XLINKS' MOROCCO-UK POWER PROJECT

Appendix E - Outline Arboricultural Method Statement

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RPS

Prepared for:

Xlinks 1 Limited

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Glossary

Term	Meaning
Arboriculturist	Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.
Arboricultural Impact Assessment	Study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.
Arboricultural Method Statement (AMS)	Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note the AMS is likely to include details of an on-site tree protection monitoring regime.
Compaction	The compressing and hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange and inhibits root growth.
Competent person	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached: A competent person: • understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed; and • is able to advise on the best means by which the recommendations of this British Standard may be implemented.
Condition	Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Horizontal Directional Drilling	Horizontal Directional Drilling (HDD) is a method of installing underground pipelines, cables and service conduit (or ducts) through trenchless methods to avoid obstacles and sensitive features (e.g. roads, watercourses, woodlands, etc.). The term HDD is used here interchangeably with other similar trenchless techniques but excluding micro tunnelling or direct pipe methods.
Onshore Infrastructure Area	The proposed infrastructure area within the Order Limits landward of Mean High Water Springs. The Onshore Infrastructure Area comprises the transition joint bays, onshore HVDC Cables, converter stations, HVAC Cables, highways improvements, utility diversions and associated temporary and permanent infrastructure including temporary compound areas and permanent accesses.
Order Limits	The area within which all offshore and onshore components of the Proposed Development are proposed to be located, including areas required on a temporary basis during construction (such as construction compounds).
Proposed Development	The element of Xlinks' Morocco-UK Power Project within the UK. The Proposed Development covers all works required to construct and operate the offshore cables (from the UK Exclusive Economic Zone to Landfall), Landfall, onshore Direct Current and Alternating Current cables, converter stations, and highways improvements.
Root Protection Area (RPA)	Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m².

Term	Meaning
Tree Removal and Protection Plan	A scale drawing prepared by an arboriculturist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the Arboricultural Method Statement (AMS), which can be shown graphically.
Veteran Tree	Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.
Xlinks' Morocco UK Power Project	The overall scheme from Morocco to the national grid, including all onshore and offshore elements of the transmission network and the generation site in Morocco (referred to as the 'Project').

Acronyms

Acronym	Meaning
AMS	Arboricultural Method Statement
CEZ	Construction Exclusion Zone
ES	Environmental Statement
LEMP	Landscape and Ecology Management Plan
RPA	Root Protection Area
UK	United Kingdom

Units

Units	Meaning
mm	Millimetres
m	Metres
t	Tonnes

1 OUTLINE ARBORICULTURAL METHOD STATEMENT

1.1 Introduction

1.1.1 This document forms the Outline Arboricultural Method Statement, which has been prepared for the United Kingdom (UK) elements of Xlinks' Morocco-UK Power Project (the 'Project'). For ease of reference, the UK elements of the Project are referred to as the 'Proposed Development'.

1.1.2 The Outline Arboricultural Method Statement forms Appendix E to the Outline Onshore Construction Environmental Management Plan (On-CEMP) (document reference 7.7), which seeks to manage the environmental impacts of the construction process.

1.1.3 This statement has been informed by a Tree Survey of the Proposed Development which was carried out by RPS in October 2022 and May 2024 in accordance with the requirements of BS5837:2012. The Tree Survey and Arboricultural Impact Assessment is contained in Volume 4, Appendix 2.6 of the Environmental Statement (ES) (document reference 6.4.2.6) containing the tree schedules and accompanying plans.

1.1.4 This report has been prepared in accordance with the requirements set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations (British Standards Institute, 2012).

1.2 Scope

1.2.1 This report follows on from the Tree Survey and Arboricultural Impact Assessment that forms Volume 4, Appendix 2.6 of the ES (document reference 6.4.2.6).

1.2.2 This report provides the following information:

- arboricultural information and measures to ensure the protection of retained trees throughout the construction of the Proposed Development; and
- Preliminary Tree Removal and Protection Plans to illustrate the proposed protection measures to be taken in respect of the trees during construction of the Proposed Development.

