

Arborweald Environmental Planning Consultancy

LANDSCAPE, ARBORICULTURE & ECOLOGY
SURVEYS* PLANS* ASSESSMENTS* MITIGATION* SOLUTIONS &
METHODOLOGY*

Woodland Enterprise Centre, Hastings Road, Flimwell, East Sussex TN5 7PR



Details Pursuant to British Standard 5837:2012,
Trees in relation to design, demolition & construction
Change of Land Use Proposal for: Highdown-Land West of former McIntyre Nursery,
Ferring, West Sussex BN12 6PB.

BS5837:2012 Survey and Report

August 2021

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DKS/Wood01

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1.0. Introduction

Arborweald Environmental Planning Consultancy (AEPC) has been commissioned by Mr. Mark Wood to provide details pursuant to the British Standard 5837: Trees in relation to design, demolition and construction – Recommendations (BS5837:2012). This report has taken into account a number of documents, reports (section 1.2.) and discussions with the architect, Ms. Eimear Murphy of Murphy Associates.

AEPC is a multidisciplinary environmental planning consultancy qualified to provide a professional service in the fields of arboriculture, ecology and the natural landscape. It is led by its founder; David Kavanagh-Spall who is a trained arboriculturist and Ecologist, a higher education lecturer in arboriculture and associated subject matter, and a professional member of the Arboricultural Association. David has over 20 years' industry experience; Alex Livingstone is a trained arboriculturist and forester with over 22 years of industry experience, within the charity, education and commercial sectors.

Assessment is based upon professional qualifications and knowledge and published professional guidance/recommendations and legislation. The BS5837:2012 tree survey was carried out on the 27th of August 2021 when weather conditions facilitated good visibility and therefore did not act as an impediment to the survey.

Trees were assessed by way of visual tree assessment (VTA) from ground level with the aid of binoculars, high powered torch, probe, acoustic hammer, true metre wheel, laser range finder, compass, diameter tape and clinometer. Ground conditions on site were visually assessed at multiple points and probed to ascertain compaction.

1.1. Legal Considerations/Risk Assessment

Although the potential risk to someone passing beneath a tree when the tree or part of it fails is relatively remote, the risk is present. This increases significantly in areas of consistent and regular usage on a year-round basis, such as pedestrian and vehicular highways and amenity areas. Where static structures exist, the risks become constant, and an assessment is made as to whether complete or partial failure of a tree could cause damage to such structures. Within the scope of any tree survey, it is a fact that not all risks of stem or crown failure can be covered, particularly in relation to freak occurrences of weather when even trees of a sound condition can be the subject of structural failure. Trees also have the rare propensity to drop limbs that appear to be in an acceptable condition. These rare occasions have been known to occur in spring and summer on calm days. Although rare, trees shedding limbs should be acknowledged as a risk that cannot be entirely mitigated. The law requires that properties are retained safely for residents, visitors and neighbours (Occupiers Liability Act, 1957/84, Defective Premises Act, 1972 and as Common Law Duty of Care) this includes the reasonable care of trees.

1.2. Relevant Documents

S. Barrett, Architectural and Party Wall Services, Title: *Highdown-Land West of Former McIntyre Nursery; Land Change of Use*, Drawing number: BSB/21/888/1, Dated: 1/7/21; Job Ref: 2113396, Dated: July 2021; S. Barrett, Architectural and Party Wall Services, Title: *Highdown-Land West of Former McIntyre Nursery; Block Plan and Site Plan*, Unique Plan Reference: #00647155-735093 Dated: 1/7/21; Murphy Associates, *Area of land (formerly McIntyre Nursery), North of Highdown Vineyard, Littlehampton Road, Ferring, West Sussex, Additional Information/Details*.

2.0. Rationale

Provide sustainable solutions for trees and the development which takes appropriate account of the area's character.

3.0. Area Character Assessment

Assessment of the character of the site and surrounding area consisted of a walkover assessment of both as well as assessment of the general character of the area through viewing maps and assessing views into the site from all cardinal points.

