

Hallgates to Elms Farm Pipeline

Technical Note: Arboriculture

Project	Hallgates to Elms Farm Pipeline	Purpose	To provide a summary of existing arboricultural information available to support an EIA screening opinion		
Location	Leicestershire				
Client	Severn Trent Water				
Doc Ref	Version	Authored	Checked	Approved	
10480.01.001	1.0	AAB	HEE	JGS	

1.0 Introduction

1.1 The Environment Partnership (TEP) Ltd was commissioned in September 2024 by Severn Trent Water (STW) to provide information on trees and woodland to support an EIA screening opinion for the proposed Hallgates to Elms Farm water pipeline route. This note summarises the findings of field and desktop surveys; recommendations for reducing impacts on arboriculture during detailed design; and mitigation recommendations for tree protection and replacement planting where loss is unavoidable as a result of the proposed development.

Site Location and Description

- 1.2 The proposed pipeline route is approximately 9.4km in length and will run from an existing pipeline located to the north of Roecliffe Road (NGR: SK 54145 11582) to the Brickyard (NGR: SK 52657 05963). The route is currently split into two sections, named Section 1-E and Section 2-A, splitting at Bradgate Road, Anstey (NGR:SK53709 09394).
- 1.3 Section 1-E is situated between Roecliffe Road and Bradgate Road, Anstey. The pipeline will initially run eastwards from Roecliffe Road before turning north then south. It will cross Bradgate Road, Cropston and run in a south-westerly direction on the south side of Cropston Reservoir before crossing Bradgate Road, Anstey.
- 1.4 Section 2-A is located between Bradgate Road, Anstey and the village of Groby. In this section, the pipeline will initially run south-eastwards towards the main A46 road. It will then cross this road, turn southwards and cross the main A50 road. The pipe will then turn westwards to skirt the edge of the village of Groby, cross the main A46 road again and turn southward again, running parallel to this road before it terminates at the Brickyard.

- 1.5 An additional cross-connection between existing pipelines is also included within the project scope. This comprises Section 3 of the scheme and is located to the south of Ratby (NGR: SK 52174 05480), outside of the main pipeline route. The Section 3 site is bordered by the M1 to the east, agricultural fields to the south, Tavener Drive to the west and the Ivanhoe Trail to the north.

Proposals

- 1.6 The proposed pipeline in Sections 1 and 2 will connect the existing pipeline at Roecliffe Road to the Brickyard via a new 9.4km long, 1000 mm nominal bore trunk main.
- 1.7 Detailed proposals for the pipeline route are not currently known, however it is understood that the majority of the pipeline will be installed via an open cut method. Details of construction methods at watercourse and road crossings are still to be confirmed. It is anticipated the construction working width will be approximately 40m along the length of the pipeline route, with a narrower working width used at hedgerow crossings.
- 1.8 The proposed cross-connection site in Ratby will comprise a 0.2km, 200mm nominal bore cross-connection between existing pipelines.

Arboriculture Work Undertaken to Date

- 1.9 A detailed tree survey of the proposed centreline was undertaken by TEP between September 2024 and July 2025 in accordance with BS 5837 by qualified arboriculturists. The results of this are shown on the Site Overview and Tree Constraints Plans (ref: D10480.01.001-051) and Tree Survey Datasheets (ref: X10480.01.001). Where trees were not surveyed in detail, either due to access or visibility into private gardens, these are highlighted within the above referenced plans and datasheets.
- 1.10 Access was not available in 4 areas; a field parcel north of Roecliffe Road (NGR: SK54279 11547), a network of field parcels between Bradgate Road and the Badger Sett pub (NGR: SK55364 11255), a single field parcel south-west of Reservoir Road (NGR: SK55070 10850), and a single field parcel between Sacheverell Way and the A46 Leicester Western Bypass (NGR: SK52909 06566) and therefore there is no survey data for these areas at present.

2.0 Summary of Arboricultural Baseline

- 2.1 A summary of the arboricultural baseline available for the site based on the work completed to date is provided below.

Tree Population

- 2.2 The tree population comprises largely middle aged and mature individual field boundary trees or boundary trees groups. These are predominantly pedunculate oak followed by common ash. Field boundaries are also largely delineated by native species hedgerow. The tree population is typical of that expected within the agricultural setting of the route and wider area.
- 2.3 Tables 1 and 2 provide a breakdown of surveyed trees and groups by BS5837 categorisation (excluding hedgerows) and feature type. In addition, just over 15km of hedgerow was recorded.