1.2.3 The Preliminary Tree Removal and Protection Plans in Annex D of Volume 4, Appendix 2.6: Tree Survey Report and Arboricultural Impact Assessment (document reference 6.4.2.6) identify the following, based on current designs:

- trees to be retained;
- trees to be removed based on worst case scenario;
- indicative alignment and design of protection fencing; and
- Root Protection Area (RPA) of trees.

1.3 Report Implementation

1.3.1 Detailed Arboricultural Method Statements (AMS) (including detailed Tree Removal and Protection Plans) would be prepared in general accordance with this Outline AMS, for approval by the relevant planning authority prior to the relevant construction works commencing. These method statements would be prepared for all parts of the Proposed Development that coincide with existing trees or elements of the Proposed Development that lie immediately adjacent to trees.

1.3.2 The arboricultural measures within this statement and the Preliminary Tree Removal and Protection Plans would be revisited during the detailed design phase ensuring that arboricultural considerations are seamlessly integrated into the overall Proposed Development plans and reflect the latest on-site conditions.

1.3.3 The Detailed Tree Removal and Protection Plans shall be made available to all relevant site operatives prior to and throughout the construction process, so they understand the scope and importance of the tree protection measures.

1.3.4 To minimise the potential for harm to occur to retained trees all works shall be carried out in general accordance with the tree protection measures and construction techniques detailed within this Outline AMS and which Detailed AMSs must be in general accordance with.

1.3.5 In particular, the establishment of a Construction Exclusion Zone (CEZ) by erection of tree protection fencing would be required to minimise the potential for harm to occur to retained trees.

1.4 Detailed Arboricultural Method Statement and Tree Protection Plan

1.4.1 Once detailed design has been completed, Detailed AMS(s) would be provided for any area where works are in close proximity to retained trees.

1.4.2 These would be written in accordance with this Outline AMS and detail tree specific working methodologies as necessary to ensure retained trees are protected.

1.4.3 They would also include Detailed Tree Protection Plans for each area in question which will show:

- locations of trees to be retained with RPAs and approximate tree canopy outlines with category colours;
- location and alignment of tree protection fencing; and
- hatches/comments showing where specific tree working methodologies are required.

1.4.4 The key of each Tree Protection Plan would provide details showing which arboricultural working practice each of the above mentioned hatches relates to.

1.4.5 These hatches and any comments would be further expanded upon within the body of each detailed AMS.

1.5 Arboricultural Working Practices

1.5.1 The measures set out in this section are arboricultural working procedures and protective measures that would, following detailed design, be reviewed and confirmed through the Detailed AMSs.

Outline of Working Practices

1.5.2 General working practices and methodologies that would be implemented across the Proposed Development are as follows:

- general methodology for working near trees;
- tree removal and pruning works; and
- tree protection measures.

1.5.3 More specific Arboricultural Working Practices that may be required, where identified as necessary within the detailed AMS, are described in section 1.7 of this report and listed below:

- excavation within an RPA;
- breaking out existing hard surface;
- resurfacing of existing hard surfaces;
- construction of new hard surfaces;
- installation of posts for fencing;
- ground protection; and
- installing new surfaces or upgrading existing services.

General Methodology for Working Near Trees

1.5.4 All new (and existing re-routed) services shall be routed outside the existing or potential RPA of retained trees. Where it is unavoidable, then hand excavation shall be employed to avoid damage to the larger roots and the services slid through or below the root system. Ducting shall be used to carry cables. Reference shall be made to the recommendations included within the National Joint Utilities Group (NJUG) document 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees' (NJUG 4) (NJUG, 2007).

1.5.5 Where possible, the RPA would become an exclusion zone during construction works and for any development. It would be fenced-off and protected in accordance with BS5837:2012. Details of Tree Protection Fencing and ground protection are detailed below.

1.5.6 Unless specified within the Detailed AMS, there would be no activities that result in excavations, changes in level or soil compaction within the RPA of any retained trees, especially older mature trees. This includes the storage of materials, any construction work, trafficking by vehicles or even excessive trafficking by pedestrians.

