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## **Arboricultural Impact Assessment**

**Primrose Lodge, Clitheroe - Ribble Rivers Trust.**

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### Introduction.

Proposals exist for reclamation, improvements and public access ability to Primrose Lodge, any of which could have impacts upon the existing treescape.

This document considers each element of the works, potential impacts and discusses appropriate methodologies to maximise future health and viability of retained trees.

### Proposed Operations.

1. Access from north eastern corner adjacent to School Playing Fields.

Access from the adjacent track to the rear of properties along Whalley Road is required for both construction equipment to implement initial clearance operations and in the longer term for refurbishment works, bridge erection and public access.

Access after leaving the existing track will be across unmanaged rough grassland and beneath existing mature trees and their associated root protection areas.

Levels are relatively easy but generally fall towards the Brook and as such consideration will be necessary to provide a useable level surfacing for general safety.

It is proposed that all such surfacing will be formed from Terram Geocell or similar which is a 3D cellular confinement system manufactured from permeable geotextile fabric that is expanded on site to form a honeycomb – like structure that can be filled with sand, soil, gravel or other site material.

Such a system minimises compaction to underlying soils and as such is recommended for surfacing across root protection areas to maximise the future viability of retained trees.

The Geocell can also be readily trimmed and overlaid so as to create horizontal terracing and a final level platform capable of resisting internal loads and pressures to maintain structural integrity.

This surfacing once laid can be permanently retained and utilised in the longer term for car parking, pedestrian access or similar.

To install the surfacing, and provide access for equipment, bridge formation and the temporary location of a welfare unit for contractors, minor crown lifting of the adjacent existing trees will be required to approximately 5m.

Such operations correctly undertaken by appropriate contractors will have minimal visual impact and will not materially harm the trees.

One hawthorn exists in close proximity and due to the growth habit of this item it may require cutting to ground level to facilitate accessibility.

It will however rapidly resprout and will develop a new canopy in future years when access requirements will be significantly reduced.

In respect of the provision of a welfare unit during site works, this can either be located on the Geocell surfacing or, on open ground in the vicinity of trees, the units being comparatively lightweight, standing either on wheels and jacks or simply a levelling jack system, and can be placed on sleepers or similar timber barks to provide stability and spread loads.

The extents of all surfacing and access requirements will be finalised in due course and detailed specifications prepared for contractors. Appropriate Method Statements will be prepared, all as recommended in BS5837:2012 Trees in relation to design, demolition and construction - Recommendations et al.

## 2. Tree / Vegetation Clearance for Access to Lodge, Construction of Footpaths etc.

Trees and vegetation will be required to be either cut back and / or removed to provide both access for remediation works and to maintain clearances for footpaths. Such operations will also permit access to remove debris including plastic materials that have been tipped or collected across the area.

Historically, clearance operations around the Lodge would have been undertaken on a regular basis to both maintain access for maintenance of the feature, to ensure that no material would be retained that could fail and block sluices, spillways or similar and to maintain a high quality water supply generally free from debris for use within the mills.

As a result of such management the majority of the trees effectively became coppice material and the remnants of these can be observed around the Lodge as multi stemmed willows.

Other trees have become established in the intervening period such as ash and in many instances, have developed in relatively inaccessible areas or on the edges of bankings where they are causing damage and displacement of the formal walls and retaining features.

Re-coppicing of many of the willows will be undertaken and as indicated on the Outline Design drawings and arisings will be reused to trap silt and create the new habitats.

Trees located on the edge of bankings and on, or within walled structures to the various channels will require removal to maintain the integrity of the features. The incremental root growth of saplings / trees can rapidly displace localised stonework that can fall into the watercourses and cause blockages.

During periods of extreme weather, the movement of such trees in relatively precarious locations can also generate significant root plate movement that in turn can cause sections of walls to collapse again causing conflicts with water flows and increasing risks of flooding.

It would be considered that all such material would be recommended for removal regardless of any other site remediation operations and stumps will be suitably treated to prevent regrowth.

Coppiced willow and the majority of other trees present will resprout and form new canopies. These in turn will be managed in future years to create the most desirable habitat for their environment all under the control of the Ribble Rivers Trust. It would be expected that coppice would be recut on a cyclical basis, such operations always permitting an element of aerial growth to be maintained for shelter and amenity value.

Discussions with the Ribble Rivers Trust have indicated that as part of the long term development and management of the project new and appropriate tree planting will be undertaken to improve species diversity and age category mixes. All such operations will greatly improve the future viability of the treescape and are in accordance with all good arboricultural and silvicultural practices.

