Tree Surgery ● Consultancy ● Training

Arboricultural Impact Assessment (AIA)

Site Details				Local Planning Authority Details	
Land at Sweeting Thorns Holme Scunthorpe Lincolnshire				North Lincolnshire Council Civic Centre Ashby Road Scunthorpe North Lincolnshire DN16 1AB	
Our ref:	CT_5038.18	**Revision:**	3		
Client:	Aarkvark EM Limited			**Survey Date:**	13th August 2018
Project Arboriculturist:	Mr Simon Putt **Senior Arboriculturist**			**Tel Number:**	01392 811338
Checked by:	Millie Gilbert-Mowat Administration				
Date of issue:	**16th July 2018**				

Contents

Executive summary

This report describes the extent of impacts on the existing and retained tree resource and where necessary recommends mitigation.

Trees within the site were surveyed using a methodology guided by British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (BS5837).

- The site subject to this assessment is located on the outer fringes of Scunthorpe, to the south east. It is a long narrow field extending to the south from the A18 towards Holne Lane.

- The framework for this report and the associated plan is the British Standard BS 5837:2012 Trees in relation to design, demolition and construction-Recommendations as this is the standard used by local planning authority officers when considering trees affected by development.

- The most significant trees are in the form of Sweeting Thorns Wood (W1) to the east and the linear group of oaks on the southern boundary. Both of these arboricultural features are protected by a Tree Preservation Order.

- Management works are proposed to two linear groups of trees which extend into the central regions of the site. This management work is based on sound arboricultural management principles. It is specified to enhance and promote long term arboricultural features.

- Supporting replanting coinciding with the management works will put the impact from tree removal to negligible.

- A safety buffer was applied to the trees height to consider the future growth potential of the arboricultural resource. Future growth potential was put at moderate when considering the age and species of trees.

This report has been produced, balancing the layout of the proposal against the competing needs of trees. This report comprises all of the requisite elements of an arboricultural impact assessment and supporting plans.

1. Instruction

1.1 This evaluation has been prepared on behalf of Aarkvark EM Limited and comprises of an-

- Arboricultural Impact Assessment (AIA),
- Tree Survey Schedule,
- Tree Protection Plan (TPP)

1.2 It concerns trees which are potentially affected by installation of a Solar Farm within the development area.

1.3 The scope of the evaluation is to assess the impact of the proposed Solar Farm on the existing arboricultural resource and to put forward recommendations, specifications and working methodologies in order to achieve an optimum arboricultural outcome.

1.4 This report should be read in conjunction with the tree survey (See Appendix 1) carried out by Simon Putt (Senior arboriculturist) on the 13th August 2018.

1.5 The framework for this report and the associated plan is the *British Standard BS 5837:2012 Trees in relation to design, demolition and construction-Recommendations* as this is the standard used by local planning authority officers when considering trees affected by development.

2. Introduction

Existing site

2.1 The site subject to this assessment is located on the outer fringes of Scunthorpe, to the south east. It is a long narrow field extending to the south from the A18 towards Holne Lane.

2.2 There is a network of deep ditches on the outer edges of the site which extend into the fields in places. There are also unmade tracks which extend down the eastern boundary, along the south and half way up the western boundary.

2.3 There is a public footpath which is localised to the western boundry of the site.

Trees overview

2.4 The trees which have the potential to be impacted by this proposal have been assessed in line with recommendations set out in Table 1 within BS5837:2012 *Trees in relation to design, demolition and construction.*

2.5 A large volume of the trees and groups identified as part of this survey are located on the boundaries of the field at all compass points.

2.6 The most significant trees are in the form of Sweeting Thorns Wood (W1) to the east and the linear group of oaks (G11) on the southern boundary. Both of these arboricultural features are protected by a Tree Preservation Order.

2.7 There are two overgrown hedgerows running into the site which break the field up. These are a mixture of low and moderate value trees and management is required.

2.8 The trees and hedges on the western boundary are off site however, in places, the canopies of the trees extend into site.

2.9 For this survey the trees have been identified as

- **Individual trees: T1 through to T17.**
- **Groups of trees: G1 through to G17.**
- **Woodland: W1**
- **Hedges: H1 through to H4**

2.10 In general, the sites contain a high level of semi mature to mature trees outside of the site extents.

2.11 The presence of deep ditches filled with water act as a natural constraint to root development which has been reflected on the Constraints Plan CT_5038_TCP_V1.

