



Draft Arboricultural Method Statement

Cala Homes (Chiltern) Ltd

Land at Fewcott Road, Fritwell

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Version Control

Version Number	Date of Change	Details of change	Changed By
1	08.06.16	Original report	SW
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DISCLAIMER

While all reasonable efforts have been made to identify defects in the subject trees, the statements made in this report do not take into account the effects of extreme weather events, vandalism or accidents, or changes to the site that may affect trees that have taken place since the date of the survey. Lockhart Garratt Ltd does not accept any responsibility in connection with these factors. The comments and observations made within this report will cease to be valid either within two years of the date of the survey (unless specifically stated elsewhere within the report), or when site conditions change or any works to trees take place that have not been specified within this report, whichever is the sooner.

Purpose of Document

This report has been commissioned to provide details on how the retained trees will be protected and managed during the development process at land at Fewcott Road in Fritwell. This includes a Draft Tree Protection Plan that provides illustrative guidance on the tree protection measures that are required for the development of the site.

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Attachments:

Document/Plan	Ref	Version
Tree Schedule	15-1370	2
Draft Tree Protection Plan	D16-0392	2

1. SCOPE OF WORKS

- 1.1. The construction project is for provision of 34 residential dwellings with associated access and ancillary features such as garages and car parking.
- 1.2. The following arboricultural protection measures are required:
 - Arboricultural Clerk of Works supervision
 - Tree Protective Fencing (TPF)
 - Temporary ground protection
 - Permanent ground protection
- 1.3. A total of three trees, one group and a 10m section of one hedge, (T6, T7, T10, G11 and H13).
- 1.4. One tree (T15) will require a minor (2m) crown reduction to the southern side of the canopy.
- 1.5. There is no requirement for any of the following within Root Protection Areas (RPAs) of retained trees:
 - Demolition of existing buildings
 - Contractors parking
 - Storage of materials
- 1.6. There is also no requirement for the following within the site:
 - Fires
 - Herbicide use

2. ARBORICULTURAL ACTIVITIES & SEQUENCE

2.1. It is recommended that this sheet is copied from this report, laminated and displayed within the main site office at a visible location to all site staff.

Arboricultural Requirements	Required on this Site? (Yes/No)	Timing & Importance	Details	AMS Report Section	Appendix No.
ACoW Supervision	Yes	Level of ACoW supervision will be determined at the pre-commencement meeting.	<ol style="list-style-type: none"> 1. Pre-commencement meeting 2. Installation of barriers 3. Installation of temporary/permanent ground protection 4. Removal of temporary ground protection 5. Removal of barriers 	3.3 – 3.15	1 -10
Tree Removals	Yes	Pre-construction	The following trees require removal; T6, T7, T10, G11 & H13 (10m section)	3.16 – 3.17	N/A
Tree Pruning	Yes	Pre-construction	One tree (T15) requires a 2m crown reduction to the southern side of the canopy.	3.16 – 3.17	N/A
Tree Protective Fencing	Yes	Fencing MUST be erected and inspected by ACoW before site works can start.	Heras 151 fencing will be installed in accordance with the TPP.	3.21 – 3.28	4, 5 & 6
Temporary Ground Protection	Yes	Temporary ground protection MUST be installed following erection of tree protective fencing.	DuraDeck will be installed within the RPAs of the following trees; T15	3.30 – 3.34	9
Permanent Ground Protection	Yes	Permanent ground protection MUST be installed before construction machinery access relevant parts of the site.	Cellweb will be installed within the RPAs of the following trees; T12 & G25	3.35 – 3.41	7 & 8
Specific Protection Measures	No	N/A	No specific construction measures are required.	N/A	N/A

Key Responsibilities:

- 1) IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR TO ENSURE THAT TREE PROTECTION MEASURES ARE ADHERED TO AT ALL TIMES.
- 2) IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR TO ENSURE THAT ALL SITE PERSONNEL FULLY UNDERSTAND THE PROTECTION MEASURES ON THE SITE.
- 3) IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR TO ENSURE THAT THE PROJECT ARBORICULTURIST IS CONTACTED IF THERE ARE ANY ISSUES RELATED TO TREES.

3. ARBORICULTURAL METHOD STATEMENT

Overview

- 3.1. The following explanations relate specifically to this site and they should be read in conjunction with the Tree Protection Plan (TPP).
- 3.2. A copy of this report must be kept on site and be permanently available for the duration of the development. It can be:
- Included in the tender documents to identify and quantify the tree protection and management requirements;
 - Used to plan the timing of site operations to minimise the impact on trees, and;
 - Referenced on site for practical guidance on how to protect trees.

Arboricultural Supervision

- 3.3. An Arboricultural Clerk of Works (ACoW) will be appointed by the developer to advise on the tree management for the site and to attend:
- The pre-commencement meeting before any works start
 - Regular supervision visits; and
 - As needed to oversee specific works that could affect trees
- 3.4. Additionally the consultant will have a supervisory input into the following operations:
- Site preparation, including tree works
 - Installation, maintenance and removal of barriers
 - Installation, maintenance and removal of temporary ground protection
 - Installation of permanent ground protection
 - Installation of new structures

Sequencing and Timing

- 3.5. Effective tree protection relies upon following a logical sequence of events and arboricultural inspection/supervision. Figure 1 and Table 1 below provides an indication to the likely sequencing and supervision requirements of the retained ACoW.

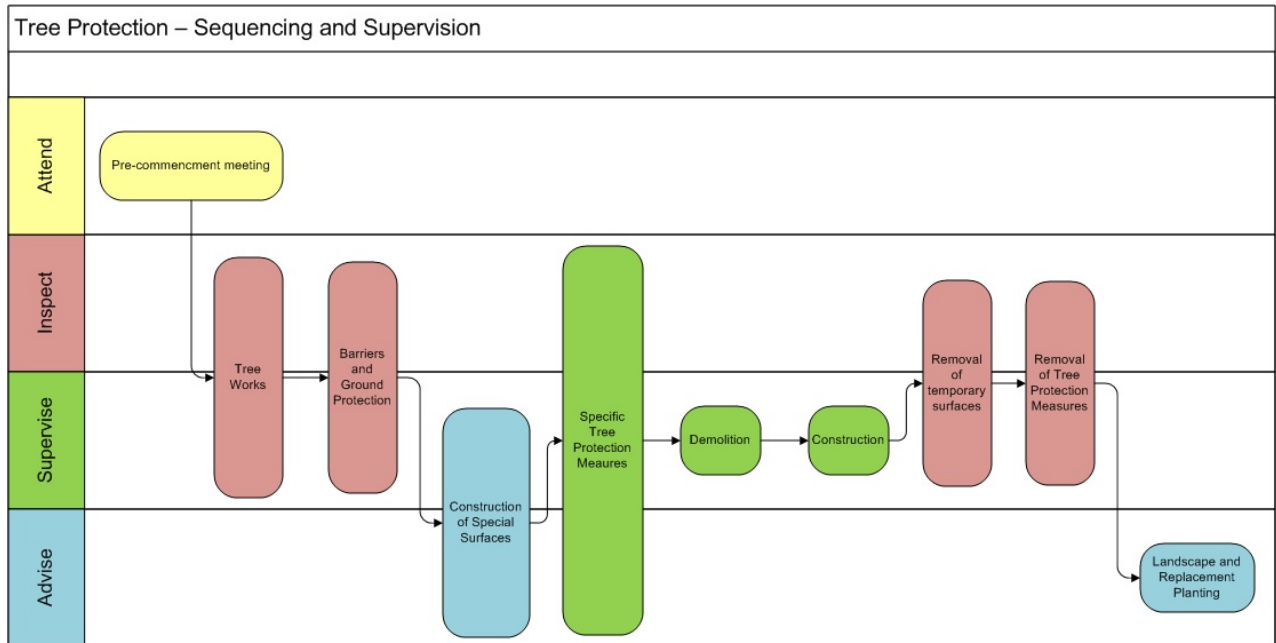


Figure 1 - Tree Protection: Sequencing and Supervision Chart

Table 1 - Sequencing and Supervision

Stage	Action	Arboricultural Input Required
1	Pre-commencement meeting	Attend
2	Tree Works	Inspect
3	Tree Protective Fencing	Inspect
4	Installation of temporary ground protection	Inspect
5	Construction of special surfaces (Cellweb)	Supervise
6	Specific tree protection measures	N/A
7	Demolition	N/A
8	Development Phase	Inspect
9	Remove temporary surfaces	Attend
10	Remove tree protective fencing	Attend

- 3.6. The retained ACoW's initial role is to liaise with the developer and Local Planning Authority (LPA) to ensure the tree protection measures are fit for purpose and in place before any works commence on the site. Once the site is working that role will switch to monitoring compliance with arboricultural planning conditions and advising on any tree problems that arise or modifications that become necessary.
- 3.7. It is the developer's responsibility to ensure that details of this AMS and any agreed amendments are known and understood by all site personnel. An AMS Briefing Statement has been prepared and attached to this document, see Appendix 1. This document provides summarised details of the key protection measures contained within this document. A copy of this should be made available to all site staff and used in any site inductions.

- 3.8. The final details of supervision and the frequency of inspection visits will be agreed at the pre-commencement meeting. The supervision arrangement will be sufficiently flexible to allow the supervision of all sensitive works as they occur.
- 3.9. The ACoW will make a record of the visits and these will be attached to the site copy of the AMS for inspection. A further copy will be sent to the LPA. The purpose of these written records is firstly to provide proof of compliance that will allow the developer to robustly demonstrate adherence to best practice in the event of any dispute. Secondly it will help the LPA efficiently discharge the relevant planning conditions.
- 3.10. An example of this site inspection record can be found in Appendix 2.

