

Arboricultural Impact Assessment (AIA)

Livingstone Drive.

Prepared for: Mr Andrew Marsh (Nugent Care)

Prepared by Simon Brain *Chartered arboriculturist*

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- 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 15 years' experience and over twenty years field 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 Livingstone Drive, Liverpool.
- 1.3 This Arboricultural Implications Assessment (AIA) is based on the proposed development as shown on the Proposed Site Plan (26 units) dwg no 242-001-SK(00) 015 dated 18.01.17 Rev A Oct 16 as drawn by The Mersey Design Group and incorporated into the Tree Protection Plan (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 and construction techniques have been recommended further detailed specifications and methodology will be required in an Arboricultural Method Statement (AMS).
- 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/pre construction. They are examined in this AIA and bespoke methods of working have been prescribed which shall require a Special Measures Area (SMA) for this site and on site watching brief for the arborist working to an approved Arboricultural Method Statement (AMS).

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 the installation of proposed residential property and a bin and cycle store

2.3 In terms of having an arboricultural impact the following items have been identified and analysed for their arboricultural impact and subsequent tree protection requirements.

2.3.1 Access alignments

There are no trees lost for the direct impact of the access arrangements. T18 is a young Oak that is located in a prominent public position, the RPA remains unaffected and due to the lower crown height of 4m the canopy dimension is not affected indirectly by, for example construction traffic. The CEZ protects the RPA of T18 in full.

2.3.2 New surfacing including the installation of proposed residential property and a bin and cycle store.

The proposed residential properties shall require the removal of T9.

The indirect impact of the hard standing car parking bays (4 no.) and the proposed bin / cycle store indirectly affects the RPA of T15, T14 and T12. These trees are fully mature and well established and the theoretical loss of <15% RPA (maximum) from these RPA is highly unlikely to either cause health and / or safety issues in the future. A loss of this nature is likely to be acceptable to such as established specimen and any actual root loss is likely to be of small diameter and responsible

for nutrient uptake, not structural anchorage and shall therefore be likely to regenerate in the spring of 2018 (if present). Due to the RPA overlap and potential for indirect damage during development (particularly to the soil condition/excavations) the area within the CEZ has been designated a Special Measure Area (SMA), refer to section 9.0 Construction Exclusion Zones and Special Measure Areas.

The SMA size is representative of the species ability to tolerate ground disturbance and therefore all activity will be 'no dig' within the CEZ and managed by the following means:

- Accord with Arboricultural Method Statement (AMS) and details therein including ensuring no ground level change occurs within the CEZ
- Construction excavation located with Special Measure Areas (SMA) shall be supervised on site by a qualified consultant whom shall record all progress and oversee all excavations in the RPA
- A cellular confinement system shall be used for all hard surfacing which shall be porous
- No CEZ repositioning shall be considered acceptable
- All SMA are protected by on ground scaffold boarding

The indirect impact of the retained trees and their arboricultural impact on the future residents (post construction tree resentment) are discussed further in section 4.2. (Trees retained and removed for development) and specifically 4.2.1.

3.0 Tree Preservation Orders

- 3.1 I have not checked with the LPA for Conservation Area or to check if Tree Preservation Orders apply.

4.0 Trees to be removed and retained

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

None

- 4.2 Trees identified below are required to be removed for the direct impact of development:

T9

- 4.2.1 Trees identified below are required to be removed for the indirect impact of development and tree condition (Category C trees whose replacement would better serve long term and sustained visual amenity in the wider landscape):

T7, T10 and T11.

- 4.2.2 The remaining trees are due to be retained and protected as outlined on the TPP:

T1-T6, T12-T16 and T18.

- 4.3 Retained and removed trees – analysis.

There are 4 individual trees lost for this development and 13 individual trees retained.

Those trees that are being removed are largely to better serve long term visual amenity on this site and are mainly Category C trees as measured by BS5837:2012.

Those trees that are proposed to be retained are the principal arboricultural assets on this site which are the significant specimens forming wider visual amenity in the local and wider landscape.

The removal of Category C trees and their replacement with species such as *Liquidamber styraciflua worplesdon* / *Fagus sylvatica dawyck* provides an opportunity to ensure further longer term visual amenity is added to the immediate and wider landscape in a visually prominent position. An extra heavy girth 14/16, 16/18 or 18/20cm is recommended.

