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**Arboricultural
Method Statement
to BS 5837:2012**

Site Address:

Land at Ferry Road,
Barrow-upon-Humber

Issue Date:

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Report No:

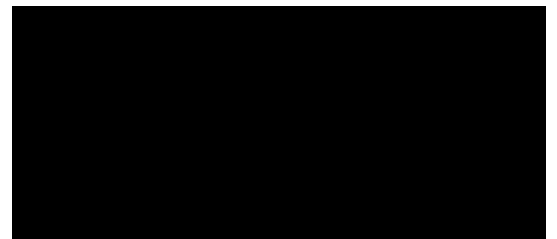
200609

Prepared For:

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1. Introduction

1.1. Purpose of the Method Statement

- 1.1.1. This Arboricultural Method Statement has been compiled to ensure the safe and healthy retention of all retained trees on this development. Integral to achieving this goal is the implementation of the special construction details and protection methods detailed within this report.
- 1.1.2. This Method Statement must be made available to all contractors and operatives on the site during the construction process so that they fully understand the importance of the measures set out for tree protection.
- 1.1.3. The information contained within this Arboricultural Method Statement conforms to BS 5837:2012 'Trees in relation to Design, Demolition and Construction - Recommendations'.

1.2. Scope of the Method Statement

- 1.2.1. I am instructed to produce this Arboricultural Method Statement (AMS) for the proposed development consisting of 64 houses with associated accessways, garages and gardens. The development also includes an area of public open space. The details of the design can be found in drawing no. FR/171/15. This drawing also forms the basis for the Tree Protection Plan in Appendix 2.
- 1.2.2. This method statement is based on the tree surveys carried out on the 9th June 2020 and the 24th February 2021. The findings of these surveys can be found in the associated report ref. Arboricultural Report - 200609 FerryRoadBarrow.
- 1.2.3. The AMS is concerned with the trees within and, where deemed necessary, those just beyond the boundary of the site, and has been compiled in order that retained trees are adequately protected throughout the course of the development. It is not intended to be used for any other purpose. The report does not take into account any other trees or vegetation, except where these are specifically referred to.
- 1.2.4. The activities to which the AMS relates are; tree removal and pruning (including root pruning) for access and clearance, tree protection measures and construction methods. Risk assessments (with relevant control measures) should be produced for each of these operations prior to commencement of work. This is the duty of the contractors engaged to undertake the work.

2. Timing of Operations

- 2.1. In order to ensure that disturbance to retained trees is kept to a minimum, the site operations should proceed in the following order:

Phase 1 - Pre-development

1. Completion of the approved tree works, (Section 3)
2. Installation of tree protection measures (Section 4 & 5)

Phase 2 - Development

1. Adherer to site limitations resulting from tree protection measures, (Section 4 & 5)
2. At an appropriate time set-back protective fencing to allow necessary access into Construction Exclusion Zone (CEZ), (Section 9 & 12)

Phase 3 - Post-development

1. Landscaping operations required outside CEZ
2. Removal of tree protection measures

3. Landscaping operations required within CEZ
- 2.2. Any amendments to the ordering of operations that are likely to affect retained trees must only be made with the approval of the project arboriculturist or the Local Planning Authority (LPA) Arboricultural Officer.

3. Tree Works

- 3.1. Prior to any construction activity, the first operation on site will be the undertaking of the necessary arboricultural works, as described in the Survey Schedule at Appendix 1. These include:
 - 3.1.1. The removal of T1-7, T11-17, T23-26, T28-29, H3, H5 and G2-4
 - 3.1.2. The partial removal of G1, G5, H1 and H4
- 3.2. All work must be undertaken to BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations and carried out by qualified and experienced contractors who must be adequately insured.
- 3.3. Any tree defects seen by a contractor or the client that were not apparent to the project arboriculturist must be brought to our attention immediately.
- 3.4. If during the development, additional access facilitation pruning is required advice should be sought from the project arboriculturist. Under no circumstance shall construction personnel undertake any tree pruning operations.