The site is located to the north of the A259, north of Ferring West Sussex. Surrounding landscape to the northwest comprises predominantly horse grazed fields with associated field and boundary hedgerows, to the southwest light industrial units at Skinner's Sheds and Highdown Vineyard; to the south a wasteland area with minimal infrastructure; to the east light industrial yards, and to the north successional grassland gradually ascending to scrubby downland scattered tree cover. Surrounding arboricultural value is limited to amenity screen plantings adjacent to industrial yards with native hedgerows bounding field edges and boundaries, and successional tree growth on downland to the north of the site.

3.1 Site Character Assessment

The site is moderately level with a gentle slope northward to wider countryside. The site was previously used as a horticultural nursery that has now ceased with the site now predominantly clear with rank ground vegetation now growing, the southern portion of the site is currently used to store roofing and building materials. A type 1 roadstone/gravel access track with an adjacent hybrid black poplar avenue bounds the eastern side of the site that further east leads into an adjacent fencing yard; a semi mature native hedgerow bounds at the boundary with Skinner's Sheds to the west, and an early mature linear hybrid black poplar group bounds south between the site and adjacent wasteland area to the south. A stock fence bounds further to the north of the site leading into grassland succeeding into scrub and the wider landscape. The site is accessed from the gravel track to the east with a historic unmade and heavily compacted vehicle entrance area.

The site as a whole is heavily compacted, anecdotally from previous land use as an agricultural and nursery site, including the site vehicle entrance. The soil was extensively probed during the survey and offered little to no ingress and accordingly would offer at best a suboptimal rooting medium for adjacent trees.

The change of land use proposal provides an opportunity to improve arboricultural value to the site if management recommendations for retained trees are carried out and if native hedge and screen planting recommendations are implemented.

3.2 General Site Management Recommendations

If change of land use consent is approved, then the site as a whole can be rationalized and planned to improve the arboricultural value of retained trees as well as implementing new planting to add arboricultural and ecological value.

Clearly defining storage areas and restacking all existing stored roofing and building supplies onto pallets taking into account the rhizosphere of Group 1 trees will improve root function over time. Moving building materials and undertaking soil amelioration within the rhizosphere of Group 2 trees will also improve root function for this group. All stacking and subsequent storage will be limited to defined areas and undertaken by hand, clearly defining the vehicle entrance and limiting vehicle movements to defined areas will also help to minimize any future compaction within tree rhizospheres.

Security fencing around the site if permitted will be carefully planned and undertaken under special protection measures SPM (section 7.0) where installation is within the theoretical RPAs of existing trees.

An opportunity to plant native hedge species and climbing plants adjacent to the proposed security fence at the northern boundary of the site will improve arboricultural value if approved, as well as providing a natural screen from the landscape to the north. The proposed location and access to the storage shipping container will be sited well away from group 1 RPAs. Locations for the above recommendations are contained within appendix 3 of this report.

4.0. Tree Survey

Trees were assessed individually and as groups, in relation to the surrounding landscape setting and development proposal. Trees were assessed for general condition, amenity, age and size. Table 1 lists the trees and tree measurements and table 2 sets out life stage, condition, categorization and estimated remaining contribution. In accordance with BS5837:2012 trees were assessed as individuals and groups based on their amenity contribution and functional proximity. However, trees within groups were subjected to an individual visual tree assessment and tree root protection areas (RPAs) are based upon the largest recorded diameter measurements within the groups unless there are significant differences. Crown

spreads are measured from group edge trees. Appendix 1 provides scientific species name identification and 2 and 3 provide tree location; site management recommendations; and tree protection plans. Trees surveyed are those within the influence of the proposed development and vice versa.

Table 1: Trees and Tree Measurements

First significant branch (cardinal direction) = FB(N, E, S, W); Crown starts= CS; At ground level = AGL;
Diameter at breast height = DBH; Estimated = Est.; Root protection area= RPA; millimetres= (mm);
metres = (m); Hedgerow = H; Scrub = S; >3 stems = Multi; Codominant = Codom.

