

Arboricultural Report

Sir Robert McApline

Birley Fields
Bonsall Street
Manchester
M15 6PL

URBAN GREEN
arboriculture
landscape
ecology

Report Summary

The pie charts to the far right present key statistics found within our survey. The bar charts to the right indicate the age distribution, species distribution and the works we have recommended. Other sections within the report summary are self-explanatory.

Site Location: Birley Fields, Bonsall Street



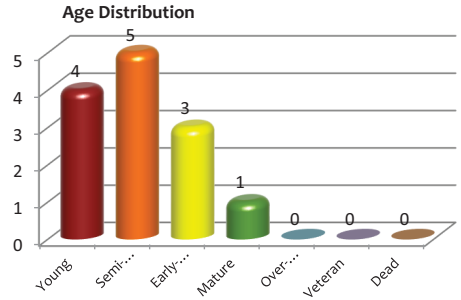
Extent of the survey

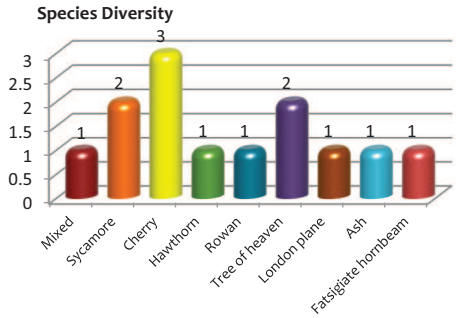


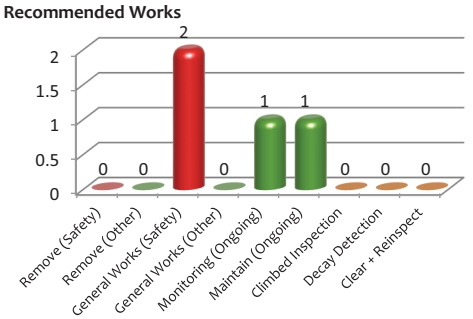
Site location

Summary

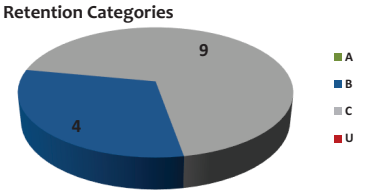
- A survey was conducted to BS5837. The condition of all trees on site was assessed and a Retention Category was allocated. Tree positions and Root Protection Areas are plotted on a Tree Constraints Plan.
- No Arboricultural Impact Assessment has been conducted at this stage.
- We recommend that this report and the constraints plan are used within the design process to help achieve a proposal with minimal impact.
- Where possible category A and B trees should be retained and works within their Root Protection Area should be undertaken in a sympathetic manner. General advice is included within this report as to how this may be achieved.
- Upon instruction Urban Green will be happy to provide Impact Assessments to assist the design process and an Arboricultural Method Statement to ensure that the retained trees are not damaged during the construction process.

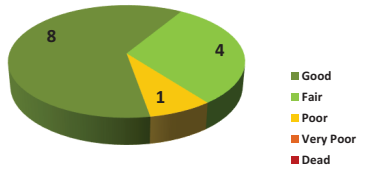


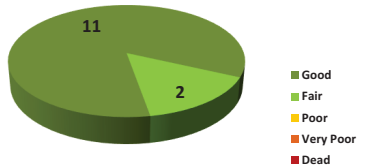


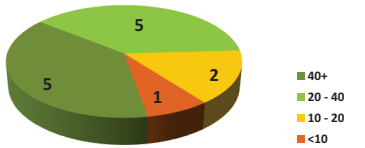


Trees surveyed as individuals: 9
groups: 4
hedges: 0
woodlands: 0









Contact Details.

Local Authority:	Manchester City Council	Tel.	0161 234 4516
Arboricultural Consultant:	Scott Fitzgerald	Tel.	0161 637 5242

Tree Protection Status

We are informed that:

- The site is not within a conservation area.
- There are no TPOs affecting trees within the site.

See Section 4 for further details.

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1. Introduction

1.1. Instructions and references

1.1.1. All trees, regardless of their statutory status, are a material consideration in a planning application. It is therefore essential that the potential effects of any Proposed Development on existing trees are fully assessed.

1.1.2. We have been instructed by Sir Robert Mc Alpine to carry out an Arboricultural Survey to British Standard 5837:2012 guidelines at the site location and produce our findings in a report.

1.1.3. The tree survey has been undertaken in order to highlight material constraints in regard to existing trees that are deemed to merit retention. The results should be used (along with any other relevant baseline data) to inform feasibility studies and design options.

1.1.4. A scaled plan has been provided with all tree positions already plotted. Any extra trees found on site that were not included on the original plan have been plotted according to measurements taken on site.

1.2. Scope and limitations of the report

1.2.1. The report is designed to accompany a planning application following guidance set out in BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations. The report has been compiled objectively and does not take into account future proposals for the site.

1.2.2. All trees, regardless of their statutory status, are a material consideration in a planning application. It is therefore essential that the potential effects of any Proposed Development on existing trees are fully assessed.

1.2.3. The report is based upon a visual inspection. The consultant shall not be responsible for events that happen after the date of the report due to factors that were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

1.2.4. Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.

1.2.5. The consultant accepts no liability in respect of the trees unless the recommendations of this report are carried out under his supervision.

1.2.6. Any physical alterations to site conditions subsequent to this report may have the potential to change/invalidate the findings and recommendations of this report.

1.2.7. Assessing the potential influence of trees upon load bearing soils, beneath existing and proposed structures resulting from water abstraction by trees or rehydration of shrinkable soils was not included in the contract brief and is therefore not considered in the report. The consultant cannot be held responsible for damage arising from such action.

