

Ref: LAS_242_C
Date:23.01.2023

Site: Phase 10, Heyford Park Developments Ltd, Camp Road, Heyford Park

Arboricultural Impact Statement

1) Introduction

LandArb Solutions has been instructed to undertake a tree survey and prepare an arboricultural impact statement to accompany a reserved matters application for new residential development at Heyford Park in relation to Phase 10.

Within the Arb Impact Statement LandArb Solutions were commissioned to also provide details required by Condition 11 attached to Application 18/00825/HYBRID

Condition 11 states: *No works or development shall take place in connection with each phase or sub phase of the development until a scheme for the protection of the existing trees, hedgerows or such other landscape features as may exist that are identified for retention under Condition 11 has been agreed in writing with the Local Planning Authority. This scheme shall include:*

- *A plan that shows the position, crown spread and Root Protection Area (paragraph 5.2.2 of BS5837) of every retained tree within that phase or sub-phase and on neighbouring or nearby ground to the site in relation to the approved plans and particulars. The positions of all trees to be removed shall be indicated on this plan.*
- *The details of each retained tree as required at paragraph 4.2.6 of BS5837 in a separate schedule.*
- *A schedule of tree works for all the retained trees in paragraphs (a) and (b) above, specifying pruning and other remedial or preventative work, whether for physiological, hazard abatement, aesthetic or operational reasons. All tree works shall be carried out in accordance with BS3998, 1989, Recommendations for tree work.*
- *Written proof of the credentials of the arboricultural contractor authorised to carry out the scheduled tree works.*
- *The details and positions (shown on the plan at paragraph (a) above) of the Ground Protection Zones (section 9.3 of BS5837).*
- *The details and positions (shown on the plan at paragraph (a) above) of the Tree Protection Barriers (section 9.2 of BS5837), identified separately where required for different phases of construction work (e.g. demolition, construction, hard landscaping). The Tree Protection Barriers must be erected prior to each construction phase commencing and remain in place, and undamaged for the duration of that phase. No works shall take place on the next phase until the Tree Protection Barriers are repositioned for that phase.*
- *The details and positions (shown on the plan at paragraph (a) above) of the Construction Exclusion Zones (section 9 of BS5837).*
- *The details and positions (shown on the plan at paragraph (a) above) of the underground service runs (section 11.7 of BS5837).*

- *The details of any changes in levels or the position of any proposed excavations within 5 metres of the Root Protection Area (para. 5.2.2 of BS5837) of any retained tree, including those on neighbouring or nearby ground.*
- *The details of any special engineering required to accommodate the protection of retained trees (section 10 of BS5837), (e.g. in connection with foundations, bridging, water features, surfacing) The details of the working methods to be employed with the demolition of buildings, structures and surfacing within or adjacent to the Root Protection Areas of retained trees.*
- *The details of the working methods to be employed for the installation of drives and paths within the Root Protection Areas of retained trees in accordance with the principles of "No-Dig" construction.*
- *The details of the working methods to be employed with regard to the access for and use of heavy, large, difficult to manoeuvre plant (including cranes and their loads, dredging machinery, concrete pumps, piling rigs, etc) on site.*
- *The details of the working methods to be employed with regard to site logistics and storage, including an allowance for slopes, water courses and enclosures, with particular regard to ground compaction and phytotoxicity.*
- *The details of the method to be employed for the stationing, use and removal of site cabins within any Root Protection Areas (para. 9.2.3 of BS5837).*
- *The details of tree protection measures for the hard landscaping phase (sections 13 and 14 of BS5837).*
- *The timing of the various phases of the works or development in the context of the tree protection measures. Implementation shall be in accordance with the approved scheme unless otherwise agreed in writing by the Local Planning Authority. Note – this information has been submitted in relation to Phase 10.*

2) Tree survey and existing trees

LandArb Solutions carried out a BS5837:2012 survey of Phase 10 on 20.04.21.

Following receipt of pre-application advice from Cherwell District Council, LandArb Solutions visited the site again on 21.02.22 and 17.05.22 to re-survey the trees including surveying trees within group G1013 individually.

A copy of the tree survey schedule is shown in Appendix 1 and tree survey and constraints plan in Appendix 2. Site Photos are in Appendix 3.

The following sets out a description of existing trees.

G1013 – C2: Photos 1, 2, 3, 4, 12 and 13.

This group comprises pine trees with elder shrubs understorey. All appear to be same age and size. These trees have been resurveyed as individual trees as requested by CDC in their pre-app response.

Many pines within the group have had limb failures and tops snapped out. Most have poor shapes/structures. The trees (except for T1013d) are assessed as low quality (Category C).

