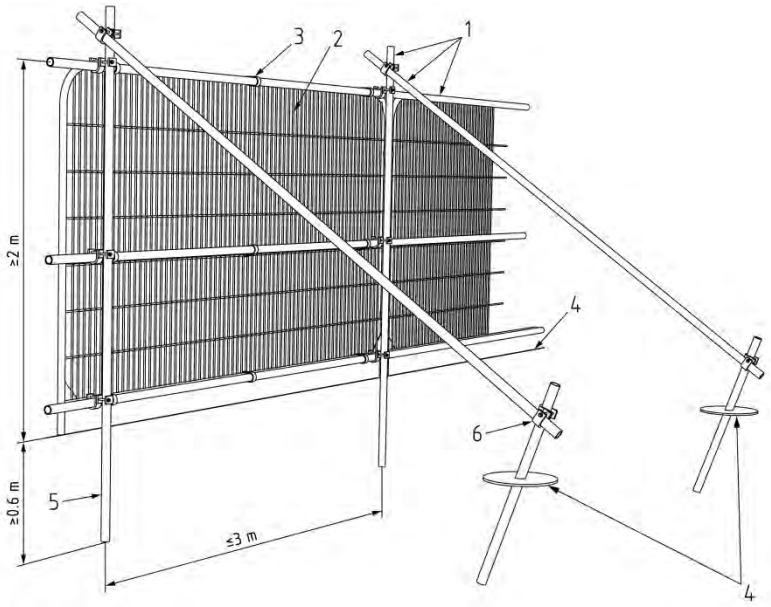
APPENDIX 2 – EXAMPLES OF TREE PROTECTION SYSTEMS

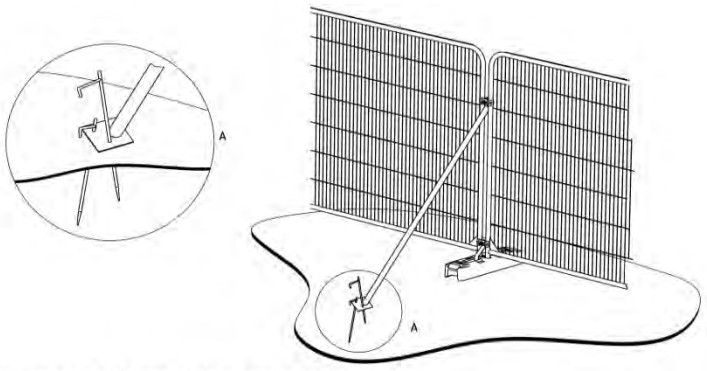
(Extracts taken from BS5837: (2012), "Trees in relation design, demolition and construction – Recommendations".)



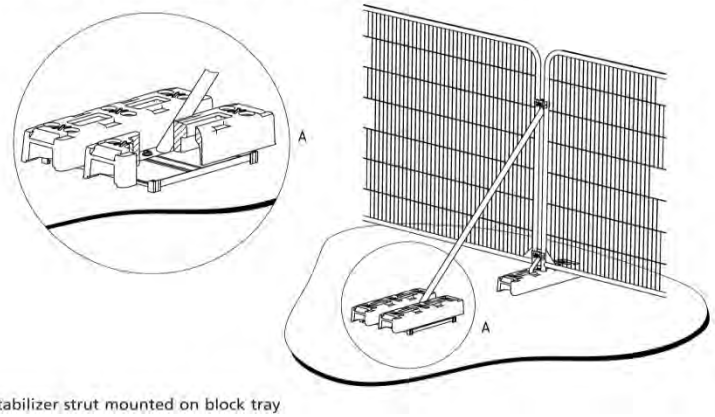
Key

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

Default specification for protective barrier

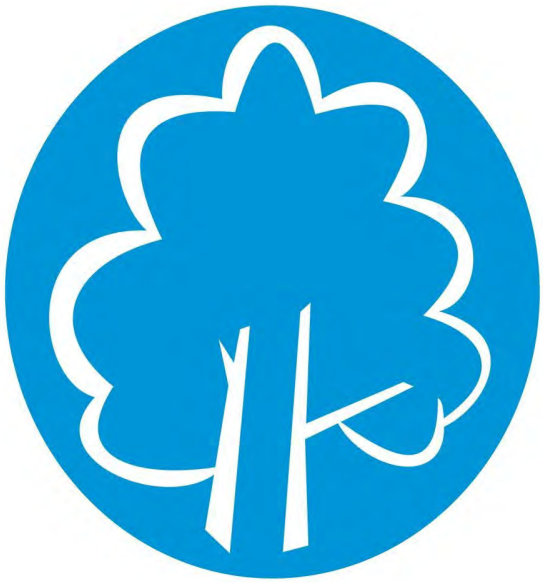


a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

APPENDIX 3 – TREE PROTECTION SIGNAGE





TREE PROTECTION FENCING

THIS FENCE MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED METHOD STATEMENT AND DRAWINGS FOR THIS DEVELOPMENT

TREE PROTECTION AREA

ACCESS INTO THIS AREA IS PROHIBITED FOR THE DURATION OF THE DEVELOPMENT IN ACCORDANCE WITH THE APPROVED METHOD STATEMENT FOR THIS DEVELOPMENT

APPENDIX 4 3D CELLULAR CONFIEMENT SYSTEM, e.g. CELLWEB TRP OR EQUIVALENT PRODUCT

Cellweb® TRP

Tree Root Protection

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.



Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

Indicative Cellweb with overfill



Web: www.geosyn.co.uk | Tel: 01455 617139
Fax: 01455 617140 | Email: Sales@geosyn.co.uk

Geosynthetics
Engineered Solutions

APPENDIX 5 – ARBORICULTURAL INSPECTION PROFORMA

Part 1 Project details

RECORD OF ARBORICULTURAL INSPECTION			**Inspection by**	**Marianne Dobson** FdSCArb, MArborA, Lantra certified in Professional Tree Inspection	**Visit number**		**Date of visit**	
			Signed		**Work stage**			
			Accompanied by		**Activities inspected**			
			Signed		**Weather conditions**			
	PROJECT DETAILS							
	Kingmoor and address		**Drawing Title**		**Drawing Number**		**Version**	
	Planning application reference							
	Tree Preservation Order and/or Conservation Area Details							
	Other Site Constraints							
	Add other information as required							

Part 2 Record of arboricultural inspection – *inspections will generally be undertaken every 4-8 weeks depending on progress of the works and complexity, unless specific visits are programmed to coincide with planned site activities. Planned dates to be entered in the table once programme of works is known.*

Ref	**Work stage** *Add or delete as relevant to specific works*	**Activity requiring on site attendance by Arboriculturist** *Add or delete as relevant to specific works*	**Planned date of inspection**	**Actual date of inspection**	**Inspection details and comments**	**Compliance with AMS**	**Follow up action required**
1	Advance works	Prestart meeting for tree works					
		Marking out for trees to be removed					
		Commencement of tree works					
		Completion of tree works					
		Commencement of installation of tree protection fencing					
		Completion of installation of tree protection fencing					
		Periodic monitoring (depending on timing of specific inspection visits)					
2	Site clearance and demolition	Toolbox talk					
		Removal of above ground structures within the crown spread or RPA of trees to be retained					
		Removal of hard standing and below ground structures or features within the crown spread or RPA of trees to be retained					
		Periodic monitoring (depending on timing of specific inspection visits)					
3	Construction works	Toolbox talk					
		Excavation or works within RPA of trees to be retained					
		Reprofiling of ground levels within RPA of trees to be retained					

Ref	**Work stage** *Add or delete as relevant to specific works*	**Activity requiring on site attendance by Arboriculturist** *Add or delete as relevant to specific works*	**Planned date of inspection**	**Actual date of inspection**	**Inspection details and comments**	**Compliance with AMS**	**Follow up action required**
		Installation of services within RPA of trees to be retained					
		Installation of ground protection below temporary hard standing within RPA of trees to be retained					
		Installation of ground protection below permanent hard standing within RPA of trees to be retained					
		Periodic monitoring (depending on timing of specific inspection visits)					
4	Landscape reinstatement	Toolbox talk					
		Soiling within RPA of trees to be retained					
		Land drainage within RPA of trees to be retained					
		Turfing and Seeding within RPA of trees to be retained					
		Planting within RPA of trees to be retained					
		Periodic monitoring (depending on timing of specific inspection visits)					
5	Completion	Removal of tree protection fencing					
		Add other activities as required relevant to the project and construction activities					

Part 3 Follow up actions identified during inspection

Ref	Follow up action required	Date completed	Comments and / or photographs from site team	Follow up or close out

Part 4 Evidence of arboricultural inspection

	PHOTOGRAPHS TAKEN DURING SITE VISIT	Date

Part 5 Circulation of record of inspection

	RECORD OF INSPECTION ISSUED BY		
	Print name	*Signature*	*Date*

RECORD OF SITE INSPECTION ISSUED TO THE FOLLOWING

ISSUE	PROJECT CONTACTS	NAME	CONTACT NUMBER	EMAIL ADDRESS	ROLES AND RESPONSIBILITIES FOR ARBORICULTURAL ISSUES ON SITE
☐	**Project Manager**				• Delivery of project and compliance with legal requirements and planning consents relating to the project
☐	**Site Construction Manager**				• Ensure compliance with the Arboricultural Method Statement, monitor performance of construction site staff and sub-contractors and maintain records to demonstrate compliance with and implementation of the Arboricultural Method Statement; and • Main contact for any Third Party queries and shall keep a record of any Third Party contacts and any follow up actions that may be taken.
☐	**Site Manager with responsibility for environmental compliance / Environmental Advisor / or Environmental Clerk of Works**				• Delivery of tool box talks for inductions of construction site staff and sub-contractors to ensure arboricultural protection methods are effectively communicated to the site team; • Undertake daily audits of tree protection fencing, ground protection fencing and compliance with the Arboricultural Method Statement; and • Liaises and cooperates with the Arboricultural Consultant at each site inspection and for the duration of the project
☐	**Arboricultural Consultant**				• Delivery of initial tool box talk for construction site staff to ensure arboricultural protection methods are effectively communicated to the site team; • Undertake site inspections at key work stages identified in the programme and at 8 weekly intervals during the course of the construction project; and • Report to the Local Planning Authority within 3 days of each inspection
☐	**Site construction team and sub-contractors**	*Updated information on arboricultural constraints to be issued to site team as part of regularly site briefings, inductions and tool box talks*			• Work to agreed Arboricultural Method Statements, plans and procedures and minimise environment impacts; • Understand the importance of maintaining arboricultural protection on site and maintaining the integrity of the tree protection fencing; • Understand the importance of avoiding pollution, including silt run-off, dust, escape of fuel, chemicals, cement and concrete; • Report all incidents immediately to the Environment Site Manager; and • Monitor the site for potential environmental risks and engage with co-workers to be proactive and ensure method statements, plans and procedures are complied with
☐	**Third Party Co-ordinator / Project Co-ordinator / Customer Co-ordinator**				• Liaison with Local Planning Authority, stakeholders and Third parties
☐	**Arboricultural Contractor**				• Undertake tree removal and pruning requirements prior to commencement of construction; • Works to be in accordance with approved planning drawings; and

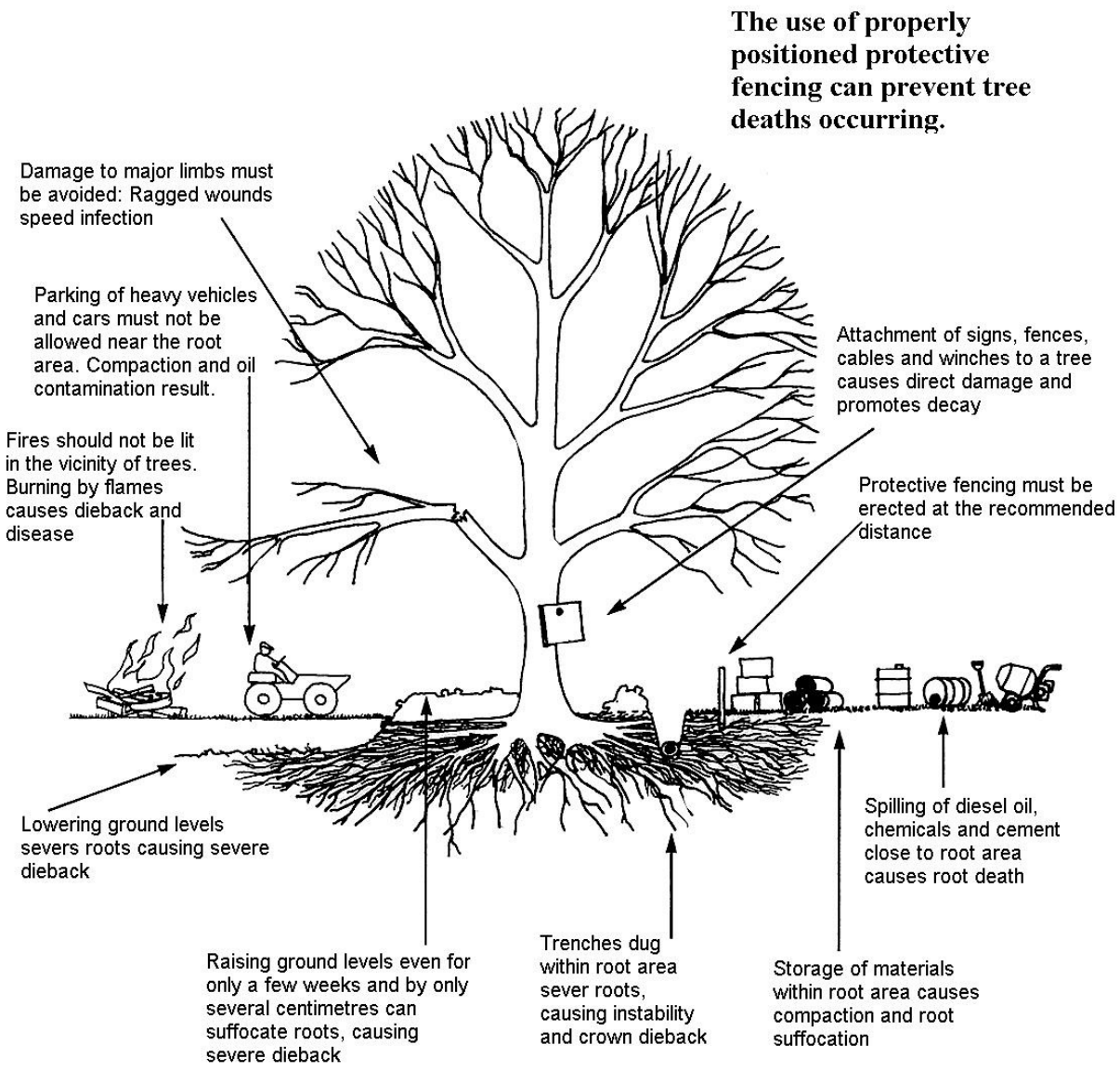
ISSUE	PROJECT CONTACTS	NAME	CONTACT NUMBER	EMAIL ADDRESS	ROLES AND RESPONSIBILITIES FOR ARBORICULTURAL ISSUES ON SITE
					• Works to be undertaken with regard to environmental and ecological constraints, such as nesting and breeding birds, bats, proximity to watercourse
☐	**Ecology Consultant**				• Advise on ecological constraints at the site
☐	**Local Authority, include Tree Officer details where known**				
	Additional contacts				

Part 6 Reporting procedure:

a) Undertake site inspection and record comments (Parts 2);
b) Discuss any follow up actions immediately with the responsible person on site for environmental compliance and set date for completion of actions (Part 3) where possible rectification works should be undertaken as soon as possible, exceptions to this may include works to protected trees that requires additional consent or work that may require LPA approval before proceeding;
c) Add evidence of rectification works or follow up actions to inspection record in Part 3;
d) Add photographic record of site visit inspection in Part 5; and
e) Issue record of inspection to nominated person for liaison with Local Planning Authority (LPA) or direct issue of record of inspection to LPA, project team and site team as per circulation list.

APPENDIX 6 – COMMON CAUSES OF TREE DEATH POSTER

Common causes of Tree Death



Please use copies of this as an on-site poster for personnel

APPENDIX 7 - GLOSSARY OF TERMS

Maturity	Newly planted - Not fully established and capable of being transplanted or easily replaced
	Young - Establishing, usually with good vigour, still capable of being transplanted or replaced
	Early mature - Established, usually vigorous and increasing in height
	Semi-mature – Established with an overall height in excess of 4 metres and or a stem girth measurement (circumference) of 20 centimetres or larger;
	Middle Age - Trees in the established growth stage of their life with the potential to continue increasing in size;
	Mature - Trees that have reached their ultimate size, given their location and surroundings;
	Over-mature - Fully mature, in last quarter of life expectancy, vigour decreasing
Condition	Good, Fair, Poor. An overall assessment of a tree's physiological and structural state
Veteran	Trees that have biological, cultural or aesthetic value due to age and / or condition. Typically trees that may be living beyond their expected age range for their species
BS 5837 Tree Quality Assessment	The tree quality assessment is based on four categories (A, B, C and U) are used to denote tree quality (A= High, B = Moderate, C = Low, U= Unsuitable for retention).
	Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the allocation of a specific category.
Root Protection Area (RPA)	The theoretical rooting area of a tree as defined in *BS5837: 2012*. RPA is allocated to ensure that a sufficient area is left undisturbed during development. It is provided as an area (m^2) and as the radius of a circle (m) typically plotted from the centre of the stem.
Estimated Remaining Contribution	The approximate life expectancy as healthy functioning tree and relates to species and the condition of the tree at the time of survey. Long > 40 years Medium 20 – 40 years Short – Medium 10- 20 years Short - Imminent removal <10years
Adventitious or Epicormic shoots	Small branches that grow in clusters around the stem or base of a tree in an uncharacteristic fashion for a normally healthy tree, usually at the site of pruning wounds or as an indicator of stress
Bifurcate	Divided into two branches or forks
Buckling	Deformation of a structure subjected to a bending load Buttress zone, irreversible.
Chalara – Ash dieback	Chalara dieback of ash, also known as Chalara or ash dieback, is a disease of ash trees caused by a fungus called *Hymenoscyphus fraxineus*
Decurrent	The tree crown is borne on several major wide spreading limbs of similar size
Defect	A feature which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment
Dieback	A condition in which a tree or shrub begins to die from the tip of its leaves or roots backwards, owing to disease or an unfavourable environment.
Disease	A malfunction or destruction of tissues usually caused by pathogens.
Dominance	The tendency for a leading shoot to grow faster than the lateral shoots; also a tree that maintains a taller crown than its neighbours.
Excurrent	A well-defined central main stem to the crown, bearing branches which are limited in their length, diameter and secondary branching.
Flush-cut	A pruning cut which removes part of the branch bark ridge and or branch-collar.
Girdling root	A root which circles and constricts the stem.

Hazard beam	An upward curving part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting or may form a banana shaped crack.
Included bark (ingrown bark)	Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact.
Infection	The establishment of a parasitic micro-organism in the tissues of a tree or other organism.
Lopping	Removal of large branches from a tree that does not follow natural target pruning practices.
Natural target pruning	The siting of pruning cuts at the branch bark ridge with a cut of minimal surface area to allow quicker healing of the wound.
Occlusion	The process of continual radial growth and healing of a wound which is progressively closed by the formation of new wood and bark around it.
Plant pathogen	Infectious organism that causes a disease on a plant. Although relatives of some plant pathogens are human or animal pathogens, most plant pathogens only harm plants. Plants are rarely cured of disease once infected.
Pollarding	The removal of the tree canopy, back to the stem or primary branches. The management regime is usually repeated as part of a regular management programme.
Primary branch	A major branch, of greater order than secondary branches.
Pruning	The removal or cutting back of lesser branches or twigs.
Reactive Growth/ Reaction Wood	Production of woody tissue in response to mechanical stresses.
Root-collar	The transitional area between the stem/s and roots prior to development of a root flare or buttress.
Secondary branch	A branch, of lower order than primary branch.
Veteran tree	An aged old specimen that has features which increase its value as habitat for wildlife (dead wood, cavities etc.) irrespective of its chronological age and that is of interest biologically, culturally or aesthetically because of its age, size or condition, is usually of advanced age.
Windthrow	The fall of a tree in high wind, blowing over of a tree at its roots.
Wound wood	Wood developing in response to a wound which gradually heals and occludes the wound