HAYDEN'S
Arboricultural Consultants

TREE SURVEY & CONSTRAINTS PLAN
IN ACCORDANCE WITH BS 5837:2012

Proj. No **6953**	**Innovation Park Northern and Southern Areas, Rochester Airport, Chatham, Kent, ME5 9SD**
Client:	LDA Design
Date of Report:	06/09/2018

Contact Details

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1.0 Introduction

1.1 Terms of Reference

1.1.1 Hayden's Arboricultural Consultants Limited has been commissioned by LDA Design to prepare a Tree Survey and Constraints Plan for the existing trees at Innovation Park Northern and Southern Areas, Rochester Airport, Chatham, Kent, ME5 9SD.

1.1.2 The site survey was carried out on the 29th August 2018. The relevant qualitative tree data was recorded in order to assess the condition of the existing trees, their constraints upon the prospective development and the necessary protection required to allow their retention as a sustainable and integral part of any future permitted development.

1.1.3 Information is given on condition, age, size and indicative positioning of all the trees, both on and affecting the site. This is in accordance with the British Standard 5837: 2012 *Trees in relation to design, demolition and construction - Recommendations.*

1.2 Scope of Works

1.2.1 The survey of the trees and any other factors are of a preliminary nature. The trees were inspected on the basis of the Visual Tree Assessment (VTA) method as developed by Mattheck and Breloer (1994). The trees were inspected from ground level with no climbing inspections undertaken. It is not always possible to access every tree and as such some measurements may have to be estimated. Trees with estimated measurements are highlighted in the schedule of trees. No samples have been removed from the site for analysis. The survey does not cover the arrangements that may be required in connection with the removal of existing underground services.

1.2.2 Whilst this is an arboricultural report, comments relating to non arboricultural matters are given, such as built structures and soil data. Any opinion thus expressed should be viewed as provisional and confirmation from an appropriately qualified professional sought. Such points are clearly identified within the body of the report.

1.2.3 An intrinsic part of tree inspection in relation to development is the assessment of risk associated with trees in close proximity to persons and property. Most human activities involve a degree of risk with such risks being commonly accepted, if the associated benefits are perceived to be commensurate. In general, the risk relating to trees tends to increase with the age of the trees concerned, as do the benefits. It will be deemed to be accepted by the client that the formulation of the recommendations for all tree management will be guided by the cost-benefit analysis (in terms of amenity), of the tree work.

1.2.4 Where the trees inspected stand within woodland, the frequency with which these trees/woodlands are accessed, or will be accessed, must be considered as an integral part of the recommendations given for the future management of these trees/woodlands. Priority will be given to those trees near existing and proposed footpaths, public highways and the site boundaries where it is assumed that the presence of persons and property will be more frequent and therefore of a potentially higher risk. Many of the trees surveyed within the woodland areas present little or no risk (barring exceptional circumstances) to site users and could therefore be left unmanaged.

The decision regarding the frequency of use of these areas within the site, and the management decisions taken based on this frequency, must ultimately be the responsibility of the client.

1.3 Documentation

1.3.1 The following documentation was provided prior to the commencement of the production of this report;

- Email of instruction from Mark Williams dated 1st August 2018
- Definition of site boundary
- Aerial survey

2.0 The Site

2.1 Site Overview

2.1.1. The site is contained within two separate areas: the first to the south of Rochester Airport and the second currently part of the northern section of the airport. The southern section is currently a storage site for caravans. The arboricultural features on this site are mainly contained within a woodland belt which encircles the site providing high level of screen and habitat value. This woodland area has been subject to minimal intervention recently and is of varying condition throughout. There are also several individual trees of different species and conditions to be found scattered through this area. The northern section comprises mostly shrubs and a few small, poor quality trees.

2.2 Soils

2.2.1 The soils type commonly associated with this site are slightly acidic loams and clays with impeded drainage. They are of moderate to high fertility and support a wide range of pasture and woodland type habitats. This soil type constitutes approximately 10.6% the total English land mass.

2.2.2 The data given was obtained from a desk top study which provides indications of likely soil types. By definition, this information is not comprehensive and therefore any decisions taken with regards the management, usage or construction on site should be based on a detailed soil analysis.

2.2.3 Further to item 2.2.2, this report provides no information on soil shrinkability. It may be necessary for practitioners in other disciplines (e.g. engineers considering foundation design) to obtain this data as required.

2.3 Statutory Tree Protection

2.3.1 Hayden's Arboricultural Consultants Limited have been unable to ascertain whether the trees identified within this report are covered by local planning authority administered statutory tree protection. In view of this, owners, managers or any persons wishing to undertake work to any trees should contact the local planning authority Medway Council, to ensure no such protection measures exist.

2.3.2 **Felling License**

All trees within the United Kingdom are protected under the Forestry Acts. In general, anyone felling more than 5 cubic metres of timber in any calendar quarter requires a Felling License from the Forestry Commission. There are exemptions however and these are as follows:-

A Felling License is not required in the following instances:

- To fell trees in a garden, an orchard, a churchyard, or a designated open space (Commons Act 1899).
- To carry out surgery operations such as pruning, reduction, dead wooding or pollarding.
- To fell less than 5 cubic metres in a calendar quarter. (Please note that not more than 2 cubic metres in a calendar quarter may be sold).
- To fell trees which are 8 centimetres or less in diameter when measured 1.3 metres from the ground. Trees removed for thinning may have a diameter of up to 10 centimetres and trees managed under a coppice regime may have a diameter of up to 15 centimetres.
- To fell trees previously approved for removal under a Dedication Scheme, or where Detailed Planning Permission has been granted.