4. The Construction Exclusion Zone (CEZ)

- 4.1. In order to adequately protect retained trees a Construction Exclusion Zone (CEZ) must be formed around their crowns and Root Protection Area (RPA). The CEZ must be formed of appropriate protective fencing and/or ground protection.
- 4.2. Within the CEZ, the following restrictions shall apply:
 - NO mechanical digging or scraping
 - NO hand digging (unless in accordance with sections, below)
 - NO storage of material or equipment
 - NO vehicular or plant access (unless in accordance with section 5 and/or section 6)
 - NO fire lighting
 - NO washing down of vehicles or machinery
 - NO handling, discharging or spillage of any chemical substance including cement washings
 - NO action likely to cause localised water-logging
 - NO changing of ground levels (unless agreed by the LPA)
 - NO earthworks
- 4.3. In addition to the above, further precautions are necessary adjacent to the CEZ or adjacent to any trees on neighbouring land:
 - Materials that will contaminate the soil such as concrete mixing, diesel spillage and vehicle washings must not be discharged within 10m of a tree.
 - This must take into account the topography of the site and the slopes to avoid toxic materials running towards retained trees.
 - Fires must not be lit in a position where their flames can extend to within 5 metres of the foliage, branches or trunk. This will depend on the size of the fire and the wind direction.
 - Notice boards, telephone cables or other services (etc.) should not be attached to any part of a tree.

5. Tree Protection Fencing

- 5.1. The Tree Protection Plan (TPP) at Appendix 2 shows the position of the Tree Protection Fencing. This fencing must be erected after any tree works but before any materials or machinery are brought onto site and before any demolition, development or stripping of soil commences.
- 5.2. In this instance two fencing positions have been specified. Prior to construction the fencing will be erected in Position 1. At an appropriate time, the fencing will be set-back to Position 2 to allow access into the CEZ.
- 5.3. On this site the protective fencing will be installed in accordance with the above ground stabilised protective fencing method as detailed in BS 5837: 2012. All weather signage outlining the status of the CEZ should be securely fixed to the fencing. Please refer to Appendix 3 for further details of the protective fencing and signage.
- 5.4. Once erected, barriers and ground protection will be regarded as sacrosanct, and will not be removed or altered without prior agreement of an arboriculturalist and approval of the local planning authority.
- 5.5. Barriers should be fit for the purpose of excluding constructive activity, and appropriate to the degree and proximity of work taking place around the retained tree. On all sites, special attention should be paid to ensuring that barriers remain rigid and complete.

6. Ground Protection

- 6.1. In this instance no temporary ground protection is required.

7. Temporary Buildings and Stores

- 7.1. The location of any site office/welfare unit and temporary buildings shall be located away from the RPA of retained trees. This includes areas for mixing of chemicals including cement washings and storage of machinery as well as parking.

8. Installation of Services within CEZ

- 8.1. The routing of services is not known at the present time, however there appears to be no reason why these should not be diverted away from retained trees.

9. New Hard Surfacing within CEZ

- 9.1. Hard surfaces, in the form of an access driveway and car parking, is proposed within the RPA of T27. A cellular confinement system must therefore be installed using a no dig technique to prevent damage to tree roots. The location of this surfacing is highlighted on the TPP at Appendix 2.
- 9.2. The design of such a system needs to be sensitive to the requirements of tree roots, substantial enough to withstand the expected levels of traffic and practicable in terms of ease of fabrication. The final surface treatment must be porous to enable the percolation of water through the surfacing to the tree roots beneath. This method is considered to be appropriate in terms of minimising damage to retained trees. However, a structural engineer should be consulted to ensure that the mechanical needs of the chosen design are adequately met.

9.3. Immediately prior to the construction of this surfacing the protective fencing will be set back to Position 2 as shown on the TPP at Appendix 2. Installation of the surfacing can then commence.