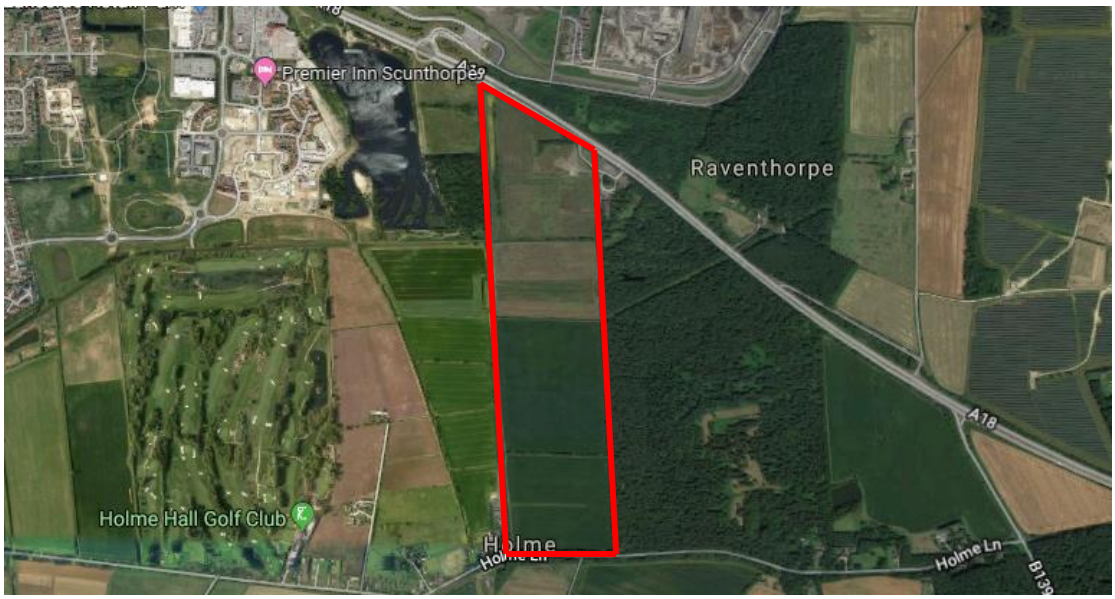


Figure 1 The satellite image, taken from Google Earth, shows the location of the site outlined in red.

Significance of trees within the landscape

2.12 The protected trees W1 and G11 have obvious visual amenity which is within the local landscape. The group G11 contributes to the wooded character of Holme Lane to which it is adjacent to.

2.13 The hedges, groups and trees within the centre have less visual amenity due to the level nature of the site and significant screening from boundary vegetation.

The proposal

2.14 The proposal is to install standalone solar PV modules and associated infrastructure at land at Sweeting Thorns, Holme, Scunthorpe.

3. Report limitations and disclaimer

3.1 In order for tree owners to reasonably comply with Duty of Care responsibilities, it is advised that a programme of tree risk management is implemented. The scope of this professional tree inspection process should be to evaluate the degree of risk posed by trees on the site and to specify, as well as prioritise, appropriate risk control measures as may be necessary.

3.2 Any physical alterations to site conditions subsequent to the date of the relevant tree survey will have the potential to change/invalidate the findings and recommendations of this arboricultural impact assessment and any associated arboricultural method statements.

3.3 This document is intended as a guide to identify key tree related constraints to site development only. The potential influence of trees upon existing, proposed buildings or other structures, resulting from the effects of their roots abstracting water from shrinkable load-bearing soils, is not considered.

3.4 Due to the dynamic nature of trees, the findings and recommendations within the document are limited to the duration of the planning application.

4. Other considerations

Statutory Tree Protection

4.1 There are Tree Preservation Orders adjacent to the site on W1 and G11. This has been considered through the layout of the site.

4.2 Excluding specific exemptions (*including the granting of full planning permission*) it is an offence to carry out any works to any tree that is subject to a TPO without having first applied for and obtained the approval of the local planning authority.

Statutory Wildlife Protection

4.3 Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife

habitats are not made by the arboriculturist and fall outside the remit of this report.

5. Documents seen

5.1 This report should be read in conjunction with:

- **CT_5038.18_TPP_V3**
- **CT_5038.18_TCP_V1**

6. Arboricultural impact assessment (AIA)

6.1 With reference to BS5837:2012 '*Trees in relation to design, demolition and construction- Recommendation*s this AIA evaluates the direct and indirect effects of the proposed design on the site's arboricultural resource. Mitigation is recommended where it is considered to be appropriate.

6.2 The AIA considers the effects of any tree loss required to implement the design as well as any potentially damaging activities proposed in the vicinity of retained trees.

6.3 The key impacts associated with this proposal are:

- Tree loss- negative impact on the character of the area and visual amenity. Loss of tree related benefits.

Tree benefits

6.4 Trees offer many benefits, including:

- Providing visual amenity, softening or complementing the effect of the built environment, and adding maturity to new developments;
- Displaying seasonal change and providing opportunities for wildlife in built up areas;
- Making places more comfortable in tangible ways by contributing screening and shade, reducing wind speed, and turbulence, intercepting snow and rainfall and reducing glare.

6.5 This assessment considers the benefits of the existing arboricultural resource and the impact on it. Where required, mitigation is recommended to reduce the impact of the proposal in the short to long term.

Tree removal

6.6 Tree removal is proposed across the scheme to manage, enhance and maintain the existing arboricultural resource.

6.7 This is shown on the tree protection plan CT_5038.18_TPP_V3.

6.8 Only the low value group G1 directly conflicts with the proposed layout and will need to be removed to facilitate development.

6.9 The impact (*reduced visual amenity and reduced benefits associated with trees*) of removing these trees will be negligible within the immediate and wider landscape.

6.10 The proposed management work will enhance the retained trees for the long term and look to promote new arboricultural features.

6.11 This tree management work will be supported by a new landscape proposal for planting across the site. The replanting scheme should consider:

- Contributions to green infrastructure networks;
- The inherent aesthetic attractiveness of trees as prominent landscape architectural features;
- Screening of undesirable views;
- Introduction of natural character and seasonal change that can relieve or compliment artificial environments;
- Reflection of local landscape character;
- Attenuation of surface water run-off and mitigation of flood risk, through root reinforcement and canopy interception of precipitation.

