Arboricultural Impact Assessment (including Tree Survey)

Land east of Cote Lane, Thurgoland

Report reference: AR-4099-02
August 2019

Report Title:	Arboricultural Impact Assessment Land East of Cote Lane, Thurgoland
Report Reference:	AR-4099-02
Written by	Victoria Black FdSc Arb Principal Arboricultural Consultant
Approved for issue	Victoria Black FdSc Arb Principal Arboricultural Consultant
Date	14.08.19

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Tree Survey including Tree Constraints Plan
Tree Protection Plan DR-4099-02
1018-006-A Proposed Level Strategy submitted by FORTEM

Summary Statement

The Site is a roughly triangular field with trees and hedges to the periphery, including a woodland 'Spring Wood' to the immediate east. Cote Lane runs along the western boundary. Residential properties are located to the north on Springwood Close, and to the south of the Site. The topography is sloping from north down to the south.

In Brooks Ecological Ltd Arboricultural Survey of April 2016 sixteen trees and groups were surveyed with tree quality ranging from a high-quality woodland to the east of the Site to a poor quality trees fronting Cote Lane and another outside the north-east corner of the Site. Two moderate quality trees were identified on or near the southern boundary. The remaining eleven trees/groups were assessed as low quality.

Low-quality trees G10, G11, T12, T13, T14 & T15 would require removal for the underground services, Yorkshire Water easement and Attenuation Storage tank. We are advised this cannot be removed from the proposed location.

T8 would be require removal because of the significant ground level change proposed within over 47% of its root protection area (RPA).

This report should be read in conjunction with the attached Tree Protection Plan Ref: DR-4099-02.

Introduction

Purpose of the report

1. This report has been commissioned by Alfa Homes to provide professional independent, detailed arboricultural advice on relevant trees present at land to the east of Cote Lane, Thurgoland.

2. A plan has been provided by Fortem Civil Engineering Consultants Ltd (reference: 1018-006-A, dated June 2018 and revised June 2019) and A Proposed Level Strategy Plan Ref: 1019-006-A has been provided by FORTEM, to enable an impact assessment of the proposed works on the existing relevant trees within the Site. The development comprises twenty-seven residential plots, a road junction with Cote Lane, retaining walls, banking and attenuation tank.

3. The tree data for the schedule below is taken from Brooks Ecological report R-2579-01.2 dated April 2016 and Tree Constraints Plan dated 29/04/2016.

Impact Schedule

The following schedule identifies the individual tree and its retention category with the main feature(s) of the proposed works likely to cause an impact. The tree references are shown on the tree constraints plan and the tree protection plan. Any mitigation measures are noted.

Tree ref.	Species	Retention category	Proposal feature	Impact	Mitigation
G1	Hawthorn	C	None	n/a	Protection barrier to BS5837:2012.
W2	Oak, sycamore, goat willow, hawthorn	A	None	n/a	Protection barrier to BS5837:2012.

Tree ref.	Species	Retention category	Proposal feature	Impact	Mitigation
T3	Sycamore	U	Remove for arboricultural reasons	Remove for arboricultural reasons	Removal for arboricultural reasons
T4	Oak	B	None	n/a	Protection barrier to BS5837:2012.
G5	Lawson cypress	C	None	n/a	Protection barrier to BS5837:2012.
T6	Cherry	C	Retaining gabion wall 1-2m high.	Impact to root protection area will required shallow foundations for gabion wall.	Careful handheld excavations during construction to avoid root damage. Arboricultural supervision. Measures should be set in place to improve the soil environment within this RPA. Protection barrier to BS 5837:2012.
T7	Ash	B	Retaining wall 1-2m high and level changes on within root protection area.	Impact to root protection area will required shallow foundations for gabion wall. Ground level increase to 11% of RPA	Careful handheld tools excavations during construction to avoid root damage. Arboricultural supervision. Measures should be set in place to improve the soil environment within this RPA. Protection barrier to BS 5837:2012.
T8	Ash	C	Ground level changes within root protection area.	Incursion into root protection area, approximately 47%. Removal required.	Tree planting within development.

Tree ref.	Species	Retention category	Proposal feature	Impact	Mitigation
T9	Holly	C	Retaining gabion wall 1-2m high.	Impact to root protection area will required shallow foundations for gabion wall.	Careful excavations during construction to avoid root damage. Arboricultural supervision. Measures should be set in place to improve the soil environment within this RPA. Protection barrier to BS 5837:2012.
G10	Sycamore Ash	C	Underground services, Yorkshire Water easement and Attenuation Storage tank.	Removal	Tree planting within development.
G11	Ash	C	Underground services, Yorkshire Water easement and Attenuation Storage tank.	Removal	Tree planting within development.
T12	Hawthorn/ash	U	Removal for arboricultural reasons	Removal for arboricultural reasons	Potentially not required.
T13	Hawthorn/ash	C	Underground services, Yorkshire Water easement and Attenuation Storage tank.	Removal	Tree planting within development.
T14	Hawthorn/ash	C	Underground services, Yorkshire Water easement and Attenuation Storage tank.	Removal	Tree planting within development.

Tree ref.	Species	Retention category	Proposal feature	Impact	Mitigation
T15	Hawthorn/ash	C	Underground services, Yorkshire Water easement and Attenuation Storage tank.	Removal	Tree planting within development.
G16	Mixed hedgerow	C	None	n/a	Protection barrier to BS5837:2012.

