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Arboricultural Constraints Survey Teesworks Redcar

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1 SUMMARY

1.1 Report

This report is concerned with the arboriculture associated with proposed development of the land to the east of Steel House, Redcar, centred on grid reference NZ57922429. It identifies the arboricultural constraints and advises, in general terms, how they might be overcome or mitigated.

As requested by Teesworks, a site visit was carried out on 19th August 2022 Kay Richardson BA (Hons) who is an Ecologist at Ecosurv Ltd. The trees were inspected visually from the ground. The weather at the time of the inspection was dry and calm which was suitable for the purposes of the visit. A total of 6 groups of trees were recorded along with one hedgerow. A mix of trees at different life stages were assessed and mostly consisted of native and naturalised species. The trees were assigned categories A, B and C. Groups G1, G2 and G6 were assigned Category A due to their screening properties.

1.2 Development and site description

The survey area is a brownfield site to the east of Steel House at Teesworks, Redcar. The site is undergoing redevelopment which requires demolition of a number of buildings and vegetation and tree clearance which was seemingly underway at the time of the site visit. The proposals are to construct a park and ride facility to serve future employees of the redeveloped Teesworks site. The proposals require removal of a large quantity of trees to facilitate the development, the extent of which is unknown, however, it is anticipated to include all trees within the site boundary, with the exception of some of the trees in G1 which will be retained to maintain an element of screening. Construction and installation of new surfaces will be required near to trees which are to be retailed therefore tree protection by arboricultural methodology, barriers and ground protection should be implemented throughout the works.

Specifications for tree protection barriers and ground protection are provided, along with general advice on tree retention. Tree protection and methodology shall be deployed where indicated on the Tree Protection Plan.

1.3 Root Protection Areas (RPAs)

The Root Protection Areas (RPA's) of all trees surveyed were calculated and recorded in the Tree Survey Schedule (see results) where they are expressed in linear metres; it would normally be at this distance that tree protective barriers should be erected. In some instances, particularly for groups of trees, an indicative RPA has been given including area extent to account for the presence of hardstanding and buildings near the trees.

1.4 Tree Protection Orders (TPOs)

The trees within the site are not subject to tree preservation orders, nor are situated within a conservation area.

1.5 Potential ecological impacts

Trees have an ecological value to any site providing nesting sites for birds, roost sites for bats and habitat for insects which play an important part in local biodiversity. The trees surveyed do provide potential for nesting birds as do the hedgerows and shrubs elsewhere on the site.



Any tree works should start outside of the bird breeding season (March – August inclusive). Should this not be the case, a survey of these should be undertaken by a suitably qualified ecologist to identify if nesting is taking place and an appropriate buffer identified where works should not take place until the young have fledged.



2 INTRODUCTION

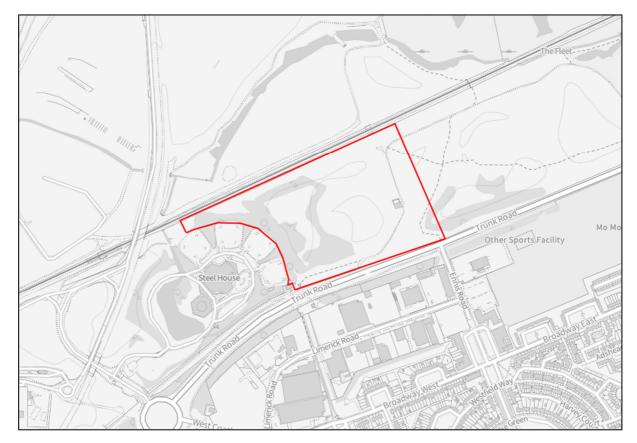
Ecosurv Ltd were commissioned by Teesworks to undertake an Arboricultural Survey of trees at Steel House, Redcar. The land is centred on grid reference NZ57922429 and the survey was conducted in order to assess the site for potential arboricultural constraints.

2.1 Objectives

The survey has been conducted in accordance with BS 5837:2012 – 'Trees in relation to design, demolition and construction – Recommendations', to provide a written report of the findings. The report covers all trees within, or adjacent to the site boundaries and assesses their current status.

