

Thurnscoe Phase 2

Barnsley

**Arboricultural Impact Assessment
and Arboricultural Method Statement**

Keepmoat Homes

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Arboricultural Impact Assessment and
Arboricultural Method Statement**

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Executive Summary

On behalf of Keepmoat Homes, Ecus Ltd. have carried out an Arboricultural Impact Assessment and Method Statement to BS 5837 (2012) "*Trees In Relation To Design, Demolition And Construction - Recommendations*", following a Tree Survey Report carried out by Michael Cooper in August 2017 for the site at School Street, Thurnscoe. This survey has formed the basis of an assessment of the impact development proposals may have on existing trees and any methodologies to be adopted to protect any retained trees.

Throughout this report 'RPA' is used to refer to 'Root Protection Area'. The RPA of any given tree is the area of ground around that tree which should not be disturbed by excavation, compaction, changes in level or other construction/demolition operations. The extent of the RPA is calculated in accordance with BS5837 (2012), and is an important part of the methodologies described in this report.

The Client proposes construction of 129 housing units with associated hard and soft landscaping. This will require the removal of 27 trees and 2 groups (all classed as unsuitable for retention), but may also have an impact on above and below ground parts of retained trees unless adequate protection of these trees is provided.

This report details the arboricultural impact and offers a range of protection measures that should be put in place prior to works starting on site as well as construction methodologies which should be adopted. These measures as described in detail in Chapter 5 will prevent accidental damage and other adverse affects on the health of retained trees and cover:

- Protective fencing.
- Installation of utilities and services within RPA.
- Construction within RPA
Permanent buildings, fencing, street furniture, level changes, surfacing.
- Level changes within RPA.
- Soft landscaping and planting within RPA.

This report also makes further recommendations for any measures to mitigate or compensate the loss of trees within the site and the likely impact on the site and the local landscape. These include:

- Replacement tree planting to compensate the loss of trees.

For ready reference, the Figure 1 (Appendix 3) is a simplified version of the 'Design and Construction Process and Tree Care' table outlined in BS5837:2012. The table clearly identifies processes and obligations expected at the various stages of the construction project. BS:5837 is considered an iterative process, and as such the project Arboriculturalist's advice should be ongoing.

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Figure 3 – Default specification for protective barrier

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1. Introduction

- 1.1.1 Ecus Limited were commissioned by Keepmoat Homes to assess the arboricultural impact and produce an arboricultural method statement, to accompany development proposals at the site at Thurscoe Phase 2, Barnsley. The site location is shown on Figure 2.1 (Appendix 2).
- 1.1.2 This report is based upon data obtained by Michael Cooper in October 2017, collected as part of a Tree Survey in accordance with BS 5837 (2012) "*Trees In Relation To Design, Demolition And Construction- Recommendations*". This report analyses the potential impact of the development on trees and provides recommendations for tree protection during the construction process. It is recommended that Michael Cooper report ref. School Street, Thurscoe BS 5837 (2012) *Tree Survey* is to be read in conjunction with this report.

1.2 Tree Designations

- 1.2.1 The survey included identification of any existing designations affecting trees on site such as Tree Preservation Orders and Conservation Area status by checking the map information available on Barnsley Council website www.barnsley.gov.uk.
- 1.2.1 This check confirmed that there are no Tree Preservation Orders (TPO) on any of the trees surveyed. The site is not within a Conservation Area.

2. Arboricultural Impact Assessment (AIA)

2.1 Development Proposals

- 2.1.1 An Arboricultural Impact Assessment of the proposed site plan has been undertaken to assess the likely impact of the development on existing trees and tree groups. This assessment is based on the development plan provided by the Keepmoat (ref: Chris Gothard architecture 2238-02-M dated September 2017).
- 2.1.2 The client proposes construction of 129 housing units with associated hard and soft landscaping.
- 2.1.3 This is Phase 2 of the continuing regeneration of the area. The site will be developed in one phase, with houses constructed using standard methods and materials.

2.2 Arboricultural Impact Assessment

Direct Impact from Development

- 2.2.1 The development plan indicates that no trees afforded a retention category of C or higher within the red line site boundary will need to be removed to accommodate the new development, including new buildings, new roads and drives as well as new hard landscape.

