Arboricultural Impact Assessment

BE-748.1a

The East Manchester Academy, 60 Grey Mare Ln, Manchester, M11 3DS

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Grid reference	SJ 87065 97945
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Client	The East Manchester Academy
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Executive Summary

Bagshaw Ecology Ltd have been instructed by Lancaster Maloney on behalf of The East Manchester Academy to undertake an Arboricultural Impact Assessment of the land at The East Manchester Academy, 60 Grey Mare Ln, Manchester, M11 3DS in relation to an application for planning.

The development proposals include construction of a fence which will run along the eastern boundary of the school grounds - parallel with Grey Mare Lane

The site survey identified 11 individual trees and two groups of trees with the potential to be affected by the development proposals. These included one Category B tree of moderate quality, and ten Category C trees and two groups of low quality.

At the time of writing it has not been verified if trees on the site are afforded protection by Tree Preservation Orders (TPO), or if they are located within the boundaries of a Conservation area.

The development proposals will necessitate the complete removal of one Category C tree and one Category C group. Additionally, one Category C group will also require partial removal and further facilitative pruning.

Due to the low intensity of the proposed construction works, and close proximity with low quality trees, Tree protective Fencing and Ground Protection would be unviable and unnecessary.

It is recommended that an Arboricultural Method Statement is followed during construction works.

As the site already boasts substantial areas of tree cover and the planned development will not require the removal of high quality trees from the site, further mitigation is not deemed mandatory.

1. Introduction

1.1. Background

Bagshaw Ecology Ltd have been requested by Lancaster Maloney, on behalf of The East Manchester Academy, to undertake an Arboricultural Impact Assessment of the land at The East Manchester Academy, 60 Grey Mare Ln, Manchester, M11 3DS.

The purpose of the report is to:

- Assess the quality of the trees on and immediately adjacent to the site, in accordance with BS5837: 2012 – Trees in Relation to Design, Demolition and Construction: Recommendations (hereafter referred to as BS5837: 2012).
- Identify trees suitable for retention and for removal due to the proposed development.
- Prescribe tree protection measures to ensure that retained trees survive the proposed development and thrive after its completion.
- Prescribe arboricultural recommendations for the long-term management of trees on the site.
- To assess the site for its suitability for mitigation planting, and to specify planting requirements.

1.2. Site Details

The site is located at grid reference SJ 87065 97945 and is accessed west off Grey Mare Lane. The site is bound by Grey Mare Lane to the east, Albert Street to the north and by residential properties on all other aspects.

The study area is approximately 0.6ha in size, and at the time of the survey comprises of car parking facilities, the main school entrance and adjacent grassed and shrubbery areas.



Figure 1: Aerial imagery of site and surrounding area (Google Earth Pro, 2018)

1.3. Proposed Development

The development proposals include construction of a fence which will run along the eastern boundary of the school grounds, parallel to Grey Mare Lane.

2. Methods

2.1. Desk Based Study

The local council was consulted to determine if any trees on the site and immediately adjacent to the site are protected by Tree Preservation Orders (TPOs) and/or are within Conservation Areas. Cranfield (2018) was consulted as to the soil type of the surrounding area.

2.2. Site Survey

The site survey was carried out on Friday 10th August 2018. The weather at the time of the survey was mostly clear and dry, with intermittent showers. Visibility was good.

The survey was carried out by Jack Delaney. Jack Delaney has worked within the arboricultural industry for ten years and hold an FdSc in Arboriculture.

All trees on site were inspected from ground level, using the Visual Tree Assessment (VTA) method (Mattheck *et al*, 2015). Any notable defects of trees were recorded, although the site survey did not constitute a full tree safety assessment.

Tree heights and crown clearances were measured to the nearest 0.1 m with a clinometer. Crown spreads of trees were measured on their, north, east, south and west aspects to the nearest 0.1m.

The diameter at breast height (DBH) of trees was measured to the nearest 10mm. This was used to calculate the root protection area (RPA) of trees using methods prescribed in BS5837: 2012:

- For single stem trees, the RPA was calculated as a circle with a radius 12 times the DBH.
- For trees with 2-5 stems, the RPA was calculated using the formula:

  $$\text{RPA} = \sqrt{(\textbf{Stem 1 DBH})^2 + (\textbf{ Stem 2 DBH})^2 + \ldots (\textbf{Stem 5 DBH})^2}$$

- For trees with 6 or more stems, the RPA was calculated using the formula:

  $$\text{RPA} = \sqrt{(\boldsymbol{\mu\, DBH})^2 \textbf{ x number of stems}}$$

In accordance with BS5837: 2012, trees were classified as either A, B, C or U, using the criteria shown in Table 1.

