St Michael's School, Barnsley

Arboricultural Impact Assessment

Report for Barnsley Partnership for Learning
(Laing O'Rourke)

July 2010

Institute of Chartered Foresters
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SUMMARY

Greengage Arboriculture & Ecology was commissioned to carry out an arboricultural impact assessment on the site of St Michael's School, Barnsley. The site is proposed for construction of a new school building and associated facilities as part of the Building Schools for the Future programme. The proposal for the site includes demolition of the existing school buildings.

A survey of trees on the site was carried out previously and the results of this survey are reported separately. The large site has a relatively low tree density. The majority of the trees present are middle-age trees growing singly or in small groups in amenity space close to the existing buildings and footpaths. The most common trees are silver birch, whitebeam, rowan cherry and Norway maple. The survey assessed 37 individual trees and 3 groups of trees and shrubs.

The proposed development layout and earthworks will require the felling of 24 individually assessed trees and shrubs and two groups of trees and shrubs (A-C category only). In addition to this the *Landscape Masterplan* proposes the felling of an additional nine individually assessed trees as part of the overall scheme design. In total it is proposed to fell all the trees on the site. The only trees proposed for retention are a single individually surveyed tree and a single group of trees, both located off-site close to the site boundary.

The proposed felling will lead to a local loss of tree cover. Many of the trees to be felled are relatively small trees growing away from the site boundaries and partially screened by the buildings present. For this reason, impact of the tree loss on public amenity should be relatively small and localised. It is considered that the tree felling can be adequately mitigated in the medium and long-term by the planting proposed in the *Landscape Masterplan*.

1. INTRODUCTION

1.1 Scope and Brief

This arboricultural report was commissioned by Laing O'Rourke on behalf of Barnsley Partnership for Learning. Laing O'Rourke have been appointed by Barnsley Metropolitan Borough Council (Barnsley MBC) to design and construct new school buildings and facilities under Phase 3 of the Barnsley Building Schools for the Future (BSF) programme.

The report was prepared by Guy Morrison, Principal Arboriculturist and Partner of Greengage Arboriculture & Ecology. He is a Chartered Forester and Registered Consultant with the Institute of Chartered Foresters. He is also a Professional Member of the Arboricultural Association and holds the Royal Forestry Society Professional Diploma in Arboriculture.

The scope of the report was to carry out an arboricultural impact assessment of the proposed development. The assessment and tree protection details accord with BSS5837:2005 '*Trees in relation to construction – Recommendations*' (BSi, 2005). The assessment is accompanied by a schedule for facilitation works to trees that are necessary in order to accommodate the proposed development. A *Tree Protection Plan* (Plincke drawing no. BP4L_MIC_PLI_91_SW_00_05 Rev.P01) has been produced separately and should be referred to when reading this report.

Arboricultural impact assessment reports have been commissioned for the three sites that form Phase 3 of the Barnsley BSF programme. These are Holgate and Kingstone, Wombwell, and St Michael's School. This report relates to the St Michael's site.

A pre-development tree survey of the site had been carried out previously. This *Predevelopment Tree Survey* report (RPS, 2009) and the accompanying *Tree Constraints Plan* (RPS drawing no. 5353-01) should be referred to when reading this report.

1.2 Site Description

A full description of the existing site and the site location plans are provided in the tree survey report (RPS, 2009). A summary of the site description is provided below.

The proposed development site has an area of approximately 10.8ha and includes three existing schools. These are St Michael's Catholic and Church of England High School, Edward Sheerien School and St Dominic's Catholic Primary School, as well as the Youth Service Community Centre. The site has a large number of buildings which are all located in the northern half of the site. The southern half of the site comprises grass sports pitches.

The large site has a relatively low tree density. The majority of the trees present are middle-age trees growing singly and in small groups in amenity space close to the existing buildings and footpaths. The most common trees are silver birch, whitebeam, rowan cherry and Norway maple. The survey assessed 37 individual trees and three groups of trees and shrubs.