Implications for retained trees

Tree protection

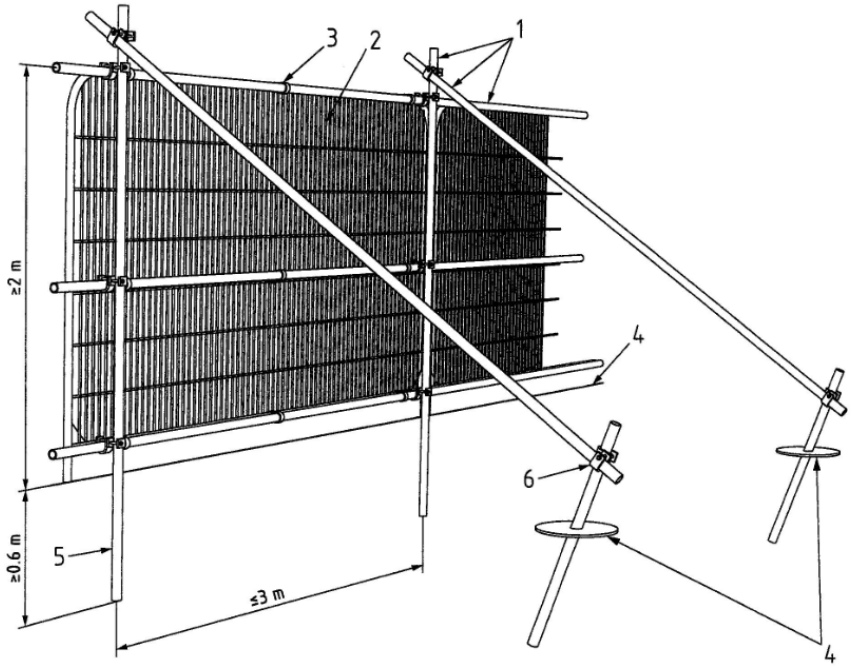
4. Trees and tree groups should be protected from unwanted damage during construction works with temporary tree protection barriers. The barriers should be erected to the outer edge of the tree canopy or the edge of the RPA, whichever is the furthest away from the tree, unless otherwise indicated on the Tree Protection Plan.

5. Tree protection barriers should be the default specification for protective barrier, Figure 1 below (BS 5837: 2012 Trees in relation to design, demolition and constructions – Recommendations). Where Site circumstances prevent the use of the default barrier, an alternative specification would be recommended by the project arboriculturist with agreement of the local planning authority. The recommended locations for tree protective barriers are shown in the Tree Protection Plan.

6. All-weather notices should be attached to the barrier with words such as: "Construction exclusion zone – no access".

7. Where facilitation access is authorised within the root protection area (RPA) temporary ground protection should be installed prior to work starting on Site. The temporary ground protection should be capable of supporting the weight of any traffic/machinery using the Site without being distorted or causing compaction to the ground. It is recommended that the ground of the possible Site compound/storage area is covered in temporary ground protection to minimise soil damage by compaction and conserve soil health through to post-construction planting in this area.

8. Groups G1 and G16 along the northern boundary may be unsuitable for protection by the standard tree barrier fencing due to the proposed retaining walls to the immediate south. Care should be taken during the excavation for the retaining walls to avoid damaging the roots of these groups.



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Figure 1

Tree work

9. Where pruning work is necessary and authorised to roots or branches of retained trees to enable facilitation works, it should be carried out by a competent contractor in accordance with BS 3998: 2010 Tree Works – Recommendations.

10. Roots smaller than 25mm diameter may be pruned back where necessary, making a clean cut with a suitable sharp tool, except where they occur in clumps. Roots in clumps or larger than 25mm diameter should be severed only following consultation with an Arboriculturist, as such roots may be essential to the health and stability of the tree.

11. T7 requires a crown lift and a crown clean.

Demolition

12. Demolition is not expected within the proposed Site works.

Drainage and utilities

13. Drainage and utilities are expected to be included within the proposed Site works and should not involve digging or trenching within RPA's. An attenuation tank is proposed on the west side of the Site though this is not expected to impact upon the trees/groups nearby.

Ground level changes

14. It is our understanding that ground levels are to be raised along the southern section of the site, within the RPA's of T7. The change in ground level within 11% of the RPA. The ground is to be raised within this area by 1 in 3 gradient. This should be carried out with the use of granular material (with no lime fillings), which constantly remains gas and water permeable.

Retaining gabion wall

15. Proposed gabion retaining wall, will encroach into the RPA's of retained trees T6, T7 & T9. Because of the shallow foundations required, this encroachment is deemed acceptable and no special construction techniques are required.

16. Only hand-held tools can be used within this area. No heavy machinery.

17. All construction works within RPA's should supervised by Brooks Ecological.

18. Regular brief reports, including photos, should be submitted to Barnsley Council's tree officer.

19. All tree protective fencing should remain intact until ALL works are completed.

Boundary features

20. Proposed boundary fencing maybe required within the RPA's of some of the retained trees on site. In order to minimise root damage to these trees, excavation must be kept to a minimum. A fence designs requiring intermittent posts will be acceptable and the post holes must not be excavated by mechanical means but may be either dug by hand (with any roots found cleanly severed) or the posts may be driven into the ground. Details on fencing will be addressed within an Arboricultural Method Statement (AMS).

Trees to be removed

21. Trees T3 & T12 may be removed on poor health and condition grounds.

22. Low-quality trees G10, G11, T12, T13, T14 & T15 would require removal for the underground services, Yorkshire Water easement and Attenuation Storage tank. We are advised this cannot be removed from the proposed location.