Removal of Trees For Amenity And Safety Reasons

- 2.2.2 27 trees and two tree groups on site have been assessed as being “unsuitable for retention”. Unless otherwise agreed with the developer/owner, these trees should be removed to ensure the safety of the site during construction and operation of the development/ improve the amenity spaces within the site.
- 2.2.3 Sycamore T56. In November 2017 Michael Cooper commented in correspondence to Keepmoat Homes “*The decline in the health of this tree (Sycamore T56) over the last 4 years is striking. The canopy is now becoming very sparse and I have no reason to doubt that this will accelerate in the immediate future. This is obviously a private tree over which you will have no control over its retention. There is no chance that the health of this tree will improve as the decline is too far advanced. If this application proceeds positively, Keepmoat would be well advised to obtain photographic records of this tree when it is in full leaf to show its current condition and again when the development is complete.*”
- 2.2.4 In light of the comments regarding T56 it is strongly recommended that the tree is closely monitored and steps taken to remediate any risk it poses to personnel or future users of the site. As the tree is not within the ownership of Keepmoat it is recommended that steps are taken to find the owner and raise the concerns highlighted in this report.
- 2.2.5 It is strongly recommended that trees to the north of the site highlighted as unsuitable for retention, although outside of the red line, are removed during clearance works on the site. The creation of new dwellings will increase footfall in this area, thus increasing the targets within the risk zone of these trees. Obviously removal work would be subject to ownership issues and obtaining any necessary permissions.

2.3 Recommendations

- 2.3.1 As the development proposals assume the removal of 27 trees and 2 groups growing

within the site, no protection measures will be required for those trees.

2.3.2 Chapter 3 Arboricultural Method Statement describes measures to protect the retained trees during the development, and operations within the RPA of retained trees including:

- Protective fencing.
- Change of level within the RPA.
- Installation of power supply services.
- Excavation for soft landscaping.

2.3.3 It is recommended that replacement tree planting is carried out across the site. The trees should be planted at minimum 12/14 cm standard size. Proposed tree species should be suitable for the spatial constraints imposed by their surroundings. Recommended tree species include field maple 'elegant' (*Acer campestre* 'Elegant'), beech (*Fagus sylvatica*), English oak (*Quercus robur*) and whitebeam (*Sorbus aria*).

3. Arboricultural Method Statement (AMS)

3.1 Important Founding Principle of BS5837:2012

- 3.1.1 The most important and effective process, in terms of preventing damage to trees on a construction site, is the timely erection of tree protection fencing. This must be erected as the first operation on site, for example, before access track construction, before Contractors site cabins, and before trenching for service runs.
- 3.1.2 The founding principle of BS5837:2012 Trees In Relation To Construction is that the protective fencing is erected before any other operation. However, it is noted that the fencing provides a unnecessary and potentially dangerous restriction to essential tree works and therefore tree works can be carried out before fencing is erected.
- 3.1.3 The following paragraphs are laid out in sequence of chronological order of operations on site.

3.2 General

- 3.2.1 The Arboricultural Method Statement should be read in conjunction with Figure 4 Tree Protection Plans in Appendix 1. The Arboricultural Method Statement paragraphs below are written in the chronological sequence they are to be carried out:

3.3 Pre-Commencement

- 3.3.1 It is advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery on site. The meeting will firstly highlight the potential for damage occurring to tree crowns, but thereafter ensure that extra care is applied when manoeuvring any machinery within close proximity of retained trees to prevent any contact with the tree and consequent damage to crown, stem or roots.
- 3.3.2 For clarity, prior to any construction or development work proceeding, the alignment of the protective fencing (Section 3.4) and the RPA's of any individual trees to be retained which are not able to be protected by fencing should be marked out using the distances provided in the table within the tree survey report. Marking out should be completed or approved by a person with arboricultural expertise as individual trees will have root zones that may be affected by local conditions and allowances will need to be made to accommodate this. This may be done prior to, or during, the Pre-Commencement Site Meeting.