Pre-commencing meeting

- 3.11. A pre-commencement site meeting involving the land owner, representative of the development company, ACoW, contractors and engineers (as appropriate), and relevant LPA officers will be held to ensure that all aspects of the tree protection processes are understood and agreed.
- 3.12. The meeting is where the details of the programme of tree protection will be agreed and finalised, which will then form the basis of any supervision arrangements between the ACoW and the developer.
- 3.13. The ACoW will send a record of the meeting to all parties.
- 3.14. The ACoW will request that the contractor signs a Statement of Undertaking (SoU). This document confirms that the contractor fully understands the tree protection measures required throughout the construction process and accepts full responsibility for the protection of retained trees. A copy of the signed document will be kept onsite throughout the duration of the project. A copy will also be sent to the LPA officer for reference.
- 3.15. An example of this document can be found in Appendix 3.

Tree Removal & Tree Works

- 3.16. Trees for removal have been noted on the TPP with a dashed red circle around each location. Each tree has also been noted with red text in the attached tree schedule. Table 2 provides details of trees required for removal.

Table 2 - Trees for removal

Tree No.	Details of Works
T6	Trees are to be removed to ground level and stump removed by stump grinder.
T7	
T10	Any arboricultural contractor instructed to complete these works should avoid compacting RPAs of retained trees.
G11	
H13 (10m section)	

3.17. One tree (T15) will require a minor crown reduction to the southern canopy in order to facilitate sufficient working space to construct one of the new residential properties. A reduction in approximately 2m will be required. All pruning and removal works will be conducted in accordance with BS3998:2010 *Tree Work – Recommendations*.

Barriers and Ground Protection

The Construction Exclusion Zone

3.18. The primary means of protecting the RPA of trees is through the use of barriers formed by protective fencing. The enclosed area is the Construction Exclusion Zone (CEZ). The CEZ has been marked on the TPP by orange diagonal hatching.

3.19. The CEZs are to be afforded protection at all times and will be protected by fencing. The type of fencing is detailed below.

3.20. No works will be undertaken within any CEZ that causes compaction to the soil or severance of tree roots.

Tree Protective Fencing

3.21. A protective fence will be erected around the trees, prior to the commencement of any site works. This includes any materials or machinery brought onto site, development or the stripping of soil.

3.22. The fence is to be sited in accordance with the TPP enclosed with this method statement. This is shown as a black dashed line with diagonal orange hatching indicating the enclosed CEZ. Details of minimum distances for the barriers from the trees can be seen in Appendix 4. These figures are based on a perfect circle for the RPA around the tree. Where the RPA has been offset the parameters for the fencing have been marked on the TPP.

3.23. The precise form of fencing can vary provided it is fit for purpose and prevents damaging activities within the CEZ. For a proposal of this nature, the Heras 151 system of fencing will provide the necessary protection to the CEZ. Details of this fencing can be seen in Appendix 5.

3.24. All Heras fence panels will be joined using a coupling system such as the Heraslock Anti-tamper coupler, using a minimum of two clamps per panel side. Each panel will be fitted securely to a rubberised foot that will in turn be pinned to the ground using metal stakes driven a minimum of 500mm into the ground.

3.25. The fence will have signs attached to it stating that it defines a CEZ and that no works are permitted within the fence. No notice boards, cables or other services will be attached to any tree. An example of a fencing sign is provided in Appendix 6.

3.26. After the protective fencing has been erected, the retained ACoW will visit the site. The purpose of the visit will be to check that the fencing has been correctly installed so as to provide protection to the trees. The LPA tree officer may also be invited to inspect the tree protection measures prior to any works commencing.

3.27. The retained ACoW will provide a written report confirming satisfactory completion of this task. A copy of this report will be sent to the LPA.

3.28. The protective fencing may only be removed following completion of all construction works.

Construction of Special Surfaces

3.29. Where, due to site constraints, construction activity cannot be excluded through the use of fencing, appropriate ground protection must be installed to protect the rooting environment during the construction process.

Temporary Ground Protection

3.30. Where it is not practical to protect the RPA by use of fencing barriers, BS5837 allows for the fencing to be set back and the soil shielded by ground protection. A range of methods can be used including retaining existing hard surfaces or structures that already protect the soil, installing new materials, or a combination of both. Whatever the choice of method, the end result must be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots.

3.31. For pedestrian movements within any CEZ then a single thickness scaffold board on top of a compressible layer (e.g. wood chip mulch) laid onto a geotextile fabric may be acceptable. Advice should be sought from the ACoW prior to pedestrian access into the CEZ.

3.32. One tree (T15) will require temporary ground protection measures to protect the RPA and enable sufficient workspace around one of the new dwellings. An example of temporary ground protection measures can be found in Appendix 9.

3.33. After the temporary ground protection has been installed, the retained ACoW will visit the site. The purpose of the visit will be to check that the system is protecting the RPAs of retained trees.

3.34. The temporary ground protection measures are to remain in place until all construction works have been completed or following advice from the ACoW.

Permanent hard surfaces within the RPA

3.35. Where permanent hard surfaces are required within the RPA, there must be no excavation into the soil, either through the lowering of levels and/or scraping, other than the removal of turf or other surface vegetation. All such works shall be carried out using hand tools only.

3.36. One tree and one group (T12 & G25) will require permanent ground protection to ensure that the rooting environment remains free from harm during the construction of car parking spaces within their RPAs.

3.37. A No-Dig solution will be implemented in accordance with industry best practice and in particular with reference to Arboricultural Practice Note 12 (APN12) which provides detail of the no-dig method of construction. The area directly beneath the finished hard surface and on top of the RPA will be protected by the installation of a three-dimensional cellular confinement system. The recommended product for this solution is CellWeb but whatever system is used, the end result must be that the

underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots.

- 3.38. The dimensions for the area protected by the Cellweb have been marked on the TPP, which can be identified by the purple cross-hatch on the plan.
- 3.39. The CellWeb will be pinned in place and backfilled with Type 1 MOT and finished with a wearing surface of porous macadam. The edgings of the car parking spaces are to be installed on top of the CellWeb and will comprise of kerbs and backfilled with the wearing layer as previously described.
- 3.40. Once the system has been installed and backfilled correctly machinery can work from on top of the system.
- 3.41. Details of Cellweb are included in Appendix 7, and a methodology for installation given in Appendix 8. This methodology has been provided by the manufacturer and it will be the responsibility of the contractor to ensure that whatever system is used, it is installed in accordance with the latest guidelines provided by the manufacturer.

Additional precautions outside the exclusion zone

- 3.42. Any risk from activities outside RPAs but close enough to have an impact will be assessed during the day-to-day running of the site, and appropriate precautions put in place to reduce that risk.
- 3.43. It is a presumption of this report that all RPAs that have been identified for protection but which lie outside of the protective fencing, will be protected from soil degradation at all times during construction activity.
- 3.44. Further details for working within the RPA are also provided in Appendix 10.

Specific Tree Protection Measures

- 3.45. No specific tree protection measures are required for any tree on this site other than those detailed in this AMS and defined on the TPP.

Contingency planning

- 3.46. No mixing or storage of materials will take place up a slope where they may leak into a CEZ. Where contours of the site create a risk of polluted water running into RPAs, precautionary measures of using heavy duty plastic sheeting and sandbags with the ability to contain accidental spillage will be put in place to prevent contamination.
- 3.47. Water will be kept readily available on site and will be used to flush split materials through the soil and avoid contamination of tree roots.
- 3.48. At the time of any spillage the main contractor will contact the retained ACoW for advice.

Post Development

Removal of temporary surfaces

- 3.49. Any temporary protective surfaces will remain in place until all construction activity is finished and there is no realistic risk of damage.
- 3.50. The temporary ground protective measures will be removed working backwards from on top of the system. This will need to be done carefully to ensure that there is no excavation into the original surface level and there will be no damage to trees.
- 3.51. Once this material has been removed vehicular access to this part of the site will not be permitted.

Completion Meeting

- 3.52. Upon completion of all works specified above and all procedures detailed, the ACoW will visit the site and may invite the LPA tree officer to meet on site to discuss the process and agree any final remedial works which may be required.

Responsibilities

- 3.53. It is the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.
- 3.54. The main contractor will be responsible for contacting the LPA at any time issues are raised related to the trees on site.
- 3.55. If at any time pruning works are required permission must be sought from the LPA first and then carried out in accordance with BS3998:2010 *Tree Works – Recommendations* and industry best practice.
- 3.56. The main contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site.
- 3.57. The fencing and signs must be maintained in position at all times and checked on a regular basis by an on-site person designated that responsibility.
- 3.58. The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

THIS AMS IS NOT A CONTRACT. THE RETENTION OF A QUALIFIED ARBORICULTURIST FOR SUPERVISION AND MONITORING MUST BE AGREED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY.

Stephen Westmore MSc BSc (Hons) MArborA MICFor

22 June 2016

Appendix 1: AMS Briefing Statement

Arboricultural Method Statement –Briefing Statement

Land at Fewcott Road, Fritwell.

Purpose

The purpose of this briefing document is to ensure that all contractors, sub-contractors and any other personnel working on the Fewcott Road project are fully aware of the purpose of the tree protection measures that have been implemented on site.