9.4. Please see Appendix 4 for specification and installation method.

10. Demolition Works within CEZ

10.1. No demolition works are required within the CEZ.

11. Construction of Buildings within CEZ

11.1. The footprints of all buildings are located outside the RPA's of retained trees, therefore no specialist foundations are required for arboricultural purposes.

12. Post Construction Landscaping

12.1. Following completion of the main construction phase, the protective fencing can be removed, and any temporary ground protection lifted, the landscaping phase can then commence.

12.2. The installation of a beetle bank is required within the RPA of T10. If these works are carried out prior to the main landscaping phase, before the protective fencing is removed, the protective fencing will be set back to Position 2 as shown on the TPP at Appendix 2. Installation of the beetle bank can then commence.

12.3. Where new fencing is located within the RPA of retained trees, post holes will be dug by hand. They may be driven in either by hand or using mechanical means. If construction plant is to be used it must work from outside of the RPA at all times. Fencing systems utilising continuous trench footings must not be used in the RPA of retained trees.

12.4. Any patios, garden paths or other hard surfaces within RPA which may not be shown on the plans provided may be constructed using no-dig techniques, providing that they do not cover more than 20% of the RPA of any tree. If there is any concern of damaging retained trees, further advice should be sought from a qualified Arboriculturalist.

12.5. Landscaping works must be carried out in such a way as to avoid ground level changes or deep digging within RPA. Tractor mounted rotovators or other mechanised cultivation methods must not be used within the RPA of retained trees.

12.6. Heavy machinery is not permitted in the vicinity of retained trees, unless otherwise stated in this method statement.

12.7. Herbicides should be appropriate for the purpose and should not be used in such a way as to damage any retained trees or vegetation.

12.8. If in doubt, regarding the impact of proposed landscape operations, please contact the appointed arboriculturalist.

Appendix 1: Survey Schedule

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
T1	Common Beech	Mature	17.5	1200*				14.4	7	12	11	8	Fair	B1	20 to 40 yrs	Fair	Single stemmed to full height. Vegetation at base prevented detailed inspection. Large cavity to N at 1.75m. Significant hollowing with sound wood at cavity margins. Central main stem ivy clad preventing detailed inspection. Major deadwood in central crown at 10m. Crown lifted to W for utilities. Mature crown with medium deadwood and minor dieback.	Development Recommendation: Remove
T2	Common Beech	Early-mature	14	700				8.4	4.5	11.5	4.5	0	Poor	U	<10 yrs	Good	Single stemmed to full height. Cavity at base to W. Significant hollow soundings all around main stem up to 1m. Stem lean of 20° to E. Lean likely unstable with little correction in crown. Numerous significant wounds on main stem with decay initiated. Healthy crown with minor dieback and minor deadwood.	Development Recommendation: Remove
T3	Sycamore	Semi-mature	8	310				3.7	4.5	6	4	4.5	Good	C1/2	>40 yrs	Good	Bifurcated from 2m with included but improving union. Notable basal sweep to N. Recently torn out primary limbs at 2.5m to N. A developing healthy crown with no other notable defects.	Development Recommendation: Remove
T4	Sycamore	Semi-mature	10	330				4.0	5	6	5.5	2	Good	C1/2	>40 yrs	Good	Single stemmed to full height with slight competition induced lean to E. Crown break at 2m with heavy bias to E. Crown heavily suppressed to W. A healthy crown free from notable defects.	Development Recommendation: Remove
T5	Goat Willow	Semi-mature	8	470				5.6	6	6	6.5	6	Good	B1/2	20 to 40 yrs	Good	Multi stemmed from 1.5m with adequate and improving unions, and three main leaders. Stem diameter measures at 1m below crown break flare. A developing spreading crown with healthy shoots and foliage.	Development Recommendation: Remove