1.2.8. Trees have the potential to cause indirect damage to existing and proposed structures by desiccation of the soil. Where soils are suspected to be shrinkable, they should be analysed by laboratory testing to determine the plasticity index. This will allow management decisions to be made relating to foundation depths, new planting and the effect of tree removals.

1.2.9. Potentially hazardous trees are highlighted and appropriate recommendations are made. However, this report should not be seen as a substitute for a full tree risk assessment or management plan which are specifically designed to minimise risk and liability associated with responsibility for trees.

2. Site overview

2.1. Location

2.1.1. The site is situated to the east of Manchester city centre. The co-ordinates are 53°28'1.14"N, 2°14'39.16"W, the OS reference is SJ 8388596722 and the altitude is 35m above sea level.

2.1.2. The survey was limited to the area shown in Figure 1.

Figure 1.



3. Tree condition and recommendations

3.1.1. The recommendations found in the Tree Data Schedule in Appendix 1 are based on assessments from a health and safety perspective and are made regardless of the Proposed Development. Section 3 discusses in further detail our findings during the site visit in relation to the health and safety of the trees, and future users of the site.

3.2. Summary of findings

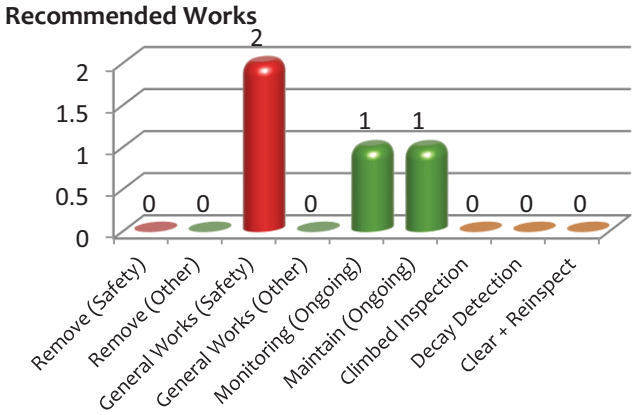
3.2.1. Trees which are potentially hazardous and require works in order to make them safe are T7 and T8. These works should be prioritised as indicated on the Tree Data Schedule.

3.2.2. T3 is considered to be in an acceptable condition at present but has defects which require monitoring.

3.2.3. All other trees are deemed to be in an acceptable condition and no further works have been recommended.

3.3. Work priority and future management

3.3.1. The Tree Data Schedule in Appendix 1 details what works are required to individual trees in order to ensure that they are in an acceptable condition. The chart below summarises these works:



Key:

Bars coloured red indicate hazardous trees.

Bars coloured orange indicate trees which may be hazardous and require further investigation.

Bars coloured green indicate trees which are not hazardous and the work is therefore of a lower priority.

3.3.2. The following table suggests a schedule for prioritizing works required to individual specimens, as outlined in the Tree Data Schedule in Appendix 1, in order to ensure that the associated risks are abated:

Priority	Definition	Tree Number
Urgent	As soon as possible	None
Very High	Within 1 Month	None
High	Within 3 Months	T5, T7, T8
Moderate	Within 1 year	G1, T3
Low	Within 3 years	None

3.3.3. Upon completion of any recommended works, the trees will be in an acceptable condition from a health and safety perspective. However, they should be regularly inspected according to the following suggested schedule:

Inspection Frequency (years)	Tree Number
0.5	None
1	T3
1.5	T5, T7, T8
3	T2, G4, T6, T9, G10, T11, T12, G13

3.4. Tree protection status

3.4.1. We have been informed by the planning department at Manchester City Council that the site is not within a conservation area and there are no Tree Preservation Orders (TPOs) affecting trees within the site.

3.5. Tree protection – general advice

3.5.1. It is recommended that the local authority is consulted before any tree works are undertaken, as new TPOs may have been created since the time of enquiry, and heavy fines exist for unauthorised works to protected trees.

3.5.2. A TPO can be overridden by planning consent, where tree removal is necessary to enable the Proposed Development to proceed.

3.5.3. All works to protected trees require consent from the local authority, including pruning. However, this does not include the removal of dead wood, which is exempt. Although dead and dangerous trees are exceptions to a TPO, it is advisable to give the local authority five days' notice in writing of any intended removal.

3.5.4. It is an offence to remove more than $5m^3$ of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission. It must be noted, however, that this excludes sites where planning permission has already been granted.

3.6. Tree works

3.6.1. All specified tree work is to be carried out in accordance with BS 3998:2010 Tree work - Recommendations by a professional and specialist arboricultural contractor, who carries the appropriate experience and insurance cover.

3.7. Wildlife

3.7.1. Prior to the commencement of any tree works, the trees should be assessed for the presence of protected species, some of which are subject to the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. Where there is evidence that bats, birds or other protected species are present, the statutory nature conservation organization needs to be consulted prior to commencement of any tree work operations.

4. Potential arboricultural impacts

4.1. Proposals

4.1.1. It is understood that the site is to be developed. However, at the time of writing the report, we are unaware of detailed and specific proposals for the site. It is recommended that an AIA is undertaken once plans are available, in order for us to advise on the impact of the development and any mitigation that may be required.

4.1.2. The RPAs marked on the Tree Constraints Plan at Appendix 3 indicate the desired rooting zone which should be left undisturbed. Any development should be designed in order to avoid the RPAs of trees to be retained. Decisions about which trees are to be retained should be influenced by their retention categories as suggested below.

4.1.3. Where possible category A and B trees should be retained and any works within their RPAs should be undertaken in a sympathetic manner. General advice is included within this report as to how this may be achieved.

4.2. Tree constraints

4.2.1. BS 5837:2012 recognises that conflicting requirements of the planning system for development means that trees are only one factor which need to be taken into consideration. Although there may be certain specimens that can pose significant constraints to development due to their importance, it is essential that inappropriate tree retention is avoided.