G1014 – C2: Photos 17 and 18

The group comprises pine trees. All appear to be similar age and size.

No trees within the group appear to be higher quality in their own right or appear to have characteristics that would significantly differentiate them from the rest of the group to warrant being surveyed as an individual. Several dead pine within the group.

The group does have some visual amenity from Camp Road and appears to have been planted to help screen parts of the infrastructure of the old airfield/airfield use and is characteristic of the type of tree planting seen across the airfield.

They are assessed as low quality (Category C).

G1015-B2: Photos 5 and 6

The group comprises pine trees. All appear to be similar age and size.

No trees within the group appear to be higher quality in their own right or appear to have characteristics that would significantly differentiate them from the rest of the group to warrant being surveyed as an individual.

Group does have some visual amenity from Camp Road and appears to have been planted to help screen parts of the infrastructure of the old airfield/airfield use. The trees are characteristic of the type of planting seen across the airfield and help contribute to the setting of the former airbase.

Assessed as moderate quality (Category B), at lower end of scale. The group is fairly dense and in reasonably good condition.

G1016a-p – Mix of Category B, C and U.

This group comprises a mix of deciduous and conifer species. Overall as a group is assessed as moderate quality (Category B). However, there are lower and poor-quality trees within and trees in poor condition.

Because the group comprises a mix of species (ash, pine, beech, alder) with a range of stem sizes and overall condition, the trees have been surveyed as individuals (a-p). They have also been surveyed as individual to identify individual condition and quality of trees in the group to aid in determining if any trees could be retained on their own merits.

G1017 – C2: Photos 7 and 8

The group comprises pine trees. All appear to be similar age and size.

No trees within the group appear to be higher quality in their own right or appear to have characteristics that would significantly differentiate them from the rest of the group to warrant being surveyed as an individual.

Group has limited visual amenity from Camp Road and appears to have been planted to help screen parts of the infrastructure of the old airfield/airfield use.

The group is Assessed as low quality (Category C).

Camp Road Hedge

Along the south side of the land parcel (outside the redline) is a chain-link fence that runs along camp road. Part of this has been cleared of vegetation (ivy and brambles etc). However, to the east of G1014 vegetation is still present growing over the chain-link fence. Vegetation is clipped and managed like a hedge.

Statutory Tree Protection and designations

A review of Cherwell District Council's online interactive maps shows that none of the trees within the site are subject to a Tree Preservation Order (TPO). However, the site is within a Conservation Area.

3) Development proposals

Proposals are for the erection of 138 residential dwelling (C3 Use Class), Public Open Space/Play Areas, Ancillary infrastructure.

A copy of the proposed site plan is shown in Appendix 4.

Arboricultural Impact Assessment

The proposed site plan has been overlaid with the tree survey to prepare a Tree Retention/Loss Plan (Appendix 5) and Tree Protection Plan (see Appendix 7). This has been used to inform this assessment in terms of the proposed site plan and its relationship with trees.

4) Tree Retention/Loss and New Planting

Tree Loss

A Tree Retention/Loss Plan is shown in Appendix 5.

Proposals will require the removal of G1013, G1014, G1015 to enable development.

G1014 and G1015 will need to be removed to enable new built development. Trees within each of the two groups have grown together and therefore have a degree of dependability on each other for companion shelter. As a result the trees have generally grown taller and thinner which makes selective retention difficult as the trees could be expected to be vulnerable to wind load failures. Therefore in this context groups like these, if retained within development, would need to be retained together and located within open space. As set out within the pre-application advice, were designs amended to try and accommodate all or part of G1014 and G1015 it is highly likely that there would be future conflicts between new dwellings and the trees in terms of shading and overbearing issues, threatening the trees longevity. In light of the above ground constraints posed by these tree groups (shading, positions and extent of land take), removal and replacement is justifiable.

With regard to G1013, this group will need to be removed to enable new parking and a dwelling to be constructed. Following pre-application feedback, this group was resurveyed to assess trees on an individual basis to see if any would justify a higher categorisation. All trees except T1013d are considered to be low quality due to structural condition and poor form. Many have suffered failures and or have poor form. Given many have already had branch failures and suffered storm damage, it is considered none except T1013d could realistically be retained on individual merit. Having grown as a group none appear to have a form or structural condition that would allow safe retention on an individual basis. The group would need to be either retained together or removed together. Given all but 1 of the trees are assessed individual as Category C and as a group Category C, these should not be viewed as a constraint to development.

Previous site plan designs (issued as part of pre-application) showed G1016 as requiring removal to enable development. However, designs in this area have been amended so that G1016 is now retained within the development. It was noted during the survey that some trees are in poor condition (g, o and k) and are therefore shown for removal due to condition.

