

GM TREE CONSULTANTS

STAGE 1
ARBORICULTURAL REPORT WITH
TREE CONSTRAINTS PLAN
&
ARBORICULTURAL IMPACT ASSESSMENT
TO AID IN THE
SITE DESIGN / LAYOUT

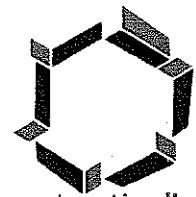
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CONSULTING ARBORIST: **GARY MARSDEN**
FDSc Arb M.Arbor.A

ARBORICULTURAL REPORT PREPARED FOR: Majid Hussain

SITE ADDRESS: 'Moor View'
Showley Road
Clayton-Le-Dale
BB1 9DR



UK REGISTERED PROFESSIONAL CONSTRUCTION SERVICES

STAGE 1 + AIA BS 5837 Report – Dated 17th July 2012 – Job Ref. 0311
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Validation statement for council registration of this report

In accordance with the ***Department for Communities and Local Government circular 02/2008*** and its guidance document ***Validation of Planning Applications***, this report fulfils the recommended national list criteria for tree survey/arboricultural information. More specifically, it contains the following:

- A full tree survey compliant to the requirements of ***B55837; (2012) Trees in relation to design, demolition and construction - Recommendations*** undertaken by a qualified arboriculturist.
- A plan to a suitable scale with a north point and showing tree survey information, retention categorisation and root protection areas, tree height and ultimate tree height.
- An assessment of the arboricultural impacts of development detailing trees to be retained / removed and appropriate protection measures.



Summary

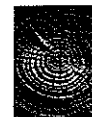
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I have inspected all the relevant trees that could influence the development of this site and listed there details within this report, a minimum root protection zone is indicated around each tree, as no construction would be allowed within the area of any retained tree unless there are specifically approved construction methods to overcome such issues.

This information can now be used to assist the architect in producing there design while still protecting any retained trees in compliance with *BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations*.

This proposal will result in the loss of 3 low category trees. All the significant boundary tree cover located on the site will remain intact. There is plenty of space for new planting if needed. The construction activity and proposed changes may adversely affect further trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through an arboricultural method statement, the development proposal will have no adverse impact on the contribution of trees to local amenity or character. Indeed, any new planting proposals will increase the potential of the site to contribute to local amenity well beyond the short term.

Gary Marsden FDS Arb M.Arbor.A



1.0 Introduction

1.1 Instruction:

I am instructed by Majid Hussain (referred to as the 'client' from here on) to inspect any significant trees that could have an effect on the development at 'Moor View' Showley Road, Clayton-Le-Dale, BB1 9DR and to provide the following information to aid in the design of the site:

- A schedule of the relevant trees to include basic data and a condition assessment as per section 4.4.2.5 of BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations.
- A tree constraints map showing: root protection areas, above ground constraints, crown spreads, retention categories, tree height plus ultimate tree height

From this data I have also produced an Arboricultural Impact Assessment (AIA) based on the initial tree survey, any designs of the site by the architect Ray Fish (referred to as the 'architect' from here on).

1.2 Purpose of this report:

This reports primary purpose is to allow the architect to design relevant buildings / site layout while taking into account any impact this will have on the retained trees on site

Within this planning process, this report will be available for inspection by people other than tree experts so the information is presented to be helpful to those without a detailed knowledge of the subject

1.3 Qualifications and experience:

I have based this report on my site observations and any provided information and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture, and include a summary in Appendix 'A'

1.4 Documents and information provided:

My client or architect provided me with copies of the following documents or information:

- Their verbal instruction outlining the situation;
- Their consent commissioning this report and agreeing to the T&C and cost
- Site drawing ref: 37/12 sheet 2 of 4 – July 2012. This shows the site layout and the footprint of the proposed dwelling

1.5 Relevant background information:

Prior to the site survey, my client advised me that:

- The council requested a survey to accompany the application, hence my involvement

1.6 Scope of this report:

This report is only concerned with the prominent trees within or around the proximity of the site that could influence the development of this site. It takes no account of any trees outside this remit or any building structural issues. It includes a preliminary assessment based on the site visit and any documents provided, listed in 1.4 above



The survey is based upon information that was available at the time of the inspection. Further inspections are necessary over time to give a fuller picture of the health of trees.

1.7 Mapping:

Site plans showing all tree locations and any relevant details can be found in Appendix 'D'.

1.8 Justification of work:

Where management action / tree surgery are recommended, this is based on maximizing the tree's safe useful life expectancy (SULE), given its current situation or the safety of persons and surrounding targets.

2.0 Limitations

- 2.1 The inspection was carried out from ground level only and relates only to arboricultural aspects. All visual observations and recommendations, relate, to the condition of the trees on the day of the survey. The trees have been assessed with the aid of a Nylon mallet for the purpose of detecting changes in resonance which may indicate that further investigation is required. Any unusual weather conditions, changes in soil, soil levels and changes to surroundings may result in a dramatic change in the trees health.
- 2.2 Due to the changing nature of trees and other site circumstances, this report and any recommendations made are limited to a 12-month period. Any alteration to the site and any development proposals could change the current circumstances and may invalidate this report and any recommendations made.
- 2.3 Trees are dynamic structures that can never be guaranteed 100% safe: even in good condition they can suffer damage under average conditions. Regular inspections can help to identify potential problems before they become acute.
- 2.4 A lack of recommended work does not imply that a tree is safe and likewise it should not be implied that a tree would be made safe following the completion of any recommended work.
- 2.5 This report does not consider the structural condition of existing buildings, nor the impact of existing trees on their foundations. If there are concerns over such matters the advice of a structural engineer should be sought.

3.0 Site visit and observations.

3.1 Site visit:

- I carried out an unaccompanied site visit on 12th July 2012.
- All my observations were from ground level without detailed investigations and I measured all dimensions unless otherwise indicated.
- I did not have access to trees outside the client's boundaries and have confined any observations to what was visible from within the client's property, any dimensions have been estimated.
- The weather at the time of inspection was clear, still and dry, with good visibility.

