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Arboricultural Impact Assessment (Phase 2)

Land off Llangollen Road, Acrefair, Wrexham

Prepared for:

Gower Homes
8 Temple Row
Wrexham
LL13 8YL

Ref: 09/AIA/P2/WXM/32 (Rev B)

18 January 2010

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1.0 INSTRUCTIONS

- 1.1 We have been instructed by Gower Homes to carry out an Arboricultural Impact Assessment (AIA) in order to assess the development proposal in relation to trees plotted on the plans provided, in accordance with the principles of British Standard 5837 'Trees in Relation to Construction - Recommendations' 2005.
- 1.2 We are instructed to prepare a report in order to provide information to assist all parties involved in the planning process to make balanced judgements with regard to arboricultural features in relation to the proposed residential development on land off Llangollen Road, Acrefair, Wrexham. As such, all significant trees on and adjoining the site have been surveyed and are listed within a Tree Survey Schedule (**Appendix 1**) and plotted on a Tree Constraints Plan (**Appendix 3**) and an Impact Assessment Plan (**Appendix 4**).
- 1.3 The survey was carried out on 24 November 2009 by Alistair Henderson, Principal Consultant to Tree Solutions. Our appraisal of the mechanical integrity of trees on the site is sufficient only to inform the current project. The assessment of trees is carried out from ground level without invasive investigation and the disclosure of hidden defects cannot therefore be expected. Whilst the survey is not specifically commissioned to report on matters of tree safety, we report obvious defects that are significant in relation to the existing and proposed land use. We do not carry out detailed safety inspections unless specifically instructed to do so in writing and have not carried out such inspections of trees on the proposal site.
- 1.4 Twenty nine individual trees (T1–T29) and two groups (G1-G2) were surveyed and mapped on a Tree Constraints Plan (Dwg No: 09/AIA/P2/WXM/32). All arboricultural information recorded during the survey is presented at **Appendix 1**.
- 1.5 The phase 2 Arboricultural Impact Assessment is based on DWG No: 4925 dated November 2009 carried out by Parry Davies Architects.

2.0 STATUTORY CONTROLS & PLANNING POLICY

- 2.1 In terms of impacts on trees, the planning application will be assessed against Policy EC4 of the Wrexham County Borough Council Unitary Development Plan (2005) and Local Planning Guidance Note 17 'Trees & Development' (2006).
- 2.2 Consultation with Wrexham County Borough Council confirmed that no trees within the curtilage of the site are the subject of a Tree Preservation Order and the site does not fall within a designated Conservation Area. As such, statutory permission from the Local Planning Authority (LPA) will not be required prior to any tree works taking place.

2.2 Protected Species

- 2.2.1 Mature trees often contain cavities, crevices and hollows that offer potential habitat for species such as bats and barn owls. Both are afforded protection under the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as The Conservation (Natural Habitats, &c) (Amendment) Regulations 2007.

2.3 Wildlife Habitats

- 2.3.1 Trees and hedgerows of most species provide valuable nesting sites for a wide range of birds and it is highly likely that nesting birds will be present on the site during the period March to September.

3.0 THE SITE

- 3.1 The proposed development site is currently a disused railway embankment that was formally owned by Wrexham County Borough Council. It contains a small copse of naturally regenerated trees and scrub on the North West embankment that falls steeply to Chapel Street below. The trees appear to have been felled/coppiced in the past and have now regenerated from coppiced stools.

4.0 DEVELOPEMENT PROPOSAL

- 4.1 Erection of 7 semi-detached residential properties with associated vehicular access and parking.

5.0 GENERAL CONSTRAINTS DATA

- 5.1 Constraints arising from retention trees are separated into three and sometimes four types of Construction Exclusion Zone (CEZ), of which CEZ1 (the Root Protection Area - RPA) is illustrated on the Impact Assessment Plan. The CEZ's are explained further as follows:

5.2 CEZ1: Root Protection Area (RPA)

- 5.2.1 The area, calculated in m^2 , which shall be protected during and preserved intact after construction, in order to facilitate the healthy retention of the tree(s) concerned by safeguarding a reliable quantum of functioning tree roots. This area is based on a radial measure from the centre of the stem of the tree, which is found by multiplying the stem diameter of the tree concerned, by a factor of twelve (or by a factor of ten when measuring basal diameter immediately above the root flare for multi-stemmed trees).
- 5.2.2 During this Arboricultural Impact Assessment, the derived radial measure has been converted into the actual area to be protected, having due regard to prevailing site conditions and how these may have affected the trees, particularly in relation to factors affecting their likely rooting disposition.
- 5.2.3 The means of protecting the RPA will include the installation of tree protection fencing prior to the start of work on site, including all demolition. Various activities within the RPA are prohibited (e.g. mechanical excavation, soil stripping, fire lighting, materials storage, lowering levels and creating excessive sealed surfacing), and may include the use of temporary ground protection and/or special engineering solutions where construction is proposed near to retention trees or within the RPA.
- #### 5.3 CEZ2: Tree Crown Protection Zone
- 5.3.1 This is the area above ground occupied by the crown of the tree, along with allowances for working space and if appropriate, for future growth. The extent of CEZ2 is determined by considering the existing and future crown spread of the tree(s), bearing in mind the possibility of this being modified by an acceptable quantum of pruning.
- 5.3.2 Arising from the above, the means of protecting CEZ2 includes providing an adequate separation distance between retention trees and the proposed residential dwelling. This will include tree removal and access facilitation pruning, where this is necessary and arboriculturally acceptable.