6.12 As indicated on the CT_5038.18_TPP_V3 fencing shall be used to protect retained trees and this will be in place before construcution activities take place (discussed further in section 8). This will be extended to protect the ground in its existing condition, to provide an optiminm environment for new planting not compacted by development activities.

Construction work within the RPA of retained trees

6.13 The excavating of soil within the RPA of retained trees can result in extensive root loss leading to decline in the trees long term physiological and structural health.

6.14 There are no works proposed within the RPA of retained trees therefore these matters have not been considered.

Buildability of scheme in relation to retained trees.

6.15 The buildability of the scheme is achievable in relation to the retained trees.

6.16 The retained trees can be suitably protected *(considering factors set out within section 8*) during the construction phase. There is adequate room for parking and site and office compounds.

7. Conclusion

7.1 All key trees and groups have been retained as part of this proposal. This includes the protected woodland W1 and trees to the south G11.

7.2 Management works are proposed to two linear groups of trees which extend into the central regions of the site. This management work is based on sound arboricultural management principles. It is specified to enhance and promote long term arboricultural features.

7.3 Supporting replanting coinciding with the management works will put the impact from tree removal to negligible in the short to long term.

8. Tree Protection Measures

8.1 It is important that measures for protection are in place throughout the scheme and for as long as a risk of damage remains. Particular care and planning are necessary in the operation of excavators, lifting machinery and cranes to ensure all vehicle movements and lifting operations will not impact on retained trees.

8.2 The retained trees should be adequately protected by stout fencing, 'fit for purpose' and preferably as prescribed in section 6.2 of British Standard 5837: 2012 to provide an adequate RPA that will allow its successful retention within the development.

8.3 The RPA should be regarded as sacrosanct and the fencing should be installed prior to construction works, and plant and machinery arriving on site. The fencing should remain intact throughout the duration of the scheme and only be removed upon completion. The position of the fencing around the trees should be shown on the tree protection plan (TPP) once the scheme layout has been finalised.

8.4 During construction there should be no materials stored or dumped and no vehicular or plant movement within the RPA to minimise the risk to the trees from soil compaction. Where compaction has occurred advice should be sought from an arboriculturist and a structural engineer on decompaction methods. This is in line with recommendations set out within section 8.4 of BS 5837:2012.

8.5 All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside RPAs unless otherwise agreed with the LPA. No discharge of potential contaminants should occur within the RPA of a retained tree stem or where there is a risk of run off into the RPA.

8.6 Excavations within the root protection area should be avoided. However, if excavations are necessary, works should be limited to the use of hand tools. Great care should be taken to preserve and work around roots greater than 25mm in diameter and clusters of smaller roots avoiding damage to bark. Where it is necessary to sever roots greater than 25mm in diameter, advice from an arboriculturist should be sought. Where smaller roots must be severed they should be cut back using secateurs or a sharp pruning saw.

8.7 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a setback in the alignment of the tree protection barrier. Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

8.8 New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. The ground protection might comprise one of the following:

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;
b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, interlinked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;
c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

8.9 Wherever possible, underground utility services should be routed outside the RPA. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with a competent arboriculturist.

9. Site Supervision

8.10 Consideration should be given to a competent arboriculturist visiting site and monitoring the works at an interval agreed at the pre-commencement site meeting.

8.11 The interval should be sufficiently flexible to allow the supervision of key works as they occur. The arboriculturist's role is to monitor compliance with arboricultural conditions and advising on any tree problems that arise or modifications that become necessary.

8.12 The key stages requiring supervision will be agreed at the pre-commencement site meeting, but will usually include:

- Tree pruning and felling operations
- Installation of tree protection barriers
- Regular monitoring of compliance

Appendix I- Tree survey

Tree Survey: Key	Age Class
St- Stem Diameter (mm) **measured at 1.5 metres or immediately above root flare for multi stem trees.** Ht- Height (metres) **in metres** Crown Spread (m) **estimated in metres as radius from stem taken at the four cardinal points (N, S, E, W)** Crown height (m) **estimated height of tree canopy above ground level measured in metres** LBd**- lowest branch and its direction** Ch- **Crown height** R.RPA- Radius (m) **Root Protection Area as a radius from tree stem in metres** **# - RPA modified to consider site constraints** ERC- Estimated Remaining Contribution **(yrs) Estimate of remaining useful life expectancy in years based on species, age and condition.** BS Cat- **Trees categorised in accordance with BS 5837: 2012 Trees in relation to design, demolition and construction Recommendations Table 1 Cascade chart for tree quality assessment**	**Y** -Young (newly planted tree 0-10yrs) **SM-** Semi mature (tree in first third of normal life expectancy for species) **EM-** Early Mature (tree in second third of normal life expectancy for species) **MA-** Mature (tree in final third of normal life expectancy for species) **OM-** Over mature (tree beyond normal life expectancy for species) **V-** Veteran (tree that is of interest biologically, aesthetically or culturally because of its age, size or condition)

Physiological condition	Structural Condition
Good- **Fully functioning biological system with normal extension growth, leaf/bud size, crown density, incremental growth for species** *Fair* **-Fully functioning biological system but displaying below average extension growth, leaf/bud size, crown density, incremental growth for species.** *Poor* **-Biological system with low functionality symptoms include: poor extension growth, small and/or chlorotic leaves, small buds, limited incremental growth, and sparse crown and/or die back.** *Dead* **-Tree is dead**	***Good***- Tree without any significant structural defects ***Fair*** Tree with minor defects that may be remedied with appropriate management. ***Poor*** Tree with significant defects that cannot be remedied ***UNK.*** **-** Unknown due to tree being off site.

