

Arboricultural Impact Assessment (AIA)

Star Academy Radcliffe
Prepared for: Morgan Sindall

Prepared by Simon Brain *Chartered arboriculturist*

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Appendix

1 Tree Protection Plan

2 Survey sheets (updated as a result of AIA)

1.0 Introduction

1.1 Instruction, Scope, Methodology, Mitigation & Limitations

- 1.2 My name is Simon Brain, I am a chartered arboriculturist, with 25 years' experience holding the LANTRA Professional Tree Inspection certificate. I have been instructed by the client to prepare the following Arboricultural Impact Assessment for land at Star Academy, Radcliffe.
- 1.3 This Arboricultural Implications Assessment (AIA) is based on the proposed developments as shown on the Proposed and incorporated into the Tree Protection Plans (TPP) in Appendix 1 of this report.
- 1.4 The assessment will be carried out in line with the recommendations in BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* and will evaluate the direct and indirect impacts of the proposed design and where necessary recommend mitigation.
- 1.5 The AIA considers constraints posed above and below ground and where appropriate makes recommendations to mitigate impacts associated with development sites and retained trees.
- 1.6 Where specialist design, construction techniques or in areas where supervision of the works is required a Special Measure Area (SMA) has been shown on the TPP for the study areas.
- 1.7 Below ground constraints are influenced by the root protection area and are determined in line with the recommendations set out in BS 5837:2012. These recommendations quantify the root protection area based on a measured stem diameter in accordance with Annex C, and the root protection area determined from Annex D.
- 1.8 It is important to understand that when considering the Root Protection Area (RPA) with regards to the circular plot as delineated on the TPP that a number of site factors can influence root morphology and disposition of tree roots.

- 1.9 Above ground constraints are considered above and below ground and in line with the recommendations in BS 5837:2012 to include; shade, dominance, current and future crown spread as well as the ultimate height of those retained trees.
- 1.10 Impacts associated with development sites and retained trees can be associated with single or multiple site operations that can subject trees to multiple impacts (*root severance, compaction, loss of photosynthetic material*), where this is applicable it will be highlighted in the AIA.
- 1.11 The mitigation measures proposed in this report are essential to ensure that trees marked for retention are adequately protected during the period of post/preconstruction.

2.0 Arboricultural Impact Assessment

2.1 Area for proposed development

2.2 The proposed development has been embedded within the Tree Constraints Plan which indicates the following developments associated with this site to have an arboricultural impact:

- Access arrangements and new surfacing (including existing surface removal) in the vicinity of retained trees
- Installation of proposed development infrastructure requiring tree removal

2.3 The arboricultural impacts of these items have been identified below.

2.3.1 Access alignments and new surfacing (including existing surface removal) in the vicinity of retained trees.

A driveway in the RPA of T16 and T1 is within a designated Special Measure Area (SMA) and construction of this can only be proposed as 'no dig' construction if the following items can be achieved:

- A cross section of the existing and proposed ground levels is submitted for arboriculture review.
- A detailed engineer-based drawing specification of the no dig driveway is produced for arboriculture review
- The California Bearing Ratio and soil structure are acquired and have undergone arboriculture review.
- Future maintenance, water interception, pollution potential and deformation potential of the new surface is assessed.
- No walls of any kind will be acceptable in the RPA.
- A full AMS is needed when these matters have been managed to support a planning application which will detail sequencing, methods, materials, tree protections, personnel and a detailed supervisory

timetable with the provision of compliance reporting at regular intervals.

Typical no dig construction can consists of:

- Establishment of the California Bearing Ratio of the land in question order to inform engineers of type and capacity of load bearing cellular confinement system to be used.
- Appoint and confirm engineer for design and supply of a suitable load bearing geo cellular confinement system requiring no more than 25cm of excavation for top soil preparation only.
- Driveway is constructed and finished to the agreed specifications before any other general building activity commences on site.
- The cellular confinement system shall be guaranteed by the supplier so as not to cause subsequent compaction for a period of ten years.
- Typically, a 'no dig' approach (based on APN12 Driveways close to trees) will be taken with the confinement system being laid directly onto the existing ground level; where local cuts and fills are required this shall be no more than 75-100mm in depth.
- Typically, a confinement system of 150mm in depth is used.
- Edge restraints shall be required, and they shall be secured by means of small metal ties approximately 50cm+ long at appropriate intervals.
- The cellular confinement system shall be laid by pedestrian means under the consultant's on-site supervision. Small excavators can be used on the surface when it is newly laid and when ground boarding is provided.

