arbconsultants ltd

Arboricultural Implication Assessment (AIA)

Clifton House Farm

Prepared by

Arbconsultants Ltd

Consultants in Urban Forestry, Arboriculture and Environmental Sciences

June 2017

arbconsultants ltd
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1. Scope and Limitations of Report

1.1 This report has been commissioned by Gavin Oates of Graham Anthony Associates and the scope of the report reflects his instructions.

1.2 The scope of the report is limited to a visual inspection of the trees (VTA Visual Tree Assessment).

1.3 The brief is to appraise the trees in relation to the proposed development of the site in accordance with British Standard 5837:2012 'Trees in relation to Construction – Recommendations'.

1.4 To prepare a clear set of report recommendations with supporting plans and data to facilitate consideration of the Arboricultural implications by the Local Planning Authority.

1.5 To consider the development proposals and identify areas where there are arboricultural issues and to recommend possible solutions.

1.6 To consider additional information supplied and identify arboricultural issues arising from this information and to recommend possible solutions.

1.7 This report is not a Tree Risk Management or a Hazard Analysis Report and its use as such is invalid.

1.8 The report refers to the condition of the trees and an assessment of the site on the day that the evaluation was undertaken. The tree was not climbed but was assessed from ground level.

1.9 Due to the changing nature of trees and their site circumstances this report and any recommendations made are limited to a 1 year period. Any alteration to the application site or any development proposals could change the current circumstances and may invalidate this report and any recommendations made. Should this be the case this report will require revision to reflect the development proposals.

1.10 Trees are dynamic structures that can never be guaranteed 100% safe; even those in good condition can suffer damage under average conditions. Regular inspections can help to identify potential problems before they become acute.

1.11 A lack of recommended work does not imply that a tree is safe and likewise it should not be inferred that a tree will be made safe following the completion of any recommended work.

1.12 Trees dimensions were measured using a combination of a Haglof digital Clinometer, a Leica Disto Laser Rangefinder and a Fujikura Diameter tape. All instruments were used in accordance with appropriate user guides.

1.13 Decay detection where used is undertaken using an IML Resistograph.

1.14 All data provided by the testing equipment has been verified according to the equipment manufacturer's instructions.

1.15 No soil samples were taken and no soils analysis was undertaken.

1.16 Any legal description or information given to Arbconsultants Ltd is believed to be accurate.

1.17 Where solutions to arboricultural problems are specified which require the usage of a third party product e.g. no dig roadway construction. No liability is assumed for the performance or suitability of the product and specialist advice as to the suitability or installation of the product should be sought from the manufacturer or other specialist.

1.18 No responsibility is assumed by Arbconsultants Ltd for legal matters that may arise from this report, and the Consultant shall not be required to give testimony or to attend court unless additional contractual arrangements are made.

1.19 Any alteration or deletion from this report shall invalidate it as a whole.

2. Qualifications and Experience

2.1 My name is Christopher Raper and I am a Consultant practising through Arbconsultants Limited, which is an Arboricultural Consultancy Practice based at Myerscough College, Preston, Lancashire. The Practice Specialises in Arboriculture, Urban Forestry, Biological Sciences and Project Management.

2.2 I am a Consultant specialising in tree failure, hazard evaluation, risk assessment related to trees, planning and development where trees are involved and insurance claims where tree failure is involved and/or building damage occurs which may be attributed to the activity of trees. I have received extensive training in relation to trees, clay soils and subsidence of low-rise buildings. I am a specialist in the field of trees/vegetation and special construction engineering methodologies. I am familiar with different Tree Hazard Evaluation systems and conversant in Visual Tree Assessments (VTA) techniques.

2.3 I have a 1st class honours degree in Arboriculture awarded by Myerscough College in conjunction with the University of Central Lancashire. I have 10 years experience in the Arboricultural industry ranging from Tree Officer with a Local Authority through to Senior Consulting level with Europe's largest specialist Arboricultural Consultancy. I provide guest lectures on Arboricultural Consultancy to the MSc course on Arboriculture and Urban Forestry run by the University of Central Lancashire and Myerscough College. I have attended formal and informal public inquiries and have supplied consultancy advice as part of design, project management and consultant/legal teams.