1.5.7 The location and siting of proposed new construction elements near trees would consider the potential impact on and conflict with both tree roots and canopy.

This would take into account the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree(s) on end user activities would also be considered with regard to obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.

1.5.8 Any time the need for arboricultural supervision is anticipated this would be highlighted on the Detailed AMS using a colour coded hatch or comment on the drawing. This would only be when works may encroach upon a tree's RPA.

1.5.9 If however, any roots greater than 25 mm diameter are discovered while working outside of a tree's RPA, arboricultural advice shall be sought before works continue.

Tree Removal and Pruning Works

Standard of Work

1.5.10 The tree work required in order to facilitate the Proposed Development would adhere to the following standards.

- All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice.
- All tree work shall be carried out by suitably qualified, competent and insured arboricultural contractors in accordance with Arboricultural Association Standard Conditions of Contract and Specifications for Tree Works (Arboricultural Association, 2008) and BS3998:2010 Tree Work.
- All green and woody waste generated by the tree works shall be removed from site and disposed of in a suitable environmentally sustainable manner e.g. biomass creation, compost facility, wood fuel and/or habitat creation.

1.5.11 When a branch is removed at its point of attachment, injury of the wood and bark of the parent stem or branch above the cut shall be avoided. If a branch collar is visible, the final cut shall be just outside it and care shall be taken to avoid tearing retained wood and bark when the cut is made. Preliminary cuts shall be made, if necessary, so as to remove weight, before a final cut is made. Care shall be taken to prevent falling branches from harming other parts of the tree (including its roots), its surroundings, people or property. Heavy branches shall be removed in sections and, where necessary, shall be lowered with ropes.

1.5.12 Prior to the start of any tree works, an appropriate risk assessment shall be produced by the appointed contractor to describe the measures required to fulfil the statutory safety obligations. It shall aim to identify and prioritise the necessary control measures and precautions.

Timing of Works

1.5.13 Any tree works required shall be completed in accordance with the Detailed AMSs to be approved by the relevant planning authority.

1.5.14 All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.

1.5.15 Please refer to the Outline Landscape and Ecology Management Plan (LEMP) (document reference 7.10) for further details regarding the protection of birds during tree removal.

1.6 Tree Protection Measures

Construction Exclusion Zones

1.6.1 The protection fence line defines the CEZ, and the fencing shall not be moved or taken down at any time.

1.6.2 Within the CEZ, unless specified otherwise within the Detailed AMS, there must be no mechanical digging or scraping; no alteration to existing ground levels including soil stripping; no earthworks; and no handling or discharge of any chemical substance, concrete washings or of any fuels. Furthermore, vehicular, or pedestrian access and the storage of any materials is prohibited within the CEZ.

1.6.3 Additionally, no materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10 m of the stem of any tree and no fires shall be lit within 10 m of the maximum extent of a tree's crown.

Tree Protection Fencing

1.6.4 Unless otherwise agreed in writing with the Arboricultural Consultant, the fencing system to be utilised shall be in accordance with **Annex A** and compliant with BS5837:2012.

1.6.5 The tree protection fence shall be erected as shown on the Detailed Tree Protection and Removal Plans to form part of the Detailed AMSs and compromising an update to the Preliminary Plans (contained in Annex D of Volume 4, Appendix 2.6: Tree Survey Report and Arboricultural Impact Assessment (document reference 6.4.2.6)) to take account of detailed design work.

1.6.6 The fence line to be shown on the Detailed Tree Protection and Removal Plans would be shown as the minimum required and the length of the fence shall be extended or adjusted on site as agreed with the Arboricultural Consultant to ensure satisfactory protection of all retained trees and RPAs.

1.6.7 Where proposed construction site-hoarding provides the same level of protection to the retained trees and RPAs as the proposed tree protection fence, subject to agreement with the Arboricultural Consultant, the hoarding may serve as the tree protection fence. Notwithstanding, depending on the form and alignment of the construction site hoarding it may be necessary to provide additional tree protection fence to ensure adequate protection of retained trees and RPAs as shown on the Detailed Tree Protection and Removal Plans.