- The system shall be filled with granular material that retains porosity and maintain a porous finished wearing surface such as pea gravel or resin bonded gravel. Proprietary surface coverings that may be suitable for some surfaces include Flexipave and Permadrive.
- All surface construction when complete shall be covered in on ground boarding throughout the SMA for the remainder of the build period.
- All surface construction if acceptable will be located with Special Measure Areas (SMA) which is designated on the Tree Protections Plan (TPP). All construction shall be supervised on site by a qualified arboricultural consultant whom shall record all progress and oversee all new surface installations in the RPA's affected and document the installation in the event of any future third party claims.

NOTE: The chronological order of events shall be as follows.

Following installation of the CEZ access is installed under supervision to no dig specification provided and all new surfacing's are protected by on ground boarding such as scaffold boards prior to any other construction activity commencing in the vicinity. It is however critical that ground boarding is proportionate to the load anticipated to be exerted on the surface. Therefore, in areas of proposed driveway where vehicular (car) and pedestrian traffic is anticipated during / post construction scaffold boarding is enough above the newly laid surface. However, heavier construction related deliveries may be required and ground boarding shall be upgraded to bog mat or similar which must bear the anticipated load. Both types of on ground boarding are required for the construction duration.

An existing hard standing in the RPA of T5 and T9 is present. No CEZ relocation can occur without arborist sign off. The arborist shall direct the surface extraction. The excavated area shall be backfilled with clean

and certified topsoil's and re seeded. The area may require de compaction which will be confirmed during the surface removal. Following works the arborist shall sign off the position of the CEZ as per the location provided within the TPP. All new surfacing shall be no dig.

2.3.2 Installation of proposed development access requires the removal of the following tree references:

- 12;13;14;38;39;40;41;42;43;44;45;46;53;54;55;56;57

3.0 Tree Preservation Orders

3.1 I can confirm we have been advised that there are no tree preservation orders or conservation areas covering the site.

4.0 Trees to be removed and retained

4.1 The following trees have been identified for removal due to their condition (Category U): T44

4.2 A total of 17 trees are identified to be removed for the direct impact of development as listed in section 2.3.2.

4.3 The remaining trees are due to be retained and protected as outlined on the TPP by methodology needed in an AMS.

5.0 Root Protection Areas (RPA)-modifications

5.1 Root Protection Areas have been plotted in line with the guidance given in BS 5837: 2012 where ground constraints have had or are likely to effect the root morphology of trees e.g. where underground utilities or building foundations have obstructed root growth this shall require formal confirmation by excavation to establish presence or absence of significant rooting material. No RPA modifications have been shown for this scheme.

6.0 Post construction considerations

6.1 Not applicable due to nature of development

7.0 Tree pruning to facilitate development and future pruning

7.1 There are no requirements for minor levels of tree pruning to facilitate the proposed development.

8.0 New surfacing and ground level modifications

8.1 New surfacing is required in RPA of retained trees. Old surfacing requires potential removal in the RPA of retained trees. Refer to section 2.3.1 and appendix 3 for details of construction.

9.0 Construction Exclusion Zones and Special Measure Areas

9.1 The Construction Exclusion Zone has been shown as a black fenced polyline on the TPP in Appendix 1 and shall be constructed using heras panels and rubber feet securely staked to the ground.

9.2 The CEZ is purposefully located within proposed new surfacing near retained trees in order to prompt site supervision and wider protective measures when new surfacing is installed.

9.3 The CEZ must be installed as signed off as fit for purpose before any other works commence on site.

10.0 Site supervision and monitoring

10.1 Where a tree has been delineated on the TPP as requiring retention there will be a requirement to oversee construction operations in these areas in order to ensure that no damage occurs to the retained tree.

10.2 To ensure that there is an auditable system of site monitoring, reports will be compiled by an appointed arborist and following site visits they issued to the site manager and design team, copies of which will be

available on site at all times for inspection by a Council planning/Tree officer.