### 3. Cascade, Weir and Spillway Structures to Southern End of Primrose Lodge.

All structures have been extensively surveyed and proposals exist for management, repairs and construction of a Fish Passage.

Various observations have been made in submitted reports regarding the presence of vegetation and proposals for removal to facilitate repairs and improvements.

As discussed previously, trees growing within or on top of structures can cause damage and displacement by root growth and expansion. The displacement caused by such incremental growth can cause failure or simply cause sufficient movement to permit leaks from dams / lodges that in turn gradually scour out internal material and promote failure.

To remove any such vegetation identified is therefore strictly in accordance with good practices and will assist in the reclamation of many historic features and their functions. The removal of the material will also expose the various historic features that in turn will enable their workmanship and quality to be fully viewed. It will also simplify access and future inspections and / or repairs to the benefit of the project.

Whilst vegetation within or immediately impacting upon the various structures may be recommended for removal, it is also necessary to consider larger items at a greater distance especially when located on top of retaining structures.

In respect of roots growing beneath a well-constructed wall or building, whilst they may be able to penetrate a weak area and possibly cause nuisance or localised damage, they are unlikely to generate sufficient forces to physically lift such a heavy structure.

The Arboricultural Research Note 134/96/EXT advises that in respect of retaining walls however, much less force is required to be exerted by a tree growing on top of the structure to cause it to tip or rotate. This is because the wall would not have to be lifted and the force needed would be that to overcome the bending resistance of the wall perpendicular to its height and length. A wall adjacent to a tree trunk from which a large buttress root is growing might easily be tipped outwards due to uneven expansion of the root upwards.

In consideration of such advice, the significant wall to the approximate west of the cascade / spillway below Primrose Road should be inspected during the course of operations to firstly remove any vegetation growing within it to avoid direct displacement of the structure and secondly in respect of any trees / vegetation growing close to the top edge that could, as advised above, tip or otherwise displace the wall.

BS5837:2012 Trees in relation to design, demolition and construction - Recommendations advises in Table A.1 that to avoid direct damage to structures such as masonry boundary walls the minimum distance between young trees and new planting and structures should be 2.00m for trees expected to have stem diameters in excess of 600mm.

In consideration of the foregoing comments and observations therefore it is reasonable to accept that some trees / vegetation will require removal for repairs / reconstruction / maintenance of various walls and structures around the southern section of the site but, such clearances are necessary and in accordance with good practices but on the positive side will expose attractive / historic architectural and engineering features of interest and visual amenity.

#### Construction Methodology / Method Statements.

It would be expected that appropriate Method Statements are prepared prior to any construction operations commencing within the site. Such documents as detailed in BS5837:2012 Trees in relation to design, demolition and construction - Recommendations would be appropriate to the proposals and would be expected to typically address the following issues:

- Protection to all retained trees before any materials or machinery are brought onto the site and before any operations commence.
- Removal of existing structures and any areas of hard surfacing.
- Installation of ground protection.
- Installation of new surfacing.
- Specialist foundations, installation techniques, level changes and similar.

- Retaining structures.
- Storage compounds and temporary services.
- Auditable / audited system of arboricultural site monitoring, including a schedule of specific site events requiring input or supervision.
- Contact details for all relevant parties.

In respect of the provision of the Method Statements, in accordance with BS5837 Annex B Table B.1, once the feasibility and planning/design section is complete and Scheme Design Approvals are obtained from Clients and Regulatory bodies, the detailed/technical design stage should be implemented.

Concerning arboricultural issues, this will basically involve the inclusion of appropriate methodologies within the full construction documents to cover all operations.

The provision of such guidance within Method Statements will ensure that there are neutral / negligible impacts on the retained treescape and that full communications with both RVBC and local residents will ensure that all works proposed are fully accepted and the reasoning understood.

#### Conclusions.

Proposals exist for the reclamation of Primrose Lodge which will have impacts upon the trees present. It has been indicated however that only defective or structurally damaging material will be removed, the majority of the remaining vegetation simply re-coppiced for access and construction of new features such as footpaths and the arisings utilised wherever possible.

All such operations are in full accordance with good arboricultural and silvicultural practices and will enable the Ribble Rivers Trust to recreate an attractive, desirable and sustainable feature.

Future management will undoubtedly entail cyclical coppicing plus additional landscaping / planting works to again benefit and diversify the treescape to the benefit of the local environment.

Potential impacts have been identified such as surfacing beneath trees / within expected root protection areas but, it has been clearly indicated that with appropriate methodologies all necessary protection can be provided.

It is reasonable to conclude therefore that the proposed reclamation scheme – subject to implementation of appropriate methodologies, would have no detrimental impact upon the future health and viability of the local treescape.

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