6.0 SURVEY METHODOLOGY

- 6.1 For the purpose of this report we have assumed that all tree positions have been accurately plotted on the topographical site survey provided.
- 6.2 The method used in the preparation of this report is based on the principles of BS 5837: 2005.
- 6.3 Tree heights were surveyed to the nearest 1m. They can be measured with a Suunto Clinometer if required.
- 6.4 Trunk diameters were measured by use of forestry girth tape.
- 6.5 The category assessment (Table 1) on which the trees is based include current and long-term arboricultural, landscape, cultural and conservation values (BS5837: 2005). This table can be found at **Appendix 2**
- 6.6 For clarity, the grading system is summarised as follows:

R grade – trees for removal, effective for less than 10 years

A grade – trees of high quality and value, effective for more than 40 years

B grade – trees of moderate quality and value, effective for more than 20 years

C grade – trees of low quality and value, effective for 10 years

7.0 JUXTAPOSITION OF TREES AND STRUCTURES

7.1 Above ground constraints

- 7.1.2 Shading from trees should not be a material consideration of this planning application as trees immediately to the rear of the development are to be felled in order to construct the proposed retaining wall. Furthermore, the remaining trees are on the northern boundary and as such are unlikely to cast a significant shadow to the rear elevation or courtyard gardens. The front elevations face south where they will receive uninterrupted daylight. The rear gardens will also benefit from unimpeded daylight from the east and west.

7.2 Below ground constraints

- 7.2.1 The below ground constraints are generally summarised as the root protection area (RPA). The shape of the RPA and its exact location will depend upon arboricultural considerations including likely tolerance of the tree to root disturbance; morphology and disposition of the roots when known influenced by past or existing site conditions; soil type and structure; and topography and drainage.
- 7.2.2 The purpose of the RPA is to prevent physical damage to tree roots and to prevent damage to the soil structure. Tree roots are damaged by soil compaction, changes in soil levels or soil contamination which could reduce tree health and/or stability.
- 7.2.3 Root patterns are affected by topography and characteristics of the soil or substrate. Where trees are located within close proximity to existing hard standing they are unlikely to have an even distribution of lateral roots due to restrictions in root growth created by compacted sub-grades beneath. In such circumstances tree root distribution is predominately heavily biased towards the other side of the tree. The RPA of tree numbers 23 has therefore been modified to reflect this and are shown running along the edge of Chapel Street to its east. The required root protection radius as defined by BS5837 for this tree has been maintained by extending the RPA to within the site in the opposite direction.

7.3 Underground Services

- 7.3.1 There are no issues with regard to installation of services to the proposed properties as they will be located within the site boundary and as such outside any designated RPA's of trees marked for retention.

8.0 DEVELOPMENT IMPLICATION TO RETAINED TREES

- 8.1 The proposed car parking bays encroach within the RPA of tree numbers 11 to 14. These trees are poor quality scrub specimens that form a linear group along the former boundary fence line. They are insignificant to the character and setting of the area and add little landscape or amenity value to the locale. They have been allowed to grow through lack of any formal management and a number of them should be removed and replaced irrespective of this development proposal. They have therefore been categorised as 'C' grade trees and should not be considered a material consideration of this planning application.
- 8.2 The proposed development requires the removal of tree numbers 12 to 16, 19 to 22 and 3 individual Birch trees within group 1. The proposed construction of the retaining wall also encroached within the RPA of tree number 23 which is a multi-stemmed Ash. We have recommended that this tree be re-coppiced rather than removed entirely and allowed to regenerate from the coppice stool. The root loss to this tree due to excavation of the spoil heap will be kept to the minimum and we believe that the tree will tolerate this amount of loss particularly if coppiced. The subsequent re-growth will be re-coppiced on a 6-10 year rotation in order to maintain healthy stems and vigorous new root growth that will help stabilise the loose material on this steep embankment. The trees to be removed are all poor quality scrub or low canopy tree specimens that are of no particular individual merit to the site. They can all be easily replaced by new planting within the areas identified on the Tree Protection Plan at Appendix 6. All trees have been categorised a 'C' grade and as such should not be considered for retention at the expense of well needed affordable housing to the locale.
- 8.3 Although outside the site boundary, the most appropriate form of future management for the entire eastern slope would be to re-coppice all Ash trees and plant a low level scrub layer of Hawthorn, Holly and Hazel as high canopy trees are not the most appropriate for slope stabilisation due to their high lever effect in strong winds that can lead to windthrow and landslip. Ideal slope planting to avoid erosion are leafy shrubs/scrub which root deeply thus locking the soil slip planes. Shrubs and scrub have low canopies therefore scarcely loosen the soil with their short wind lever.