Table 1 Number of existing features by BS5837 category

Feature	Category A	Category B	Category C	Category U	TOTAL
Trees	54	104	74	5	237
Groups	5	66	62	0	133
Woodlands	5	3	0	0	8
TOTAL	64	173	136	5	378

Table 2 Existing features by canopy area (ha) and BS5837 category

Feature	Category A	Category B	Category C	Category U	TOTAL (ha)
Trees	0.8392	0.7526	0.3569	0.0261	1.9748
Groups	3.3131	9.6587	4.4449	0.0000	17.4167
Woodlands	21.7018	4.4348	0.0000	0.0000	26.1366
TOTAL (ha)	25.8541	14.8461	4.8018	0.0261	45.5281
TOTAL %	56%	33%	11%	<1%	

Desktop Searches and Survey Finding

- 2.4 A 200m wide corridor (100m either side of the proposed centreline) was applied for the purpose of desktop searches where relevant. This corridor has been applied for the purposes of gathering baseline desktop information within the wider area only. It is not reflective of any proposed working corridor used to facilitate the works, which is likely to be significantly narrower than this across the scheme.

Ancient Woodland

- 2.5 Ancient Woodland is defined in England as any area that has been wooded continuously since at least 1600 AD¹; it is regarded as 'irreplaceable'². One designated ancient woodland was identified³ within the 200m corridor.

Table 3 Ancient Woodlands within 200m corridor

Ancient Woodland Name	Ancient Woodland Designation	Grid Reference	What3Words Location	Tree Survey Reference
Hallgate Hill Spinney	Ancient Replanted	SK 53677 11472	///parent.lovely.played	W4

- 2.6 In accordance with Natural England Standing Advice, a minimum 15m protective buffer has been applied to canopy edge of surveyed ancient woodland within which additional construction restrictions will apply. This is shown on the Tree Constraints Plans.

Veteran Trees

- 2.7 The definition of a 'veteran tree' is variable, subject to how and why it is being applied, and therefore no set definition exists. For the purposes of this note, the definition provided by the National Planning Policy Framework has been applied, which defines veteran trees are those which, because of age, size and condition, are of exceptional biodiversity, cultural or heritage value⁴. All ancient trees are veteran trees. Not all veteran trees are ancient, though they tend to be relatively old for the species. Ancient and veteran trees are regarded as 'irreplaceable'.
- 2.8 There is no comprehensive national register of veteran trees. The Woodland Trust maintains an inventory of significant trees which includes some ancient and veteran individuals⁵. At the time of writing, it contained records within the 200m corridor. These have been assessed by a qualified arboriculturist and where appropriate have been highlighted as such. There are two veteran trees that meet the definition in NPPF within influencing distance of the scheme.

¹ NPPF Annex 2: Glossary (p.71)

² NPPF Annex 2: Glossary (p.74)

³ Assessed on the basis of Natural England's Ancient Woodland Inventory (Provisional) for England via *Magic Maps*

⁴ NPPF Annex 2: Glossary (p. 70)

⁵ <https://ati.woodlandtrust.org.uk/>

Table 4 Veteran trees

Tree Survey Reference	Species	Grid Reference What3Words Location	Veteran Characteristics
T77	Pedunculate oak	SK 54441 11379 ///wasp.fool.manage	Size, cavities, deadwood, decay and hollowing
T127	Pedunculate oak	SK 53976 09851 ///fund.entertainer.forest	Size, decay fungi, decay and hollowing of scaffold branches, deadwood, epiphytes

- 2.9 In accordance with Natural England Standing Advice, a minimum buffer zone of either 5m from the canopy edge or 15 times the stem diameter, whichever is the larger, should be applied to ancient and veteran trees. Therefore, a buffer of 15 times the stem diameter has been applied to both trees, as shown on the Tree Constraints Plans.

Tree Preservation Orders

- 2.10 The presence of any Tree Preservation Orders within the 200m corridor was confirmed with the relevant Local Authorities, either via email correspondence or via their online mapping systems where available. The results are detailed in Table 5.

Table 5 Tree Preservation Orders per Local Authority

Local Authority	TPO Name (where available)	TPO Reference (where available)	Tree Survey Reference
Charnwood Borough Council	Charnwood Forest Area TPO 28 (1950)	W66 / W67 / G84 / G86 / G87	W7 / W1 / T63, T65, T88, T89, T90, T92 / T22, T23, T28, G13 / T33-T36, T38, T40, T41, T44, T45, T47, T48, T50, T51, T53-T56, T58
	CBC TPO58 (1974)	A1	G23
	CBC TPO31 (1972)	T1-T12	G2, G9
	CBC TPO189 (1992)	T1-T12	G7, G8, T8, T10-T14
Hinckley and Bosworth Borough Council	Borough Council of Hinckley and Bosworth Groby (Glebe Farm) TPO 1975	A1	G58, G69, G130, T108, T199, T203, T204, T206, T207, T208

Conservation Areas

- 2.11 Checks to ascertain the presence of any Conservation Areas within the 200m corridor were undertaken with the relevant Local Authorities, either via email correspondence or via their online mapping systems where available.
- 2.12 None were identified within the corridor.