New planting

A proposed landscaping plan is shown in Appendix 6.

The landscape plan includes for new tree planting (266 new trees) along with shrub and hedge planting.

Previous designs included for woodland planting around the edge of the site. However, during pre-application discussions, officers raised concerns that woodland planting would detract from the openness of the airfield and would cause harm to the heritage assets close to the site. Officers advised that areas of grassland would need to be retained to reflect the setting of the airfield. To that end, in recognition of the form of the existing trees to be removed (i.e. blocks of pine planting), the landscape plan includes for new tree planting around the edge of the site in clusters (including different pine species) to mirror the existing tree planting that is found around the airfield that is more typical of the tree planting found in the area.

Proposed new tree, shrub and hedge planting at the site will deliver a significant increase in species diversity at the site compared to the existing tree resource. Increasing species diversity will help deliver greater resilience in the tree stock at the site to be better able to respond to climate change and pest and disease threats.

Canopy Cover Area

- Total existing canopy cover – 3177 sqm (Area).
- Total canopy cover lost from tree removal – 2738 sqm (Area).
- Total retained canopy cover = 439sqm (Area).
- Canopy from 266 new trees at year 1 - 1.5m crown spread (1.7 sqm each tree, 266 x 1.7 sqm) = 452.20 sq. m new canopy at year 1.
- Projected canopy cover from 266 new trees at year 25 - 5m crown spread (19.6 sqm each tree. 266 x 19.6 sq. m = 5213.6 sq. m new canopy at year 25.

In summary the retained tree canopy cover (439 sqm) and the proposed new tree planting canopy cover (at 25 years) equates to a total of 5652.6 sqm. This results in a net increase in canopy cover of 2475.6 sqm (at 25 years) compared to existing tree cover.

5) Impacts to retained trees

Tree works to retained trees.

No tree work to retained trees is required to enable new dwelling construction.

It is likely G1016a, b and d will all need to be crown lifted to 2.5m to ensure clearance of the working area in relation to drainage installation.

Because G1016 is to be retained and development is set back away from them, any required tree work due to condition or health is to be actioned through a s211 process.

Removal of existing structures

No existing structures need to be removed from the RPAs of any retained trees.

Construction of new buildings / structures

No dwellings or other buildings are to be constructed in any RPA. Proposed dwellings are set fully outside of RPAs.

New hard surfacing

All roads are positioned outside of any RPA of retained trees.

Drainage

A proposed drainage plan is shown in Appendix 8, and drainage runs are shown on the TPP.

The vast majority of proposed drainage runs are located away from any retained tree. However, the drainage plan has an insert that shows proposed drainage in relation to trees in G1016. The red dotted line is foul drainage, red circles are foul drainage manholes, blue dotted line is surface water drainage and greyed out runs and manhole/inspection chambers shown to the south and south-west of G1016 is an existing pumping station.

In order to connect to the existing pumping station the foul drainage connection to the development will need to pass through the RPAs of trees G1016a, G1016b and G1016d and a new manhole/inspection chamber (F290) will need to be installed.

The starting point is to avoid installing drainage runs in the RPAs of retained trees in order to avoid any potential root severance or damage that would be detrimental to the health and viability of the trees.

However, if it is not possible to relocate drainage runs outside of RPAs, the way in which the works are carried out would need to be carefully controlled in order to try and minimise root disturbance/severance. A method statement for the installation of drainage is set out in the tree protection section.

6) Tree protection and method statement

A Tree Protection Plan is included in Appendix 7.

Protection fencing and ground protection

Temporary tree protection fencing and ground protection will be required in relation to G1016. G1017 is off site and it is expected that the site will be contained with fencing.

Fencing will need to be installed in the primary position as shown on the TPP prior to works commencing on site and must remain in place until works are completed. The fencing will prevent encroachment into RPAs and accidental direct contact.

However, fencing will need to be adjusted into a secondary position when it comes to installing new foul drainage runs to the north of G1016d and between G1016a and G1016b/d). Fencing will need to be adjusted in order to allow access to the working area.

Because drainage works would be in the default RPA of retained trees, fencing in the secondary will not provide protection to all part of the RPAs. As shown on the TPP, where fencing would not offer protection, temporary ground protection would be need.

For pedestrian and lightweight plant ground protection in the form of Ground Guards or track mats set upon a 100-200mm layer of bark chippings would be suitable. Example shown in Appendix 9.

For heavier loading, ground protection would need to be in the form of a load bearing geocell such as Cellweb or similar.

