

Tree Survey and Outline Arboricultural Impact Assessment

Biddulph Grange Country Park Visitor Centre

Waste Water Management Scheme

Introduction

Staffordshire Moorlands District Council's arboricultural officer was asked by Alliance Norse to advise on the quality and retention values of existing trees in the vicinity of a proposed new waste water management installation at the Biddulph Grange Country Park Visitor Centre, including an assessment of how the trees might be affected by the proposed scheme and any impact avoidance or mitigation measures which could be applied.

The Proposed Development

A new underground self-contained treatment unit would be installed a few metres to the north of the visitor centre building, with outflow pipe to the east via a sampling inspection manhole and a backdrop manhole continuing down a short steep bank to an outlet headwall discharging into the brook.

A preliminary schematic arrangement plan has been provided, but this does not give or indicate construction depths, pipe invert levels or falls etc.

British Standard 5837:2012 *Trees in Relation to Demolition, Design and Construction* – Recommendations

BS 5837 recommends that trees which may be affected by a proposed development are assessed and assigned a retention category reflecting their quality, significance, likely future lifespan, and appropriateness for retention in the context of the development. These range from Category A (high quality/significance – shown coloured green on the Constraints Plan) through Category B (medium – coloured blue) and Category C (low – coloured grey) to Ungraded/U (not suitable for retention irrespective of development proposals – coloured red).

Trees are easily damaged by construction, in particular the root systems by severance, soil compaction, poisoning etc. The majority of the roots are normally located within the upper 0.75m or so of soil profile below the surface, and can therefore easily be damaged by relatively shallow excavation. The basic premise is that all development, new structures (including areas of hard surfacing and underground services) and construction-related activities should be excluded from the RPAs. Where encroachment into an RPA is unavoidable, there may be technical solutions which can be employed in order to avoid, reduce or mitigate adverse impact on the tree BS 5837 is used to derive a Root Protection Area (RPA) for each retained tree or group.

Ideally a tree survey is carried out first to identify tree-related constraints, which can then be used to influence the development design/layout and avoid harmful impact on trees to be retained – in particular those of higher-graded categories. However, in practice the development layout/form is often pre-determined, perhaps necessitated by spatial/technical constraints, or development objectives.

Tree Survey Results

Survey by Steve Massey, SMDC arboricultural officer, on 1st November 2023. Weather: overcast, clear, calm. Ground-based visual inspection only; no instruments or diagnostic tools were used. Tree positions and dimensions estimated by eye – in this instance considered sufficiently accurate for purpose.

Several trees/groups of trees were identified in the immediate vicinity, which could potentially be affected by the proposed development. Tree characteristics and comments are given in the tree data table at Appendix 1, and approximate stem positions of the surveyed trees are marked on the attached Tree Constraints Plan at Appendix 1 and corresponding RPAs shown (derived in accordance with BS 5837:2012).

No Category A or B trees were recorded. Three individual trees of Category C were identified (T1, T2 and T3 on the Plan). One group of Category U trees was noted (G1 on the plan)

Arboricultural Impact of Proposed Development

Installation of the treatment plant would require the removal of Group G1, but these are anyway of very poor quality and form, generally leaning towards the visitor centre, with no long term future and inappropriate for retention regardless of development proposals.

T1 Goat Willow leans towards the visitor centre with a significantly unbalanced crown weighted in that direction, hanging low over the fenced area. The proposed treatment plant, outflow pipe and inspection manholes would not encroach within the RPA of T1, and its roots would therefore not be significantly affected. There may be a need to carry out crown lift pruning to remove lower/pendulous branches over the development site in order to accommodate access and working space for construction plant/equipment. This should be carried out by a qualified arboriculturalist prior to development, in accordance with British Standard 3998:2010 *Tree Work – Recommendations*.

T2 and T3 Sycamores are situated on the steep wooded bank above the brook to the east of the visitor centre. The treatment plant and inspection manholes would be located outside the RPAs of these trees, and construction/installation of these elements of the scheme would not have significant impact on tree roots. The outflow pipe from the backdrop manhole to the outlet headwall into the brook would pass through the RPAs of T2 and T3. It appears to be unavoidable that the pipe crosses the RPA of these or other trees, as the whole bank is continuously wooded. Individually T2 and T3 are of lower quality, although the woodland overall is an important part of the structural landscape, within a designated Conservation Area.

An open trench excavated to install the outflow pipe would be likely to cause significant damage to roots. The depth and required slope/fall of the pipe and the properties of the ground conditions are unknown, so in turn it is unknown whether any of the following measures could be considered in order to reduce impact:

- Directional drilling to install the pipe without open excavation through RPAs;
- Hand-digging all or part of a trench within tree RPAs to retain significantly sized (>25mm diameter) woody roots intact and threading the pipe beneath retained roots before backfilling;
- Hand-digging part of a trench at shallow angle of fall until it emerges onto the steep bank, (retaining significant roots intact and threading the pipe beneath the retained roots) then running the remaining length of outflow pipe down the bank at a steep angle of fall, above existing ground surface, to the outlet headwall.

There may be technical, operational or regulatory constraints unknown to the arboricultural officer which may preclude the use of any or all of these measures.

There may again be a need for some minor crown lift pruning to T2 and/or T3 in order to provide construction access and plant operating clearance beneath overhanging tree canopies.

G1 group of Goat Willow – removal of group would be required to accommodate installation of the water treatment plant as proposed, but group is anyway of poor quality and significance, and removal would be appropriate on arboricultural grounds regardless of development proposals.