4.2.2. In order to avoid expensive delays and to maximise the landscape potential of the Proposed Development, it is strongly recommended that the arboriculturist is consulted during the early stages of the design process.

4.3. Tree protection during construction

4.3.1. BS 5837 recommends that an AMS is adhered to which ensures that all retained trees are adequately protected during the construction phase and should take into account issues such as hard surface design, implementation of services and foundations, storage of materials, scaffolding, use of heavy plant such as cranes or excavators, fencing specification, and necessary tree works. Adherence to such a method statement will help to minimise the impact of the development.

4.4. Impact of general construction activity

4.4.1. Existing trees can be easily damaged directly due to root severance and indirectly due to soil compaction which can cause anaerobic conditions in the rooting zone. Spillage of toxic materials can also cause root death. Protection for trees selected for retention is essential to ensure their sustainable position within the proposed scheme.

4.4.2. An Arboricultural Method Statement will be required to advise on the protection of trees during the construction process. In addition, a Tree Protection Plan may be required to highlight areas of site where trees require protection and where care is needed in RPAs not protected by fencing.

4.4.3. A generic method statement highlighting tree protection measures during demolition and construction activities is included in Section 5.

5. Arboricultural Method Statement (AMS)

5.1. Development implementation phases

The arboricultural consultant may need to be involved in some or all of the following processes.

Phase of Development	Arboricultural input
Phase 1 - Site preparation	• Pre-construction tree surgery works • Access facilitation pruning • Demolition of existing structures • Installation of protective fencing and ground protection • Pre-development inspection
Phase 2 – Construction process	• Demolition of existing structures • Foundations in the RPA • Installation of services • Working in the RPA • New surfaces in the RPA • Hard landscaping
Phase 3 – Post-construction	• Removal of protective fencing • Soft landscaping • Signing off

5.2. Phase 1 – Site preparation

5.3. Tree surgery works

5.3.1. Tree works that are recommended in the Tree Data Schedule in Appendix 1 are of a general maintenance nature and can be carried out at any time as per recommendations.

5.3.2. Tree works required to facilitate the development will be carried out prior to the commencement of any onsite operations. This should allow sufficient space for approved construction to be carried out.

5.3.3. Any unforeseen tree works that become apparent during the construction process will require written consent from the Local Authority Tree Officer.

5.4. General construction activity

5.4.1. All operations that could affect trees on and adjacent to the site must be considered as part of the project management of the Proposed Development. It is therefore imperative that an Arboricultural Consultant is appointed as part of the design and management team to advise on pre-development issues and supervise on-site operations.

5.4.2. The Arboricultural Consultant may also have an advisory role in the preparation of site including tree surgery works and the protection of trees during demolition processes.

5.4.3. The AMS accompanies the AIA and should be read in conjunction with the Tree Protection Plan. It is essential to adhere to the recommendations within this document during on-site operations to ensure the successful retention of trees as part of the Proposed Development. Compliance with the AMS will be a requirement of all relevant contracts associated with the Proposed Development.

5.4.4. The AMS aims to provide general guidelines to onsite personnel that must be followed when working close to trees on construction sites. All site personnel should have access to this document and be made aware of any sections that may be relevant to their specific area of work.

5.4.5. The developer will inform the Local Planning Authority (LPA) within twenty four hours if the Arboricultural Consultant is replaced.

5.5. Potential damage to above ground parts of retained trees

5.5.1. Care will be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights are able to operate without coming into contact with retained trees. Any contact has the potential to cause life limiting damage. It is therefore essential that any activities in close contact with retained trees is carried out under the supervision of a banksman to maintain sufficient clearances.

5.5.2. Any tree damage must be reported to the Arboricultural Consultant or Local Authority Tree Officer as unreported damage could lead to the structural instability.

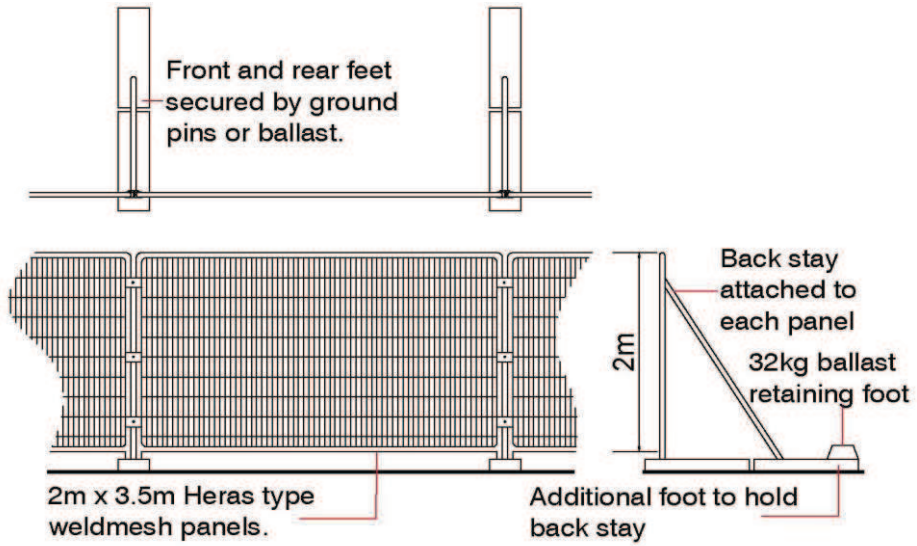
5.6. Protective fencing

5.6.1. Temporary protective fencing will need to be installed in the positions indicated on the Tree Protection Plan in Appendix 3 prior to the commencement of any construction activities on site including the delivery of materials and site facilities.