3. Summary and Proposals

3.1 The survey was carried out at the site of the proposed development within the curtilage of the open space as defined by Graham Anthony Associates and as shown on the plans at appendix 1, 3, 4, 5 and 7. The site consists of arable land with some boundaries defined by hedges.

3.2 The proposal is to build residential properties.

3.3 The topography of the site and the placement of the existing trees / hedges will make the development possible with care and with minimal losses. We are assuming that this small loss of amenity would be acceptable to the LPA providing suitable replacement planting is provided and it is understood that if the development goes ahead there will be extensive planting giving the site a considerably larger arboricultural population. To make the development viable would involve the use of a cellular confinement system within the rhyzospheres of a number of trees. Presuming that the development will go ahead we have detailed in the report the process for retaining these third party trees alongside the build process and have outlined in Appendix 5 the approximate areas that could feasibly be used and still retain the trees.

3.3 We have not been supplied with detailed drawings showing foundation types therefore we have made certain assumptions and have supplied method statements that will cover most contingencies whereby the development may impact upon the trees. If necessary these method statements can be modified once full technical drawings have been produced.

4. BS: 5837:2012 'Trees in relation to construction – Recommendations'

4.1 The trees on site have been surveyed in accordance with BS5837:2012 'Trees in relation to construction – Recommendations'.

4.2 The survey lists all the trees or groups of trees (excluding those trees already scheduled for removal) that may be impacted upon by the development and will include the following information.

- Reference number (to be recorded on the tree survey plan)
- Species
- Height in metres.
- Stem diameter at 1.5m above adjacent ground level (on sloping ground to be taken on the upslope side of the tree base) as per annex D of the Standard or

  a) For trees with two to five stems, the combined stem diameter should be calculated as follows: $\sqrt{(\text{stem diameter 1})^2 + (\text{stem diameter 2})^2 + (\text{stem diameter 5})^2}$

  b) For trees with more than five stems (not illustrated in Annex C), the combined stem diameter should be calculated as follows: $\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$

- Branch spread in meters taken at the four cardinal points to derive an accurate representation of the crown (to be recorded on the tree survey plan).
- Existing height above ground level of first significant branch and direction of growth (e.g. 2.4-N) of the canopy,to inform on ground clearance, crown/stem ratio and shading;
- Life stage (e.g. young, semi-mature, early mature, mature, over-mature).
- General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations;
- Estimated remaining contribution, in years (<10, 10+, 20+, 40+).
- Category U or A to C grading (see 4.5 and Tables 1 and 2), to be recorded on the tree survey plan.

4.3 The survey is attached at **Appendix 2** of this report.

4.4 The British Standard at 5.5.6 states that the following factors need to be considered

a) site construction access; this will be through the existing access gateway and the proposed new road entrances

b) the intensity and nature of the construction activity; the construction will be medium key.

c) contractors' car parking; contractors will be expected to use off-street parking within the site but outwith the RPA's of trees.

d) phasing of construction works; all tree works will be completed and protective barriers will be in place prior to any construction work.

5.0 **Grading category and Recommended Tree Works**

5.1 Trees that have the potential to be affected by the development have been classified according to BS5837:2012.

5.2 Category "A" Trees are classified as high quality and value in such condition as to make a substantial contribution for a minimum of 40 years. No trees surveyed can be considered to be Category A.

5.3 Category "B" i.e. those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested). Category B Trees are defined as trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage).