2. STATUTORY TREE PROTECTION

2.1 Tree Preservation Orders / Conservation Areas

It is currently unknown whether trees on or immediately adjacent to the site are protected Tree Preservation Order (TPO) or whether the site is located in a Conservation Area.

TPOs place various restrictions on the felling, pruning or damaging of trees, subject to various exemptions (DETR, 2000; DCLG, 2008). Permission is required from the LPA to fell or prune trees covered by the TPO, or to carry out any other operations that may damage the trees. There are a number of exemptions, such as the felling of dead, dying and dangerous trees, but it is recommended that the LPA is consulted on all planned works to agree on whether a formal application for permission is required

2.2 Felling Licences

Tree felling on non-residential land is also controlled by the need to obtain a Felling Licence from the Forestry Commission before felling more than $2m^2$ of timber (or $5m^2$ if timber is not sold) per three month period, subject to various exemptions (FC, 2005).

2.3 Protected Species

Trees and scrub provide habitat for a wide range of species, some of which are protected. Most nesting birds and their nests are protected by the Wildlife and Countryside Act 1981 (as amended). All bats and their roosts are protected by the Wildlife and Countryside Act 1981 (as amended) and gain additional protection as under the Conservation (Natural Habitats, &c.) Regulations 1994. Birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 and all bat species are also protected from disturbance when using nesting or roosting sites.

3. TREE SURVEY SUMMARY

3.1 Tree Survey Methodology

A trees survey of the site was carried out by RPS and the results of this survey (RPS, 2009) are considered and used in this assessment. The results of the survey are assumed to be true and accurate and no checks on these have been made.

A tree survey was carried out on the site in accordance with BSS5837:2005 '*Trees in relation to construction – Recommendations*' (BSi, 2005). The tree survey report (RPS, 2009) should be referred to for the survey methodology.

The trees' overall quality and value for retention was assessed in accordance with BS5837:2005 Table 1. This was dependent on the trees' physiological and structural condition, safe useful life expectancy and arboricultural, landscape, cultural and ecological value. Trees were assigned to the following quality and value categories:

Table 1. Tree quality and value categories

Quality and value	Characteristics
Category A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).
Category B	Those of moderate quality and value: in such a condition as to make a significant contribution (a minimum of 20 years is suggested).
Category C	Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm.
Category R	Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

The root protection area (RPA) radius and area for each tree was calculated in accordance with BS5837:2005. The RPA is an area of ground that provides sufficient soil rooting volume to ensure the survival of the tree.

3.2 Tree Survey Results

The full survey results are shown in the tree survey report (RPS, 2009) and accompanying *Tree Constraints Plan* (RPS drawing no. 5353-01). An extract of the survey information is provided in the arboricultural impact and works schedule (Appendix A).

The survey assessed 37 individual trees and shrubs and three groups of trees.

No trees of high quality and value (A category) were identified on the site. This is principally down to the dominance of small and medium-growing ornamental species on the site. There are a smaller number of larger-growing species, but all are young or middle-age trees.

The survey identified 17 individually surveyed trees and one group of trees and shrubs of moderate quality and value (B category). Trees in this category included better examples of most of the species present on the site. There is no particular pattern to the distribution of the trees in this category.

The survey identified 20 individually surveyed trees and two groups of trees and shrubs of low quality and value (C category). These include younger and smaller trees that are easily replaced and trees of impaired condition and limited life expectancy so that they do not meet the criteria for selection to higher value categories.

No trees were identified to be in a poor condition where they are likely to die or require removal within a period of 10 years (R category).

4. ARBORICULTURAL IMPACTS

4.1 The Development Proposal

It is proposed to develop the site by constructing a secondary school, the St Michael's Joint Advanced Learning Centre, which will replace the existing schools on the site.