Drainage pipe installation by G1016

When excavating drainage runs within an RPA the following method should be followed:

- Ensure tree protection fencing and ground protection is in place as per the TPP (consult with project arboriculturist).
- Mark out the alignment of the drainage run on the ground.
- Excavate using handheld tools (hand digging or use of air-spade). The priority is to remove soil without damaging or severing significant roots or damaging roots in the immediate area of excavation. Preference should be paid to using an air-spade to minimise damage to roots. However, if the ground is sufficiently compacted that air-spade excavation is not possible or not possible for another reason, excavation should be carried out using hand tools.
- Where digging by hand as opposed to air-spade, a fork should be used to loosen soil and help locate any significant roots. Loosened soil can then be lifted out using a spade.
- In Root Protection Areas (RPAs), mechanical excavation should be avoided. However, in the event that mechanical plant is required, this should operate from a load bearing ground protection. Any mechanical plant must be lightweight and any excavation carried out in increments of 50-100mm using a toothless bucket. This is to ensure that any significant roots are spotted and retained and not accidentally severed.
- During excavation, roots under 25mm are to be pruned back to the edge/face of the excavation using a sharp cutting tool such as saw or secateurs. If smaller roots under 25mm are sufficiently flexible and can be temporarily or permanently displaced, then the default should be to retain.
- Roots over 25mm or large fibrous mass are to be retained. Retained roots must not be served. Once roots have been located, a smaller tool such as a trowel should be used to clear soil away from the retained roots to avoid damaging its bark.

- Retained roots must not be exposed for long periods of time (over a few hours) without protection. Therefore any exposed retained roots are to be covered with damp hessian sacking to prevent drying out and protect them from direct sunlight until they can be recovered with soil/backfill.
- Excavated soil should be temporarily stored outside of any RPA or if in soft landscaped ground on heavy duty plywood boards or similar to prevent compaction to the ground beneath.
- Once the excavation is complete and the drainage pipe is installed, the excavation is to be backfilled and any roots protected with hessian sacking, this will need to be removed prior to back filling.

With regard to the inspection chamber F290, it will not be possible to retain any roots. However, the drainage plan suggest the exact location of the manhole is to be confirmed on site with the project arboriculturist. In this situation, there would be some flexibility to allow the exact position of the manhole to be adjusted to avoid any large or significant roots (i.e. to limited the amount of potential root loss). Therefore excavations should be carried out carefully by hand to determine the optimal position.

All works in an RPA (i.e. drainage) is to be supervised by the project arboriculturist.

General rules for tree protection

Do not independently carry out any activity that is at odds with the site tree protection measures set out above.

Areas excluded by fencing form a construction exclusion zone and areas protected with ground protection also require certain works to be excluded. The following activities, would not be permitted in any area protected by fencing or ground protection (except in relation to drainage works as set out above):

- No mixing of cement.
- No soil/turf stripping, raising/lowering of ground levels, deposit or excavation of soil or rubble.
- No storage of materials, waste materials, spoil, machinery fuel, chemicals or other materials of any other description.
- No parking/use of tracked or wheeled machinery.
- No lighting of fires or disposal of liquids.

Fires on site should be avoided. Where they are unavoidable, they must not be lit in a position where heat could damage foliage or branches. Fires must be a minimum of 20m from the trunk of any retained tree. No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained tree.



All materials and equipment is to be dropped off a stored in open areas outside of any RPA. All protection measures must be in place as per the TPP prior to works and remain in place for the duration.