3.4 Clearance of Category U Trees

- 3.4.1 All tree works should be carried out in accordance with BS 3998 (2010) "*Tree Works-Recommendations*".
- 3.4.2 Clearance of category U Trees should be carried out on site by a suitably qualified and experienced tree surgeon before construction or demolition operations commence on site. The clearance work can run concurrent with operations to erect tree protection fencing as long as this can be co-ordinated such that neither presents a hazard to the other.
- 3.4.3 It is recommended that any trees that require removal or significant canopy works, should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

3.5 Protective Barrier/Tree Protection Fencing

- 3.5.1 The development design prepared for the site indicates that a number of trees within the site are being retained. In addition there is one tree off site but within 12m of the site boundary. All these trees need to be protected from all demolition/construction operations by a protective barrier (fencing to BS5837 (2012) which creates a sacrosanct Construction Exclusion Zone (CEZ).
- 3.5.2 The alignment of the protective barrier is based on the calculated extent of the RPA in accordance with BS5837 (2012). The detailed alignment is shown in Figure 4 Tree Protection Plans in Appendix 1.
- 3.5.3 In principle, protective fencing should be erected before any construction/demolition operations start on site and should be removed only on completion of all construction/demolition works on site.
- 3.5.4 The default specification for protective barrier is shown in Figure 3 (Appendix 3). Site hoarding is an acceptable alternative. It may be appropriate on some sites to use temporary site offices as components of the protection barriers, on the understanding that they will remain in situ for the duration of the construction/demolition works and their removal will be planned to ensure the Contractor's co-ordinated withdrawal from site away from the trees rather than towards them.
- 3.5.5 BS 5837 (2012) clause 6.2.2.3 specifies an alternative protective barrier where site circumstances and associated risk of damage incursion into the RPA do not necessitate the default level of protection. This can include 2m tall welded mesh panels (e.g. Heras fencing) on rubber or concrete feet to protect from cars, vans, pedestrians and manually operated plant. The alternative specification for the protective barrier should only be used if and where agreed with the Local Planning Authority.
- 3.5.6 All weather notices should be placed on fencing to indicate that operations are not permitted within the fenced area, for example "CONSTRUCTION EXCLUSION ZONE – NO ACCESS" or similar.
- 3.5.7 Once set up fences should not be removed or altered without prior consultation with the arboricultural advisor.
- 3.5.8 The presence of long grass and other vegetation in the 'Construction Exclusion Zone' is a welcome indicator that the protected area has been left undisturbed. However, on occasion, and certainly towards the end of the project, it is acceptable to cut the vegetation by hand held strimmer or scythe taking care not to work within 300 mm of the tree trunk (to avoid damaging the bark). Vegetation within 300 mm of the trunk can be cut with non-mechanised shears.

3.6 Installation Of Power Supply And Services

- 3.6.1 There are currently no proposals to route services or utilities through the RPA of any retained trees. If this changes at a later stage of the project, proposals should be submitted to the local planning authority Tree Officer for approval.
- 3.6.2 As guidance only, it is noted here that any underground power supply and services routed through the RPA should be installed in accordance with BS 5837:2012 clause 7.7.2 and NJUG *Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees*.

3.7 Construction within RPA

Fence Construction Within RPAs

- 3.7.1 Where fence posts need to be installed within RPAs, excavations should be minimal and carried out using hand held tools. Fence posts should be erected at least 1 m from trees, using metal post support spikes or semi-dry postcrete mixes if installed within the RPA.
- 3.7.2 The proposed fence alignment should allow for a minimum distance of 500 mm between the tree stems and the fence, providing sufficient room for the future increase of the stem diameter and minimising the risk of potential conflicts between the fence structure and the tree stem.

Formation of Shed Bases Within RPAs

- 3.7.3 Where a slab for a minor structure (shed base) is to be formed within the RPA, it should bear on existing ground level, and should not exceed an area greater than 20% of the existing unsurfaced ground.

Changes of Level Within RPAs

- 3.7.4 Generally, the levels within the RPA or protected area should not be changed. Tree roots are considered to be, in the main, within the top 600 mm of the soil. Obviously, any excavation into this will remove part of the root system and potentially affect the vigour or stability of the tree. Conversely, any additional material built up above ground level will compact the soil beneath it, potentially compacting all the air pores in the 600 mm depth of soil that most roots are in, effectively suffocating the roots and thus affecting the vigour or stability of the tree.
- 3.7.5 On occasion, additional soil may be gently spread by hand within the RPA/protected area, for example, to marry levels in small areas between raised levels of no-dig construction and the existing levels. The maximum depth of this would be to 150 mm, reducing to nil. However, it is not generally acceptable, in large areas of the RPA/protected area to raise the level as a blanket. Any areas which will need to be raised are to be agreed Local Planning Authority prior to construction. Specifically there will be no mechanical equipment within the RPA/protected area to spread, compact, or level out soil levels as this would compact the soil.