5.6.2. Any fencing that is damaged so that it is no longer able to protect retained trees must be replaced/repaired immediately with appropriate fencing.

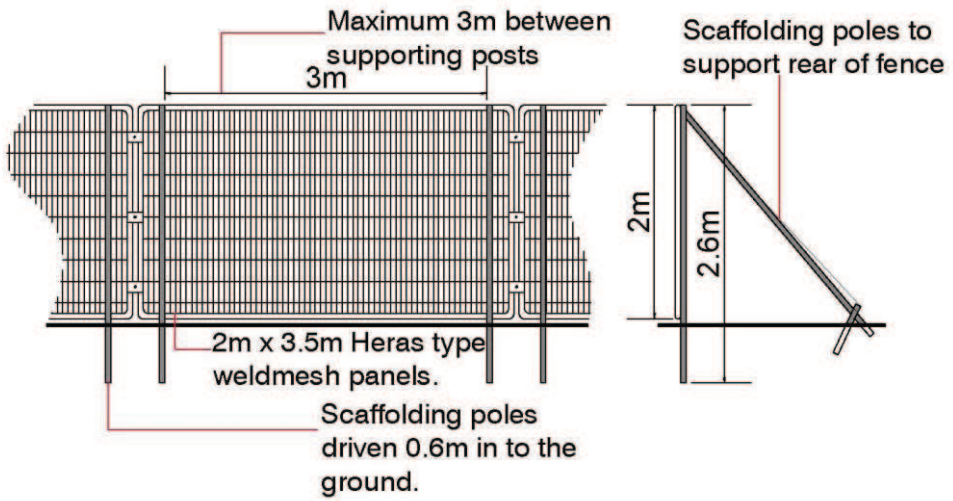
5.6.3. All RPAs will be protected by 'Heras' steadfast type fencing with back stay supports where construction activity is expected to be minimal. (Fig 2. below)

Fig 2. Temporary Protective Fencing with back stay supports



5.6.4. In areas of site where construction activity is expected in close proximity to RPAs, it will be necessary to employ the more robust 'in-ground' system following BS 5837 guidelines. (Fig 3. below)

Fig 3. Temporary Protective Fencing

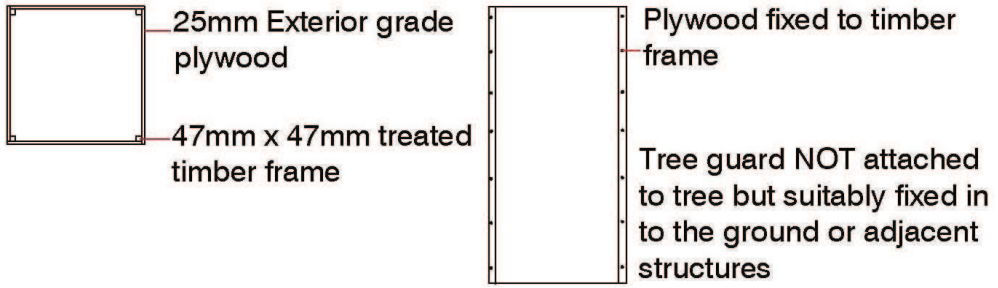


5.6.5. The 'in-ground' system involves driving vertical scaffold poles approximately 0.6m into the ground onto which are affixed horizontal scaffold poles and bracing struts. 2m high anti-climb weldmesh panels are then wired to the scaffold framework. The vertical scaffold poles should be at a maximum of 3m apart.

5.6.6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to the tree roots when locating uprights.

5.6.7. Where space is limited, it is sometimes necessary to construct a temporary tree guard to physically protect the main stem of the tree (Fig 4. below). This should be made by joining together 4 X 25mm Exterior Grade pieces of plywood to 47mm X 47mm treated timber posts to create a box shaped frame which is attached to the ground or adjacent structures. No fixings are to be made to the tree and suitable ground protection should be employed within the RPA of the tree (see Section 5.9).

Fig 4. Temporary Protective Fencing



5.6.8. A 600mm x 300mm warning sign reading “TREE PROTECTION AREA KEEP OUT” shall be fixed to every 10m of protective fencing. (Fig 5. below)

Fig 5. Tree Protection Sign



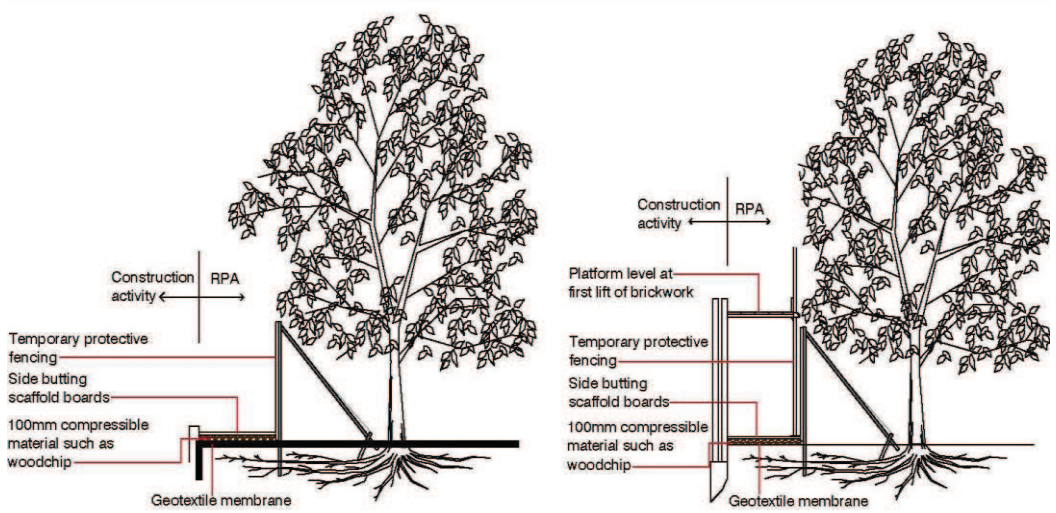
5.7. Ground protection for wheeled or tracked vehicles

5.7.1. All vehicles will use existing hard surfaces. However, it may be necessary on occasion to drive plant machinery within the RPA. To avoid compaction of the soil during construction, a minimum of 100mm compressible material, followed by temporary interconnected road plates or similar that is capable of sustaining the expected loads should be installed. This system will ensure that the weight is evenly distributed over the affected area.

