

Arboricultural impact assessment and BS5837
survey of
11 Chaffinch Close, Totton, SO40 8UQ.

Carried out by Matthew Rowden for Hollie Davis and
Nathan Swain,
Proposers and correspondents for the application for the
above address.

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3. Instruction

To assess trees on the site for any potential impact that the proposed development may have on them, and the constraints that the trees may pose on the proposals. This is in accordance with current legislation BS5837:2012, and to implement control measures and/or design alterations to the proposals where necessary.

4. Limitations

This survey is valid for 1 year, dependent on changing site conditions. I must be kept in direct supervision of the site at all times in regards to all arboricultural matters in order for the findings in this report to remain valid.

5. Site details

The site is a residential property, just off Stonechat drive to the West of Totton Town centre. The LPA is New Forest District Council.

6. Legal restrictions

Details have been sought from NFDC as to whether any of the trees on the site are covered by a TPO or Conservation area. According to the TPO map that this authority uses, two of the 4 oak trees surveyed are covered by a TPO, reference 1136/1A. The rather vague description of the location of these trees suggests to me that the two TPOd trees are numbers 3 and 4 on this report.

7. Proposals

The proposal is to extend both the East and North aspect of the property, and to have a double storey extension with the apex of the roof extended to the East aspect of the existing structure. Full details of the building footprint are shown in appendix 1.

8. Drawings and documents

The client has provided detailed drawings and documents for the purposes of this assessment. For ease of identification, the trees relevant to this application have been numbered as T1 - TG6, grouped where practical, and plotted on a tree protection plan obtained from Ordnance survey to show how and where protection measures must be implemented. At present, an architect has been appointed, but further consultation with a structural engineer will be necessary to move this project forward.

9. Summary

The current proposals are heavily constrained by the location of trees 2, 3 & 4. The RPAs overlap the building footprint, and the canopies of these trees hang too low to make the double storey extension viable without regular pruning.

However, I do not consider these constraints to make the project impossible: engineering solutions provide a work-around for the RPAs, and the pruning of the trees need not be severe: These trees are located right next to National grid overhead services, so are already under pressure to be regularly pruned.

10. Findings (please see appendices 2 & 3 for specific details)

A. Identification of the constraints posed by the trees to developing the site under the current proposal.

T1, 2, 3, 4

- i. The RPA of these trees overlap the proposed building footprint.
- ii. These trees will drop leaves in the gutters of the extended aspect of the house, and the shading will place them under ongoing pressure to be pruned.

- iii. The trees have been pruned heavily on their North East aspects any way due to their proximity to the National grid. With this in mind, minor pruning to allow the extension to fit is insignificant.

TG5 and TG6

- iv. No constraints posed.

B. Potential impacts of the proposal on the trees

T1, 2, 3, 4

- i. Excavation would be necessary to install the footings in a conventional manner within the RPA of these trees.
- iii. Run off from concrete, fuel spills and other contaminants can cause root death, loss of nutrient uptake, stress, and if enough of the functional root mass is killed, the tree may die.
- iv. The rooting area of these trees is likely to be in the top 600mm of soil and very susceptible to compaction from vehicular movements. This can result in root death, loss of oxygen in the soil, reduced moisture percolation and diminished nutrient uptake, leading to stress and eventual strain.
- v. The proposal is very close to these trees, and so may impact large lateral roots which exist predominantly for anchorage. Severing these could render the trees structurally unstable.
- vi. Excavating up to over 1m deep and installing the footings conventionally is unacceptable in this instance. Instead, pile and beam foundations must be deployed. A raft could also be used, but this is my least preferred option due to the ground levels and the necessary excavation for the lip of the raft: consultation must occur with a structural engineer, moving forward.
- vii. The total square meterage of the RPAs of the trees occupied by the proposals (including a 1.5m working area is:
 - i. T1: 5.5m²
 - ii. T2: 21m²
 - iii. T3: 35m²
 - iv. T4: 62m²
- viii. This is in line with BS5837 guidance which will permit up to 20% of the RPA: the working area pushes that up slightly to 25% for T4, but it is not a permanent surface.
- ix. These trees will need to be pruned to enable the proposals to fit. I advise a 3m crown reduction of the lower canopy to the West aspect for all trees. This can have the following impacts:
 - i. Stunted growth/ disrupting canopy balance.
 - ii. Introducing opportunistic pathogens into the tree from regular pruning.
 - iii. Loss of photosynthetic material by reduction in canopy.