23. T8 would be require removal because of the significant ground level change proposed within over 47% of Its root protection area (RPA).

Mitigation

Mitigation measures

24. It is proposed that a series of mitigation measures should be set in place to improve the soil environment that is used by T6, T7 and T9 for growth.

25. Sub-soil aeration using compressed air should be carried out with the addition of an organic bulky biochar to help prove the soils health and structure. A treatment of mycorrhizal fungi every two years is also recommended.

26. Any cultivation operations within these RPA's should be undertaken carefully by hand with the use of no heavy mechanical machinery.

27. All works within RPA's should supervised by Brooks Ecological.

Landscaping

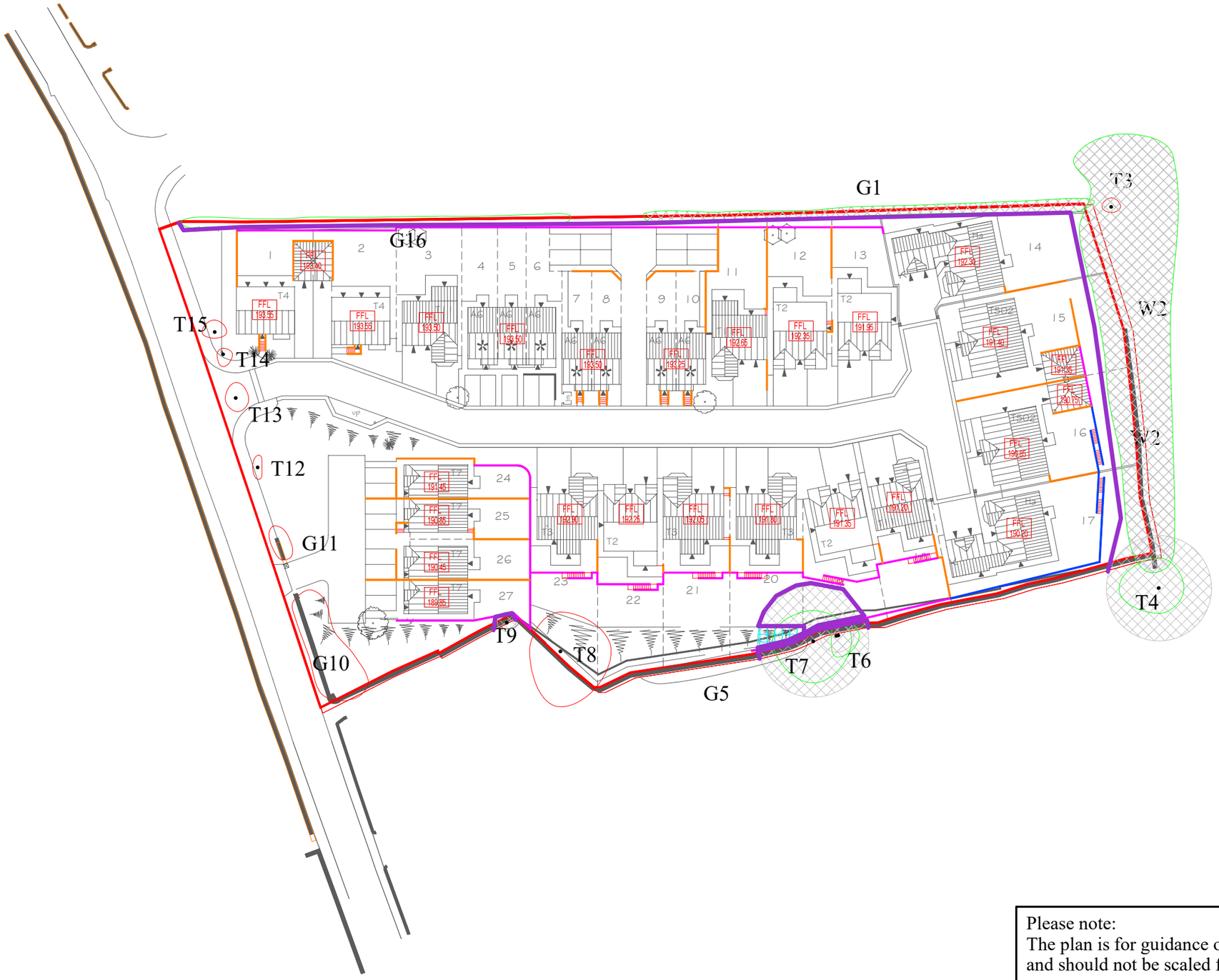
28. It should be noted that no tree replacement and landscaping plans have been provided to comment on at present. Once these are available, the detailed landscaping plan should include areas designated for structural landscape that need to be protected from construction operations to prevent the soil structure being damaged. This should also include an assessment of the topsoil quality and amelioration, and details of landscape operations. All in line with British Standards BS 4428:1989 & BS 8545. Further to this should include species choice, stock size, protection methods and a regime of maintenance. The planting of trees would improve the aesthetic value of the surrounding area and may be conditioned in the usual way.

29. This AIA will require updating once this information is available.

Tree Protection Plan DR-4099-02

N

Indicative



Brooks Ecological
Grounded advice

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DR-4099-01 TPP

Site: Cote Lane, Thurgoland.

Paper Size: A2 | **Scale: 1:500**

BS 5837: 2012 Retention Categories

	Trees to be retained
	Trees to be removed
	Protective fencing in line with BS 5837:2012
	Area of RPA where change in land levels are taking place. Must be supervised by Arb consultant
	ROOT PROTECTION AREA
•	TREE STEM

Please note:
The plan is for guidance only
and should not be scaled from.