**3.2 Brief site description:**

- Showley Road is located in the residential suburbs of Clayton-le-dale.
- Moor View is on the eastern side of the road and surrounded by similar residential developments and open green space
- The property consists of a large bungalow is currently occupied and centrally set in a large garden.
- The surrounding topography is relatively flat and the site is not particularly exposed
- Utility services were observed on site: these were a electricity power line to the north of the property
- No visual inspections of any services were made below ground level
- A variety of broadleaved trees are located around the extremities of the site boundaries
- There is no known history on this site either personal nor from a third party

3.3 Identification and location of the trees:

I have illustrated the locations of the significant trees on the digital maps included in Appendix 'D' These plans are for illustrative purposes only and it should not be used for directly scaling measurements. All the relevant information on it is contained within this report and the provided documents.

3.4 Soil assessment

An assessment of the underling bedrock profile has been undertaken using the British Geological Survey web site (<http://mapapps2.bgs.ac.uk/geoindex/home.html>) to determine as far as reasonably practicable the presence of any shrinkable clay soils and there possible implications on the design of the development.

The bedrock formation found on or around this site is:

- BOWLAND SHALE FORMATION - MUDSTONE AND SILTSTONE

From this data it has been determined that the bedrock formation is not shrinkable. If a more detailed analysis is required, then this must be undertaken by an expert in soil analysis with access to a specialist laboratory

3.5 Restrictions:

No Tree Preservation Orders are in place on the trees in question

This site is not located in a Conservation Area

No other known restrictions apply to these trees

As confirmed by:

David Hewitt,
Arboricultural Planning and Tree Preservation Officer,
Ribble Valley Borough Council
Council Offices,
Church Walk,
Clitheroe,
Lancashire,
BB7 2RA
Tel: 01200 414505,
E-mail: david.hewitt@ribblevalley.gov.uk

A copy of this e-mail is included in Appendix 'H'



Tree Preservation Orders (TPO)

A tree preservation order, referred to as a 'TPO', is an order made by a local planning authority ('LPA') in respect of trees or woodlands.

The principal effect of a TPO is to prohibit the: Cutting down, uprooting, topping, lopping, wilful damage, or wilful destruction of trees without the LPAs consent. The cutting of roots is potentially damaging and so, in the Secretary of State's view, requires the LPAs consent

Anyone who, in contravention of a TPO, wilfully damages a tree in a way that is likely to destroy it is guilty of an offence. Anyone found guilty of this offence is liable, if convicted in the Magistrates Court, to a fine of up to £20,000. In serious cases a person may be committed for trial in the Crown Court and, if convicted, is liable to an unlimited fine.

Conservation Areas (CA)

Conservation Areas are areas of special architectural or historical interest with a character or appearance that is desirable to preserve or enhance. Trees may often contribute to the special character of the area.

All trees in a Conservation Area are subject to controls which enable the LPA to protect the special character of the area created by the trees. If trees have a specific Tree Preservation Order (TPO) on them, then the normal Tree Preservation Order controls apply.

You must give the LPA 6 weeks' notice, in writing, of your intention to do any work to trees in a Conservation Area. You must not carry out any work during the six week period, which starts from the date of receipt of your notification by the council, unless you receive written permission to do so.

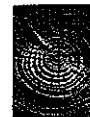
Work which is not exempt and is carried out without formal notification or within the six week period without the written consent of the council is illegal. The LPA may prosecute offenders and fines of up to £20,000 for each tree may be imposed by the Magistrates Court in the event of offenders being convicted of an offence. If proceedings are instituted in the Crown Court fines are unlimited. There is a duty to replace any tree removed without permission.

It is strongly advised that prior to undertaking work to tree/s an up to date check is carried out to establish if a TPO / CA is in force on the tree/s.

The information in this report is correct at the time of writing but it is possible that conditions could have been applied to the tree/s after this report was written.

3.5 Collection of basic data:

I inspected each tree and have indicated the numbering on the site map enclosed in Appendix 'D'. I identified obvious hedges and groups where appropriate. For each individual tree, group or hedge, I collected information on species, height, diameter, maturity and potential for contribution to amenity in a development context. I have recorded this information in the tree schedule included as Appendix 'E'.



I stress that my inspection was of a preliminary nature and did not involve any climbing or detailed investigation beyond what was visible from accessible points at ground level. This data collection is fully compliant with the *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* set out in subsection 4.4.2.5 of the standard.

4.0 Tree Categorisation

4.0 Guidance:

BS 5837:2012 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 April 2012 and supersedes BS 5837:2005, which has been withdrawn.

BS 5837:2012 provides recommendations and guidance for arboriculturists, architects, builders, engineers, and landscape architects. It is also expected to be of interest to land managers, contractors, planners, statutory undertakers, surveyors, and all others interested in harmony between trees and development in its broadest sense.

The category for the tree is ascertained by following the guidelines in the BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* "Cascade chart for tree quality assessment" included with the TCP tree schedule in Appendix 'F'. A brief summary of each category is outlined as follows:

4.1 Category 'A' trees:

This category signifies trees that are of a high quality and value with an estimated remaining life expectancy of at least 40 years. Occasionally a veteran tree, although not in the best condition may warrant this category because of its wildlife and cultural value.

It is essential to retain these trees. The design of the proposed development should take into account the retention of category 'A' trees. A design layout that suggests the removal of category 'A' trees has a high increased risk of planning refusal.

4.2 Category 'B' trees:

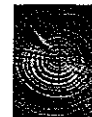
This category signifies trees that are of a moderate quality and value with an estimated remaining life expectancy of at least 20 years.

It is important to retain these trees. The design of the proposed development, where feasibly possible, should take into account the retention of category 'B' trees. A design layout that suggests the removal of category 'B' trees has an increased risk of planning refusal.

4.3 Category 'C' trees:

This category signifies trees that are of low quality and value with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

They are generally trees that could remain and are expected to have a safe useful life expectancy of between 10 and 20 years if no development were to occur. However, because of their generally low quality it would not be a great loss if they had to be removed if they were a significant constraint to the design or construction process of the proposed development. Particular attention is drawn to the phrase "significant constraint".