Tree no.	Species	Height (m)	DBH (mm)	FB & CS Height (m) AGL	Crown spread @ cardinal points; N,E,S & W (m)	RPA (m ²)
G1	Hybrid black poplar x 29	23	455 Largest avg. 350	FB 0.5 N & CS @ 7	12, 8, 9 & 6.	94
G2	Hybrid black poplar x 22	18	360 Largest avg. 250	FB 1W @ & CS @ 3.5	6, 6, 6 & 7.	59
G3	Lombardy poplar & Monterey cypress	17	365 Largest	FB 1 W & CS @ 3	5, 3, 1 & 3.	60
H1	Hawthorn, blackthorn, guelder rose & field maple.	3	Sub 75	FB & CS AGL	1, 0.5, 0.5 & 1. (2.5m wide)	3

Table 2: Tree Condition and Amenity Contribution

Structural condition = Sc; Physiological condition = Pc; Estimated minimum life expectancy = Eml;
Local Planning Authority = LPA; Category A = High amenity, B = Moderate amenity, C = Low amenity
& U = Hazard to targets; BS. 3998 = British standard for tree work.

Tree no.	Life stage	Sc	Pc	Eml	BS5837 Category	Comments
G1	Early mature	Average	Average	10 +	C2	Linear group of even aged hybrid black poplar at southern boundary of site of average form and vitality. Rooting limited north by historic compaction and east at access track, level change to S. with 0.3m drop some soil mounded at group bases signs of recent soil disturbance within neighbouring site south. Group has drawn up form with poor taper, early signs of stress with some tip die back top southern crowns, middle tree within group has lost top at 10m. Barbed wire fence attached to western most tree within group now starting to occlude and causing minor conflict with other trees within group. 6 eastern most trees have significant historic mechanical damage 2-10m N side up to 1/3rd circumference partially occluded. <i>Remove barbed wire fence without damaging stems, fell smaller suppressed trees within group and implement staged cyclical reduction to bring down to 18m target height, then manage with cyclical reduction interventions every 5-7years. Monitor regularly if land use changes.</i> Restack stored materials adjacent to group as specified within section 7.0. Crown raise north canopy to 5m limited to small diameter branches no larger than 1/3rd parent stem or branch to facilitate development; group can be effectively protected and sustainably retained with SPM implemented during security fence installation (section 7.0).

Tree no.	Life stage	Sc	Pc	Eml	BS5837 Category	Comments
G2	Early mature	Average	Average	10+	C2	Linear group of even aged hybrid black poplar at eastern boundary of site adjacent to gravel access track group of average form and vitality. Rooting limited east by access track and sub optimal rooting west into site by historic compaction and material storage. Early signs of stress with some tip die back top crowns. Monitor regularly if land use changes. Conduct soil amelioration after removing building materials away from southernmost trees to improve rhizosphere (section 7.2.1) and clearly define site entrance to limit vehicle access. Crown raise east canopy to 5m limited to small diameter branches no larger than 1/3 rd parent stem or branch to facilitate access to development; group can be effectively protected and sustainably retained with SPM implemented during security fence installation (section 7.0).
G3	Early mature	Average	Average	10+	C2	Mixed linear group of even aged Lombardy poplar with interspaced Monterey cypress east of access track to screen adjacent industrial yards. Rooting limited west at access track and east within adjacent industrial areas. Signs of dieback and stress within group likely due to compaction and limited rooting area. Occasional standing dead trees within group- minimal risk due to size and companion shelter. Crown raise west canopy to 5m limited to small diameter branches no larger than 1/3 rd parent stem or branch; group can be effectively protected and sustainably retained.
H1	Semi mature	Average-good	Good	20+	B2	Amenable native hedge at western boundary of site. Maintain at current dimensions with annual cutting, hedge can be laid within the next 5 years which will ensure stock proofing and maintain density. Hedge can be effectively protected and sustainably retained.

5.0. Arboricultural Impact Assessment

Views into the proposed site are limited from all cardinal points apart from the wider landscape to the north and as such the proposed change of land use proposal would if consented have minimal arboricultural impact, with no tree removal recommended to facilitate development. Furthermore, development associated benefits for both arboriculture and ecology would result if recommendations as contained within sections 3.2 and 7.0 of this report are carried out. The visual impact of proposed security fencing at the north of the site can be mitigated with appropriate native hedge planting and native climbing species planted to screen the fence and site, as well as increasing native hedge cover and improving ecological value.