The original of this drawing was produced
in colour - a monochrome copy should not be
relied upon.

Tree Survey Ref: R-2579-01 & Tree Constraints Plan

Brooks Ecological
Grounded advice

Arboricultural Report for Planning Purposes- Land at Cote Lane, Thurgoland, Barnsley S35 7AE

Report reference: R-2579-01
April 2016

Report Title:	Arboricultural Report for Planning Purposes
Report Reference:	R-2579-01
Written by:	Callum Andrew BSc (Hons) Arboriculture
Approved for issue:	Christopher Shaw BSc (Hons) ACIEEM Ecologist
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Appendix 2: Cascade Chart for Tree Quality Assessment (extract from BS5837 table1)

Appendix 3: Tree Schedule

Appendix 4: General Tree Protection Considerations

Appendix 5: Tree Constraints Plan

Introduction

1. Brooks Ecological Ltd was commissioned to prepare an Arboricultural Survey to accompany a planning application for a proposed development at the above address.

2. The report produced includes the following information:

    - A tree survey, undertaken in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction' - Recommendations

    - An Arboricultural Constraints Plan which defines the required Root Protection Areas

    - An Arboricultural Implications Assessment which evaluates any potential impact the proposal may have on the surrounding trees

3. This report is based on site observations and the provided information. Conclusions have been made in light of the surveyors experience and qualifications. A list of experience and qualifications in arboriculture are detailed below. The client may choose to accept or disregard the recommendations made in this report, or seek additional advice.

4. This report is only concerned with trees in relation to construction. This report makes no attempt to provide a full safety inspection of the trees surveyed. It should not be seen as an alternative for a Tree Hazard Assessment which is specific to minimising the risk and liability associated with trees. Potentially hazardous trees have been highlighted and appropriate recommendations made only where urgent action is required in the interests of public safety.

5. Climatic conditions including storms, drought and temperature-related factors can cause damage and failure in apparently healthy trees. It should be remembered that all trees do pose a risk, whilst every effort has been made to detect any major defects in inspected trees, no guarantee can be given as to their safety. Although the risk should be managed to an acceptable level, no tree can be guaranteed as safe at all times.

6. This report is based on Visual Tree Assessment (VTA) methodology, as devised by Mattheck (1991). V.T.A is a ground level visual assessment of a tree, which is carried out to identify obvious mechanical defects, signs of ill health, potential mechanical failure and the suitability of a tree to a site. The survey is compiled in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and

construction' - Recommendations with all Root Protection Areas (RPA's) are based upon section 4.6 of the document.

Site Visit

7. A visual inspection of the trees and their surroundings was completed 22nd April 2016. The survey was undertaken by Callum Andrew, who has completed and been awarded a 1st class BSc Honours degree in Arboriculture. Previous to this he completed a National Diploma in Forestry and Arboriculture.

8. The visit was unaccompanied. The weather conditions were dry and cloudy with minimal visibility constraints.

9. All measurements were calculated using the necessary instruments or estimated where access could not be gained. No climbing inspections or decay detection were undertaken.

10. The relevant information was recorded and the trees were graded using table 1 of BS5837. This information has been included within the tree schedule in Appendix 3. An explanation of the tree schedule format is also included within Appendix 2.

11. This survey should be read in conjunction with the Tree Constraint Plans (TCP) (located in appendix 5) which has been prepared by overlaying the necessary tree information onto a provided topographical plan. The surveyor has relied on the accuracy of the plan in the completion of the survey.

Site Description

12. The site appears to be a grassed agricultural field at present, possibly used for grazing at times, however on arrival at site gave the impression that it has been relatively unused during the recent past.

13. To the north of the site is the cul-de-sac of Springwood Close, whilst a broadleaved woodland borders the site's eastern perimeter. A few large detached residential dwellings are located to the south of the site, with Cote Lane found to the west.

14. All the trees on and around this site are located on its boundary of which are mainly broadleaved species varying from semi-mature to mature in age.

15. Manmade structures are present within some of the trees rooting environment. It is likely the presence of non-porous materials will have altered root dispersion.

Tree Protection Status

16. It is not known whether the site is located within a Conservation Area or if any of the trees included in this survey are covered by a Tree Preservation Order.

Soil Assessment

17. No soil testing was undertaken and no soil information was provided for the author. As recommended in BS5837 a comprehensive assessment should be undertaken by a competent person to determine whether the soil is shrinkable and gain an accurate understanding of the soil's structure. The assessment will help to inform tree protection considerations and new planting proposals.

Tree Quality Assessment

18. The tree survey included 10 individual trees, 5 groups of trees and a woodland. The woodland was awarded the upmost category 'A' status. Two individual trees were merited as category 'B' material. 6 individual trees and all 5 groups were categorised as 'C' class items. The remaining 2 trees were seen as poor quality 'U' grade specimens.

19. Generally the Local Planning Authority is likely to accept the removal of trees in a poor condition or those with a minimal, safe, useful life expectancy. This usually includes category 'U' and 'C' trees.

20. G1 (Common Hawthorn) is simply a boundary hedge between the site and the rear gardens of dwellings on Springwood Close. This hedgerow was graded as category 'C' material.