9.0 SUMMARY AND ANALYSIS OF TREES

- 9.1 A full description of all tree details is provided in **Appendix 1**.
- 9.2 The tree survey covers 29 individual trees and 2 groups. Of the trees covered there 2 that are considered 'R' category, i.e. in such a condition that any existing value would be lost within 10 years and which could/should be removed for sound arboricultural reasons.
- 9.3 There are 26 individual trees and all groups considered to be 'C' category trees, which are of low quality and value or generally insignificant trees in terms of amenity or landscape value to the locale. The BS states that such trees could be considered for removal as part of the design process or retained until such time as new planting can be established; a minimum of 10 years is suggested. The BS also states that C category trees should not be considered significant constraints to development particularly if their retention would be disproportionate to the value of the development and when new tree planting can adequately mitigate their loss. This is clearly the case on this proposal.

- 9.4 Tree numbers 23 and 26 have been categorised as 'B' grade trees that are of moderate quality and value due to their identifiable biodiversity benefits rather than landscape value. Tree number 26 (Oak) is outside the site boundary and is unaffected by any proposed construction works, tree number 23 (Ash) will be coppiced allowing re-generation from the coppiced stool that will rapidly replace the existing stems lost to development.

10.0 PROPOSED REVISIONS TO THE SCHEME

- 10.1 We advise that all proposed revisions in respect of location of underground services, external surfacing and/or landscaping; having implications for trees should be referred to us for review.

11.0 NEW TREE PLANTING

11.1 Advance tree planting & aftercare

As mitigation for the trees being removed, advanced tree planting shall be undertaken within the first available planting season November 2010 -February 2011 prior to the development being completed in order to increase the tree cover on the site and enhance the local biodiversity. Full details and specifications including any soil amelioration required are to be submitted as part of the detailed landscape scheme associated with application. This can be made a condition of planning consent. The below trees are a guide of the species to be planted in the two area indicated on the Tree Protection Plan at Appendix 6 and should consist of a mixture of feathered whips and 1+1 transplants. New planting should consist of native species in order to visually integrate with the existing vegetation along the western embankment and enhance the local biodiversity of the area by creating valuable habitat.

Recommended low canopy species (1+1 transplants):

Hazel - <i>Corylus avellana</i>	30%
Holly - <i>Ilex aquifolium</i>	10%
Field Maple - <i>Acer campestre</i>	20%
Spindle - <i>Euonymus europaeus</i>	10%
Hawthorn - <i>Crataegus monogyna</i>	30%

Recommended high canopy species (Feathered whips):

Oak - <i>Quercus robur</i>	6 plants
Ash - <i>Fraxinus excelsior</i>	6 plants
Alder - <i>Alnus glutinosa</i>	6 plants

11.2 Specification Summary

- 11.2.1 PLANTING NOTES: All plants to be supplied in accordance with HTA 'National Plant Specification' and from a HTA certified nursery. All trees and plants to be supplied in accordance with BS3936: Part 1 (1992) and planted in accordance with BS4428 (1999). Delivery and handling of all plant material to be in accordance with CPSE 'Handling and Establishment of Landscape Plants 1996'. All plants will be watered in a field capacity immediately after planting.
- 11.2.1 Tree Planting - All trees to be in accordance with BS 3936/5236, to be either notch planted or pit planted at 2 meter centres and protected by plastic 'tubex' tree guards. The base of trees to be planted are to be covered with 75mm depth bark mulch to 1.0 metre diameter and kept weed free.
- 11.2.2 WEED CLEARANCE: Areas to be planted and shall be cleared of any grass and weed growth physically and/or chemically with translocated herbicide (glyphosate based) prior to cultivation operations. All roots of perennial weeds shall be removed. More than one application may be necessary to ensure eradication. Extreme care is to be taken whilst spraying herbicide near existing trees.

- 11.2.3 SOILS: Subsoil is to be scarified to 300mm depth prior to spreading topsoil to alleviate compaction. Imported or as saved topsoil to be in accordance with BS3882 'Premium Grade'. Screened or manufactured topsoil is not acceptable. Topsoil is to be free from weeds, stones and debris over 25mm in size.
TOPSOIL DEPTH: Feathered whips/transplant s 300mm depth. Incorporate proprietary non peat compost to BS PAS 100 50mm depth evenly worked into soil.
- 11.2.4 Maintenance and making good defects - The landscape contractor shall maintain all the planting areas for a period of 12 months following practical completion. All planting areas are to be kept weed free for the duration of the maintenance period. All plants that are found dead, diseased or dying at the end of the first growing season shall be replaced at the contractors own expense in the next available growing season.

12.0 CONCLUSIONS

- 12.1 BS 5837: 2005 contains clear and current recommendations for a best practice approach to the assessment, retention and protection of trees on development sites. The proposed development has followed this guidance by:
- Seeking arboricultural advice and undertaking a phase 1 preliminary tree survey to inform the layout and design of the proposed development
 - Respecting the constraints posed to development of the site by high or moderate quality trees
 - Acting upon arboricultural advice throughout the design process in order to obtain the best development proposal whilst considering the current and future tree requirements
- 12.2 New landscaping will be incorporated within the scheme to enhance the site boundaries and provide valuable native habitat making this proposal the most sustainable approach to continued tree cover in the area.
- 12.3 The protection of retained trees will be in accordance with recommendation contained within the BS and as detailed on the Tree Protection Plan at **Appendix 6** and within the Arboricultural Method Statement at **Appendix 7**.
- 12.4 Inspection of the tree protective fencing will ensure that all works comply with the provisions of this report.