It is proposed to demolish all the buildings on the site which will be replaced with a single large building in the northern half of the site. Sports facilities will be expanded and improved and will include an all-weather pitch, several grass pitches and several multi-use games areas (MUGAs). A new car park will be constructed in northern corner of the site and this will be accessed from the existing site entrance on Carlton Road.

The proposed development will require significant re-grading works in relation to the proposed building, car park and all-weather pitch. The existing grass pitches in the southern half of the site will remain largely as present, with no work proposed.

The layout of the development proposal is shown on the *Tree Protection Plan* (Plincke drawing no. BP4L_MIC_PLI_91_SW_00_05 Rev.P01) and the *Landscape Masterplan* (Plincke drawing no. BP4L_KIN_MIC_91_SW_00_01 Rev.P08).

The routing of surface water and foul water drainage and gas are shown on the *Proposed Foul Water Drainage* (Arup drawing no. BP4L_MIC_ARU_DR_51_SW_LL_0100 Rev.P1), *Proposed Surface Water Drainage* (Arup drawing no. BP4L_MIC_ARU_DR_51_SW_LL_0200 Rev.P01) and *Incoming Gas Supply Sketch* (Arup drawing no. BP4L_MIC_ARU_DR_96_EX_LL_5002 Rev.P2). Details on the routing of water, electricity and telecommunication services are not available at this stage.

4.3 Typical Development Impacts

Impacts by trees can be divided into direct and indirect impacts. Direct impacts refer to the removal of trees to facilitate the development and physical damage caused to retained trees during construction works. Indirect impacts refer to future pressures on the trees arising from their location in relation to the proposed use of the site.

Damage can be caused to trees in various ways during construction works. Direct damage to the roots is commonly encountered and is caused by excavation, for example to construct foundations or hardstandings or to install services. Roots are generally most frequent in the upper 600mm of soil, with many encountered at far shallower depth, and significant root damage can be caused by site soil stripping.

Damage to the soil may be as equally damaging to trees as direct root damage. Compaction is a commonly encountered problem and causes long-lasting damage to the soil. The anaerobic conditions which are often caused by compaction are unsuitable for most plant rooting and may cause tree decline. Compaction soil damage by vehicle movement is most common on, but not restricted to, high clay-content and poorly drained soils. Damage to tree rooting conditions is also caused during hard-standing construction where impermeable construction prevents the infiltration of water and oxygen to the roots.

Direct damage to trees by construction at close distance can be minimised or even eliminated by the adoption of special construction methodologies. These include non-dig permeable hardstanding construction, pile and beam foundation design and non-trenched service installation. All these methodologies require careful design and supervision if they are to be used to minimise impact on trees.

Other common causes of tree damage on construction sites are accidental bark damage or branch breakage by vehicles and plant, fire damage, herbicide damage and soil pollution by cement-based products, diesel, hydraulic oil and other chemicals.

Trees may face indirect impacts where their retention in relation to the development causes a significant nuisance to future users of the site. This may lead to future pressure to fell the trees or prune them heavily in a way that destroys their form and much of their value. Another significant indirect impact is where indirect space has been allowed for the future crown-spread of the tree and BS5837 advises that trees should not be retained on the basis that their crown spread can be controlled by periodic pruning unless this is a desired management outcome. It is also important to allow space for trees to grow and develop without causing significant nuisances such as severe loss of light to adjacent property.

4.4 Direct Impacts

The arboricultural impact and facilitative works schedule (Appendix A) describes the impact of the development proposal on each tree surveyed and describes the arboricultural works that are necessary to implement the proposal. This is summarised below.

The main direct impacts on trees on the site are associated with the construction of school building, access road, sports facilities and the associated earthworks.

Tree removal

All the trees located on the site are proposed for removal and the only trees proposed for retention are a single individually assessed tree (no. 1) and group of trees (no. G2) which are both located on adjacent land close to the site boundary.