- iv. Reducing stored energy and placing the tree under stress.
- v. The pruning necessary is only moderate, so providing it is carried out by professionals, adhering to BS3998 guidelines, the impact would be of low significance.

TG5 & TG6

- x. No impacts posed.

C. Potential impacts of trees on the current proposals

All trees:

- i. Tree protective fencing must be erected to prevent any tools, materials, fuel or other contaminants from being stored within their RPAs.
- ii. Contractor parking and material storage must be kept outside the RPA of all trees, even if it has to be on road parking.

T1, 2, 3, 4

- iii. A cellular confinement system must be deployed along this section of the build area to provide a working area: I have also added a 1.5m working area to the East of proposals to allow access for the brick layers and any plant.
- iv. I stipulate a minimum of 150mm Cellweb® membrane, as this is capable of supporting up to 30 tonnes of plant loading.
- v. At this point, the pile and beam foundations may be installed with an auger through the cell web.
- vi. The area within the RPA of trees 1-4 must not be worked in without the ground protection in situ first.
- vii. These trees will need to be pruned prior to any work being undertaken. I advise a 3m reduction of the lower canopy on the West aspect to allow an adequate clearance.

11. Conclusion

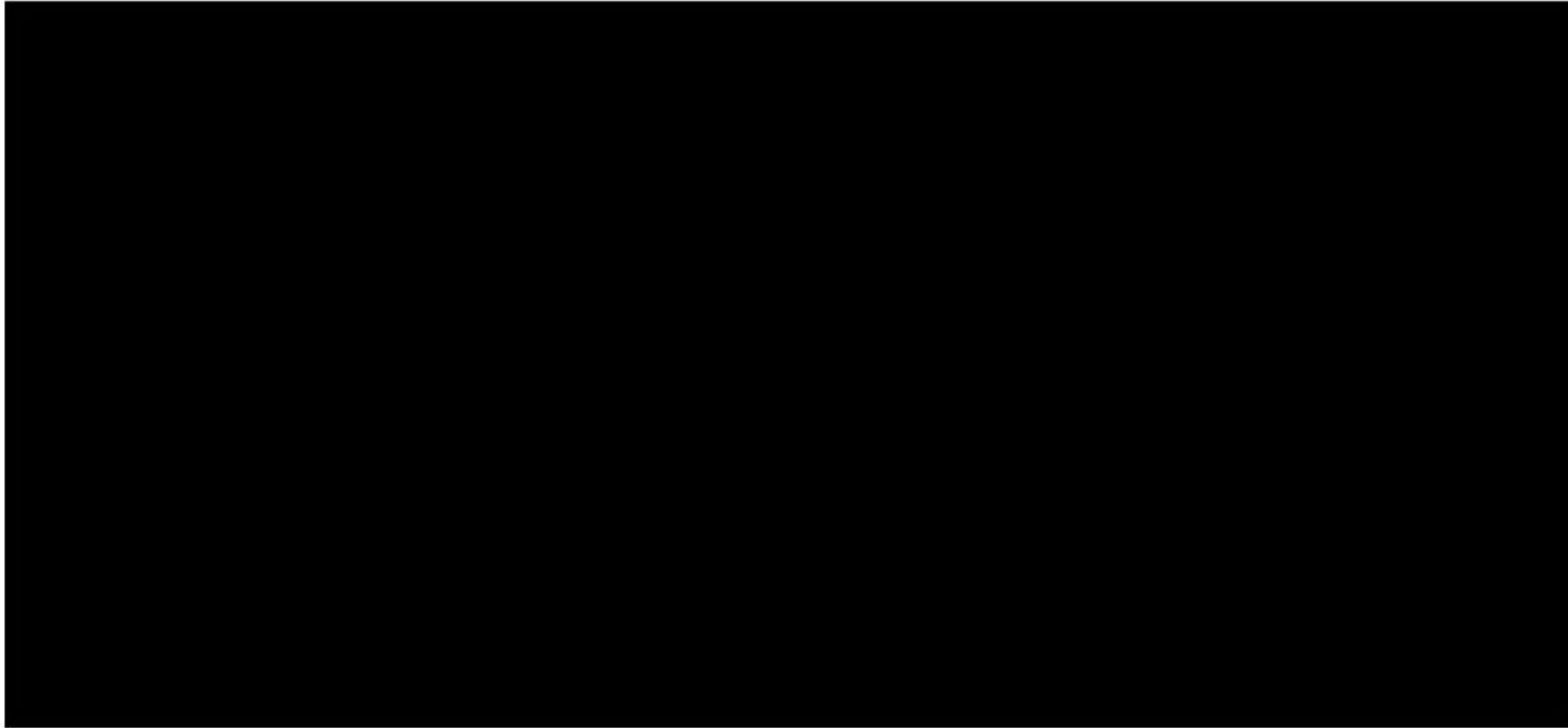
The constraints presented by the RPAs of trees 1-4 are highly significant. However, I see no reason why the proposals should not go ahead as planned, providing all trees are protected following the method statement.