Community Forests

- 2.13 Online mapping⁶ confirmed that no part of the 200m corridor falls within a Community Forest.

Habitats of Principal Importance

- 2.14 Arboreal Habitats of Principal Importance⁷ that were surveyed and/or fall within the 200m corridor are as follows:
- Deciduous Woodland; and
 - Hedgerow
- 2.15 No Wood Pasture and Parkland Habitat of Principal Importance was identified within the 200m corridor.

3.0 Arboricultural Impacts in Relation to EIA Screening

- 3.1 A preliminary assessment based on the current proposed pipe centreline, finds it possible to avoid significant effects on trees, woodland and hedges and therefore the environment via the implementation of the following measures:
1. Use of the tree constraints information to design around high-quality trees and the minimum protective buffers for ancient woodland and veteran trees.
 2. Utilisation of existing gaps in tree lines and hedgerows.
 3. Narrowing the working corridor at tree-lined and wooded crossings. For short sections, where routing the pipeline through wooded crossings is unavoidable,

⁶ <https://englandscommunityforests.org.uk/where-are-the-forests/>

⁷ Natural Environment and Rural Communities Act 2006, 41 (1)

the footprint of the works can be significantly reduced by not using these areas to store soil and material.

4. In-situ hedgerow reinstatement.
5. Ex-situ tree replacement based on a ratio that's proportionate to the size of those removed.

3.2 To further aid EIA screening, a response to questions of relevance to arboriculture in the government screening checklist are provided in Table 6 below.

Table 6 EIA screening questions of relevance to arboriculture

Screening Criteria Question	Response to Question (Yes/No and Explanation of Reasons)		Is a Significant Effect Likely? (Yes/No and Explanation of Reasons)	
Are there any areas on/around the location which contain important, high quality or scarce resources which could be affected by the project, e.g. forestry, agriculture, water/coastal, fisheries, minerals?	Yes	A designated ancient woodland (Hallgate Hill Spinney). Two veteran trees. 64 high quality (BS5837 Category A) arboreal features (54 trees; 5 tree groups and 5 woodland).	No	Updates to the proposed route since the original survey was undertaken in 2024 do not interact with ancient woodland. Works will remain outside the minimum veteran tree protective buffers. The proposed pipeline route and working area will avoid Category A trees and woodland wherever possible by utilising the design measures listed at paragraph 3.1. Based on the proposed pipeline route, it is likely that the majority of Category A features could be retained.

Screening Criteria Question	Response to Question (Yes/No and Explanation of Reasons)		Is a Significant Effect Likely? (Yes/No and Explanation of Reasons)	
Are there any protected areas which are designated or classified for their terrestrial, avian and marine ecological value, or any non-designated / non-classified areas which are important or sensitive for reasons of their terrestrial, avian and marine ecological value, located on or around the location and which could be affected by the project? (e.g. wetlands, watercourses or other water-bodies, the coastal zone, mountains, forests or woodlands, undesignated nature reserves or parks. (Where designated indicate level of designation (international, national, regional or local)).	Yes	One designated ancient woodland. Two veteran trees. Tree Preservation Orders.	No	Updates to the proposed route since the original survey was undertaken in 2024 do not interact with ancient woodland. Works will remain outside the minimum veteran tree protective buffers. The proposed pipeline route and working area has been designed to minimise loss of TPO trees., Where loss is unavoidable, it will be minimised via routing and working restrictions and a TPO Application for Tree Works submitted to the relevant Local Authority.

4.0 Mitigation Recommendations

Tree Protection

- 4.1 Temporary physical protection measures will be designed as part of the Arboricultural Impact Assessment process based on the proposed pipeline route and working area. Temporary barrier fencing and ground protection of different types would be used to provide an appropriate level of protection in accordance with BS5837, ranging from visual identification of protected areas to immovable barriers preventing access. Criteria would be established by which the most appropriate tree protection specification would be selected. The final tree protection detail would be provided as a set of Tree Protection Plans or as part of an Arboricultural Method Statement.