A topographical plan was provided illustrating the existing site layout and extent of vegetation. In addition, a proposed development plan was also provided to give an indication of the development footprint.

The survey only includes trees / groups of trees with a trunk diameter of 100mm or more (measured at a height of 1.5m above ground level), located within the extents of the development and land surrounding the site. All advice is given in connection with this plan. The report provides information for the retention and protection of trees on the development site.



2.2 Location

Figure 1: Map showing site location (in red) and the surrounding area.



3 LEGISLATION

The following is given as standard general advice:

3.1 Conservation Areas and Tree Preservation Orders

Trees and hedgerows can be subject to statutory control and severe penalties can result from unauthorised works or damage. It is recommended that prior to commencement of any tree works the LPA are contacted. When proposing to do works to trees within a Conservation Area, with some exceptions, six weeks written notice must be given to the LPA. This notice is often referred to as a Section 211 Notice. Having received such a notice, the LPA has essentially only one of two options at its disposal, these are:

Impose a TPO in respect of those trees/some of those trees subject to the notice. This prevents any works being carried out without the express, written consent of the LPA.

Or

Do nothing. It is considered best practice for an LPA to acknowledge receipt of the notice but there is no obligation for it to do so. After six weeks of serving the notice the tree owner may proceed with the works detailed in the Section 211 Notice.

The LPA cannot, in response to a Section 211 Notice, issue a conditional consent.

TPO's are made in the interests of preserving amenity, usually taken to mean public visual amenity. Trees largely removed from public view and which have little visual impact are not usually made the subject of a TPO. Subject to certain exemptions e.g. trees which are dead, dying or dangerous, the written consent of the LPA must be obtained prior to undertaking works to trees subject to TPO.

3.2 Trees and Wildlife

Trees provide valuable habitat for nesting birds and roosting bats. It is a criminal offence under normal circumstances to disturb or destroy, either intentionally or unintentionally, the nesting sites of birds and roosting sites of bats. Nesting birds and bats are afforded protection under The Wildlife and Countryside Act 1981(as amended). The Conservation of Species and Habitat Regulations 2010 affords additional protection to all UK bat species. Significant tree works should be avoided during bird nesting season (March – August inclusive) and trees should be professionally surveyed for signs of bat roosting and activity, prior to any tree work commencing.

3.3 Hedgerows

The Hedgerow Regulations 1997 provide protection by prohibiting the removal of countryside hedgerows if they are assessed as 'important' according to a specific set of criteria. In particular, older hedgerows, species-rich hedgerows and those associated with large trees, water or public rights of way are more likely to meet the criteria for Importance. Hedgerows generally fall outside of the scope of BS5837:2012 as such; no comprehensive assessment of the hedgerow stock was made. Further advice should be sought from the project ecologist.



3.4 Non-statutory Considerations

3.2.1 Implementation of Tree Works

Guidance on hiring an Arborist is available from the Arboricultural Association's Register of Contractors is available free from Ampfield House, Romsey, Hants, SO51 9PA (Telephone 01794 368717, www.trees.org.uk). Any appointed contractor should carry out all tree works to BS 3998 (1991) 'Recommendations for Tree Work' as modified by research that is more recent. Ecosurv Ltd can assist with both the appointment of a tree surgeon and provide on-site supervision.

3.2.2 New Planting:

It is likely that any planning permission issued will carry a condition requiring new tree planting, particularly in instances where a proposal involves the removal of trees. Further advice is available upon request.



4 GENERAL ADVICE FOR TREE PROTECTION

Since development layouts are subject to change, the following is given as general guidance.

4.1 Below Ground Constraints

To successfully complete development, various construction activities are required, and great care and consideration needs to be given as to how such activity can proceed whilst avoiding damage to retained trees.

"Damage can occur as a result of direct impact between construction machinery and parts of a tree. Often greater damage and even destruction occurs quite invisibly due to the deformation of the soils in which the trees root. Soil stripping, trenching and compaction all have serious effects on trees and if such trees are to be successfully retained in the long term it is necessary to protect the soil during construction."