Appendix 1: Tree Survey Schedule










Ref no.	Species	Ht. (m)					Crown Spread (m)								Life stage	ULE	Physiological Condition	Structural Condition	General observations and Notes
			Stem dia. (mm)	RPA radius	RPA area	Category Grading	N	E	S	W	Ht. 1st Br. (m)	Est.	1st Br. Direction	Ht. Can. (m)					
G1013	Pine	12.0	300	3.6	41	C2	As on plan				N/A	-	N/A	0.0	M	10+	Fair	Poor	Group of pine with dense under storey elder. All appear same age and size. Multiple pine with tops snapped out and branch failures fallen to ground. Low quality group overall. Moderate to major deadwood within. Stems kinked, poor individual shape. Three stems on eastern side have had top snapped out and major limb failures, same on north western stems.
T1013a	Pine	12.0	300	3.6	41	C1	0.5	3.0	4.0	0.5	0.0	-	-	1.0	M	<10	Fair	Poor	Top snapped out in past, multiple branch failures, stem kinked, canopy to south and east, no north or west canopy as branches snapped off.
T1013b	Pine	12.0	350	4.2	55	C1	3.0	3.0	4.0	3.0	0.0	-	-	0.5	M	10+	Fair	Poor	Main leader snapped out in past, multiple branches snapped/failed. Stem is kinked, canopy to floor.
T1013c	Pine	3.5	250	3.0	28	C1	0.5	0.5	6.0	1.5	0.0	-	-	0.5	EM	<10	Fair	Poor	Stem bent to south leaning almost horizontal southwards. Poor structure. Remove.
T1013d	Pine	12.0	400	4.8	72	B1	3.0	4.0	5.0	2.5	0.0	-	-	0.5	M	10+	Fair	Fair	Dense crown, some snapped branches, north west limb dead, suppressed to north west.
T1013e	Pine	12.0	240	2.9	26	C1	2.0	2.0	2.0	2.0	0.0	-	-	2.5	EM	10+	Fair	Fair	Drawn up, top heavy, deadwood lower canopy.
T1013f	Pine	12.0	400	4.8	72	C1	3.0	4.0	5.0	2.0	0.0	-	-	0.5	M	10+	Fair	Fair	Moderate deadwood, needles appear light and crown thin, not as dense as others.
T1013g	Pine	12.0	400	4.8	72	C1	3.0	2.5	3.0	3.0	0.0	-	-	0.5	M	10+	Fair	Poor	Western limb snapped and hanging disbanded, split in top of crown in main codominant leader, kinked stem.
T1013h	Pine	12.0	359	4.3	58	C1	3.0	2.0	1.5	2.0	0.0	-	-	2.0	M	10+	Fair	Poor	Kinked stem, moderate deadwood, past branch loss/storm damage evident, top heavy.
T1013i	Pine	12.0	300	3.6	41	C1	5.0	1.5	2.5	3.5	0.0	-	-	1.0	M	10+	Fair	Poor	Kinked leader to north, canopy leans to north, poor shape.
T1013j	Pine	12.0	283	3.4	36	U	2.0	2.0	0.5	2.0	0.0	-	-	1.0	EM	<10	Poor	Poor	Twin stem from 1m both stems kinked both leaders snapped out, limited needle coverage, heavy storm damage. remove
T1013k	Pine	12.0	200	2.4	18	C1	2.5	2.0	2.0	2.0	0.0	-	-	6.0	EM	10+	Fair	Fair	Drawn up, top heavy with high canopy, slight kink to stem.
T1013l	Pine	12.0	350	4.2	55	C1	3.0	2.0	2.0	2.0	0.0	-	-	3.0	M	10+	Fair	Fair	Kinked lower stem, moderate deadwood lower crown, upper crown dense.
T1013m	Pine	12.0	250	3.0	28	C1	2.5	2.5	2.0	1.5	0.0	-	-	3.0	EM	10+	Fair	Poor	Drawn up, kinked stem thin crown with deadwood and light needles what is left.
T1013n	Pine	12.0	180	2.2	15	C1	3.0	3.0	0.5	1.0	0.0	-	-	4.0	EM	10+	Fair	Poor	Drawn up, spindly, suppressed to south, stem kinked, leader kinked and leaning north.