Substantial fines exist for not complying with the requirements of a Felling License.

3.0 Tree Survey

3.1 As part of this survey a total of sixteen individual trees, four groups of trees, four areas of trees and one woodland have been identified. These have been numbered T001 – T016, G001 – G004, A001 – A004 and W001 (inc. W001a) respectively.

3.2 An accurate topographical survey was not available at the time of inspection. Therefore, the position of each tree shown on the attached drawing no. 6953-D-CP has been fixed by use of a hand-held GPS surveying unit. Given this, the position of the trees must be considered indicative, although drawing no. 6953-D-CP provides a fair representation of the relationship of the trees as distributed across the site.

3.3 In order to provide a systematic, consistent and transparent evaluation of the trees included within this survey, they have been assessed and categorised in accordance with the method detailed in item 4.3 of *BS 5837: 2012 "Trees in Relation to Design, Demolition and Construction - Recommendations"*. For further information, please see the attached Explanatory Notes.

3.4 The detailed assessment of each tree and its work requirements with priorities are listed in the attached Schedule of Trees.

3.5 Several items would benefit from tree surgery or additional investigation, be it for health and safety, cultural, aesthetic, or structural reasons as detailed in the attached Schedule of Trees. Including the trees recommended for felling, the items requiring the **most urgent** intervention are as follows:

As soon as possible:

T001	Fell to ground level.
T014	Fell to ground level.
T016	Fell to ground level.

Within six months:

A004	Fell dead ash as indicated on drawing no. 6953-D-CP.
G004	Remove ivy from lower stems and undertake a close inspection when able to access.
T002	Fell to ground level.
T003	Fell to ground level.

3.6 In accordance with item 4.2.4 (c) of BS 5837: 2012, the items inspected and detailed within this report have been selected for inclusion due to the likely influence of any proposed development on the trees, rather than strictly adhering to the curtilage of the site. However, it must be understood that there may be trees beyond the site and not included in this survey which may exert an influence on the development. Where works for cultural, health and safety, quality of life, or development purposes have been recommended on trees outside the ownership of the site, these can only progress with the agreement of the owner, except where it involves portions of the trees overhanging the boundary.

4.0 Constraints upon Proposed Development

4.1 Physical Extent of the Trees

4.1.1 The Root Protection Areas (RPA) for the trees deemed worthy of retention are indicated on the attached Drawing No. 6953-D-CP. These define the below ground constraints of the trees.

4.1.2 The crown spreads of the trees deemed worthy of retention are also indicated on the attached Drawing No. 6953-D-CP. These define the above ground constraints of the trees.

4.2 Design Considerations

4.2.1 The combination of the above and below ground constraints outlined at 4.1 above, should be used to inform the layout and design of any proposed development by considering the following principal factors;

4.2.2 **Shade.** Consideration will be needed regarding the size, positioning and aspect of windows, together with the internal layout of dwellings in close proximity to trees to ensure sufficient daylight enters rooms or buildings. Consideration should also be given to the future growth potential of trees in close proximity to prospective development.

4.2.3 **Water Demand.** The water demand of the trees deemed worthy of retention, as listed by the NHBC, is given in the attached *Schedule of Trees* in order to inform the foundation design process.

4.2.4 **Siting.** Ideally, the footprint of any proposed building should be no closer than 2 metres from the edge of any RPA or crown spread of any trees to be retained. This is to ensure that sufficient room is provided to allow the construction of the proposed development without any encroachment into the RPA or under the crown spread. If it is considered acceptable and appropriate to construct within the RPA, specialist engineering techniques (e.g. cantilever, piling, or pad and above ground beam foundations) and ground protection measures will be required to minimise the impact on the roots.

4.2.5 **Practicality.** It is important to ensure that any garden attached to a dwelling has a significant area of open ground that is not covered by the crowns of retained trees.

4.3 Construction Measures

4.3.1 In order to ensure that trees intended for retention are not harmed during the construction processes, the following matters require consideration and implementation as necessary. Please note that once the design is finalised, Hayden's Arboricultural Consultants will provide a Preliminary Arboricultural Method Statement & Tree Protection Plan that will satisfy the requirements for obtaining planning permission.

4.3.2 **Protective Fencing.** The trees to be retained will need to be protected by the use of stout barrier fencing. This fencing must be in accordance with the requirements of BS 5837: 2012 and will be erected prior to any development on the site, therefore ensuring the maximum protection. All tree protection barrier fencing will be regarded as sacrosanct and, once erected, will not be removed or altered without the prior consent of the Local Planning Authority Arboricultural Officer.

4.3.3 **Services.** Ideally, all service runs will be routed outside of the RPA of any retained trees. If a service has to be installed across an RPA, works must be undertaken in accordance the guidance of the National Joint Utilities Group Guidance Note 4 "*Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees*" (NJUG 4 paragraph 4) and installation of such a method as to reduce any possible detrimental effect on roots to an absolute minimum.

4.3.4 **Hard Surfaces.** Hard surfaces may be constructed under the crown spreads of retained trees and within the RPA if specific detail is paid to the design and specification. In these areas, the design will comply with the principles of the Arboricultural Advisory Information Services (AAIS) Practice Note 12 "*Through the Trees to Development*" - the only difference being that instead of a geo-grid, a geo-textile base is provided, and the no-fines road stone is incorporated in, and retained by, a geo-web cellular confinement system. Given the individual requirements of each site, it is essential that a specialist engineer is consulted to specify the construction detail. Where the hard surface proposed is impermeable, it must not cover more than 20% of the RPA. Larger extents of permeable surfacing may be acceptable, dependant on the individual circumstances of the site.