Key Messages

- The protection of the retained trees and hedges on site is a critical requirement of both the client and the Local Planning Authority.
- The site has been designed with key green features being retained and protected. Any breach of the protection measures has the potential to damage those features and therefore disrupt the overall vision for the site.
- A detailed **Arboricultural Method Statement** has been prepared. This details the requirements for ensuring that retained trees are protected. This document is available on site at the site office and should be read and understood by all personnel working on the site.
- A **Tree Protection Plan** has been prepared to provide graphical illustration as to the extent of tree protection measures.
- The approved **Tree Protection Fencing** is Heras panels to protect areas that are being actively worked.
- All **Tree Protection Fencing** will have a sign attached at regular intervals to state that it is Tree Protective Fencing.
- No **Tree Protection Fencing** can be moved, opened, or breached in any way without the prior written approval of the project Arboriculturist.
- **The area within the Tree Protective Fencing is a Construction Exclusion Zone. This means that there must be no machinery, no materials, and no personnel within the area. Unauthorised access will be a breach of planning conditions and could lead to enforcement notices from the Local Planning Authority.**
- All **Temporary Ground Protection** will remain in place throughout the duration of the project. Unless approved by the project Arboriculturist.
- All **Permanent Ground Protection** will be installed under the supervision of the project Arboriculturist.
- No works to any tree or hedge can be undertaken by any person that has not been approved by the project Arboriculturist.
- Where additional tree works are required, there may be a requirement to obtain input and approval from: the client; the Local Planning Authority; the project Ecologist; and/or the project Landscape Consultant. If any additional works are required, as much notice as possible must be given to ensure that there are no delays to the works programme while the necessary approvals are obtained.

Appendix 2: ACoW Site Inspection Record (Example)

Site		Date	
		Surveyor	
Ref No:		Planning Application No.	
Developer			
Site Agent		Contact No:	

Purpose of Visit	
Was all tree protective fencing in place?	
Details	
Action	
Was CEZ to agreed dimensions?	
Details	
Action	
Was debris/storage/groundwork evident within CEZ?	
Details	
Action	
Was there any evidence of damage to trees?	
Details	
Action	
Are any special works scheduled for coming build period?	
Details	
Action	
Additional Comments	

Any amendments proposed to plan?	
Details	
Action	

Signed:	
Name:	
Position:	

Circulation:				
Name	Position	Company	Email	Phone

Appendix 3: Statement of Undertaking

STATEMENT OF UNDERTAKING.

I confirm that I have read and fully understood the tree protection measures that have been detailed in the Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) that have been provided for Fewcott Road. These documents have been provided to ensure that retained trees on the site are protected at all times during the construction process, and to assist the developer/construction company maintain compliance with the planning conditions.

I will ensure that tree protection measures are in accordance with the AMS and TPP throughout the construction process. I will also ensure that all site personnel are aware of the tree protection measures that are required throughout the site.

Where issues arise from tree related matters I will consult the retained Arboricultural Clerk of Works (ACoW) before undertaking any activities that may cause damage to the protected trees.

Position:

Name:

Signature:

Company:

Date:

Approved by:

Position:

Name:

Signature:

Company:

Date:

Enc: Arboricultural Method Statement: 16-0449

Tree Protection Plan: D16-0392

Appendix 4: Tree Constraints Data

Tree No	Species	Stem Diameter (mm)	Circle Radius (m)	RPA (m ²)	Length of sides of a square (m)	Minimum barrier distance (m)
1	Hawthorn (Group)	190	2.3	16	4	2.0
2	Sycamore	260	3.1	31	6	2.8
3	Elm	90	1.1	4	2	1.0
4	Elm	158	1.9	11	3	1.7
5	Apple (Group)	200	2.4	18	4	2.1
8	Elder	150	1.8	10	3	1.6
9	Hawthorn (Common)	203	2.4	19	4	2.2
12	Ash (Common)	636	7.6	183	14	6.8
13	Blackthorn	80	1.0	3	2	0.9
14	Hawthorn (Group)	220	2.6	22	5	2.3
15	Ash (Common)	410	4.9	76	9	4.4
16	Hawthorn (Group)	170	2.0	13	4	1.8
17	Ash (Common)	430	5.2	84	9	4.6
18	Sycamore	140	1.7	9	3	1.5
19	Sycamore	658	7.9	196	14	7.0
20	Hawthorn (Group)	130	1.6	8	3	1.4
21	Sycamore	430	5.2	84	9	4.6
22	Narrow-Leaved Ash	520	6.2	122	11	5.5
23	Blackthorn	160	1.9	12	3	1.7
24	Sycamore	270	3.2	33	6	2.9
25	Sycamore	309	3.7	43	7	3.3
26	Ash (Common)	321	3.9	47	7	3.4
27	Hawthorn (Group)	180	2.2	15	4	1.9

Appendix 5: Tree Protective Fencing

heras® 151 and 151steadfast system

Having invented the original concept of temporary fencing back in the 80's, Heras is proud of its reputation as a true innovator.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.

Our safest, most stable and most secure system ever offers you total peace of mind, and unrivalled performance.

You can be sure that by installing the Heras® 151 Steadfast System (patent pending), you are conforming fully to the latest HSE Guidelines on "Protecting the Public" from the dangers of construction sites.

Heras has campaigned widely over recent years against flimsy product standards, and has worked closely with your firm to ensure the construction industry to ensure our products meet and exceed your expectations. This latest innovative system means you should never again need to compromise on:

- Value for money
- Quality
- Performance
- Design
- Ease of installation.

All backed up with unbeatable service from our nationwide branch network – deal direct with Heras – your safety first fencing supplier.

Fully Tested and Certified

- Extensive independent testing by Sheffield Hallam University has proved the performance of the system, resisting wind speeds well in excess of gale force.
- The HSE has confirmed that the system meets all of the guidelines in the HSG 151 Publication "Protecting the Public - 'our next move'".
- In turn, therefore, we can offer customers a certificate of compliance when they purchase this system from Heras.
- It is your responsibility to ensure the system is correctly installed and fixed. For help and advice, contact your nearest branch.

151 system

The key components of the Heras 151 system are as listed.

Round Top Panel with Anti-Climb Mesh

- The strongest panel on the market, with 3 sides formed from a continuous length of fibre, eliminating the top corner weld, often the weakest point in traditional panel design.

High Visibility Orange Block

- Permanently coloured with a durable UV stabilised "block" casing and filled with solid high density concrete.
- Effectively highlights any potential trip hazard.
- Beware of cheap imitations – painted coatings will chip and peel.

Heraslock® Anti-Tamper Coupler

- Providing additional security, these couplers can only be removed with the use of the spadebit tool.

151 steadfast system

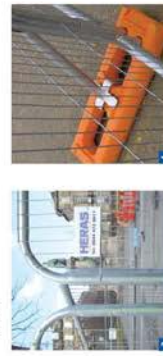
The Heras 151 steadfast system incorporates all the benefits of the 151 system, with the addition of the patented...

Heras® Steadfast Strut

- The unique design of this clever strut dramatically increases the stability of the fence.
- The strut fits neatly within the high visibility blocks allowing a neat and compact solution, and acts as an integrated anti-lift device.
- 3 additional fixing tubes incorporated into the design allow for soil pins and thunderbolts, dependent on ground conditions.

Optional Extras:

- Heras® Steadfast Safety Strips with reflective coating can be fitted in minutes to highlight site dangers.
- Front support brackets allow vastly improved performance on softer ground conditions and fit quickly and easily into the high visibility blocks.



ROUND TOP PANELS WITH ANTI-COUPLER TECH



1. Front stabiliser.
2. High visibility footblocks.
3. Round top panel.
4. Heraslock anti-tamper coupler.
5. Heras® Steadfast Strut.
6. Optional steadfast safety strip.
7. Anti-dive round top panel with headfast struts to increase stability.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.

Appendix 6: Example of Protective Fencing Signage



(Lockhart Garratt is able to provide useable, weather-proof copies of this sign if required, for attaching to the protective fencing. If required, please contact us for further details).

Appendix 7: Permanent Ground Protection

CellWeb™ Tree Root Protection System



The CellWeb™ TRP cellular confinement system protects tree roots from the damaging effects of compaction and desiccation, while creating a stable, load-bearing surface for vehicular traffic.

CellWeb™ offers an alternative to the traditional methods of constructing roadways and building foundations that involve excavation, which can result in tree root severance and soil compaction from the passage of vehicles. Such damage can severely influence tree health, and in extreme cases leads to death. CellWeb™ can be sensitively installed close to and under the canopies of trees without negative effects.

Trees are valuable landscape features and a vital environmental resource. Increasingly, contractors are being required to ensure the health and survival of trees during and beyond the construction period. Although this is enshrined in BS 5837: Trees in Relation to Construction: Recommendations (2005) and Tree Preservation Order legislation, it presents several issues when implementing construction projects near to trees:

- Root severance caused by excavation, leaving trees open to decay, less stable and with a diminished capacity to utilise soil water and nutrients.
- Destruction of soil structure and compaction due to the passage of heavy vehicles, restricting the flow of water and air to tree roots.
- Need for construction access, new roadways and hard surfaces that require engineering-standard load-bearing foundations that meet building regulations.
- Need for high-performance, cost-effective driveways and roadways in the vicinity of tree roots.



Potential loss of existing tree due to poor construction techniques.

The CellWeb™ system overcomes these issues and helps contractors to comply with tree health guidelines by creating a load-bearing base that is water-permeable, stable and durable.

With no need for excavation, the system is quick and easy to install, reducing construction time and saving costs and making it suitable for temporary and permanent solutions.



Glynebourne Wood.
Pedestrian path to recreational wood and built using a CellWeb™ foundation which was covered with DuoBlock and then filled with woodchip to create a porous surface.

Product features



CellWeb™ comprises an expandable cellular mattress that is then filled with a clean stone sub-base and above a Treetex T300 Geotextile.