Table 1: BS5837 Cascade Chart (adapted from British Standards, 2012)

Category	Definition	Retention	Colour code
Category A	Trees of high quality with an estimated remaining life expectancy of at least 40 years; trees that are particularly good examples of their species, especially if rare or unusual.	Highly desirable	Light green
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years; trees lacking the special quality to merit category A designation.	Desirable	Dark blue
Category C	Trees of low quality with an estimated remaining contribution of at least 10 years, or trees with a stem diameter below 150mm; unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Feasible, but should be removed if posing a constraint to development	Grey
Category U	Trees that have serious, irremediable, structural and/or physiological defects, including those that will become unviable after removal of other category U trees.	Unfeasible	Dark red

2.3. Constraints

The survey was constrained by the season in which it took place. Some pathogens of trees, in particular fruiting bodies of decay fungi, are only visible at certain times of year.

3. Results

3.1. Desk Based Study

Correspondence with Manchester City Council confirmed that none of the trees mentioned within this report are afforded protection by Tree Preservation Orders (TPOs).

Cranfield (2018) states that the surrounding area consists of Slowly permeable, loamy and clayey soils, which are seasonally wet and slightly acidic. No further detailed soil analysis was carried out as part of the survey.

3.2. Tree Population Assessment

The site survey identified a total of 11 trees and two groups of trees with the potential to be affected by the development proposals.

The trees on the site include one Category B tree of moderate quality, and ten Category C trees and two groups of low quality.

Table 2: Summary of Tree Categories

Category	Description	Tree/group numbers	Totals
A	Trees of high quality which should where be possible be retained throughout any proposed development	-	-
B	Trees of moderate quality which should where possible be retained throughout any proposed development	T4	1 Tree
C	Trees of low quality which should not be considered a constraint to development	T1, T2, T3, T5, T6, T7, T8, T9, T10, T11 G1, G2	10 Trees 2 Groups
		Total:	**11 Trees** **2 Groups**

Tree data can be viewed in Appendix 1: Tree Survey Schedule. Tree locations can be viewed in Appendix 3: Tree Constraints Plan.

Tree species on and adjacent to the site include; red oak *Quercus robur*, field maple *Acer campestre* and sycamore *Acer pseudoplatanus.*

4. Impact Assessment

4.1. Tree Works

The construction of the proposed fence to the east of the study area - which will be approximately 2.4m in height upon completion - will impact upon the crown spread of T7, G1 & G2.

The position of the fence in relation to T7 and G2 dictate that these cannot feasibly be retained.

G1 can be retained but will require partial removal of its southern portion, along with further facilitative pruning.

Table 3: Summary of Trees Impacted by Development Works

Category	Trees necessitating removal	Trees necessitating pruning works
A	-	-
B	-	-
C	T7, G1, G2	G1
U	-	-
Totals	**1 Tree, 2 Groups**	**1 Group**

4.2. Root protection areas affected by development

Although the RPA of G1 is dissected by the proposed fence line, it is likely that the only construction works which will be required within these RPAs are excavations for the installation of fence posts. As such, it is anticipated that this group can be retained, provided that a precautionary approach to development works is adopted.

5. Recommendations

5.1. Tree Works

Prior to works commencing, to facilitate construction of the proposed fence, it is recommended that T7 and G2 are removed. G2 and T7 are all Category C trees and of low arboricultural merit, therefore the removal of these is considered of low impact.

G1 will also require partial removal of its southern portion to facilitate construction of the proposed fence. Prior to commencement of works, it is also recommended that a qualified arboricultural team liaises with the development contractors, so that G1 can be pruned in such a way that would allow unhindered construction of the fence.

At the time of the survey it has not been verified if trees on the site are afforded protection by TPOs and/or Conservation Areas. As such, any legal designations affecting trees should be verified with the local authority prior to the commencement of works. Killing or damaging a protected tree is a criminal offence and can result in an unlimited fine.

All tree works, including tree removals, should be carried out by a fully insured and suitably qualified arboricultural contractor who is able to comply with BS3998: 2010 – Tree Works: Recommendations.

5.2. Tree Protection

As the majority of tree roots are found within the first 1m of ground level, it is recommended that where possible, to avoid damage to major roots, fence posts are installed a minimum of 2m away from the main stem of any of the trees within G1. All excavations within RPAs should be carried out by hand tools only; if any major roots are found during excavations, an alternative fence post location should be sought.

It is recommended that works follow an Arboricultural Method Statement (AMS). An AMS can be viewed in Appendix 4. This should be reviewed by an arboricultural consultant prior to the commencement of works on the site.

Due to the close proximity of works to trees, and low intensity of the proposed construction works; Tree Protective Fencing and Ground Protection are not deemed necessary. However, heavy machinery should not be operated within any RPAs – to avoid excessive damage to roots, RPAs should be restricted to pedestrian access only.