21. W2 (Common Oak, Sycamore, Goat Willow & Common Hawthorn) is an offsite woodland to the east of the site. This broadleaved, mixed species woodland has strong collective value and strongly enhances the amenity of the area, whilst also providing ample wildlife habitat (Figure 1). When considering this woodland in its entirety, its quality is clear, especially with its potential to benefit the landscape well into the long-term future, and as a result category 'A' status has been awarded.



Figure.1. The woodland to the east of the site, as seen from the site's central region.

22. T3 (Sycamore) is a poor quality specimen within the woodland area (W2). This declining tree has a limited safe useful life expectancy, and therefore has been categorised as a 'U' class item.

23. T4 (Common Oak) is located within a garden just beyond the site's south-east corner (Figure 2). It borders the woodland area (W2) however is worthy of individual merit. This well-formed tree was considered to be of category 'B' standard.



Figure.2. The offsite, category 'B' Common Oak (T4).

24. G5 (Lawson Cypress) is a relatively poor quality, offsite hedgerow. Such a hedge will never be considered of any great value, although it does provide screening between the site and neighbouring residential property. Nonetheless, category 'C' status has been allocated.

25. T6 (Cherry) is an ornamental specimen that is being slightly suppressed by its larger neighbour (T7). This tree lacks any great stature and is not worthy of anything more than the 'C' class status it has been provided with.

26. T7 (Common Ash) is an offsite specimen. This tree is well-formed and provides a noticeable focal point on the landscape. It has the potential to benefit the amenity of the area into the future. In turn, category 'B' status has been granted.

27. T8 (Common Ash) is a densely ivy covered specimen. It is unfortunate as without the ivy, this tree may have potential to be of a higher grade. Therefore, it has been recommended that the ivy is severed and removed. At present, this specimen is only worthy of 'C' class status.

28. T9 (Common Holly) is an inconsequential, multi-stemmed specimen. Its only real merit is its screening qualities between the site and neighbouring residential property. Category 'C' status has been provided for this tree.

29. G10 (Sycamore & Common Ash) is made up of two multi-stemmed Sycamore, that have formed as coppice regrowth and a small self-seeded Common Ash. These trees have a degree of collective value and do provide screening and amenity. However, they do lack any major qualities that would make them worthy of anything more than the category 'C' status they have been graded with.

30. G11 (Common Ash) are three inconsequential specimens that at present only deserve 'C' class status.

31. T12 – T15 (Common Hawthorn & Common Ash) are also relatively inconsequential trees at present, whilst T12 is growing around the boundary fence. T12 has been listed as a 'U' class specimen whilst the remaining three Common Ash (T13 – T15) have been provided with 'C' class status.

32. G16 is a mixed species hedgerow on the site's northern boundary that appears to be regularly maintained by the property owners on Springwood Close. Although it is well maintained and provides screening it is only worthy of 'C' class status.

Arboricultural Implications Assessment (AIA)

33. The following section evaluates the proposed design layout and the trees on site. Any tree and design conflicts are highlighted and possible remedial action recommended. The assessment is based on the surveyor's findings and the approximate location of the proposed development.

34. The proposal includes the construction of a residential estate made up of approximately 15 dwellings of which will surround a cul-de-sac road that runs from Cote Lane along the central part of the site in an easterly direction.

Trees to be removed to facilitate the proposal

35. The proposal has considered the surrounding trees and any above and below ground constraints. The following trees would require removal due to direct conflicts between their location and the development proposal.

36. It appears that the only tree that will require removal is T13 (Common Ash), an inconsequential category 'C' specimen, to accommodate the development of the access road into the estate. The removal of this specimen is not seen as of any great detriment from an Arboricultural prospective.

37. T14 & T15 may also need removing, however their retention may also be possible. Nonetheless, if there removal is required they are again seen as inconsequential and this would not be a major concern.

Below ground constraints

38. The area of roots that need to be protected around a tree to try and ensure that it does not suffer damage during the construction process is called the Root Protection Area (RPA).

39. As recommended in BS5837 we have plotted the RPA's (in magenta) onto the attached Tree Constraints Plan (TCP) taking full account of the surrounding topographical factors, tree condition and the overall likelihood of root disposition.

40. Any tree scheduled for retention will require protection in accordance with BS5837, regardless of its initial retention category. This protection will require the trees to be fenced-off in areas equal to RPA. This must be undertaken prior to any work beginning on site. An example of the required fencing has been attached to appendix 4.

41. BS5837 requires that these Construction Exclusion Zones are considered sacrosanct from any ground disturbance throughout the entire development process. Where access or construction is required with the RPA of any tree scheduled for retention, the work should be completed in a sympathetic manner so as not to cause detrimental effect on the tree's health.

42. The proposal has been situated outside of the required RPA's of trees highlighted for retention. Therefore the footings of the proposed buildings and infrastructures can be installed using traditional methods without incursions into the required RPA's.

43. No material storage or plant movement will be required within the designated RPAs. Sufficient space will be available within the central regions of the site.

Above ground constraints

44. There are no foreseeable, immediate conflicts with the position of the development and the above ground parts of trees. No facilitation pruning would be required as a direct conflict between the proposed building and trees highlight for retention.

45. Some of the trees on the western edge of W2 do have some low hanging branches that grow over the site boundary (Figure 4). The crown lifting of these trees may help to open up and enhance the appearance of the rear gardens of the properties that back onto this woodland area.

46. The retained trees (in proximity to the proposed building and access) can be expected to grow their overall dimensions by approximately 10% over the next decade. The expected future growth of the retained trees is not considered to cause any conflicts with the proposed development in the immediate future.