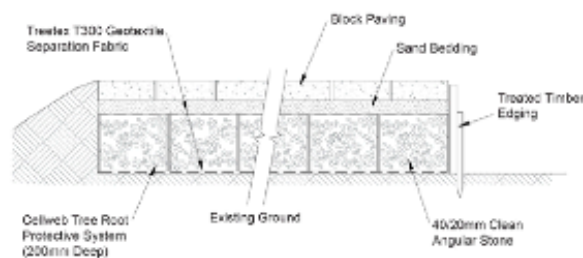
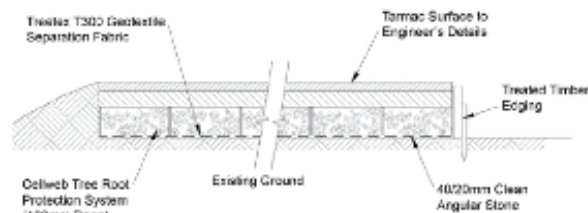
The honeycomb-like structure is made of robust high-density polyethylene (HDPE) that is simply stretched out and filled with clean angular material. Just like traditional roadways, the strength of the structure comes from the binding together of the infill, but with CellWeb™ this is achieved without compaction and without reduction in permeability.

Perforated cell walls allow the angular infill to bind with the contents of the adjacent cell, but with sufficient space for the movement of water and air to nearby tree roots. As the infill contains no fines and the geotextile layers prevent clogging from particles washing into the system, the structure remains permeable to water over time and protects the roots for the lifetime of the tree.

As well as being quick and easy to install, CellWeb™ also dramatically cuts down the depth of sub-base required, in most cases by as much as 50%, further reducing costs. CellWeb™ significantly reduces surface rutting, increasing the long-term performance of the finished surface and ensuring that tree roots remain protected from vertical loads.

CellWeb can be used as a permanent solution or alternatively the system can be used in a temporary situation. In a temporary application the system can be used for the required period of time, then removed for use on another site or recycled, thereby adding to CellWeb's green credentials.

- No excavation – Soil structure remains undisturbed; risk of root damage minimised.
- Porous infill – Allows tree roots to conduct moisture and gas exchange.
- No compaction – No need to compact the infill to achieve a load-bearing structure.
- Lateral stability – Structure remains rigid to vertical loads.



**Please call
01455 617 139**

or email sales@geosyn.co.uk
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Appendix 8: Example Methodology for Construction of Surface


(This document has been produced by Geosynthetics Ltd for the installation of the Cellweb Tree Root Protection System – it does not apply to other products which may serve a similar purpose).



When considering damage to tree roots, in applications of vehicular access and parking, the risk of oxygen depletion caused by compaction of subsoil's, site clearance damaging the root source and type of reinforcement are areas which need to be given due consideration.

Other risk factors are:

<ul style="list-style-type: none"> • Creating an impermeable surface 	
<ul style="list-style-type: none"> • Causing a rise in the water table due to construction 	
<ul style="list-style-type: none"> • Increasing ground level 	
<ul style="list-style-type: none"> • Contamination of subsoil's 	
1. Compaction	
When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting traffic to be proposed:	
<ul style="list-style-type: none"> • Californian Bearing ratio (CBR) – Standard test method for measuring soil strength 	
<ul style="list-style-type: none"> • Soil types 	
<ul style="list-style-type: none"> • Water table 	
<ul style="list-style-type: none"> • Maximum load (vehicles) 	
<ul style="list-style-type: none"> • Acceptable rut depth 	
<ul style="list-style-type: none"> • Reinforcement type 	Cellweb Cellular Confinement 150mm deep

Type and Depth of engineered infill material	Clean, angular. Usually 40mm to 20mm.
2. Dig (site strip)	
Site stripping does damage some root structure prior to construction; however, the use of no-dig construction elevates the access road requiring edge protection.	
3. No dig	
3.1. Remove surface vegetation	Use a suitable herbicide suitable for the specific vegetation and not harmful to the tree root system
3.2. Place geotextile separation filtration layer	Use a Treetex T300 non woven Geotextile over the prepared sub-grade. Overlap dry joints by 300mm.
	The three dimensional cell structure, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system
3.4. Edge restraint	A treated timber edging is usually acceptable.
4. Cellular Confinement and Backfill Material.	
	<p>Expand the Cellweb 2.56m wide panels to the full 8.1 metre length. Pin the Cellweb panels with staking pins to anchor open the cells and staple adjacent panels together to create a continuous mattress. Infill the Cellweb with a no fines angular granular fill (typically 4-20mm) within each open cell. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and geogrid-reinforced structures demonstrate a 50% reduction in construction thickness of the granular material.</p>

5. Surfacing Options

Block Paving:

5.1. Lay second layer of Treetex T300 Geotextile separation fabric over the infilled Cellweb sections

5.2. Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.

5.3. Place block pavers as per manufacturers instructions.

Tarmac:

Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.

Loose Gravel:

5.4. Ensure Cellweb is completely filled.

5.5. Place decorative aggregate to required depth

NOTE: A treated timber edge should be provided to restrict gravel movement.

Grass Blocks:

5.6. Place second layer of Treetex T300 Geotextile separation fabric over the infilled Cellweb sections

5.7. Place 50/50 rootzone bedding layer to the required depth

5.8. Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.

5.9. Seed as per architects instructions.

(Alternatively the Grass Blocks may be infilled with gravel.)

Concrete Slab

6.0 Lay Cellweb as previous and place second layer of Treetex Geotextile directly over the filled panels. Pour concrete base as specified.

If you have any queries about installation please contact Geosynthetics Ltd on 01455 617139.

Appendix 9: Temporary Ground Protection Measures (Duradeck)

DuraDeck

-|-|-|-|-|-|-|
PRODUCT SPECIFICATIONS
DD1

Traction Surface: Double-traction tread design includes two parallel traction treads positioned at 90 degrees to adjacent double traction tread sets.

Module Size: **Length:** 8' / 2.44 m
 Width: 4' / 1.22 m
 Module Size: 32 sq/ft / 2.973 sq/meters
 Thickness: ½" thick mat + 3/8" cleat

Module Weight: 86 lbs. / 39.01 kg.
Per Square Foot: 2.69 lbs. / 43 oz. / 1.22 kg. / 1219 grams
Per Square Meter: 28.60 lbs. / 12.97 kg.

Colors: Black, White.
 Custom colors available (minimum order required).

Material: Black High-Density Polyethylene (HDPE) post-industrial recycled plastic, naturally UV resistant due to the carbon black used for color. White mats available.

Test Results:		ASTM	Units	Typical Values
Melt Index		D 1238	g/10min	4.9
Density		D 792	g/cm ³	.960
Tensile Strength @ Yield 50mm/min		D 638	mpa (psi)	30 (4,350)
Elongation @ Break 50mm/min		D 638	%	1 500
Flexural Modulus		D 790	mpa (psi)	1 240 (180,000)
Hardness, Shore D		D 2240	--	70
Compressive Strength:			D695-02a	psi 2,843
Flammability Resistance:		UL-94 HB		Passed

Tread Pattern: **DD1:** Rugged double-traction tread on both sides

Support Structure: Matting incorporates multi-directional structural support (cleat design) allowing for distribution or dispersion of PSI weight factors. Not intended for bridging.

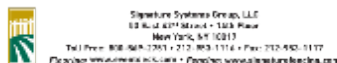
Weight Loading: Varies, depending on sub-surface, up to 80 tons capacity.

Ground Surface: DuraDeck mats are designed to be used with no ground preparation over grass, gravel, soil, concrete, asphalt, mud and sandy soil conditions.

Connection System: DuraDeck mats have eight holes: one in each corner and four in the center line (two on each 8ft side) to create multi-directional roadways of nearly any size or shape. Mats can be connected using metal DuraLink connectors. DuraLinks do not require tools to install.

Shipping: Pallet maximum is 50 units (4' x 8')
 20' Ocean Container: 250 – 4' x 8' unit order and/or equal to 29,240 lbs.
 40' Ocean Container: 500 – 4' x 8' unit order and/or equal to 43,000 lbs.

Warranty: 7 years against cracking and breaking under normal use.



Appendix 10: Site Guidance for working in the RPA

General Guidance for Working in RPAs

a) What is the purpose of this guidance?

This guidance sets out the general principle that must be followed when working in the RPA. Where more detail is required, it will be supplemented by illustrative specifications in other appendices to this document. Before work starts on site, the purpose of this guidance is to demonstrate to the LPA that tree protection issues have been properly considered and to provide a written record of how they will be implemented.

Once the site work has started, this guidance is specifically for the site personnel to help them understand what has been agreed and explain what is required to fully meet their obligations to protect trees. All personnel working in the RPA must be properly briefed about their responsibilities towards important trees based on this guidance.

b) What are the RPAs?

RPAs are the areas surrounding important trees where disturbance must be minimised if they are to be successfully retained. All RPAs close to the construction area are identified on the Tree Protection Plan attached to this report. Damage to roots re degradation of the soil through compaction and/or excavation within the RPA will damage the tree. Any work operations within the RPA must be carried out with great care if trees are to be successfully retained.

c) When should this guidance be followed?

Anyone entering a RPA must follow this guidance if the trees are to be retained unharmed. Anyone working in a RPA must take care to minimise excavation into existing soil levels and limit any fill or covering that may affect soil permeability. There are two main scenarios where this guidance must be followed when entering and working within a RPA:

- i. Removal of existing surfaces/structures and replacement with new surfaces, structures or landscaping
- ii. Preparation and installation of new surfacing structures and/or landscaping.

d) Where does this guidance apply?

This guidance should always be read in conjunction with the site plans illustrating the areas where specific precautions are necessary. Each area where precautions are required is annotated on the plans as identified on their keys. All plans are illustrative and are intended to be interpreted in the context of the site conditions when the work commences. All protective measures should be installed according to the prevailing site conditions and agreed as satisfactory by the appropriate supervising officer before any demolition or construction works commence.

e) **What references is this guidance based on?**

This guidance is based in the assumption that the minimum general standards for development issues are those set out in BS5837 (2012): Trees in relation to design, demolition and construction – Recommendations, and the NJUG Vol.4 Issue 1: Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.

f) **Preventing adverse impact to the RPA beyond the immediate work area**

Any part of the RPA beyond the agreed work area must be isolated from the work operations by protective barriers or ground protection to at least the minimum standard described in BS5837 for the duration of the work.

g) **Excavation and dealing with roots**

All excavation must be carried out carefully using spades, forks and trowels, taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air may be an appropriate alternative to hand digging, if available. All soil removal must be undertaken with care to minimise the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of small roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.