5.0 Conclusions

5.1 The site is Innovation Park Northern and Southern Areas, Rochester Airport, Chatham, Kent, ME5 9SD. This location has been subjected to a total health and safety inspection, together with a consideration of the tree related constraints on development.

5.2 Within the area specified for inspection, a total of sixteen individual trees, four groups of trees, four areas of trees and one woodland have been surveyed. These were found to be of mixed condition and age providing a variety of amenity benefits.

5.3 Consideration is being given to undertaking development within the site, but no definite layout has as yet been determined.

5.4 Ideally, all development should take place outside the RPA of the trees considered most worthy or appropriate for retention thus allowing a traditional construction process. It is usually technically possible (though not necessarily desirable) to build within a very limited portion of the RPA of one or more trees using specialist engineering techniques, but inevitably this is more difficult and expensive than traditional construction methods and may not be acceptable to the local planning authority.

5.5 Irrespective of any development proposals, a number of trees require attention as detailed items in the *Schedule of Trees*. As recorded at item 3.5 above, three individual tree requires urgent intervention and another four items need attention within six months.

6.0 Recommendations

6.1 It is recommended that the siting and design of the layout considers the presence of trees, particularly the highest quality, and where feasible seeks to incorporate them within any proposed development.

6.2 Tree surgery should be completed as detailed in the *Schedule of Trees*. Where this has been identified for reasons other than to permit development, this work should be completed within the advised timescales irrespective of any development proposals.

6.3 The tree surgery works proposed as part of the Survey are recommended to mitigate any identified health and safety problems and to promote longevity in retained trees in the context of a potential development site. To this end, should these recommendations be overruled, this Survey stands as the opinion of Hayden's Arboricultural Consultants Limited, and therefore any damage or injury caused by trees recommended by this practice for felling or tree surgery works, to which the proposed schedule of works has been altered or the tree has been requested to be retained by the Local Planning Authority, cannot be the responsibility of this practice.

7.0 Limitations & Qualifications

Tree inspection reports are subject to the following limitations and qualifications.

General exclusions

Unless specifically mentioned, the report will only be concerned with above ground inspections. No below ground inspections will be carried out without the prior confirmation from the client that such works should be undertaken.

The validity, accuracy and findings of this report will be directly related to the accuracy of the information made available prior to and during the inspection process. No checking of independent third-party data will be undertaken. Hayden's Arboricultural Consultants Limited will not be responsible for the recommendations within this report where essential data are not made available or are inaccurate.

This report will remain valid for one year from the date of inspection but will become invalid if any building works are carried out upon the property, soil levels altered in any way close to the property, or tree work undertaken. It must also be appreciated that recommendations proposed within this report may be superseded by extreme weather, or any other unreasonably foreseeable events.

If alterations to the property or soil levels are carried out, or tree work undertaken, it is strongly recommended that a new tree inspection be carried out.

It will be appreciated, and deemed to be accepted by the client and their insurers, that the formulation of the recommendations for the management of trees will be guided by the following: -

1. The need to avoid reasonable foreseeable damage.
2. The arboricultural considerations - tree safety, good arboricultural practice (tree work) and aesthetics.

The client and their insurers are deemed to have accepted the limitation placed on the recommendations by the sources quoted in the attached report. Where sources are limited by time constraints or the client, this may lead to an incomplete quantification of the risk.

Signed:

September 2018…….
For and on Behalf of Hayden's Arboricultural Consultants Limited

8.0 References

British Standards Institute (2012) *BS 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations.* BSI, London.

Department for Communities and Local Government (2014) *Tree Preservation Orders and trees in conservation areas.*

Forestry Commission (2007) *Tree Felling – Getting Permission.* Country Services Division, Forestry Commission, Edinburgh.

Mattheck, C. and Breloer, H. (1994) *Research for Amenity Trees No. 4: The Body Language of Trees*. HMSO, London.

NHBC Standards (2007) *Chapter 4.2 'Building Near Trees'.* National House-Building Council.

NJUG 4 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Issued 16th November 2007.

Patch, D. and Holding, B. (2006) *Arboricultural Practice Note 12 (APN12)*, *Through the Trees to Development.* Arboricultural Advisory and Information Service (AAIS).

Roberts, J., Jackson, N. & Smith, M. (2006) *Research for Amenity Trees No. 8: Tree Roots in the Environment*. Department for Communities and Local Government. HMSO, London.

9.0 Appendices

Appendix **A** Species List & Tree Problems

Appendix **B** Schedule of Trees

Appendix **C** Schedule of Works - Irrespective of Development

Appendix **D** Explanatory Notes

Appendix **E** 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 stabilizing systems

Appendix **F** Drawing No. 6953-D-CP

Appendix A - Species List & Tree Problems

Species List:

Ash	*Fraxinus excelsior*
Aspen	*Populus tremula*
Cherry Plum	*Prunus cerasifera*
Cypress	*Cupressus* spp.
Elder	*Sambucus nigra*
English Oak	*Quercus robur*
Field Maple	*Acer campestre*
Goat Willow	*Salix caprea*
Grey Poplar	*Populus canescens*
Hawthorn	*Crataegus monogyna*
Hornbeam	*Carpinus betulus*
Hybrid Black Poplar	*Populus* x *canadensis*
Leyland Cypress	X *Cuprocyparis leylandii*
Rowan	*Sorbus aucuparia*
Silver Birch	*Betula pendula*
Snowy Mespilus	*Amelanchier lamarckii*
Sweet Chestnut	*Castanea sativa*
Sycamore	*Acer pseudoplatanus*
Wayfaring Tree	*Viburnum lantana*
Wild Cherry	*Prunus avium*

Tree Problems:

This gives a brief description of the problems identified in the attached Tree Survey.