1.6.8 Where necessary, tree protection fencing may be temporarily re-aligned in order to facilitate tree removal. Fencing is to be re-instated immediately following removal in a manner that encompasses the remaining trees and their respective RPAs.

1.6.9 During tree removal, no wheeled or tracked machinery is to enter the area previously encompassed by tree protective fencing as shown in the Detailed Tree Protection and Removal Plans.

1.6.10 Signs detailing the purpose of the protective fencing shall be attached to the fencings. Such signs will be weatherproof and shall be substantially in the form of the specimen provided in **Annex B**. Signs must be replaced as necessary would they be removed or become illegible.

Site Compounds and Materials Stores

1.6.11 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular, the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.

1.6.12 To prevent harm occurring to trees, provision for materials storage, deliveries and other related activities shall be made available in areas away from retained trees.

1.6.13 Under no circumstances shall materials or plant be stored beneath the canopy or within or abutting the RPA of any retained trees/hedges, whether fenced or not.

Soft Landscaping

1.6.14 Following the completion of main works, all landscaping works shall take place from outside the area that was demarcated as the CEZ.

1.6.15 Where final landscape grading would require fathering into the CEZ, this works shall be done by hand or by use of small plant, preferably with large pneumatic grass tyres.

1.6.16 All soft landscaping works shall be in accordance with the Outline LEMP (document reference 7.10), good horticultural practice and current British Standards with particular reference to:

- BS 3998: Recommendations for tree work;
- BS 4428: Code of practice for general landscape operations; and
- BS 7370: Grounds maintenance.

Dust Management

1.6.17 On particularly hot, dry weather conditions the dust created from the works can cover tree canopies and subsequently cause indirect damage to trees by reducing transpiration through the leaves and their ability to photosynthesise.

1.6.18 On all occasions when dust settles on the canopies of trees, a water hose shall be used to water down and remove all dust from leaves within the canopy.

Monitoring

1.6.19 Following erection of the protection fencing and prior to commencement of the construction works of the relevant area, an inspection of the site by the Arboricultural Consultant will be arranged to confirm fencing has been installed in accordance with the Detailed Tree Protection and Removal Plans (to be prepared as part of the Detailed AMSs).

1.6.20 Further monitoring visits will be carried out following commencement of the works on site, ideally on at least a monthly basis to ensure ongoing functionality of the CEZ and to check on tree condition.

1.6.21 All arboricultural site visits will be recorded and presented within an Arboricultural Inspection Report.

Reporting

1.6.22 Will any arboricultural issues become apparent during the works the Principal Contractor will immediately contact the Arboricultural Consultant for advice on how to proceed.

1.7 Below Ground Impact Mitigation

1.7.1 As part of the detailed design phase, any essential works that are identified within the RPA of a retained tree would require extra protection or mitigation methods.

1.7.2 Areas where such additional mitigation methods are required would be added to the Detailed Tree Removal and Protection Plans, based on the preliminary plans in Annex D of Volume 4, Appendix 2.6: Tree Survey Report and Arboricultural Impact Assessment (document reference 6.4.2.6), and contained in the Detailed AMSs for the relevant planning authority's approval.

1.7.3 These mitigation methods may include the following.

Ground Protection

1.7.4 If access to a retained tree's RPA is required in order to facilitate construction, the Detailed AMS would identify this and specify where ground protection must be used in order to protect the trees roots from soil compaction.

1.7.5 Temporary ground protection must be sufficient in design, to support the proposed construction movement within the RPA. Different levels of ground protection may be comprised of one of the following designs as referenced from BS5837:2012:

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

1.7.6 See **Annex C** for an Example Ground Protection Detail.

Excavation within an RPA

1.7.7 Where excavation works within the RPA are unavoidable, works must be undertaken by hand and the soil levels would be carefully reduced to avoid damage to the bark of larger roots directly beneath and adjacent to the excavation. Where these become exposed, they would be further protected from drying out.

1.7.8 Where root pruning is unavoidable it would be made at a suitable place within the root system, avoiding damage to surrounding tissue in accordance with BS

3998:2010. Final pruning cuts shall be made at right angles to the axis of the root and the final cut wound would be smooth and as small as possible, free from ragged torn ends.