13.0 LIMITING CONDITIONS

Unless stated otherwise:

Information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of the inspection.

The inspection is limited to visual examination of the subject trees from ground level only and without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

This report has been prepared for the sole use and benefit of the client. Any liability of Tree Solutions shall not be extended to any third party.

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14.0 REFERENCES

- BS 5837; 2005 'Trees in Relation to Construction - Recommendations' British Standards Institute, London
- BS 3998; 1989 'Recommendations for Tree Work' British Standards Institute, London
- 'Tree Roots in the Built Environment 2006 - Dept. for Communities & Local Government (DCLG)

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Appendix One
Tree Survey Schedule

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TREE SURVEY SCHEDULE

SITE:	LAND OFF LLANGOLLEN ROAD, ACREFAIR, WREXHAM	SURVEYOR:	A. HENDERSON	PAGE: 1 OF 6
CLIENT:	GOWER HOMES	ASSESSMENT DATE:	26/11/2009	
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT	VIEWING CONDITIONS:	CLEAR	
		JOB REFERENCE:	09/AIA/P2/WXM32	

Tree No.	Species	Age	Height (m)	Crown Spread (m)	D.B.H (mm)	Vitality	Comments	Management	BS 5837 Retention Category	BS5837 RPA Radius (m)
T1	Field Maple	EM	8 C- 0.5	N: 1.5 S: 1.5 E: 1.5 W: 1.5	250 (multi)	M	• Poor quality multi- stemmed tree within previous fence line • E.R.C <10	• Consider coppicing	C1	2.5
T2	Sycamore	EM	12 C- 2	N: 4 S: 2.5 E: 5 W: 2	600 (multi)	M	• Insignificant multi-stemmed tree • Ivy clad • E.R.C < 10	• Consider coppicing	C1 & 2	6
T3	Field Maple	EM	9 C- 1	N: 3 S: 3 E: 3 W: 3	400	M	• As T2 • E.R.C < 10	• N/A	C1 & 2	4.8
T4	Elder	EM	4 C- 0	N: 1 S: 1 E: 1 W: 1	130	M/P	• Decay in base • Insignificant scrub • E.R.C < 10	• N/A	C1 & 2	1.6

HEADINGS& ABBREVIATIONS

TREENO.

AGERANGE:

DBH:

CROWNSPREAD:

VITALITY:

BS 5837 RETENTIONCATEGORY:

BS 5837 RPARADIUS:

E.R.C.

REFERENCENUMBER. REFER TO PLAN OR NUMBEREDTAGS WHEREAPPLICABLE

Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, FM = FULLY MATURE, PM = POST MATURE

STEM DIAMETER – MEASURED AT 1.5 METRES

MEASURED DIAMETER OF CROWN AT 4 CARDINAL COMPASS POINTS

A MEASURE OF PHYSIOLOGICAL CONDITION. D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, G = GOOD

RETENTION VALUE BASED ON TABLE 1 BS 5837 (2005)

RADIUS FROM STEM TO THE LINE OF THE TREE PROTECTION AS SET OUT IN TABLE 2 OF THE STANDARD

ESTIMATED REMAINING CONTRIBUTION (YEARS)

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TREE SURVEY SCHEDULE

SITE:	LAND OFF LLANGOLLEN ROAD, ACREFAIR, WREXHAM	SURVEYOR:	A. HENDERSON	PAGE: 2 OF 6
CLIENT:	GOWER HOMES	ASSESSMENT DATE:	26/11/2009	
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT	VIEWING CONDITIONS:	CLEAR	
		JOB REFERENCE:	09/AIA/P2/WXM32	

Tree No.	Species	Age	Height (m)	Crown Spread (m)	D.B.H (mm)	Vitality	Comments	Management	BS 5837 Retention Category	BS5837 RPA Radius (m)
T5	Field Maple	EM	9 C-1	N: 2 S: 2 E: 2 W: 2	310 (multi)	M	• As T2	• N/A	C1&2	3
T6	Ash	Y	7 C-1	N: 0.5 S: 2 E: 2 W: 2	370	M	• Young tree in fence line • E.R.C < 10	• N/A	C1 & 2	4.5
T7	Goat Willow	Y	6 C-1	N: 1.5 S: 1.5 E: 1.5 W: 1.5	250 (multi)	M/P	• All as T2 • E.R.C < 10	• N/A	C1 & 2	2.5
T8	Goat Willow	SM	6 C-1	N: 1 S: 2 E: 2 W: 0.5	300 (multi)	M	• All as T2 • E.R.C < 10	• N/A	C1 & 2	3
T9	Goat Willow	SM	5 C-1	N: 2 S: 2 E: 0.5 W: 2	300 (multi)	M/P	• All as T2 • E.R.C < 10	• N/A	C1 & 2	3
T10	Goat Willow	EM	5 C-1	N: 0 S: 3 E: 2 W: 2	300 (multi)	M	• All as T2 • E.R.C < 10	• N/A	C1 & 2	3