T1013o	Pine	12.0	320	3.8	46	C1	6.0	5.0	2.0	1.0	0.0	-	-	0.5	M	10+	Fair	Poor	Topped snapped out, over extended north limb, past branch loss and failure from storm damage, leans north.
T1013p	Pine	12.0	180	2.2	15	C1	2.0	2.0	2.0	2.0	0.0	-	-	7.0	EM	10+	Poor	Poor	Top heavy with very high canopy, drawn up spindly stem which kinks, thin canopy that is small.
T1013q	Pine	12.0	200	2.4	18	C1	2.5	2.5	2.5	2.5	0.0	-	-	7.0	EM	10+	Fair	Poor	Drawn up, leans to north east, high canopy, some deadwood, drawn up.
T1013r	Pine	7.0	100	1.2	5	U	2.0	2.0	2.0	2.0	0.0	-	-	0.5	SM	<10	Dead	Dead	Dead remove.
T1013s	Pine	8.0	100	1.2	5	U	2.5	1.0	0.5	1.0	0.0	-	-	1.0	SM	<10	Poor	Poor	Suppressed, poor shape, limited canopy, kinked stem and leader.
G1014	Pine	12.0	350	4.2	55	C2	As on plan				N/A	-	N/A	0.0	M	10+	Fair	Poor	Group of pine, all similar age. Several dead pine within central southern group, several with branch failures, moderate deadwood.
G1015	Pine	12.0	350	4.2	55	C2	As on plan				N/A	-	N/A	0.0	M	10+	Fair	Fair	Group of pine, Fairley dense planted together. Bramble and elder understorey to frontage, stems in places kinked and bent to grow towards light. Some ivy on stems. Some deadwood and past branch failures.
G1016	Pine, alder, beech, ash,	14.0	500	6.0	113	B2	As on plan				N/A	-	N/A	0.0	-	20+	Fair	Fair	Mixed group. Moderate quality when viewed together. Trees within have been surveyed individually (a-p) to differentiate quality.
G1016a	Pine	14.0	600	7.2	163	B1	5.0	5.0	6.0	4.5	N/A	-	N/A	0.5	M	20+	Good	Fair	Dense canopy good shape. Ground disturbed south side.
G1016b	Pine	14.0	500	6.0	113	B1	4.5	3.0	5.5	6.0	N/A	-	N/A	0.5	M	20+	Good	Fair	Dense canopy, ground disturbed north side, lower canopy deadwood east side.
G1016c	Pine	14.0	450	5.4	92	B1	3.5	3.0	4.0	4.0	N/A	-	N/A	3.0	M	10+	Fair	Fair	Drawn up, lower canopy deadwood from shaded out, upper canopy dense.
G1016d	Pine	14.0	450	5.4	92	B1	5.0	4.0	3.0	4.0	N/A	-	N/A	1.0	M	20+	Good	Fair	Dense canopy, slight suppression south side with lower canopy deadwood.
G1016e	Pine	14.0	540	6.5	132	B1	3.0	3.0	4.0	3.0	N/A	-	N/A	0.5	M	20+	Good	Fair	Dense canopy, slight suppression north side with lower canopy deadwood
G1016f	Pine	14.0	450	5.4	92	B1	4.5	4.0	3.0	3.0	N/A	-	N/A	0.5	M	20+	Fair	Fair	Reasonably dense canopy, suppression south west side with lower canopy deadwood.
G1016g	Pine	12.0	300	3.6	41	U	2.0	2.0	2.0	2.0	N/A	-	N/A	1.5	EM	<10	Poor	Fair	Very thin canopy, major deadwood
G1016h	Ash (Common)	14.0	360	4.3	59	C1	2.0	2.0	4.0	4.0	N/A	-	N/A	5.0	EM	<10	Poor	Poor	suppressed by neighbours, lower canopy dead. Thin crown.
G1016i	Hornbeam	11.5	200	2.4	18	C1	1.5	1.5	1.5	1.5	N/A	-	N/A	0.5	EM	<10	Poor	Poor	Poor shape, limited canopy structure, poor quality,
G1016j	Beech	13.0	330	4.0	49	C1	3.5	3.5	4.0	3.0	N/A	-	N/A	0.5	EM	10+	Fair	Fair	Drawn up, canopy slight suppressed by neighbours,
G1016k	Alder	13.0	300	3.6	41	U	3.0	1.0	1.5	2.5	N/A	-	N/A	2.0	EM	<10	Poor	Poor	Major deadwood, limited canopy structure, poor shape,
G1916l	Beech	14.0	330	4.0	49	B1	4.0	4.0	4.0	4.0	N/A	-	N/A	0.5	EM	20+	Good	Fair	Good shape, dense crown