Tree no. on plan	Species	St	Ht	Crown Spread				Crown Height		Age Class	Physiological and/or structural condition General observations	Preliminary management recommendations	ERC	R. RPA	BS Cat
				N	*E*	*S*	*W*	*LBd*	*Ch*						
H1	Hawthorn *Crataegus monogyna*	75	3. 5	See Plan				0	0	EM	P : Good S : Good Comments : Gaps equivalent to 11m in length within hedge. Moderate low-level screening function.	**Remove dead sections of hedge and fill in existing gaps with new hawthorn trees.**	20+	.9	**C2**
G1	80% Birch *Betula pubescens* 20% Goat willow *Salix caprea*	<360	12	See Plan				0	0	EM	P : Good S : Fair Comments : Compromised structure to willow trees within group. Vehicles turning on northern side of group.	**None**	20+	4.2	**C2**
T1	Oak *Quercus robur*	X2 400 380	13	5	5	5	5	0	0	0	P : Good S : Fair Comments : Superficial damage to primary branches over site.	**None**	10+	6.6	**C1**
T2	Oak	X3 400 400 400	13	5	5	5	5	0	0	EM	P : Good S : Fair Comments : Superficial damage to primary branches over side.	**None**	10+	8.4	**C1**
G2	Oak	450	8- 15	3	3	3	3	0	2	MA	P : Fair S : Good Comments : Ditch on one side. Hawthorn understory.	**None**	20+	5.4	**B 2 3**
T3	*Oak*	450	8	5	5	4	6	2 N	2	MA	P : Fair S : Good Comments : Major deadwood	**None**	20+	5.4	**B 1 3**
T4	*Oak*	400	6	3	5	3	5	2 W	2	EM	P : Fair S : Fair Comments : Major pruning work over site.	**None**	10+	4.8	**C 1**

Tree no. on plan	Species	St	Ht	Crown Spread				Crown Height		Age Class	Physiological and/or structural condition General observations	Preliminary management recommendations	ERC	R. RPA	BS Cat
				N	*E*	*S*	*W*	*LBd*	*Ch*						
G3	Ash *Fraxinus excelsior*	A 350 B 350 C 300 D 300	8	4	/	4	/	2 N	2	MA	P: Fair S : Good	**Selective removal of trees to retain specimens.**	20+	4.2	**B 2 3**
G4	Oak	A 350 B 300 C 300 D 350 E 320	8	4	/	4	/	2 N	2	MA	P : Good S : Good	**Selective removal of trees to retain specimens.**	20+	4.2	**B 2 3**
H2	Hawthorn	75	3	SEE PLAN				0	0	EM	P : Fair S : Fair Comments : Dead stems within the hedge.	**Remove dead trees and restock with hawthorn whips.**	10+	.9	**C 2**
T5	Oak	350	7	5	5	3	5	2 N	2	MA	P : Fair S : Good Comments : ditch to the south	**None**	20+	4.2	**B 1**
T6	Oak	600	14	1	6	6	6	0	0	MA	P : Good S : Good Comments : Off site - set back	**None**	20+	7.2	**B 1**
G5	Weeping willow *Salix babylonica*	450	10	-	3	-	-	0	0	MA	P : Good S : Poor Comments : Significant cavity visible impacting on structure of tree.	**Coppice**	<10	5.4	**U**
G6	*Ash*	400 400	12	-	3	-	-	0	0	MA	P : Good S : Good	**None**	20+	4.8	**B 2**