11.0 Installation of below ground infrastructure

- 11.1 No detailed plans have been provided specifying the location of site utilities
- 11.2 Specialist advice with regards to the position of utilities will need to be sought from engineers and must be reviewed by the consulting arboriculturist prior to commencement on site.
- 11.3 The usual construction techniques for installing site utilities within an RPA will be unacceptable due to the level of root severance that would occur. The impact of root severance will have a detrimental effect on tree health as trees require a healthy root system in order to maintain water and mineral uptake from the soil. Trees need to maintain a balance between shoot and root growth to ensure that the resources supplied by each can meet the demand of the other. Severance of tree roots caused by trenching can lead to reduced water uptake which in turn impacts on the trees ability to supply water to the canopy, resulting in desiccation. A further complication associated with root severance can be problems associated with tree stability. The tree relies on an intact root system in order to maintain stability; this stability will be compromised by root severance.
- 11.4 The use of trenchless techniques can be acceptable provided the depth of service run that is excavated is below the anticipated root depth.

12.0 Design change requirements

- 12.1 Design change requirements have not been necessary.

13.0 Amenity Value

The retention of significant arboricultural assets will be needed and has been identified.

14.0 Concluding statement

- 14.1 The proposed scheme was assessed in line with guidance provided in BS 5837:2012 *Trees in relation to design demolition and construction – Recommendations* with the aim to achieve a harmonious relationship between trees and structures that can be sustained in the long term.
- 14.2 It is my professional opinion as an arboriculturist that a harmonious balance of retained and removed trees has been achieved and can be considered acceptable by the LPA. However, undertakings are required for the hard standing proposal to demonstrate its acceptability particularly in terms of existing and proposed levels and the acceptability of excavation depths required for footways in RPA.

Appendix 1 Tree Protection Plan



TREE PROTECTION PLAN

Retention value key

(RETENTION VALUE A)

(RETENTION VALUE C)

(RETENTION VALUE B)

(RETENTION VALUE U)

Root Protection Areas (RPA) & Construction Exclusion Zones (CEZ)

Root Protection Areas (RPA's) have been identified and are based on BS5837:2012. RPA's and Construction Exclusion Zones (CEZ) have been shown as detailed below. The CEZ shall act as the protective barrier for retained trees.

CEZ (Protective barrier)

RPA

Canopy extent

CEZ
The CEZ's will require installation as shown on the TPP. The section of CEZ shall be repositioned only under arboricultural supervision and only when all construction associated with SMA is complete .

Special Measure Areas (SMA)
Special Measure Areas (SMA's) have been identified for construction in these areas and they have been shown as detailed below.

SMA1. New permanent hard surfacing proposed. All surfacing to be no dig and installed under arboricultural supervision.

Note: The original of this drawing was produced in colour-a monochrome copy should not be relied upon for accuracy.

AMENITY TREE Ltd

Client:
Morgan Sindall

Project:
Star Radcliffe

Detail:
Tree Protections Plan

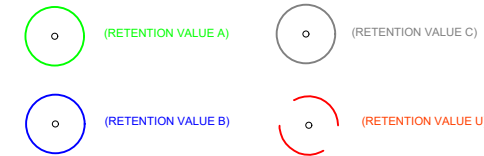
Drawn By: SS Date: 30.08.2023 Scale: 1/500@A3

Drg No: **01** Revision: **V1**



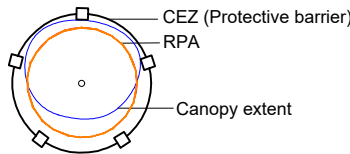
TREE PROTECTION PLAN

Retention value key



Root Protection Areas (RPA) & Construction Exclusion Zones (CEZ)

Root Protection Areas (RPA's) have been identified and are based on BS5837:2012. RPA's and Construction Exclusion Zones (CEZ) have been shown as detailed below. The CEZ shall act as the protective barrier for retained trees.

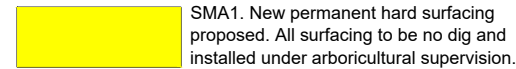


CEZ

The CEZ's will require installation as shown on the TPP. The section of CEZ shall be repositioned only under arboricultural supervision and only when all construction associated with SMA is complete.

Special Measure Areas (SMA)

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Client:

Morgan Sindall

Project:

Star Radcliffe

Detail:

Tree Protections Plan

Drawn By:

SS

Date:

30.08.2023

Scale:

1/500@A3

Drg No:

01

Revision:

V1

Tree No.	Common Name	Life Stage	Stem Diameter (mm)	Stem No.	Height	Lower Crown Height (m)	North(m)	South(m)	East(m)	West(m)	Category	Est. Remaining Life Expectancy	Comments	Recommendations following AIA	RPR(m)	RPA(m)
1	Norway Maple	M	505	1	13	4	4	6	3	4	B1	20+		Retain and protect. SMA applies for no dig surfacing. Refer to AIA/AMS.	6.1	115
2	Norway Maple	EM	320	1	13	4	4	4	3	4	B1	40+		Retain and protect	3.8	46
3	Norway Maple	EM	360	1	13	3	4	3	3	3	B1	40+		Retain and protect	4.3	59
4	Norway Maple	EM	420	1	13	4	3	5	4	5	B1	40+		Retain and protect	5	80
5	Norway Maple	EM	470	1	13	5	4	5	5	5	B1	40+		Retain and protect. SMA applies for existing surface removal in RPA, air spade required. Refer to AIA/AMS.	5.6	100
6	Norway Maple	EM	265	1	13	2	3	3	5	2	B1	40+		Retain and protect	3.2	32
7	Norway Maple	EM	410	1	13	2	4	4	4	6	B1	40+		Retain and protect	4.9	76
8	Norway Maple	EM	445	1	13	2	3	3	3	5	B1	40+		Retain and protect	5.3	90
9	Norway Maple	EM	410	1	13	3	5	4	5	3	B1	40+		Retain and protect. SMA applies for existing surface removal in RPA, air spade required. Refer to AIA/AMS.	4.9	76
10	Norway Maple	EM	485	1	13	3	5	3	5	4	B1	40+		Retain and protect	5.8	106
11	Norway Maple	EM	405	1	13	3	5	4	3	5	B1	40+		Retain and protect	4.9	74
12	Ash	EM	420	1	15	3	5	5	3	4	C1	40+	Ash dieback present	Remove and replace	5	80
13	Norway Maple	EM	475	1	15	3	5	5	4	4	B1	40+		Remove and replace	5.7	102
14	Norway Maple	M	635	1	15	7	6	6	6	4	B1	20+		Remove and replace	7.6	182
15	Norway Maple	M	575	1	15	7	5	7	5	5	B1	20+		Retain and protect	6.9	150
16	Ash	M	575	1	15	7	5	6	4	6	C1	20+	Ash dieback present	Retain and protect. SMA applies for no dig surfacing. Refer to AIA/AMS.	6.9	150
17	Silver Birch	M	375	1	15	4	4	5	4	5	B1	20+		Retain and protect	4.5	64
18	Silver Birch	M	410	1	15	4	4	4	5	4	B1	20+		Retain and protect	4.9	76
19	Ash	EM	470	1	16	7	7	5	6	5	C1	40+	Ash dieback present	Retain and protect	5.6	100
20	Ash	EM	435	1	16	9	4	5	5	5	C1	40+	Ash dieback present	Retain and protect	5.2	86
21	Ash	EM	340	1	10	2	4	4	5	4	B1	40+		Retain and protect	4.1	52
22	Norway Maple	EM	340	1	13	8	2	2	4	3	C2	40+		Retain and protect	4.1	52
23	Ash	EM	375	1	14	3	4	3	5	4	C2	40+	Ash dieback present	Retain and protect	4.5	64
24	Silver Birch	Y	208	3	6	2	3	3	3	3	C1	40+		Retain and protect	2.5	20
25	Hazel	Y	160	4	4	0	1	1	1	1	C1	20+		Retain and protect	1.9	12
26	Norway Maple	M	440	1	14	2	2	6	5	3	B1	40+		Retain and protect	5.3	88
27	Norway Maple	M	420	1	14	3	3	3	3	6	B1	40+		Retain and protect	5	80