Name: **Ash Dieback** (*Hymenoscyphus fraxineus*):	
Symptoms/Damage Type:	Symptoms of the disease can be visible on leaves, shoots, stems and branches of affected trees. In severe cases, the entire crown shows leaf loss and dieback, which is often associated with the formation of Epicormic shoots on branches and the trunk. Ash tree showing symptoms of Chalara fraxinea are now widespread across Europe and Britain.
Consequence:	The disease caused leaf loss and crown dieback in affected trees and often leads to tree death.
Control Measures:	You can report suspect trees via the Forestry Commission Tree Alert page t: www.forestry.gov.uk/treealert. You do not need to take any particular action if you own infected Ash trees, unless serves with a Plant Health Notice. You can slow the spread of the Ash dieback disease by locally burning, burying or composting fallen Ash leaves.

Name: **Basal Suckers**	
Symptoms/Damage Type:	A profusion of shoots emanating from the base of the main stem close to ground level. Several species of trees but most notably Limes produce suckers as part of their naturalised habit however in some species this can be an indicator of elevated stress upon the tree.
Consequence:	Suckers do not cause direct harm to the tree in their self however they can be problematic where they impede free use of space such as where a tree is adjacent to a footpath or roadway. Where suckers are established they can impede visibility of the basal area of the stem and prevent identification of more significant defects such as decay cavities or fungal growths. If left unchecked the suckers can establish to become large limbs in their own right and spoil the form of the tree and presenting issues for future management as removal would leave large wounds around the stem base providing opportunity for ingress of decay.
Control Measures:	Regular pruning away of new sucker growth is recommended to prevent the development of the issues mentioned above dependent upon the implications and the trees location.

Name: **Deadwood**	
Symptoms/Damage Type:	This relates to dead branches in the crown of the tree. In the majority of cases, this is caused by the natural ageing process of the tree or shading due to its close proximity to neighbouring trees. However, in some situations, it may be related to fungal, bacterial or viral infection.
Consequence:	Depending upon the location and mass of dead wood removal of the affected tissue may be necessary to prevent harm to persons or property as the wood will become unstable as it decays and in some circumstances is likely to fall from the tree with little or no warning.
Control Measures:	Detailed monitoring should be undertaken on those trees showing signs of excessive deadwood production to identify the underlying cause.

Name: **Epicormic growth**	
Symptoms/Damage Type:	This is the production of numerous shoots on the main stem and branches of the tree. They are produced by the bursting into life of otherwise dormant buds. It is commonly associated with elevated levels of stress on the tree.
Consequence:	Whilst epicormic growth is usually symptomatic of an issue elsewhere within the tree heavy proliferation can cause the trees resources to become depleted or may mask significant structural weaknesses within the framework of the tree.
Control Measures:	Pruning off epicormic growth may be necessary to improve the visual amenity of the tree or prevent the development of a hazard or obstruction. No direct means of prevention are available other than therapeutic measures to alleviate stresses on the tree.

Name: **Ivy** (*Hedera helix*)	
Symptoms/Damage Type:	Ivy may grow to varying degrees on all areas of a tree from the base to the upper crown. It is possible that in doing so it will out-compete the host tree for available light thereby suppressing the host.
Consequence:	This is generally only harmful to the tree on already unhealthy specimens which may be constricted by large ivy stems around the trunk or may have their top growth suppressed by a mass of flowering shoots in the crown.
Control Measures:	Ivy should only be removed if absolutely necessary because it provides abundant cover to wildlife and then by severing twice close to the ground and removing a length of stem thereby causing the gradual dying away of the aerial parts of the plant providing extended benefit to wildlife whist relieving the pressure on the tree.

Appendix B

Schedule of Trees

SCHEDULE OF TREES

Innovation Park Northern and Southern Areas, Rochester Airport, Chatham, Kent

Surveyed By: Ben Figg Date: 29/08/2018
Managed By: Ben Figg

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required	Priority
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand				
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover				
A001	Hornbeam, Elder, Cherry Plum, Field Maple, Wayfaring Tree	350	11.5		Moderate	N4.5, E4.5, S4.5, W4.5	Mixed species area comprising a dense linear feature forming boundary screen. Mostly over-mature elder and dying Hornbeam.	U	No work required.	4
		4.2	0-2m		M	Moderate				
Yes		55.4			<10 Years	Dense undergrowth				
A002	Ash, Sycamore, Wild Cherry, Sweet Chestnut, Hornbeam, Elder	170	12		Low	N2.5, E2.5, S2.5, W2.5	Dense mixed species area which is regularly coppiced to ensure clearance for approach to neighbouring runway.	C1	No work required.	4
		2.04	0-2m		EM	Moderate				
Yes		13.1			10 + years	Dense undergrowth				
A003	Ash, Wild Cherry Plum, Dogwood, Hawthorn, Viburnum	160	6.5		Moderate	N2.0, E2.0, S2.0, W2.0	An area of mostly dense shrubs containing some young self set trees.	C2	No work required.	4
		1.92	0-2m		M	High				
Yes		11.6			10 + years	Dense undergrowth				
A004	Sweet Chestnut, Birch, Ash, English Oak	400	21.5		Moderate	N6.5, E6.5, S6.5, W6.5	A mixed species area of even aged trees which are mostly healthy and of good condition and with adequate spacing. There is one dead Ash located centrally (see drawing no 6953-D-CP for approximate location).	B2	Fell dead ash as indicated on drawing no. 6953-D-CP.	2
		4.8	0-2m		M	High				
Yes		72.4			20+ years	Grass, Woodland floor				
G001	Sweet Chestnut	450	11		Moderate	N3.0, E3.0, S3.0, W3.0	Group of recently coppiced Chestnut which all appear healthy. There was no safe access at the time of the survey to carry out a detailed inspection.	C2	No work required.	4
		5.4	0-2m		EM	Moderate				
Yes		91.6			10 + years	Woodland floor				
G002	Hornbeam	410	15.5		Moderate	N6.0, E6.0, S6.0, W6.0	A pair of trees which are of good condition and structure despite having been topped in the past. There is some impact damage to bases and visible surface roots, though with no decay evident and these wounds should fully occlude in time, provided that further damage is avoided and the health of the trees is maintained.	C2	No work required.	4
		4.92	2.1-4m		EM	Moderate				
Yes		76			20+ years	Grass, Tarmac				
G003	Aspen, Cypress	450	15.5		Moderate	N4.5, E4.5, S4.5, W4.5	A small group of poor quality trees exhibiting poor structural form. Aspen have been topped in past but re-growth is poor. The cypress is becoming suppressed by neighbouring oak.	U	No work required.	4
		5.4	0-2m		EM	High				
Yes		91.6			<10 Years	Grass, Tarmac				