5.8. Ground protection for pedestrians or light vehicles

5.8.1. The primary method of ground protection is the installation of a compressible layer (e.g. woodchip) over a geotextile fabric with side butting scaffold boards. (Fig 6. below)

Fig 6. Ground Protection in RPA



5.8.2. Ground protection measures whilst working the RPA must be capable of supporting the expected loads and avoid compaction of the soil.

5.8.3. The boarding will be left in place until the construction works are finished.

5.8.4. Scaffolding may first be erected with the uprights on spreader boards and the ground protection installed around the uprights.

5.9. Pre-development inspection

5.9.1. The site will be inspected by the appointed Arboricultural Consultant or Local Authority Tree Officer following any facilitative tree surgery works and the installation of protective fencing and ground protection measures.

5.10. Phase 2 – Construction process

5.11. Demolition and removal of surfaces in the RPA

5.11.1. During demolition, the following restrictions will apply:

- Where direct damage by falling masonry is likely, the tree should be protected by exterior grade plywood sheets constructed around the main stem.
- The main body of any mechanical excavator will operate outside the RPA.
- Masonry will be pulled away from trees where possible.
- When breaking masonry, a fine water spray will be used to minimise dust particles.
- Excessive dust particles on trees will be removed each day by spraying with water.

5.11.2. Hard surfaces should be kept in place for as long as possible during construction works in order to prevent soil compaction in the RPA.

5.11.3. During surface removal, the following restrictions will apply:

5.11.4. Only hand operated tools will be used to lift existing surfaces and sub-base. No mechanical excavators are to be used.

5.11.5. No excavation below the existing sub-base will occur.

5.11.6. Exposed roots are to be treated as in Section 5.13 below.

5.11.7. All surface removal within the RPA will be supervised by the Arboricultural Consultant or the Local Authority Tree Officer.

5.12. Excavation in the RPA

5.12.1. Any necessary excavation must be carried out using hand tools to avoid direct damage to the protective bark of tree roots. It may be possible in some instances to use specialised equipment such as high air pressure machinery to excavate the soil with minimal disturbance to roots.

5.12.2. Exposed roots will be wrapped in dry, clean Hessian sacking to prevent desiccation and to protect from rapid temperature changes. In warmer weather, the sacking should be kept moist by regular watering. Sacking should be removed before backfilling.

5.12.3. Roots less than 25mm diameter may be pruned back, preferably to a growing point. A sharp cutting tool such as bypass secateurs or a handsaw should be used to leave the smallest wound possible. Roots greater than 25mm in diameter should be retained wherever possible.

5.12.4. Root pruning should be carried out under the supervision of the Arboricultural Consultant or the Local Authority Tree Officer to ensure that only roots necessary to facilitate the development will be removed and the long-term well-being of retained trees is maintained.

5.12.5. Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.

5.13. Temporary site cabins

5.13.1. All storage facilities and deliveries will make use of existing hard surfaces to avoid unnecessary compaction within RPAs. The locations will be agreed in writing with the LPA prior to delivery and will remain in the agreed locations unless approved by the LPA.

5.13.2. If storage facilities require siting within RPAs, every effort will be made to ensure that any damage to aerial parts of retained trees is avoided and that appropriate footings are used to avoid root damage or compaction of the soil.

5.14. New structures in the RPA

5.14.1. No concrete strip foundations are to be installed within the RPA of any retained tree. Traditional strip foundations can cause an unacceptable amount of damage during the excavation process where roots are easily torn by mechanical excavators.

5.14.2. Small, light structures such as sheds and bin stores can be laid directly onto the soil surface without the need for significant excavation. A small amount of excavation may be permissible to provide a level surface, however, no roots over 25mm in diameter should be severed without the advice of an arboriculturist or Local Authority Tree Officer.

5.14.3. Traditional footings should not be used within the RPA for the construction of non-load bearing walls. It may be possible however, to construct walls in proximity to trees by bridging existing roots with lintels.

5.14.4. Where foundations are to be laid in the RPA of retained trees, root damage can be minimized by using small diameter piles located to avoid major tree roots. The proposed area for pile installation should be dug by hand to a depth of approximately 750mm in order to ascertain the position of roots present. Beams, slabs and suspended floors should be laid at or above ground level and cantilevered, as necessary, to avoid tree roots.

5.14.5. Where piling is to be installed in proximity to trees, the smallest practical pile diameter should be used as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. The latter is particularly important where piling within the branch spread is proposed, as mini-rigs reduce the need for access facilitation pruning. Sheathed piles protect the soil and adjacent roots from the potential toxic effects of concrete.

5.14.6. Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.

5.14.7. Any pruning should be carried out under the supervision of the Arboricultural Consultant or the Local Authority Tree Officer to ensure that only branches necessary to facilitate the Proposed Development will be removed and the long-term well-being of retained trees is maintained.

5.15. Utilities

5.15.1. All services will need to be designed to avoid the RPAs of retained trees including foul and surface water drains, electricity, land drains telephone and cable services, soak-aways, lighting, gas and water.

5.15.2. The installation of underground utilities within the RPA should not be considered unless it is absolutely necessary. Trenching can cause an unacceptable amount of damage to tree roots.