The impact to retained trees within influence of the site can be effectively managed with the implementation of BS: 5837 standard and special protection measures as specified within section 6.2 of this report.

A net improvement in the arboricultural character of the site would be achieved if the proposed change of land use is granted with retained tree management recommendations undertaken as specified within table 2; and recommended additional hedge and appropriate climbing species planted adjacent to the proposed security fence.

6.0. Arboricultural Protection

Construction for the proposed land use change for this site is minimal, limited to the installations of a level base for the proposed container and boundary security fencing and vehicle access gates. In accordance with BS5837 (2012) effective tree protection for installation of the container would be achieved through the provision of construction exclusion zones (CEZs) protected by the erection of appropriate barriers (fig 1.) and limiting construction activities to specified construction operations areas (COAs). The site foreman or arboriculturist should ensure that the barriers are not breached and that the CEZs remain sacrosanct tree protection areas. Group 1 adjacent to the proposed container location, Group 2 and H1 RPAs and canopies would be the subject of protection through the erection of appropriately signed barriers '**Construction Exclusion Zone – Keep Clear**'.

Special protection measures for the installation of security fencing at the southern boundary of the site and stacking of building and roofing materials adjacent to Group 1 should be carried out as recommended within sections 6.2 and 7.0 of this report.

Utility services if needed are minimal to service this site but should be laid outside of the CEZs where possible.

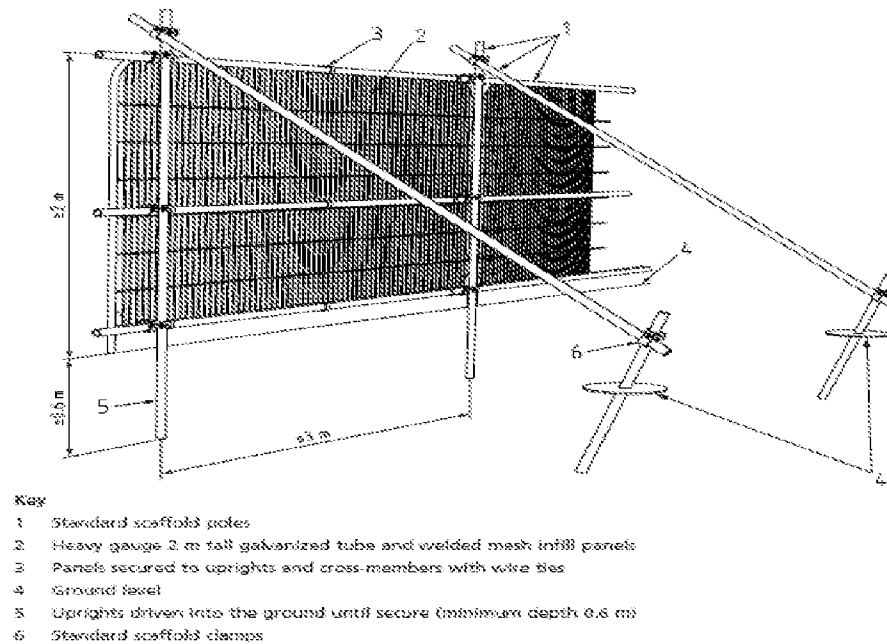


Fig 1: BS5837 Recommended Barrier Specification

6.1. Construction Operations Area (COA)

As stated, construction for the proposed land use change for this site is minimal however, construction for the container base should be carried out within a specified COA (appendix 3). The COA is an area where all construction activities are carried out including logistics/material storage, construction worker facilities, mixing of construction materials and fuels etc. without detrimentally impacting on retained trees within influence of construction.

6.2 Special Protection Measures (SPM)

The installation of security fencing at the southern boundary of the site should be undertaken under SPM. Locations of fence posts should be carefully planned, and installation undertaken to avoid potential damage to any roots from Group 1, specifications and methodology to undertake fence installation are contained within section 7.1. Anecdotal evidence of compaction from previous site usage and survey findings concludes that the stacking of building materials within the potential RPAs of group 1 is acceptable if stacking areas as specified within appendix 3 and stacking methodologies are followed within section 7.0.