G1016m	Alder	9.0	330	4.0	49	C1	2.0	3.5	4.0	3.0	N/A	-	N/A	0.5	M	10+	Fair	Fair	Supressed north side, squat shape, minor deadwood
G1016n	Ash (Common)	14.0	360	4.3	59	C1	3.0	3.0	1.0	2.0	N/A	-	N/A	5.0	EM	10+	Poor	Poor	suppressed by neighbour, drawn up with high crown, deadwood in crown, union from 2m.
G1016O	Ash (Common)	14.0	360	4.3	59	U	2.0	4.0	4.0	2.0	N/A	-	N/A	2.0	EM	<10	Poor	Poor	bark peeling away from stem on south side, very thin crown, moderate deadwood.
G1016p	Ash (Common)	14.0	360	4.3	59	C1	4.0	4.0	4.0	4.0	N/A	-	N/A	3.0	EM	10+	Poor	Poor	drawn up, supressed by neighbours, lower canopy is dead, crown thin, dieback at tips.
G1017	Pine	10.0	250	3.0	28	C2	As on plan				N/A	-	N/A	0.0	M	10+	Fair	Fair	Group of pine, some kinked stems, reasonably spread moderate interior deadwood from shaded out, all appear same age and size.



Appendix 2: Tree Survey and Constraints Plan

KEY - BS 5837 : 2012 Categories

-  Tree Category A - High Quality
-  A Category - Hedgerow, Group, Woodland
-  Tree Category B - Moderate Quality
-  B Category - Hedgerow, Group, Woodland
-  Tree Category C - Low Quality
-  C Category - Hedgerow, Group, Woodland
-  Tree Category U - Unsuitable for Retention
-  Root Protection Area to BS:5837:2012
-  Shrub Mass / Offsite Tree



Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Revision	Description	Date
-	First issue	26/4/21
A	Second issue	25/2/22

LANDARB SOLUTIONS

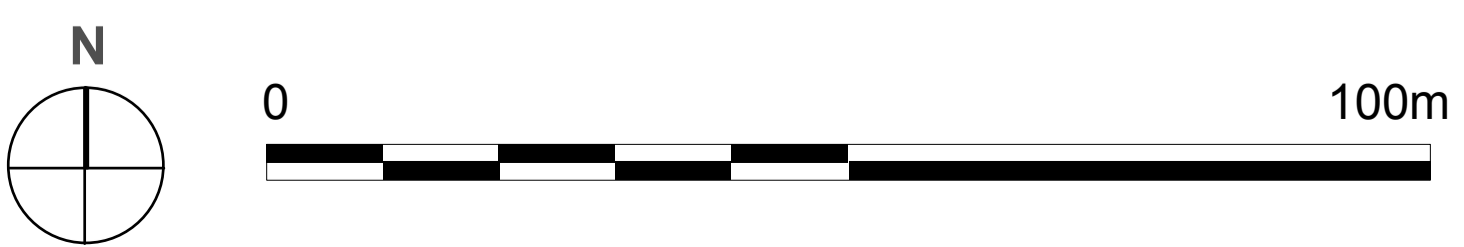
Project:
Upper Heyford Phase 10

Description:
Tree Survey and Constraints Plan

Status:
For Planning

Scale: **1:650@A1** Drawn I Checked: **DP MP** Date: **25/02/2022**

Job Number: **LAS 242** Drawing Number: **01** Revision: **A**



Appendix 3: Photos:



Photo 1: View looking north-west towards G1013



Photo 2: View looking north-east towards G1013



Photo 3: View south towards G1014



Photo 4: View south-west towards G1014



Photo 5: View south-east towards G1015



Photo 6: View south-west towards G1015.



Photo 7: View west towards G1017



Photo 8: View north towards G1017



Photo 9: View west towards G1016.



Photo 10: view north towards G1016.



Photo 11: View north towards G1016.



Photo 12: view south-east towards G1016.



Photo 13: View north towards G1013.



Photo 14: view south-west towards G1013.



Photo 15: View north towards G1016.



Photo 16: view west towards G1016.



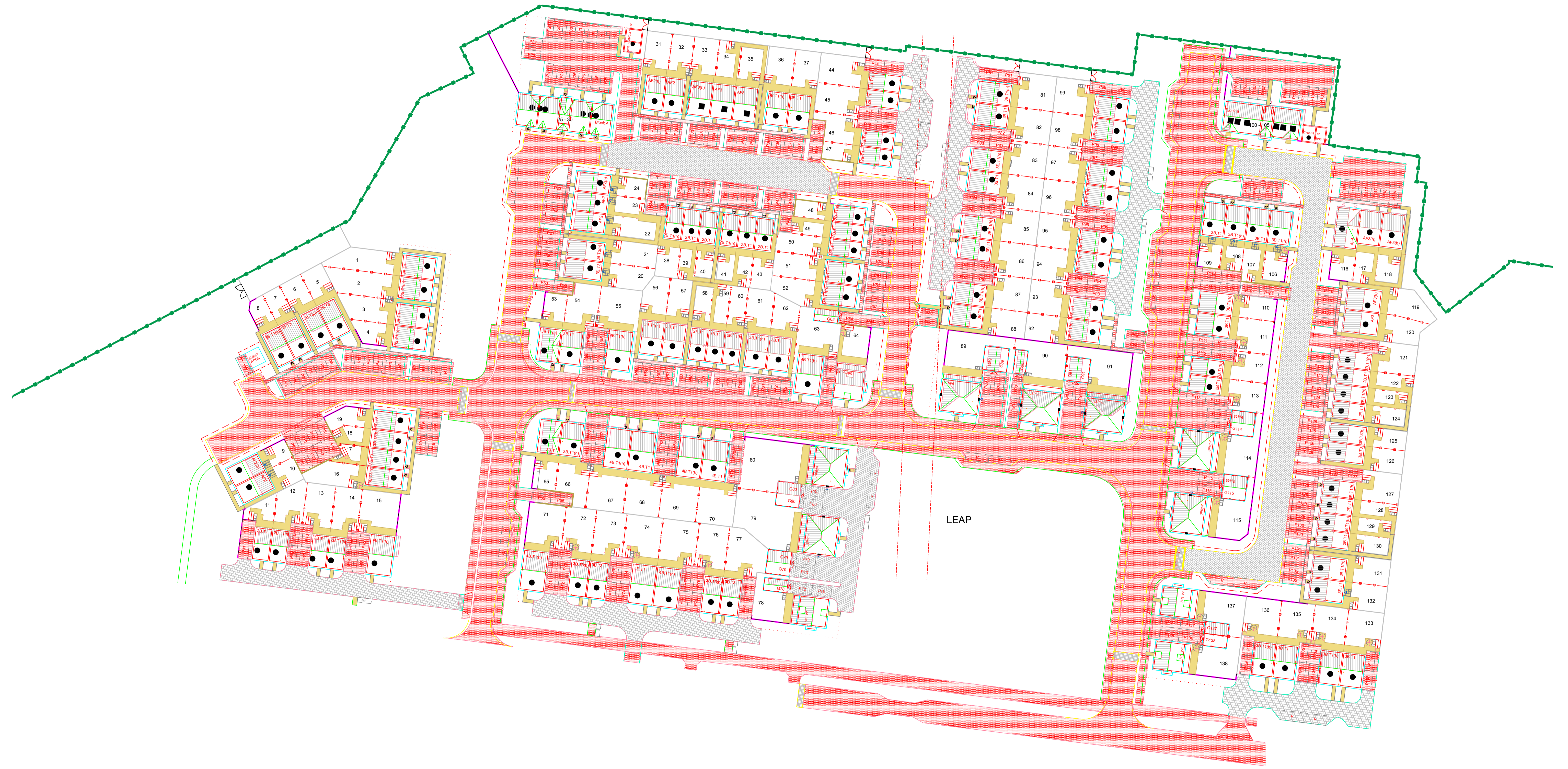
Photo 17: View north towards G1014.