If digging by hand, a fork should be used to loosen the soil and help locate any substantial roots. Once the roots have been located the trowel should be used to clear the soil away from them without damaging the bark. Exposed roots that are to be removed should be cut cleanly with a sharp saw or secateurs 10-20cm behind the final face of the excavation.

Roots temporarily exposed must be protected from direct sunlight, drying out and extreme temperatures by appropriate covering. Roots 2.5-10cm in diameter should only be cut in exceptional circumstances. Roots greater than 10cm in diameter should only be cut after consultation with the appropriate supervisory officer.

h) **Arboricultural supervision**

Any work within the RPA requires a high level of care. Qualified arboricultural supervision is essential to minimise the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed before any works commence.

Ongoing work must be inspected regularly, and on completion, the work must be signed off by the arboriculturist to confirm compliance by the contractor. In the context of this guidance, an appropriate supervising officer would be an arboriculturist.

Installation of new surfaces in RPAs

a) **Basic Principles**

New surfacing is potentially damaging to trees because it may require changes to existing ground levels. This can result in damage to the soil structure affect the efficient exchange of water and gases in and out of the soil. Mature and over mature trees are much more likely to suffer as a result of these changes. These impacts can be minimised by reducing the extent of changes within the RPA. The most suitable surface will be one that is permeable (allowing the movement of water and gas), load bearing (to avoid compaction) and requires little or no excavation (to limit root damage). The actual specification is an engineering issue that needs to be addressed by a suitably qualified professional, and is beyond the scope of this report.

b) **Establish the depth of excavation and surface gradient**

The precise location and depth of roots within the soil is unpredictable and can only be established once digging has commenced. Ideally, all RPAs should be no-dig, but this is often not possible on undulating surfaces. New surfacing normally requires an evenly graded sub-base layer, which can be made up to high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted. Some limited excavation may be required to achieve this, and this is not necessarily damaging to trees if it is done carefully and no large roots are cut. The top 5mm of soil on grass surfaces is unlikely to contain any tree roots and therefore the removal of this will not impact the tree. It may be possible to dig deeper than this depending on local conditions, but this would need to be assessed by the retained ACoW.

On undulating surfaces, finished gradients/levels must be planned with sufficient flexibility so as to allow changes to occur if the excavation of high points reveals unexpected large roots. If roots are less than 25mm in diameter, it would normally be acceptable to cut these. However, for roots over 25mm diameter, cutting them may cause damage to the tree and further excavation may not be possible. In this case, the surrounding levels must be adjusted to take account of these high points, by filling with suitable material. If this is not possible and it is necessary to cut larger roots, discussions should be held with the retained ACoW before any final decision is made.

c) **Base and finish layer**

Once the sub-base layer is finished, the load-spreading surface is installed on top, without compaction. Generally, the load-spreading surface will normally be cellular and filled with crushed stone – care must to be taken as different products produce different results, and the detail must be confirmed prior to installation. Suitable finishes included washed gravel, permeable tarmac or permeable block paving. For lightly loaded surfaces such as pedestrian footpaths, preformed concrete slabs may be appropriate if the sub base is prepared as detailed above.

d) **Edge Retention**

Conventional kerb retention set in concrete trenches is likely to cause damage to the roots and should be avoided. Effective edge retention within the RPA must be custom designed to avoid significant excavation

in to existing soil surfaces. Generally, the use of pre-formed edging secured by metal pins or wooden pegs will be sufficient to ensure minimal impact on the trees.

e) **Installing new surfacing on top of existing surfacing**

It may be possible/preferable in some instances to use existing surfaces as the base for a new surface. This will not normally result in any significant excavation that could damage the roots, so no special precautions are required. However, if large roots appear above the existing surface, then the precautions and procedures detailed above must be followed.

BS5837: 2012 Tree Survey

Client: Cala Homes (Chiltern) Ltd	Reference: 15-1370/3829/06 v1
Site: Land off Fewcott Road, Fritwell	Date of survey: 04/09/2015
Surveyor: Steve Westmore	

*This schedule has been updated following an additional site visit on 09/06/16.

Key to Notations		Age Class		Definition		Category Grading		Sub category	
Stem Dia:	Stem diameter (mm) at 1.5m above ground level	Y	Young	1st 1/3rd of life expectancy		Category		ULE	
C.C.	Height of crown clearance above ground level	EM	Early Mature	2nd 1/3rd of life expectancy		A	High Quality & Value	40+	1
L.B.	Lowest branch height in meters	M	Mature	Final 1/3rd of life expectancy		B	Moderate Quality & Value	20-40	2
D.L.B.	Direction of Lowest Branch	OM	Over Mature	Beyond life expectancy & in natural decline		C	Low Quality & Value	10-20	3
U.L.E.	Useful Life Expectancy of tree in years	V	Veteran	Great age & poss. high conservation value		U	Dead, dying or dangerous	<10	
Physiological condition	Good	No significant health problems		Fair	Symptoms of health that can be remediated		Poor	Significant ill health	
Structural condition	Good	No significant defects		Fair	Significant defects that can be remediated		Poor	Significant defects with no remedy	

Tree No.	Tag No.	Species	Botanical Name	H (m)	Stem Dia.	No of Stems	Branch Spread (m)				CC (m)	LB (m)	DLB (m)	Age	PC	SC	Comments	Recommendations	ULE	Cat.	RPA (m2)	RPA Radial distance (m)
							N	E	S	W												
1	G1	Hawthorn (Group)	<i>Crataegus spp.</i>	6.5	190	1	3	3	3	2	-	-	North	EM	Fair	Fair	Offsite group of x1 hawthorn, x2 elm and x1 elder - unable to take accurate measurements. All ivy clad and widely spaced and provides marginal low level screening value.	None.	10-20	C2	18	2
2	T2	Sycamore	<i>Acer pseudoplatanus</i>	13.5	260	1	6	7	7	6	2	-	North	M	Good	Fair	Offsite tree of x14 stems from old coppice stool. Prominent boundary tree with debris and farm machinery stored at base south (within site).	Remove debris from beneath canopy and consider decompaction measures to improve rooting environment.	40+	B1	28	3
3	T3	Elm	<i>Ulmus sp.</i>	6	90	1	1	1	1	2	2	3	East	Y	Fair	Fair	Offsite tree of little significance.	None.	10-20	C1	5	1
4	T4	Elm	<i>Ulmus sp.</i>	5.5	158	3	3	3	3	3	3	1	East	EM	Fair	Fair	Unable to access - all measurements estimated. Insignificant tree with debris stored at base.	None.	10-20	C1	10	2
5	G5	Apple (Group)	<i>Malus spp.</i>	6	200	1	3	3	3	3	2	-	South	M	Fair	Poor	Linear group of x2 elder, x1 hawthorn and x3 crab apple. Majority ivy clad and leaning due west. Group forms marginal low quality screen to neighbouring site. Overall little retention value.	If retained, remove x2 dead elder at northern end.	10-20	C2	18	2
6	T6	Sycamore	<i>Acer pseudoplatanus</i>	11.5	418	3	4	4	4	4	3	1	South	M	Good	Fair	x3 stems from base with included union. Debris stored at base and unlikely to be suitable for retention due to structural defects.	If retained remove debris from around base of tree.	10-20	C1	82	5
7	T7	Elder	<i>Sambucus nigra</i>	3.5	292	3	3	2	2	3	2	1	North	M	Poor	Fair	Multi stemmed from base and suppressed by larger tree due east.	Remove.	>10	U	41	4
8	H8	Elder	<i>Sambucus nigra</i>	2.5	150	1	2	2	2	2	-	-	South	M	Fair	Poor	Linear hedge of elder and hawthorn. Not actively managed and densely ivy clad. Generally poor and forms partial low level screen to neighbouring site.	Remove and replace.	10-20	C2	10	2
9	T9	Hawthorn (Common)	<i>Crataegus monogyna</i>	5.5	203	3	3	3	3	3	2	1	West	M	Good	Fair	Offsite tree - all measurements estimated. Multi stemmed from base.	None.	20-40	C1	18	2
10	T10	Sycamore	<i>Acer pseudoplatanus</i>	10	247	3	3	3	4	4	2	1	East	M	Good	Fair	Offsite tree - all measurements estimated. Stem bifurcates at 1.5m with included union, retention category down graded due to structural defects but otherwise reasonable quality tree.	None.	10-20	C1	28	3
11	G11	Elder	<i>Sambucus nigra</i>	5.5	230	1	4	3	3	3	1	2	East	M	Poor	Poor	Offsite group - all measurements estimated. Western tree has partially failed and group is overall poor.	None.	>10	U	23	3
12	T12	Ash (Common)	<i>Fraxinus excelsior</i>	16	636	3	6	6	6	6	3	1	East	M	Good	Fair	Offsite tree - all measurements estimated. Stem trifurcates at base and is partially ivy clad. Tree is growing on old boundary wall.	None.	20-40	B1	177	8
13	H13	Blackthorn	<i>Prunus spinosa</i>	2	80	1	2	2	2	2	-	-	South	EM	Fair	Fair	Linear hedgerow which hasn't been managed. Group provides marginal habitat value and green corridor network.	None.	20-40	C3	3	1