5.3. Mitigation

The development proposals will necessitate the removal of one Category C tree and two Category C groups. One further Category C group will also require partial removal. These trees are of limited environmental and amenity value; therefore, removal is considered low impact. The study area is also set within the larger area of The Manchester East Academy, which already has an existing high level of tree cover.

However, further planting could be considered to enhance the amenity of the site. If undertaken, it is suggested that further planting should seek to diversify species structure at the site, with native trees often providing the greatest ecological benefits.

To ensure the best possible chances of successful establishment, trees planted should ideally be standard in size and should be planted in accordance with BS845: 2014 – Trees: from Nursery to

Independence in the Landscape. All trees should be affixed with a wooden stake, secured to the tree by a biodegradable cable tie. An organic woodchip mulch should be applied in a 1m radius around tree stems.

Suggested species include:

- Hornbeam *Carpinus betulus*
- Silver birch *Betula pendula*
- Sessile oak *Quercus petraea*
- Hawthorn *Crataegus monogyna*
- Sweetgum *Liquidambar styraciflua*

6. References

British Standards (2010). BS3998: 2010 – Tree Works: Recommendations. British Standards Institute, London

British Standards (2012). BS5837: 2012 - Trees in Relation to Design, Demolition and Construction: Recommendations. British Standards Institute, London

British Standards (2014). BS8545: 2014 – Trees: from Nursery to Independence in the Landscape. British Standards Institute, London

Cranfield (2018). *Interactive Soilscapes Viewer* [online]. Available at: >www.landis.org.uk< [accessed 13th August 2018]

Google Earth Pro (2018). *Google Earth* [online]. Available at: >www.google.co.uk/earth< [accessed 13th August 2018]

Johnson, O., More, D. (2004). *Collins Tree Guide.* London: HarperCollins

Mattheck, C., Bethge, K., Weber, K. (2015). *The Body Language of Trees.* The Karlsruhe Research Institute, Karlsruhe (Germany)

Appendix 1: Tree Survey Schedule

A plan of the tree locations can be viewed in Appendix 2: Tree Constraints Plan.

Key			
Species	Common name following Johnson & More (2004)	**Age**	EM – Early mature; tree in 2/3 of estimated lifespan
Height	Measured to nearest 0.1m		M – Mature; tree in 3/3 of estimated lifespan
CC	Height of crown clearance, measured to nearest 0.1m		OM – Over mature; tree that has exceeded its natural life span
Stems	Number of stems bifurcating below 1.5 metres		V – Veteran tree
DBH	Diameter at breast height (1.5m), in millimetres	**RPA**	Root protection area, in metres squared
Crown spread	Measured to nearest 0.1m	**RPR**	Root protection radius from stem, in metres
Age	Y – Young sapling/newly planted tree	**SULE**	Safe useful life expectancy of tree, in years
	SM – Semi-mature; tree in 1/3 of estimated lifespan	**Category**	See BS5837 cascade chart (Table 1)
		#	Denotes estimated value

Individual Trees

Tree No.	Species	Height	CC	Stems	DBH	Crown Spread				Age	Comments	RPA	RPR	SULE	Category
						N	E	S	W						
T1	Field maple *Acer campestre*	6.2	2	1	170	2.7	2.6	2.7	2.5	SM	No major visible defects. Lacks qualities for higher classification.	13	2	21-40	C
T2	Field maple *Acer campestre*	6.2	2.1	1	130	2	2.1	2	2	SM	No major visible defects. Lacks qualities for higher classification.	8	2	21-40	C
T3	Hornbeam *Carpinus betulus*	5.4	1	1	135	1.2	1.4	1.7	1.8	SM	Suppressed by adjacent T4. No major visible defects. Lacks qualities for higher classification.	8	2	21-40	C

Tree No.	Species	Height	CC	Stems	DBH	Crown Spread				Age	Comments	RPA	RPR	SULE	Category
						N	E	S	W						
T4	Sycamore *Acer pseudoplatanus*	10.6	2.4	1	450	5.5	7	6.3	5.9	M	Multiple pruning wounds at 2.5-3m western aspect. Girdling root on western aspect. Minor deadwood 100mm diameter and crossing branches throughout crown.	92	5	21-40	B
T5	Red oak *Quercus rubra*	5.2	2.2	1	130	2.7	2.1	2	1.7	SM	Rather sparse crown, with minor deadwood 100mm diameter throughout. Dense vegetation at base limited inspection of basal area.	8	2	11-20	C
T6	Red oak *Quercus rubra*	6.6	2.3	1	160	3.1	3.5	3.4	3	SM	Situated on raised bed. No major visible defects. Minor deadwood 100mm diameter. Lacks qualities for higher classification.	12	2	21-40	C
T7	Red oak *Quercus rubra*	6.6	1.6	1	140	3	3.1	2.8	3	SM	Rather sparse foliage, with some minor tip dieback.	9	2	11-20	C
T8	Red oak *Quercus rubra*	5.8	1.7	1	150	2.3	2.5	2.6	2.5	SM	Minor mechanical basal damage. No other major visible defects.	10	2	21-40	C
T9	Red oak *Quercus rubra*	6	2	1	160	2.6	2.8	2.8	2.7	SM	Minor deadwood <100mm diameter throughout crown. No other major visible defects. Lacks qualities for higher classification.	12	2	21-40	C
T10	Red oak *Quercus rubra*	6.3	2.1	1	160	2.9	2.6	2	2.2	SM	Minor deadwood <100mm diameter throughout crown. No other major visible defects. Lacks qualities for higher classification.	12	2	21-40	C