Tree ID	Species	Category	Details
1	Oak	B	Deadwood - Protect with barriers
2	Oak	B	Deadwood - Protect with barriers
3	Sycamore	B	No Works - Protect with barriers
5	Oak	B	No Works
7	Oak	B	Deadwood - Protect with barriers
8	Oak	B	Deadwood and Monitor - Protect with barriers
9	Oak	B	Deadwood and Monitor - Protect with barriers
10	Oak	B	Deadwood - Protect with barriers
13	Oak	B	Deadwood - Protect with barriers
14	Ash	B	Deadwood - Protect with barriers
15	Oak	B	Deadwood - Protect with barriers
17	Oak	B	Monitor - Protect with Barriers
18	Oak	B	Deadwood - Protect with barriers
19	Oak	B	Deadwood - Protect with barriers
20	Ash	B	Deadwood - Protect with barriers
28	Oak	B	Deadwood and Monitor - Protect with barriers
29	Oak	B	Deadwood and Monitor Protect with barriers
31	Oak	B	Deadwood - Protect with barriers
33	Sycamore	B	No Works - Protect with barriers
43	Oak	B	Deadwood - Protect with barriers
44	Oak	B	Deadwood - Protect with barriers
45	Sycamore	B	Monitor - Protect with barriers
46	Sycamore	B	Monitor- Protect with barriers
48	Ash	B	No Works - Protect with barriers

51	Oak	B	Deadwood - Monitor -Protect with combination of Barriers -
55	Ash	B	Deadwood - Protect with barriers
56	Sycamore	B	Deadwood - Monitor- Protect with combination of Barriers
58	Oak	B	Deadwood - 3rd party
59	Oak	B	Deadwood - 3rd party

5.4 The following tree have been classified as Category "C" i.e. those of lower quality and value; currently in adequate condition which could if necessary remain until new planting is established, trees present in groups or woodlands, but without this conferring on them significantly greater landscape value.

Tree ID	Species	Category	Details
4	Ash	C	Monitor - Protect with Barriers
6	Ash	C	Monitor
11	Hawthorn	C	No Works - Protect with barriers
12	Alder	C	Deadwood and Monitor - Protect with barriers
16	Oak	C	Monitor -- Protect with Barriers
21	Alder	C	No Works - Protect with barriers
22	Alder	C	No Works - Protect with barriers
23	Hawthorn	C	No Works - Protect with barriers
24	Alder	C	No Works - Protect with barriers
25	Alder	C	No Works - Protect with barriers
26	Ash	C	No Works - Protect with barriers
27	Ash	C	Monitor - Protect with Barriers
32	Alder	C	Monitor for Phytopthora - Protect with barriers
37	Alder	C	Remove Ivy - Monitor - Protect with combination of Barriers -
38	Ash	C	Deadwood remove Ivy - Monitor - Protect with combination of Barriers -

39	Sycamore	C	No Works - Protect with barriers
40	Sycamore	C	No Works - Protect with barriers
41	Ash	C	No Works - Protect with barriers
42	Ash	C	No Works - Protect with barriers
47	Beech	C	No Works - Protect with barriers
52	Lime	C	Deadwood - Protect with barriers
53	Alder	C	Deadwood - Protect with barriers
54	Oak	C	Deadwood - Protect with barriers
57	Holly	C	No Works - 3rd party
H1	Mixed species	C	remove approximately 10 m of hedge to allow of the construction of roadway
H2	Mixed species	C	No Works - Protect with barriers

5.5 Category "C" trees may **not** usually be retained where they would impose a significant constraint on development.

5.6 Category "U" trees are those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management. Examples include…

- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning).
- Trees that are dead or showing signs of significant, immediate, and irreversible overall decline.
- Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality.

Tree ID	Species	Category	Details
30	Ash	U	Fell for sound arboricultural management reasons
34	Sycamore	U	Fell for sound arboricultural management reasons

35	Sycamore	U	Fell for sound arboricultural management reasons
36	Sycamore	U	Fell for sound arboricultural management reasons
49	Ash	U	Stump
50	Oak	U	Stump

5.7 There are relatively few trees inspected that would fall into the U category.

5.8 It is recommended that the works detailed in this report are undertaken prior to the erection of protective fencing and certainly prior to development.

5.9 The trees that will be impacted upon by the development consist of Oak, Beech, Ash, Sycamore, Alder, Hawthorn, Cherry, Elder, Willow and Privet

5.10 Permissions: Under no circumstances is any tree work to be instigated without having first checked with the Local Planning Authority that no statutory controls apply in respect of the trees. All tree workers shall have the relevant NPTC qualifications and shall submit completed risk assessments to the project manager prior to commencement of tree-work.