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required	Priority
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand				
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover				
G004	Hybrid Poplar	600	19.5		High	N6.0, E6.0, S6.0, W6.0	A group of large poplars adjacent to a roadside. Trees are within a fenced disused industrial area, so all dimensions are estimated. All trees appear healthy. There is dense Ivy covering the stems, which may mask any defects.	C1	Remove ivy from lower stems and undertake a close inspection when able to access.	2
		7.2	2.1-4m		M	High				
Yes		162.9			10 + years	Grass, Tarmac				
T001	Silver Birch	300	10		Low	N3.0, E3.0, S3.0, W3.0	A dead Birch located at the edge of the woodland area currently overhanging caravans and is heavily covered with Ivy.	U	Fell to ground level.	1
		3.6	2.1-4m		SM	Low				
Yes		40.7			<10 Years	Woodland floor				
T002	Wild Cherry	130	5		Low	N1.0, E1.0, S1.0, W1.0	A small dead Cherry.	U	Fell to ground level.	2
		1.56	2.1-4m		SM	Low				
Yes		7.6			<10 Years	Woodland floor				
T003	Silver Birch	200	10		Low	N3.0, E3.0, S3.0, W3.0	Dead Birch.	U	Fell to ground level.	2
		2.4	2.1-4m		EM	Low				
Yes		18.1			<10 Years	Woodland floor				
T004	Field Maple	700	14.5		High	N5.0, E5.0, S5.0, W5.0	A mature tree located within an area of poorer quality trees on top of a bund, forming an attractive landscape feature which could be usefully singled out if desired, provided that the removal of the bund will not be required. Tree has good structural form and is healthy.	B2	No work required.	4
		8.4	2.1-4m		M	Moderate				
Yes		221.7			40+ years	Grass, Woodland floor, Dense undergrowth				
T005	Hornbeam	470	13.5		High	N5.0, E5.0, S5.0, W6.5	Tree has no visible defects and is in good condition and health.	B1	No work required.	4
		5.64	2.1-4m		M	Moderate				
Yes		99.9			40+ years	Grass				
T006	English Oak	480	15		High	N4.5, E7.0, S7.5, W7.5	A tree located at the end of a dense linear strip of trees which has been managed as a pollard in the past. There is cracking in the surrounding concrete as a result of direct damage from the roots through annual thickening. This tree appears healthy.	C1	No work required.	4
		5.76	2.1-4m		EM	High				
Yes		104.2			20 + years	Tarmac, Concrete				
T007	Snowy Mespilus	220	7.5		Low	N3.0, E3.5, S4.0, W3.5	A large stem has been removed leaving a large pruning wound which will likely never fully occlude. This will likely lead to decay in future, therefore shortening the expected lifespan of the tree.	U	No work required.	4
		2.64	0-2m		M	Moderate				
Yes		21.9			<10 Years	Grass, Tarmac				

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required	Priority
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand				
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover				
T008	English Oak	550	21		High	N5.0, E8.0, S8.0, W9.0	This tree has been topped in past but the subsequent re-growth has developed a new crown with no significant defects apparent. The tree is slightly asymmetric in shape due to the existence of the neighbouring woodland. This tree appears healthy.	B1	No work required.	4
		6.6	0-2m		M	High				
Yes		136.8			40+ years	Grass, Tarmac				
T009	Silver Birch	280	15.5		Moderate	N3.5, E3.5, S3.5, W3.0	A healthy tree, though of stunted form with visible surface roots within the drip line.	C1	No work required.	4
		3.36	0-2m		EM	Low				
Yes		35.5			10 + years	Grass				
T010	Silver Birch	240	12		Moderate	N3.5, E3.0, S4.0, W3.0	A tree of stunted form with low vigour and visible surface roots within the drip line.	U	No work required.	4
		2.88	0-2m		EM	Low				
Yes		26.1			<10 years	Grass				
T011	Field Maple	410	15.5		Moderate	N4.5, E5.0, S5.0, W4.5	An attractive tree with good structural form and appearing healthy. There are surface roots visible to 4m from the stem in all directions, where minor bark damage can be seen. This should however fully occlude in time, provided that the tree remains healthy and further damage is avoided.	B1	No work required.	4
		4.92	2.1-4m		M	Moderate				
Yes		76			40+ years	Grass, Tarmac				
T012	Rowan	310	10.5		Low	N2.5, E2.5, S2.5, W2.5	A small tree of multi-stemmed form and tight main unions with included bark. There is a wound on the lower stem, though this is occluding well.	C1	No work required.	4
		3.72	2.1-4m		M	Moderate				
Yes		43.5			<10 years	Grass, Tarmac				
T013	Grey Poplar	830	24		High	N11.0, E10.0, S10.0, W9.5	A large healthy tree which is twin stemmed from 3m but with good structural form. There are visible surface roots with some suckering within the soft area to the east of the tree within the drip line. There is a small amount of deadwood throughout the crown, though no significant visible defects.	B1	No work required.	4
		9.96	2.1-4m		M	High				
Yes		311.7			20+ years	Grass, Tarmac				
T014	Hornbeam	150	13		Low	N1.0, E1.0, S1.0, W1.0	The upright stem on the east side of the tree is dead. There is decay feeding into the live stem which overhangs the road.	U	Fell to ground level.	1
		1.8	0-2m		EM	Moderate				
Yes		10.2			<10 Years	Woodland floor				
T015	Goat Willow	230	6		Low	N3.5, E3.5, S3.5, W3.5	A regularly coppiced Willow which appears healthy, though has grown through the wire fence.	C1	No work required.	4
		2.76	0-2m		M	High				
Yes		23.9			10 + years	Grass, Tarmac				