The issues for the AMS to address are as follows:

- i. Tree protective fencing is required: the AMS must cover installation, maintenance and responsibilities.
- ii. Geocell membranes are to be deployed on all areas of the proposals, plus a 1.5m working area: Installation and process.
- iii. Where must the site office/ contractor parking and tool and material storage be sited, if at all?
- iv. Method statement for pile and beam foundations.

12. Recommendations

1. Appoint structural engineer: further consultation is necessary.
2. Follow the method statement set out in appendix 3.



Matthew Rowden *BTEC L3 NatDipArb, ABC L6 ProfDipArb*

24/10/2023

13. References

- a. BS5837:2012 - Trees in relation to design, demolition and construction
- b. TDAG 2014
- c. Cutler & Richardson 1981, Kew root survey.

Appendix 1 - Tree protection plan (in DWG and PDF format- separate doc)

Appendix 2 - Tree survey schedule (separate doc)

Appendix 3 - Arboricultural method statement (see below)

Appendix 3

**Arboricultural Method Statement for 11
Chaffinch Close, Totton, SO40 8UQ.**

Carried out by Matthew Rowden for Hollie Davis and
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1. Responsibilities

It is the responsibility of the site manager to respect the tree protection measures and observe the necessary precautions within and adjacent to them. Bonafide sub-contractors must be inducted by the site manager and the tree protection measures explained and enacted to the letter of this method statement.

As the arboriculturist appointed for this site, I must be present onsite prior to work commencing to ensure that my protection measures have been followed. I must attend site whenever there are arboriculturally sensitive activities occurring, and must send regular supervision reports to NFDC. with site meetings arranged if the planning officer or handling team so wish.

2. COSHH

- a. A cement mixing area will be sited away from the CEZ and if necessary a protective bund installed to prevent contaminated washings or rainwater draining into the CEZ.
- b. These will be positioned on the existing driveway parking area (South West aspect of super structure).
- c. Fuels or any other chemicals must be stored outside of the construction exclusion zone (CEZ) or on the road.

3. Contractor parking and site office

- a. Contractor parking will be on the driveway of 11 Chaffinch close. This is sited outside of the RPA. No revisions to the highway for construction traffic will be necessary at this time.
- b. No site office is necessary for this development.