BS5837: 2012 Tree Survey

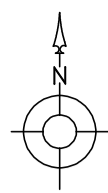
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L.B.	Lowest branch height in meters	M	Mature	Final 1/3rd of life expectancy		B	Moderate Quality & Value	20-40	2	Mainly landscape value
D.L.B.	Direction of Lowest Branch	OM	Over Mature	Beyond life expectancy & in natural decline		C	Low Quality & Value	10-20	3	Mainly cultural value
U.L.E.	Useful Life Expectancy of tree in years	V	Veteran	Great age & poss. high conservation value		U	Dead, dying or dangerous	<10		
Physiological condition		Good	No significant health problems		Fair	Symptoms of health that can be remediated		Poor	Significant ill health	
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Tree No.	Tag No.	Species	Botanical Name	H (m)	Stem Dia.	No of Stems	Branch Spread (m)				CC (m)	LB (m)	DLB (m)	Age	PC	SC	Comments	Recommendations	ULE	Cat.	RPA (m2)	RPA Radial distance (m)
							N	E	S	W												
14	G14	Hawthorn (Group)	<i>Crataegus spp.</i>	7	220	1	3	3	3	3	1	-	South	M	Good	Fair	Offsite group of hawthorn and elder that forms edge of small shelterbelt and habitat area. Evidence of compaction at base from horses but otherwise good quality group.	None.	20-40	B2	23	3
15	T15	Ash (Common)	<i>Fraxinus excelsior</i>	11.5	410	1	5	4	6	6	2	4	South	M	Fair	Good	Offsite tree - all measurements estimated.	None.	20-40	B1	72	5
16	G16	Hawthorn (Group)	<i>Crataegus spp.</i>	7	170	1	3	3	3	3	2	2	East	EM	Good	Good	Offsite group - all measurements estimated. Mixed species of hawthorn, elder, elm, ash, field maple, sycamore, cherry, hazel and blackthorn. Trees share mutual canopy and provides good vegetative screen to new offsite properties.	Provide minimum 3.5m buffer for future root growth.	40+	B2	14	2
17	T17	Ash (Common)	<i>Fraxinus excelsior</i>	9.5	430	1	4	3	3	3	2	4	East	M	Fair	Fair	Offsite tree - all measurements estimated. Stunted growth for species and age.	None.	10-20	C1	82	5
18	G18	Sycamore	<i>Acer pseudoplatanus</i>	7	140	1	2	2	2	2	1	1	East	EM	Good	Fair	Offsite group - all measurements estimated. Consists of sycamore, birch and hawthorn. Tress shares mutual canopy and provides partial screen to new offsite properties.	Provide minimum 3.5m buffer for future root growth.	10-20	C2	10	2
19	T19	Sycamore	<i>Acer pseudoplatanus</i>	16	658	2	6	5	5	6	2	1	East	M	Good	Fair	Tree on corner of site. Good example of species but evidence of included bark at stem union. Downgraded due to structural defect.	None.	40+	B1	191	8
20	H20	Hawthorn (Group)	<i>Crataegus spp.</i>	5	130	1	2	2	2	2	-	-	North	EM	Fair	Fair	Linear hedgerow of hawthorn, blackthorn, elder, apple and sycamore. Numerous gaps and unmanaged.	Hedgerow management regime needed and supplementary planting.	10-20	C2	7	2
21	T21	Sycamore	<i>Acer pseudoplatanus</i>	14	430	1	5	4	4	4	2	2	West	M	Good	Fair	Electric fence attached to tree and open cavity at base north to 1.5m with significant reaction wood. Otherwise fairly prominent tree.	If retained reinspect for health and safety purposes.	20-40	B1	82	5
22	T22	Narrow-Leaved Ash	<i>Fraxinus angustifolia</i>	12	520	1	5	3	6	7	1	1	West	M	Good	Fair	Offsite tree - all measurements estimated. Tree is located east of ditch and canopy extends into site. Evidence of x2 hanging branches at 5m west.	Remove hanging branch and provide offset to accommodate root growth.	20-40	B1	125	6
23	H23	Blackthorn	<i>Prunus spinosa</i>	5	160	1	3	3	3	3	1	-	North	M	Good	Fair	Boundary group of blackthorn and hawthorn that forms dense screen to offsite access drive. Provides dense habitat corridor.	Consider hedgerow management plan.	20-40	C2	10	2
24	G24	Sycamore	<i>Acer pseudoplatanus</i>	7	270	1	3	3	3	3	1	1	North	EM	Good	Fair	Offsite group - all measurements estimated. Consists of sycamore, ash, hawthorn, field maple, elm and blackthorn. Soil banded at base north and shares mutual canopy. Provides vegetative screen offsite.	Remove soil bund to benefit root spread.	20-40	B2	34	3
25	G25	Sycamore	<i>Acer pseudoplatanus</i>	6	309	3	4	4	4	4	-	1	West	M	Fair	Fair	Offsite group - all measurements estimated. Historically pollarded at 1.5m (?).	None.	20-40	C2	41	4

BS5837: 2012 Tree Survey

Key to Notations									
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D.L.B.	Direction of Lowest Branch	OM	Over Mature	Beyond life expectancy & in natural decline		C	Low Quality & Value	10-20	3 Mainly cultural value
U.L.E.	Useful Life Expectancy of tree in years	V	Veteran	Great age & poss. high conservation value		U	Dead, dying or dangerous	<10	
Physiological condition		Good	No significant health problems		Fair	Symptoms of health that can be remediated		Poor	Significant ill health
Structural condition		Good	No significant defects		Fair	Significant defects that can be remediated		Poor	Significant defects with no remedy

Tree No.	Tag No.	Species	Botanical Name	H (m)	Stem Dia.	No of Stems	Branch Spread (m)				CC (m)	LB (m)	DLB (m)	Age	PC	SC	Comments	Recommendations	ULE	Cat.	RPA (m2)	RPA Radial distance (m)
							N	E	S	W												
26	T26	Ash (Common)	<i>Fraxinus excelsior</i>	7.5	321	3	6	4	3	5	2	1	West	M	Fair	Fair	Offsite tree - all measurements estimated. Debris stored at base and stem trifurcates at base with an uneven canopy.	None.	10-20	C1	48	4
27	G27	Hawthorn (Group)	<i>Crataegus spp.</i>	4	180	1	3	3	3	3	1	-	North	EM	Fair	Poor	Offsite group which is widely spaced. Consists of hawthorn, elder and elm. Debris stored at base and growing on bank of ditch. Overall little retention value.	None.	10-20	C2	14	2



LEGEND

- ▲ Category A trees
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- Tree Protective Fencing
- Construction Exclusion Zone
- Permanent ground protection (Cellweb)
- Temporary ground protection during construction

LOCKHART GARRATT

TITLE: Draft Tree Protection Plan - Overview

PROJECT: Land off Fewcott Road, Fritwell

CLIENT: Cala Homes (Chiltem) Ltd

MAP REF: 3849/06/D/16-0392

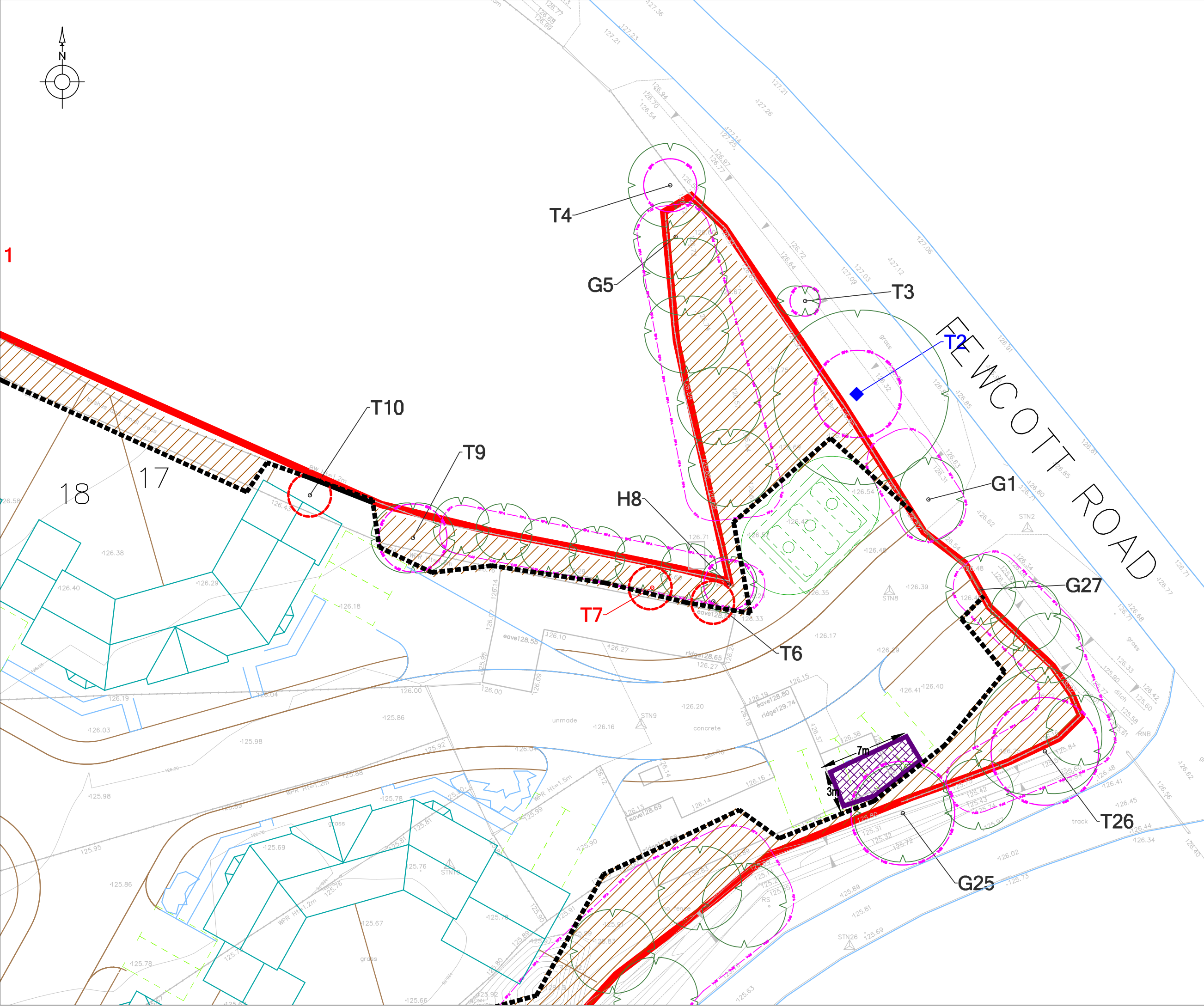
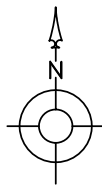
REVISION: 2