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
T6	Sycamore	Semi-mature	7	210				2.5	3	3	3	3	Good	C1	>40 yrs	Good	Single stemmed to full height with a well-balanced crown and no notable defects. A reasonable specimen.	Development Recommendation: Remove
T7	Sycamore	Early-mature	15	560	450			8.6	8.5	5.5	5	5.5	Good	B1/2	>40 yrs	Good	Twin stemmed from ground level with bark included main union. Union currently adequate. Main stems ivy clad preventing detailed inspection. Otherwise, tree in good condition and free from notable defects.	Development Recommendation: Remove
T8	Sycamore	Early-mature	15.5	510	540	470		10.5	5.5	6	8.5	8	Good	B1/2	>40 yrs	Good	Bifurcated from ground level with W stem twin stemmed from 1m. All main unions currently adequate. Stems and primary unions appear free from notable defects. A mature spreading crown with healthy shoots and foliage slightly suppressed to N by T9.	
T9	Sycamore	Early-mature	14	570				6.8	8.6	8	4	9	Good	C2	10 to 20 yrs	Poor	Single stemmed to full height. Heavily crown lifted resulting in numerous significant pruning wounds on main stem, decay currently limited. Medium deadwood in crown over site. Crown sparse with notable apical dieback.	
T10	Common Ash	Mature	18	1250				15.0	8.5	7	9	10	Fair	B1	20 to 40 yrs	Fair	Off-site tree. Veteran. GD fruiting bodies and notable basal decay at base to N. Single stemmed to crown break at 4.5m from where multiple leader rise. Base, stem and main leaders heavily ivy clad preventing detailed inspection. Major dead hanging branch to NE overhanging disused green space. Crown sparse with significant volume of minor deadwood.	
T11	Sycamore	Young	6.5	160				1.9	2.5	2.5	2.5	2.5	Good	C1	>40 yrs	Good	Single stemmed to full height with a well-balanced developing crown. A reasonable young specimen free from notable defects.	Development Recommendation: Remove

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
T12	Sycamore	Young	9	200				2.4	3	3	3	3	Good	C1	>40 yrs	Good	Bifurcated from 2m with a sound main union. A well-balanced developing crown. A reasonable young specimen free from notable defects.	Development Recommendation: Remove
T13	Sycamore	Young	7.5	200				2.4	3	3	3	3	Good	C1	>40 yrs	Good	Single stemmed to full height with a well-balanced developing crown. A reasonable young specimen free from notable defects.	Development Recommendation: Remove
T14	Silver Birch	Young	7.5	150				1.8	3	2	2	2	Good	C1	>40 yrs	Good	Single stemmed to full height with a well-balanced developing crown. A reasonable young specimen free from notable defects.	Development Recommendation: Remove
T15	Common Ash	Young	6.5	120				1.4	2	2	2	2	Good	C1	>40 yrs	Good	Single stemmed to full height with a well-balanced developing crown. A reasonable young specimen free from notable defects.	Development Recommendation: Remove
T16	Downy Birch	Young	6.5	120				1.4	2	2	2	2	Good	C1	>40 yrs	Good	Single stemmed to full height with a well-balanced developing crown. A reasonable young specimen free from notable defects.	Development Recommendation: Remove
T17	Common or Black Elder	Semi-mature	4.5	120				3.5	1.5	1.5	1.5	1.5	Fair	U	<10 yrs	Poor	Multi-stemmed from ground level with congested crown structure. Very sparse foliage with significant volume of minor deadwood.	Development Recommendation: Remove

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
T18	Common or Black Elder	Semi-mature	4.5	110				1.3	2.5	2.5	2.5	2.5	Fair	C2	10 to 20 yrs	Fair	Multi-stemmed from ground level with congested crown structure. Sparse foliage with notable volume of minor deadwood.	
T19	Common or Black Elder	Semi-mature	4.5	230				2.8	2.5	2	1.5	2	Good	C2	10 to 20 yrs	Good	Multi-stemmed from 1m with congested crown structure. Crown heavily bias to NW due competitive growing conditions.	
T20	Sycamore	Young	8.5	160*	140			2.6	3	3	3	3	Good	C2	>40 yrs	Good	Off-site tree standing 0.5m over boundary. Tree location prevented detailed inspection. Twin stemmed from ground level. Healthy developing crown.	
T21	Common Hawthorn	Mature	6.5	220*	250			4.0	3	3	3	3	Good	B1	>40 yrs	Good	Off-site tree standing 0.5m over boundary. Tree location prevented detailed inspection. Twin stemmed from ground level with ivy clad main stems. Healthy mature crown.	

