 to 2 feet per second. When several inches of soil have been loosened, soil should be physically removed to expose a fresh working surface for the nozzle. Vacuum suction, as provided by the AirVac® vacuum unit, is an excellent way to remove loosened soil.

Always wear eye and ear protection when operating air tools and related equipment.

PHONE 800-482-7324

airspade.com

10. Trunk Protecta by Green Grid Systems

Trunk Protecta by Green Grid Systems

https://greengridsystems.com/products/trunk-protecta

https://holm-products.com/product/trunk-protecta/

Appendix G

Haydens Drawing

- Arboricultural Impact Assessments
- Arboricultural Method Statements
- Tree Constraints Plans
- Arboricultural Feasibility Studies
- Shade Analysis
- Picus Tomography
- Arboricultural Consultancy for Local Planning Authority
- Quantified Tree Risk Assessment
- Health & Safety Audits for Tree Stocks
- Tree Stock Survey and Management
- Mortgage and Insurance Reports
- Subsidence Reports
- Woodland Management Plans
- Project Management
- Ecological Surveys