Tree Solutions**TREE SURVEY SCHEDULE**

SITE:	LAND OFF LLANGOLLEN ROAD, ACREFAIR, WREXHAM
CLIENT:	GOWER HOMES
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT

SURVEYOR:	A. HENDERSON
ASSESSMENT DATE:	26/11/2009
VIEWING CONDITIONS:	CLEAR
JOB REFERENCE:	09/AIA/P2/WXM32

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Tree No.	Species	Age	Height (m)	Crown Spread (m)	D.B.H (mm)	Vitality	Comments	Management	BS 5837 Retention Category	BS5837 RPA Radius (m)
T11	Ash	Y	3 C-0	N: 1 S: 1 E: 1 W: 1	90	M	- Small insignificant sampling in fence line - Easily replaced by new planting - E.R.C <10	Fell for development	C1 & 2	2
T12	Ash	Y	6 C-1	N: 1 S: 2 E: 1 W: 1	260	M	- Small insignificant tree in fence line - Easily replaced by new planting - E.R.C <10	Fell for development	C1&2	3.2
T13	Goat Willow	EM	5 C-0.5	N: 0.5 S: 1.5 E: 1 W: 2.5	250 (multi)	M	- Co-dominant stems - Within old fence line - Easily replaced - E.R.C <10	Fell for development	C1 & 2	2.5
T14	Goat Willow	EM	5 C-0.5	N: 1 S: 2 E: 2.5 W: 0	300 (multi)	M	- Co-dominant stems - Within old fence line - Easily replaced - E.R.C <10	Fell for development	C1 & 2	3
T15	Willow	EM	7 C-1	N: 1 S: 2 E: 3 W: 2	800 (multi)	M	- Multi-stemmed scrub tree in wrong location to develop - Insignificant to locale - E.R.C <10	Fell for development	C1	8

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TREE SURVEY SCHEDULE

SITE:	LAND OFF LLANGOLLEN ROAD, ACREFAIR, WREXHAM	SURVEYOR:	A. HENDERSON	PAGE: 4 OF 6
CLIENT:	GOWER HOMES	ASSESSMENT DATE:	26/11/2009	
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT	VIEWING CONDITIONS:	CLEAR	
		JOB REFERENCE:	09/AIA/P2/WXM32	

Tree No.	Species	Age	Height (m)	Crown Spread (m)	D.B.H (mm)	Vitality	Comments	Management	BS 5837 Retention Category	BS5837 RPA Radius (m)
T16	Goat Willow	Y	5 C- 1	N: 0 S: 2 E: 2.5 W: 1.5	210 (multi)	MP	• As T15	• Fell for development	C1	2.1
T17	Ash	Y	5 C- 0	N: 1.5 S: 2 E: 2 W: 0.5	220 (multi)	P	• As T15	• Fell for development	C1	2.2
T18	Goat Willow	EM	4 C- 0	N: 2 S: 2 E: 2 W: 2	350 (multi)	M	• Poor quality tree/scrub with multiple inclusions at base • Past coppiced • E.R.C <10	• Coppice	C1 & 2	3.5
T19	Birch	Y/S M	8 C- 1.5	N: 1 S: 2.8 E: 1.8 W: 1.5	220	M	• 3 stems • Self set trees with no amenity/lands cape value • Easily replaced • E.R.C <10	• Fell for development	C1 & 2	2.7
T20	Goat Willow	EM	5 C- 0	N: 1.5 S: 6 E: 3.5 W: 2	400 (multi)	M	• Poor quality tree/scrub with multiple inclusions at base • Past coppiced • E.R.C <10	• Fell for development	C1 & 2	4

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TREE SURVEY SCHEDULE

SITE:	LAND OFF LLANGOLLEN ROAD, ACREFAIR, WREXHAM	SURVEYOR:	A. HENDERSON	PAGE: 5 OF 6
CLIENT:	GOWER HOMES	ASSESSMENT DATE:	26/11/2009	
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT	VIEWING CONDITIONS:	CLEAR	
		JOB REFERENCE:	09/AIA/P2/WXM32	

Tree No.	Species	Age	Height (m)	Crown Spread (m)	D.B.H (mm)	Vitality	Comments	Management	BS 5837 Retention Category	BS5837 RPA Radius (m)
T21	Hawthorn	EM	4 C-0	N: 1 S: 2 E: 1.5 W: 1.2	90	M	- Small scrub tree of no visual significance - Easily replaced - E.R.C <10	Fell for development	C1 & 2	1.2
T22	Goat Willow	EM	5 C-0	N: 2 S: 4 E: 4 W: 3	400 (multi)	M	All as T20	Coppice	C1 & 2	4
T23	Ash	EM	10 C-2.5	N: 4 S: 4 E: 3 W: 3	700 (multi)	M	6 stems from previous coppiced stool - Will regenerate well from re-coppicing to form similar sized tree before coppicing again in approx. 6 years - E.R.C <10 as requires coppicing	Re-coppice	B3	7
T24	Goat Willow	EM	6 C-1	N: 2 S: 3.5 E: 3.6 W: 2.8	350 (multi)	M	All as T20	Coppice	C1 & 2	3.5
T25	Goat Willow	EM	5 C-0	N: 2 S: 4 E: 4 W: 3	400 (multi)	M	All as T20	N/A	C1 & 2	4
T26	Oak	SM	11 C-7	N: 1 S: 1.5 E: 1 W: 1	250	G	- Good quality tree with no significant defects - E.R.C 40+	N/A	B3	3