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required	Priority
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand				
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover				
T016	Ash	170	15		Low	N3.0, E3.0, S3.0, W7.0	A very poor quality tree located at the edge of the woodland area, overhanging the road and the site access. This tree features crown dieback.	U	Fell to ground level.	1
		2.04	4.1-6m		SM	Moderate				
Yes		13.1			<10 Years	Woodland floor, Tarmac				
W001	Oak, Wild Cherry, Ash, Sweet Chestnut, Hornbeam, Beech, Goat Willow, Aspen, Sycamore, Silver Birch, Hawthorn, Field Maple, Leyland Cypress	500	22		High	N7.0, E7.0, S7.0, W7.0	A mixed species woodland of mixed ages and mostly of good condition. Feature forms a dense boundary screen between site and surrounding land and roads. Minimal understory in most areas. Dense Ivy covers the stems of some trees, limiting inspection. There is potential to improve this woodland through management to recommence coppicing and introduce coppice management to other areas to improve density and structure while allowing the introduction of some understory planting. There is deadwood throughout this feature as would be expected in a woodland. There is a small area within the woodland belt towards the north-east corner of the caravan park where several trees have been recently windblown, which present options for interplanting with understory species and some coppicing works to prevent further windthrow failures.	B2	No work required.	4
		6	0-2m		M	High				
Yes		113.1			20+ years	Woodland floor, Ivy				
W001a	Sweet Chestnut	900	22		High	N5.0, E5.0, S5.0, W5.0	Group of lapsed Chestnut coppice which requires recommencement of a cyclical coppice regime to ensure their longevity and continuation of associated habitat.	B2	No work required.	4
		10.8	0-2m		M	Moderate				
Yes		366.4			20+ years	Woodland floor				

Appendix C

Schedule of Works

SCHEDULE OF WORK

Innovation Park Northern and Southern Areas, Rochester Airport, Chatham, Kent

Surveyed By: Ben Figg
Surveyed: 29/08/2018
Managed By: Ben Figg

Tree No.	Species	Work required	Priority
T001	Silver Birch	Fell to ground level.	**1**
T014	Hornbeam	Fell to ground level.	**1**
T016	Ash	Fell to ground level.	**1**
A004	Sweet Chestnut, Birch, Ash, English Oak	Fell dead ash as indicated on drawing no. 6953-D-CP.	**2**
G004	Hybrid Poplar	Remove ivy from lower stems and undertake a close inspection when able to access.	**2**
T002	Wild Cherry	Fell to ground level.	**2**
T003	Silver Birch	Fell to ground level.	**2**

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.

V Veteran. An over-mature specimen, usually of high value due to either its age, size and/or ecological significance

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.