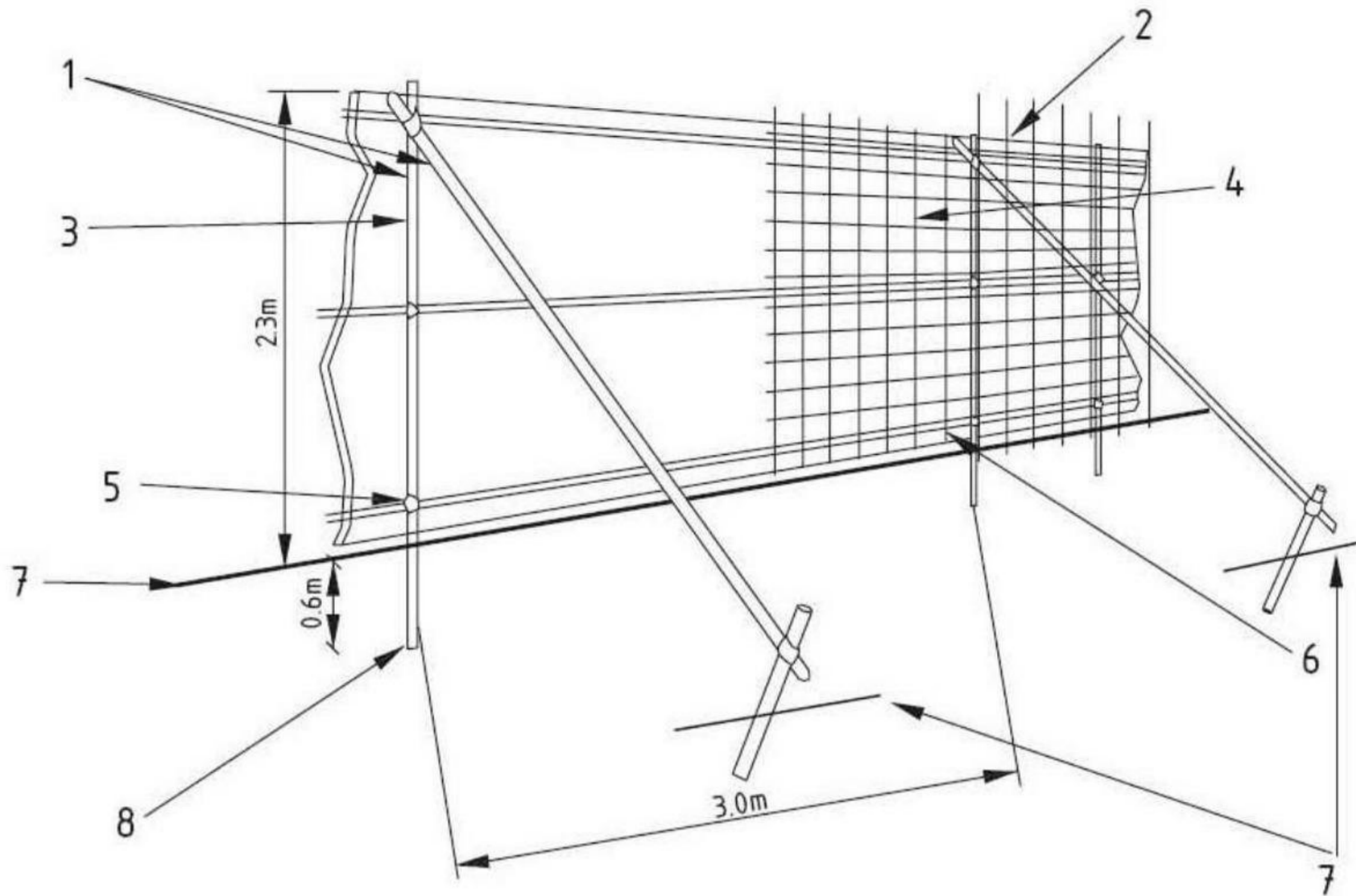
4. Restrictions within Construction exclusion zone

Inside the exclusion area of the CEZ, the following shall apply:

- a. No excavation by any means without arboricultural site supervision.
- b. No hand digging without a written method statement having first been approved by the developer's arboriculturist.
- c. No storage of plant or materials.
- d. No storage or handling of any chemicals.
- e. No vehicular access.
- f. No development activity.

5. Tree Protection Fencing

- a. The Tree Protection Plan (TPP) shows the position of the Tree Protection Fencing (TPF). Vertical banners must be erected and ground protection installed before any materials or machinery are brought onto site and before any demolition, development or stripping of soil commences.



- 1 Standard scaffold poles
- 2 Uprights to be driven into the ground
- 3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps
- 4 Standard clamps
- 5 Wire twisted and secured on inside face of fencing to avoid easy dismantling
- 6 Ground level



- b. Once erected, barriers and ground protection will be regarded as sacrosanct, and will not be removed or altered without prior agreement of an arboriculturist and approval of the local planning authority.
- c. Barriers must be fit for the purpose of excluding constructive activity, and appropriate to the degree and proximity of work taking place around the retained tree. Attention must be paid to ensuring that barriers remain rigid and complete.
- d. Barriers will consist of a scaffold framework in accordance with Fig.1, comprising a vertical and horizontal framework, well braced to resist impacts, with

vertical tubes spaced at a maximum interval of 3m. Onto this, weld mesh panels must be securely fixed with wire or scaffold clamps.