7.0 Arboricultural Method Statement

Retained tree groups and hedges adjacent to the site if appropriately managed will ensure a sustainable relationship between the proposed change of land use development and existing tree stock. Early mature trees adjacent to site boundaries would benefit from regular visual tree assessments if planning permission is granted due to their size, and proximity to potential target areas. The implementation of the

following methodologies will help to protect existing trees as well as ensure a more sustainable tree and property relationship in the future.

7.1 Security Fence Installation

The installation of security fencing adjacent to the southern boundary of the site will be within the theoretical RPAs of group 1 and the southernmost trees of group 2. Although, soil within these RPAs is heavily compacted a belt and braces approach for fence installation under SPM must be undertaken to minimise any potential damage to tree roots. Accordingly fence post locations will be installed at maximum spacings (3m) to minimise post numbers and therefore disturbance and at least 1.6m away from group 1 stem bases and where possible away from larger diameter trees within the group to avoid damage to structural root plate areas. Initial probing at potential post hole locations to assess rooting prior to digging will help to inform post hole locations and allow for location adjustments.

Post holes should then be hand dug at minimal diameter for post installation under a supervisory arboricultural watching brief (appendix 4.). Should small diameter roots (under 50mm) be encountered during post hole excavation, the appointed competent arboriculturist would relay or cleanly cut back roots and cover them with site excavated topsoil to prevent desiccation; large diameter roots (over 50mm) must not be cut and if found re-siting of fence post holes may be necessary. Mixing of cement and storage of fencing materials should be carried out within the COA and installation of concrete footings for posts should be contained within a non-permeable membrane to prevent any contamination of surrounding soil.

7.2. Storage and Stacking Areas

Anecdotal evidence from previous site usage has left historic compaction on site which was evidenced on site findings. Carefully planned stacking of building materials in the future if permission is granted will help to relieve compaction by managing future stacking areas. Roofing and building material stacking areas should be sited at least 3m from tree bases within Group 1 and outside of the Group 2's RPA. Stacking areas should be clearly defined to avoid stacks drifting into other areas and tree rhizospheres. Stacking all building materials on pallets in the future will help to minimise ground footprint therefore limiting further compaction. All building material stacking and any subsequent material movements within stacking areas will be undertaken by hand thereby also limiting future compaction.

7.2.1. Soil Amelioration

Building materials stacked within the potential RPA of group 2 should be moved to designated stacking areas and soil amelioration within this group's RPA should be undertaken to improve rhizosphere function: *Insert a garden fork into the ground every 2 metres width and length wise for the specified area (Appendix 3). Lever the fork back and forth to loosen the soil (no digging/turning soil over should take place).*

The area should then be excluded from storage and vehicle movements to avoid any future compaction.

7.3. Security Fence Screen Planting

The proposed location of security fencing at the northern boundary of the site will be seen from the wider landscape principally from the north side of the site. Native hedge planting adjacent to the proposed fence location at the northern site boundary along the entire length east to west, will effectively screen both the fence and the site itself. A double staggered row of the same hedgerow species as found in H1 (hawthorn, blackthorn, guelder rose and field maple) will tie the new hedgerow into existing boundary hedges within the area. Native honey suckle and clematis should also be planted at 2m spacings along the proposed fence line, these species over time will climb and ramble over the proposed fencing therefore providing additional screening and disguising infrastructure. Both climbing and hedge species will add both arboricultural and ecological value to the site if approved, recommended species are included within appendix 5.

7.4. Facilitation Pruning

Crown lifting works to groups 1, 2, and 3 to facilitate the change of land use proposal should be limited to a maximum height of 5m and only the removal of branches within direct influence of both access and storage. Permission should be sought prior to pruning if groups are outside of site ownership. Crown lifting works should be limited to small diameter branches with branches either taken back to the main stem or scaffold origin where the final cut is less than 1/3rd of the diameter of the parent branch or to a suitable growth point in line with BS 3998 for Tree Works (2010). Removal of larger diameter branches from main stems is unnecessary and would be detrimental to retained trees by causing excessive wounding. All works are specified within table 2 and must adhere to BS 3998 (2010) good practice.