3.8 Excavations for soft landscaping

- 3.8.1 Where soft landscaping is proposed within the RPA of retained trees, excavations should be kept to the minimum required to provide adequate conditions for the establishment of new shrubs and trees. Excavations should be carried out carefully and by hand, avoiding the severance of any roots larger than 25 mm diameter.

4. Tree Management

- 4.1.1 The following section provides guidance as to how retained trees will best be protected during construction. More detailed guidelines for tree protection during construction are given in BS5837: Trees In Relation To The Design, Demolition And Construction Recommendations (2012).
- 4.1.2 Any tree roots severed during site clearance works will be wrapped or covered with hessian sheets (wet in summer, dry in winter) as an immediate protection measure against desiccation and rapid temperature changes. This will be removed prior to backfilling which will be carried out as soon as possible. In addition the advice of an arboriculturalist, or the Tree Officer of the local planning authority, will be sought as soon as possible on the potential effect of the root damage on the tree's stability, vitality and legal implications.
- 4.1.3 All tree works will follow best practice procedures as set out in BS 3998 (2010). All trees will be maintained in good condition on site and be inspected annually (where overall condition requires) or every 2 years and after any major storm events, with safety a priority.
- 4.1.4 The best practice principles have been broadly summarised below:
- Once areas around trees have been protected by fencing, any works on the remaining site area may be commenced providing activities do not impinge on protected areas.
 - Wide or tall loads etc. will not come into contact with retained trees. Banksman will supervise transit of vehicles, jibs, booms etc. where this is in close proximity to retained trees.
 - Oil, bitumen, cement or other material that is potentially injurious to trees will not be stacked or discharged within 10 m of a tree bole. No concrete mixing will be done within 10 m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.
 - No fires will be lit where flames are anticipated to extend to within 5 m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.
 - Notice boards, telephone cables or other services will not be attached to any part of a retained tree.
 - In the event of having caused any branch or limb damage to retained trees, the advice of an arboriculturalist will be sought on what tree surgery should be carried out, in accordance with BS 3998 (2010) Recommendations for Tree Work, to correct the damage, and the best timescale for that tree surgery which will be determined by season, species, gravity of damage and legal status of the tree (Tree Preservation Order/ Conservation Area/nesting birds/roosting bats).
- 4.1.5 All of the above precautionary measures will be applied to minimise the effect of any damage to long-term tree health and safety.

- 4.1.6 It is recommended that any trees that require removal or significant canopy works, should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

5. References

Books and Papers

BS 3998:2010 *Tree Work – Recommendations*. ISBN 978 0 580 53777 6

BS 5837:2012 *Trees In Relation To Design, Demolition And Construction – Recommendations*. ISBN 978 0 580 69917 7

Volume 4 NJUG *Guidelines For The Planning, Installation and Maintenance of Utility Apparatus in Proximity To Trees*, Volume 4: Issue 2: 16/11/2007, www.njug.org.uk