- e. Weld mesh panels on rubber or concrete feet are not resistant to impact and must not be used.
- f. The tree protective fencing must be erected prior to commencing any work on the site, and must remain in situ for the entire duration of the development, until all final work has been completed and the site has been signed off by the site arboriculturist.
- g. All weather notices must be fixed to the barriers with the words: 'Construction exclusion zone - Keep out' or similar (see above image).
- h. It is vital that these protection measures are in place before any construction work happens.

6. Ground protection

- a. Tree roots are very shallow, the majority occupying the top 600mm deep layer of soil. With this in mind, the extension footings cannot be laid in the traditional fashion of trenching and back fill with concrete. Instead, the following control measures must be implemented to ensure the trees are not constrained by the proposal and extensive root damage doesn't occur:
- b. The proposed area of excavation is for industrial machinery (up to a 30 ton excavator [This may seem like overkill but a 100mm layer of cell web will only permit loading of 3.5 tons which may constrain the build]), so the ground protection must be the first thing that is put into the build, in order to set up a temporary working area,. This consists of the following, rated up to 30 tons in the rollout order specified:
- c. This is a "no dig" solution, so there is no need to remove any top soil. Scrape off the top layer of turf and debris using hand tools.

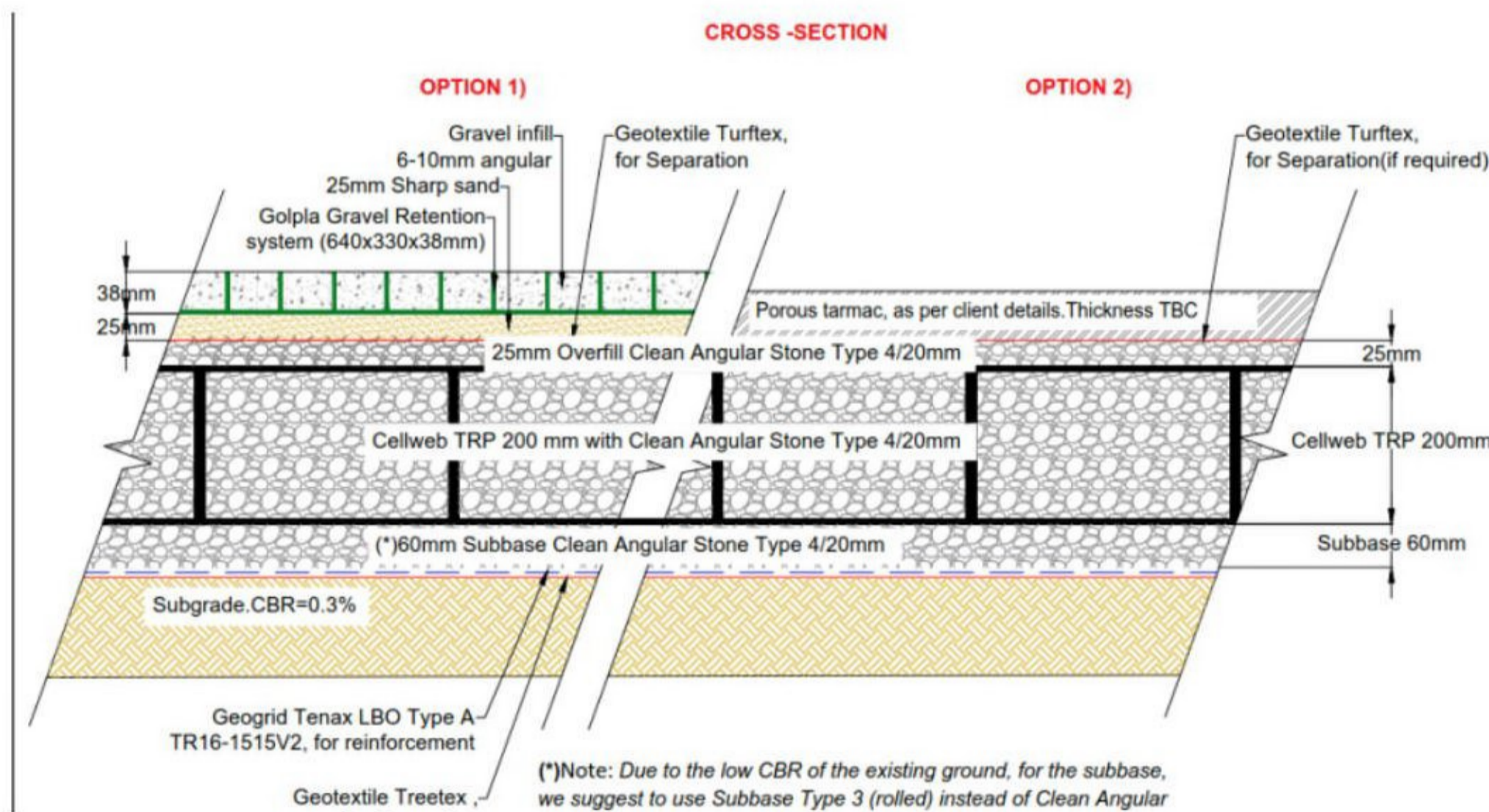


Fig.1

- d. Install Treetex geotextile membrane up to the boundaries of the proposed working area and extension footprint to act as a pollution barrier and a separation layer.
- e. Install a 60mm layer of clean angular stone (type 4/20mm) as a sub base, to level the area where possible. Often sand is used to level out hollows.