Replacement Planting

- 4.2 Impacts that cannot be mitigated using methodological mitigation (i.e. protection measures or working restrictions detailed within a Method Statement) would be mitigated or offset by new planting.
- 4.3 Any new planting may contribute towards Biodiversity Net Gain provision within a broader suite of biodiversity objective, but only where specific arboricultural 'mitigation principles' are also met. This is important because trees provide landscape, amenity, culture, and heritage benefits, as well as habitats. If not considered separately, trees that do not provide sufficiently distinctive habitats may be offset by other types of habitat creation within biodiversity offsetting. It is therefore possible within a scheme achieving BNG for some trees not to be replaced. In order to ensure that non-habitat benefits and functions are also reinstated, all trees and hedgerow that are removed should be replaced within, or in close proximity to, the working area.
- 4.4 The recommended rate at which individual trees would be replaced should be calculated as a function of their current stem size. Stem size is a good general proxy for tree age and also total biomass because of the annual expansion of a trunk's cross-sectional area. Older and larger trees tend to provide increased biodiversity opportunities and more environmental and amenity benefits than smaller trees. In this way replacement would respond to the scale of impact.
- 4.5 In simple terms, the tree replacement strategy recommended for this scheme is based on the replacement of the cross-sectional area of stems that are removed. This is to align with biodiversity offsetting, and because it represents a reasonable scale for reinstatement.

- 4.6 The average stem diameter of newly planted trees after 30 years of growth (post-nursery) is assumed to be 300mm⁸. It is unlikely many species would attain a greater stem diameter than this within a 30-year period and not in sufficient numbers to make any meaningful difference to the average. Root Protection Area (12 times the diameter of a trees stem) is then used as a proxy for biomass.
- 4.7 The replacement rate for each tree that would be removed would be calculated by dividing the current cross-sectional stem area, measured at 1.5m in height (the Diameter at Breast Height), by 0.07m², which is the cross-sectional stem area of a 300mm diameter tree. Where the result is a fraction, the number of replacement trees is rounded up to the nearest whole number.
- 4.8 For example, a tree with a stem diameter of 600mm and a cross-sectional stem area of 0.28m² would be replaced by four trees, each contributing 0.07m².
- 4.9 Table 7 below provides representative examples of the replacement ratios that would apply to individual trees in different size brackets.

⁸ Based on a 'small tree' in the Tree Helper function of Statutory Biodiversity Metric Calculation Tool

Table 7 Arboricultural and ecological classification of woody vegetation

Stem Diameter	Number of Replacement Trees Per Tree Removed
100mm	1
200mm	1
300mm	1
400mm	2
500mm	3
600mm	4
700mm	6
800mm	8
900mm	9
1000mm	12
1100mm	14
>1200mm	16

- 4.10 Tree groups and woodland that are removed are recommended to be replaced at the rates shown in Table 8. These would be applied based on the median stem size of the range recorded within each group.

Table 8 Representative group and woodland replacement rates

Stem Diameter Range	Area of Replacement Planting
Small ($\leq 300\text{mm}$)	1:1
Medium ($>300\text{mm}$ to $\leq 600\text{mm}$)	1:1.1 (+10%)
Large ($>600\text{mm}$ to $\leq 900\text{mm}$)	1:1.2 (+20%)
Very Large ($\geq 900\text{mm}$)	1:1.3 (+30%)

- 4.11 The primary objective of Group and Woodland planting is to provide an equivalent or greater area of tree cover to that being removed. Group and Woodland planting would be delivered using young trees (whips) which would be planted at a high density (typically at 1m centres) than specimen trees. The number of new trees provided will therefore greatly exceed those provided for individually recorded trees but will reduce over time through management, in the form of thinning and natural suppression. Replacing groups based on their current canopy area also assures no net loss of future canopy cover, irrespective of future crown management. In reality, most new trees will develop branches that extend well beyond the planting footprint resulting in a net gain in long-term tree canopy cover.
- 4.12 Hedgerows would be replaced at a rate of at least 1:1 by length and of equivalent or similar species. Wherever possible, hedge replacement planting should be undertaken in situ of removed sections.

5.0 Conclusions

Key Arboricultural Constraints

5.1 The key arboricultural constraints along the route are considered to be:

- Hallgate Hall Spinney (ancient woodland);
- Two veteran trees; and
- High quality (BS5837 Category A) arboreal features

Next Steps

5.2 The proposed next steps relating to arboriculture are as follows:

- A review of the potential effects of trees, woodland and hedges should be undertaken based on the proposed pipeline route and working area.
- Any arboreal features that may be affected by the proposals that were not inspected in detail during the initial site visits should be surveyed.
- Design team meetings with STW should be held to agree and/or resolve areas of conflict and minimise adverse effects.
- An Arboricultural Impact Assessment and Arboricultural Method Statement should be produced based on the proposed pipeline route and working area, comprising a written report supported by drawings and specifications as appropriate.
- Submission of a TPO Works Consent Application to the relevant Local Planning Authority upon completion of detailed arboricultural impact assessment.