5.15.3. The National Joint Utilities Group publication, NJUG10 recommends the following precautions when working in the RPA:

- No excavation should be carried out using machinery.
- When digging by hand, carefully work around roots, retaining as many as possible.
- Do not sever roots over 25mm in diameter without the consent of the Arboricultural Consultant or Local Authority Tree Officer.

- Any root pruning will be carried out using a sharp tool (eg secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
- Backfill the trench with an inert granular material and topsoil mix. Compact the backfill with care around the retained roots. On non-highway sites backfill only the excavated soil.
- Do not repeatedly move or use heavy mechanical plant except on hard standing.
- Do not store spoil or building material, including chemical and fuels.
- Protect roots with dry sacking if they are to be left exposed overnight when there is a risk of frost. Sacking must be removed before backfilling.

5.16. Working in the RPA

5.16.1. Special care will need to be undertaken when working in the RPAs that are not protected by temporary fencing. The RPA is defined on the Tree Protection Plan Appendix 3 by coral hatched circles surrounding retained trees. Where necessary, temporary protective fencing will be placed in the marked positions, beyond which is a Construction Exclusion Zone (CEZ). This zone precludes all construction activity, with the sole exception of specified arboricultural works that have been agreed by all parties and under the supervision of an arboriculturist.

5.17. RPAs explained

5.17.1. The RPA is an area of ground around the base of a retained tree, which is calculated in relation to the stem diameter, where disturbance should be kept to a minimum and avoided if at all possible.

5.17.2. The majority of tree roots grow within the upper 600mm of the soil profile where most nutrients are available as the result of the decomposition of organic matter close to the surface. Rooting conditions become less favourable at depth as the soil density increases, creating anaerobic conditions.

5.17.3. It is essential that roots are protected from construction works including physical damage from excavation and changes in soil structure from compaction and changes in ground levels.

5.18. Construction Exclusion Zone (CEZ)

5.18.1. No construction activity will take place unless otherwise stated in this report or agreed in writing with the LPA prior to required works. Any required works will be carried out under the supervision of the Arboricultural Consultant or Local Authority Tree Officer

5.18.2. Any materials which have the potential to contaminate the soil, e.g. concrete mixing and diesel oil will not be discharged within 10m of the tree stem. This should take into consideration the topography of the site and slopes, to avoid materials such as concrete washings flowing towards retained trees.

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

5.18.4. Notice boards, telephone cables or other services should not be attached to any part of retained trees.

5.19. Surface design

5.19.1. It is essential to maintain adequate supplies of water and oxygen for trees through the soil. New impermeable surfacing should not cover more than 20% of the RPA.

5.19.2. Design and construction specification should take account of further growth.

5.19.3. Paving slabs and block pavers are available with built in infiltration spaces between the slabs or blocks. They should be laid dry-jointed on a sharp sand foundation to allow air and moisture to penetrate to the rooting area.

5.19.4. It may be necessary to lay paving and other surfaces on a flexible base to allow movement and to facilitate relaying if distortion becomes excessive due to the activity of tree roots.

5.19.5. Edgings and associated foundations and haunchings can damage tree roots. This should be avoided within the RPA by either the use of alternative methods of edge support or by not using supports at all.

5.19.6. Where wheeled or heavy pedestrian traffic is expected in the RPAs of retained trees, it will be necessary to construct the new surface using a cellular confinement system with a permeable surface. A supplementary method statement will be included in the appendices if necessary.

5.20. Changes in ground level

5.20.1. Changes in ground level can be harmful to trees where stripping or filling of soil is carried out in the RPA. It is therefore important that no significant changes in level occur within the RPA of retained trees.

5.21. Pedestrian Paving

5.21.1. Any pedestrian paving or patios that may be installed over rooting zones, as part of a post construction landscaping scheme, should be constructed in a manner sympathetic to tree roots. Excavation should be limited to 100mm. Paving with a thickness of 50mm bedded on mortar, or sand bearing directly onto the ground, with a finished surface which is level with existing ground levels will be acceptable. No retaining kerbs should be used.

5.22. Boundary treatments

5.22.1. Where fencing is to be installed within RPAs of retained trees, post holes will be excavated by hand and kept as narrow as possible. Trial holes will be dug using a manually operated soil augur in order to position post holes to avoid major roots.

5.22.2. Exploratory post holes will be dug before committing to positions. If any roots in excess of 25mm are encountered they are to remain intact and the post hole will be relocated to avoid them. The fencing system must permit such flexibility (i.e. where fixed panel widths are used, all post holes must be excavated before committing to the final location)

5.22.3. All post holes will be excavated by hand and kept as narrow as possible (maximum diameter 300mm).

5.22.4. Any roots in excess of 10mm which are severed will be neatly pruned back with secateurs. This will encourage healing and reduce the likelihood of infection.

5.23. Soft landscaping

5.23.1. No machinery used for landscaping such as rotovators are to operate within the RPAs of retained trees.

5.23.2. All planting must be carried out carefully, by hand to avoid damage to existing roots. Mulch should be used around the base of trees, where possible, to maintain ground level and to avoid mower and strimmer damage to buttresses and surface roots.

5.24. Monitoring

5.24.1. The Arboricultural Consultant will be responsible for the monitoring of all arboricultural works and issuing a certificate of practical completion.

5.24.2. A record of site visits will be maintained for inspection on site and copies forwarded to the developer/agent and to the LPA.