5.11 All pruning shall be done in accordance with the principles of 'Natural Target Pruning' and in accordance with the current relevant British Standard, **BS3998: 2010** 'Recommendations for Tree Work'. All pruned sections shall be lowered to the ground in a controlled manner such that no damage is done to other trees or vegetation and structures beneath. The implication of tree works must have regard to the presence of any nesting Birds or Bats and their roosts, which are protected under the Wildlife and Countryside Act 1981.

6.0 Tree Constraints – Calculated Root Protection Area (RPA)

6.1 BS5837 (2012) requires that the root protection area is calculated for each of the retained trees on the development. The root protection area is the minimum area in m^2 which should be left undisturbed around each retained tree. The RPA should be calculated using Annex D of the Standard as an area equivalent to a circle with a radius 12 times the diameter calculated for the stem of the tree.

6.2 The standard calculated RPA's and the protection zone radii are detailed at appendix 6 of this report.

6.3 The RPA, for each tree as determined in Table 2, should be plotted on the Tree Constraints Plan taking full account of the following factors, as assessed by an arboriculturalist, which may change its shape but not reduce its area whilst still providing adequate protection for the root system.

a) The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age and condition and presence of other trees.

b) The morphology and disposition of the roots, when known to be influenced by past or existing site conditions (e.g. the presence of roads, structures and underground services).

c) The soil type and structure.

d) Topography and drainage.

7.0 **Tree Constraints – Incursions into the Root Protection Area (RPA)**

7.1 The proposed development will involve an incursion into the defined root protection area.

7.2 BS 5837:2012 accepts that whilst the most reliable way to ensure tree retention is to ensure the RPA is completely undisturbed, it may be necessary to undertake demolition operations and to incorporate hard surfaces and other construction within it. The ability of a tree to tolerate disturbance depends on individual circumstances including the prevailing site conditions.

7.3 The Standard recommends that the advice of an Arboriculturist should be sought for any operations within the RPA. The standard defines an Arboriculturist as 'a person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction'.

7.4 The information contained within section 2.0 of this report demonstrates that I fulfil the criteria required of an Arboriculturist as defined by the Standard.

8.0 Installation of Services (Underground and above ground services)

8.1 Trenching for the installation of underground services severs any roots present and may change the local soil hydrology in a way that adversely affects the health of the tree. For this reason particular care should be taken in the routing and methods of installation of underground services and where possible routing the services outside the specified RPA's

8.2 At all times where services are to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with an Arboriculturist. Such plans should also show the levels and access space needed for installing the services and be accompanied by arboricultural method statements (AMS).

Table 3 **Trenchless solutions for differing utility apparatus installation requirements**

Method	Accuracy	Bore dia. [A)]	Max. sub. [B)] length	Applications	Not suitable for
	mm	mm	m		
Microtunnelling	<20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/ roadway undercrossings	Low-cost projects due to relative expense
Surface-launched directional drilling	≈100	25 to 1 200	150	Pressure pipes, cables including fibre optic	Gravity-fall pipes, e.g. drains and sewers [C)]
Pipe ramming	≈150	150 to 2 000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling [D)]	≈50 [E)]	30 to 180 [F)]	40	Gas, water and cable connections, e.g. from street to property	Any application that requires accuracy over distances in excess of 5 m

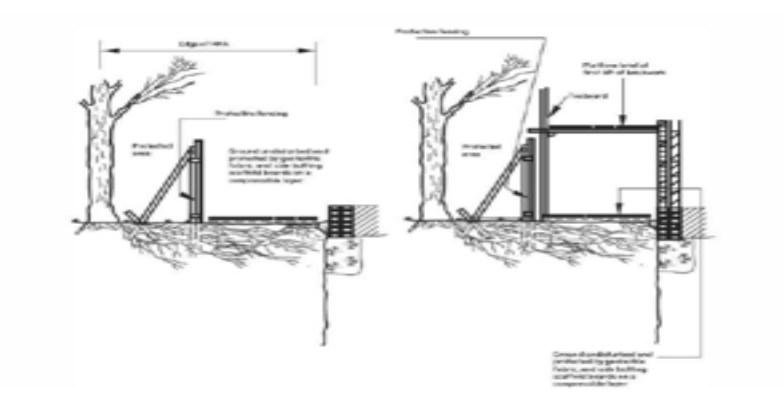
8.3 In this instance it is envisaged that services within the RPA will be by the use of a mole where the entry and retrieval pits being sited outside the RPA's.