* denotes estimated measurement

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
T22	Common Hawthorn	Mature	6	260*				3.1	2	2	2	2	Fair	C1	10 to 20 yrs	Fair	Off-site tree standing 0.5m over boundary. Tree location and ivy prevented detailed inspection. Crown sparse with minor deadwood and ivy cladding.	
T23	Sycamore	Semi-mature	10	310				3.7	3.5	0	3.5	3.5	Good	C2	>40 yrs	Good	Homogeneous crown with T24. Single stemmed. Suppressed asymmetrical crown.	Development Recommendation: Remove
T24	Sycamore	Semi-mature	11	390	360			6.4	5.5	5	4	5	Good	C2	>40 yrs	Fair	Bifurcated from 0.5m, sound Union. S stem heavily suppressed significant medium deadwood.	Development Recommendation: Remove
T25	Sycamore	Semi-mature	12	390	300			5.9	2.5	4	6.5	4	Good	C2	>40 yrs	Good	3.5m from neighbouring dwelling. Likely causing significant littering and shading issues. Bifurcated from 0.25m with sound main union. Crown asymmetrical and heavily bias to S over dwelling due to competition with neighbouring tree.	Development Recommendation: Remove
T26	Sycamore	Semi-mature	13	360				4.3	5	2.5	4.5	3	Good	C2	>40 yrs	Fair	Single stemmed. Heavily suppressed by neighbouring trees.	Development Recommendation: Remove
T27	Sycamore	Semi-mature	13	430	340	380		8.0	6	6	5.5	4.5	Good	B1/2	>40 yrs	Good	Trifurcated from 0.25m with a sound main union. A reasonable specimen with a well-balanced crown.	

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
T28	Sycamore	Semi-mature	12	280				3.4	0	2.5	3	2.5	Fair	C2	20 to 40 yrs	Good	Single stemmed to full height. Heavily and poorly pruned to S with deadwood stubs. Heavily suppressed to N by neighbouring trees. A poor specimen.	Development Recommendation: Remove
T29	Sycamore	Semi-mature	11.5	530				6.4	7	6	6	5	Good	B1/2	>40 yrs	Good	Single stemmed to full height. Likely causing significant littering and shading issues for neighbouring dwelling. Poorly pruned in lower crown to S leaving numerous stubs. Otherwise, a reasonable specimen free from notable defects.	Development Recommendation: Remove
G1	A Group		4.5	130				1.6	4	4	4	4		C2	20 to 40 yrs		Group of four elder and one young sycamore. All poor specimens.	Development Recommendation: Remove southern portion of group that stands within site boundary.
G2	A Group		8	150	150	150	150	3.6	5	5	5	5	Fair	C2	20 to 40 yrs	Good	Group of four semi-mature willow. All multi-stemmed with poor form apart from T5 that is recorded individually.	Development Recommendation: Remove
G3	A Group		7.5	180				2.2	4	4	4	4		C2	>40 yrs	Good	Group of four young to semi-mature sycamore. Heavily suppressed to W by neighbouring hedge. Crowns bias to E.	Development Recommendation: Remove
G4	A Group		10	280				3.4	4	4	4	4	Good	U	>40 yrs	Good	Two semi-mature sycamore. S most tree standing within 2m of neighbouring property. Crown in contact with building at multiple points. Both tree certain to be causing severe littering and shading issues.	Development Recommendation: Remove
G5	A Group	Early-mature	15.5	450	450			7.6	6.5	6	5	6	Good	B1/2	>40 yrs	Good	Group re-surveyed with trees now recorded individually as trees T23-29.	

