
The Cambourne to Cambridge Order

Transport And Works Act 1992

Transport And Works (Applications And Objections Procedure) (England And Wales) Rules 2006

Technical Report 14: Arb Report

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1 INTRODUCTION

1.1 PURPOSE

- 1.1.1. This Technical Report provides an assessment of the impacts of the CtoC Scheme on trees. It summarises preliminary observations from desk study and field survey of selected arboricultural features within the draft Order limits of the Scheme.
- 1.1.2. The surveys were commissioned by the Greater Cambridge Partnership (GCP) to provide information on the risks from the proposed development to trees considered notable¹ due to their size or where ecological and landscape value had been identified by complementary disciplines. Planning constraints associated with tree preservation orders (TPO) and conservation areas are outlined.
- 1.1.3. The overarching assessment of the Scheme is supplemented by additional studies (see appendices) that focus respectively on the status of the oldest apple trees in Coton Orchard potentially affected by the Scheme, together with a mitigation (including compensation) strategy; and by an assessment of risks to TPO trees along the Rifle Range track, together with mitigation proposals to deliver long term protection of the trees from potential impacts of the Scheme. Appendices are included that describe these specific assessments.
- 1.1.4. The impact on trees and consequent effects on ecology, heritage and landscape are addressed where relevant in TR05, Ecology; TR07, Heritage; and TR08, Landscape and Visual respectively.

1.2 SCOPE

- 1.2.1. Trees were scoped into the survey protocol by the following methods:
 - Desk study of TPOs;
 - Ecology discipline highlighting apple trees at Coton Orchard;
 - Boundary poplar trees at land associated with Coton Orchard;
 - Trees in the vicinity of the Rifle Range, University Rugby Ground; and
 - LiDAR assessment of trees more than 14m high and with crown area greater than 40m².
- 1.2.2. A desk based scoping exercise supplemented with arboricultural field surveys were undertaken at parts of Coton Orchard and the Rifle Range.

¹ Woodland Trust – “Notable trees are usually mature trees which may stand out in the local environment because they are large in comparison with other trees around them”

2 METHODOLOGY

- 2.1.1. The methodology for field survey of trees followed the recommendations of BS5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' (British Standards Institute, 2012), referred to in this report as BS5837. BS5837 gives recommendations and guidance on the relationship between tree and design, demolition and construction processes. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.
- 2.1.2. The quality of arboricultural features has been determined in accordance with BS 5837 Table 1 as shown in **Plate TR14-2-1** below.

Plate TR14-2-1 - BS 5837 Table 1: Cascade chart for tree quality assessment

Table 1 Cascade chart for tree quality assessment				
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none">Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)Trees that are dead or are showing signs of significant, immediate, and irreversible overall declineTrees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

- 2.1.3. With respect to considering veteran trees, the National Planning Policy Framework (NPPF (updated July 2024)) sets out government policy on considerations relevant to the granting of planning permission and the circumstances where planning permission should be refused. The definition in the NPPF is the most appropriate definition to be used when deciding whether to grant planning permission.
- 2.1.4. The NPPF defines an ancient and/or veteran tree as one "...which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient but are old relative to other trees of the same

species. Very few trees of any species reach the ancient life-stage.” Recognition of the veteran features of trees drew on a number of assessment tools and processes, with RAVEN2 method (Forbes-Laird, 2023) used to help provide structure and supplemented with alternative approaches as further evidence.

- 2.1.5. Further consideration of the veteran status of the older apple trees in Coton Orchard is set out in **Appendix TR14.1.**