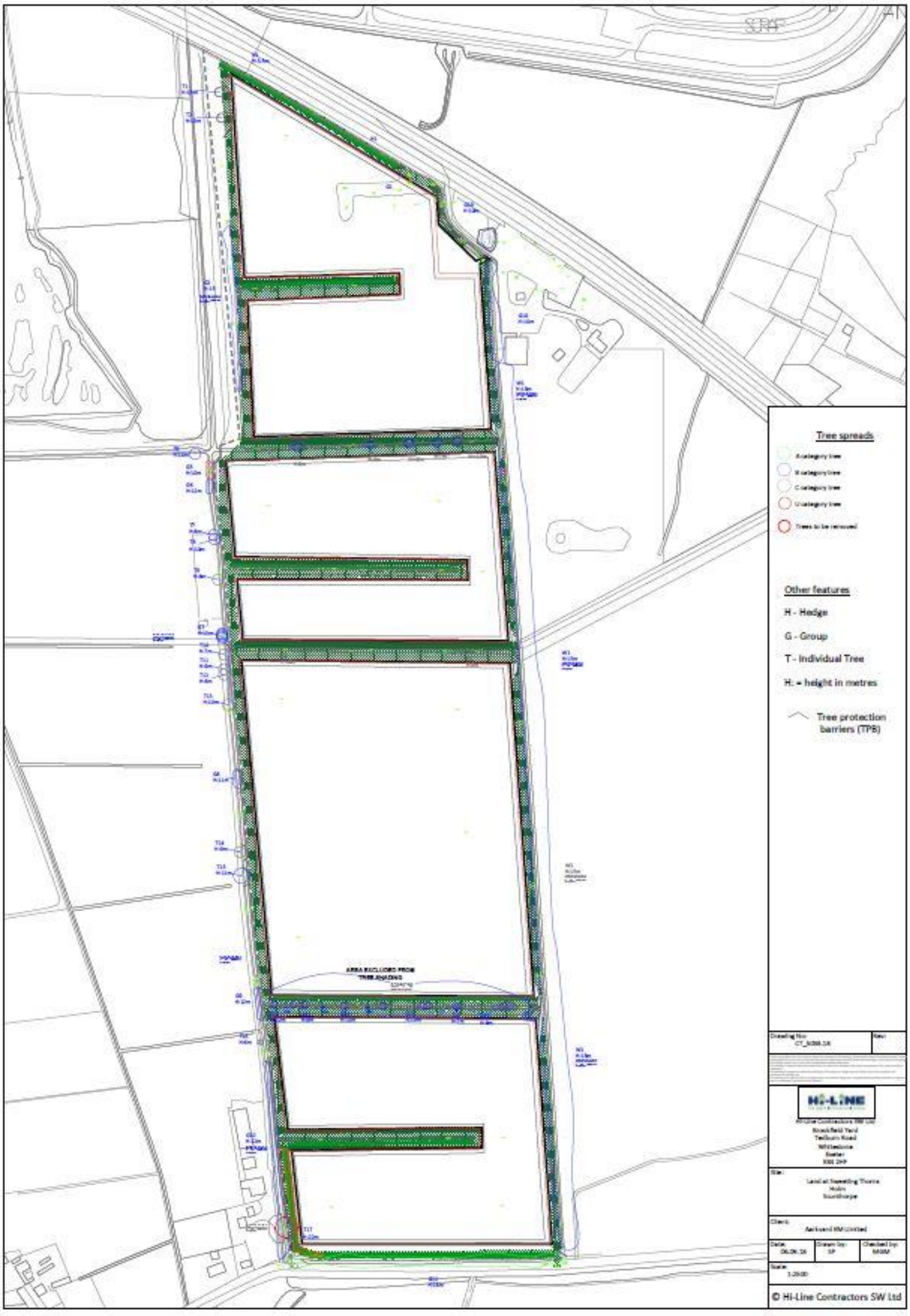
Tree no. on plan	Species	St	Ht	Crown Spread				Crown Height		Age Class	Physiological and/or structural condition General observations	Preliminary management recommendations	ERC	R. RPA	BS Cat
				N	*E*	*S*	*W*	*LBd*	*Ch*						
H3	Hawthorn	75	3	1	1	1	1	0	0	MA	P : Fair S : Fair	**None**	10+	.9	**C 2**
T7	Oak	400	8	4	4	4	4	3 E	3	MA	P : Good S : Good	**None**	20+	4.8	**B 1**
T8	Oak	400	10	4	4	4	4	3 E	3	MA	P : Good S : Good	**None**	20+	4.8	**B 1**
G7	Oak	420	14	4	4	4	4	0	0	MA	P : Good S : Good	**None**	20+	5.1	**B 2**
T9	Oak	350	8	4	4	4	4	0	0	Y	P : Good S : Fair	**None**	10+	4.2	**C 1**
T10	*Oak*	450	7	3	4	4	3	0	0	MA	P : Fair S : Fair Comments : Topped to accommodate overhead utility lines.	**None**	10+	5.4	**C 1**
H4	Hawthorn	100	4	SEE PLAN				0	0	EM	P : Fair S : Fair Comments : Topped predominantly hawthorn hedge.	**None**	10+	1.2	**C 2**

Tree no. on plan	Species	St	Ht	Crown Spread				Crown Height		Age Class	Physiological and/or structural condition General observations	Preliminary management recommendations	ERC	R. RPA	BS Cat
				N	*E*	*S*	*W*	*LBd*	*Ch*						
T11	Oak	400	9	4	4	4	4	0	0	EM	P : Good S : Fair Comments : Multi-stemmed at the base.	**None**	10+	4.8	**C 1**
T12	Oak	320	8	4	4	4	4	0	0	EM	P : Good S : Fair	**None**	10+	3.9	**C 1**
T13	Oak	380	10	5	6	5	5	2N	3	EM	P : Poor S : Good Comments : Decline to extremities of the crown combined with low crown volume.	**None**	10+	4.5	**C 1**
G8	X 2 oak	400 390	11	5	5	5	6	3E	2	MA	P : Good S : Fair	**None**	20+	4.8	**B 2**
T14	Oak	350	9	5	6	4	4	0	0	MA	P : Good S : Good	**None**	10+	4.2	**C 1**
T15	Oak	420	11	4	7	3	3	2E	3	MA	P : Fair S : Good Comments : Lean into site	**None**	20+	5.1	**B 1**
G9	X 13 oak X1 poplar *Poplar spp*	450	12	/	5	/	/	4E	3.5	MA	P : Fair S : Fair Comments : Hawthorn understorey	**None**	20+	5.4	**B 2**