8.4 In instances where services may need to pass through the RPA and a mole is unsuitable it is proposed to install these in conjunction with the specification of NJUG 10. All excavations near these trees will take place with an air-spade and any root pruning necessary will be undertaken by a qualified Arboriculturist in accordance with both NUG 10 and BS3998. All apparatus should be routed through common ducts and all inspection chambers are to be sited outside the RPA's.

8.5 Consideration will be given to the routing of above ground services in order to avoid the need for detrimental and repetitive pruning. In this regard the current and future crown size of the tree should be assessed.

8.6 Scaffolding in the RPA

8.7 Scaffolding which is to be erected within the RPA shall be done as detailed below.



8.8 Additional precautions outside the exclusion zone :-

8.9 Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence. All weather notices should be erected on the barrier with words such as: "Construction exclusion zone — Keep out".

8.10 In addition the following should be addressed or avoided.

a) Care should be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning.

b) Material which will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, should not be discharged within 10 metres of the tree stem.

c) Fires should not be lit in a position where their flames can extend to within 5 m of foliage, branches of trunk. This will depend on the size of the fire and the wind direction.

d) Notice boards, telephone cables or other services should not be attached to any part of the tree.

e) It is essential that allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees.

9.0 Tree Protection Plan (TPP)

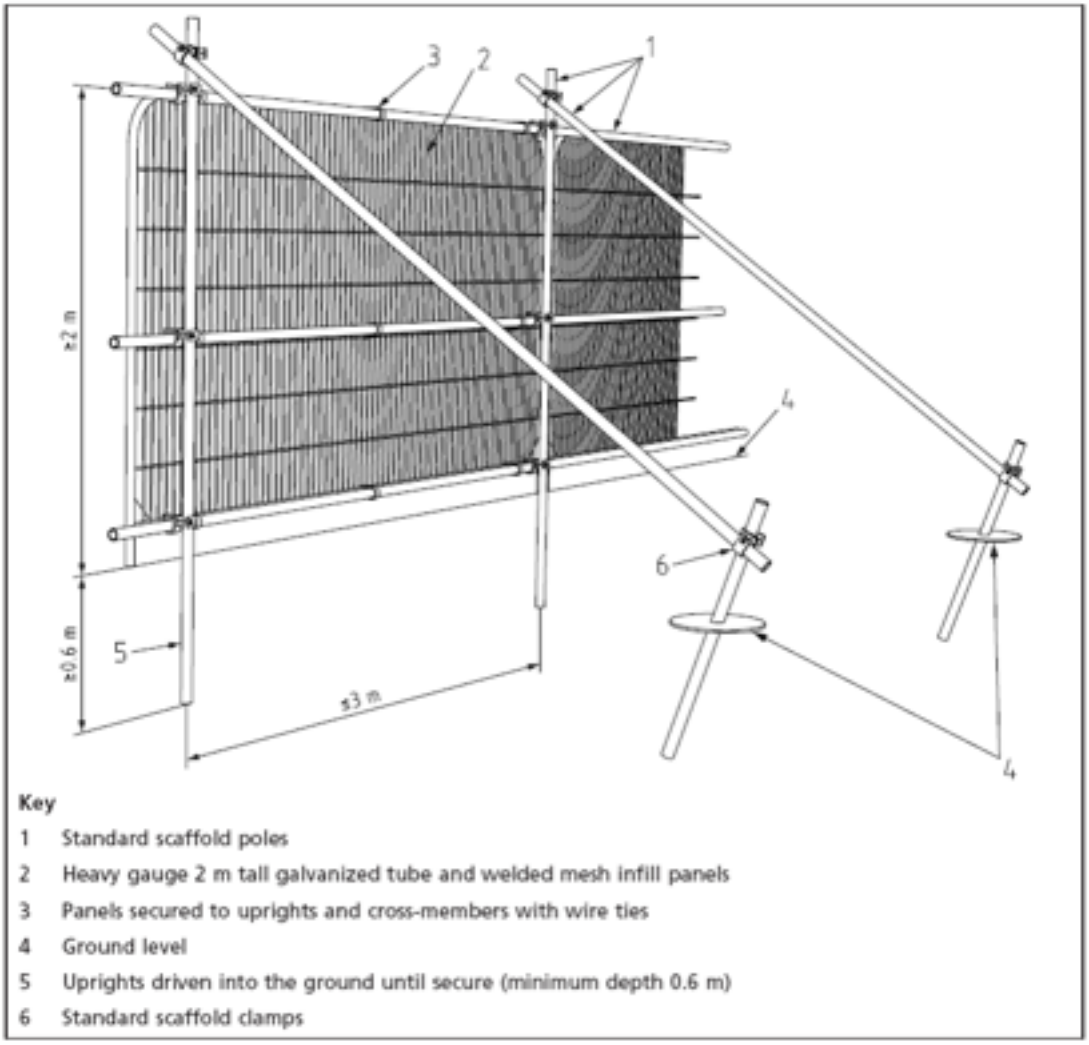
9.1 The exclusion zones as defined in this report will be protected with fencing. The fencing is to be strong enough to resist impacts and suitable to the degree of construction activity on the site and to be in accordance with that specified of BS5837:2012.