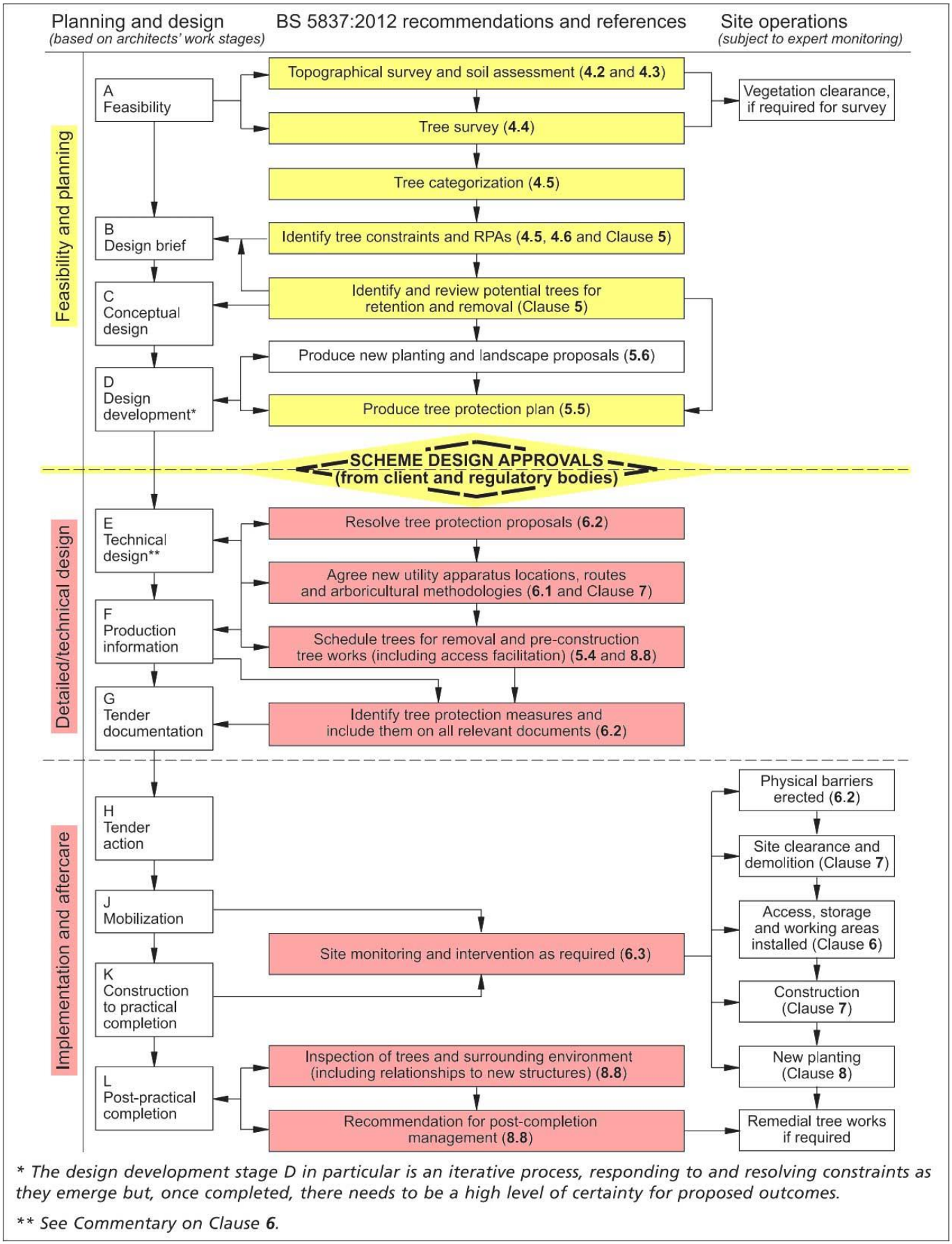
BS 5837:2012 Terms and Definitions

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

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 ☐ NO ☐

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 ☐

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

YES ☐ NO ☐

Details

Name of Wood:

Grid Reference:

Area: (ha) .

Date of Assessment:

Name of Assessor:

Notes

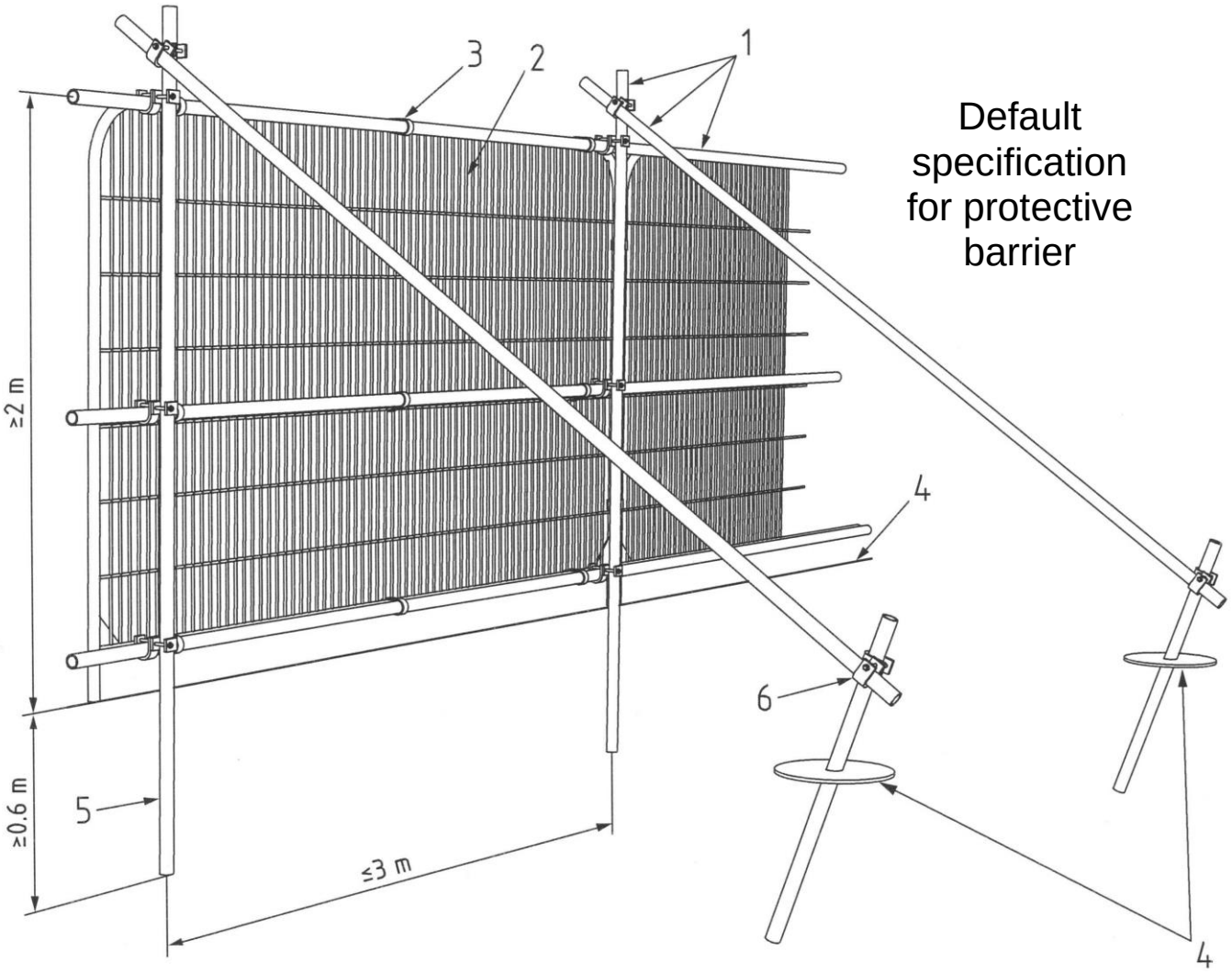
A licence is not required but continue to sections 6 and 7 below