4.4 Category 'U' trees:

This category signifies trees that are in such a condition that they cannot be realistically be retained as living trees in the context of the current land use for longer than 10 years and which should, in the current context, be removed for reasons of sound arboricultural management

5.0 Root Protection Areas (RPAs)

5.1 Why do we need root protection areas?

Approximately eighty percent of a tree's roots are in the top 600 mm of soil. Therefore any changes in this vital environment including: ground level, soil compaction, physical damage to roots, moisture or levels of contaminants can have a dramatic effect on the health of a tree. At deeper strata alterations in water table and routing of services can cause detrimental, long term, effects

5.2 Method of calculations:

The area of roots that need to be protected around a tree to try and ensure that it does not suffer damage during the construction process is called the Root Protection Area (RPA)

The RPA is calculated using a formula based upon the diameter of the tree at 1.5 metres high for single stem trees and near ground level for multi-stem trees. At this stage it is generally represented by a circle centred on the tree's stem. A small percentage lost from the outside of the circle may be tolerated by the tree or offset in another direction. However, where there are significant existing constraints additional root loss in close proximity near to a tree's stem is likely to have a detrimental effect on the tree's health or even complete failure of the root plate.

5.3 How to use RPAs:

The RPAs for the trees in question are indicated in Appendix 'E'. At this point the RPA is only indicative and intended to assist in preparing the design layout.

5.4 Optimum RPA calculation:

If the site conditions prevail it is recommended to increase the size of the RPA to accommodate as much potential rooting area as possible, this will reduce any conflict with the tree and minimise the chance of rejection / conflict with the planning application / Local Planning Authority.

6.0 Pre Development Appraisal

6.1 Category 'U' trees (Removal):

There are no category 'U' trees located on or bordering this site that are recommended for removal regardless of whether development proceeds.

6.2 Category 'A' trees:

There are 4 trees that should be retained due to the physiological and structural strengths of the trees and the contribution to the amenity value that they make now and their potential in the future.



6.3 Category 'B' trees:

There are no category 'B' trees located on or bordering this site

6.4 Category 'C' trees:

There are 9 trees that should be retained but removal is an option if the tree / trees impinge on the proposed development.

6.5 Groups:

There are no groups located on or bordering this site

There are no category 'A' groups located on or bordering this site.

There is 1 category 'A' group that should be retained due to the physiological and structural strengths of the trees and the contribution to the amenity value that they make now and there potential in the future

There are no category 'B' groups located on or bordering this site

There are no category 'C' groups located on or bordering this site

6.6 Conflict:

There are no significant conflicts with the proposal and the trees on or bordering this site

6.7 Tree works:

The management options noted in the survey data should be followed so to keep a maintained tree stock on and around this development site, particularly giving clearance from properties and over any adopted roads or footpaths

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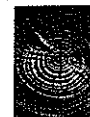
7.0 Arboricultural Implications Assessment

7.1 Summary of the impact on trees:

I have assessed the impact of the proposal on the trees / groups by the extent of disturbance in and around the RPAs and the current and future canopy height and spread. All the trees / groups that may be affected by the development proposal are listed in table 1

Table 1: Summary of the trees / groups that may be affected by the development on this site if the current proposed plans are implemented.

Impact	Reason	Important trees		Unimportant trees	
		A	B	C	U
Trees / groups to be removed	Building construction, new surfacing, tree quality and / or, proximity	#	#	T4, T5, T6	#



Trees / groups that may be adversely effected by the tree canopy or through disturbance to RPAs	Removal of existing surfacing / structures / landscaping and or installation of new surfacing / structures / landscaping	T1, T2, T3, T12	#	T7 T8 T9 T10 T11 T13	#
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7.2 Category A and B trees to be removed:

There are no category 'A' trees located on or immediately adjacent to the site that are to be removed

There are no category 'B' trees located on or immediately adjacent to the site that are to be removed

7.3 Category A and B trees that may be adversely affected through RPA disturbance:

There are no category 'B' trees located on or immediately adjacent to the site that may be adversely affected through RPA disturbance

Four category 'A' trees may be adversely affected by the site activity on site both from below ground i.e. compaction and by canopy damage from pedestrian and vehicular movement.

These trees are considered important for retention and have potential to contribute to amenity, so any adverse impacts on them should be minimised. I have reviewed the situation carefully and my experience is that these trees could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.

7.4 Category C trees to be lost:

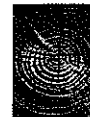
There are 3 category 'C' trees to be removed but are considered to have limited potential for long term retention. As such it is considered to be unworthy of influencing any layout. I believe it is not important in the overall planning context and its loss should not influence the determination of this application. The Pear tree, T4 could be dug up and transplanted to a different location on the site that is away from the construction activity.

7.5 Retained category C trees that may be adversely affected through RPA disturbance:

The six trees that may be damaged are category C because they are considered to have limited potential for long term retention.

As such it is considered to be unworthy of influencing any layout. However, it is proposed for retention and so special precautions will be necessary to ensure that any adverse impact is minimized.

Although these trees are proposed for retention, I believe it is not important in the overall planning context and any risk of damage to it should not influence the determination of this application.



7.6 Presence of Tree Preservation Orders (TPO) or Conservation Area Designation:

There are no Tree Preservation Orders in place on the any of the trees within the proposed development site at the time of writing this report

The proposed development site does not fall within a Conservation Area

7.7 Effects of new buildings on amenity value on or near the site:

The effect of the new construction on this site have been assessed and have been found not to have any significant effect on the amenity value of the remaining trees on site

7.8 Below ground constraints:

No construction of foundations or the installations of services are to take place within any Root Protection Area (RPA)

Any remaining trees may be affected by the passage of pedestrian and / or site vehicles therefore protective fencing is proposed to minimize any impact on the trees

7.9 Above ground constraints:

Any remaining trees may be affected by the passage of pedestrian and / or site vehicles therefore protective fencing is proposed to minimize any impact on the trees

The crowns of T1 and T2 may require to be raised to give 4 metre clearance by removal of secondary tertiary branches from the underside of the main branch structure of both trees where they extend over the driveway to permit site vehicular access

7.10 Construction processes of the proposed development:

Development processes that lead to soil compaction in tree rooting zones and physical damage to trees can adversely affect long-term tree health This can lead to unnecessary tree loss if not controlled properly on site during the demolition of a building and then the construction phases that follow

No access to the RPAs of any retained tree will be permitted before or during construction activity unless the RPA falls within an already existing tarmac road and there is adequate crown clearance Therefore there is no risk of machinery causing damage to trunks and low branches

The processes of construction are highly unlikely to have a detrimental effect upon the health of the retained trees assuming recommendations made in this report are adhered to at all times by the contractors e.g. the positioning of a stout fence between the retained trees construction activities is placed prior to commencement of works and remains intact and in position throughout the duration of the construction activities.