In order to avoid damage to their roots, trees should be protected using protective barriers as are detailed in British Standard 5837, (2012), 'Trees in Relation to Construction: Recommendations' and as illustrated in appendix 1. This should be erected around the RPA prior to the commencement of the demolition/construction activity and must remain in situ and intact until completion. The area within these barriers should be considered sacrosanct, and no work should ordinarily be permitted within them. To ensure any tree protective barriers remain during construction, it is further advised that they carry signage as per appendix 3 and that the Site Agent is briefed accordingly. On sites which are particularly 'tree sensitive', the Local Planning Authority (LPA) may apply conditions to a planning permission requiring arboricultural supervision.

4.2 Hard Surfacing

Where hard surfacing exists within the area defined as the RPA, it is acceptable to erect protective barriers at the extent of that hard surface, since the surface itself will afford protection to tree roots. However, care must be taken to avoid collision between overhanging tree branches and passing construction traffic. Where it is proposed to remove/regrade existing hard surfacing, it is advised that an arboricultural method statement should be sought.

4.3 Services

Careful consideration must be given to the siting of underground services e.g. drains, electricity, gas etc. and, ideally, they should not be sited within the RPA. As specified in the National Joint Utilities Group (NJUG) Publication Volume 4, 'Guidelines for The Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees' (Issue 2), digging within the RPA should only be carried out with hand tools, preferably by compressed air soil displacement. Great care should be taken to preserve and work around roots greater than 25mm in diameter and clusters of smaller roots to avoid damaging the bark. Where it is necessary to sever roots greater than 25mm in diameter, arboricultural advice should be sought. Where smaller roots must be severed, they should be cut back using secateurs or a sharp pruning saw.

Where possible, services laid through protected areas should be installed at a depth greater than 600mm using a trenchless insertion method, in order to preserve the maximum number of roots and avoid conflict between the tree roots and the service.



5 SURVEY LIMITATIONS

Trees are living organisms whose health and condition can change rapidly and all trees, even healthy ones are at risk from unpredictable climatic and man-made events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those factors by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk.

The findings and recommendations contained within this report are, assuming its recommendations are observed, valid for a period of twelve months from the date of survey. Trees are living organisms subject to change – best practice dictates they are inspected on an annual basis for reasons of safety.

Tree rooting characteristics and soils are both enormously variable as are their interactions. This makes attempts to quantify subsidence risk assessment impossible. No effort has been made to assess subsidence risk potential nor should any be construed.

Whilst every effort has been made to detect defects within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. Extreme climatic conditions can cause damage to even apparently healthy trees. All recommendations are given in the context of the site's current usage; any change will dictate a re-inspection.

This report represents a survey and should not be construed to be a detailed tree inspection report; such is available upon request.



6 TREE SURVEY

6.1 Site Visit

A site visit was carried out on 19th August 2022 by Kay Richardson BA (Hons) who is an Ecologist at Ecosurv Ltd. The trees were inspected visually from the ground, no drilling or excavation was carried out. The weather at the time of the inspection was calm and visibility was acceptable for the purposes of the visit.

6.2 Tree Survey Methodology

The survey was undertaken in accordance with the guiding principles of British Standard 5837 (2012) '*Trees in Relation to Construction: Recommendations*' and the trees were assessed objectively and without reference or influence being given to any proposed site layout. Using 'Visual Tree Assessment' techniques the trees were surveyed from the ground; this is the method generally adopted and is appropriate in this instance. All trees surveyed are listed in the Tree Survey Schedule and numbered on the plan provided (see results).

Trees have been identified as such in instances as are defined in BS 5837 (2012) 'Trees in Relation to Construction: Recommendations' i.e. where, by virtue of the fact that trees are in such close proximity they function as a unit, in visual terms, aerodynamically or culturally they are identified in the Tree Survey Schedule and on the associated plan with the prefix 'G'. In the case of groups, the principal species are recorded, other minor species may be omitted. Trees and shrubs which were considered to be insignificant have been omitted from this survey.