You will need to obtain a licence BEFORE carrying out the work (see EPS Licence Application Forms and Notes)

You may commit an offence if you do not tell your operators about the protected species in your wood.

You may commit an offence if you do not take steps to ensure that your operators comply with the Good Practice guidance.

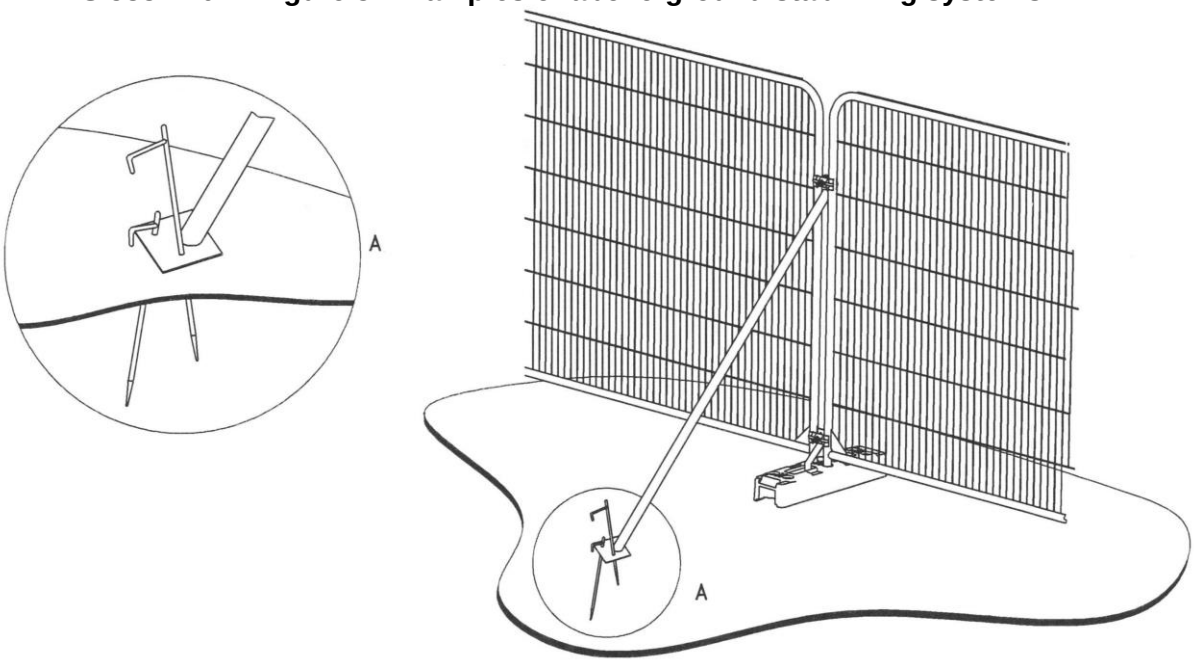
3. BS 5837:2012 Figure 2: Default specification for protective barrier



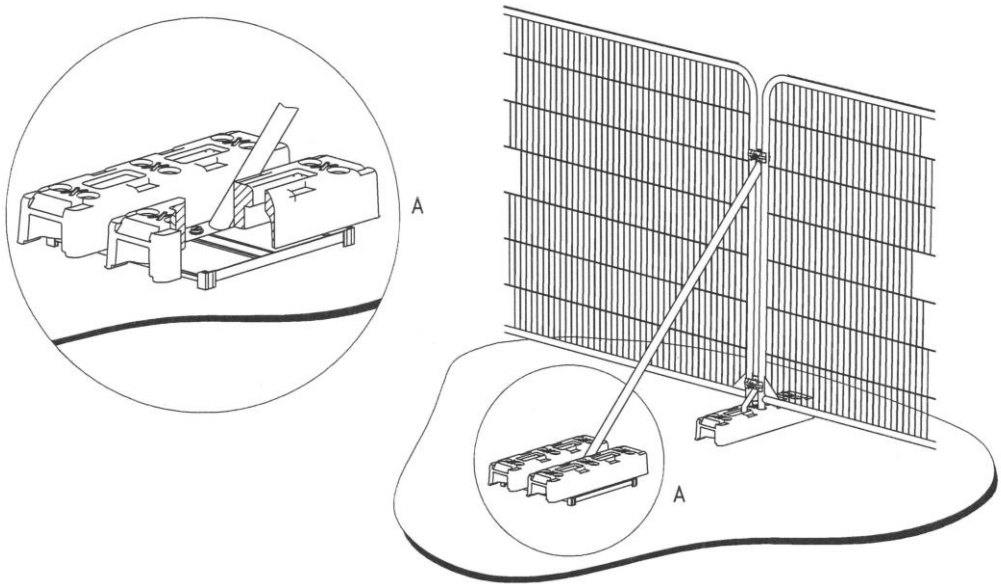
Key

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

Appendix F

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