7.11 Modifications proposed to accommodate trees:

The siting of the dwellings dispenses with a need to modify building construction to accommodate retained trees The retained trees are far enough away from the siting of the dwellings so as to permit light infiltration to the windows This will negate the need for subsequent calls for tree pruning due to shading

7.12 Infrastructure requirements – highway visibility, lighting, CCTV, services etc:

The installation of services within the rooting zones of trees can have a large detrimental impact on the long-term survival of retained trees leading to their unnecessary loss or root failure in high winds



No services are to be installed within any tree RPA.

The trees on site do not have any impact on highway visibility.

Undisclosed sighting of above ground services, CCTV cameras, electrical sub-stations, refuse stores, lighting and other infrastructure requirements can lead to unnecessary pruning of tree crowns or root loss during or post development. There are no such developments planned to take place adjacent or within the RPA of any retained trees.

7.13 Mitigating tree loss / new planting:

Some tree loss will take place as a result of the development of the site

As yet there are no proposed replacement trees to be planted. If required as part of planning conditions there are areas throughout the site that can be planted with trees. Any replacement trees would be selected and located allowing development into a mature tree without the conflict between tree, building or surrounding features.

7.14 Proximity of trees to structures:

With the impact of trees on buildings, and vice versa, allowances for future growth have all been considered in the sighting of the new dwellings. Tree size, future growth, light / shading, leaf and fruit nuisance etc have received due attention and are not considered to be an issue. This is due to the considerable distance of the retained trees from the development.

8.0 Proposals to mitigate any impact

8.1 Protection of retained trees:

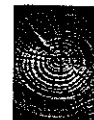
The successful retention of trees depends on the protection and the administrative procedures to ensure those protective measures remain in place whilst there is an unacceptable risk of damage. An effective means of doing this is through an arboricultural method statement that can be specifically referred to in a planning condition. An arboricultural method statement for this site can be written at an additional commission.

8.2 New planting:

In the context of the loss of trees, if replacement trees are requested by the LPA there are areas where trees can be established in sustainable and prominent locations throughout the site. Any future selection of species and location should remain provisional until all relevant parties had been fully consulted. However, these new trees should be selected on their potential to reach a significant height without excessive inconvenience and be sustainable into the long term, significantly improving the potential of the site to contribute to local amenity and character.

8.3 Summary of the impact on local amenity:

This proposal will result in the loss of 3 low category trees. All the significant boundary tree cover located on the site will remain intact. There is plenty of space for new planting if needed. The construction activity and proposed changes may adversely affect further trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through an arboricultural



method statement, the development proposal will have no adverse impact on the contribution of trees to local amenity or character. Indeed, any new planting proposals will increase the potential of the site to contribute to local amenity well beyond the short term

9.0 Other Considerations

9.1 Trees subject to statutory controls:

If any trees are covered by a tree preservation order or located in a conservation area, it will be necessary to consult the council before any pruning works other than certain exemptions can be carried out. The works specified above are necessary for reasonable management and should be acceptable to the council. However, tree owners should appreciate that they may take an alternative point of view and have the option to refuse consent.

9.2 Trees outside the property boundaries:

Any trees that are located in adjacent properties are effectively out of the control of the client / land owner. It will not be possible to easily carry out any recommended works without the full co-operation of the tree owners. The implications of non-cooperation require legal interpretation and are beyond the scope of this report. By common law, branches from trees on adjacent properties extending over boundaries can be pruned back to the boundary line without the permission of the owners. However, the material belongs to the tree owner and the same guidance on statutory controls applies as discussed in 8.1 above.

9.3 Development within the rooting area:

The zone of influence has been determined using the calculation outlined in Table 2, of section 5.2.2 of *BS 5837 2012 Trees in relation to design, demolition and construction - Recommendations*. This calculation utilises the diameter of the trunk, at a height of 1.5m from the surrounding ground level; and calculates the root protection area (RPA) by multiplying the diameter by a value of 12; the result is then used to calculate the total area (m²) of the RPA. The calculations are illustrated in the tree survey data in Appendix 'E'.

9.4 Construction Exclusion Zone:

The values indicate the area of soil around the base of the tree to be retained undisturbed. This area should be protected with vertical barriers and considered sacrosanct. Signs should be erected on the fencing to indicate that the area is a Construction Exclusion Zone (CEZ).

9.5 Arboricultural Method Statement:

A detailed Arboricultural Method Statement (AMS), outlining the different stages and progression of construction is available as a further commission. This process should be undertaken once the final decision has been made on the proposed structure (if requested by the Local Planning Authority (LPA)).

9.6 Implementation of works:

All tree works should be carried out to *BS 3998 Recommendations for Tree Work* as modified by more recent research. It is advisable to select a contractor from the local authority list and preferably one approved by the Arboricultural Association. Their Register of Contractors is available free from:



Arboricultural Association
The Malthouse,
Stroud Green,
Standish,
Stonehouse,
Gloucestershire
GL10 3DL, UK
Tel: +44 (0)1242 522152
Email: admin@trees.org.uk
Website: www.trees.org.uk/contractors.htm
Fax: +44 (0)1242 577766

9.7 **Local Arboricultural Contractors:**

If requested I can provide a list of reputable arboricultural contractors that have carried out work on previous projects.