An existing site plan showing the locations of individual trees was made available for the survey. This survey has plotted the location of tree stems and the canopy extent, however due to the density of planting within some tree groups, canopy extent for individual trees should be treated as indicative.

The following features of each tree, group of trees or woodland have been recorded and are presented within the Tree Survey Schedule:

6.2.1 Species

The species identification is based on visual observations and the common English name (with a key provided to scientific names) of what the tree appeared to be. In the case of groups only the principal species are recorded, other minor species may be omitted.

6.2.2 Height

Height is measured in metres from the stem base. Where the ground has a significant slope, the higher ground is selected. Estimated mature heights are given in brackets where identified. In the case of groups, the maximum is recorded. Tree heights were measured using a clinometer and recorded to the nearest 1m.

6.2.3 Stem Diameter

Measured at 1.5 metres above ground and recorded in millimetres to the nearest 10mm. However, where the trunk of any tree breaks below 1.5 metres it is considered a multi-stemmed tree and, in accordance with British Standard 5837 (2012), 'Trees in relation to Construction: Recommendations' it is measured immediately above the root flare. In the case of groups of trees,



the maximum diameter was recorded. In some instances, the trunk of the tree could not be accessed, for example where dense vegetation exists, in this instance the trunk diameter was estimated. Stem diameters were measured using a rounded down diameter tape to avoid variations due to stem irregularity and shape.

6.2.4 Crown Spread

Crown spread is measured in metres and taken at the four cardinal points to derive an accurate representation of the crown. Where accessible, crown spreads have been measured from the edge of the crown to the stem using a tape measure; inaccessible crown spreads were estimated. All crown spreads are recorded at the cardinal points north, east, south and west.

6.2.5 Crown Clearance

Height above ground level of tree canopy in metres.

6.2.6 Significant Branch

Height and direction of growth of first significant branch.

6.2.7 Life Stage

Age class of the tree is described as young, semi-mature, early-mature, mature, or over-mature.

6.2.8 Physiological Condition

Physiological condition is classed as good, fair, poor, or dead. This is an indication of the health of the tree and takes into account vigour, presence of disease and dieback.

6.2.9 Structural Condition

Structural condition is classed as good, fair or poor. This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.

6.2.10 Estimated Remaining Contribution

Life expectancy is classed as: less than 10 years (<10) (Very Short); 10-20 years (Short); 20-40 years (Medium); or more than 40 years (40+) (Long). This is an indication of the number of years before the removal of the tree is likely to be required.

6.3 Tree Categorisation

Following guidance as set out in BS5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*', trees are impartially assigned a category which determines their retention value within any future development. These are described below:

6.3.1 Category A

Category A trees are of high quality and value with a significant life expectancy, normally over 40 years, and should be retained within the development. These trees are identifiable on the Tree Location and Constraints Plan as light green. They may be further sub-divided as follows:

A1 - Trees that are particularly good examples; perhaps rare or unusual species, or forming an essential part of arboricultural features;



A2 - Trees, groups or woodlands having a significant landscape impact or with excellent screening properties, or those softening the effect of existing structures; and

A3 - Trees, groups or woodlands are those having a significant conservation or historical value.

6.3.1 Category B

Category B trees are of moderate quality and value with a reasonable life expectancy, at least 20 years, and should be retained where possible within the development. These trees are identifiable on the TLCP as mid blue. They may be further sub-divided as follows:

B1 – Trees that might be included in the high category but are downgraded because of their impaired condition;

B2 - Trees that are usually present in groups forming distinct landscape features, thereby attracting a higher collective rating than they might as individuals; and

B3 - Trees with clearly identifiable conservational or cultural benefits.

6.3.2 Category C

Category C trees are of low quality and value and are currently in adequate condition to remain until new planting could be established. These trees should not constrain development, although relocation should be considered where possible. They are identifiable on the TLCP as grey. They may be further sub-divided as follows:

C1 - Trees that do not qualify in the higher categories;

C2 - Trees that are present in groups or woodlands that do not form a distinct landscape feature; and

C3 - Trees with very limited conservational or other cultural benefits.