All trees to be removed are shown on the *Tree Protection Plan* (Plincke drawing no. BP4L_MIC_PLI_91_SW_00_05 Rev.P01).

Trees requiring removal because they are located on the footprint of proposed construction works are listed in Table 2 below. This also includes trees that are in an area subject to a significant change in ground levels arising from the proposed earthworks.

Table 2. Trees and shrubs (A-C category only) to be removed to implement proposal where they are located on the footprint of proposed construction works.

Category	No.	Species	Age class
A None	None		
B 8 no. individual trees	11	Sycamore	Mat
	13	White Willow	MA
	14	Cherry sp.	MA
	22	White Willow	MA
	27	Ash	MA
	29	Ash	MA
	30	Rowan	Mat
	31	Norway Maple	Mat
C 16 no. individual trees 2 no. group	2	Hawthorn	Mat
	3	Ash	Y
	9	Silver Birch	Y
	10	Field Maple	MA
	12	Cherry sp.	Mat
	15	Cherry sp.	Y
	24	Swedish Whitebeam	MA
	25	Rowan	Mat
	26	Silver Birch	Y
	28	Red Oak	Y
	32	Horse Chestnut	Mat
	33	Rowan	Mat
	34	Goat Willow	Mat
	35	English Oak	Y
	36	Sycamore	MA
	37	Alder	MA
	G2	Silver Birch	Y
	G3	Hawthorn, Elder, Sycamore, Goat Willow	MA
Total *24 no. individual trees* *2 no. groups*			

It is also proposed to fell several trees where their felling is not essential to implement the proposed layout and where they are not located in an area subject to significant level changes, but where their felling is desired as part of the overall scheme design within the *Landscape Masterplan*. These are listed below in Table 3.

Table 3. Trees and shrubs to be removed as part of the development, but whose removal is not essential.

Category	No.	Species	Age class
A None	None		
B 5 no. individual trees	4	Whitebeam	MA
	5	Whitebeam	MA
	16	Norway Maple (Purple)	MA
	20	Silver Birch	Mat
	23	Silver Birch	Mat
C 4 no. individual trees	17	Rowan	Mat
	18	Cherry Laurel	Mat
	19	Cherry sp.	Mat
	21	Norway Spruce	Y
Total *9 no. individual trees*			

Damage to retained trees
Subject to satisfactory protection during the demolition and construction works, the trees to be retained should not suffer significant damage as a result of the development proposal, either to themselves or soil conditions within their RPA.

4.5 Indirect impact

Shading
Due to the removal of all the trees on the site, the retention of trees will not lead to undue shading of the site. Generally some areas of light shading are desirable on a school site and these will be achieved once the trees proposed for planting have established.

Pruning
No pruning is proposed to the small number of off-site trees proposed for retention.

4.6 Impact summary

It is proposed to fell all the trees on the site. The only trees proposed for retention are a single individually surveyed tree and a single group of trees, both located off-site close to the site boundary. The proposed development will require the felling of 24 individually assessed trees and shrubs and two groups of trees and shrubs (A-C category only). In addition to this the *Landscape Masterplan* proposes the felling of an additional nine individually assessed trees and two groups of trees and shrubs as part of the overall scheme design. The construction should not lead to any significant impacts on the off-site trees to be retained.

The proposed felling will lead to a local loss of tree cover. Many of these trees are relatively small trees growing away from the site boundaries and partially screened by the buildings present. For this reason, it is considered that impact on public amenity of the tree loss will be relatively small and localised. It is considered that the tree felling can be adequately mitigated in the medium and long-term by the planting proposed in the *Landscape Masterplan*.

5. RECOMMENDATIONS

5.1 Arboricultural works and inspection

The arboricultural impact and works schedule (Appendix A) contains recommendations for arboricultural works that are necessary to facilitate the development. This is the felling of all the trees on the site.

Trees to be removed to facilitate the development are shown on the *Tree Protection Plan* (Plincke drawing no. BP4L_MIC_PLI_91_SW_00_05 Rev.P01).