9.8 **Safety:**

Tree works can be a hazardous profession, so it is important that all operatives have the necessary and relevant training, health and safety policy and valid forms of insurance

9.9 **Statutory wildlife obligations:**

The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000, provide statutory protection to birds, bats and other species that inhabit trees. All tree work operations are covered by these provisions and advice from an ecologist must be obtained before undertaking any works that might constitute an offence

9.10 **Future considerations:**

Any remaining trees should be inspected on a regular basis by a qualified arboricultural consultant

9.11 **Replanting:**

Any trees on this site that are protected by a preservation order and are being recommended for removal, the appropriate replanting of replacement trees will be needed as a condition of the council granting permission for these trees being felled. This should be incorporated into the landscaping plans at the design stage and followed through after building work is completed

10.0 Bibliography / References

BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations – BSI Publication

BS 3998: 2010 Tree work – Recommendations – BSI Publication

[N1] NATIONAL JOINT UTILITIES GROUP (NJUG) *Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees*
Volume 4, issue 2 London: NJUG, 2007

Arboricultural Practice Note (APN) 12 – Through the trees to Development –
Derek Patch and Ben Holding – Arboricultural Advisory and Information Service



Principles of Tree Hazard Assessment and Management – David Lonsdale

The Body Language of Trees – Claus Mattheck and Helge Breuloer

Diagnosis of Ill Health in Trees R G Strouts and T G Winter

A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas – Nelda P. Matheny and
James R Clark

E-mail communication with local Arboricultural / Planning Officer



APPENDIX 'A'

Brief qualifications and experience of Gary Marsden:

Qualifications:

- National Certificate in Arboriculture – August 1998
- The Leonard Cheshire Home Award , Practical Award – September 1998
- NVQ in Amenity Horticulture Level 1 – November 2003
- Foundation Degree In Science - Arboriculture - June 2005
- BTEC Higher National Diploma in Arboriculture – June 2005
- Certified Expert Witness by Cardiff Law School / Bond Solon – December 2011

Practical experience:

After qualifying at NC level in arboriculture I gained full time employment with Blackburn with Darwen Borough Council as an Arborist / Climber (September 1998) where I gained a wide range of practical Arboricultural experience ranging from pruning, dismantling and planting

In January 2004 I was promoted to Team Leader Arborist where I developed my skills in Arboriculture, leadership, organisation and prioritising workloads

In August 2005 I was promoted to 'Arboricultural Officer' this job involves:

- Health and Safety of all Arboricultural aspects
- Inspection and scheduling of tree complaints
- Tree surveys and report writing
- Staff management

In July 2008 I set up my own tree consultancy company – GM Tree Consultants – which I am constantly developing and evolving

Continuing professional development:

As a conscious effort to stay in touch with the progression in modern techniques and practices in the arboricultural industry, I attend seminars, receive regular arboricultural literature and maintain membership of professional bodies, examples of which are listed below:

- Arboricultural Association Professional Member since November 2006
- Professional Member of the Consulting Arborist Society since May 2009
- Quantified Tree Risk Assessment licensed user since October 2008
- Attendance of Arboricultural Association annual conferences
- Attendance of specialist short courses in relation to specific fields in arboriculture including: Tree Preservation Orders, Subsidence and mortgage reports, Planning legislation and Tree inspection methods and skills
- Accredited as an Expert Witness by Cardiff University Law School / Bond Solon since December 2011

A detailed breakdown of qualifications and continued professional development training is available; please contact me directly for this information if requested.

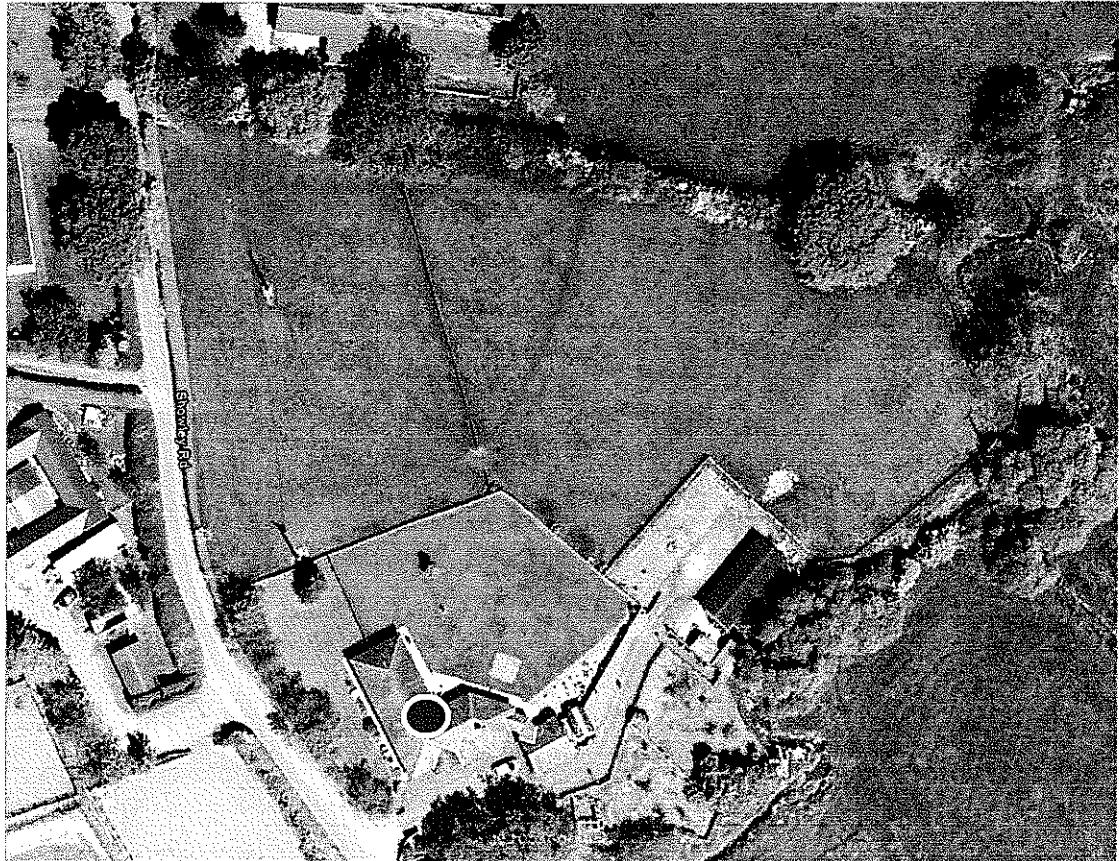
320120663 P

GM Tree
Consultants



APPENDIX 'B'

Site Location aerial photo:





APPENDIX 'C'

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Tree survey Index

Tree Locations:

This has been measured using a laser distancing device with a digital compass and plotted on the site plan using tree management software. The accuracy given for the tree stem location is $\pm 1\text{m}$.