Breaking Out Existing Hard Surface

1.7.9 Removal of any hard surface, within the RPA of a retained trees, shall be carried out by low impact handheld pneumatic tools. Working from the undisturbed surface, the removal of this surface shall occur in strips, working in a retreating manner away from the retained trees. Subsequent removal of arisings/debris shall also be carried out by hand.

1.7.10 Where possible, the use of machines with a long reach would be favoured, if they can work from outside of the RPAs or from within the RPAs when supported by suitable ground protection.

1.7.11 Where this is not possible, hardstanding shall be manually broken up and removed from the RPA using appropriate hand tools e.g. pneumatic breaker, crowbar, sledgehammer, pick, mattock, shovel, spade, trowel and wheelbarrow. This work will also be carried out under an Arboricultural Watching Brief, to ensure any encountered roots are delt with appropriately.

Resurfacing of Existing Hard Surface

1.7.12 Where this is proposed within an RPA, the new hard surface would be constructed using 'no-dig' design principles, in accordance with Arboricultural Association Guidance Note 12 'Cellular Confinement Systems Near Trees' (Arboricultural Association, 2020), with construction utilising existing levels, reusing sub-base and wearing courses within new construction.

Construction of New Hard Surface

1.7.13 Where possible, proposed new hard surface within any RPA would be constructed using above ground construction, requiring no-dig design principles in accordance with Arboricultural Association Guidance Note 12 (Arboricultural Association, 2020), in order to minimise the potential impact this would have on any retained trees.

Installation of posts for fencing

1.7.14 At various points across the Proposed Development, there may be site hoarding/boundary fences proposed within the RPAs of retained trees. The impact of this work is minimal and would not have a significant impact on tree health as long as best practise is followed.

1.7.15 Where possible, posts shall be driven into the ground avoiding any obvious large surface roots. If it is not possible to drive posts into the ground, small holes can be excavated using hand tools only, avoiding roots, back filled with removed earth and compacted down to ensure stability.

1.7.16 If cement is required to provide reinforcement, the hole shall be dug using hand tools only, lined with a non-permeable layer and cement poured into the hole to ensure the leaching of chemicals into the RPA does not occur.

Installing New Services or Upgrading Existing Services

1.7.17 Where practicable, all new surfaces would be outside of RPAs, but where existing services within RPAs require upgrading or new provision is required, trenchless installation would be the preferred option.

1.7.18 If this option is not feasible, any excavation would be carried out by hand in accordance with the guidelines set out in NJUG (2007).

1.7.19 The table in **Annex D** taken from BS5837:2012 outlines available trenchless solutions.

1.8 References

British Standards Institute (2012). BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.

British Standards Institute (2010). BS3998:2010 Trees Work - Recommendations.

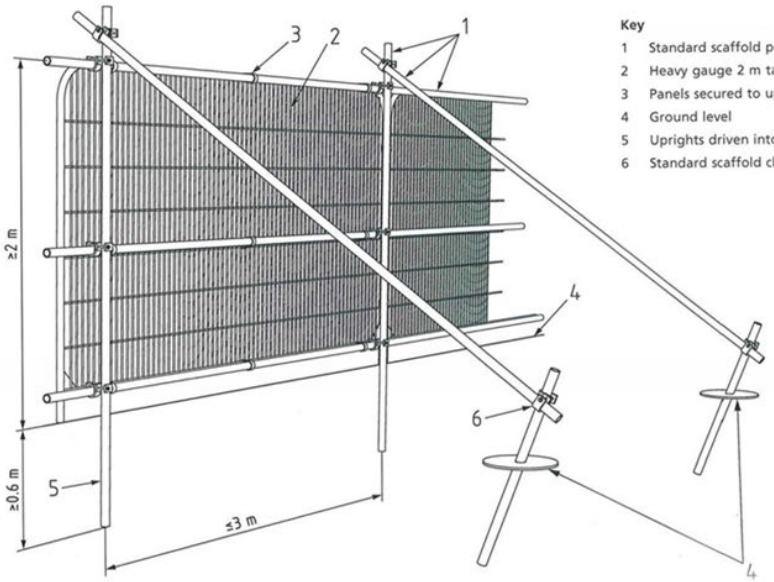
NJUG (2007). NJUG Volume 4- Guidance for the planning, installation and maintenance of utility services in proximity of trees.

Arboricultural Association (2008). Standard Conditions of Contract and Specifications for Tree Works (2008) Edition

Arboricultural Association (2020). Guidance Note 12: The Use of Cellular Confinement Systems Near Trees.

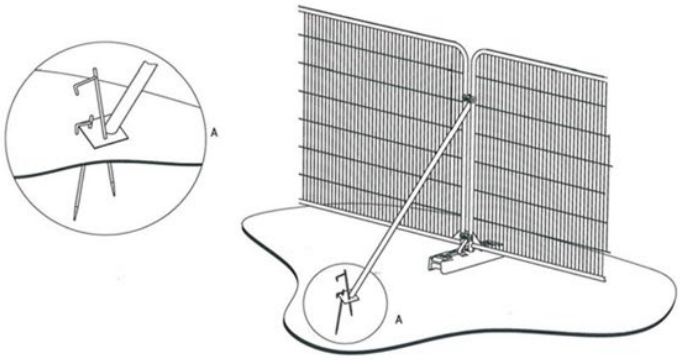
Annex A: Example Tree Protection Fencing (BS5837:2012 Fig 2 and 3)

Figure 2 **Default specification for protective barrier**

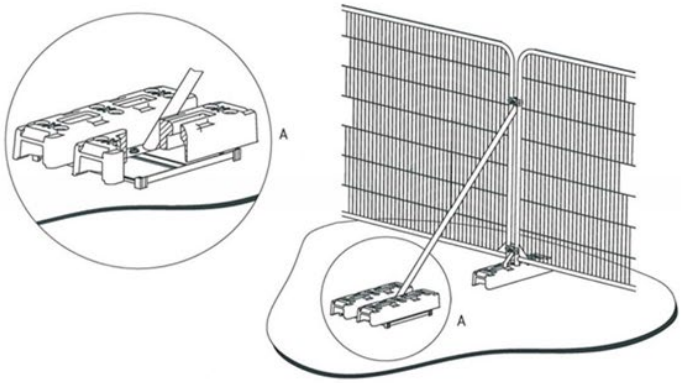


Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

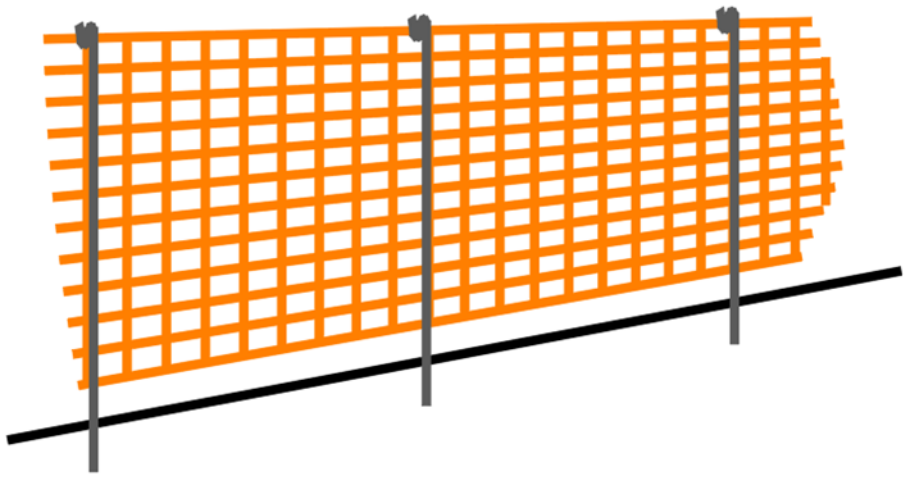


b) Stabilizer strut mounted on block tray

VISUAL TREE PROTECTION BARRIER

Secondary tree protection barrier

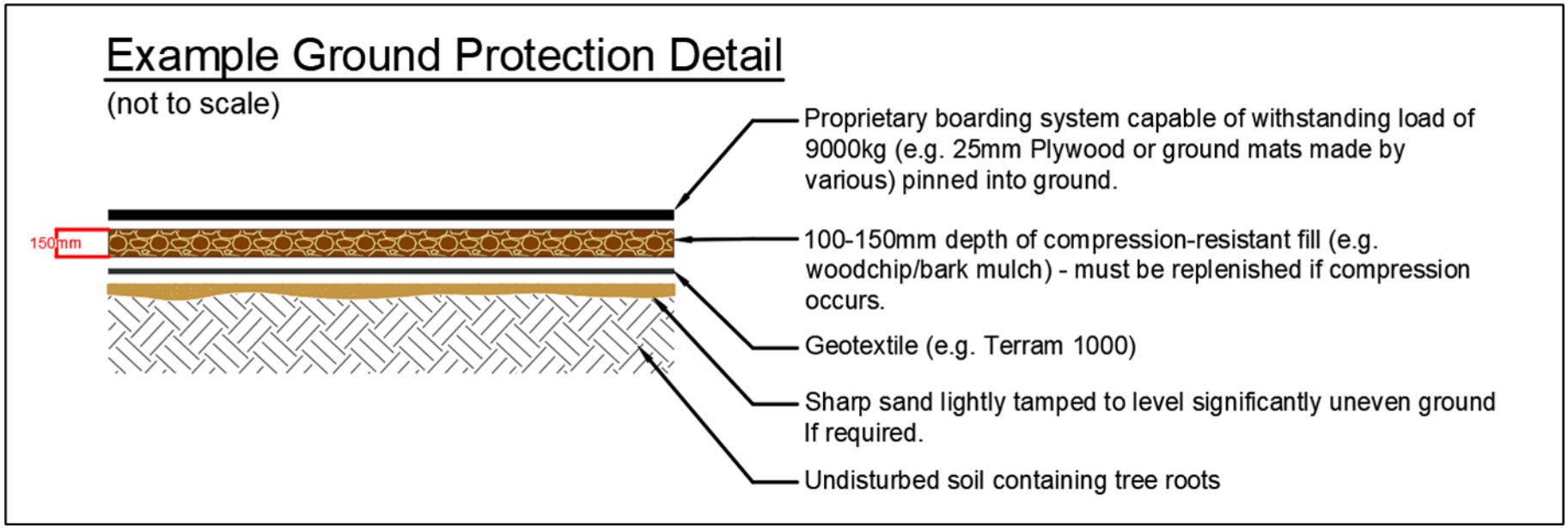
(Not to scale)



- To identify trees and vegetation not immediately adjacent to construction works.
- 1m high heavy duty hi-vis barrier mesh
- Erected and fitted to metal poles, timber stakes or railway pins driven into the ground at regular intervals

Annex B: Example Construction Exclusion Zone (CEZ) Sign

Annex C: Example Ground Protection Detail



Annex D: Potential Methods of Trenchless Installation

Trenchless solutions for differing utility apparatus installation requirements (BS 5837:2012)					
Method	**Accuracy mm**	**Bore dia. (A) mm**	**Max sub (B) length m**	**Applications**	**Not suitable for**
Microtunnelling	<20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/ roadway undercrossings	Low-cost projects due to relative expense
Surface-launched directional drilling	≈100	25 to 1 200	150	Pressure pipes, cables including fibre optic	Gravity-fall pipes, eg. drains and sewers (C)
Pipe ramming	≈150	150 to 2 000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling (D)	≈50(E)	30 to 180(F)	40	Gas, water and cable connections, eg. from street to property	Any application that requires accuracy over distances in excess of 5m

(A) Dependent on strata encountered.

(B) Maximum subterranean length.

(C) Pit-launched directional drilling can be used for gravity fall pipes up to 20m subterranean length.

(D) Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.

(E) Substantial inverse relationship between accuracy and distance.

(F) Figures given relate to single pass: up to 300mm bore achievable with multiple passes.