Tree No.	Species	Height	CC	Stems	DBH	Crown Spread				Age	Comments	RPA	RPR	SULE	Category
						N	E	S	W						
T11	Red oak *Quercus rubra*	5.3	1.6	1	110	1.3	1.4	1.6	1.2	SM	Rather sparse foliage, with some minor tip dieback.	5	1.3	11-20	C

Groups of Trees

Group No.	Species	Av. Height	Av. CC	Approx. Stems	DBH	Av. Crown Spread	Age	Comments	RPA	RPR	SULE	Category
G1	Hornbeam *Carpinus betulus*	6.5	0.5	5	160	2	SM	Linear group on raised bed, parallel with footpath. No major visible defects. Lacks qualities for higher classification.	12	1.9	21-40	C
G2	Hornbeam *Carpinus betulus*	6	0.5	4	150	2	SM	Linear group parallel with footpath. No major visible defects. Lacks qualities for higher classification.	10	1.8	21-40	C

Appendix 2: Tree Imagery



Plate 1: T1 & T2



Plate 2: T4 & T5



Plate 3: T6



Plate 4: T7 (left) & T8 (right)



Plate 5: G1



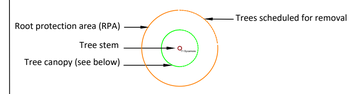
Plate 6: G2

Appendix 3:
Tree Constraints Plan

Project:	The Manchester East Academy
Drawn by:	Jack Delaney
Date:	13th August 2018
Scale:	1:300 @ A1

Do not scale off this drawing - to be reproduced in colour only

Key:



Category B trees of high quality

Category C trees of low quality



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Appendix 4: Arboricultural Method Statement

1. Introduction

Bagshaw Ecology Ltd have been instructed by Lancaster Maloney on behalf of The East Manchester Academy to undertake an Arboricultural Impact Assessment of the land at The East Manchester Academy, 60 Grey Mare Ln, Manchester, M11 3DS in relation to an application for planning.

The development proposals include construction of a fence which will run along the eastern boundary of the school grounds - parallel with Grey Mare Lane

2. Timing of Works

The phasing of works should be carried out in accordance with Table 1, below.

Table 1. Timing of Works

Stage	Works
1	Site induction
2	Carry out facilitative tree pruning works
3	Carry out construction works
4	Final inspection by arboricultural consultant

3. Site Induction

Prior to works commencing, all contractors should attend a site induction. All contractors should be briefed on arboricultural concerns arising from the development proposals, including tree root protection areas (RPAs). This method statement and a copy of the Tree Constraints Plan should be issued to all contractors on the site.

4. Tree Removals and Facilitative Pruning

Prior to the commencement of construction works G2 and T7 should be removed to facilitate construction of the proposed fence. Additionally, G1 should be partially removed and facilitative pruned to allow sufficient room for construction of the new fence.

These works should be carried out by a suitable qualified and fully insured arboricultural contractor who is able to comply with BS3998: 2010 – Tree Works: Recommendations.

At the time of the survey it has not been verified if trees on the site are afforded protection by TPOs and/or Conservation Areas. As such, any legal designations affecting trees should be verified with the local authority prior to the commencement of works. Killing or damaging a protected tree is a criminal offence and can result in an unlimited fine.

5. Tree Protection

Due to the close proximity of works to trees, and low intensity of the proposed construction works; Tree Protective Fencing and Ground Protection are not deemed necessary. However, heavy machinery should not be operated within any RPAs – to avoid excessive damage to roots, RPAs should be restricted to pedestrian access only.

No materials hazardous to tree health, such as oil, bitumen or cement should be stored within the protective fencing. Where possible this area should be extended to 10m away from tree RPAs.

Where there is a risk of polluted water runoff into RPAs, heavy duty plastic sheeting and sandbags must be used to contain any spillages and prevent contamination.

No fires should be lit within 20 metres of tree RPAs.

6. Supervised Works and Further Inspection

It is advised that an inspection by an arboricultural consultant should be undertaken upon completion of the development works. A letter should be submitted to the local authority tree officer confirming if the method statement has been followed correctly and if trees have not been adversely affected by construction works.