6.3.3 Category U

Category U trees are those considered unsuitable in their current state for retention within a development. They should ideally be removed prior to the commencement of construction unless otherwise stated. They are identifiable on the TLCP as dark red. These trees are in such a condition that any existing value would be lost within 10 years.

A single tree or group can come under one or more sub-headings. This does not confer on it a higher value than a tree with a single value.

6.4 Additional Comments

Comments include a brief description, if required, of the tree with comments on the form, vitality, health and any significant defects that may be present.

6.5 Root Protection Areas (RPAs)

In respect of all trees surveyed the RPA has been calculated and is given in the Tree Survey Schedule. The figure given represents the radial distance, from the tree's trunk, at which the barriers should be erected. However, it must be borne in mind that the figure derived from this calculation, whilst compliant with BS 5837, is merely notional. RPA's are much more effectively represented on plan, where the shape of such can be manipulated, so as to reflect the anticipated rooting area of each



subject tree/group; tree roots can be greatly constrained by adjacent watercourses, highways, retaining walls, buildings etc, meaning a reduced radial distance on the side of such features and a greater distance being required on the opposite side in order to achieve the RPA.

Root protection areas have only been calculated for those trees found within the vicinity of the proposed development.

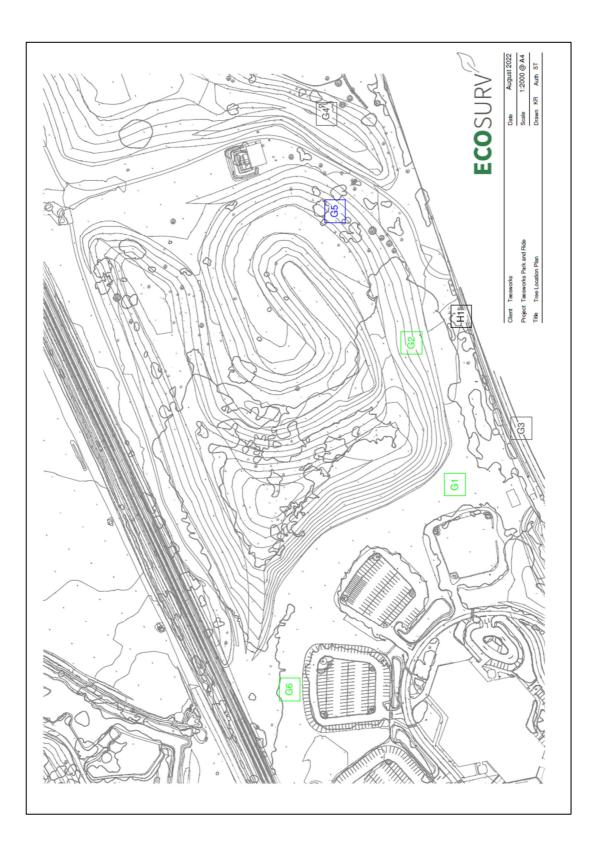
The RPA is calculated thus:

Trees with a single stem:	Stem diameter x 12 = RPA radius
Trees with 2 – 5 stems the combined stem dia. is calculated as follows:	\mathbf{v} (stem diameter 1) ² + (stem diameter 2) ² + (stem diameter 5) ²
Trees with more than 5 stems the combined stem dia. is calculated as follows:	√ (mean stem diameter) ² x number of stems