47. The guidance in section 5.3.4 of BS 5837:2012 states that buildings should not be positioned where surrounding trees would require frequent remedial pruning to alleviate encroachment. It is not considered that the proposed development will result in the need for continued pruning works.

Mitigation of tree loss

48. It is recommended that tree planting occurs on the site's western boundary to provide the new estate with screening from Cote Lane. There is adequate space along this boundary for some large trees, and therefore the planting of Common and/or Sessile Oak (*Quercus robur & Quercus petraea*) is recommended to stay in fitting with the existing landscape. With good planting and proper aftercare such trees can strongly help to enhance the site's amenity and, in turn, its value into the foreseeable future.

Wider impact and amenity

49. From an Arboricultural standpoint, the proposal is of very little detriment, with the potential to be positive if some decent tree planting is included in the development plans.

Conclusion

50. There is an entire range of high to low grade trees on and surrounding this site. The category 'A' woodland (W2) to the east of the site, and the two offsite category 'B' specimens, the Common Oak (T4) and the Common Ash (T7) are the main assets included in this survey. Yet, the remaining lesser trees do also contribute to the site's values.

51. The proposed residential estate only impacts on the inconsequential category 'C' T13 (Common Ash) which will require removal, and possibly T14 & T15 of which are again of little significance. This is not viewed as a constraint.

52. The remaining trees can be safely retained, although it may be desired that some lower westerly branches from the boundary trees of W2 are lifted to open up some of the possible rear garden space belonging to the newly developed properties.

53. It is recommended that planting takes place on the site's western boundary, where a large amount of space could allow large species planting, therefore Oak species have been suggested.

54. Providing a detailed Arboricultural Method Statement can be completed following planning consent, the author believes the scheme is Arboriculturally sound and that the long term well-being of the retained trees can be safeguarded in a suitable manner.

Signed

C Andrew

Callum Andrew BSc (Hons) Arboriculture

Appendix 1- Explanation of Survey Details

Tree Id- Each tree/group has been given a unique number, which coincides with the drawings located in appendix 3.

Species & botanical name- where identifiable the full botanical name has been given. Where a cultivar, variety or species cannot be accurately given the genus name only will be given.

Height (m)- measured approximately to the nearest 1m. If height issues are critical, measurements can be collected accurately using optical instruments.

No of stems- the number of separate stems each individual tree has.

Stem Dia @1.5m (mm)- the diameter of the given tree at 1.5m above soil level, (on sloping ground taken on the up-slope side of the tree base). Where the tree is multi-stemmed measurements will be record for each stem.

Spread- indicates the crown radius from the base of tree in four compass directions, recorded to the nearest metre.

Crown height + direction (m)- recorded as the first significant branch and direction of growth.

Life stage- described as young, semi-mature, early-mature, mature or over-mature.

Physiological condition (P)- an assessment of the trees health. Considers vitality, die back and the presence of disease. Described as **Good** = no significant health problems **Fair** = symptoms of ill health that can be remediated **Poor** = significant ill health.

Structural condition (S)- an assessment of the trees structural condition. Described as **Good** = no significant defects **Fair** = significant defects that can be remediated **Poor** = significant defects no remedy.

Observations – negative and positive- narrative comments on general condition, significant defects and overall appearance (e.g. the presence of any decay).

Preliminary management recommendations- e.g. requires pruning or further investigation of suspected defects is needed.

Life expectancy- preliminary management recommendations, e.g. requires pruning or further investigation of suspected defects is needed.

Retention Category- Each tree/group is identified with a retention category in accordance with BS5837 (an in depth explanation is provided on the following page)

RPA radius (m)- minimum area in metres which should be left undisturbed around each retained tree.

Appendix 2- Cascade chart for tree quality assessment (extract from BS5837 table 1)

Category and definition	Criteria (including subcategories where appropriate)	Identification on Plan
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	• 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 decline • Trees infected with pathogens of significance to health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve	DARK RED

TREES TO BE CONSIDERED FOR RETENTION

Category and definition	Criteria – Subcategories			Identification on Plan
	1 Mainly arboricultural values	**2 Mainly landscape values**	**3 Mainly cultural values, including conservation**	
Category A **Trees of a 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 essential components of groups, or of 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)	LIGHT GREEN
Category B **Those of moderate quality** with and 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 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	MID BLUE
Category C **Those of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of a 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 landscape value; and/or trees offering low or only temporary/transient screening benefits	Trees with no material conservation or other cultural values	GREY

Appendix 3- Tree Schedule

Tree ID	Species, Botanical Name	Height (m)	No of stems	Stem Dia @ 1.5M (mm)	Spread - N,E,S,W				Crown height+ direction (m)	Life stage	Physiological (P) and Structural (S) condition. Observations- negative and positive	Preliminary management recommendations	Life expectancy	Retention category	RPA Radius (m)
G1	Common Hawthorn, *Crataegus monogyna*	3	1	100	See Plan.				1-s	Early-mature	P = Good, S = Fair. Boundary hedgerow. Provides screening from neighbouring properties.	None at present.	10 to 20 yrs	C2	1.2
W2	Common Oak, *Quercus robur*; Sycamore, *Acer pseudoplatanus*; Goat Willow, *Salix caprea*; Common Hawthorn, *Crataegus monogyna*	15	1	540	See Plan.				1-w	Mature	P = Good, S = Fair. An offsite, broadleaved woodland. Strong collective amenity and wildlife habitat. Potential to make a long term contribution. Some ivy covered specimens present of which no accurate inspection could be completed.	None at present.	>40 yrs	A2	6.5
T3	Sycamore, *Acer pseudoplatanus*	11	1	410	1.4	1.5	1	1.5	5-w	Early-mature	P = Poor, S = Fair. Woodland grown tree with apical dieback present in crown. Possesses a limited safe useful life expectancy.	None at present.	<10 yrs	U	4.9
T4	Common Oak, *Quercus robur*	13	1	710	4.9	4	4	6.5	2-w	Mature	P = Good, S = Good. An offsite, well-formed, single stemmed specimen in neighbouring garden. Has the potential to provide a lasting contribution.	None at present.	>40 yrs	B2	8.5