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
G6	A Group		6	120				1.4	2	2	2	2		C2	>40 yrs		Group of semi-mature elder and hawthorn with young ash.	
H1	A Hedgerow		2.5	75				0.9	1	1	1	1		B2	>40 yrs		Well established and well managed hedge. Predominately hawthorn with some elder and dogrose.	Development Recommendation: Remove southern-most 40m
H2	A Hedgerow		2.5	75				0.9	1	1	1	1		B2	>40 yrs		Well established and well managed hedge. Predominately hawthorn with some elder and dogrose.	
H3	A Hedgerow		3	75				0.9	1.5	1.5	1.5	1.5		C2	>40 yrs		Intermittent unmanaged hedge. Predominately hawthorn with some elder and dogrose. Overgrown with brambles in places.	Development Recommendation: Remove
H4	A Hedgerow		4.5	220				2.6	3.5	3.5	3.5	3.5		B2	>40 yrs		Lapsed hawthorn hedge. Many elements becoming good individual tree specimens ranging up to 250mm stem diameter.	Development Recommendation: Remove three sections retaining groups as shown on Tree Protection Plan. Thin retained sections by approximately 50% favouring larger more dominant specimens for retention. Crown lift remaining trees to 1.5m with pruning cuts not to exceed 75mm.

Tree ID	Common Name	Maturity	Height (m)	Stem Diameter (mm)				RPA Radius (m)	Crown Spread (m)				Structural Condition	Retention Category	Life Expectancy	Physiological Condition	Comment	Recommendations
				1	2	3	4		N	E	S	W						
H5	A Hedgerow		7	180				2.2	4	4	4	4		C2	>40 yrs		Lapsed hawthorn hedge ranging up to 220mm stem diameter. Remaining elements are predominantly slender in form and multi-stemmed.	Development Recommendation: Remove
H6	A Hedgerow		3	50				0.6	1.5	1.5	1.5	1.5		B2	>40 yrs		A well-managed hawthorn hedge.	

