METHODOLOGY

5.1 Where works requires the removal of vegetation, this work is to be carried out before all other works and to the specification below.

5.2 Tree Protection Fencing shall then be erected, to the specification given below, in order to protect any remaining vegetation.

5.3 This fencing shall be erected before any work begins and remain in situ for the entire duration of works.

5.4 All further guidance contained within the Arboricultural Method Statement should still be followed throughout the coarse of construction.

5.5 Once construction is completed, where possible, trees and hedges should be replanted. For example, where a section of hedge has been removed to lay a cable, it should be replanted to reform a continuous hedge.

Tree Removal Works

5.6 Tree removal shall only be carried out if absolutely necessary. Any proposed work that will require tree removal shall first be assessed to see if it can be diverted in order to retain trees.

5.7 If the work can not be diverted and the removals are deemed necessary, then the path of least resistance through the vegetation to be removed shall be sought.

5.8 Where works require the removal of vegetation the following methodology shall be used:

Standard of Work

5.9 All tree work shall be carried out by a suitably qualified tree surgeon, preferably an Arboricultural Association approved contractor and monitored by an appointed person.

5.10 Trees identified for removal shall be removed with care in accordance with current H&S requirements and good arboricultural practice to avoid damage to adjacent trees / property.

5.11 Stumps of felled trees shall be treated appropriately in accordance with BS3998:2010 (section 12.3) and considering the RPA of retained trees.

5.12 No wheeled or tracked machinery (e.g., MEWPs, Chippers or Cranes) is to enter the RPA of retained trees.

Timing of Works

5.13 Any tree works required shall be completed prior to any construction and enabling works on the site.

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.

5.15 Nesting birds are protected by law and any removal / tree works should not be carried out during the bird nesting season (March-August inclusive). Should any vegetation be outlined for removal during this period, then an ecological inspection would be required to check that no nesting birds are present. Should checks reveal nesting birds the vegetation must remain until September or until an ecologist has certified that the fledglings have left the nest. A visual inspection for bats shall also be carried on mature / ivy clad trees prior to commencing operations.

Waste Wood Management

5.16 All green and woody waste generated by the tree works shall chipped, removed from site and disposed of in an environmentally sustainable manner in line with current Environmental Protection Act 1990 (EPA) guidelines.

Fencing Specification (Heras 151 steadfast system)

5.17 Either the Heras 151 steadfast system or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. See inset.

5.18 This is to be erected around as much of any retained trees RPAs as possible, as calculated during Stage 2 of this Tree Protection Protocol, while allowing sufficient clearance from proposed works.

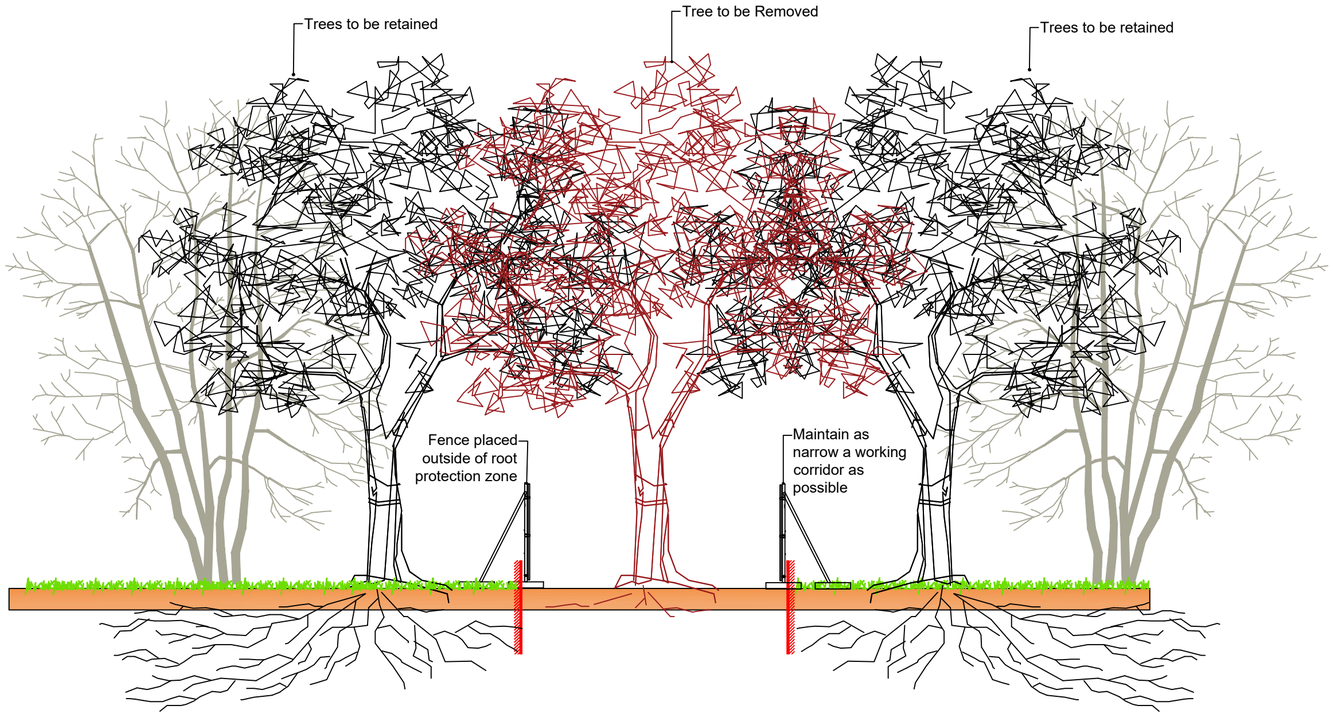
5.19 The panels will be secured to each other using at least two Heras-lock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

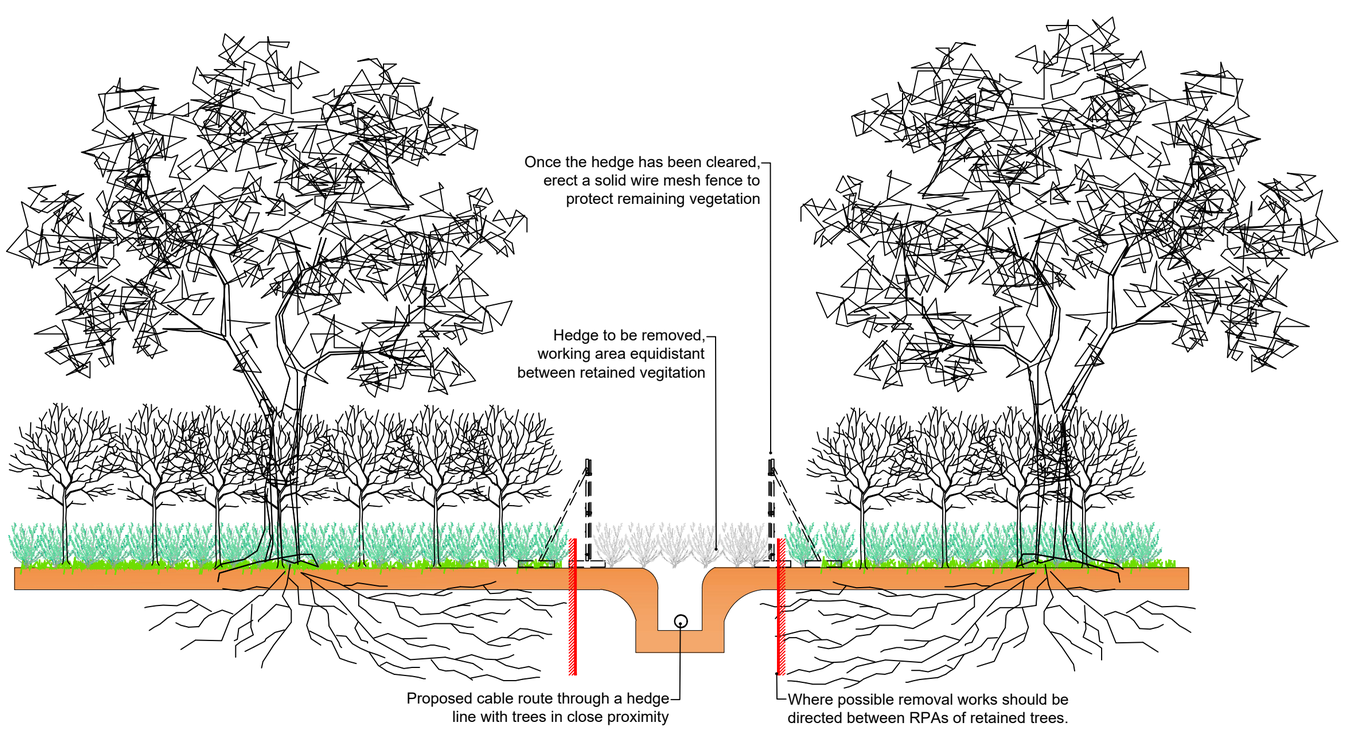
5.20 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter.

5.21 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided inset. Signs must be replaced as necessary should they be removed or become illegible.

Scenario 5

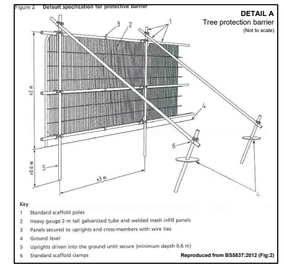
Vegetation Removal

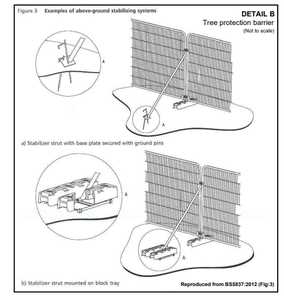




Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2023 All rights reserved. Licence number 0100031673





Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY

Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire SO53 5SS

T: 02380 810 440 **E:** rpsso@rpsgroup.com

Client	Photovolt Development Partners
Project	Botley West Solar Farm
Title	Tree Protection Protocol Scenario 5

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A2	Date Created
JSL4631	NTS	July 2023

RPS Drawing / Figure Number	Rev
795	-

rpsgroup.com

P:\4600 Series\JSL4631 - Land East of Botley - Arb\Tech\ACAD\Current\Arb\JSL4631_720-730A - Tree Protection Protocol.dwg

METHODOLOGY

6.1 Trenching within the RPA of retained trees shall only be carried out if absolutely necessary. Any proposed work that will require trenching within RPAs shall first be assessed to see if it can be diverted in order to protect trees.

6.2 **The following notes/specifications shall only be taken as guidance, and shall be used to inform SITE SPECIFIC ARBORICULTURAL METHOD STATEMENTS which will be produced in each given location where excavation with RPA's is unavoidable**.

6.3 Where works do require trenching within the RPA, this work is to be carried out using the methodology below in order to mitigate damage to retained trees as much as possible.

6.4 Tree Protection Fencing shall also used, to the specification given below, in order to protect as much of the RPA outside of the proposed works as possible.

6.5 This fencing shall be erected before any work begins and remain in situ for the entire duration of works.

6.6 If trenching works will affect more than 20% of any retained trees RPA the impact should be assessed by the project Arboricultural Consultant as the tree may require removal.

6.7 All further guidance contained within the Arboricultural Method Statement should still be followed throughout the coarse of construction.

Excavation

6.8 When within any RPA excavation shall be undertaken by hand or, if machinery is to be utilised, it is to be under an Arboricultural watching brief by the project Arboricultural Consultant.

6.9 Where machinery is to be used it shall be as lightweight as possible to complete the task and the ground from which the machine is working from should be outside of any RPA.

6.10 Any excavations that require backfilling, shall only utilise soil that was removed for filling or other site won soil where needed.

6.11 No chemicals, fuels or other harmful substances that could harm trees shall be spilled whilst undertaking the task.

6.12 Any roots encountered that are under 25mm in diameter shall be cut cleanly with a sharp saw or secateurs leaving the smallest possible diameter cut surface possible.

6.13 Any roots over 25mm in diameter that are encountered throughout excavation within an RPA shall be maintained if possible, during construction, such as within the foundations of boundary walls, and protected by packing in sand and sleeving.

6.14 Where roots are found during any excavation, they shall not be left exposed for longer than 24hrs without sufficient root protection e.g. roots wrapped in wet hessian and faces of trenches covered with polyethylene material pinned down to the ground - especially important in hot and dry conditions. Hessian and any polyethylene shall be removed on backfilling of the trench. If roots are to be cut, the appointed Arboricultural Consultant must first be consulted prior to the severance of any roots over 25mm in diameter.

Fencing Specification (Heras 151 steadfast system)

6.15 Either the Heras 151 steadfast system or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. See inset.

6.16 This is to be erected around as much of any retained trees RPAs as possible, as calculated during Stage 2 of this Tree Protection Protocol, while allowing sufficient clearance from proposed works.

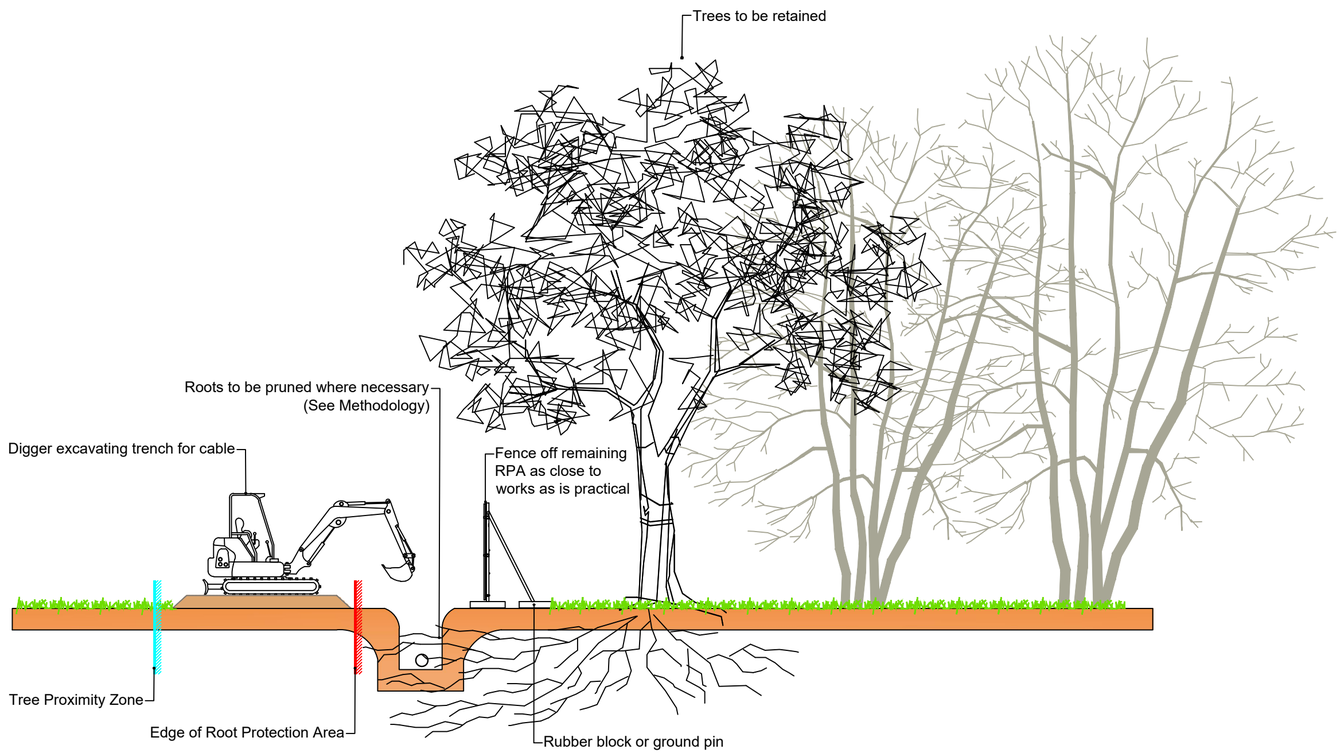
6.17 The panels will be secured to each other using at least two Heras-lock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

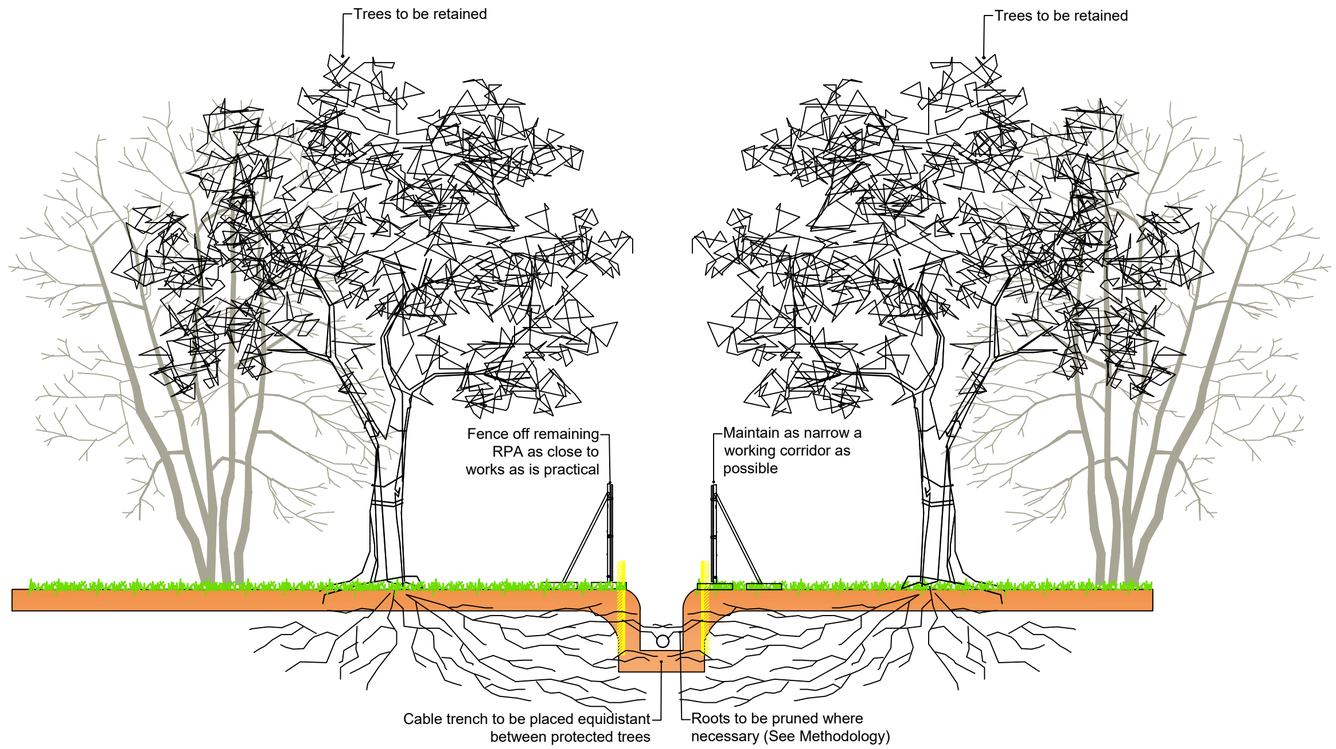
6.18 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter.

6.19 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided inset. Signs must be replaced as necessary should they be removed or become illegible.

Scenario 6

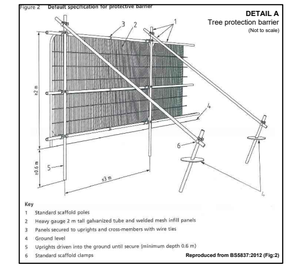
Trenching Within Root Protection Areas

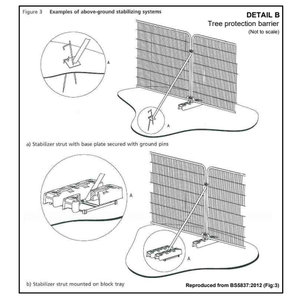




Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2023 All rights reserved. Licence number 0100031673





Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY
Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire SO53 5SS
T: 02380 810 440 **E:** rpsso@rpsgroup.com

Client: Photovolt Development Partners

Project: Botley West Solar Farm

Title: Tree Protection Protocol Scenario 6

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A2	Date Created
JSL4631	NTS	July 2023

RPS Drawing / Figure Number: 796

Rev: A

rpsgroup.com

P:\4600 Series\JSL4631 - Land East of Botley - Arb\Tech\ACAD\Current\Arb\JSL4631_720-730A - Tree Protection Protocol.dwg

METHODOLOGY

7.1 Where new access roads are to be constructed within the RPA of any retained trees, a "No-dig" construction methodology shall be adopted, following the methodology below, to avoid damage to the roots of retained trees.

7.2 Tree Protection Fencing shall also be used in order protect any remaining RPA outside of the construction area. This should be erected to the specification given below.

7.3 The Tree Protection Fencing shall be erected before any work begins and remain in situ for the entire duration of works.

7.4 All further guidance contained within the Arboricultural Method Statement should still be followed throughout the coarse of construction.

Installation of New 'No-Dig' Surfacing

7.5 If the new surface is to be within an area of existing hard surface, construction will maintain and re-using the existing sub-base and wearing courses whenever possible, with breaking out of existing hard surface following the methodology given in Scenario 10.

7.6 This will also act as ground protection for the parts of the RPAs that are outside the protective barriers and will need to be installed before any other construction activity occurs on site.

7.7 The use of cellular confinement system is suggested in BS5837:2012 as one appropriate way to achieve hard surfacing over tree roots, and the following guidance is based on this principle as well as Arboricultural Association Guidance Note 12 - Cellular Confinement Systems However, before implementation, the following specifications and guidance will need to be reviewed by an engineering specialist to ensure that the final construction is appropriate from an engineering viewpoint and suitable for the purpose intended.

Installation

7.8 Any required changes in topography will be accomplished by raising levels rather than lowering, reducing the likelihood of significant root disturbance. To attain a flat surface, it may be necessary to remove the top layer of vegetation by no more than 50mm. If any additional excavation of ground level is required, it shall be assessed by the project Arboriculturist and possibly the Councils' Tree Officer.

7.9 In the unlikely event that roots are encountered, those smaller than 25mm diameter may be pruned back using a sharp and clean cutting tool such as secateurs or handsaws. Roots larger than 25mm should only be cut having first consulted the project Arborist and/or the Local Tree Officer as the roots may be essential to the tree's health and stability.

Sub-base and final wearing courses

7.10 Once a level surface has been formed, the cellular load spreading confinement system can be installed on top of a geotextile membrane that has been laid on top of the ground surface. The infill shall be crushed stone (typically 20-40mm, clean angular stone), with no fines. This is to ensure that moisture is allowed to penetrate the surface as well as to facilitate gaseous exchange.

7.11 During the construction phase a temporary wearing course of tarmac and or aggregate, separated by a geotextile membrane is likely to be the most appropriate way of providing a suitable ground protection/working surface. At the final stages of the project, the temporary wearing course shall be removed, and the final surfacing will be installed.

7.12 Suitable wearing courses include bonded gravel, paving slabs, washed gravel or block pavers set on a sand base, this is not an exhaustive list, other surfacing may be suitable but consultation with the project arboriculturist is recommended before implementation.

Edge retention

7.13 The use of non-invasive ground contact structures including proprietary edging, gabions, wooden boards or railway sleepers is suggested in BS 5837:2012 as effective edge supports in RPAs secured by metal rods, track or road pins or wooden pegs. This or a similar approach shall be used to minimise any adverse risk of impact on trees. No trench type foundation shall be used without prior consultation with the project arboriculturist and/or the Local Authority Tree Officer.

Detailed specifications

7.14 Final drawings shall be prepared by the project engineer and based on manufacturers specifications for special surfacing. These plans could be secured by way of a suitably worded planning condition and approved by the Council before any construction activity occurs on-site. See inset below for examples of "No-Dig" construction.

Fencing Specification (Heras 151 steadfast system)

7.15 Either the Heras 151 steadfast system or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. See inset.

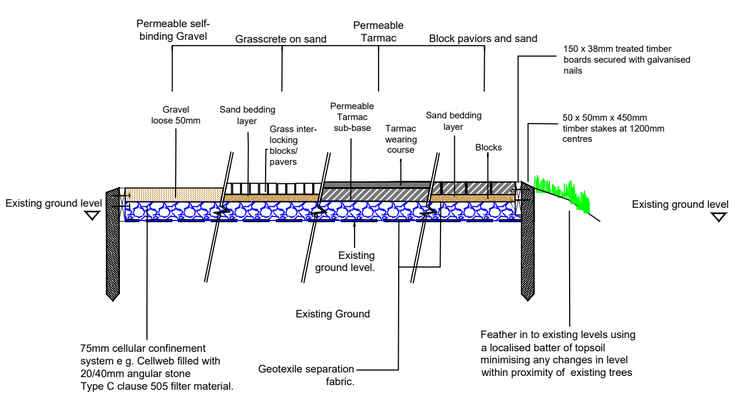
7.16 This is to be erected around as much of any retained trees RPAs as possible, as calculated during Stage 2 of this Tree Protection Protocol, while allowing sufficient clearance from proposed works.

7.17 The panels will be secured to each other using at least two Heras-lock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

7.18 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter.

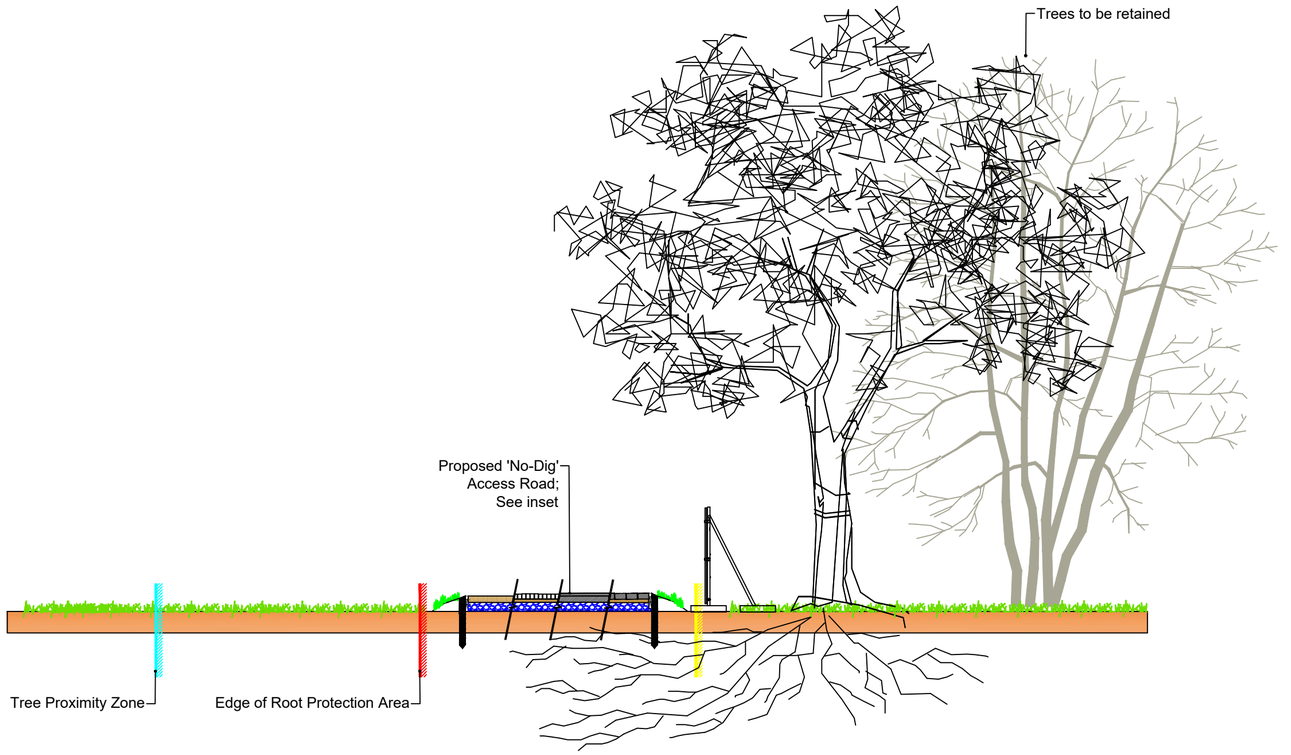
7.19 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided inset. Signs must be replaced as necessary should they be removed or become illegible.

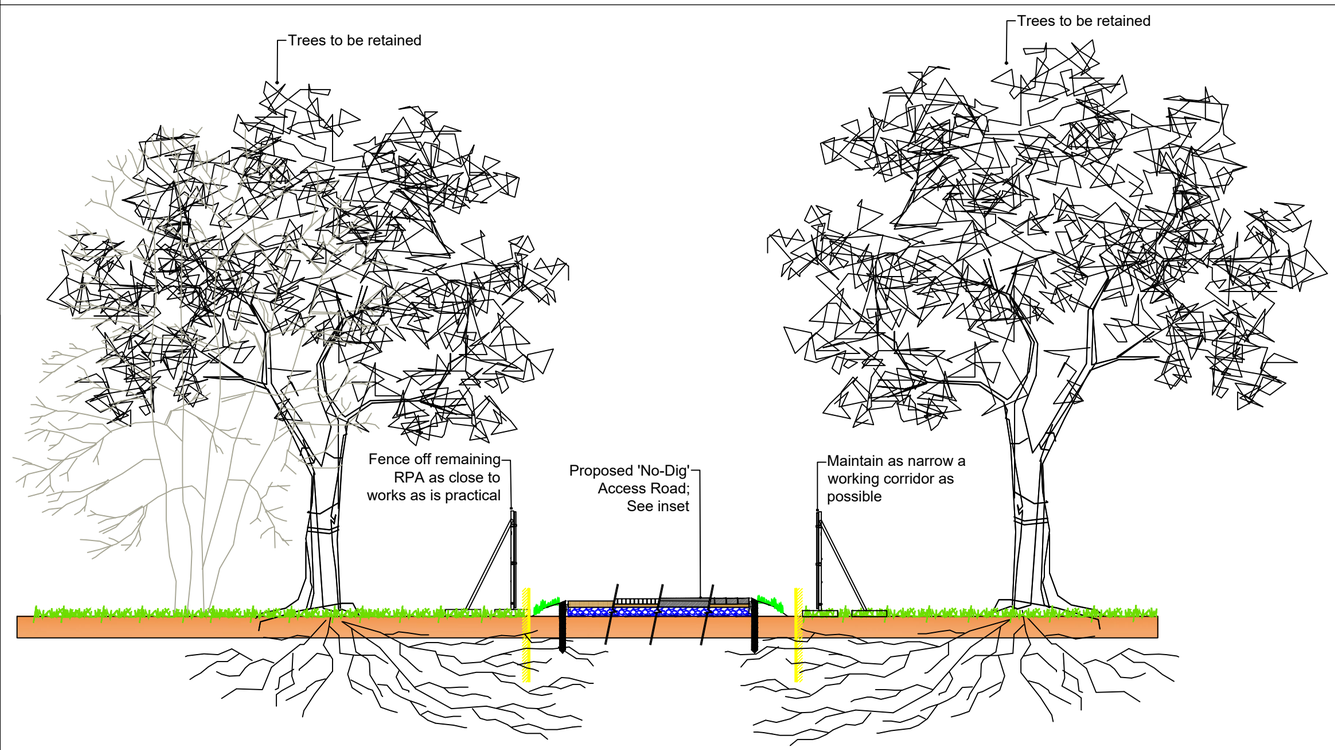
Various surface options



Scenario 7

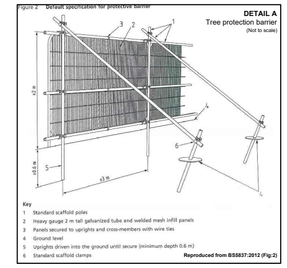
"No - Dig" Access Road Construction

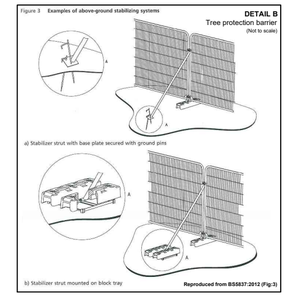




Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2023 All rights reserved. Licence number 0100031673





Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY

Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire SO53 5SS

T: 02380 810 440 **E:** rpsso@rpsgroup.com

Client: Photovolt Development Partners

Project: Botley West Solar Farm

Title: Tree Protection Protocol Scenario 7

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A2	Date Created
JSL4631	NTS	July 2023

RPS Drawing / Figure Number: 797

Rev: -

rpsgroup.com

P:\4600 Series\JSL4631 - Land East of Botley - Arb\Tech\ACAD\Current\Arb\JSL4631_720-730A - Tree Protection Protocol.dwg

METHODOLOGY

8.1 Where new fencing or solar panel arrays require posts to be placed within the RPA of any retained trees the following methodology is to be used.

8.2 Any works vehicles involved in these works are to reamin outside of all retained trees RPAs.

8.3 Using any protective fencing around retained trees RPAs has been deemed unnecessary for this task due to the small size and low impact nature of the works. Additionaly any fencing around the RPA would overly hinder workers access to the proposed works.

8.4 However, in order to ensure that operatives on site are aware of the need to remain outside of the RPAs, warning signs will be placed at 10m intervals along the edge of the RPA.

8.5 These signs should be at least A4 in size, weatherproof and attached to an appropriate backing with attached stake. Signs must be replaced as necessary should they be removed or become illegible. See inset for signage detail.

8.6 These signs shall be erected before any work begins and remain in situ for the entire duration of works.

8.7 All further guidance contained within the Arboricultural Method Statement should still be followed throughout the coarse of construction.

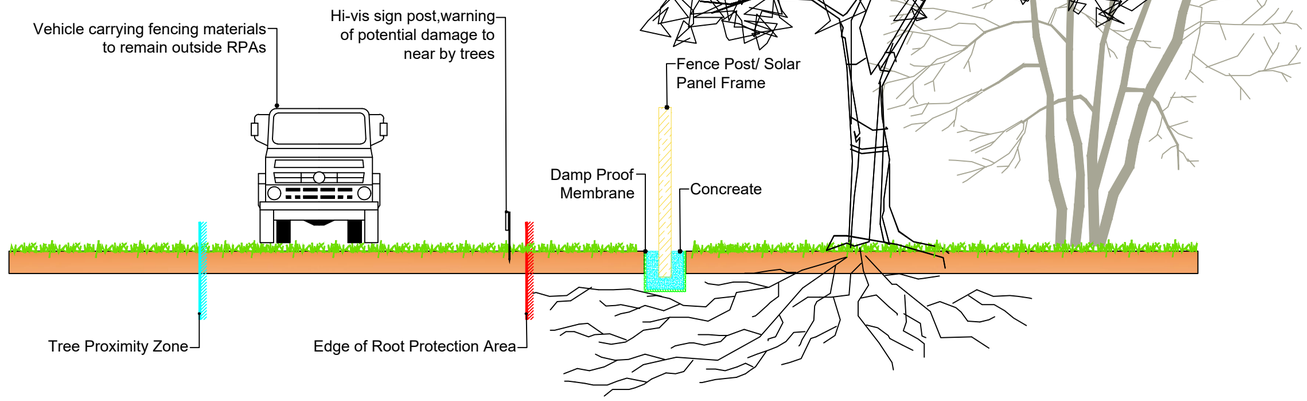
Installation of posts

8.8 Posts wherever possible 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.

8.9 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.

Scenario 8

Installing Fencing & Solar Arrays Within Root Protection Area



'Root Protection Area'

Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2023 All rights reserved. Licence number 0100031673

Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY

Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire SO53 5SS

T: 02380 810 440 **E:** rpsso@rpsgroup.com

Client: Photovolt Development Partners

Project: Botley West Solar Farm

Title: Tree Protection Protocol Scenario 8

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A2	Date Created
JSL4631	NTS	July 2023

RPS Drawing / Figure Number: 798

Rev: -

rpsgroup.com

P:\4600 Series\JSL4631 - Land East of Botley - Arb\Tech\ACAD\Current\Arb\JSL4631_720-730A - Tree Protection Protocol.dwg

METHODOLOGY

9.1 Foundation construction within the RPA of retained trees shall only be carried out if absolutely necessary. Any proposed work that will require foundations within RPAs shall first be assessed to see if it can be repositioned in order to protect trees.

9.2 **The following notes/specifications shall only be taken as guidance, and shall be used to inform SITE SPECIFIC ARBORICULTURAL METHOD STATEMENTS which will be produced in each given location where excavation with RPA's is unavoidable**.

9.3 Where works do require foundations within the RPA, where possible, pile and raft foundations will be used. If not possible, strip foundations will be used.

9.4 This work is to be carried out using the methodologies below in order to mitigate damage to retained trees as much as possible, however, before implementation the following specifications and guidance will need to be reviewed by an engineering specialist to ensure that the final construction is appropriate from an engineering viewpoint and suitable for the purpose intended.

9.5 Tree Protection Fencing shall also used, to the specification given below, in order to protect as much of the RPA outside of the proposed works as possible. This fencing shall be erected before any work begins and remain in situ for the entire duration of works.

9.6 If foundation works will affect more than 20% of any retained trees RPA the impact should be assessed by the project Arboricultural Consultant as the tree may require removal.

9.7 All further guidance contained within the Arboricultural Method Statement should still be followed throughout the coarse of construction.

Strip Foundations

9.8 When within any RPA excavation shall be undertaken by hand or, if machinery is to be utilised, it is to be under an Arboricultural watching brief by the project Arboricultural Consultant.

9.9 Where machinery is to be used it shall be as lightweight as possible to complete the task and the ground from which the machine is working from should be outside of any RPA.

9.10 Any excavations that require backfilling, shall only utilise soil that was removed for filling or other site won soil where needed.

9.11 No chemicals, fuels or other harmful substances that could harm trees shall be spilled whilst undertaking the task.

9.12 Any roots encountered that are under 25mm in diameter shall be cut cleanly with a sharp saw or secateurs leaving the smallest possible diameter cut surface possible.

9.13 If roots are to be cut, the appointed Arboricultural Consultant must first be consulted prior to the severance of any roots over 25mm in diameter.

9.14 Foundation pits should be lined with a non-permeable membrane before filling with cement in order to prevent chemicals leaching into soils and contaminating roots.

Pile & Raft Foundations

9.15 This foundation construction technique minimizes root damage that is inflicted on roots within the RPA of retained trees. The design of which should be

9.16 Once the location of a proposed foundation is marked out the pile locations should be marked with wooden pegs.

9.17 These pile locations must then be excavated by hand to a depth of 30cm, using hand tools only. This is to ensure that no tree roots above 25mm in diameter are present and likely to be damaged by insertion of the piles.

9.18 If large roots are discovered, then the position of the pile must be moved until the root has been avoided. This activity would ideally be supervised by an arboricultural.

9.19 Once these test holes have been dug and the location of piles confirmed, the piles should be driven into the ground using light machinery working from outside of any RPA. If the machinery can not reach the desired pile locations from outside the RPA, then sufficient ground protection shall be used; See Scenario 3.

9.20 Next a tree root protection membrane must applied to the surface, the purpose of which is to prevent contamination from construction materials, and in particular the concrete pad.

9.21 A raft, geo-grid can then be installed, which can then be filled with a loose gravel. This is a useful way of reducing the required depth of concrete for traditional structures, while maintaining structural integrity (consult a structural engineer for detailed specifications).

9.22 With these protections in place the concrete pad can then be laid.

Fencing Specification (Heras 151 steadfast system)

9.23 Either the Heras 151 steadfast system or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. See inset.

9.24 This is to be erected around as much of any retained trees RPAs as possible, as calculated during Stage 2 of this Tree Protection Protocol, while allowing sufficient clearance from proposed works.

9.25 The panels will be secured to each other using at least two Heras-lock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

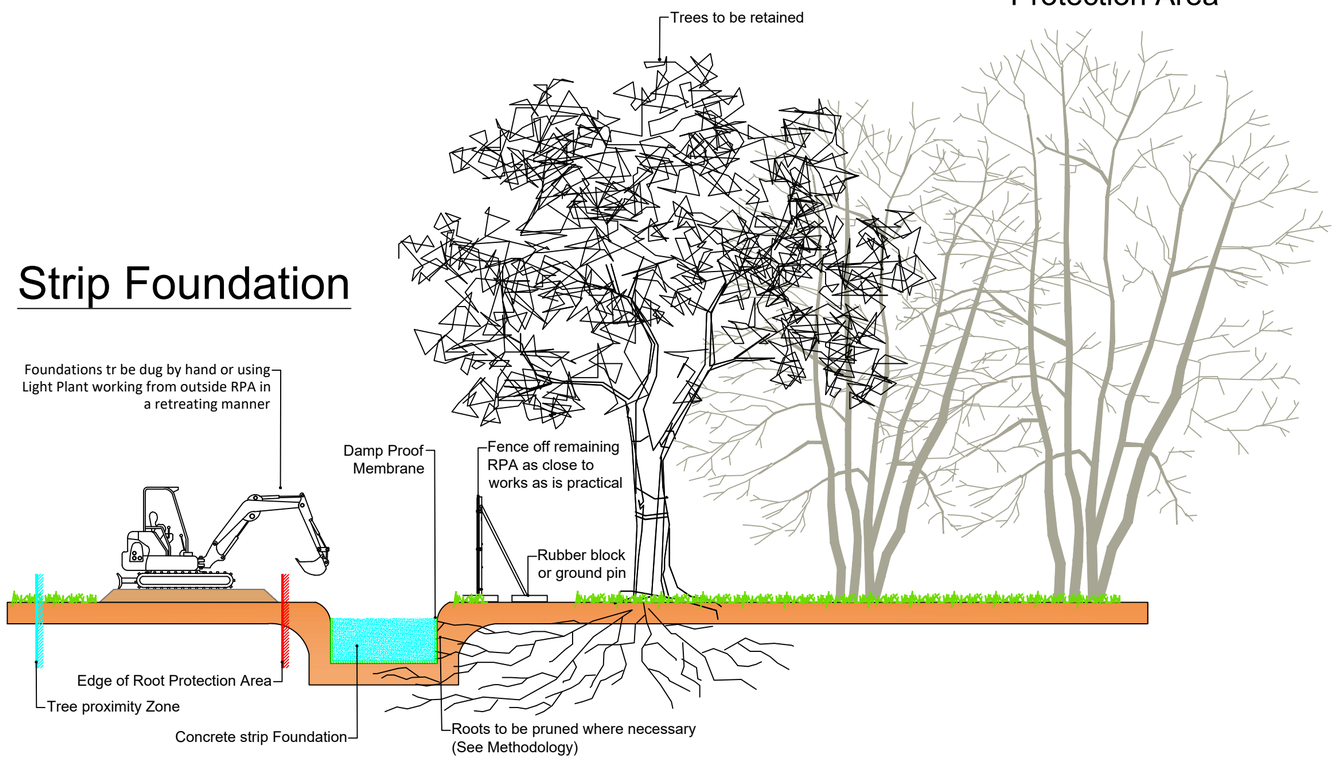
9.26 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter.

9.27 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided inset. Signs must be replaced as necessary should they be removed or become illegible.

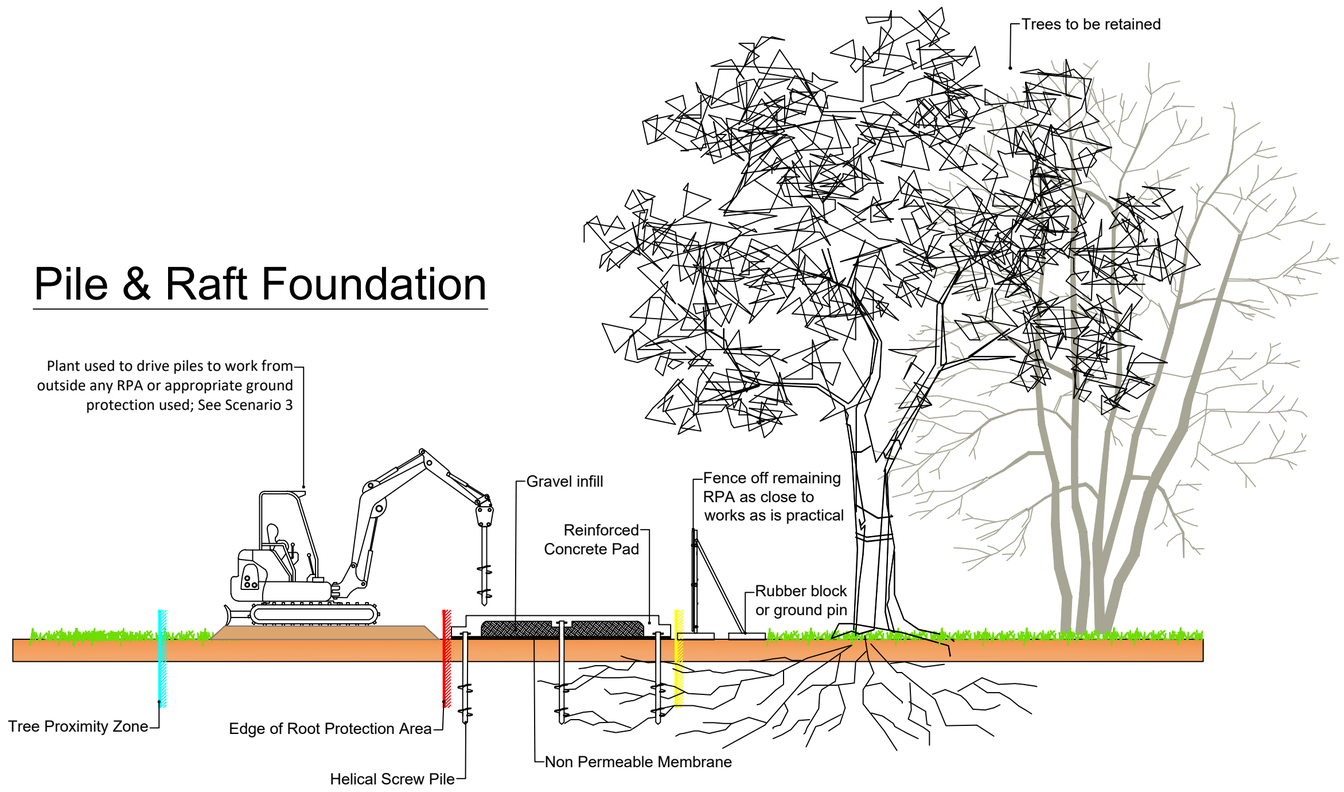
Scenario 9

Foundations Within Root Protection Area

Strip Foundation

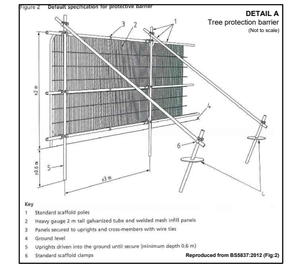


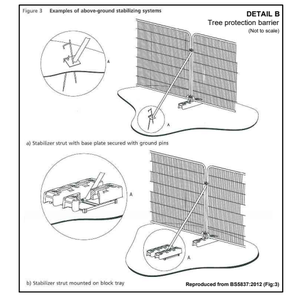
Pile & Raft Foundation



Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2023 All rights reserved. Licence number 0100031673





Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY

Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire SO53 5SS

T: 02380 810 440 **E:** rpsso@rpsgroup.com

Client: Photovolt Development Partners

Project: Botley West Solar Farm

Title: Tree Protection Protocol Scenario 9

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A2	Date Created
JSL4631	NTS	July 2023

RPS Drawing / Figure Number	Rev
799	A

rpsgroup.com

P:\4600 Series\JSL4631 - Land East of Botley - Arb\Tech\ACAD\Current\Arb\JSL4631_720-730A - Tree Protection Protocol.dwg

METHODOLOGY

10.1 Where the breaking out of any existing hardstanding is required within the RPA of retained trees, the following methodology is to be used.

10.2 Tree Protection Fencing shall also used, to the specification given below, in order to protect as much of the RPA outside of the proposed works as possible.

10.3 This fencing shall be erected before any work begins and remain in situ for the entire duration of works.

10.4 All further guidance contained within the Arboricultural Method Statement should still be followed throughout the coarse of construction.

Breaking Out Existing Hardstanding

10.5 Hardstanding shall be manually broken up and removed from the RPA using appropriate hand tools e.g. pneumatic breaker, crow-bar, sledgehammer, pick, mattock, shovel, spade, trowel and wheelbarrow.

10.6 Where possible, the use of machines with a long reach should be favoured, if they can work from outside of the RPA's or from within the RPA's when supported by suitable ground protection.

10.7 Removal of the surface shall occur in strips working from the undisturbed surface, working in a retreating manner away from the retained trees.

10.8 Below ground level structures shall be kept in place where possible to reduce the likelihood of root disturbance, this includes redundant services.

10.9 No reduction in levels of the underlying soil surface shall occur with RPA's.

Root Pruning

10.10 Any roots less than 25mm in diameter encountered during the excavation within an RPA shall be cut cleanly with a sharp pruning saw or secateurs. Similarly, any clumps of roots under 25mm shall be cut cleanly with a sharp pruning saw or secateurs.

10.11 Clumps of fibrous roots or individual roots over 25mm diameter shall, where flexible enough to do so, shall be retained and diverted back into virgin soil where possible.

10.12 Where roots above 25mm in diameter are uncovered, and are not flexible enough to divert, the Arboricultural Consultant shall make a decision as to whether the roots can be cut and/or the tree needs to be removed. Any tree removals outside of those already highlighted within this report shall first be considered by the LPA.

Fencing Specification (Heras 151 steadfast system)

10.15 Either the Heras 151 steadfast system or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. See inset.

10.16 This is to be erected around as much of any retained trees RPAs as possible, as calculated during Stage 2 of this Tree Protection Protocol, while allowing sufficient clearance from proposed works.

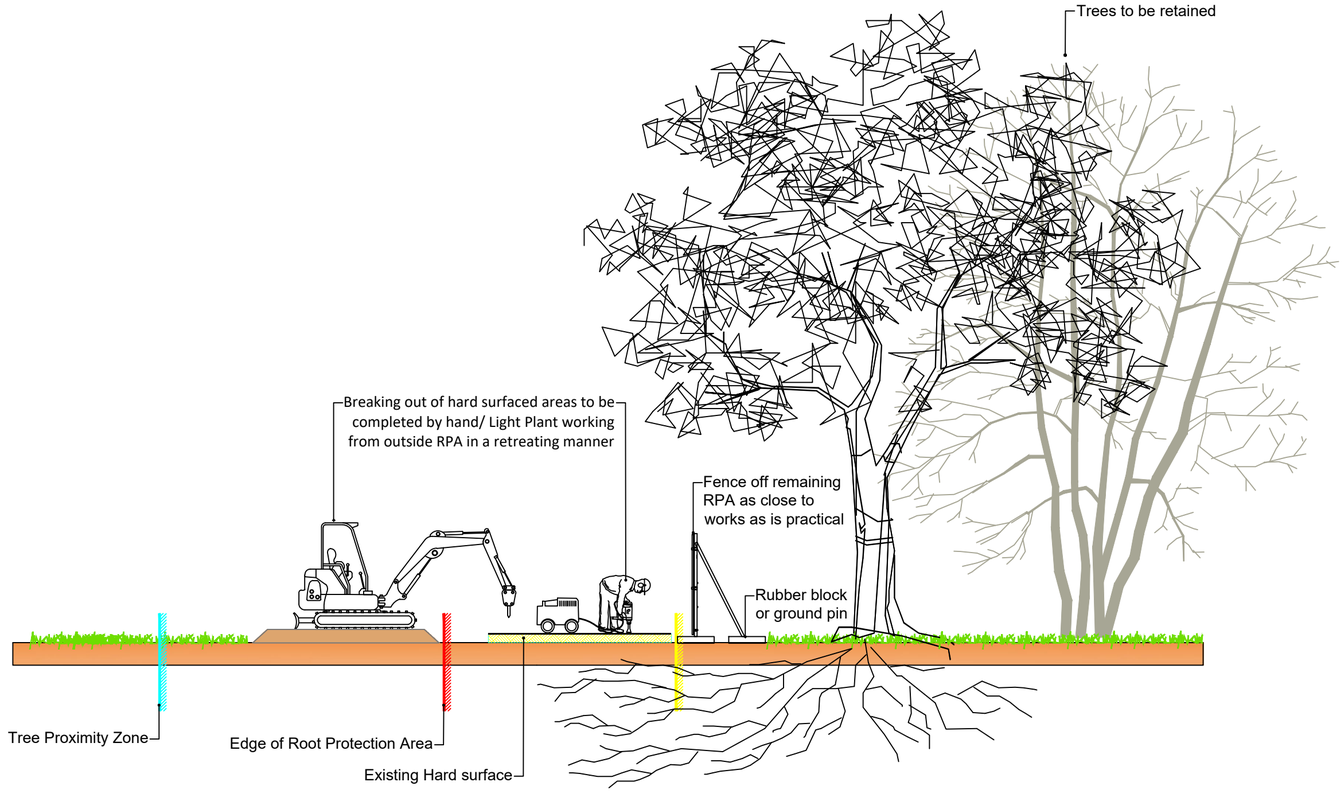
10.17 The panels will be secured to each other using at least two Heras-lock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

10.18 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter.

10.19 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided inset. Signs must be replaced as necessary should they be removed or become illegible.

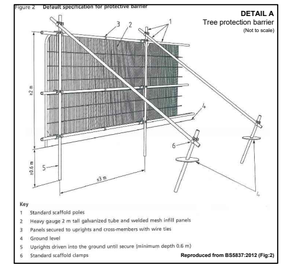
Scenario 10

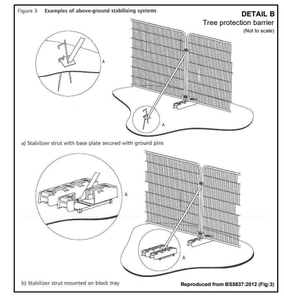
Breaking Out Hardstanding Within RPA



Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. Where applicable Ordnance Survey (c) Crown Copyright 2023 All rights reserved. Licence number 0100031673





Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY

Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire SO53 5SS

T: 02380 810 440 **E:** rpsso@rpsgroup.com

Client: Photovolt Development Partners

Project: Botley West Solar Farm

Title: Tree Protection Protocol Scenario 10

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A2	Date Created
JSL4631	NTS	July 2023

RPS Drawing / Figure Number: 800

Rev: -

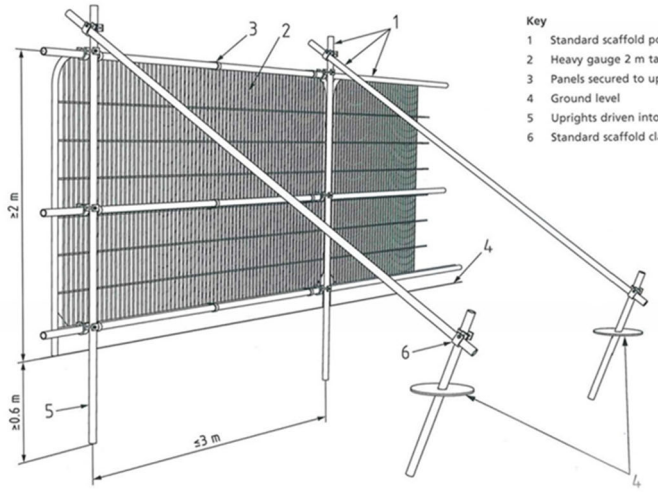
rpsgroup.com

P:\4600 Series\JSL4631 - Land East of Botley - Arb\Tech\ACAD\Current\Arb\JSL4631_720-730A - Tree Protection Protocol.dwg

Appendix D

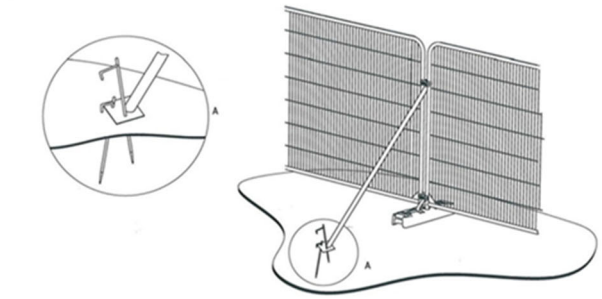
Example Tree Protection Barriers (BS5837:2012 Fig 2 & 3)

Figure 2 **Default specification for protective barrier**

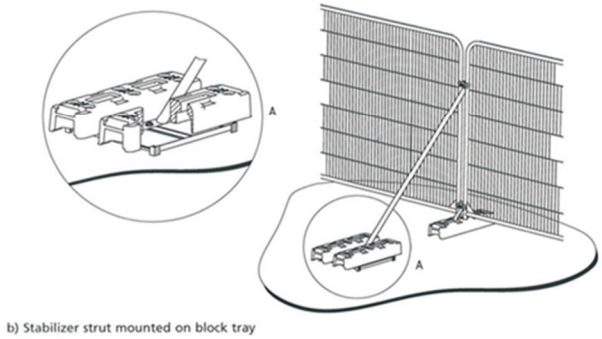


Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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

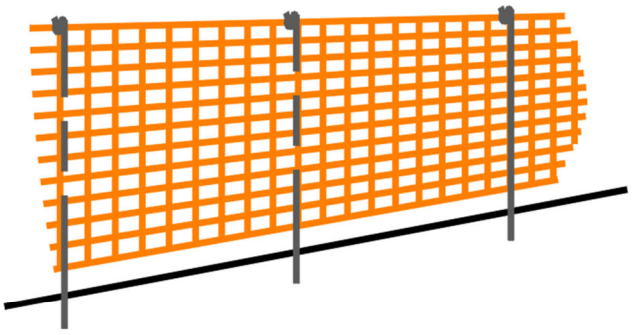


a) Stabilizer strut with base plate secured with ground pins



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

Appendix E

Construction Exclusion Zone (CEZ) Signage

Appendix F

Arboricultural Glossary

Age-class - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

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 Implications Assessment (AIA) – 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.

Asymmetric crown- Crowns that have a morphological bias in a particular direction. This can give the tree an aesthetically unfavourable appearance, but can also subject the tree to uneven wind- loading forces and potentially result in failure.

Basal – Referring to the bottom part of a tree's stem.

Basifugal mortality – A natural process seen in trees in an advanced life stage whereby the trees extremities die back and the inner crown expresses new growth, in order to conserve energy reserves.

Bifurcated - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Brown Rot- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

Buttress flares – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood.

Bifurcated- A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Cable braces – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Central leader- See apical dominance.

Chalara ash dieback- A disease affecting ash trees caused by the fungus *Hymenoscyphus fraxineus*. Usually fatal, the disease causes leaf loss and crown dieback in infected trees. It was first confirmed in Britain in 2012.

Chlorosis- yellowing of leaves which can be caused by a range of factors, often an indicator of nutrient deficiency.

Compaction - The compressing & 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.

Companion shelter- Shelter provided by neighbouring trees in groups to one another, factors such as wind throw are reduced due to supporting branches and interlocking root systems. Removing individual trees on the peripheries of such groups can expose neighbouring trees to environmental factors they have not previously been subjected to and can lead to individual failure.

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

Note 1 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.

Note 2 A competent person 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.

Conservation dead- wooding- Removal of deadwood using ‘coronet cuts’ that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Form - A general assessment of the shape and position of the tree within its environment.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity ‘fuse’ together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Invertebrate tower – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immoveable foreign objects in contact with a tree part can become encased or ‘occluded’ by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Phototropic growth – Growth responding to a light stimulus i.e. the sun. This can influence the form of a tree, particularly where other factors e.g. buildings or other trees, affect the amount/ direction light is received.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Rhizosphere - The rhizosphere is the narrow region of soil that is directly influenced by root secretions and associated soil microorganisms. In particular, mycorrhizal fungi form a symbiotic relationship with trees and assist in the assimilation of phosphates essential to the trees health.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

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.

Scaffold limbs - The main structural branches within the crown.

Tree protection plan – 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.

U.L.E – 'Useful Life Expectancy' is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA 'Estimated remaining contribution'.

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.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

White Rot - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.