9.2 All fencing will be in place prior to any other development work (with the exception of necessary tree works) commencing on site. Such fencing will therefore be erected before any materials or machinery is brought onto site. Once erected the fences will not be moved or altered in any way without prior consultation with the Local Planning Authority other than for operations detailed in this report. If the fencing is damaged in any way it will be re-instated to its original condition before construction work can re-commence Notices will be erected on the fencing stating Protected Area – No Operations within Fenced Area. Protective fences shall be maintained in situ until all equipment, machinery and surplus materials have been removed from the site. Nothing will be stored or placed in any area fenced in accordance with this condition and the ground levels within those areas shall not be altered, nor shall any excavation be made other than those detailed in this report, without the written consent of the Local Planning Authority.

9.3 The total exclusion zones are marked on the accompanying drawing in Appendix 5 (Tree Protection Plan). British Standard 5837:2012 (Appendix 2) indicates the recommended areas for the Root Protection Areas (RPA) which should be enforced with protective fencing. Specifications within BS5837:2012 inform our recommendations for both the fencing type as detailed below in figure 2 and the location of this fencing. As detailed in section 6.2.3.1 of the standard it is acceptable for the the barriers to be set back and ground protection to be put in place.

9.4 All protective fencing is to be constructed in accordance with BS: 5837 (2012) – Figures 2 and 3 specification reproduced below.