DATE: 22/06/16 **SCALE:** Not to scale@A1

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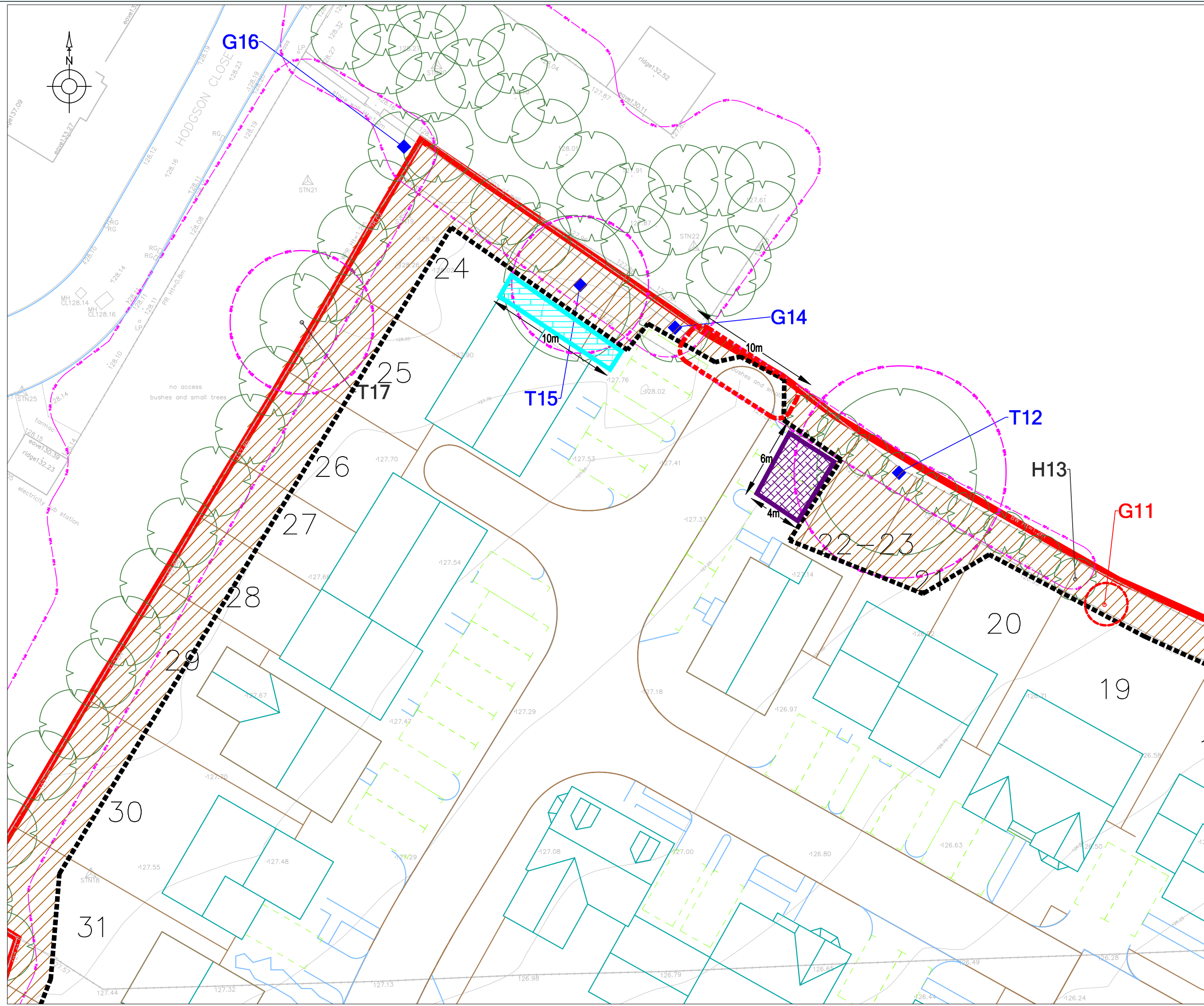
- ▲ Category A trees
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- ┌ Tree Protective Fencing
- ▨ Construction Exclusion Zone
- ▩ Permanent ground protection (Cellweb)
- ▩ Temporary ground protection during construction



TITLE: Draft Tree Protection Plan - Plan 1	
PROJECT/SITE: Land off Fewcott Road, Fritwell	
CLIENT: Cala Homes (Chiltern) Ltd	
MAP REF: 3849/06/D16-0392	
REVISION: 2	
DATE: 22/06/16	SCALE: 1:250@A3
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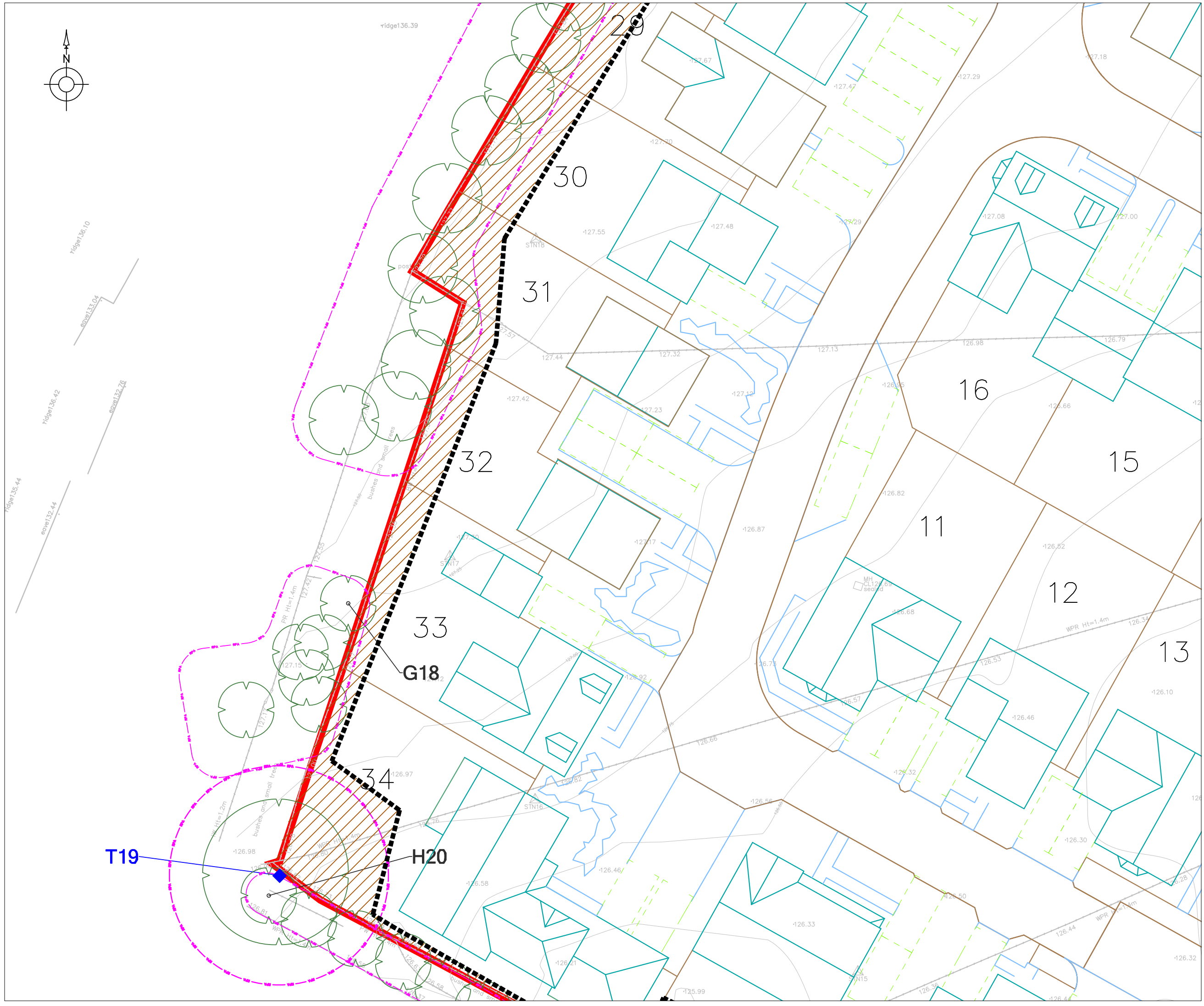
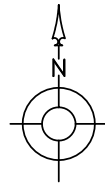
- LEGEND**
- ▲ Category A trees
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 - Category C trees
 - Category U trees
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 - Trees to be removed
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TITLE: Draft Tree Protection Plan - Plan 2	
PROJECT/SITE: Land off Fewcott Road, Fritwell	
CLIENT: Cala Homes (Chiltern) Ltd	
MAP REF: 3849/06/D16-0392	
REVISION: 2	
DATE: 22/06/16	SCALE: 1:250@A3
APPROVED BY: SP	PRODUCED BY: SW