3 TREE PRESERVATION ORDERS AND CONSERVATION AREAS

- 3.1.1. A local planning authority (LPA) may consider imposing a tree preservation order (TPO) at any time. Once the order is applied to a tree it makes it an offence, without the LPA's permission, to:
- cut it down;
 - top or lop the crown;
 - uproot it; or
 - wilfully damage or destroy it.
- 3.1.2. The purpose of a TPO is to protect selected trees and woodlands whose removal would have a significant negative impact on the local environment and its enjoyment by the public. This is particularly important where trees are in immediate danger of being felled or heavily pruned.
- 3.1.3. All types of trees can be covered by a TPO (including hedgerow trees). The TPO can cover anything from a single tree to woodlands.
- 3.1.4. TPOs are in place for a copper beech and a pair of black pine at the rear of gardens of properties on Herschel Road, Cambridge, close to the route of the busway and emergency access and maintenance track, alongside the Rifle Range track adjacent to the University Rugby Ground. Additional TPO are also in place in Coton, Hardwick and Upper Cambourne and Dry Drayton, including roadside trees along Scotland Road. These further TPO trees and tree groups are not considered vulnerable to the proposed development.
- 3.1.5. The LPA is under a duty to preserve or enhance the character or appearance of conservation areas. A key part of the character and appearance may be the trees. Anyone proposing to carry out works to a tree in a conservation area must give at least six weeks' notice to the LPA. Exceptions to this requirement apply when the tree is dead, dying or has become dangerous (but should be reported to the authority). It is a criminal offence to carry out works to a tree where notice was required and not served on the LPA.
- 3.1.6. Areas of Coton and Hardwick and west Cambridge (abutting the proposed development) are conservation areas, the latter including the TPO copper beech and pines.

4 APPLE TREES AT COTON ORCHARD

- 4.1.1. Coton Orchard combines areas of orchard and scrub woodland. The area is bounded by hedgerows of mixed broadleaf species to some of the boundaries and contains additional hedges internally creating discrete parcels within the orchard. The hedgerows could be ecological corridors but are not arboriculturally important. A line of poplar trees forming the eastern boundary is considered separately below.
- 4.1.2. The orchard areas are principally of trees on dwarfing rootstocks planted in a regular grid pattern. Whilst the orchard is not currently managed commercially the principal areas of dwarf trees complement a small number of mature orchard trees and is similarly identified as priority habit traditional orchard in Defra's MAGIC map. However, the ecological assessment considered the extent of remaining orchard meriting qualification as traditional orchard to be far less than that noted in Natural England's Priority Habitat Inventory 'Central England' dataset¹, which is quite out of date (see Chapter 8 of the ES). The young apple trees are less than 75mm in stem diameter and have been excluded from the survey.
- 4.1.3. One area of the orchard contains old trees, believed to date from the foundation of the orchard (or soon after) in 1922 (see **Plate TR14-4-1**).
- 4.1.4. There are 13 live specimens of these oldest apple tree. An elder is growing from the stump of what was once a fourteenth tree (referenced as T1 but not qualifying as a tree to be classified under BS5837). Detailed analysis of these trees in terms of their potential veteran status is provided in **Appendix TR14.1**. In summary, the approach uses different assessment tools to determine veteran status, with the RAVEN2 method (Forbes-Laird, 2023) providing structure to the assessment, with other approaches employed to inform the overall assessment as necessary. RAVEN2 follows a five-step process:
- Step one considers whether the tree is old relative for the species with a minimum 25% of species age required;
 - Step two considers whether the tree is large for the species;
 - Step three considers primary condition features, if two are present the tree should be regarded as veteran;
 - Step four considers secondary condition features. If one primary feature is present, three secondary features are required to be considered veteran or if no primary features there should be at least six secondary features; and
 - Step five is a summary confirmation of the outcome notable, veteran or ancient.
- 4.1.5. The five steps of RAVEN2 provide a structure aligned with NPPF which requires the combined age, size and condition to be exceptional and relies on the assessment of each step.
- 4.1.6. Using this approach, two of the 13 trees - T9 and T12 - would qualify as veteran trees under the NPPF definition. The buffer zone for T12 is south of the draft Order limit boundary and is not predicted to be impacted.
- 4.1.7. T9 is located within and at the southern edge of the draft Order limits. Measures to protect the tree as far as practicable would be implemented, with a particular focus on precise alignment details of the busway and emergency access and maintenance track and stringent protection during construction. Other mitigation measures would be developed as part of the detailed design,