Tree Solutions**TREE SURVEY SCHEDULE**

SITE:	LAND OFF LLANGOLLEN ROAD, ACREFAIR, WREXHAM
CLIENT:	GOWER HOMES
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT

SURVEYOR:	A. HENDERSON
ASSESSMENT DATE:	26/11/2009
VIEWING CONDITIONS:	CLEAR
JOB REFERENCE:	09/AIA/P2/WXM32

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Tree No.	Species	Age	Height (m)	Crown Spread (m)	D.B.H (mm)	Vitality	Comments	Management	BS 5837 Retention Category	BS5837 RPA Radius (m)
T27	Oak	SM	10 C- 3	N: 0.5 S: 1 E: 0 W: 2.8	200	M	• Edge tree with poor crown form – would be best removed to allow adequate space for development of T26 • E.R.C N/A	• Fell	C1 & 2	2.4
T28	Elm	EM	10 C- 3	N: 1 S: 1 E: 1 W: 1	200	P/MD	• In decline due to Dutch elm disease	• N/A	R	N/A
T29	Elm	EM	10 C- 3	N: 1 S: 1 E: 1 W: 1	200	P/MD	• Dead	• N/A	R	N/A
G1	Birch	Y/S M	6 C- 1	N: 1 S: 1 E: 1 W: 1	≤150	M/P	• Insignificant group of natural regen – some failing at base	• Fell for development	C1 & 2	1.8
G2	Hawthorn	Y/S M	2 C- 0	N: 1 S: 1 E: 1 W: 1	≤100	M	• Low understorey worth retaining for slope stabilisation	• N/A	C1 & 2	1.2

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Appendix Two
BS 5837 Category Grading Chart

Table 1 — Cascade chart for tree quality assessment

Table 1 — Cascade chart for tree quality assessment					
TREES FOR REMOVAL					
Category and definition		Criteria		Identification on plan	
Category R 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		• 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 are 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. NOTE: Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).		 RGB code: 127-000-000 AutoCAD: 246	
TREES TO BE CONSIDERED FOR RETENTION					
Category and definition		Criteria – Subcategories			Identification on plan
		1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A Those of high quality and value: those in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)		Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	 RGB code: 000-255-000 AutoCAD: 90
Category B Those trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)		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)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	 RGB code: 000-000-255 AutoCAD: 170
Category C Those trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm		Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	 RGB code: 91-91-91 AutoCAD: 252
NOTE: Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150 mm should be considered for relocation.					

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Appendix Three
Tree Constraints Plan



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Appendix Four
Arboricultural Impact Plan



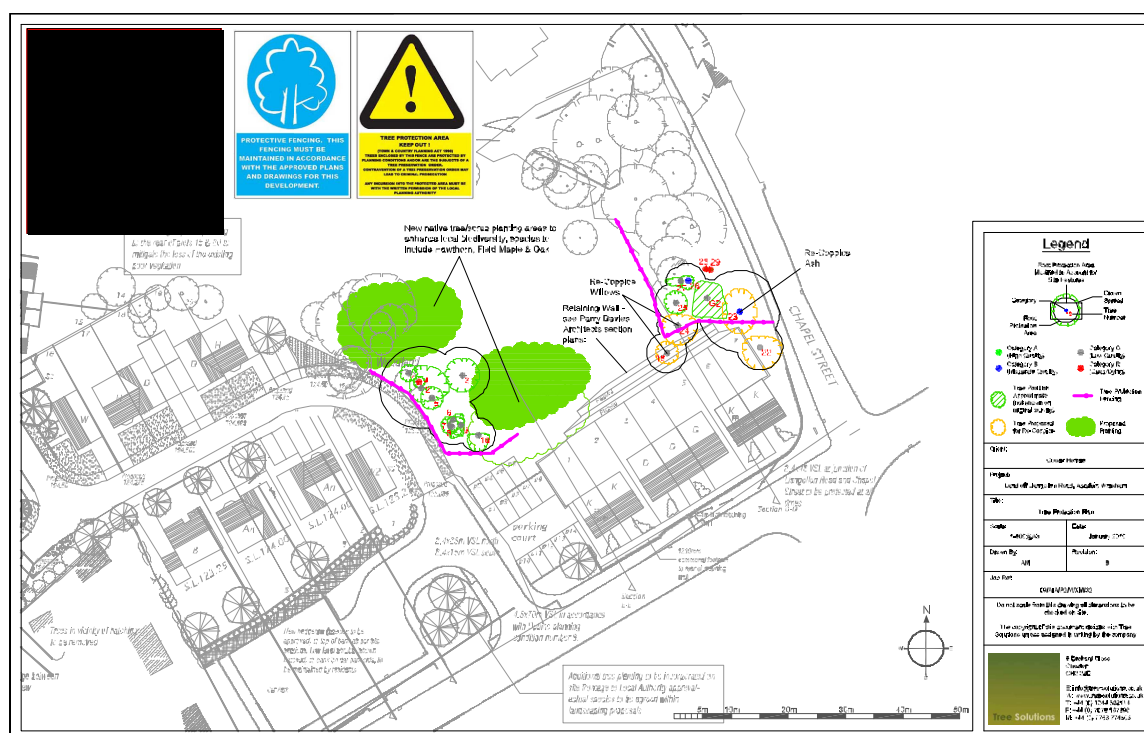
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Appendix Five
Trees to Fell & Retain Plan