If it was desired to carry out the proposed felling in advance of obtaining full planning permission then it is recommended that an enquiry is made to the local planning authority to determine whether the trees are protected by TPO or presence in a Conservation Area.

5.2 Tree protection

Tree Protection Plan

It is recommended that the trees to be retained on the site are protected in accordance with the *Tree Protection Plan* (Plincke drawing no. BP4L_MIC_PLI_91_SW_00_05 Rev.P01). This plan shows the location of protective fencing which forms the construction exclusion zone to ensure that the trees to be retained and their essential rooting zone are not damaged during the proposed demolition and construction.

The protective fencing should comply with BS5837:2005. The fencing should be constructed from 2.3m high Herris-type weld-mesh panels securely attached to a braced scaffold framework. The scaffold framework shall comprise a vertical and horizontal framework, well-braced against impact. Vertical tubes will be placed at a maximum spacing of 3.0m and driven at least 600mm into the ground.

Within the construction exclusion zone, all damaging operation should be excluded. In particular, the following activities must not take place within the construction exclusion zone:

- changes in levels;
- excavation, including trenching for service installation;
- storage of materials, including earth
- Temporary access
- movement or parking of plant and vehicles;
- siting of site cabins or other temporary buildings;
- mixing of materials and chemicals; and
- disposal of liquids.

In addition to the above no fires should be lit on the site.

Arboricultural Method Statement

Because it is proposed to remove all the trees on the site, tree protection will only be required for the single individually assessed tree and a single group of trees, both located off-site close to the site boundary. These can be adequately protected by fencing which is detailed in the Tree Protection Plan. The production of an arboricultural method statement is considered unnecessary and is not recommended.

5.3 Protected Species

Trees on the site may be used for nesting by birds during the spring and summer. Nesting birds and their nests are legally protected and wherever possible the felling or pruning trees should be avoided between 1 March to 30 August to avoid an impact on nesting birds. Where it is necessary to carry out the work during this period then advice should be sought from a suitably qualified ecologist.

It is recommended that a bat roost scoping study (BCT, 2007) is carried out by a suitably qualified ecologist of any trees due to be felled.

5.4 Replacement planting

The *Landscape Masterplan* (Plincke drawing no. BP4L_MIC_PLI_91_SW_00_01 Rev.P03) includes outline proposals for tree planting on the site. More detailed landscape planting plans will be produced once planning permission has been gained. It is recommended that the details are developed in accordance with the masterplan in order to adequately mitigate the proposed loss of trees on the site.

5.5 Further details

It is recommended that this assessment report is revised to take account of the proposed utility services layout once the details for the routing of water, electricity and telecommunications services is available. These should be planned and routed so they do not pass through the RPA of trees to be retained on land adjacent to the site. Where this is unavoidable, the impact should be assessed and measures taken to reduce the impact. Measures and procedures to be utilised should comply with BS5837:2005 and '*NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'* (2007).

6. REFERENCES

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APPENDIX A – ARBORICULTURAL IMPACT AND WORKS SCHEDULE

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No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
1	Silver Birch	MA	B_1	None	None	No action
2	Hawthorn	Mat	C_1	Tree located on proposed MUGA	None	Fell tree
3	Ash	Y	C_1	Tree located on proposed MUGA	None	Fell tree
4	Whitebeam	MA	B_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
5	Whitebeam	MA	B_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
6	Cherry sp.	MA	B_2	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
7	Cherry sp.	MA	B_2	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
8	Silver Birch	Mat	B_2	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
9	Silver Birch	Y	C_1	Tree located on proposed MUGA	None	Fell tree
10	Field Maple	MA	C_1	Tree located on proposed MUGA	None	Fell tree