Tree ID	Species, Botanical Name	Height (m)	No of stems	Stem Dia @ 1.5M (mm)	Spread - N,E,S,W				Crown height+ direction (m)	Life stage	Physiological (P) and Structural (S) condition. Observations- negative and positive	Preliminary management recommendations	Life expectancy	Retention category	RPA Radius (m)
G5	Lawson Cypress, *Chamaecyparis lawsoniana*	3	1	120	See Plan.				0-n	Early-mature	P = Fair, S = Fair. An offsite, relatively poor quality, semi-maintained boundary hedgerow. Provides screening from neighbouring property.	None at present.	10 to 20 yrs	C2	1.4
T6	Cherry, *Prunus* spp.	7	1	230	2.3	3.5	3.5	1	2-e	Semi-mature	P = Good, S = Good. An offsite ornamental that is suppressed on west side due to neighbouring tree. No accurate inspection of lower stem and base could be completed due to location.	None at present.	10 to 20 yrs	C2	2.8
T7	Common Ash, *Fraxinus excelsior*	14	1	750 est.	5	6.2	7	6.6	2-w	Mature	P = Good, S = Fair. An offsite, well-formed, large specimen with broad crown. Provides a strong degree of amenity to the landscape. Major dead wood present in crown. No accurate inspection could be completed due to offsite location and dense hedgerow.	None at present.	20 to 40 yrs	B2	9

Tree ID	Species, Botanical Name	Height (m)	No of stems	Stem Dia @ 1.5M (mm)	Spread - N,E,S,W				Crown height+ direction (m)	Life stage	Physiological (P) and Structural (S) condition. Observations- negative and positive	Preliminary management recommendations	Life expectancy	Retention category	RPA Radius (m)
T8	Common Ash, *Fraxinus excelsior*	12	1	810 over ivy	5.5	4.4	7	5	2-n	Mature	P = Fair, S = Fair. A densely ivy covered specimen of which no accurate inspection could be completed. This specimen would be a category B tree in the absence of ivy.	Sever and remove ivy.	10 to 20 yrs	C2	9.7
T9	Common Holly, *Ilex aquifolium*	6	9	130	1	2	1	1	0.5-n	Early-mature	P = Good, S = Fair. A multi-stemmed specimen that provides a degree of screening.	None at present.	10 to 20 yrs	C2	4.7
G10	Sycamore, *Acer pseudoplatanus*; Common Ash, *Fraxinus excelsior*	10	9	140	4.3	5.5	4	3.5	0.5-e	Early-mature	P = Good, S = Fair. Two multi-stemmed coppice Sycamore and one inconsequential self-seeded Ash.	None at present.	10 to 20 yrs	C2	5
G11	Common Ash, *Fraxinus excelsior*	5	1	160	2	2	2	2	1-e	Semi-mature	P = Good, S = Good. Three small and inconsequential self-seeded Ash.	None at present.	10 to 20 yrs	C2	1.9
T12	Common Hawthorn, *Crataegus monogyna*	4	3	90 80 70	2	0.5	2	1	0.5-e	Semi-mature	P = Fair, S = Fair. Scrubby formed specimen growing around fence.	None at present.	<10 yrs	U	1.7
T13	Common Ash, *Fraxinus excelsior*	7	2	160 150	2.5	2	2	2	0.5-e	Semi-mature	P = Good, S = Fair. A twin stemmed specimen from 0.5 metres with bark included union.	None at present.	10 to 20 yrs	C2	2.6

Tree ID	Species, Botanical Name	Height (m)	No of stems	Stem Dia @ 1.5M (mm)	Spread - N,E,S,W				Crown height+ direction (m)	Life stage	Physiological (P) and Structural (S) condition. Observations- negative and positive	Preliminary management recommendations	Life expectancy	Retention category	RPA Radius (m)
T14	Common Ash, *Fraxinus excelsior*	6	2	150 130	1	1.5	2	1	1-e	Semi-mature	P = Good, S = Fair. A twin stemmed specimen from 0.5 metres with bark included union.	None at present.	10 to 20 yrs	C2	2.4
T15	Common Ash, *Fraxinus excelsior*	6	1	170	2	2	1	2	1-e	Semi-mature	P = Good, S = Good. An inconsequential, single stemmed specimen.	None at present.	10 to 20 yrs	C2	2
G16	Common Hawthorn, *Crataegus monogyna*; Lawsons Cypress, *Chamaecyparis lawsoniana*	2	1	100	1	1	1	1	0-s	Semi-mature	P = Good, S = Good. A well maintained, mixed species boundary hedgerow.	None at present.	10 to 20 yrs	C2	1.2