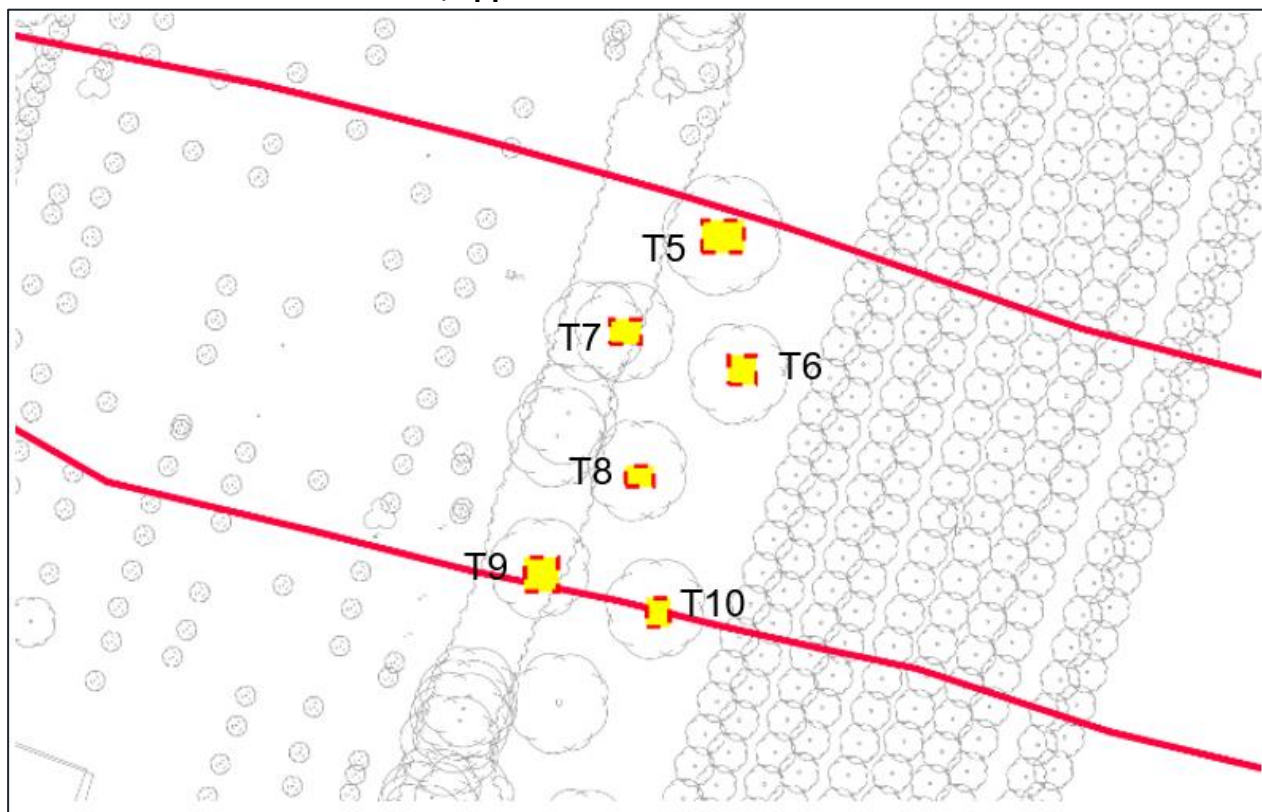
potentially including use of road designs to protect the root protection area, as have been proposed for the trees north of the Rifle Range section of the Scheme (see **Appendix TR14.3**).

- 4.1.8. The location of T9 at the boundary of the draft Order limits should allow for its retention and protection from impact. However, it is foreseeable that there would be some development activity within the buffer for T9 which has the potential to cause detrimental impact upon the tree. On this basis compensatory measures have been developed as part of the mitigation strategy and are set out within the Draft Veteran Tree Mitigation (including Compensation) strategy, prepared in accordance with NPPF and provided at **Appendix TR14.2**.