* denotes estimated measurement

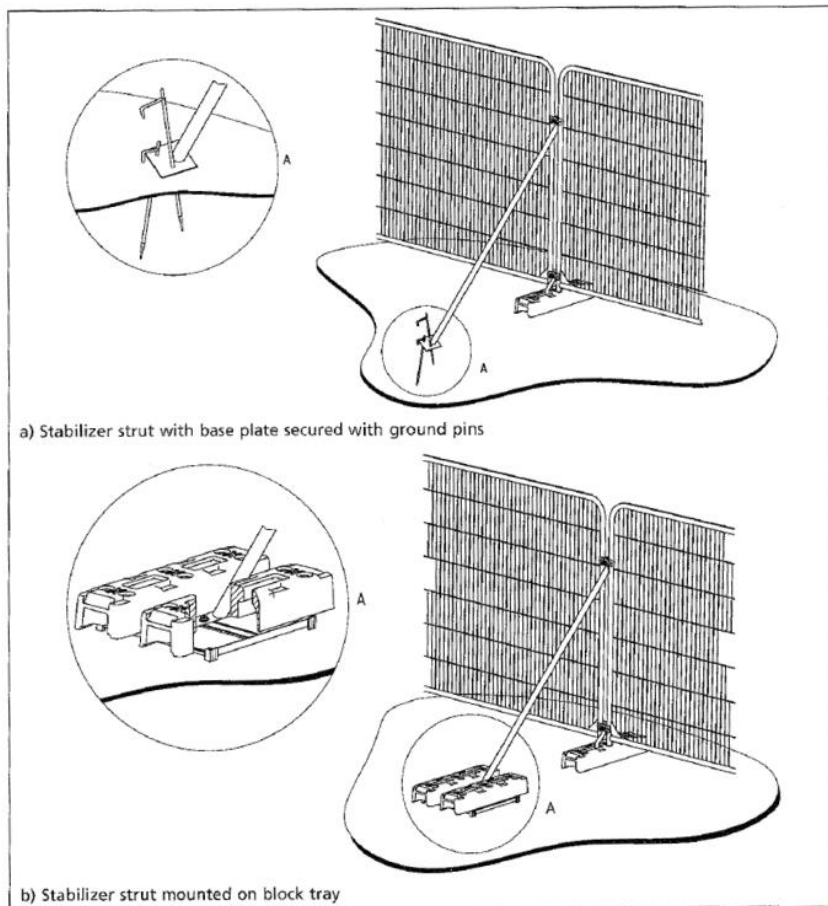
Appendix 2: Tree Protection Plan

For details see A0 PDFs;

- Tree Protection Plan [East] - 200609 FerryRoadBarrow.pdf
- Tree Protection Plan [West] - 200609 FerryRoadBarrowf.pdf

Appendix 3: Tree Protection Fencing

Figure 1. Specification for Above Ground Stabilised Protective Fencing



The protective fencing will be installed in accordance with BS 5837: 2012 and will comprise of weld mesh panel fencing, situated in rubber or concrete feet. Panels will be joined together using a minimum of two anti-tamper couplers, positioned so that they can only be removed from inside the barrier. The fencing will be supported at each joint (where two panels meet) with a stabiliser strut, attached to the fencing at one end and a base plate at the other, which will be secured with ground pins, driven into the underlying soil.

Figure 2. Example Signage for Protective Fencing

TREE PROTECTION AREA

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND ARE SUBJECTS OF A
TREE PRESERVATION ORDER
(TOWN & COUNTRY PLANNING ACT 1990)

CONTRAVENTION OF TREE PRESERVATION ORDERS MAY LEAD TO CRIMINAL PROSECUTION

THE FOLLOWING **MUST** BE OBSERVED BY ALL PERSONS:-

- THE PROTECTIVE FENCING MUST NOT BE REMOVED
- NO PERSON SHALL ENTER THE PROTECTED AREA
- NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA
- NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA
- NO SPOIL SHALL BE DEPOSITED IN THE PROTECTED AREA
- NO EXCAVATION SHALL OCCUR IN THE PROTECTED AREA

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

KEEP OUT!

Appendix 4: New Hard Surfacing

This Appendix outlines the options available for constructing No-Dig hard surfaces within the RPA of trees.

We are not qualified to recommend any particular construction method in terms of durability or structural integrity and any proposed construction should be approved by a qualified structural engineer prior to implementation.

However, with regards to trees, we make the following comments:

- Severance of roots and soil compaction should be avoided. However, if it is necessary to sever roots or if they are severed accidentally, we must be informed so that we are able to assess and recommend accordingly.
- Air and water must be able to diffuse into the soil beneath the engineered surface. Toxic substances which could leach into the ground must be avoided, as should substances which affect the pH value of the soil, for example limestone.

The No-Dig Method:

This involves construction of a surface with no excavation, soil stripping or site grading (see Figure 3). All construction takes place above ground level. Preparation and installation are as follows:

1. Kill off ground vegetation using a systemic herbicide (i.e. glyphosate) applied to the foliage and remove resulting dead organic material.
2. Removed any significant protrusions and fill major hollows with sharp sand.
3. Lay a recognised geo-fabric over the area and extend to 300mm beyond boundaries whilst overlapping any joints by 300mm.
4. Install an appropriate 3D cellular confinement system.
5. Using a no dig method (i.e. gabions or pinned boards/sleepers) construct suitable edge support for the new surface.
6. Infill with a clean angular stone type 4/20 or 20/40 using a 'roll-out' technique with plant machinery operating from outside the RPA or from already infilled areas. Cells must be filled to their maximum volume and then over filled by 25mm. No additional compaction is required beyond a limited number of passes with lightweight tracked plant machinery.
7. Install layer of geo-fabric extending to 300mm beyond boundaries whilst overlapping joints by 300mm.
8. Install final porous surface as per client specification.

Figure 3. Example 'No Dig' Hard Surfacing