Tree no. on plan	Species	St	Ht	Crown Spread				Crown Height		Age Class	Physiological and/or structural condition General observations	Preliminary management recommendations	ERC	R. RPA	BS Cat
				N	*E*	*S*	*W*	*LBd*	*Ch*						
T16	*Goat willow*	360	10	-	5	-	-	0	0	EM	P : Good S : Fair	**Reduce to hedge height.**	10+	4.2	**C 1**
G10	Oak 60% Goat willow 10% Birch 10% Sycamore 10% *Acer psudoplatanus* Hawthorn 10%	350	12	-	6.5	-	-	2E	3.5	MA	P : Fair S : Fair Comments :	**Remove goat willow and birch. Thin stems to retain specimen oaks and hawthorns.**	20+	4.2	**B 2**
T17	Poplar	1100	22	-	17	-	-	8E	9	MA	P : Good S : Poor Comments : Old pruning wound on main stem. History of lateral branch failure c.150mm in diameter. High likelihood of further failure.	**Dismantle and fell.**	10+	13.2	**U**
G11	Oak 90% Beech 5% *Fagus sylvatica* Ash 5% Hawthorn understorey	880	16	6	-	-	-	4N	4	MA	P : Fair S : Good Comments : Significant linear feature on the southern boundary.	**None**	40+	10.5	**A 2 3**
W1	Oak	600	15	-	-	-	6	4.5 W	3	MA	P : Fair S : Good Comments : x 1 dead birch within the woodland edge.	**None**	40+	7.2	**A 2 3**
G12	Oak Hawthorn	350	10	6	5	5	5	2.5N	3	SM	P : Good S : Fair Comments : History of branch failure in the oak.	**None**	10+	4.5	**C 1**
G13	Oak x 3 Hawthorn x 1	350	9	5	4	4	4	3N	3.5	SM	P : Good S : Fair	**Selective removal of trees to retain specimens.**	10+	4.2	**C 1**

Tree no. on plan	Species	St	Ht	Crown Spread				Crown Height		Age Class	Physiological and/or structural condition General observations	Preliminary management recommendations	ERC	R. RPA	BS Cat
				N	*E*	*S*	*W*	*LBd*	*Ch*						
G14	Oak Hawthorn understorey	320	10	4	-	6	-	2.5 N	3	SM	P : Good S : Fair	**Selective removal of trees to retain specimens.**	10+	3.9	**C 2**
G15	Oak 95% Birch 5%	360	10	5	4	4	4	2.5 N	3	SM	P : Good S : Fair	**Selective removal of trees to retain specimens.**	10+	4.2	**C 2**
T18	Oak	310	7	5	5	5	5	2.5 N	3	SM	P : Good S : Fair	**None**	10+	3.6	**C 2**
G16	Oak x 7	350	8	4	-	5	-	3 S	3.5	EM	P : Good S : Fair	**None**	10+	4.2	**C 2**
G17	X 3 Field maple X 1 Rowan	250	6	3	-	3	-	0	0	Y	P : Good S : Fair	**Coppice field maple**	10+	3.0	**C 2**
G18	Oak 80% Alder 20%	390	10	SEE PLAN				0	2	MA	P : Fair S : Fair	**None**	20+	4.8	**B 2**
G19	Oaks x 8	400	10	SEE PLAN				3 S	2	MA	P : Fair S : Good Comments : Natural bracing within the primary branch structure.	**None**	20+	4.8	**B 2**

Appendix II- Tree Protection Plan



Appendix III- Photographs

Figure 2 Picture shows the group G1 which directly conflicts with ten proposal and needs removing.

Figure 3 Shows the group G2 which screens the site from the footpath to the west.