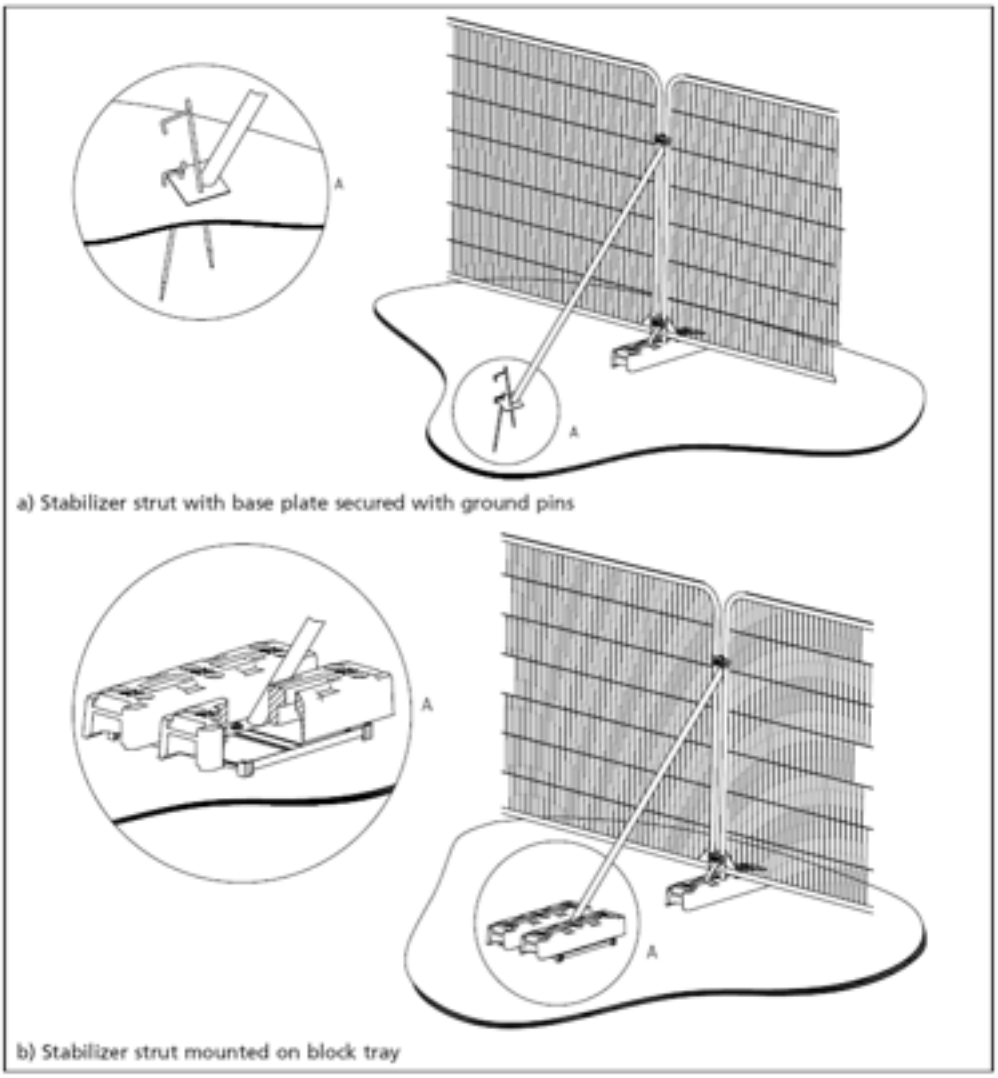
Figure 2 **Default specification for protective barrier**



Key

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

Figure 3 **Examples of above-ground stabilizing systems**



10.0 Conclusion and Impact Statement

10.1 Trees within the proposed build site and the scope of the development have been assessed in accordance with BS:5837:2012.

10.2 The trees afford some amenity in particular through their function as a screen to the site.

10.3 Fifty nine individual trees and two hedges have been assessed in response to the proposed development. It is anticipated that four individual trees of poor quality will be felled for sound arboricultural reasons and small sections of hedge will be felled to facilitate the development, all other trees will be protected throughout the development.

10.4 It is suggested that appropriate new trees are planted to replace any losses in the coming years to preserve the amenity provided by the current arboricultural population.

10.5 The impact of the proposed development has been assessed and in our professional opinion provided that the works take place in accordance with the method statements specified, the works will not be detrimental to the retained trees and the overall arboricultural population.

10.6 No work shall commence on site until such time as this method statement has been submitted to and approved in writing by the Local Planning Authorities Tree Officer. All retained trees on the site shall be protected from damage as a result of the works on site, to the satisfaction of the Local Planning Authority in accordance with its guidance notes and relevant British Standards (e.g. BS5837:2012) or the duration of the development. In the event that trees become damaged during construction, the Local Planning Authority Tree Officer shall be notified and remedial action agreed and implemented. In the event that any tree(s) dies or is removed without the prior consent of the Local Planning Authority, it shall be replaced within the first available planting season, in accordance with details agreed with the Local Planning Authority.

10.7 All technical issues relating to arboriculture should be addressed to Arbconsultants Ltd in the first instance. Arbconsultants Ltd will liaise between the Local Planning Authority and any interested parties. It is suggested that the development proceeds in accordance with the above recommendations.

Appendix 1
Site Location

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Appendix 2
Tree Survey Data Tables

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Appendix 3
Tree Survey

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Appendix 4
Tree Constraints Plan (TCP)

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Appendix 5
Tree Protection Plan (TPP)

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Appendix 6
Root Protection Area (RPA) Calculations

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Appendix 7
Proposed / Combined Plan

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