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Appendix Six
Tree Protection Plan



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Appendix Seven

Arboricultural Method Statement

SEQUENCE OF WORKS

From commencement of the above development, the following methodology shall be implemented in the manner and sequence described:

1. Pre-contract site meeting
2. Arboricultural works
3. Landscape works
4. Erection of temporary protective fencing
5. Underground services
6. Main construction phase
7. Removal of temporary fencing

1. PRE-CONTRACT SITE MEETING

To outline working methods in relation to trees prior to any construction activity on site, a site meeting of the following shall take place:

1. Client
2. Architect/Planning Consultant
3. Structural Engineer
4. Main Contractor
5. Arboriculturalist
6. Site Agent

2. ARBORICULTURAL WORKS

1. Before the erection of the temporary protective fencing, all tree removal shall be implemented in accordance with the Tree Survey Schedules
2. All possible efforts must be made to prevent damage to retained trees including potential root incursion or compaction caused by vehicle access.
3. All arboricultural works shall conform to the recommendations of BS 3998 (1989) 'Recommendations for Tree Work' as amended.
4. All operatives shall be equipped with and use personal protective equipment (PPE) in accordance with current Health & Safety Executive current directives and industry codes of practice.
5. Wound sealants shall not be used on any tree.
6. Performance of all arboricultural operations and use of equipment shall be in accordance with current Health & Safety Executive current directives and industry codes of practice.

3. LANDSCAPE WORKS

1. Landscaping works will be implemented in accordance with a scheme approved by the LPA.
2. There shall be no rotoation of ground within any area designated as a Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Fencing.
3. No hard landscaping works or excavation for cables or any other service should be installed within the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) without the written consent of Planning Service.

4. TEMPORARY PROTECTIVE FENCING ERECTION

- 1 Following completion of the tree felling and prior to construction, the main contractor shall erect the temporary protective fencing as detailed in the 'Tree Protection Plan'. Prior to commencement of any site demolition, construction, preparation, excavation or material deliveries, the Arboricultural Consultant will inspect installation of the temporary fencing. Any damage occurring to protective fencing during the demolition or construction phase shall be made good by the main contractor.

4. UNDERGROUND SERVICES

Unless an emergency arises, there shall be no new excavation for the installation, renewal, or repair of underground services within any area designated as a Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Fencing (unless very low root volume is established beforehand).

5. MAIN CONSTRUCTION PHASE

There shall be no storage of construction material, site parking, site accommodation or equipment in any area designated as the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Fencing. No fires shall be lit.

The site agent shall supervise deliveries by self-loading crane, with vehicles positioned in such a manner that retained trees are not at risk of damage.

6. REMOVAL OF TEMPORARY FENCING

1. Temporary protective fencing shall be removed only upon written approval of the Local Planning Authority.

TREE PROTECTION SPECIFICATION

The Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) enclosed by temporary protective fencing shall:

1. Be erected prior to any demolition works, delivery of site accommodation or materials and shall remain for the duration of construction works.
2. Preclude all construction activity with the sole exception of specified arboricultural works and as such works as have been agreed by all parties and to be carried out under supervision.
3. Be protected by temporary protective fencing and other measures as specified.
4. Preclude the storage or tipping of all materials and substances, in addition, toxic substances such as fuels, oils, additives, cement, or other deleterious substances within 5.0 meters of an exclusion zone.
5. Clearly legible weatherproof signage, stating "Protected Trees – Exclusion Zone" shall be attached to the fencing 1.5m from the ground, facing out of the Tree Protection Zone located at regular intervals along the fence line. The notice will be A3 in size as per **Appendix 9**.
6. Other than works detailed within this method statement or approved in writing by the Local Planning Authority (LPA), no works including storage or dumping of materials shall take place within the exclusion zones defined by the protective fencing.
7. Any incursion into the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) must be by prior arrangement, following consultation with the LPA.

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Temporary Protective Fencing Type:

Protective Barrier (Fig.2)

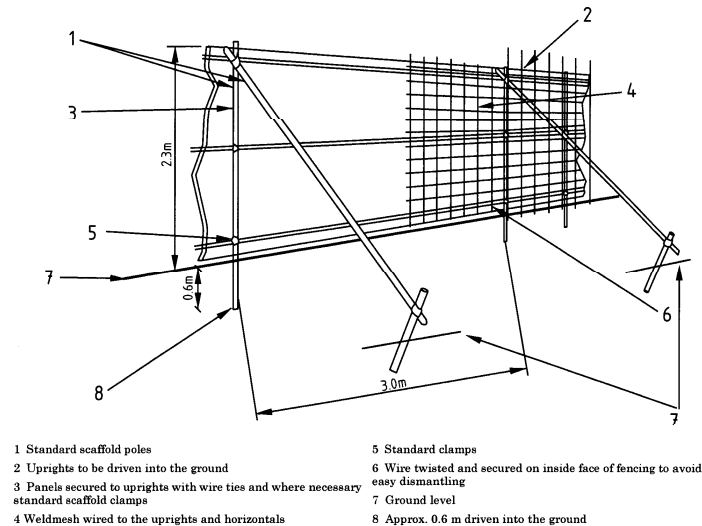


Figure 2 - Protective barrier

GENERAL PRECAUTIONS

No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10 metres of the trunk of a tree that is to be retained.