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 Mature trees are located on the southern and western boundary numbered T12 to T17 which are adjacent to a proposed residential property. The impact of shading on the occupants of the proposed unit by these trees may be significant and could generate requests for tree pruning in the future. The benefits of mature trees to a development site are expressed in BS5837:2012 and include screening, inclement weather reduction and shade. However, should future objections be raised then there is scope to accommodate such requests. For example the overhanging branches to the rear corner plot could be reduced by 2-4m which is not likely to have any adverse effects on T13.

Significant post construction resentment is not anticipated as the species are deciduous and facilitation crown pruning to include lifting and reduction in overhanging branches can be undertaken. This factor reduces shade density and permanency.

7.0 Tree pruning to facilitate development and future pruning

- 7.1 There are requirements for minor levels of tree pruning in order to facilitate the proposed development that apply to T13.
- 7.2 It is suggested that future pruning requests to maintain a reduced canopy overhang into the rear garden of the corner plot could be allowed by the council and shall not affect either health or safety of the trees in question.

8.0 New surfacing and ground level modifications

- 8.1 New surfacing is required in the form of a bin store base and car park bays (4 no.) on the site in the RPA of T13-T15.
- 8.2 No further ground disturbance shall occur in the identified SMA and the arboriculturist shall inspect these trees during SMA works.

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.
- 9.2 One SMA applies to this site for excavations in relation to T13 to T15. The location of this can be found on the TPP contained in Appendix 1.

10.0 Site supervision and monitoring

- 10.1 Where trees have 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 retained trees. Site supervision is required by the consultant arborist during construction in all SMA.
- 10.2 To ensure that there is an auditable system of site monitoring, reports will be compiled following site visits and issued to the site manager,

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

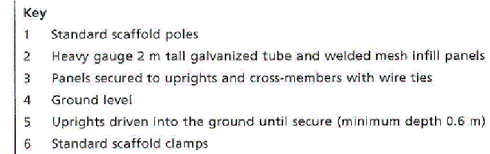
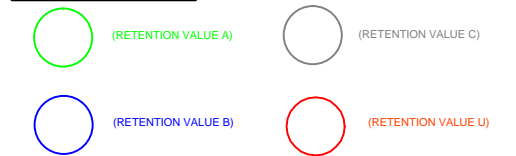
It is considered that the successful establishment of replacement trees referred to in section in 4.3.1 shall mean an improvement in the long term wider visual public amenity associated with the trees on this site.

The retention of all the significant arboricultural assets within the proposal affords for maintenance of the existing visual amenity between site and adjacent public open space.

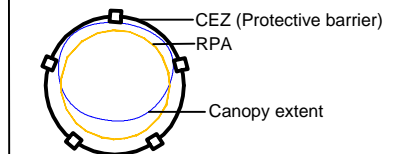
14.0 Concluding statement

- 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 the proposed development should be allowed to proceed on the grounds that the design proposal has achieved a harmonious relationship between those trees retained on site and the proposed scheme.

Appendix 1 Tree Protection Plan

Retention value key

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.



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



Notes

MONOCHROME WARNING
This drawing shall not be reproduced in black and white.