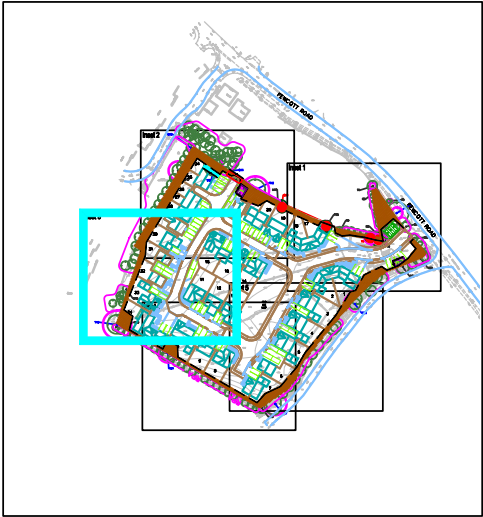
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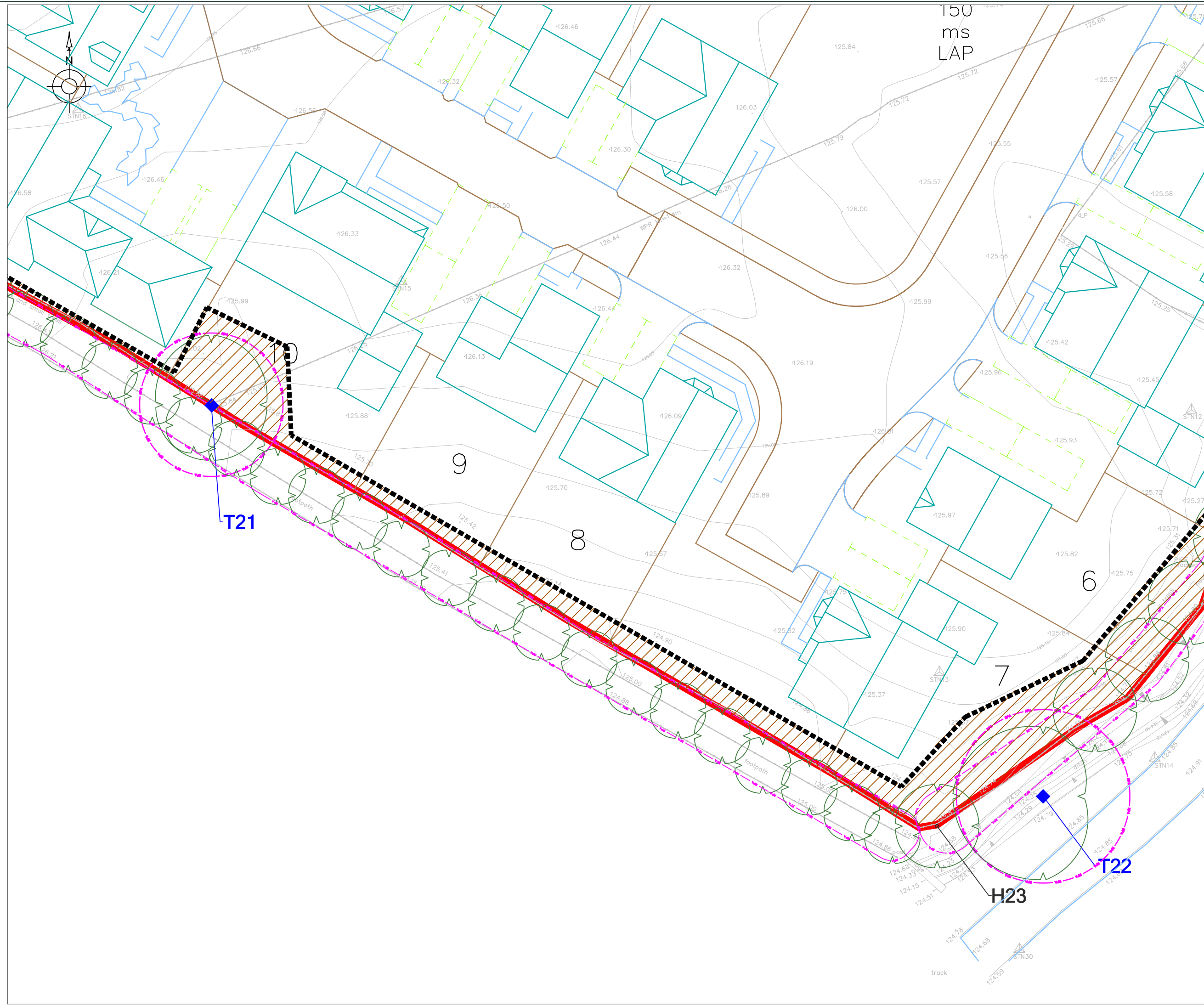
-  Category A trees
-  Category B trees
-  Category C trees
-  Category U trees
-  Root Protection Area
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-  Tree Protective Fencing
-  Construction Exclusion Zone
-  Permanent ground protection (Cellweb)
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TITLE: Draft Tree Protection Plan - Plan 3	
PROJECT/SITE: Land off Fewcott Road, Fritwell	
CLIENT: Cala Homes (Chiltern) Ltd	
MAP REF: 3849/06/D16-0392	
REVISION: 2	
DATE: 22/06/16	SCALE: 1:250@A3
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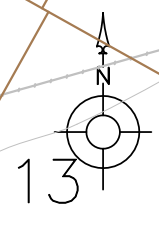
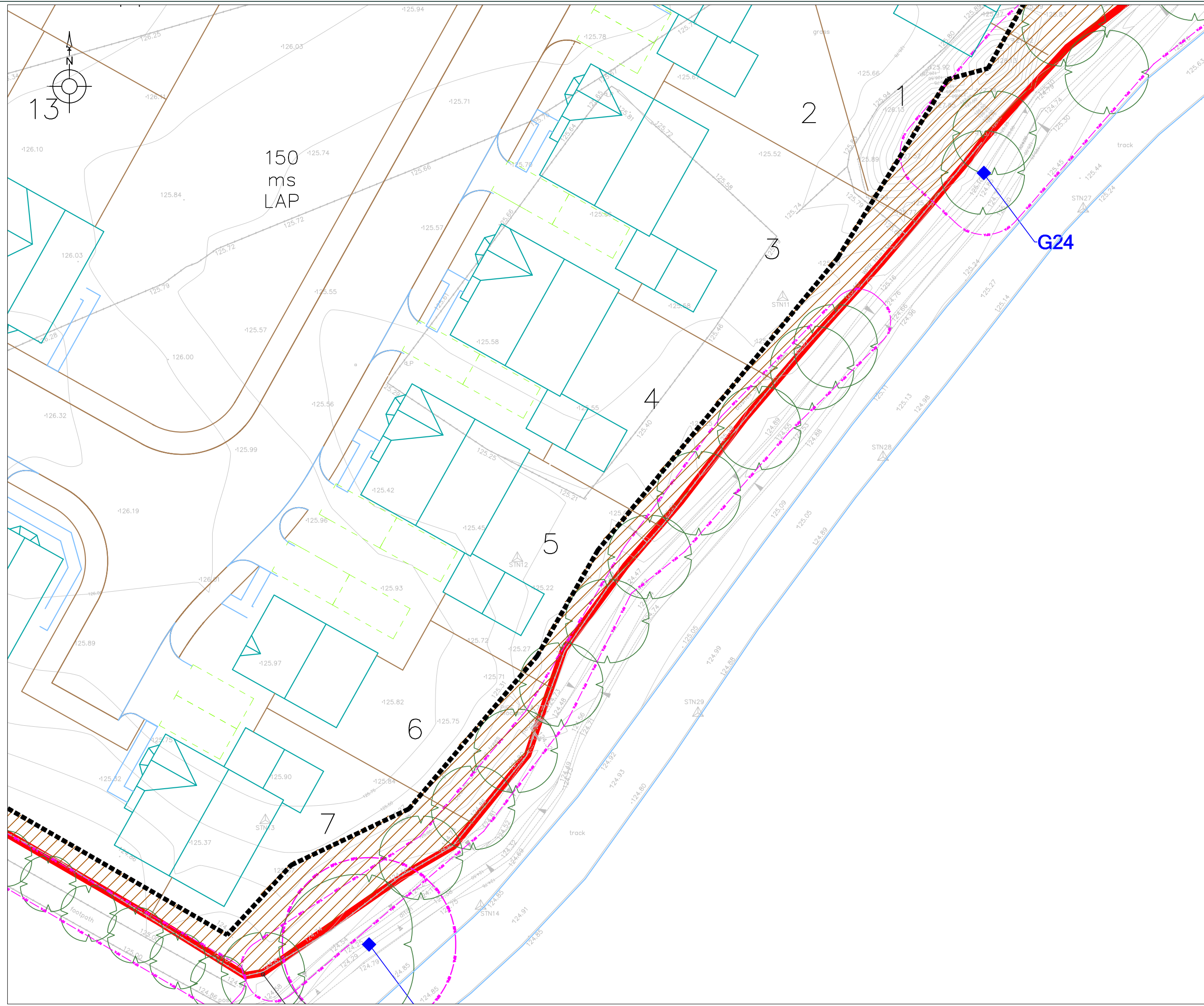
- ▲ Category A trees
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TITLE: Draft Tree Protection Plan - Plan 4	
PROJECT/SITE: Land off Fewcott Road, Fritwell	
CLIENT: Cala Homes (Chiltern) Ltd	
MAP REF: 3849/06/D16-0392	
REVISION: 2	
DATE: 22/06/16	SCALE: 1:250@A3
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- LEGEND**
- ▲ Category A trees
 - ◆ Category B trees
 - Category C trees
 - Category U trees
 - Root Protection Area
 - Trees to be removed
 - Tree Protective Fencing
 - Construction Exclusion Zone
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TITLE: Draft Tree Protection Plan - Plan 5	
PROJECT/SITE: Land off Fewcott Road, Fritwell	
CLIENT: Cala Homes (Chiltern) Ltd	
MAP REF: 3849/06/D16-0392	
REVISION: 2	
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