Tree Number:

Each surveyed feature is assigned an individual number:

e.g. – Tree A072014013 is made up of:

- 'A' – this represents the tablet pc that was used to record the data
- '07' – this is the month that the inspection was recorded
- '20' – the day of the month when the tree was recorded
- '14' – the hour in the day when the tree was recorded
- '013' – the tree number recorded in that hour of the day (when the hour changes this resets to 001)

Alternatively; each surveyed feature is assigned a number prefixed by a 'T' for individual trees, 'G' for groups of trees and 'H' for hedgerows. It is used to locate the tree in the data survey and the relevant position on the plan.

Species:

The species identification is based on visual observations and the common English name of what the tree appeared to be is listed first. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. The botanical name is followed by the abbreviation sp if only the genus is known.

Measured (M) or Estimated (#)

Trees that have been accurately measured are indicated with an 'm'. Trees that are off site or otherwise inaccessible where accurate data cannot be recovered; these trees are indicated with '#'.

Number of stems:

The number of main stems of each individual tree

Stem Diameter:

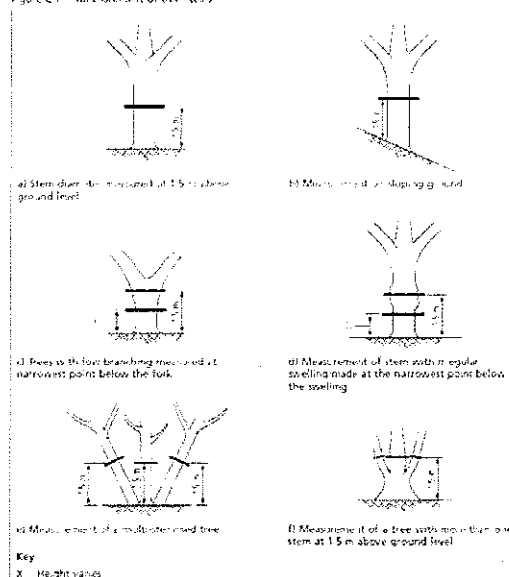
These figures relate to stem diameter in millimetres at 1.5m above ground level. This is accurately measured using a girthing tape, unless access is restricted.

Diameters of single stem trees on level ground are measured in accordance with Figure C.1a)

Diameters of other commonly encountered tree stems are measured in accordance with Figures C.1b) to C.1f)

NOTE - The thick black line indicates where the measurement is taken.

Figure C.1 Measurement of trees



**Root Protection Area:**

This is the minimum area in m² which should be left undisturbed around each retained tree.

BS 5837:2012

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Annex D **Root protection area**
(normative)

The RPAs given in Table D.1 should be used for single stem trees and the equivalent resultant combined stem diameter for multi-stemmed trees.

Table D.1 Root protection areas

Single stem diameter mm	Radius of nominal circle m	RPA m ²	Single stem diameter mm	Radius of nominal circle m	RPA m ²
75	0.90	3	675	8.10	206
100	1.20	5	700	8.40	222
125	1.50	7	725	8.70	238
150	1.80	10	750	9.00	255
175	2.10	14	775	9.30	272
200	2.40	18	800	9.60	290
225	2.70	23	825	9.90	308
250	3.00	28	850	10.20	327
275	3.30	34	875	10.50	346
300	3.60	41	900	10.80	366
325	3.90	48	925	11.10	387
350	4.20	55	950	11.40	408
375	4.50	64	975	11.70	430
400	4.80	72	1000	12.00	452
425	5.10	81	1025	12.30	475
450	5.40	92	1050	12.60	499
475	5.70	102	1075	12.90	519
500	6.00	113	1100	13.20	547
525	6.30	124	1125	13.50	573
550	6.60	137	1150	13.80	598
575	6.90	150	1175	14.10	625
600	7.20	163	1200	14.40	652
625	7.50	177	1225	14.70	679
650	7.80	191	1250+	15.00	707

NOTE These figures are derived from the calculations described in 4.6.

Height:

Overall height of tree recorded in meters Height is recorded using a digital clinometer

Potential Height of species:

The expected mature height of the tree as a 'species'.

Potential Spread of species:

The expected mature spread of the tree as a 'species'.

Height of first branch and direction:

Existing height in metres of the first significant branch above ground level and the direction of growth in relation to the 4 cardinal points (NSEW)

Height of canopy above ground level:

Existing height in meters of the canopy above ground level

Branch Spread:

This is measured in meters taken at the four cardinal points (NSEW) to derive an accurate representation of the crown

Life stages:

Described as young, semi mature, early mature, mature, over-mature / veteran.

Physiological Condition:

Described as good, fair, poor, dead and notes as needed

Structural Condition:

Described as good, fair, poor, dead and notes as needed

**Preliminary management recommendations:**

Practical arboricultural operations that are suggested and described as needed.