Appendix 1 – Figures

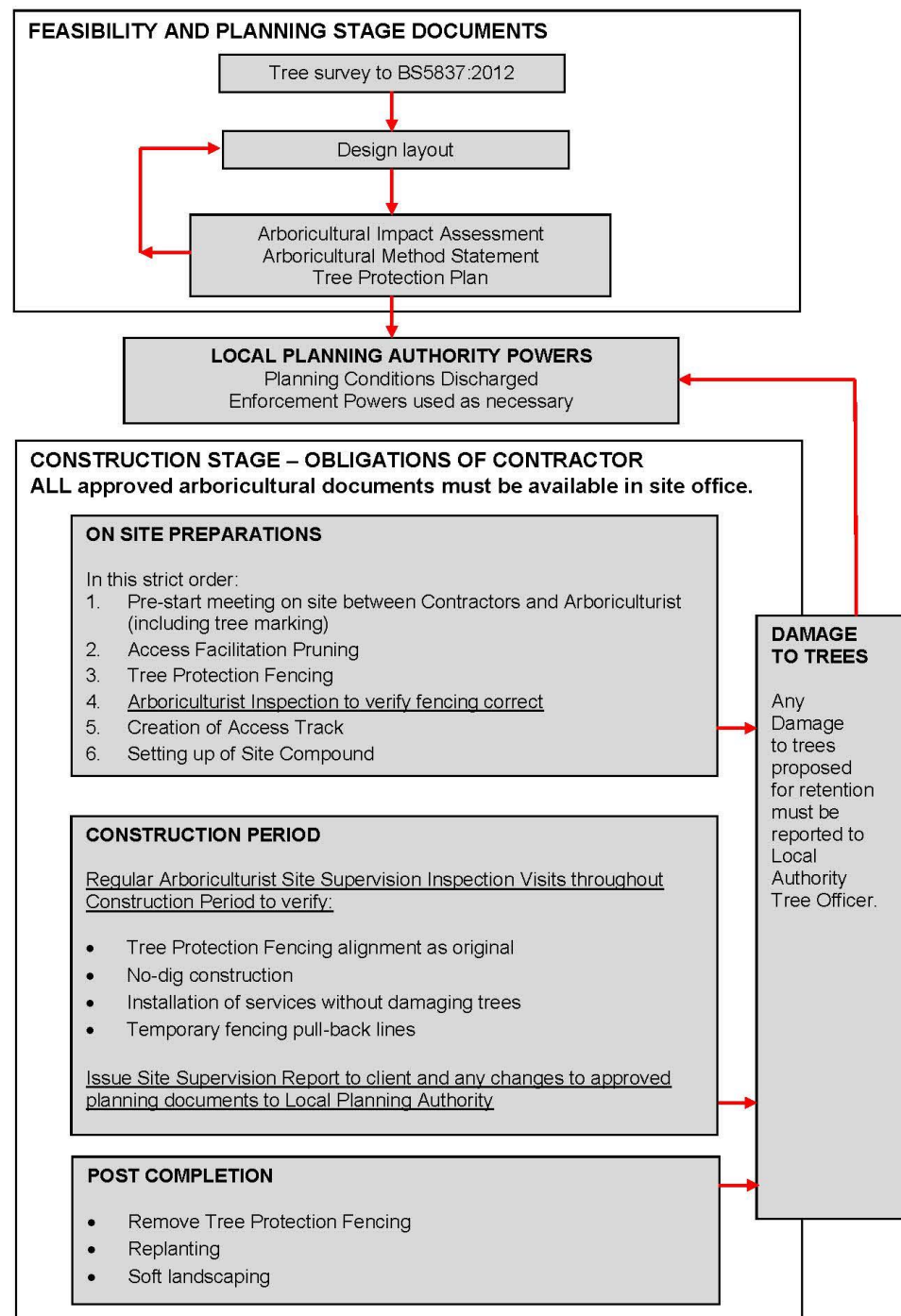


Figure 1 - The Design and Construction Process and Tree Care

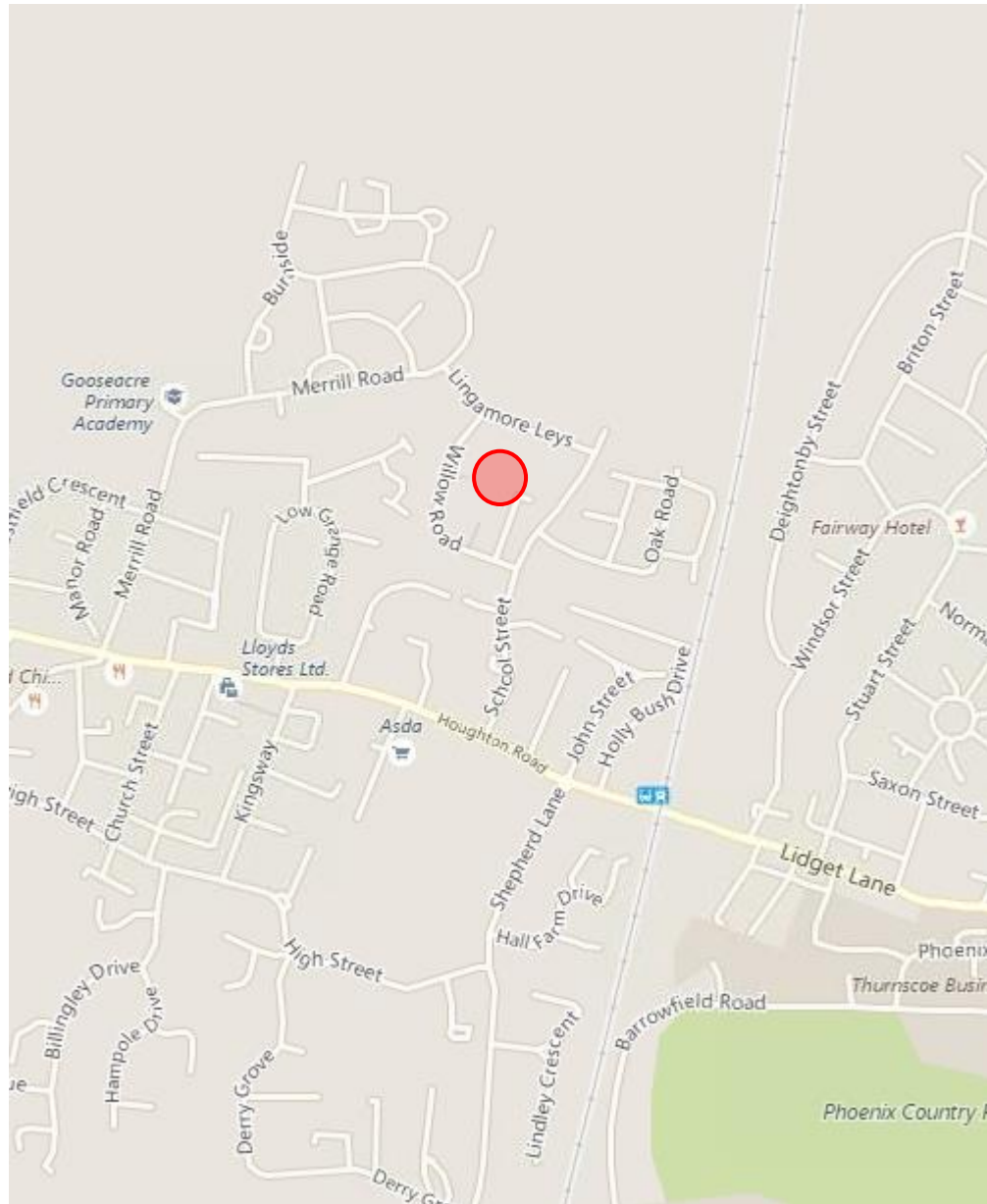