7.5. Utilities

The need for any utility services into the site is unlikely due to minimal proposed infrastructure however, if any utility services into the site are required to be laid, they should be located outside of tree RPAs or specialist engineering solutions (SESS) should be utilised such as; impact moleing and pipe ramming. Services laid by SES should optimally pass under tree RPAs at a depth of 1m however, 700mm may also be acceptable. Inspection chambers should be located outside of tree RPAs. Method statements and specifications can be provided as a requirement of a planning condition attached to a planning consent. Where there is no alternative to utility services being directed through RPAs and SES's are not possible an alternative arboricultural method statement specific to the situation would be required.

7.6. Implementation Timetable

In order to ensure effective protection of trees and woody plants, protection measures must be integrated into the development timetable (table 3).

Table 3: Tree and Woody Plant Protection Phased Timetable

Phase	Activity
1	Carry out tree work operations necessary to make trees safe and to facilitate development.
2	Implementation of protection barriers.
3	Set out construction operations areas (COAs).
4	Commencement of development with arboricultural input where required including SPM for security fence installation.
5	Completion of development.
6	Dismantling of protection measures.
7	Plant screening along security fence and undertake soil amelioration.

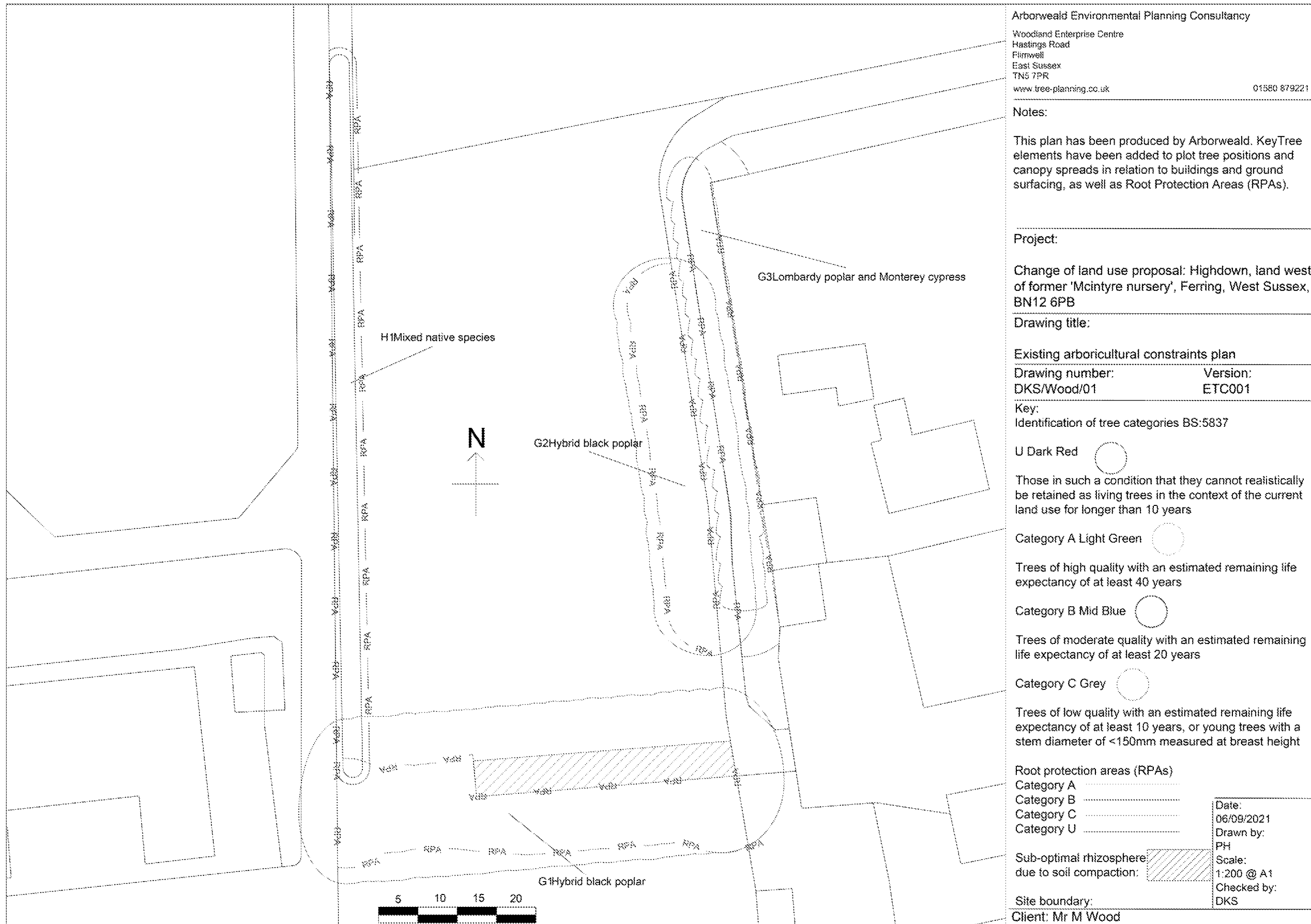
8.0. Conclusion

This report provides information which would help ensure the effective protection of retained trees, the appropriate management of trees and help implement a landscape scheme all appropriate to the local area's character.

Appendix 1 Binomial Common and Scientific Names

Common and Binomial Tree and Decay Agent Species	
Trees	
Blackthorn	<i>Prunus spinosa</i>
Field maple	<i>Acer campestre</i>
Guelder rose	<i>Viburnum opulus</i>
Hawthorn	<i>Crataegus monogyna</i>
Hybrid black poplar	<i>Populus x euroamericana</i>
Lombardy poplar	<i>Populus nigra "Italica"</i>
Monterey cypress	<i>Cupressus macrocarpa</i>

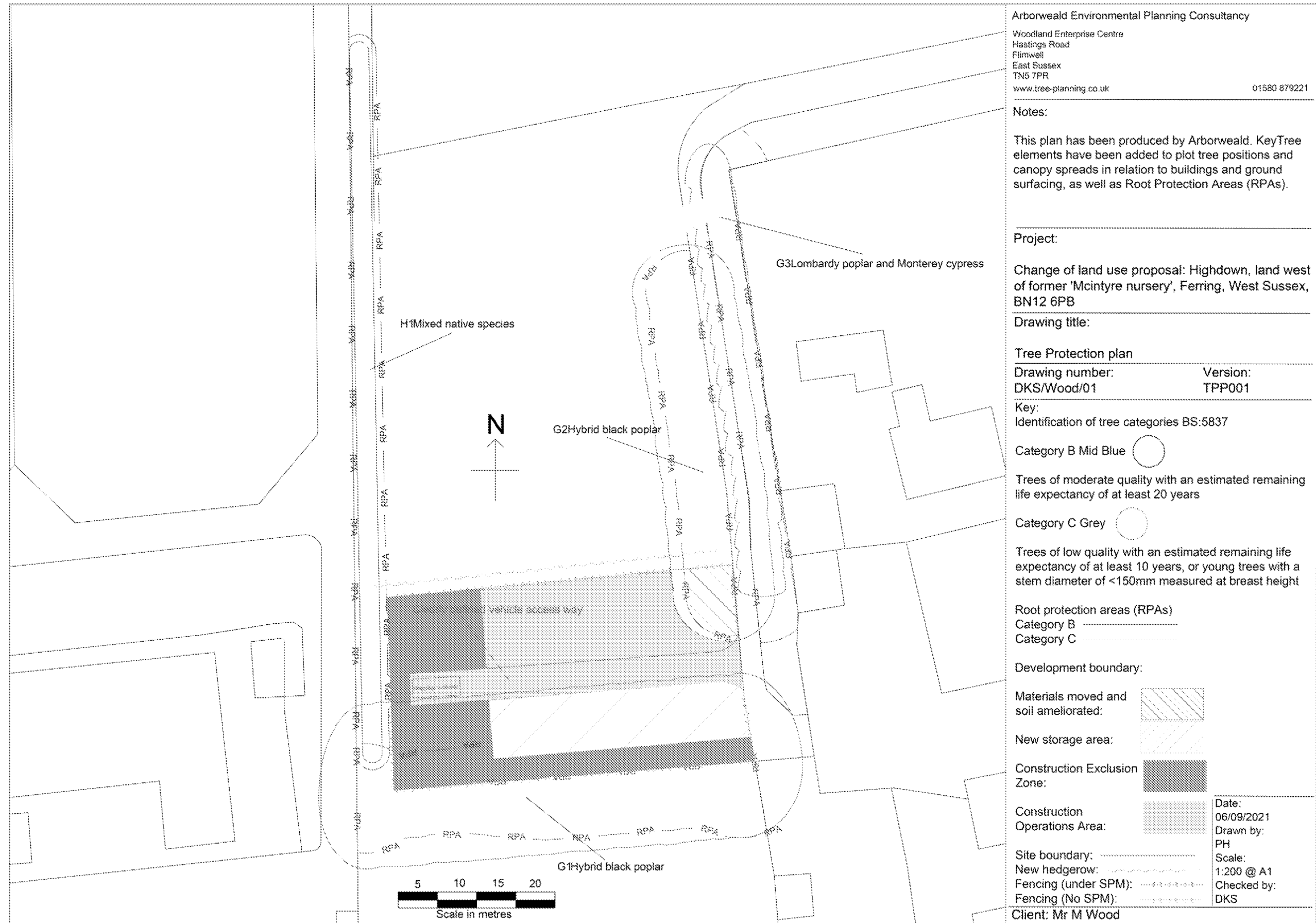
Appendix 2: Existing Arboricultural Constraints