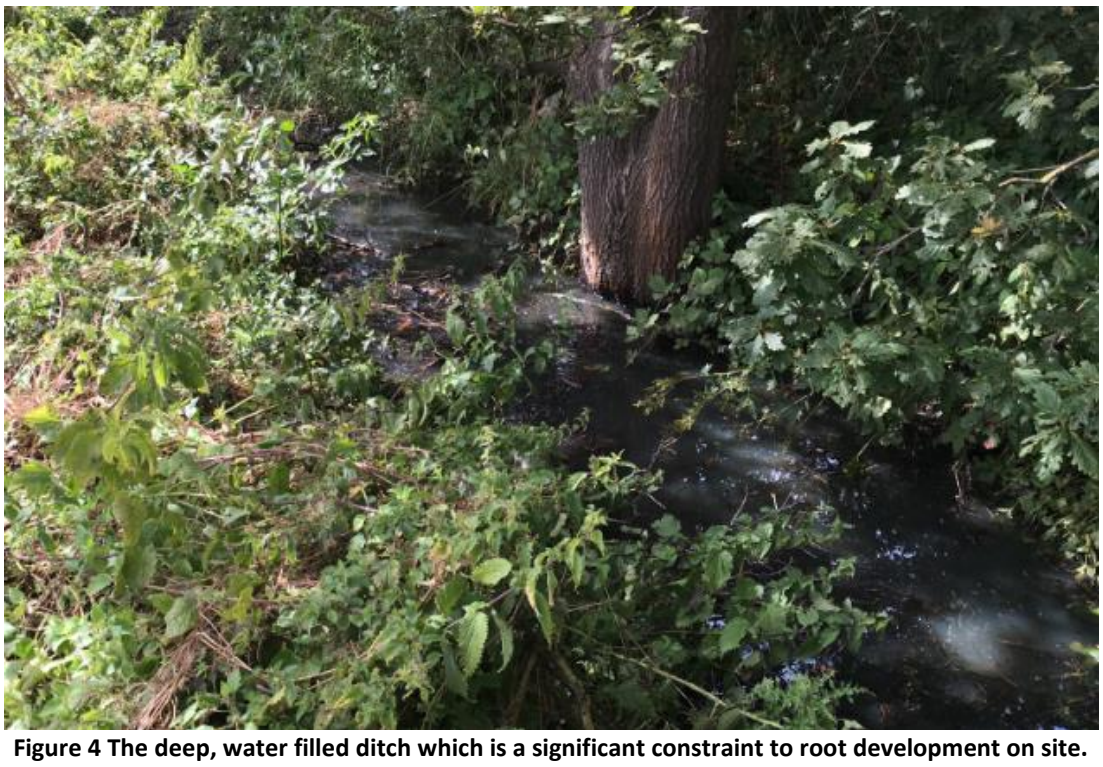


Figure 4 The deep, water filled ditch which is a significant constraint to root development on site.

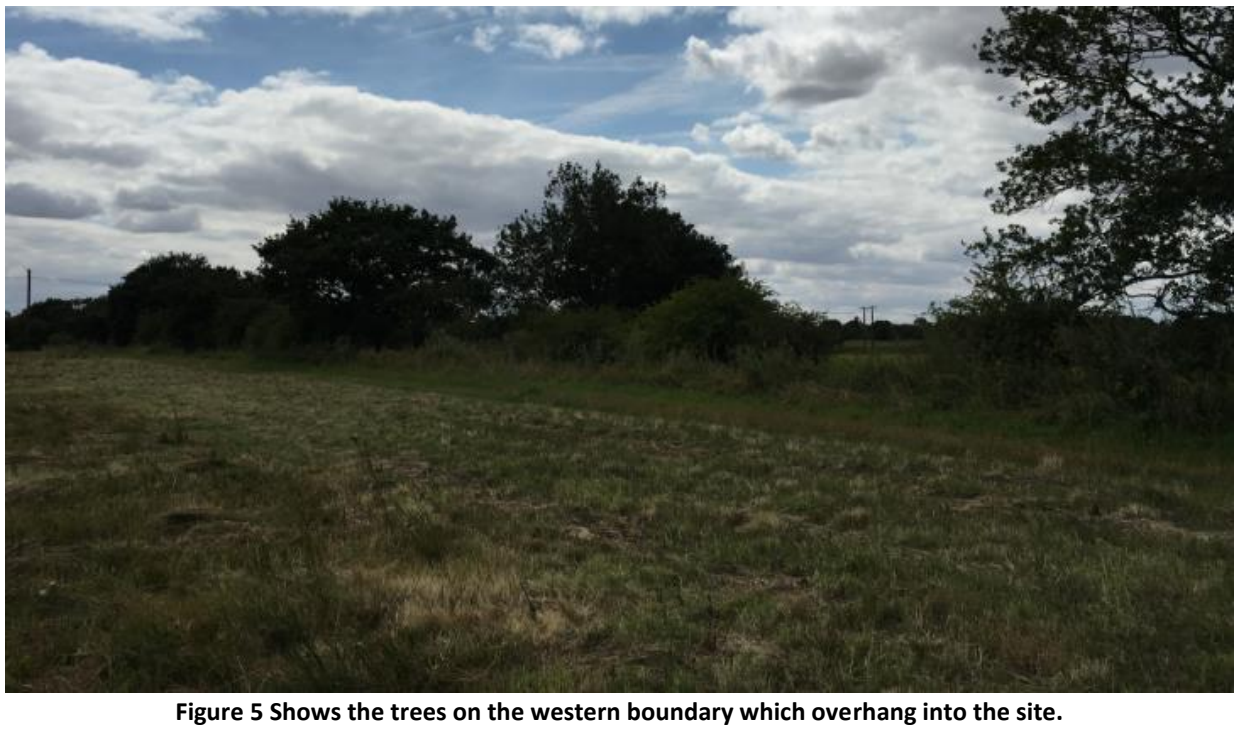


Figure 5 Shows the trees on the western boundary which overhang into the site.