Figure 2 – Location Plan
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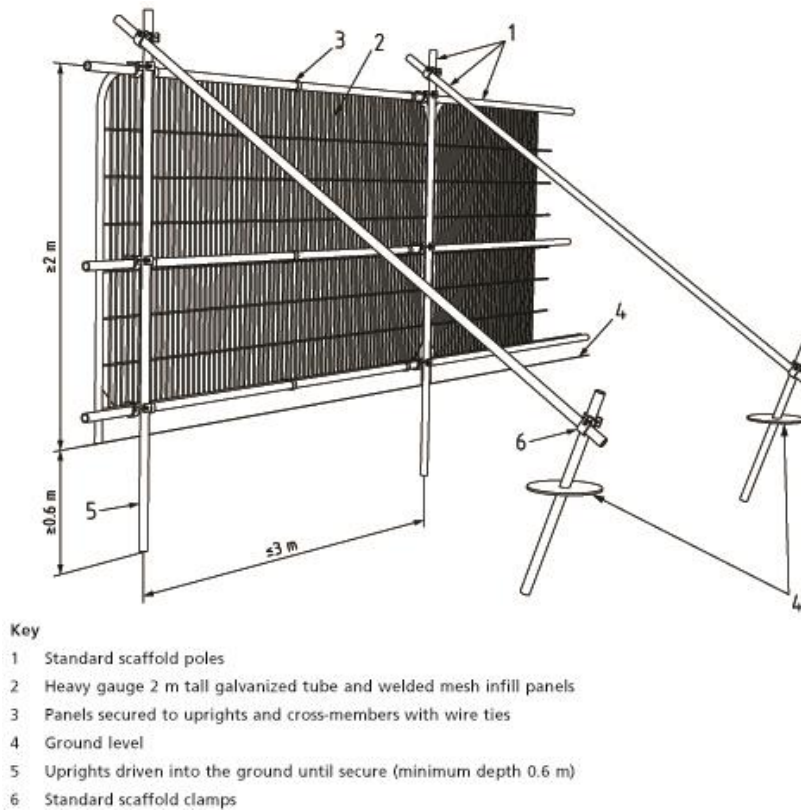


Figure 3: Default Specification for Protective Barrier to BS 5837 (2012)