7 RESULTS

7.1 Tree Location Plan





7.2 Tree Survey Schedule

	Crown Spread (m)					c												
ID	Species	Height (m)	Diameter (mm)	North	East	South	West	First Stem (m)	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Estimated Remaining Contribution	Nest	Bat	Comments	Retention Category	RPA (m)
											Groups							
G1	Silver poplar, hybrid black poplar, lime, sycamore, white beam, rowan	<25	<600	-	-	-	-	-	-	Early Mature – Mature	Good	Good	Long	Yes	Low	~ 75 trees Some fallen trees present	A2	< 7.2
G2	White beam, hawthorn, field maple, aspen, ash, willow, sycamore, blackthorn	<22	<400	-	-	-	-	-	-	Early Mature – Mature	Good	Good	Long	Yes	No	~ 1000 trees Understorey of honeysuckle, cow parsley, rose and bramble.	A2	< 6.0
G3	Hawthorne, elder	<4	<150	-	-	-	-	-	-	Early Mature	Good	Good	Long	Yes	No	Smaller group of trees on the site boundary fence line.	C2	< 1.8
G4	Hawthorne, crab apple, rowan	<6	<300	-	-	-	-	-	-	Young – Early Mature	Good	Good	Long	Yes	No	~ 10 trees	C2	< 3.6
G5	Crab apple, white beam, Hawthorne, field maple	<5	<250	-	-	-	-	-	-	Early Mature	Good	Good	Long	Yes	No	~ 40 trees	B2	< 3.0



G6	Silver poplar, hybrid black poplar, lime, sycamore, white beam, rowan	<25	<400	-	-	-	-	-	-	Early Mature – Mature	Good	Good	Long	Yes	Low	~ 75 trees	A2	< 4.8
	Hedgerows-																	
H1	Hawthorne	4	-	-	-	-	-	-	-	Early Mature	-	-	-	Yes	No	8 specimens along the boundary fence	-	-



8 CONCLUSION

A total of 6 groups of trees were recorded along with one hedgerow. A mix of trees at different life stages were assessed and mostly consisted of native and naturalised species. The trees were assigned categories A, B and C. Groups G1, G2 and G6 were assigned Category A due to their screening properties.

The proposals are to construct a park and ride facility to serve employees of the redeveloped Teesworks site. The proposals require removal of a large quantity of trees to facilitate the development, the extent of which is unknown however it is anticipate to include all trees within the site boundary, with the exception of some of the trees in G1 which will be retained to maintain an element of screening. Construction and installation of new surfaces will be required near to trees which are to be retained therefore tree protection by arboricultural methodology, barriers and ground protection should be implemented throughout the works.

General specifications for tree protection barriers and ground protection are provided, along with general advice on tree retention. Further details as to potential impacts to retained trees and appropriate protective methods and measures could be outlined within an Arboricultural Impact Assessment, Method Statement and Protection Plan.



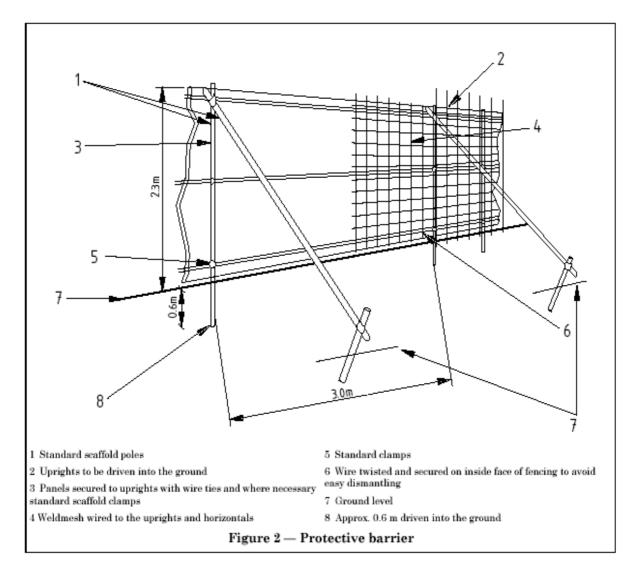
9 REFERENCES

- British Standard 5837:2005 'Trees in Relation to Construction: Recommendations.'
- British Standard 3998:1989 'Recommendations for Tree Work'.
- The Body Language of Trees, C Mattheck, H Breloer.
- Mattheck, C. (2007), Updated Field Guide for Visual Tree Assessment