Plan not to scale, scaled plans are submitted separately to this report

Appendix 3: Tree Protection Plan and Recommendations

Arborweald Environmental Planning Consultancy
BS. 5837 Report: Highdown-Land West of former McIntyre Nursery, Ferring, West Sussex BN12 6PB.
Reference: DKS/Wood01. Date: August 2021



Appendix 4: Arboricultural Supervision and Audit Form

Company:

Inspector:

Site:

Reference Number:

Inspection Date:

Scrub, Tree, Group, Woodland Edge Number:

Development Status

Pre-development ☐

Development phase ☐

Development paused ☐

Status of Protection Measures

Where required previous remedial measures implemented ☐

All protection measures in place in full compliance with the Arboricultural Protection Method Statement (APMS) ☐

All protection measures not in full compliance with the APMS ☐

Remedial measures required due to the following within the Construction Exclusion Zone:

Ground contamination ☐ Changed soil levels ☐ Excavations ☐ Vehicle movements ☐

Cement washings ☐ Material storage ☐ Water run off ☐ Ground compaction ☐

Unauthorised tree works ☐

Remedial measures required due to the following barrier condition:

Barrier erection does not accord with the APMS ☐ Barrier not in place ☐

Barrier not intact ☐ Ground protection not in place ☐

Any other faults/breaches ☐

Details

Where remedial measures required:

Details

Where alternate tree protection measures are proposed:

General Comments

Date of next inspection:

Copied to client 

Copied to Site Manager 

Copied to Local Planning Authority 

Appendix 5. Suitable Hedge and Climbing Species for Screen Planting

Native Hedging Species

Blackthorn	<i>Prunus spinosa</i>
Hawthorn	<i>Crataegus monogyna</i>
Guelder rose	<i>Viburnum opulus</i>
Field maple	<i>Acer campestre</i>
Dog rose	<i>Rosa canina</i>

Native Climbing species

Clematis	<i>Clematis vitalba</i>
Honeysuckle	<i>Lonicera periclymenum</i>

References

British Standards Institute 5837. (2012). Trees in relation to design, demolition and construction; Recommendations, British Standards Institute

British Standards Institute 3998. (2010). Tree Work; Recommendations, British Standards Institute

Mattheck C. and Breloer H. (1994). Body Language of Trees, Her Majesty's Stationary Office.