Plate TR14-4-1 - Coton Orchard, apple trees



Plate TR14-4-2 - Coton Orchard, apple trees in relation to Order Limits



5 POPLAR TREES AT COTON ORCHARD

- 5.1.1. The fruit trees of Coton Orchard give way to low quality scrub woodland in the eastern parcel of the site (see **Plate TR14-5-1**). On the eastern boundary of the land parcel is a line of poplar trees at very close spacing. The stems are typically between 1m and 3m separation and grow along the top of a ditch. The group has an understorey of hawthorn.
- 5.1.2. A small number of the poplar trees have been blown over. The closely spaced trees and the ditch have significantly restricted rooting and incipient tree instability is anticipated. The trees are tall to 26m and have stem diameters of up to 900mm (with most stems in the range 600-700mm). Collectively the trees form a moderate quality/B category group but individually the trees are of low quality/C category.
- 5.1.3. Removal of a section of the group or selective thinning of the poplar tree group will increase instability of retained trees, as there is currently some mutual physical support. Topple distance in excess of one tree length to a routeway should be maintained.
- 5.1.4. Reduction in topple distance, to allow for greater tree retention, may be possible through pollarding, the act of tree height reduction from which branch regeneration and regrowth follows. Poplar responds well to this recognised management technique, but the process requires repeated actions on a cycle of 5-10 years and left unattended, after pollarding, increases the potential for branch drop.

Table TR14-5-1 – Poplar trees at Coton Orchard

Reference No.	Species	Height (m)	Stem Diameter (mm)	Number of stems	Crown Spread (m)	Lowest Crown Height (m)	Lowest Branch Height (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution	Category	RPA Radius (m)
G1	Poplar	26	900	50+	5	8	8	Mature	Fair	Fair	20+	B	10.8
G1	Hawthorn	4	200	20+	2	1	1	Mature	Fair	Fair	20+	B	2.4

Plate TR14-5-1 - Polar trees at Coton Orchard



6 TREES AT THE RIFLE RANGE, UNIVERSITY RUGBY GROUND

- 6.1.1. Third party trees in the gardens of properties on Herschel Road and close to a roadway beside the University Rugby Ground are notable due to their size, maturity and importance in the landscape. The trees have been inspected from public land and sizes are estimated. Three trees are subject to TPO and are located also at the edge of the West Cambridge Conservation Area. Other trees not subject to TPO have moderate to low quality classification in BS5837.
- 6.1.2. The large trees have a root protection area extending significantly into the draft Order Limits. Excavation within the RPA for busway or NMU pathway must be minimised.

Table TR14-6-1 – Trees at the Rifle Range, University Rugby Ground

Reference No.	Species	Height (m)	Stem Diameter (mm)	Number of stems	Crown Spread (m)	Lowest Crown Height (m)	Lowest Branch Height (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution	Category	RPA Radius (m)
T101	Black pine	21	800	1	5	1	8	Mature	Good	Good	40+	A	9.6
T102	Black pine	21	800	1	5	1	8	Mature	Good	Good	40+	A	9.6
T103	Copper beech	24	1100	1	10	4	4	Mature	Good	Good	40+	A	13.2

- 6.1.3. Non-invasive investigation of root distribution using root radar equipment has been undertaken as part of a wider exercise to explore options for securing protection of the TPO trees during construction and as part of the design of the busway and maintenance and access track. This is set out in **Appendix TR14.3**.

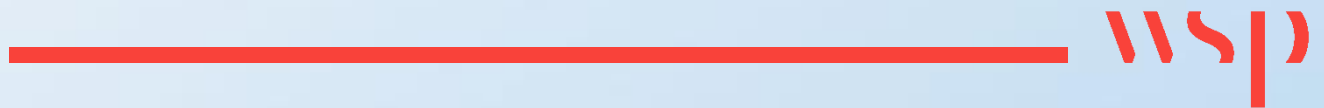
Appendix TR14.1

COTON ORCHARD VETERAN TREE REVIEW



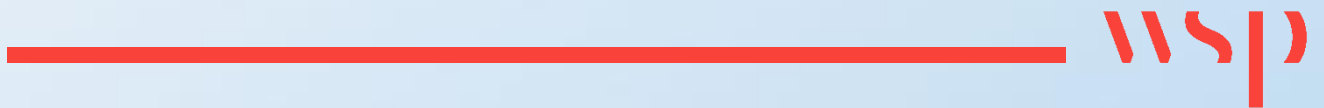
Appendix TR14.2

VETERAN TREE DRAFT MITIGATION (INCLUDING COMPENSATION) STRATEGY



Appendix TR14.3

RIFLE RANGE TRACK - TREE PROTECTION PROPOSALS





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