Nugent Care

Livingstone

TREE PROTECTION PLAN

Drawn By:	Date:	Scale:
SB	05 06 17	1:1250@A3

Drg No: TR-01
Revision: V1

Tree No.	Common Name	Botanical Name	Age	Diameter(m m)	Stems	Height(m)	Crown Height(m)	North(m)	South(m)	East(m)	West(m)	Category	Life Exp	Comments	Preliminary Management Recommendations	Management Recommendations following AIA	RPA-R(m)	RPA(Sq m)
1	Sycamore	Acer pseudoplatanus	M	721	2	14	4	5	5	5	5	B2	20+			Unaffected directly - install CEZ as shown on TPP	8.7	235
2	Sycamore	Acer pseudoplatanus	M	525	1	14	4	5	5	5	5	B2	20+			Unaffected directly - install CEZ as shown on TPP	6.3	125
3	Sycamore	Acer pseudoplatanus	M	375	1	14	4	5	5	5	5	B2	20+			Unaffected directly - install CEZ as shown on TPP	4.5	64
4	London Plane	Platanus X hispanica	M	915	1	15	4	7.5	7.5	7.5	8.5	B2	20+	Ivy on stem. Unable to inspect stem due to Ivy.	Remove ivy to allow full Visual Tree Inspection	Unaffected directly - install CEZ as shown on TPP. Implement PMR and reinspect for defects	11	379
5	London Plane	Platanus X hispanica	M	900	1	16	4	4	9	6.5	7.5	A2	40+	Ivy on stem. Unable to inspect stem due to Ivy. Not accessed due to fence.	Remove ivy to allow full Visual Tree Inspection	A <5% BS5837:2012 RPA overlap will not have any adverse health or safety implications on tree retention. Install CEZ as shown on TPP	10.8	366
6	London Plane	Platanus X hispanica	M	750	1	16	4	6	6	6	7	A2	40+	Ivy on stem. Unable to inspect stem due to Ivy. Not accessed due to fence.	Remove ivy to allow full Visual Tree Inspection	A <3% BS5837:2012 RPA overlap will not have any adverse health or safety implications on tree retention. Install CEZ as shown on TPP	9	254
7	Ash	Fraxinus excelsior	Y	220	1	9	4	3.5	3.5	3.5	3.5	C2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Not accessed due to fence.	Remove ivy to allow full Visual Tree Inspection	Remove and replace within wider landscape plans	2.6	22
8	Ash	Fraxinus excelsior	Y	220	1	9	4	2.5	2.5	2.5	2.5	C2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape. Not accessed due to fence.	Remove ivy to allow full Visual Tree Inspection	Remove and replace within wider landscape plans	2.6	22
9	Sycamore	Acer pseudoplatanus	M	460	1	12.5	4	5	5	5	5	B2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	Lost for development	5.5	96
10	Sycamore	Acer pseudoplatanus	EM	375	1	12.5	4	3.5	3.5	3.5	3.5	C2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	Remove and replace within wider landscape plans	4.5	64
11	Sycamore	Acer pseudoplatanus	EM	420	1	12.5	4	3.5	3.5	3.5	3.5	C2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	Remove and replace within wider landscape plans	5	80
12	Sycamore	Acer pseudoplatanus	EM	450	1	12.5	4	5	5		6	B2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape. Off site overhanging into site.	Remove ivy to allow full Visual Tree Inspection	Unaffected directly - install CEZ as shown on TPP. Implement PMR and reinspect for defects	5.4	92

Tree No.	Common Name	Botanical Name	Age	Diameter(m m)	Stems	Height(m)	Crown Height(m)	North(m)	South(m)	East(m)	West(m)	Category	Life Exp	Comments	Preliminary Management Recommendations	Management Recommendations following AIA	RPA-R(m)	RPA(Sq m)
13	London Plane	Platanus X hispanica	M	780	1	16.5	4	5	6	8	7	A2	40+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	A <5% BS5837:2012 RPA overlap (patio) will not have any adverse health or safety implications on tree retention. A >5% RPA covering proposed hard standing car parking shall require SMA/AMS, refoer to AIA. Install CEZ as shown on TPP. Implement PMR and reduce eastern branches by 2-4m to BS3998:2010.	9.4	275
14	Sycamore	Acer pseudoplatanus	M	785	1	17	4	6.5	6.5	7.5	7.5	B2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	>10% RPA covering proposed hard standing car parking and Bin/Bike arrangement shall require SMA/AMS, refoer to AIA. Install CEZ as shown on TPP. Implement PMR	9.4	279
15	Sycamore	Acer pseudoplatanus	M	750	1	17	4	7.5	7.5	7.5	7.5	B2	20+	Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	>10% RPA covering proposed hard standing car parking and Bin/Bike arrangement shall require SMA/AMS, refoer to AIA. Install CEZ as shown on TPP. Implement PMR	9	254
16	Sycamore	Acer pseudoplatanus	M	630	1	17	4	5.5	5.5	3	5.5	B2	20+	Part of linear group. Ivy on stem. Unable to inspect stem due to Ivy. Unbalanced crown shape.	Remove ivy to allow full Visual Tree Inspection	Unaffected directly - install CEZ as shown on TPP. Implement PMR and reinspect for defects	7.6	180
17	London Plane	Platanus X hispanica	M	975	1	18	4	5.5	5.5	5.5	5.5	B2	20+	Part of linear group. Ivy on stem. Unable to inspect stem due to Ivy.	Remove ivy to allow full Visual Tree Inspection	Unaffected directly - install CEZ as shown on TPP. Implement PMR and reinspect for defects	11.7	430
18	Turkey Oak	Quercus cerris	Y	150	1	5	4	3	3	3	3	B2	20+			Car parking proposed adjacent. RPA and caonopy dimension unaffected (lower crown ht 4m). Install CEZ as shown on TPP	1.8	10