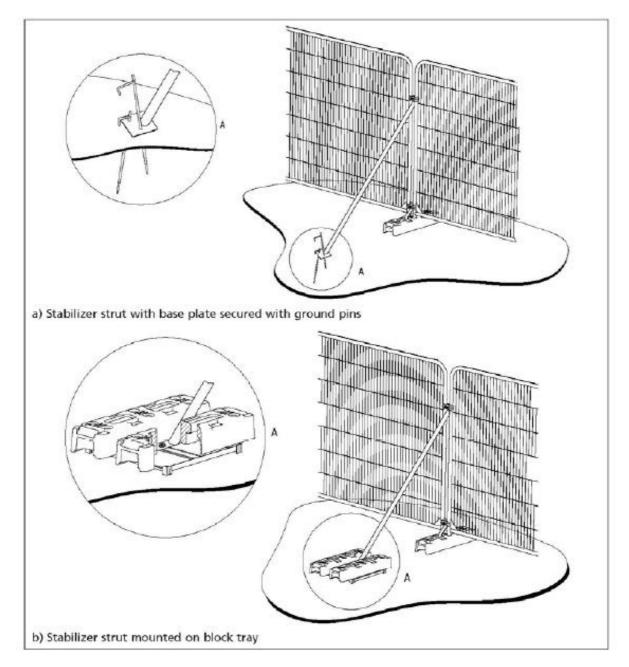
APPENDICES







Appendix 2: Above ground stabilising system





Appendix 3: Typical barrier notice



MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.



(TOWN & COUNTRY PLANNING ACT 1990) TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER. CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY



Appendix 4: Criteria for Categorisation

Category and definition	Criteria			Identification						
	(including subcategories where appropriate)			on plan						
Trees unsuitable for retention (see	e Note)									
Category U • Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those										
Those in such a condition that they	in such a condition that they that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter									
cannot realistically be retained as										
living trees in the context of the	• Trees that are dead or are showing signs of significant, imme	diate, and irreversible overall decline		RGB code						
current land use for longer than 10	 Trees infected with pathogens of significance to the health and 	nd/or safety of other trees nearby, or ver	ry low quality trees	127-000-000						
years	suppressing adjacent trees of better quality									
	NOTE Category U trees can have existing or potential conservat	tion value which it might be desirable to	preserve; see 4.5.7 .							
Trees to be considered for retention	pn									
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values							
Category A	Trees that are particularly good examples of their species,	Trees, groups or woodlands of	Trees, groups or	Colour						
Trees of high quality with an	especially if rare or unusual; or those that are essential	particular visual importance as	woodlands of significant	Light green						
estimated remaining life expectancy	components of groups or formal or semi-formal	arboricultural and/or landscape	conservation, historical,							
of at least 40 years	arboricultural features (e.g. the dominant and/or principal	features	RGB code							
	trees within an avenue)		other value (e.g. veteran	000-255-000						
			trees or wood-pasture)							
Category B	Trees that might be included in category A, but are	Trees present in numbers, usually	Trees with material	Colour						
Trees of moderate quality with an	downgraded because of impaired condition (e.g. presence of	growing as groups or woodlands,	conservation or other	Mid blue						
estimated remaining life expectancy	significant though remediable defects, including	such that they attract a higher	cultural value							
of at least	unsympathetic past management and storm damage), such	collective rating than they might as		RGB code						
20 years	that they are unlikely to be suitable for retention for	individuals; or trees occurring as		000-000-255						
	beyond 40 years; or trees lacking the special quality	collectives but situated so as to make								
	necessary to merit the category A designation	little visual contribution to the wider								
		locality								
Category C	Unremarkable trees of very limited	Trees present in groups or	Trees with no material	Colour						
Trees of low quality with an	merit or such impaired condition that	woodlands, but without this	conservation or other	Grey						
estimated remaining life expectancy	they do not qualify in higher categories	conferring on them significantly	cultural value							
of at least 10 years, or young trees		greater collective landscape value;		RGB code 091-091-091						
with a stem diameter below 150 mm		and/or trees offering low or only		091-091-091						
		temporary/transient landscape								
		benefits								

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Appendix 5: Satellite Image (Google Earth)





Appendix 6: Site Images

No.	Description	Image
1.	G1	
2.	G1	
	G2	



	G2	
3.	G6	
4.	G5	