Appendix 4- General Tree Protection Considerations

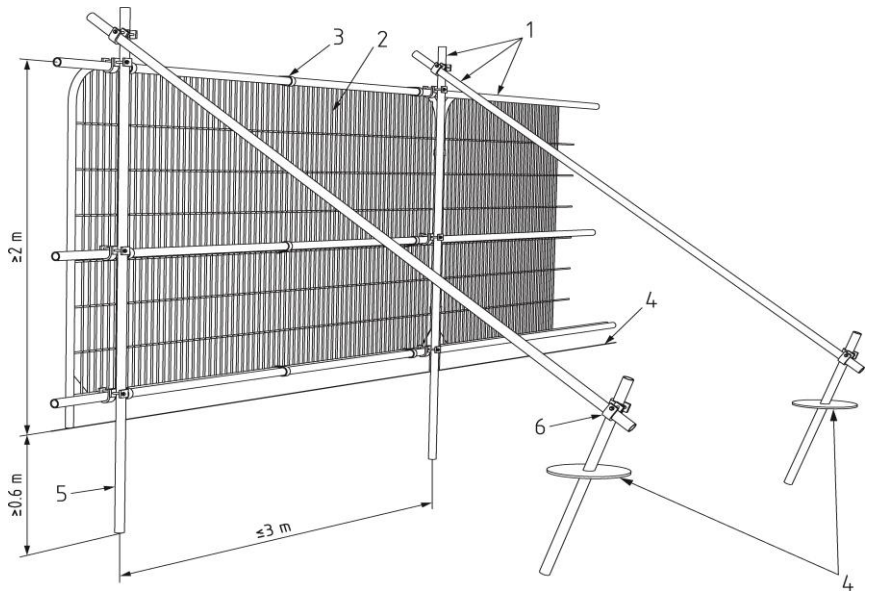
Any tree retained within the design will require protection in accordance with BS5837 regardless of its initial retention category. This protection will require trees to be fenced- off in areas equal to the RPA's plotted on the attached Tree Constraints Plan (TCP) (located in Appendix 5).

A protective fence will be erected prior to the commencement of any site works e.g. before any materials are brought on site, The fence will have signs attached to it stating that this is a Construction Exclusion Zone and that **NO WORKS** are Permitted within the fence. The protected fence may only be removed following completion of all construction works.

The fence is required to be sited in accordance with the Tree Protection Plan once a final layout has been decided. It must ideally be constructed as per figure 2 in BS5837 and be fit for the purpose of excluding any construction activity (see diagram below). Any other fence/barrier used must be fit for the purpose.

Once erected all protective fencing will be regarded as sacrosanct, and will not be removed or altered without prior recommendation by the project Arboriculturist and approval by the local planning authority.

The diagram below demonstrates the required fence specifications of BS5837:2012 figure 2.



Key

1. Standard scaffold poles
2. Heavy gauge 2m tall galvanized tube welded mesh infill panels
3. Panels secured to uprights with wire ties
4. Ground level
5. Uprights driven into the ground until secure (minimum depth 0.6m)
6. Standard scaffold clamps

Appendix 5-Tree Constraints Plan

G16
C

G1
C

T3
U

T15
C

T14
C

T13
C

W2
A

T12
U

G11
C

T4
B

T9
C

T8
C

G10
C

T7
B

T6
C

G5
C

Key

Crown Spread

Root Protection Area

Category 'A'

Category 'B'

Category 'C'

Category 'U'

0 30m

Tree Constraints Plan

Land at Cote Lane, Thurgoland

Brooks Ecological Ltd

SCALE : 1 : 500 @ A4

DATE : 29/04/2016

MAP FILENAME : [Filename]

N

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G16
C

G1
C

T3
U

T15
C

T14
C

T13
C

W2
A

T12
U

G11
C

T4
B

T9
C

T8
C

G10
C

T7
B

T6
C

G5
C

Key

Crown Spread

Root Protection Area

Category 'A'

Category 'B'

Category 'C'

Category 'U'

0 30m

Tree Constraints Plan

Land at Cote Lane, Thurgoland

Brooks Ecological Ltd

SCALE : 1 : 500 @ A4

DATE : 29/04/2016

MAP FILENAME : [Filename]

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1018-006-A Proposed Level Strategy provided by FORTEM



N

NOTES:

1. THIS DRAWING IS BASED UPON:
   BERKELEY DEVEER PROPOSED SITE LAYOUT AH.03.002, RECEIVED 28.05.2019;
   ORDNANCE SURVEY DATA MAPS;
   CSL SURVEYS TOPOGRAPHICAL SURVEY 10432-01.
2. THE PROPOSED LEVELS ARE SUBJECT TO DETAILED DESIGN REFINEMENT +/- 1.0m CHANGE.

KEY:

- PLANNING APPLICATION DEVELOPMENT BOUNDARY
- RETAINING WALL UPTO 1000mm HIGH
- RETAINING WALL BETWEEN 1000 - 2000mm HIGH
- RETAINING WALL BETWEEN 2000 - 3000mm HIGH

Rev	Date	Amendments	By
A	18.06.19	Plot numbers omitted from driveways	ML

Drawing Status.
PLANNING

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Client
ALFA HOMES

Project
COTE LANE, THURGOLAND

Drawing Title.
PROPOSED LEVEL STRATEGY

Drawn: ML
Checked: ADC
Scale: 1:500 @ A2
Date: JUN 2018

Drawing No. 1018 - 006
Rev. A

C:\Users\matth\OneDrive\FORTEM RICK\1018 - Cote Lane, Thurgoland\2. Drawings\1. FORTEM\2. Drawings\1. Current\1018 - 006 Proposed Levels Strategy.dwg 18 Jun, 2019 - 6.09pm