5.25. Phase 3 – Post development

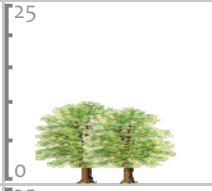
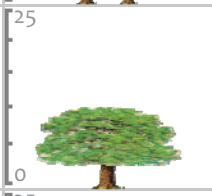
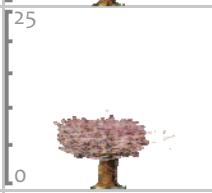
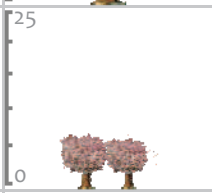
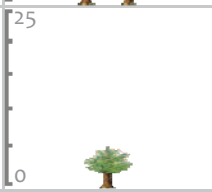
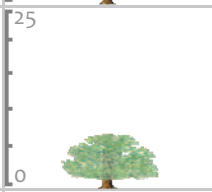
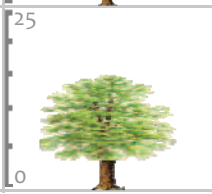
5.26. Removal of protective fencing and signing off

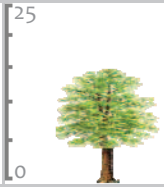
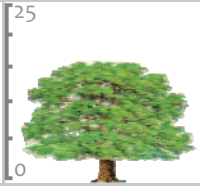
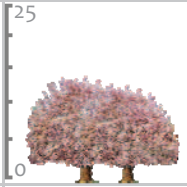
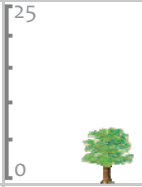
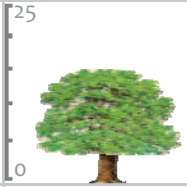
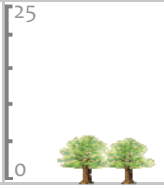
5.26.1. When the construction process is complete, the site should be inspected by the appointed arboriculturist or Local Authority Tree Officer. This must be prior to the removal of temporary protective fencing.

5.26.2. Any proposed landscaping operations by heavy machinery should be carried out before the protective fencing is removed.

Appendix 1 - Tree Data Schedule

- The following pages contain information gathered during the site survey.
- The reader should refer to Appendix 2 in order to correctly interpret the tree data.
- All images within the Tree Data Schedule are diagrammatical only. Their purpose is to indicate, at a glance, the relative dimensions of each tree. The images are computer generated based on measurements recorded for stem diameter, crown spread, crown height and overall height.

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	LB Height	LB Direction	Diameter (cm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m) 9 0 9	Notes	Recommendations Priority	Inspect Freq (yrs)	Physiological Condition Structural Condition	Life Expectancy (yrs) Retention Category
G1	Young **Mixed** Deciduous	av 10	av 2	1	E	av 250	av 3 4 4 5 each		1: Poor boundary group of sycamore and cherry. 2: Larger sycamore has major decay at base. 3: Included bark unions present. 4: Poor rooting conditions.	Remove. Moderate	N	Fair Poor	<10 C-
T2	Semi-Mature **Sycamore** Acer pseudoplatanus	10	3	1.5	N	450	6 5 5 6			No action required. n/a	3	Good Good	40+ C
T3	Mature **Cherry** Prunus sp	10	4	3	N	540	8 6.5 8 5		1: Black lesions on main stem. 2: Minor cavities with incipient decay at base.	Monitor. Moderate	1	Fair Fair	10-20 C+
G4	Young **Cherry** Prunus sp	av 7	av 2	1.5	N	av 190	av 3 3 3 3 each		1: Ornamental plantings.	No action required. n/a	3	Good Good	20-40 C
T5	Semi-Mature **Hawthorn** Crataegus monogyna	4	2	0	N	200	2.5 2.5 2.5 2.5		1: Level changes in rooting zone craeting poor growing conditions.	Remove spoil from rooting zone. High	1.5	Good Fair	40+ C-
T6	Semi-Mature **Rowan** Sorbus aucuparia	6	1	0	N	250	4 4 4 4		1: Vigorous sucker growth at base.	No action required. n/a	3	Good Fair	20-40 C
T7	Early-Mature **Tree Of Heaven** Ailanthus altissima	15	4	4	S	470	3.5 4 7 7		1: Single stemmed and vertical with an unbalanced crown. 2: Significant deadwood throughout crown.	Deadwood. High	1.5	Good Good	20-40 B

Reference (G = Group, H = Hedge)	Age & Species	Height (m)	Crown Ht (m)	LB Height	LB Direction	Diameter (cm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m)	Notes	Recommendations: Priority	Recommendations: Inspect Freq (yrs)	Physiological Condition / Structural Condition	Life Expectancy (yrs) / Retention Category
T8	Semi-Mature **Tree Of Heaven** Ailanthus altissima	15	5	4	E	300	N 2, W 4, E 7, S 3		1: Single stemmed and vertical with an unbalanced crown. 2: Significant deadwood throughout crown.	Deadwood. High	1.5	Good Good	20-40 **B**
T9	Early-Mature **London Plane** Platanus x hispanica	16	3	2	E	500	N 8, W 6, E 9, S 6			No action required. n/a	3	Good Good	40+ **B**
G10	Semi-Mature **Cherry** Prunus sp	av 14	av 2.5	1	W	av 300	N av 5, W 5, E 5, S 5 each		1: Small group.	No action required. n/a	3	Good Good	20-40 **C+**
T11	Young **Ash** Fraxinus excelsior	6	2.5	1	E	150	N 2, W 2, E 2, S 1		1: Self seeded ash close to bus stop.	No action required. n/a	3	Good Fair	10-20 **C-**
T12	Early-Mature **Sycamore** Acer pseudoplatanus	15	4	2	E	550	N 5, W 5, E 7, S 7			No action required. n/a	3	Good Good	40+ **B**
G13	Young **Fatsigiate Hornbeam** Carpinus betulus 'fastigiata'	av 5	av 1.5	0.5	S	av 170	N av 2, W 2, E 2, S 2 each		1: Recently planted linear group.	No action required. n/a	3	Good Good	40+ **C+**

Appendix 2 - Tree Survey Schedule Explanatory Notes

This section explains the terms used in the **Tree Data Schedule** in Appendix 1.