No fires will be lit within 20 metres of the trunk of any tree that is to be retained.

OnSite Storage of Spoil and Building Materials

Prior to and during all site works no spoil or construction material will be stored within the crown spread on any tree on or adjacent to the site even if proposed site work is to be within the crown spread. Any encroachment within this protected area will only be with the prior agreement of the LPA Arboricultural Officer.

Avoiding Damage to Stems and Branches

Care shall be taken when planning site operations in proximity to trees 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 injury resulting in safe retention impossible.

Should pruning be required for access purposes it shall be kept to the barest minimum necessary to facilitate development and shall be carried out strictly in accordance with BS 3998 Recommendations for Tree Works (1989) as amended. It shall only be carried out by suitably qualified and experienced professional arborists, working according to a specification prepared by Tree Solutions. **Under no circumstances shall construction personnel undertake any tree pruning operations.**

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Appendix Eight
Site Photographs

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Photo 1 – Birch scrub within group 1



Photo 2 – Tree number 23 (Ash), multi-stemmed from coppiced stool

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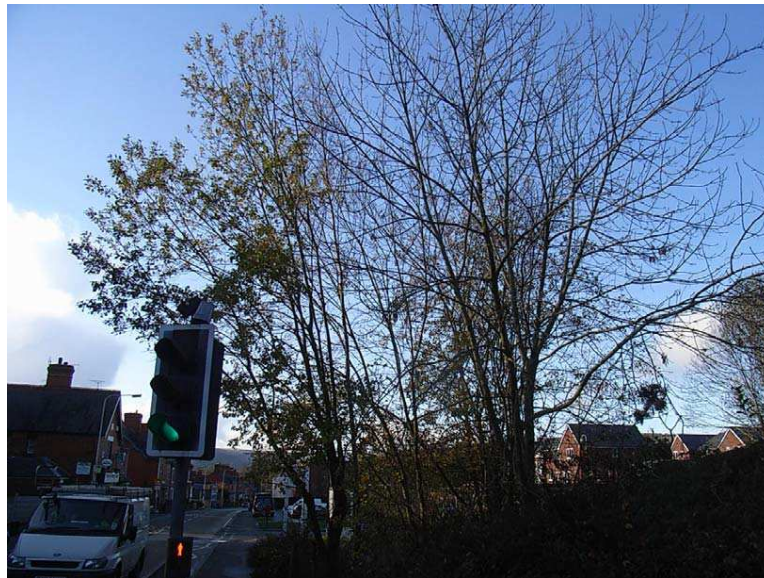


Photo 3 – Tree numbers 15-17 on site frontage



Photo 4 – Site frontage viewed from east

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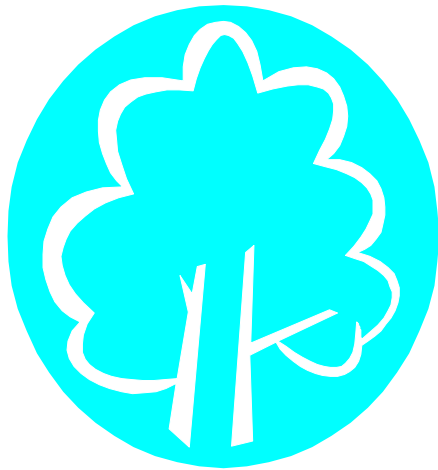
Photo 5 – Tree numbers 18-21 at top of embankment



Photo 6 – Tree numbers 11-14, insignificant poor quality multi-stemmed specimens within old fence line

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Appendix Nine
Tree Protection Sign



**PROTECTIVE FENCING. THIS
FENCING MUST BE
MAINTAINED IN ACCORDANCE
WITH THE APPROVED PLANS
AND DRAWINGS FOR THIS
DEVELOPMENT.**



**TREE PROTECTION AREA
KEEP OUT !**

**(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**

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Appendix Ten
Site Supervision Form

ARBORICULTURAL SITE SUPERVISION

Planning Ref No.
Developer:
Site Address:
Site Agent:
Visit Date:
Arboricultural Supervisor:

Site Supervision

Was all Tree Protective Fencing in place? Yes No

Was any debris noticed within Total Exclusion Zones? Yes No

Are any special works scheduled for the coming building period? Yes No

Details:

Are any amendments proposed to plans? Yes No

Details:
.....

Signed: _____

(For and on behalf of Tree Solutions)

Signed: _____

(For and on behalf of developer or main contractor)

Circulation:	Tree Solutions	☐
	Developer Head Office	☐
	Site Agent	☐
	Local Planning Authority	☐
	Architect	☐

Planning Ref: