

354 Manchester Road, Bury BL9 9NR



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Arboriculture Report

For proposed development at

**354 Manchester Road
Bury BL9 9NR**

Produced by

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of

Birtle Tree Services Ltd

on behalf of

Mrs D Sutton and Mrs R Hankinson

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1 Introduction

1.1 Instruction and references

The proposed development site is located to the west of the rear garden of 354 Manchester Road, Bury BL9 9NR. The development proposal which is to be submitted to the Local Planning Authority is for a residential dwelling.

Birtle Tree Services Ltd have been instructed by Mrs Sutton owner of 354 Manchester Road, and her daughter, Mrs Hankinson, to undertake an arboricultural survey of the trees that are within influencing distance of the proposed development and to provide guidance with regards to the retention of the trees, the replacement of trees that are recommended for removal due to condition concerns, and the protection of the trees that are retained including their roots. The Tree Protection Plan (Appendix 4a) provides an approximation of the location of the tree roots and canopy which has been informed by the topographic plan provided by Mrs Sutton and Mrs Hankinson. The survey is limited to the area shown in Appendix 1.

Some of the trees are subject to individual Tree Preservation Orders under (TPO) 274, 350 to 354A Manchester Road Bury and an attempt has been made to label each tree on the Tree Protection Plan (appendix 4a) with its Tree Preservation Order number as shown on the Local Authority Map. There is some discrepancy between the Local Authority Map in terms of precise location and species of individual trees. In addition, applications to remove and replace trees that were dead, dying and/or unsafe have been approved by the Local Authority (reference numbers LP/TPO/01044, LP/TPO/01048 and LP/TPO/01094). The trees subject to those applications are not included in the Tree Protection Plan but the replacement trees are indicated albeit that they have yet to be planted.

Following the survey, this report makes recommendations in order to mitigate risks to the retained trees including their canopies and their roots with the inclusion of an Impact Assessment, Constraints Plan and Method Statement. As the design solution has yet to be determined, the report may need to be updated prior to Planning Application submission. It should be noted that whilst there are additional trees in neighbouring gardens, the Root Protection Areas shown on the Tree Protection Plan are sufficient to protect those trees external to the boundary.

1.2 Scope and limitations of the report

The purpose of the report is to carry out a site visit at the development site, 354 Manchester Road and survey the trees in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations, in order provide a condition report, to identify those trees which are recommended for removal due to condition concerns and to determine the steps that would need to be taken to mitigate the impact of the development design solutions on the retained trees including their roots. The design of the development has not yet been finalised and the constraints plan within the report together with the Tree Protection Plan will inform the design solution, however it is noted that once the design solution has been determined the Arboricultural Report may need to be revisited.

The report is based upon a visual inspection from ground level and no climbing has been undertaken to gather evidence. The consultant shall not be responsible for events that happen after the date of

the report due to factors that were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

Any defects seen by a contractor, agent or the owner that were not apparent to the consultant must be brought to the consultant's attention immediately.

The consultant accepts no liability in respect of the trees unless the recommendations of this report are carried out under his/her responsibility.

The surveyor has not taken soil or root samples for analysis. The report cannot make comment on the structural integrity of any main structure or drainage system located on the site to which this survey and report relates. You are advised that where man-made structures are involved you may need to obtain structural engineering and/or geotechnical advice. Trees vary in their influence on load bearing soils depending on the soil structures, the availability of water, and the wider environmental influences on the trees and as such the consultant will not be held responsible for damage arising from the trees and other vegetation surveyed or planted post development.

One of the trees (T02 on the Tree Protection Plan) is assessed to be hazardous and is recommended for removal due to condition concerns. The remaining five trees that have been surveyed have not been assessed to be potentially hazardous however this report should not be seen as a substitute for a full tree risk assessment or management plan which are specifically designed to minimise risk and liability associated with responsibility for trees, and it is particularly noted that the extensive presence of ivy has prevented a full condition survey.

The Tree Protection Plan which is shown in Appendix 4a is provided for illustrative purposes, it is an estimation and is not intended to replace development plans. Scaling and measurements, whilst being a close approximation, should not be relied upon for construction purposes.

The limitations of this report are restricted to the persons, time, information made available and purpose for which this report has been prepared.

2 Survey

2.1 Conditions

Hilary Birtwistle carried out the survey and assessment of the trees on 11th and 26th November 2023 and revisited on a number of occasions to assess the condition of the trees the latest visit being 19th June 2024. The weather conditions were good with light winds. Visibility was good. The survey is limited to the area shown in Appendix 1.

2.2 Topography and surfaces

The development site is located to the rear of 354 Manchester Road and is an unmanaged annex to the garden of the residential property.

The development site is predominantly level but then falls away to the south with a slope of approximately 50° and T14 is located at the bottom of the slope along the boundary with residential properties on Windermere Drive to the west of the tree. The land surrounding T14 is predominantly unmanaged vegetation and flower beds/lawns to the west. T17 is located on the boundary between

354 and 354a Manchester Road. With the surface surrounding T17 being unmanaged vegetation and tarmac parking area to the north. The surface surrounding T11, T12, and T25 is unmanaged and overgrown vegetation. Access to the development site is via a driveway between 354 and 352/354a Manchester Road. The beginning of the access road is paved moving to an unpaved area. The land surrounding the trees along the access driveway is mainly garden and lawn except where the driveway is and some ground protection will be necessary to avoid compaction of the roots of T10 as shown in appendix 4a. The potential development area is well drained and there was no evidence of standing water.

3 Tree Survey Data

The following table should be read in conjunction with Appendix 3 (Tree Survey Data Explanatory Notes) in order to correctly interpret the tree data.

Table 1 Tree Survey Data

Ref	Species and Age	Height (m)	DBH	Approximate Crown Spread (m)	Notes	Recommendations		Vigor	Amenity Value
		Crown Clearance (m) N W E S		N W E S		Priority	Inspect Freq (yrs)	Physiological Condition	Life Expectancy (yrs)
T12	Sycamore <i>Acer</i> <i>Pseudoplatanus</i> Mature	22	1050	5	T12 is subject to TPO. T12 is multi-stemmed with a three stem split at approximately 4m. The tree is heavily covered in ivy which has prevented a full inspection however the tree appears currently to be in good health with no evidence of any decay sites. Deadwood and pegs due to natural shedding to be removed to avoid decay entering into the heartwood Fencing to protect the roots will be sufficient to protect the canopy and so no enabling pruning is required	Removal of deadwood and pegs		Mod	High
				7 9		Ring bark the ivy to allow inspection and prevent kiting of the canopy in the future.		Good	
				7		No enabling works required		Good	
		6				Mod	3 – 5 yrs		
T11	Sycamore <i>Acer</i> <i>Pseudoplatanus</i> Mature	22	800	5	T11 is subject to TPO Deadwood and pegs due to natural shedding to be removed to avoid decay entering into the heartwood Fencing to protect the roots will be sufficient to protect the canopy and so no enabling pruning is required	Removal of deadwood and pegs		Mod	High
				7 9		No enabling works required		Good	
		6				Mod	3 – 5 yrs		
		6 6		7				Good	
		6							B2

Ref	Species and Age	Height (m)	DBH	Approximate Crown Spread (m)	Notes	Recommendations		Vigor	Amenity Value
		Crown Clearance (m) N W S E		N W S E		Priority	Inspect Freq (yrs)	Physiological Condition	Life Expectancy (yrs)
T25	Sycamore <i>Acer Pseudoplatanus</i> Mature	22	800	5	T25 is subject to TPO Deadwood and pegs due to natural shedding to be removed to avoid decay entering into the heartwood Fencing to protect the roots will be sufficient to protect the canopy and so no enabling pruning is required	Removal of deadwood and pegs		Mod	High 40+ B2
		6		7 9		No enabling works required		Good	
		6 6		7		Mod	3 – 5 yrs	Good	
		6							
T14	Sycamore <i>Acer Pseudoplatanus</i> Mature	25	1200	8	T14 is subject to TPO. Deadwood and pegs due to natural shedding to be removed to avoid decay entering into the heartwood Fencing to protect the roots will be sufficient to protect the canopy and so no enabling pruning is required	Removal of deadwood and pegs		Mod	High 40+ B2
		3		8 8		No enabling works required		Good	
		3 3		8		Mod	3 – 5 yrs	Good	
		3							
T17	Lime <i>Tilia</i> Mature	22	570	7.0	T17 is subject to TPO. T17 is a single stem tree. Note – the Local Authority indicates that this tree is a Sycamore which is incorrect Deadwood and pegs due to natural shedding to be removed to avoid decay entering into the heartwood No enabling work is required for the development.	Removal of pegs; Removal of deadwood. There is no requirement for enabling pruning.		High	Mod 40+ A2
		2		7.0 6.0				Good	
		12 2		6.0		Mod	3 – 5 yrs	Good	
		1							

Ref	Species and Age	Height (m)	DBH	Approximate Crown Spread (m)	Notes	Recommendations		Vigor	Amenity Value
		Crown Clearance (m) N W S E		N W S E		Priority	Inspect Freq (yrs)	Physiological Condition	Life Expectancy (yrs)
T02	Crack Willow <i>Salix fragilis</i> Mature	22	800	5	T02 is not subject to TPO. The tree is multi-stemmed with three main stems from ground level. 50 – 70% of the tree is dead and the rest is in poor health. The recommendation is to remove and replace the tree as the health and strength is compromised. Replacement with a native species to be included within the landscape plan.	Remove and replace		Very Low	Mod
				7 9				Very Poor	<5
				7				Very Poor	R

Ref	Species and Age	Notes	Recommendations
T10		Full survey not undertaken as unnecessary and not within influencing distance of the proposed development; Located along driveway – enabling pruning required for vehicular access Roots to be protected from compaction caused by heavy vehicular access by installation of temporary ground cover to dissipate the weight	Crown lift to 5m to enable vehicular access to development site; Install temporary ground cover to protect roots from compaction.
T8 and T7		Full survey not undertaken of these trees as unnecessary; Located along driveway - In order to protect the trees pre and during construction phase, the canopy to the north of the trees to be pruned back to achieve a 5m clearance over the access driveway; Ground cover is not necessary as the drive way is paved which will achieve the distribution of the weight of vehicular access and avoid the compaction of roots.	Crown lift to 5m to enable vehicular access to development site;

4 Statutory Control and Protection in Respect of Trees and Associated Wildlife

4.1 Standard of Work

All tree work undertaken should be done in accordance with British Standard 3998: 2010 and by competent arboriculture contractors with public liability insurance cover of at least two million pounds.

4.2 Statutory Controls

Internet research has indicated that all but one of the trees are subject to Tree Preservation Order number (TPO) 274, 350 to 354A Manchester Road Bury and as such no work can be undertaken on the trees until the Local Authority have provided their written approval via the Planning process.

It is noted that a number of trees have recently been approved by the Local Authority for removal (reference numbers LP/TPO/01044, LP/TPO/01048 and LP/TPO/01094) due to them being dead, dying and/or unsafe. These trees are not indicated on the Tree Protection Plan but the agreed location for the replacement trees is shown in the Tree Protection Plan (Appendix 4a).

4.3 Wildlife

All operations should take account of wildlife needs and be planned to take advantage of weather conditions and time of year for minimum damage and disturbance. If any protected species of nesting birds are present or discovered while the works are taking place all work should cease until contact has been made with English Nature for further advice. English Nature can be contacted on 01942 820342 or by e-mail to: northwest@english-nature.org.uk Specific consideration should be given to the possible presence of roosting bats, which are protected by the Wildlife and Countryside Act 1981 (schedule 5) and included in schedule 2 of the Conservation Regulations 1994. Ideally, a survey should be carried out to identify any potential roost sites and if bats are found to be present advice should be sought from a person qualified and experienced in handling such matters and fully conversant with the implications of the Act. At the time of survey there was no evidence of nesting birds. However the best time to undertake any works would be during autumn, winter or before the nesting season begins in the spring.

5 Arboricultural Impact Assessment

5.1 Summary of the proposed development

The design solution has not been finalised but it is understood that the intention is to submit an application for planning permission to construct a residential property on the site with access, parking and landscaping within the boundary.

5.2 Impact Assessment

The Impact Assessment Table (Table 2 overleaf) has been created which details the Root Protection Area (RPA). The RPA is calculated in accordance with the British Standard 5837:2012 This is the area that should be left undisturbed in order to provide adequate rooting area for the trees. The RPA is illustrated on the Tree Protection Plan in Appendix 4a.

Table 2 - Impact Assessment

Notes			Impact and Conditions
General implications			Removal of surface materials within RPA by hand digging only. In all cases the protective fencing detailed within the Tree Protection Plan protects both roots and canopy. There is no requirement for protective fencing to be installed along the access driveway and the required crown lift to provide sufficient clearance will protect the canopies. If the canopy in any case extends beyond the protective fencing pre construction tree works must be undertaken to allow access and safe working environment for construction plant and machinery etc normally 5m is sufficient clearance. In all cases any paving and other surfaces should be laid on flexible base to allow movement and to facilitate relaying if distortion becomes excessive due to future root growth. Permeable surface material to be used for paving etc within RPA Landscaping solutions should not result in changes in the soil levels within the RPA Temporary access, location of portacabins, storage and parking must be located away from all RPAs Storage to be considered in relation to potential seepage of toxic materials into RPA Section 6.8 for details of Special Engineering considerations for foundations within the RPA Appendix 6 Scaffolding within RPA; Section 6.12 Services within RPA
Tree Ref	Root Protection Area Identified in BS 5837:2012 (m radius from tree stem)	Root Protection Area Identified in BS 5837:2012 (total m ² around tree stem)	Impact and Conditions
T12	12.6	500	The protective fencing as indicated on Tree Protection Plan (Appendix 4a) protects both the roots and the canopies of the trees within the proposed development site.
T11	9.6	290	
T25	9.6	290	
T14	14.4	652	
T17	6.8	150	

			All the conditions as detailed above to be in place throughout the preparation and construction phase. It should be borne in mind that the retained trees will result in the property being in shade and there may be future need to manage the trees by way of crown lift, thin and/or reduction to enhance natural light levels and prevent nuisance as the canopies begin to encroach onto roof space however as the trees are mature the trees are at or above 60% of their expected growth.
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6 Tree Constraints Plan and Guidance

6.1 Root Protection Area

The recommendations in BS 5837: 2012 must be complied with at all times.

The Tree Protection Plan (Appendix 4a) indicates the Root Protection Area. This is the area within which any risk of compaction and contamination of the tree roots must be mitigated against.

The Tree Protection Plan also indicates the position of the protective fencing which protects the integrity of the RPA. In all cases the protective fencing encompasses the canopies and therefore affords the whole of the tree sufficient protection.

Any works to the existing trees are to be carried out by a fully qualified tree surgeon and in accordance with BS3998: 2010 - Recommendations for Tree Works.

Although the Tree Protection Plan indicates the location for protective fencing, the final position and detail of the protective fencing would normally be agreed with the Local Authority prior to site works commencing.

The majority of the root system of a tree is in the surface 600mm of the soil, extending radially for distances frequently in excess of the trees height. Beyond the main structural roots (close to the base of the trunk), the root system rapidly sub-divides into smaller diameter roots. Off this main system a mass of fine roots develop.

The shape of the main structural roots system develops in response to the need for the tree to have physical stability. Beyond these major roots, root growth and development is influenced by the availability of water and nutrients. Unless conditions are uniform around the tree, which would be unusual, the extent of the root system will be very irregular and difficult to predict. It will not generally show the symmetry seen in the branch system.

The parts of the root system which are active in water and nutrient uptake are very fine, typically less than 0.5 mm diameter. It is essential that conditions in the soil remain conducive to the healthy growth and maintenance of these fine roots so that the water and nutrients necessary for healthy tree growth can be absorbed.

All parts of the root system, but especially the fine roots, are vulnerable to damage. Once they are damaged, water and nutrients uptake will be restricted until new roots have regenerated. Vigorous young trees will be capable of rapid regeneration but the more mature a tree is the more slowly they will respond if at all.

In order to live and grow, roots need oxygen from the soil. Respiration by the roots and other soil organisms depletes this oxygen and increases carbon dioxide levels in the soil; a correct balance of these gases is normally maintained by diffusion between the soil and the atmosphere this is known as gaseous exchange. Anything, which disturbs this balance will affect the condition of the root system.

The factors that most commonly affect this diffusion adversely and therefore damage the roots are as follows:

- a) Compaction of the ground, which reduces the space between soil particles. This is particularly important on clay soils. A single passage by heavy equipment on clay soils or storage of heavy materials can cause significant damage.
- b) Changing soil levels even for a few weeks.
- c) Covering the root area with impervious surfaces.
- d) A rise in the level of the water table. Roots can tolerate submersion for short periods, but a permanent rise will deplete the soil oxygen.

Serious damage is often caused during preliminary site works by stripping the topsoil or on brown field sites removal of hard surfaces and foundations. For this reason such works should be avoided until protective fencing has been erected and within the RPA only careful digging by hand should be undertaken.

Excavations in the rooting area can sever roots. As the majority of roots are in the surface 600mm, even shallow excavations can cause damage.

Excavations for foundations, landscaping or service trenches are usually sufficiently deep to sever most of the roots, and it should therefore be assumed that all parts of the root system beyond the excavation would no longer serve the tree.

Excavation or soil stripping which sever or damage the roots may impair the stability of the tree and make it dangerous.

If roots become exposed they need immediately to be wrapped in dry, clean hessian sacking to prevent desiccation and to protect from rapid temperature changes. Roots smaller than 25mm diameter may be pruned back to a side branch using a proprietary cutting tool such as bypass secateurs or handsaws. Roots larger than 25mm should not be severed as they fall within the restrictions imposed by the Tree Preservation Order and as such are subject to Application to Undertake Tree Works. Prior to back filling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand (builders' sand should not be used because of its high salt content which is toxic to trees).

6.2 Protective Fencing

It is recommended that tree protection fencing is erected as per the Tree Protection Plan (Appendix 4a) and that the protective fencing is inspected on a daily basis and any breaches repaired immediately.

Once the protective fencing has been erected all weather signage should be used to indicate "Construction Exclusion Zone – Keep Out".

Once erected barriers should not be removed or altered without prior recommendation by an arboriculturist and approval of the local planning authority.

All fencing used on the site should fully comply with BS5837:2012, the recommended specification is provided in appendix 5.

The fencing should be strong and suitable for local conditions. It should also take into account the degree of construction activity on the site.

In this circumstance the location for the protective fencing should be as shown on the Tree Protection Plan and be the type of temporary fencing with the bases either secured by uprights being driven into the ground (to a minimum of 0.6m) or pinned to the ground securely (see appendix 5).

As the ground from the development site to T14 drops away significantly, whilst the protective fencing is required pre and during the construction phase, post construction the protective fencing can be moved to the top of the slope to allow mechanical removal of vegetation for example within the area indicated on the Tree Protection Plan. The potential to disturb the roots of T14 in this area will be minimal as they will be at a significant depth. This relaxation of the root protection area only applies to the use of mechanical means to remove surface vegetation and all other constraints as detailed in 6.1 and 6.4 continue to apply.

6.3 Temporary Ground Protection

The access route to the development site has various surfaces which will allow distribution of vehicular weight, however the area beneath T10 is not surfaced and to mitigate against compaction of soil around the roots of T10 installation of temporary ground protection prior to and during the construction phase is recommended an example of which is provided in appendix 7 and the location for the ground cover is provided in appendix 4b.

6.4 Constraints within the Root Protection Area

Prior to and throughout the building works the RPA are to remain protected and within the areas:

- No materials are to be stored
- Mechanical cultivation is not to take place
- Soil levels must not be raised or lowered
- Cement must not be mixed either in a protected area or in a place where dust or run off could compromise a protected area

- no vehicular access or parking of vehicles unless provision has been made in the form of adequate ground cover which provides protection to the underlying soil structure In the design phase the following should be taken into account:
- during removal of the current hard surface removal closest to the RPA should be undertaken by hand;
- walls or structural slabs should bridge over roots allowing sufficient clearance for secondary thickening or be designed to distort without cracking; or
- pavings and other surfaces should be laid on a flexible base to allow movement and to facilitate relaying if distortion becomes excessive.
- pavings and other surfaces should be of permeable materials so maintaining a pervious surface through which water and nutrients are able to pass, gaseous exchange can take place: Permeable hard surfacing can result in soil volume moisture content remaining at or near field capacity for long periods. Where there is a risk of waterlogging, the design should incorporate appropriate land drainage. Land drainage within the RPA should be designed to avoid damage to the tree and the soil structure, eg sand slitting formed by compressed air soil displacement with the slits set radially to the tree.
- soil levels must not be changed within the Tree Protection Area.

6.5 Additional Precautions Outside Fenced Areas

Oil, bitumen, cement or other materials likely to cause damage to the tree must not be stacked or discharged within 10m of tree stems or within the protective area.

Concrete mixing and washing will not be carried out within 10m of the trees.

Fires will not be lit beneath the foliage or in a position where the flames could extent to within 5m of the foliage, branches or trunks. If the fire is large then this may necessitate a distance of at least 20m.

Trees will not be used as anchorage for equipment.

Notice boards, telephone cables or other services will not be attached to any part of the trees.

Care should be taken when using cranes or other equipment near the canopy of the trees.

No services under existing tree canopy should be laid without prior approval and proper supervision. All work in this respect shall be in accordance with the specifications for trenching

6.6 Tree proximity to future structures and potential impact

It should be borne in mind that, as the trees mature and their canopies begin to encroach towards the building, the canopies will require periodic management ie crown reduction.

It should also be borne in mind that the building will be in significant shade which may also require that periodic management to allow increased light levels to the property and the garden will be necessary ie crown thinning and crown lifting.

6.7 Removal of surfacing within RPA

Any demolition including removal of hard surfaces and vegetation which falls within the RPA is to be undertaken with as little disturbance to roots as possible and should be undertaken with the use of hand tools only. Debris is to be removed by wheelbarrow immediately so that a build up of debris around the roots does not occur. 25mm of top soil to be added to areas that become exposed so that soil around roots does not become too dry to sustain the roots beneath. As explained in section 6.2, as the location of T14 is at the bottom of a slope which means that the roots within the Root Protection Area to the north east of the tree will be at a significant depth, by exception, the area indicated on the Tree Protection Plan may adopt vegetation removal by mechanical methods in the post construction phase. All other constraints will be maintained within the RPA of T14 throughout.

6.8 Special Engineering for Foundations within the RPA

The use of traditional strip footings can result in extensive root loss and should be avoided. Designs for foundations that would minimize adverse impact on trees should include particular attention to existing levels, proposed finished levels and cross-sectional details.

Root damage can be minimized by using:

- piles, with site investigation used to determine their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600 mm;
- beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.

Where a slab for a minor structure (e.g. shed base) is to be formed within the RPA, it should be located on existing ground level, and in total the amount of ground covered (including paving/driveways/walling/fencing/small structures, etc) should not exceed an area greater than 20% of the root protection area.

Slabs for larger structures (e.g. dwellings) should be constructed with a ventilated air space between the underside of the slab and the existing soil surface (to enable gas exchange and venting through the soil surface). In such cases, a specialist irrigation system should also be employed (e.g. roof run-off redirected under the slab). The design of the foundation should take account of any effect on the load-bearing properties of underlying soil from the redirected roof run-off. Approval in principle for a foundation that relies on topsoil retention and roof run-off under the slab should be sought from the building control authority prior to this approach being relied on.

Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. A piling mat to protect the ground within the RPA is required.

Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. sleeved bored pile or screw pile.

6.9 Hard Surfacing

New hard surfacing to be situated within the RPAs of the trees is to be designed in conjunction with arboricultural advice to accommodate the likely loading. The design should not require excavation within the RPA however the removal of the vegetation layer or other surface vegetation will be necessary and must be undertaken via hand digging to avoid damage to roots (see section 6.7 regarding post construction exception regarding T14).

Permeable surfaces for driveways etc include: block paving, small paving slabs, gravel, permeable tarmac eg Superdrive[®] details of which can be found at <http://www.aggregate.com/products-and-services/asphalt/drainasphalt/> The design solution to be agreed by Local Planning Authority Officer.

6.10 Manual excavation

Where the surface layer within the RPA needs to be removed for any purpose, the soil is to be loosened with the aid of a fork or pick axe and then cleared with the aid of an Air-spade, Air-vac and/or shovel.

Any roots found with a diameter of less than 25mm shall be cleanly severed by the arboricultural consultant. Any roots of 25mm and above shall be excavated around without damaging them; the arboricultural consultant shall be called upon to provide advice regarding if it's feasible or necessary to retain the root, if not it shall be severed by the arboricultural consultant having obtained approval from the Local Authority.

The edge of the excavation closest to the trees should be covered with damp hessian to prevent soil collapse or contamination by concrete.

6.11 Concrete foundations

Prior to any concrete being poured to form the foundations adjacent to the RPAs of the trees the excavation is to be lined and sealed to prevent any leaching of the concrete into the soil and causing desiccation of retained roots by concrete run off.

6.12 Specification for protection to trees during installation of utilities

In the event that utilities are required to be installed within the RPA the following is provided for information.

Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routeing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.

Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routeing should be drawn up in conjunction with the project arboriculturist. In such cases, trenchless insertion methods should be used (see Table 3), with entry and retrieval pits being sited outside the

RPA. Provided that roots can be retained and protected excavation using hand-held tools might be acceptable for shallow service runs.

Method	Accuracy mm	Bore Dia ¹ mm	Max sub ² length m	Application	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 ³
Pipe ramming	≈ 150	150 to 2,000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling ⁴	≈ 50 ⁵	30 to 180 ⁶	40	Gas, water and cable connections, eg from street to property	Any application that requires accuracy over distances in excel of 5m
¹	Dependent on strata encountered				
²	Maximum subterranean length.				
³	Pit-launched directional drilling can be used for gravity fall pipes up to 20 m subterranean				
⁴	length				
⁵	Impact moling (also known as thrust-bore) generally requires soft, cohesive soils				
⁶	Substantial inverse relationship between accuracy and distance.				
	Figures given relate to single pass: up to 300 mm bore achievable with multiple passes.				

Table 3 Trenchless solutions for differing utility apparatus installation requirements adapted from BS5837: 2012

6.13 Scaffolding with the RPA

Whilst BS5837: 2012 does not specify the procedures to be adopted when erecting scaffolding within the RPA, the guidelines within BS5837: 2005 provide a best practice approach and the detail can be found in Appendix 6.

6.14 Landscaping

Landscaping (planting, turfing, fencing etc.) around retained trees may only be carried out once all tree protection measures have been removed.

All excavations within the Root Protection Areas shall be undertaken by hand and without reducing current ground levels unless it is agreed in writing with the Local Planning Authority. At no time is the use of a rotator permitted within the RPAs of retained tree.

Any tree roots discovered will be left in-situ and shall not be cut or otherwise damaged. Where possible, the soil structure within the Root Protection area shall be preserved.

See section 6.7 regarding post construction exception regarding T14.

7 Recommended Tree Works

As all the trees (with the exception of T02 below) are subject to TPO all works with the exception of removal of deadwood must be approved by the Local Authority.

Item Number	Tree Number	Proposed Works
1	T12	Removal of deadwood and pegs recommended. Ring bark the ivy to allow inspection and prevent kiting of the canopy in the future. No enabling works is required
2	T11	Removal of deadwood and pegs recommended. No enabling works is required
3	T25	Removal of deadwood and pegs recommended. No enabling works is required
4	T14	Removal of deadwood and pegs recommended. No enabling works is required
5	T17	Removal of deadwood and pegs recommended. No enabling works is required
6	T02	Not subject to TPO – recommendation remove and replace (see section 8 below) due to health condition.
7	T10	Crown lift to 5m to enable vehicular access to development site; Install temporary ground cover to protect roots from compaction (see appendix 4b for location)
8	T8	Crown lift to 5m to enable vehicular access to development site.
9	T7	Crown lift to 5m to enable vehicular access to development site.

Table 4 – Recommended Tree Works

8 Replacement Trees

8.1 Location and Recommended Species

Replacement trees have been agreed by the Local Authority for trees that have recently been permitted to be removed due to the presence of Ash Dieback. The agreed location of these replacement trees is shown on the Tree Protection Plan (Appendix 4a) but at the time of writing the replacement trees have not as yet been planted. There should be replacement trees for T02 but the location will need to be agreed when the design solution has been determined. The recommended replacement species is Beech (*Fagus sylvatica*) which as a native that thrives in an understorey position and should be able to withstand the growing conditions. Replacement trees to be of standard size.

9 Tree Protection Plan, Site Management and Arboricultural Method Statement

9.1 Tree Protection Plan

The Tree Protection Plan (TPP see appendix 4a) and method statement detail how the construction work should be phased in proximity to the trees.

9.2 Site management

The site manager will be responsible for briefing all personnel who will be working within or adjacent to canopies or RPAs of retained trees and provide or make available to them a copy of the method statement and tree protection plan so that they are aware of the implications in relation to the movement / operation of plant, excavations, unloading deliveries, mixing/pouring cement and concrete.

The site manager shall designate another person to be in charge of briefing new site personnel or visitors in his absence.

No equipment, vehicles or plant shall operate beyond the tree protection fencing. Booms, hoists and rigs should be kept away from the canopies of retained trees at all times. Where it is necessary to operate within 5m of a tree canopy, it will be done with the utmost caution and under the control of a banks man. Damage to trees will be considered a breach of this tree protection plan, which in turn could be a breach of planning permission.

Any incidents of damage to retained trees or other breach of tree protection measures shall be reported to the Birtle Tree Services Ltd. Works must cease until the project arborist has had an opportunity to inspect the damage and where appropriate, agree a mitigation plan.

9.3 Arboricultural Method Statement

The Method Statement recommends all development within influencing distant of the tree is carried out in accordance with BS5837: 2012 Guide for Trees in Relation to Design, Demolition and Construction.

Developers should enforce the methods of protection identified within the statement. All contactors must be provided with a copy of the guidelines and must also agree to them. Any failure to comply with them must be dealt with by the developer.

The Method Statement should be read in conjunction with the architects submissions.

No site personnel are to be present and no demolition, site clearance, building work or delivery of materials is to occur until the protective measures are in accordance with this method statement and the Tree Protection Plan.

References include *British Standard 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations*, *British Standard 3998: 2010 Tree Work*, and *National Joint Utilities*

Group “Guidelines for the planning, installation and maintenance of utility services in proximity to trees”, 1995.

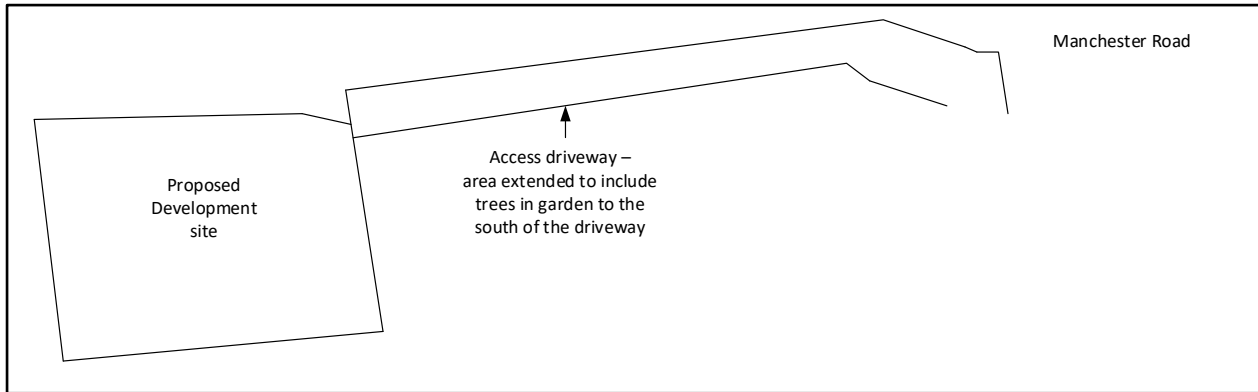
Table 5 – Arboricultural Method Statement (AMS)

Task	Detail	Responsible
	<u>General Principals for Tree Protection</u> A copy of this AMS and TPP to be retained on site at all times and all personnel associated with the construction process will be made familiar with the principles within.	Developer/Construction Company
1	<u>Pre contract meeting</u> An onsite meeting may be required with all relevant parties to record agreed tree works, location of access, location of site storage, location of tree protection barriers and any relevant time schedules	Developer, arboricultural contractor, Local Planning Authority Officer (LPAO)
2	<u>Enabling Tree Works</u> Crown lift of T7, T8 and T10 Remove T02	Arboricultural contractor
3	<u>Install Temporary Ground Protection on access driveway</u>	Developer/Construction Company
4	<u>Erect Tree Protection Fencing and Warning Signage</u> See the Tree Protection Plan appendix 4a for location of the Protection Fencing, appendix 5 for the fencing specification. Once the fencing has been properly erected in position, it is to be considered as sacrosanct and is not to be removed or altered in any way without prior approval from the LPA.	Developer/Construction company
5	<u>Removal of current vegetation</u> Reasonable notice to be given to LPA so that they can visit the site to inspect tree protection methods are in place prior to removal work beginning. Note the protective fencing around T14 post construction can be relocated to facilitate vegetation removal via mechanical methods if necessary.	Developer/Construction company
6	<u>Groundworks, Foundations, Drainage and Services</u> Spoil including soil and rubble will be removed from site and will not be stored against any protection barriers. Drainage and underground service routes will be located beyond the RPA of all retained trees. Where work is required within the RPA the principles set in NHUG 4 will be adopted.	Developer/Construction company
7	<u>Erection of Scaffolding</u> See appendix 6 for specification details of scaffolding	Developer/Construction company
8	<u>Dismantling Protection Barriers and Landscaping Works</u> A minimum of 5 working days notice will be given to the LPA prior to the dismantling of the protection barriers. All landscaping once the barriers have been removed will avoid soil re-grading and disturbance within the RPA and no soil levels will be altered after the protection barriers	Developer/Construction company

	have been removed. Any hard landscaping within the RPA will conform to the principles set out in this report. If fencing is required within the RPA post holes must be dug by hand and be no more than 10% larger than the post. All spoil is to be distributed evenly around the surrounding area to avoid a significant change in soil levels. Consideration must be given to planning of works with regards to post distribution and how this may be affected by tree locations, fencing should also be deviated as appropriate to avoid conflict with trees; usually allowing 500mm from the trunk of the tree to the nearest extent of the fence.	
9	<u>Planting of replacement trees</u> Once all work has been completed and during the next planting season the all outstanding replacement trees to be planted as per location identified in the Tree Protection Plan.	Either owner, landscape contractor or Arb Contractor

Appendix 1

Area covered by survey and report



Appendix 2

Images of trees



T12

Image 1 – T12 Sycamore



Image 2 – T11 Sycamore

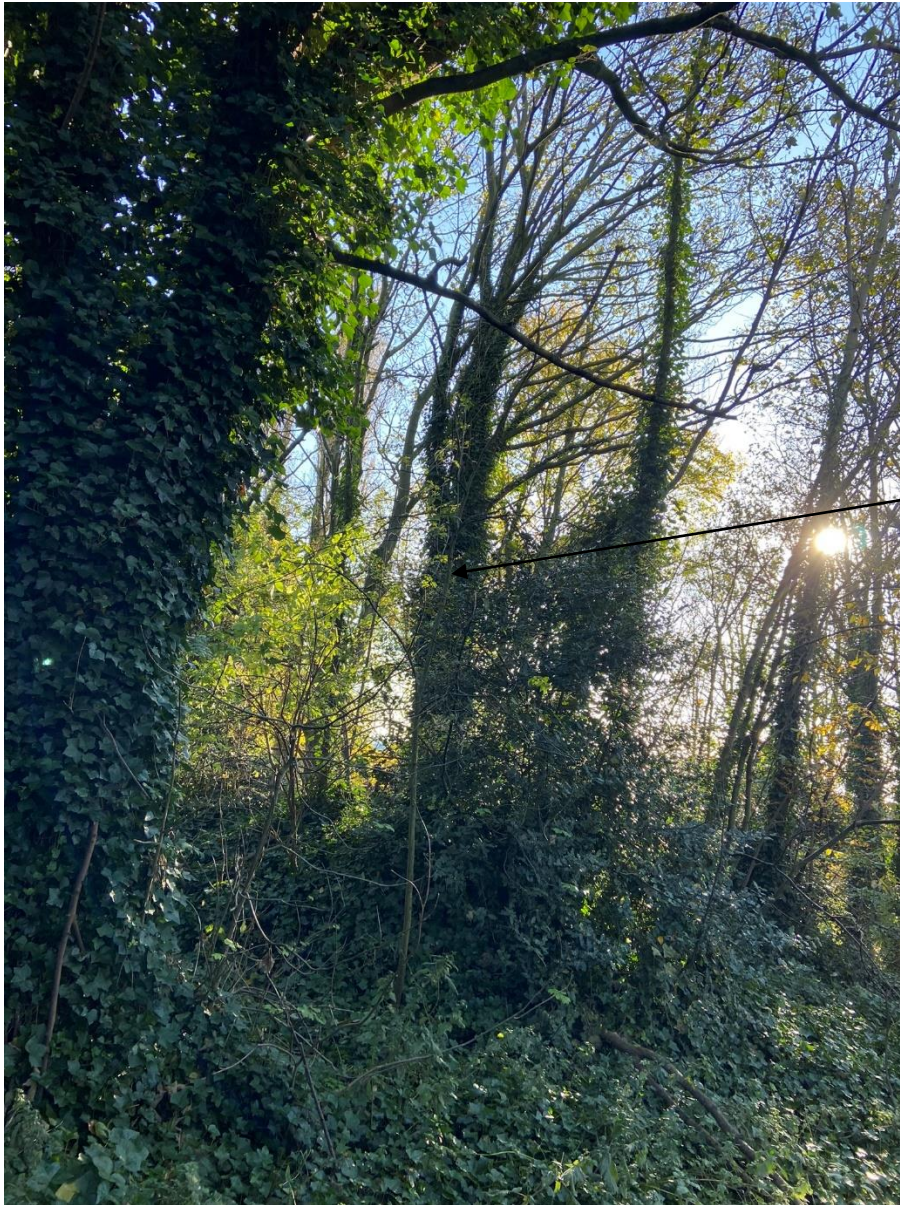


Image 3 – T25 Sycamore



T14

Image 4 – T14 Sycamore



T17

Image 5 – T17 Small Leaf Lime



T02

Image 6 - T02 Crack Willow

Appendix 3

Tree Survey Data Explanatory Notes

This section explains the terms that may be used in the Tree Survey Data within Section 3.

A1.1 General Observations

A1.1.1 Numbering system: Each item of vegetation has its own unique number prefixed by a letter such that T1 = Tree 1, G2 = Group 2, H3 = Hedge 3, W4 = Woodland 4, S5 = Shrub 5

A1.1.2 Age Categories:

Young	Usually less than 10 years old.
Semi-Mature	Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
Early Mature	Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30 – 60% of life expectancy).
Mature	Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
Veteran	A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
Over Mature	As for veteran trees except management is not considered worthwhile.

A1.1.3 Species: Common names and Latin names are given.

A1.1.4 Height: Measured from ground level to the top of the crown.

A1.1.5 Stem Diameter: Taken at 1.37 m above ground level where possible. On multi-stemmed trees this measurement may be taken at ground level, though usually an indication of the number of stems and average diameter is given e.g. 3 x 30cm.

A1.1.6 Crown Spread: Measured N,E,S & W taken from the centre of the stem and usually rounded up to the nearest meter.

A1.1.7 Observations: If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more details at the end of this section.

A1.1.8 Recommendations: Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

A1.1.9 Priority Scale: Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:

Urgent	To be carried out as soon as possible
Very High	To be carried out within 1 month
High	To be carried out within 3 months
Moderate	To be carried out within 1 year
Low	To be carried out within 3 years

A1.1.10 Inspection Frequency: An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.

A1.1.11 Vigour: An indication of growth rate and the tree's ability to cope with stresses;

High	Having above average vigour
Moderate	Having average vigour
Low	Having below average vigour
Very Low	Tree is struggling to survive and may be dying

A1.1.12 Physiological Condition

Good	Health and no symptoms of significant disease
Fair	Disease present or vigour is impaired

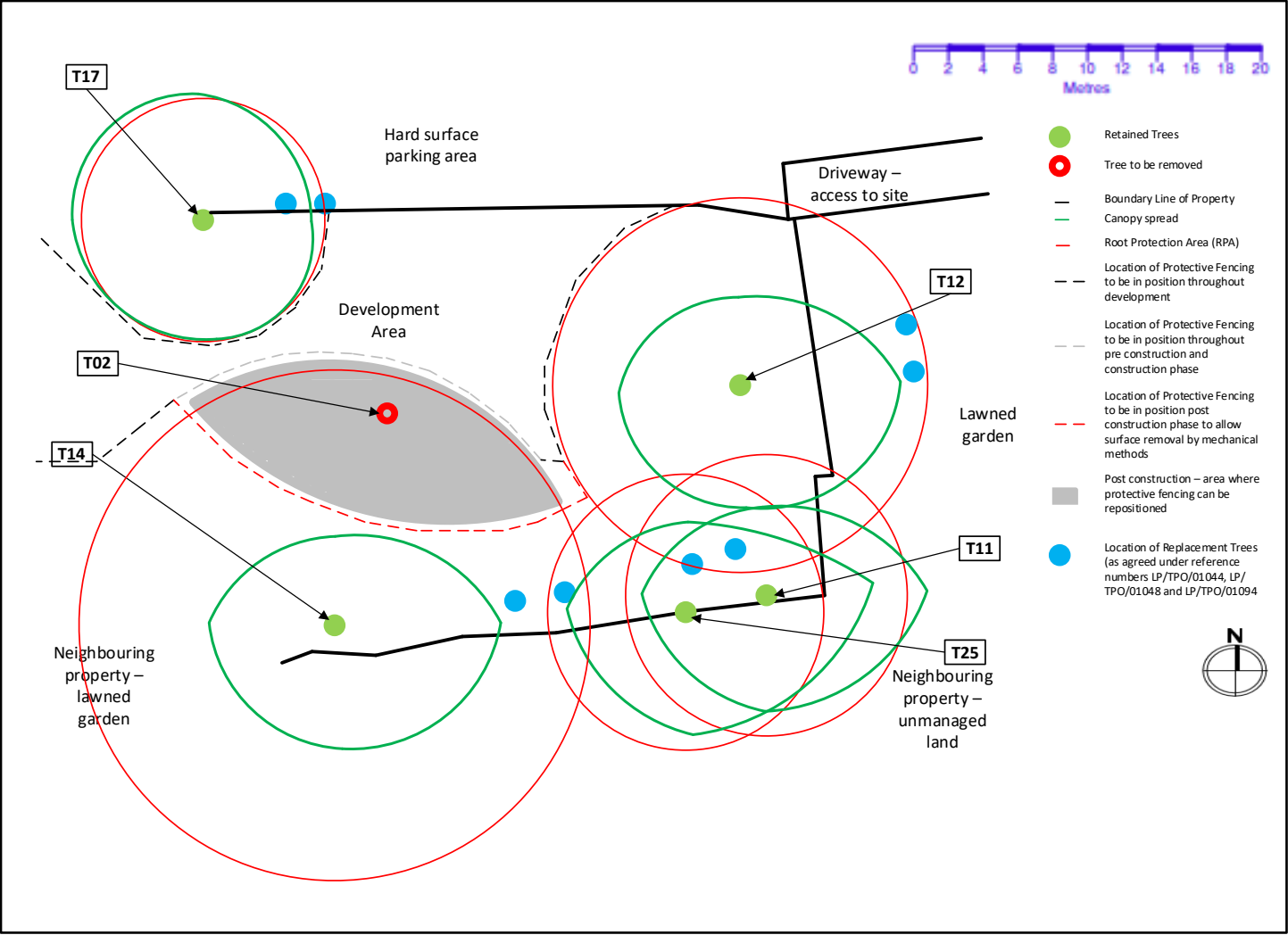
	Poor Very Poor	Significant disease present or vigour is extremely low Tree is dying
A1.1.13	Structural Condition:	
	Good	Having no significant structural defects
	Fair	Some defects observed though no high priority works are required
	Poor	Significant defects found. Tree requires monitoring or remedial works.
	Very Poor	Major defects which will usually require significant remedial works or tree removal
A1.1.14	Amenity Value:	
	Very High	Exceptional specimen, observable by a large number of people
	High	Attractive specimen, observable by a significant number of people
	Moderate	One of the above factors is not applicable
	Low	Unattractive specimen or largely hidden from view
A1.1.15	Life Expectancy: The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+)	
A1.1.16	Retention Category: These are explained in detail in Table 2 Cascade chart for tree quality assessment on the following page which is taken from BS5837.	
A1.2	Evaluation of Defects	
A1.2.1	Cavities, wounds, deadwood etc are all evaluated as follows:	
	Major	Such that structural integrity is, or will become, compromised and the tree is, or will inevitably become, hazardous.
	Significant	A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc.
	Minor	A defect that is not likely to compromise the tree's structural integrity.

Cascade chart for tree quality assessment

TREES FOR REMOVAL				
Category and definition	Criteria			Identification on plan
<u>Category R</u> Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning); - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline; - Trees infected with pathogens of significant to the health and/or safety of other trees nearby (e.g. Dutch elm disease or very low quality tree suppressing adjacent trees of better quality. NOTE Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).			DARK RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
<u>Category A</u> Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboriculatural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed in groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture)	LIGHT GREEN
<u>Category B</u> Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually in groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individual but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having litter visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	MID BLUE
<u>Category C</u> Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screen benefits	Trees with very limited conservation or other cultural benefits	GREY
NOTE Whilst C category trees will usually not be retained where they would impose a significant constraints on development, young trees with a stem diameter of less than 150 mm should be considered for relocation				

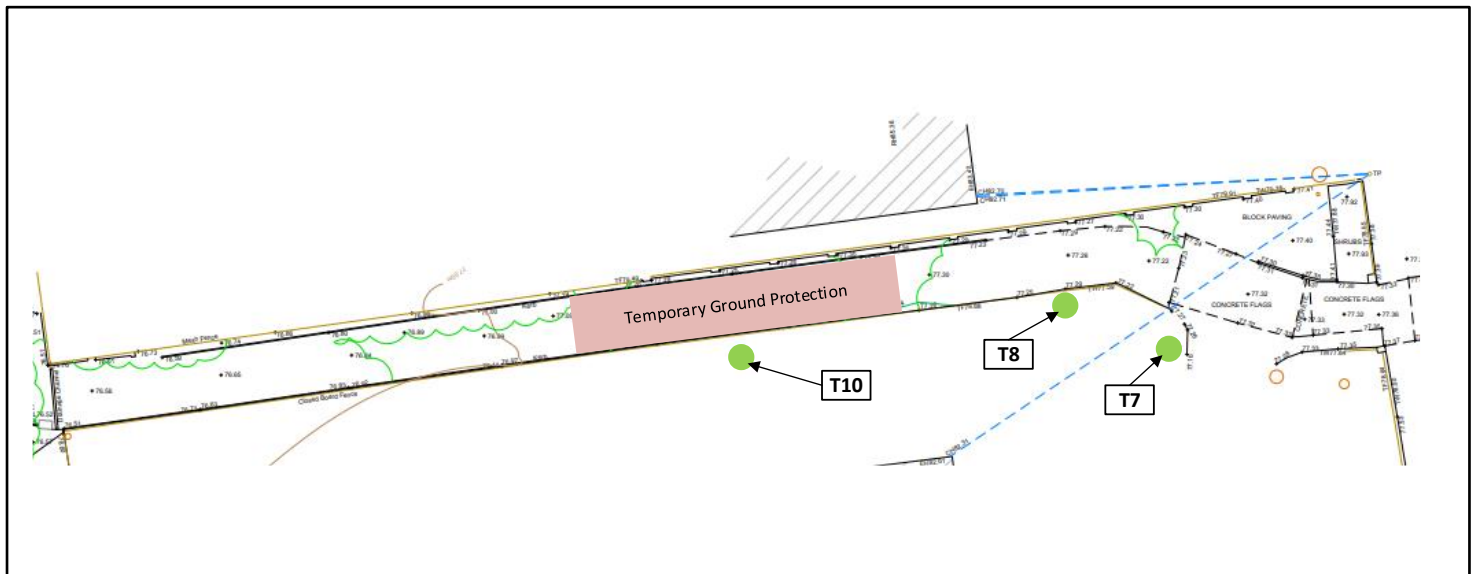
Appendix 4 a

Tree Protection Plan indicating Root Protection Areas - Development Site



Appendix 4 b

Location of temporary ground cover – site access



Appendix 5 Specification for protective fencing

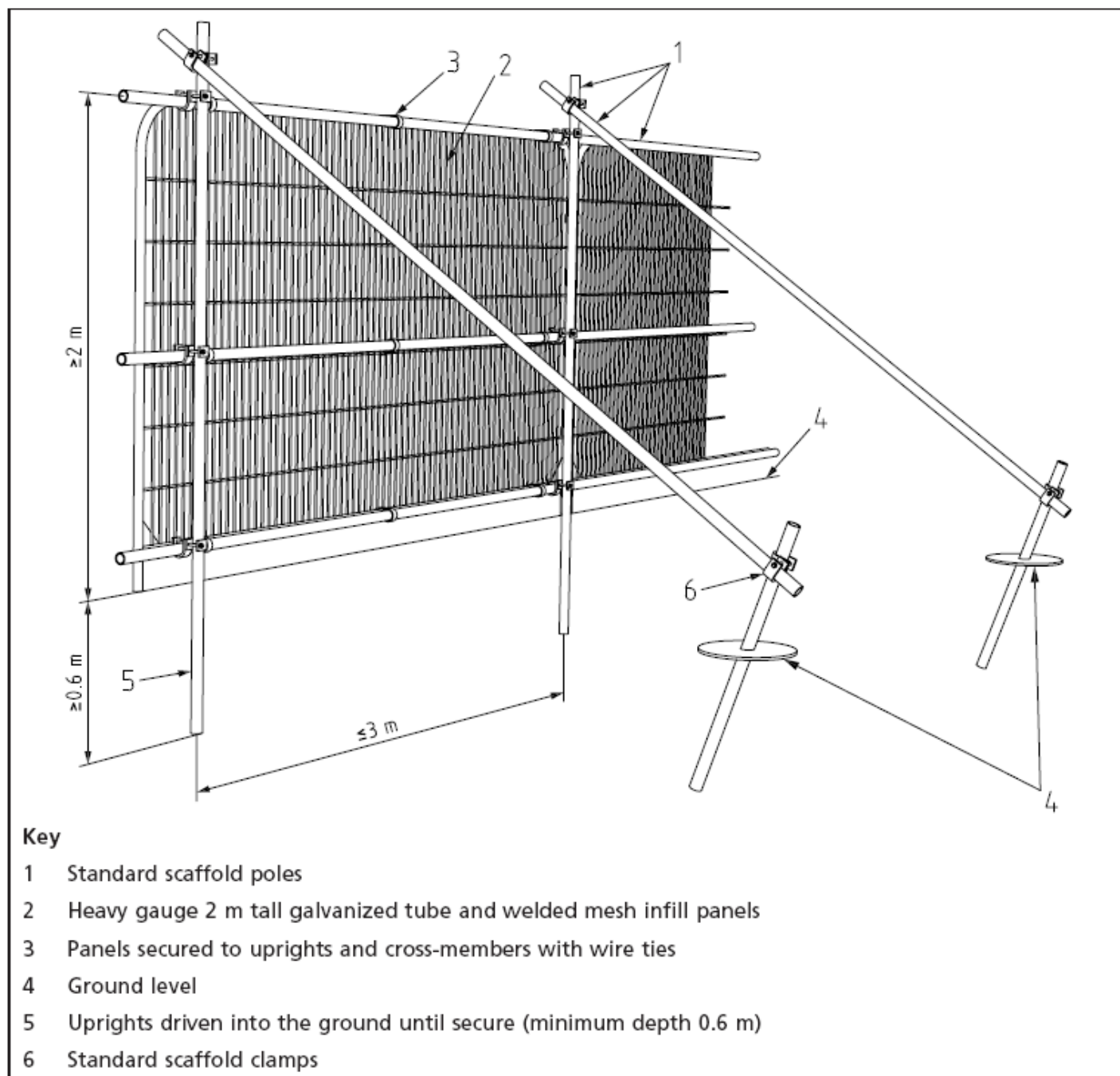


Figure A - Default system

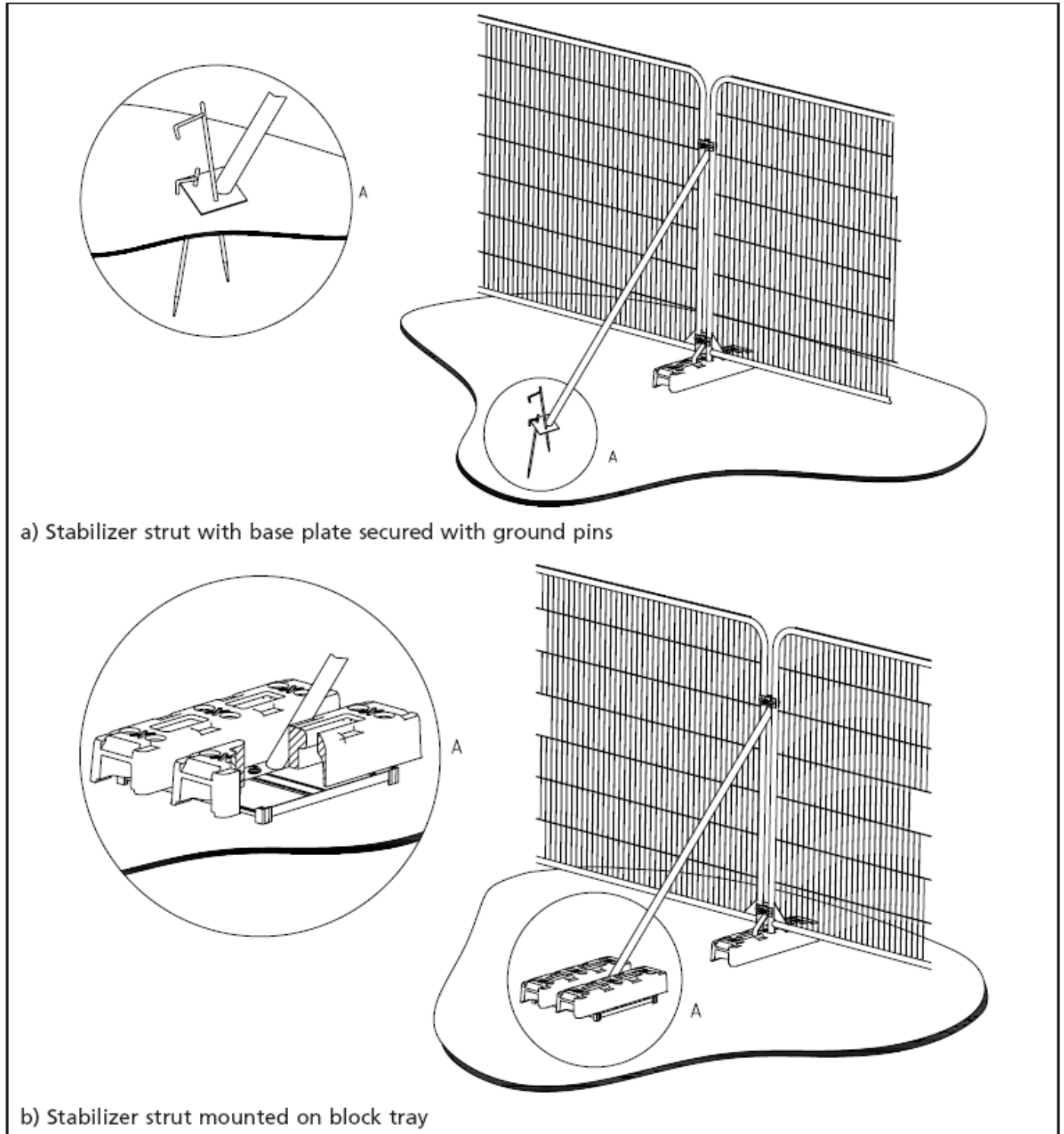
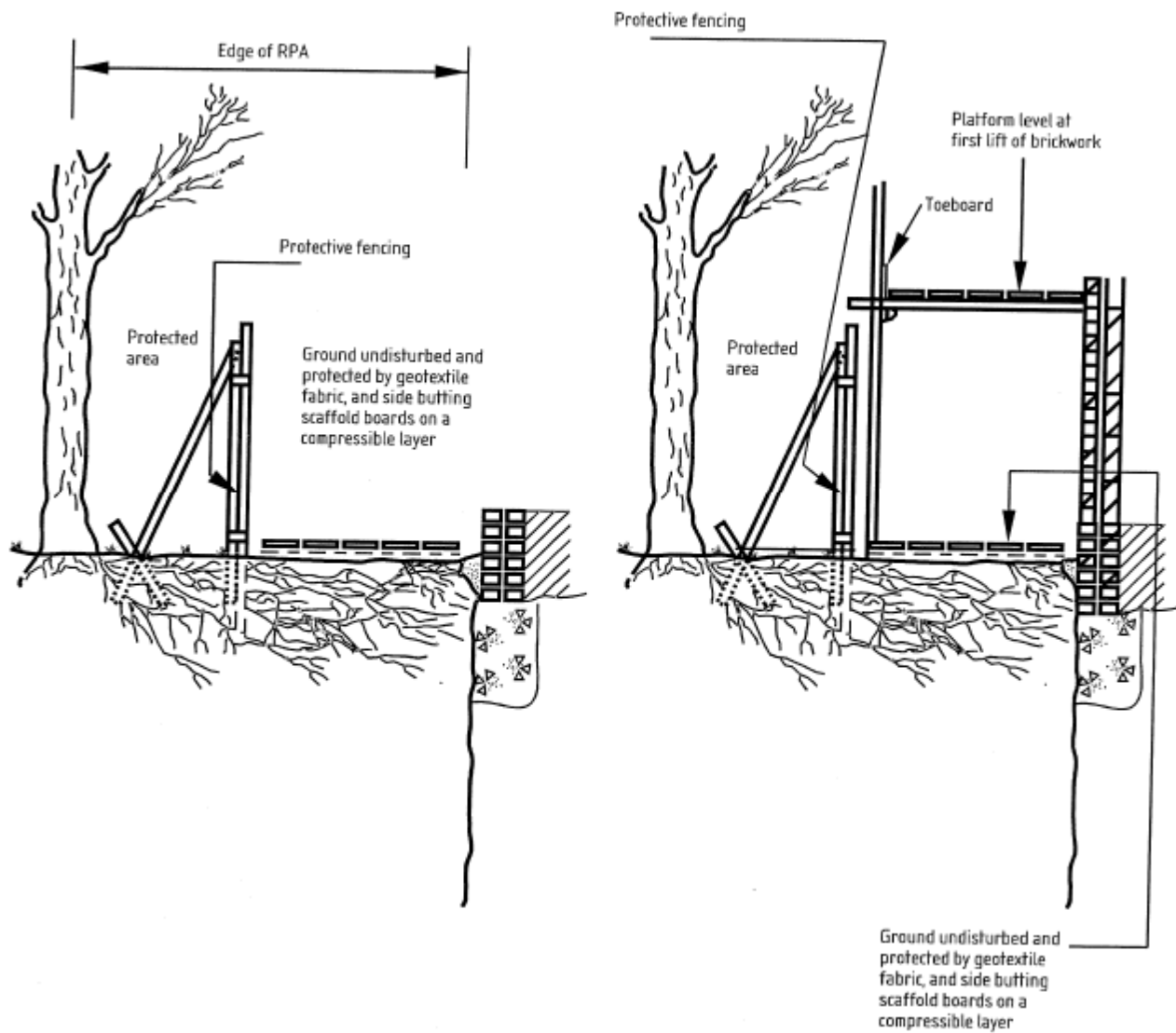


Figure B - Examples of above-ground stabilizing systems to be used where Figure A is not possible – not suitable for areas where heavy plant is working

Adapted from BS 5837: 2012

Appendix 6

Scaffolding within the root protection area with protective fencing



Adapted from BS5837: 2005

Appendix 7

Example of temporary ground protection



Example of temporary plated ground protection to prevent damage to tree roots and soil structure beneath existing driveway.