A2.1 General

A2.1.1 **Numbering System:** Each item of vegetation has its own unique number prefixed by a letter such that:

- **T1**=Tree 1
- **G2**=Group 2
- **H3**=Hedge 3
- **W4**=Woodland 4

A2.1.2 **Age Categories:**

- **Young** Usually less than 10 years old.
- **Semi-Mature** Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
- **Early-Mature** Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy).
- **Mature** Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
- **Veteran** A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
- **Over Mature** As for veteran except management is not considered worthwhile.

A2.1.3 **Species:** Common names and Latin names are given.

A2.1.4 **Height:** Measured from ground level to the top of the crown.

A2.1.5 **Crown Height:** Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

A2.1.6 **LB Height:** **(**Height of the lowest branch) is measured from ground level to the height at which the 1st significant branch emanates from the main stem. This information is not provided where the tree is multi-stemmed.

A2.1.7 **LB Direction:** Is the growth direction of the lowest significant branch (N, NE, E, SE, S, SW, W, NW)

A2.1.8 **Stem Diameter:** Taken at 1.5m above ground level where possible. On trees with two to five stems, the combined stem diameter is calculated as follows:

$\sqrt{(\text{stem diameter 1})^2 + (\text{stem diameter 2})^2 \ldots + (\text{stem diameter 5})^2}$

For trees with more than five stems, the combined stem diameter is calculated as follows:

$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$

A2.1.9 **Crown Height:** Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

A2.1.10 **Tree Diagram:** This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.

A2.1.11 **Crown Spread:** Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest half metre.

A2.1.12 **Notes:** Any relevant observations are recorded in the Notes section.

A2.1.13 **Recommendations:** Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

A2.1.14 **Priority Scale:** Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:

- **Urgent** To be carried out as soon as possible.
- **Very High** To be carried out within 1 month.
- **High** To be carried out within 3 months.
- **Moderate** To be carried out within 1 year.
- **Low** To be carried out within 3 years.

A2.1.15 **Inspection Frequency:**

- An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.

A2.1.16 **Physiological Condition:**

- **Good** Healthy and with no symptoms of significant disease.
- **Fair** Disease present or vigour is impaired.
- **Poor** Significant disease present or vigour is extremely low.
- **Very Poor** Tree is dying.

A2.1.17 **Structural Condition:**

- **Good** Having no significant structural defects.
- **Fair** Some defects observed though no high priority works are required.
- **Poor** Significant defects found. Tree requires monitoring or remedial works.
- **Very Poor** Major defects which will usually require significant remedial works or tree removal.

A2.1.18 **Life Expectancy:** The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).

A2.1.19 **Retention Category:** These are explained in detail in Table 1 on the following page.

Tree retention categorisation

The categorisation of trees is applied to guide the site owner as to the quality and value of their existing tree stock. All trees greater than 75mm in diameter at 1.5m above ground level are surveyed and allocated a ***retention category*** which takes into account amenity value, condition and safe useful life expectancy. The categories are allocated independently of development proposals. BS 5837:2012 recommends using a cascade chart for categorisation purposes. **Table 1** below provides an explanation of retention categories used.

Trees to be removed		Colour on Plan
Category U includes trees of very low quality that offer little or no amenity value.	Trees that are in such a condition that they should be removed as a matter of good arboricultural practice regardless of given proposals.	RED
Trees to be considered for retention		Colour on Plan
Category A includes trees of a high quality, usually highly visible to the wider public.	Trees that are excellent examples of their species, usually mature, with a safe useful life expectancy of at least 40 years. Category A trees are likely to enhance a development and should be retained wherever possible	GREEN
Category B includes trees of moderate quality and amenity value.	Trees that are good examples of their species but may have defects or form that downgrade them from category A. Category B trees are usually mature or younger trees with the potential to reach A category in the future. Although the retention of these trees is desirable, some losses may be acceptable.	BLUE
Category C includes trees of low quality and amenity value.	Trees that are either young with a stem diameter less than 150mm or are unlikely to make a contribution for more than 10 years. The removal of these trees should be seen as acceptable in order to allow development to proceed. It may be possible to transplant younger specimens.	GREY
NOTE: Trees that are viewed as borderline and do not fit neatly into either of the categories are given a plus or minus rating (+/-) in the tree data schedule. Therefore C+ would denote a tree being borderline C/B although C is deemed to be the most appropriate category. Similarly B- would denote a tree being borderline B/C with B seen as the most appropriate category.		

Table 1

Appendix 3 - Site Plans

The site plans referred to in the report follow this page which include the following:

- Tree Constraints Plan

Although included plans are usually to scale, they are only intended to indicate positions of surveyed trees and dimensions should not be taken from these drawings.



Key	
T1	Tree number 1
G2	Group number 2
H3	Hedge number 3
	Retention category A tree
	Retention category B tree
	Retention category C tree
	Retention category U tree
	Root Protection Area (RPA)

BS 5837 RETENTION CATEGORIES

Category A:
Trees of high quality and amenity. Usually, mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

Category B:
Trees of moderate quality and amenity. Usually mature trees, or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

Category C:
Trees of low quality and amenity. The removal of these trees should be seen as acceptable in order to facilitate development.

Category U:
Trees whose structural condition is such that they should be removed regardless of development proposals.

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Client
Sir Robert McAlpine

Project
Birley Fields

Description
Tree Constraints Plan

Scale	Drawn by	Date
1:250 A1	DAL	22/01/14
Job number	**Drawing number**	**Revision**
10555	10555.T1	N/A