- f. Install 150mm layer of Cellweb® TRP up to the edges of the proposed extension area and working area, banking up the sides of the separation membrane with angular stone. Infill the TRP with clean angular stone, size 4/20mm. Commence roll out within the RPA as a no dig solution, as ground level can be adjusted more flexibly outside of the RPA.
- g. Overfill by 25mm with clean angular stone, size 4/20mm.
- h. Once construction has been completed, the geo cell which constitutes the working area may be removed.

7. Pile and beam foundations

Foundations are normally constructed by excavating up to a 3m deep trench with infill of ballast, sharp sand and concrete. Due to the aforementioned rooting area of trees in the top 600mm of soil, this is not permissible, so pile and beam foundations must be used instead (concrete piles extending up to 3m into the ground with RSJs spreading the load across the piles, rather than across the tree's rooting area. Instead, the following method statement must be followed to implement pile and beam foundations (see fig.2[2]):

1. Install a 60mm layer of clean angular stone (type 4/20mm) as a sub base
2. Install 100mm layer of Cellweb® TRP (geo-textile membrane), infilled with clean angular stone, size 4/20mm.
3. Within this protected area, highlight the areas where the piles need to go, referring to the architects plans, and remove the ground protection in these areas, retaining it as a work area surrounding the future pile holes.
4. Bore the holes using an auger, ensuring that the plant used does not exceed the load limit of the ground protection (30 tons).
5. Remove the subsequent spoil.
6. Install membranes in the resultant pile holes to prevent concrete run off along the rest of the tree rooting area.
7. Install piles, raising the property level so that the top of the piles is higher than the original ground level, and leaves an air gap of >200mm.
8. Install beams across the top of the piles, at which point the construction of the super-structure may continue.
9. Raise the ground level on the exterior of the super structure with 200mm of sharp angular stone, size 4/20mm.

