

Arboricultural Impact Assessment (AIA) Version 4

Trevor Basin, Llangollen.
Prepared for: Canal and River Trust

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Appendix

- 1 Tree Protection Plan
- 2 Survey sheets (updated as a result of AIA)
- 3 AMS / typical no dig specification

1.0 Introduction

1.1 Instruction, Scope, Methodology, Mitigation & Limitations

- 1.2 My name is Simon Brain, I am a chartered arboriculturist, with 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 (Version 4) for land at Trevor Bason, Llangollen.
- 1.3 This Arboricultural Implications Assessment (AIA) is based on the proposed developments as shown on the GA Proposed Site Plan Trevor Boat Base GA landscape plan V14 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
- 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

New hard surfacing in the RPA of retained trees is located within a designated Special Measure Area (SMA) and construction will be managed by the following means, and shall be referred to as 'no dig' construction:

- 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 is 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.

A typical no dig specification has been provided in Appendix 3.

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.

2.3.2 Installation of proposed development infrastructure requiring tree removal. The impact of the installation of development requires the removal of the following twenty tree references (out of 75 arboricultural records):

T22;T23;T24;T31;T36;T37;T38;T39;T40;T41;T42;T43;T44;T45;T56;G5; G8;G11;T19, G4 /G9 (partial removal) and a single tree in G7.

Five trees are affected for health and safety reasons (Cat. U trees):

- T50;T51;T55;T59;T20

3.0 Tree Preservation Orders

3.1 I have not checked with The Local Council over Conservation Area or Tree Preservation Order and if they apply to this site.

4.0 Trees to be removed and retained

4.1 The following trees have been identified for management due to their condition (Category U): T50;T51;T55;T59;T20

- 4.2 A total of twenty individual trees and 3 tree groups are identified to be removed / partially 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.
- 4.4 Retained and removed trees – analysis.

There are twenty individual trees and 3 tree group references lost / partially lost for these developments, some of which are better to be replaced than retained in order to bolster long term visual amenity through a replanting scheme (Cat. C trees).

The removal of trees and their replacement with suitably sustainable species provides an opportunity to ensure further longer-term visual amenity is added to the immediate and wider landscape.

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 proposals (non-residential)

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 SMA/RPA of numerous retained trees as shown on the TPP. Refer to section 2.3.1 and appendix 3 for details of construction.

Note: Construction in RPA must be no dig.

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 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 Plans (Drainage Layout V14) have been provided specifying the location of site utilities and where necessary design change has been provided previously in earlier revision of the drainage document. The arborist shall supervise works in G9.

- 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 been necessary in earlier stages of the design development. Such change has now been implemented within the proposal to maximise tree retention across the site.

13.0 Amenity Value

The retention of significant arboricultural assets affords for maintenance of the existing visual amenity of the local area. It is considered that the successful establishment of replacement trees referred to in section in 4.4. shall mean an improvement in the long term wider visual public amenity associated with the trees on this site.