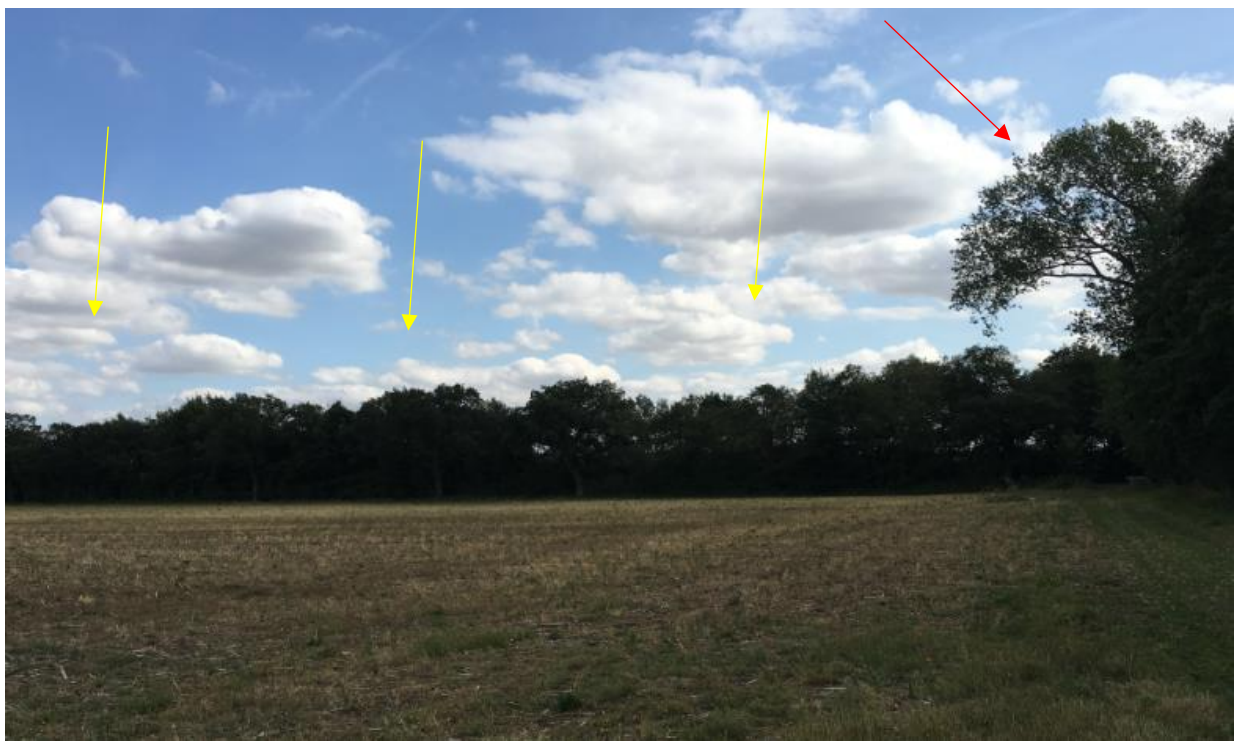


Figure 6 The picture shows the poplar T17 (red arrow) which has been graded as a 'U' and the protected oaks within G11 (yellow arrows).

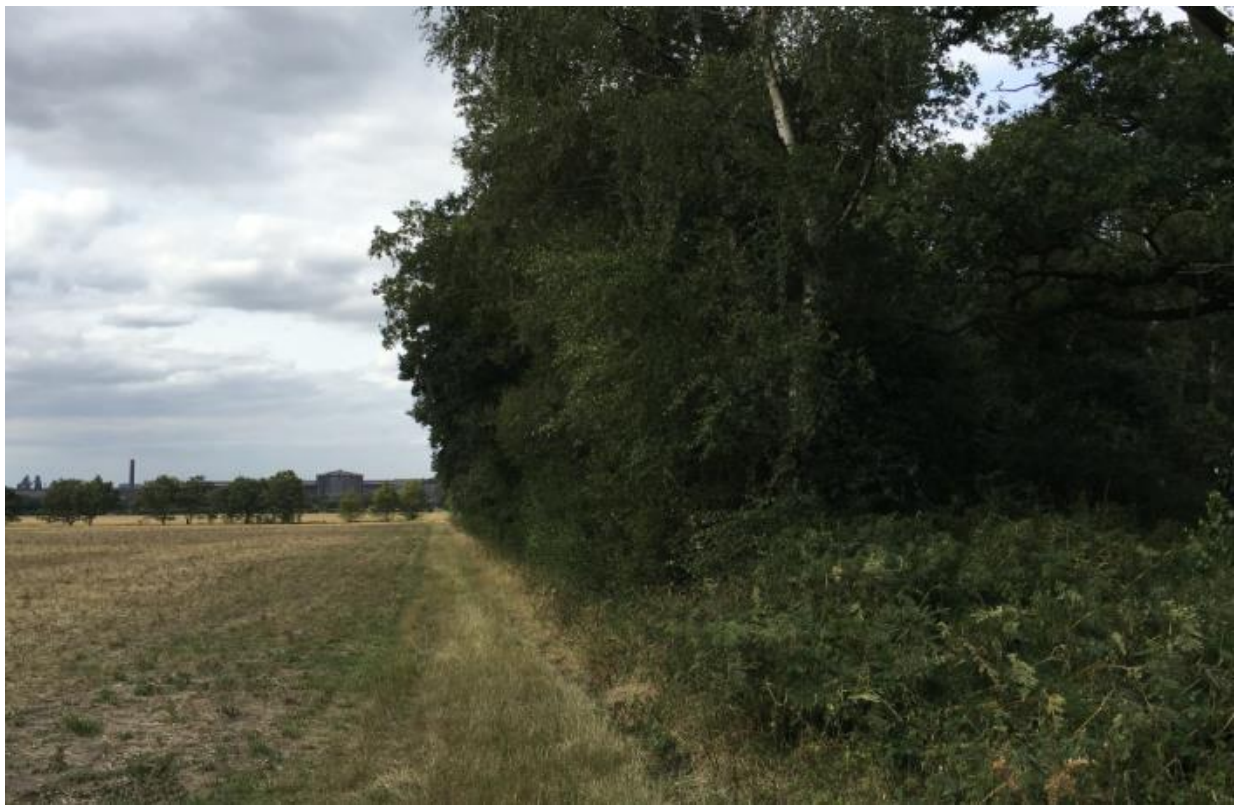


Figure 7 This picture shows the woodland edge from W1 which runs along the eastern boundary. The presence of a ditch limits root development into site.