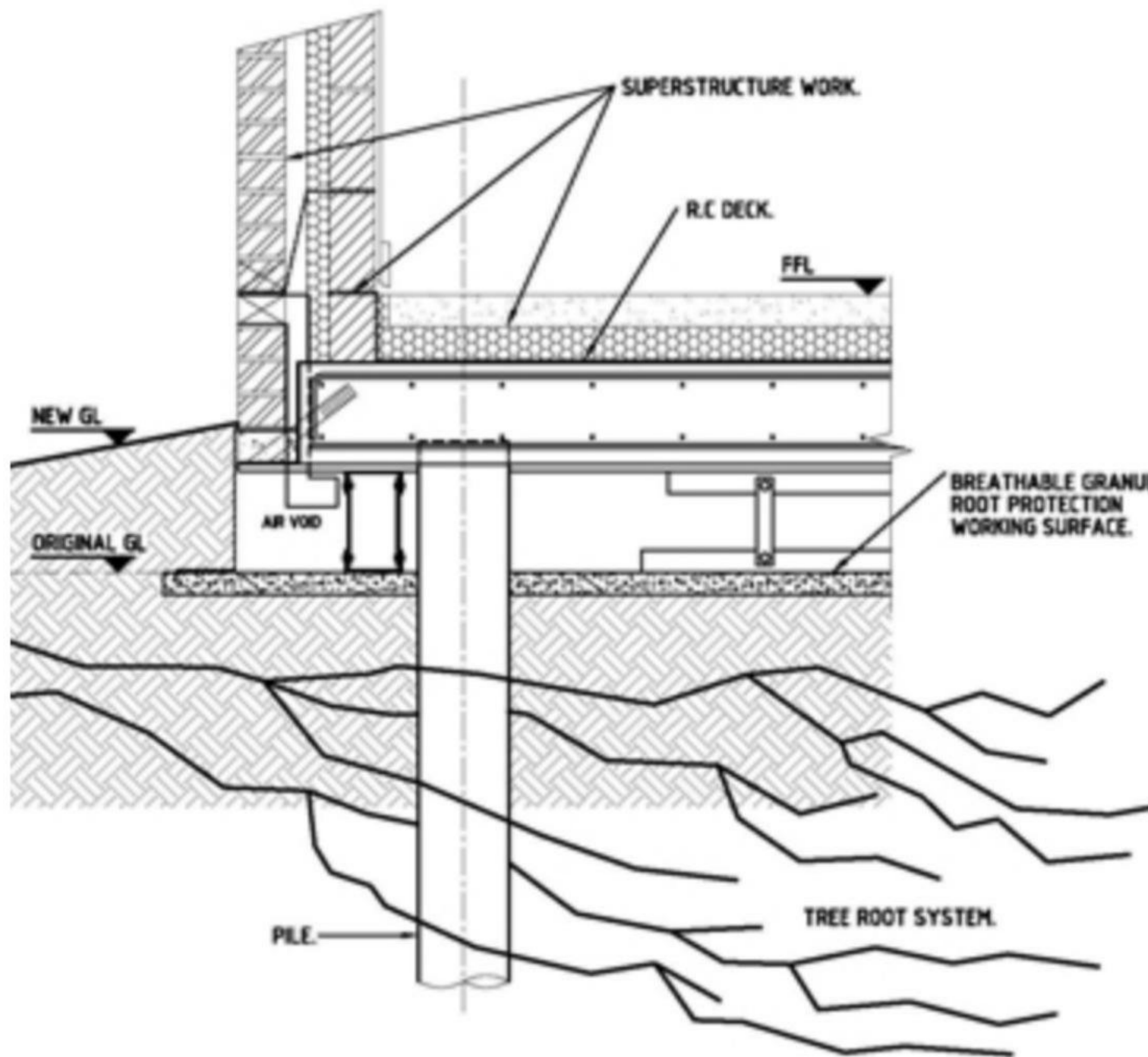


Fig.2

8. Sequence of events

- a. Carry out all necessary remedial tree work.
- b. Erect tree protective fencing as per tree protection plan and method statement. Send supervision report to NFDC.
- c. Install ground protection where specified on the TPP.
- d. Install storage area, as per the location stipulated in the AMS: allow a minimum of a 1.5m working area between the TPF and the proposals.
- e. Invite NFDC to attend site prior to commencing work.
- f. Once agreed, commence and fully complete build.
- g. Compile supervision reports throughout build when arboriculturally sensitive activities are occurring. Compile final report after the build has been completed.
- h. Invite NFDC to attend site to inspect completed works.

- i. Upon sign off, remove tree protective fencing.

IT IS VITALLY IMPORTANT THAT ALL TREE PROTECTIVE MEASURES ARE FOLLOWED, IN THE ORDER STATED IN THIS DOCUMENT. PLEASE DO NOT DEVIATE FROM EITHER DOCUMENT.