Remaining Contribution:

Estimated remaining contribution in years: e.g. <10, 10+, 20+, 30+, 40+ This is based upon Jeremy Barrels' system of SULE (Safe Useful Life Expectancy)

Tree Retention Category Grading:

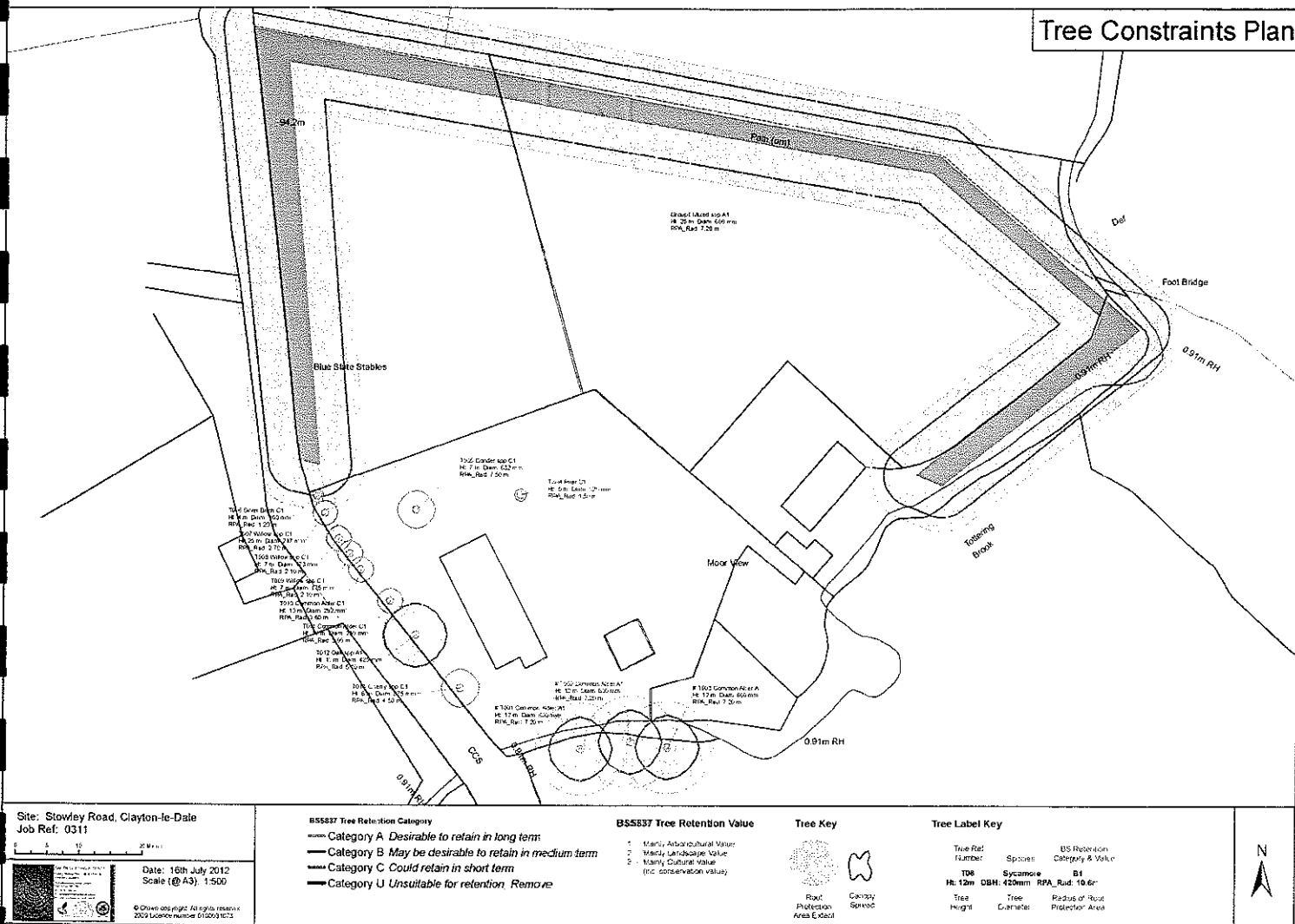
U or A to C category grading as referenced from BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations. (see Table 1 in appendix 6)



APPENDIX 'D'

Inserted site maps showing tree locations and all other relevant details:

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APPENDIX 'E'

Tree survey data inserted including the calculations for the root protection zones:

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GM TREE CONSULTANTS BS:5837 TREE SURVEY DATA

TREE SPECIFICS																																																																																																																																																																																																																																																																																																																																																																				
Tree number	Species (Common)	Measured (m) or estimated (m)	Number of stems	Single Trunk dbh @ 1.4m (mm)	Second trunk	Old trunk	New trunk	Hts trunk	Multiple advantage	calculated DBH (m)	calculated RPA (m)	Height (m)	Potential height of stem (m)	Potential spread of canopy (m)	Height of first branch (m) or canopy (m)	Height of canopy above ground (m)	DBH NORTH (m)	DBH EAST (m)	DBH SOUTH (m)	DBH WEST (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH SLOPE (m)	DBH 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APPENDIX 'F'

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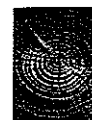
Cascade chart showing tree retention categories exerted from:
BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations

BRITISH STANDARD

BS 5837:2012

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention (see Note)		
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unstable after removal of other category U trees (e.g. 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, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.	See Table 2
Trees to be considered for retention		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1 Mainly arboricultural qualities Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue) 2 Mainly landscape qualities Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features 3 Mainly cultural values, including conservation Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	See Table 2



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APPENDIX 'G'

Table showing generic tree data of commonly found tree species:

<u>Tree "type"</u>	<u>Common name of tree species</u>	<u>Scientific name of tree species</u>	<u>Ultimate height of tree at maturity</u>	<u>Ultimate spread of tree canopy at maturity</u>
Deciduous	Alder	<i>Alnus glutinosa</i>	19m	14m
Deciduous	Ash	<i>Fraxinus excelsior</i>	30m	18m
Deciduous	Apple (all <i>malus</i> spp)	<i>Malus</i> spp	9m	8m
Deciduous	Beech	<i>Fagus sylvatica</i>	30m	20m
Deciduous	Silver Birch	<i>Betula pendula</i>	18m	10m
Deciduous	English Elm	<i>Ulmus procera</i>	30m	20m
Deciduous	Elderberry	<i>Sambucus nigra</i>	10m	8m
Deciduous	Hornbeam	<i>Carpinus betula</i>	19m	10m
Deciduous	Hawthorn	<i>Crataegus monogyna</i>	5.5m	8m
Deciduous	Hazel	<i>Corylus avellana</i>	6m	6m
Evergreen	Holly	<i>Ilex aquifolium</i>	25m	16m
Deciduous	Horse chestnut	<i>Aesculus hippocastanum</i>	30m	20m
Deciduous	Laburnum	<i>Laburnum anagyroides</i>	9m	8m
Evergreen	Larch	<i>Larix decidua</i>	30m	8m
Evergreen	Lawson Cypress	<i>Chamaecyparis lawsoniana</i>	60m	8m
Evergreen	Leyland Cypress	<i>X Cupressocyparis leylandii</i>	30m	8m
Deciduous	London Plane	<i>Platanus x hispanica</i>	30m	20m
Deciduous	Lime (small)	<i>Tilia cordata</i>	30m	16m
Deciduous	Lime (common)	<i>Tilia x europaea</i>	39m	16m
Deciduous	Lime (Large)	<i>Tilia platyphyllos</i>	41m	16m
Deciduous	Norway Maple	<i>Acer platanoides</i>	18m	18m
Evergreen	Norway Spruce	<i>Picea abies</i>	36m	10m
Deciduous	English Oak	<i>Quercus robur</i>	30m	20m
Deciduous	Black Poplar	<i>Populus nigra</i>	30m	16m
Deciduous	Robinia	<i>Robinia pseudoacacia</i>	25m	20m
Deciduous	Rowan	<i>Sorbus aucuparia</i>	15m	8m
Deciduous	Sweet chestnut	<i>Castanea sativa</i>	30m	20m
Deciduous	Sycamore	<i>Acer pseudoplatanus</i>	30m	18m
Evergreen	Scots Pine	<i>Pinus sylvestris</i>	36m	10m
Deciduous	Swedish Whitebeam	<i>Sorbus intermedia</i>	10m	10m
Deciduous	Tulip Tree	<i>Liriodendron tulipifera</i>	45m	20m
Deciduous	Whitebeam	<i>Sorbus aria</i>	25m	10m
Deciduous	Wild Cherry	<i>Prunus avium</i>	18m	16m
Deciduous	White willow	<i>Salix alba</i>	25m	18m
Deciduous	Walnut	<i>Juglans regia</i>	30m	18m

Above is a list of the more common trees found and their ultimate height and spread at maturity

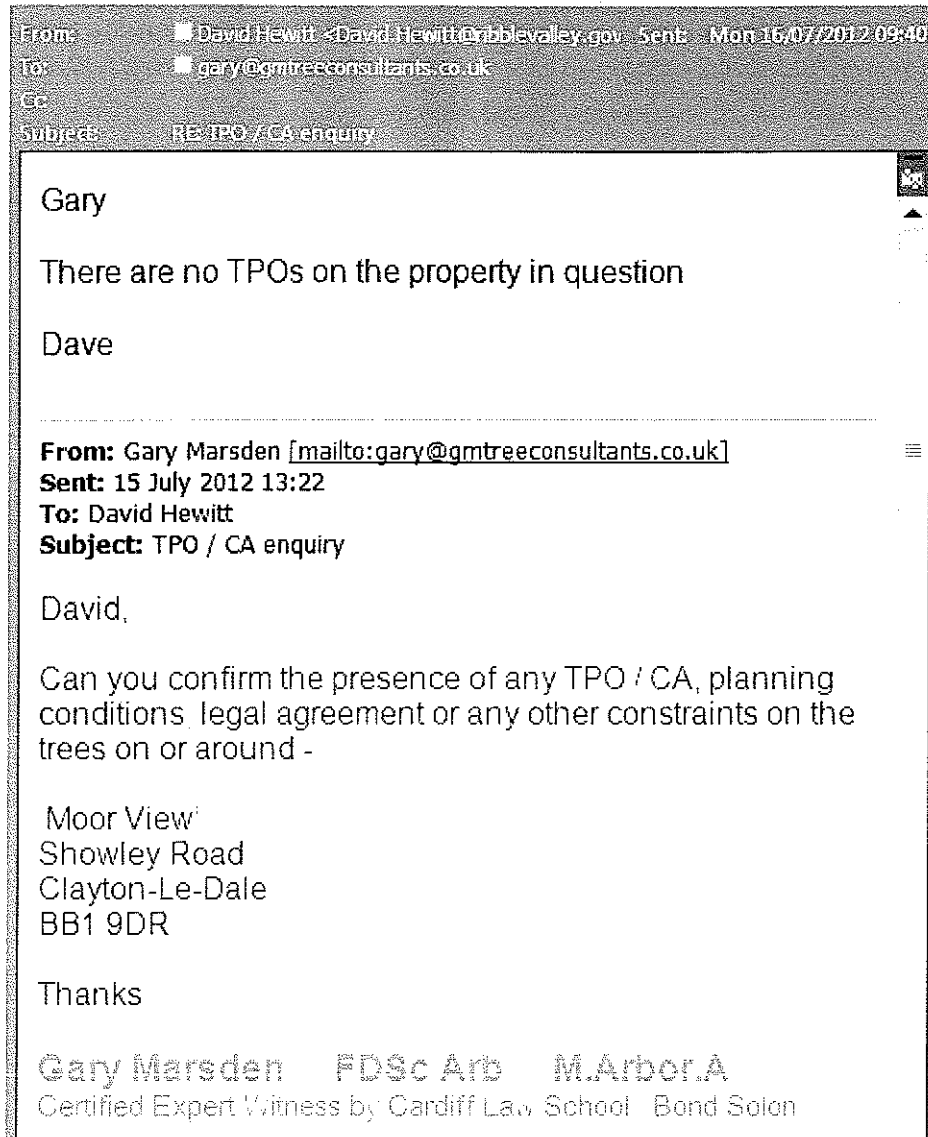
All information is taken from Trees in Britain, Europe and North America by Rodger Phillips ISBN 0 330 25480 4



APPENDIX 'H'

320120663P

Copy of e-mail from Local Arboricultural / Planning Officer:





I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact me.

320120663P

Signed

Gary Marsden

Gary Marsden FDS Sc Arb M Arbor A
Professional Member - Arboricultural Association (AA)
Professional Member - Consulting Arborist Society (CAS)

For and on behalf of **GM TREE CONSULTANTS**

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