Tree No.	Common Name	Life Stage	Stem Diameter (mm)	Stem No.	Height	Lower Crown Height (m)	North(m)	South(m)	East(m)	West(m)	Category	Est. Remaining Life Expectancy	Comments	Recommendations following AIA	RPR(m)	RPA(m)
28	Norway Maple	SM	280	1	15	6	3	3	3	3	B1	40+		Retain and protect	3.4	35
29	Ash	SM	225	1	14	9	2	2	2	1	C2	40+	Ash dieback present	Retain and protect	2.7	23
30	Norway Maple	M	405	1	10	2	3	4	6	2	C2	40+	Ash dieback present	Retain and protect	4.9	74
31	Ash	SM	325	1	14	7	3	3	4	2	C2	40+	Ash dieback present	Retain and protect	3.9	48
32	Ash	SM	325	1	14	7	3	3	4	2	B2	40+		Retain and protect	3.9	48
33	Norway Maple	SM	230	1	9	3	2	2	5	2	B2	40+		Retain and protect	2.8	24
34	Norway Maple	EM	390	1	14	2	3	3	3	4	B2	40+		Retain and protect	4.7	69
35	Sycamore	EM	370	1	14	2	3	3	6	2	B2	40+		Retain and protect	4.4	62
36	Ash	EM	370	1	13	6	4	2	2	2	C2	40+	Ash dieback present	Retain and protect	4.4	62
37	Norway Maple	EM	345	1	11	3	3	3	6	4	B2	40+		Retain and protect	4.1	54
38	Ash	M	530	1	15	2	7	4	6	5	C2	40+	Ash dieback present	Remove and replace	6.4	127
39	Norway Maple	EM	405	1	14	3	5	4	5	4	B2	40+		Remove and replace	4.9	74
40	Hazel	Y	179	5	5	1	2	2	2	2	C2	20+		Remove and replace	2.1	14
41	Hawthorn	M	415	1	9	2	3	4	5	3	B1	20+		Remove and replace	5	78
42	Hawthorn	M	250	1	6	2	2	2	1	2	C2	40+		Remove and replace	3	28
43	Hawthorn	M	290	1	6	2	2	2	5	2	C2	40+		Remove and replace	3.5	38
44	Hawthorn	M	350	1	6	2	5	2	2	2	U	<10		Remove and replace	4.2	55
45	Hawthorn	M	455	1	8	2	4	4	4	4	B1	20+		Remove and replace	5.5	94
46	Ash	EM	255	1	9	2	4	4	3	5	C2	40+	Ash dieback present	Remove and replace	3.1	29
47	Norway Maple	M	455	1	16	4	4	5	4	6	B1	40+		Retain and protect	5.5	94
48	Ash	SM	215	1	14	10	2	2	2	2	C2	40+	Ash dieback present	Retain and protect	2.6	21
49	Ash	SM	260	1	13	2	4	2	2	3	C2	40+	Ash dieback present	Retain and protect	3.1	31
50	Common Oak	Y	175	1	5	1	3	2	3	3	C2	40+		Retain and protect	2.1	14
51	Norway Maple	Y	150	1	6	1	4	1	1	1	C2	40+		Retain and protect	1.8	10
52	Ash	Y	110	1	5	1	2	1	1	1	C2	40+	Ash dieback present	Retain and protect	1.3	5
53	Hazel	Y	179	5	4	0	1	1	1	1	C2	20+		Remove and replace	2.1	14
54	Ash	Y	140	1	6	2	2	1	2	1	C2	40+	Ash dieback present	Remove and replace	1.7	9
55	Goat Willow	M	612	6	1.2	2	0	0	0	0	C2	40+		Remove and replace	7.3	169

Tree No.	Common Name	Life Stage	Stem Diameter (mm)	Stem No.	Height	Lower Crown Height (m)	North(m)	South(m)	East(m)	West(m)	Category	Est. Remaining Life Expectancy	Comments	Recommendations following AIA	RPR(m)	RPA(m)
56	Silver Birch	M	320	1	9	2	1	4	3	3	B2	40+		Remove and replace	3.8	46
57	Common Oak	EM	365	1	9	1	5	2	5	5	B2	40+		Remove and replace	4.4	60
59	Common Oak	Y	100	1	3	0	1	4	1	2	C2	40+		Retain and protect	1.2	5
60	Common Oak	Y	215	1	5	1	1	4	3	2	C2	40+		Retain and protect	2.6	21
61	Common Oak	Y	215	1	5	1	1	4	3	1	C2	40+		Retain and protect	2.6	21
62	Common Oak	Y	300	1	7	1	3	3	3	3	B1	40+		Retain and protect	3.6	41
63	Silver Birch	Y	268	3	6	1	1	3	1	2	C2	40+		Retain and protect	3.2	32
64	Silver Birch	SM	329	3	7	1	2	4	3	2	C2	40+		Retain and protect	3.9	49
65	Common Oak	Y	160	1	4	0.5	2	3	2	2	C2	40+		Retain and protect	1.9	12
66	Silver Birch	M	350	1	9	1	2	6	4	4	B2	40+		Retain and protect	4.2	55
67	Wild Cherry	M	300	1	9	1	3	4	4	4	B2	40+		Retain and protect	3.6	41
68	Common Oak	Y	90	1	3	0.5	1	1	1	3	C2	40+		Retain and protect	1.1	4
69	Common Oak	Y	175	1	3	1	2	2	1	4	C2	40+		Retain and protect	2.1	14
70	Silver Birch	Y	90	1	3	0.5	2	2	1	2	C2	40+		Retain and protect	1.1	4