Key Y – Young MA – middle-age EM - early mature Mat – mature OM - over-mature

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
11	Sycamore	Mat	B_1	Tree located close to proposed footpath. Proposed re-grading works will reduce the ground level at stem base by approximately 1.0m.	None	Fell tree
12	Cherry sp.	Mat	C_1	Tree located close to proposed footpath. Proposed re-grading works will reduce the ground level at stem base by approximately 1.0m.	None	Fell tree
13	White Willow	MA	B_1	Tree located close to proposed footpath. Proposed re-grading works will reduce the ground level at stem base by approximately 1.0m.	None	Fell tree
14	Cherry sp.	MA	B_1	Tree located close to proposed footpath. Proposed re-grading works will reduce the ground level at stem base by approximately 1.0m.	None	Fell tree
15	Cherry sp.	Y	C_1	Proposed re-grading works will reduce the ground level at stem base by more than 1.0m.	None	Fell tree
16	Norway Maple (Purple)	MA	B_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
17	Rowan	Mat	C_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
18	Cherry Laurel	Mat	C_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree

Key Y – Young MA – middle-age EM - early mature Mat – mature OM - over-mature

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
19	Prunus sp.	Mat	C_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
20	Silver Birch	Mat	B_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
21	Norway Spruce	Y	C_1	Tree located close to building to be demolished. Tree proposed for removal in landscape masterplan.	None	Fell tree
22	White Willow	MA	B_1	Tree located on proposed internal access road.	None	Fell tree
23	Silver Birch	Mat	B_1	Tree proposed for removal in landscape masterplan.	None	Fell tree
24	Swedish Whitebeam	MA	C_1	Tree located close to proposed footpath. Proposed re-grading works will reduce the ground level at stem base by approximately 0.5m.	None	Fell tree
25	Rowan	Mat	C_1	Tree located close to proposed footpath. Proposed re-grading works will increase the ground level at stem base by more than 0.75m	None	Fell tree
26	Silver Birch	Y	C_1	Tree located on proposed school building	None	Fell tree
27	Ash	MA	B_1	Tree located on proposed school building	None	Fell tree
28	Red Oak	Y	C_1	Tree located on proposed MUGA	None	Fell tree

Key Y – Young MA – middle-age EM - early mature Mat – mature OM - over-mature

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
29	Ash	MA	B_1	Tree located on proposed decking area. Proposed re-grading works will increase the ground level at stem base by approximately 1.5m.	None	Fell tree
30	Rowan	Mat	B_1	Proposed re-grading works will decrease the ground level at stem base by approximately 0.3m.	None	Fell tree
31	Norway Maple	Mat	B_1	Tree located on fence-line close to proposed school building. Proposed re-grading works will decrease the ground level at stem base by approximately 0.5m.	None	Fell tree
32	Horse Chestnut	Mat	C_1	Tree located close to proposed school building. Proposed re-grading works will decrease the ground level at stem base by approximately 0.5m.	None	Fell tree
33	Rowan	Mat	C_1	Tree located on proposed school building	None	Fell tree
34	Goat Willow	Mat	C_1	Tree located on proposed school building	None	Fell tree
35	English Oak	Y	C_1	Tree located on proposed MUGA	None	Fell tree
36	Sycamore	MA	C_1	Tree located on proposed MUGA	None	Fell tree
37	Alder	MA	C_1	Tree located on proposed bus drop-off point.	None	Fell tree
G1	Sycamore, Elder, Leyland Cypress, Prunus sp.	MA	B_2	None	None	No action

Key Y – Young MA – middle-age EM - early mature Mat – mature OM - over-mature

No.	Species	Age class	Category grade	Arboricultural impact	Protection measures	Facilitative and remedial arboricultural works
G2	Silver Birch	Y	C_1	Trees located on proposed school building	None	Fell trees
G3	Hawthorn, Elder, Sycamore, Goat Willow	MA	C_2	Trees located on proposed MUGA	None	Fell trees

Key Y – Young MA – middle-age EM - early mature Mat – mature OM - over-mature