Photo 18: view west towards G1014.













Appendix 4: Proposed Site Plan

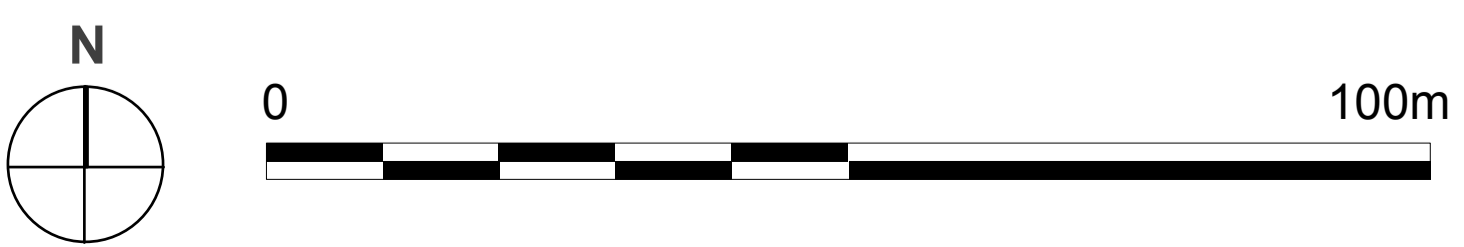
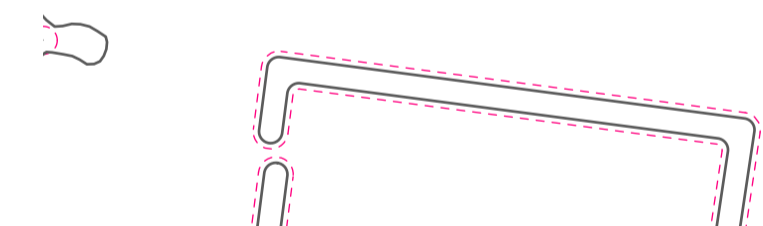




Appendix 5: Tree Retention/Loss Plan

KEY - BS 5837 : 2012 Categories

-  Tree Category A - High Quality
-  A Category - Hedgerow, Group, Woodland
-  Tree Category B - Moderate Quality
-  B Category - Hedgerow, Group, Woodland
-  Tree Category C - Low Quality
-  C Category - Hedgerow, Group, Woodland
-  Tree Category U - Unsuitable for Retention
-  Root Protection Area to BS:5837:2012
-  Shrub Mass / Offsite Tree
-  Survey Item to be Removed



Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Revision	Description	Date
-	First issue	31/2/21
A	Second issue	11/5/22
B	Third issue	27/6/22
C	Fourth issue	24/11/22
D	Fifth issue	11/1/23

LANDARB SOLUTIONS

Project:
Upper Heyford Phase 10

Description:
Tree Retention/Removal Plan

Status:
For Planning

Scale: **1:650@A1** Drawn I **DP** Checked **MP** Date: **11/01/2023**

Job Number: **LAS 242** Drawing Number: **02** Revision: **D**


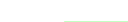








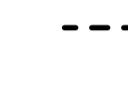



Appendix 6: Proposed Landscape Plan

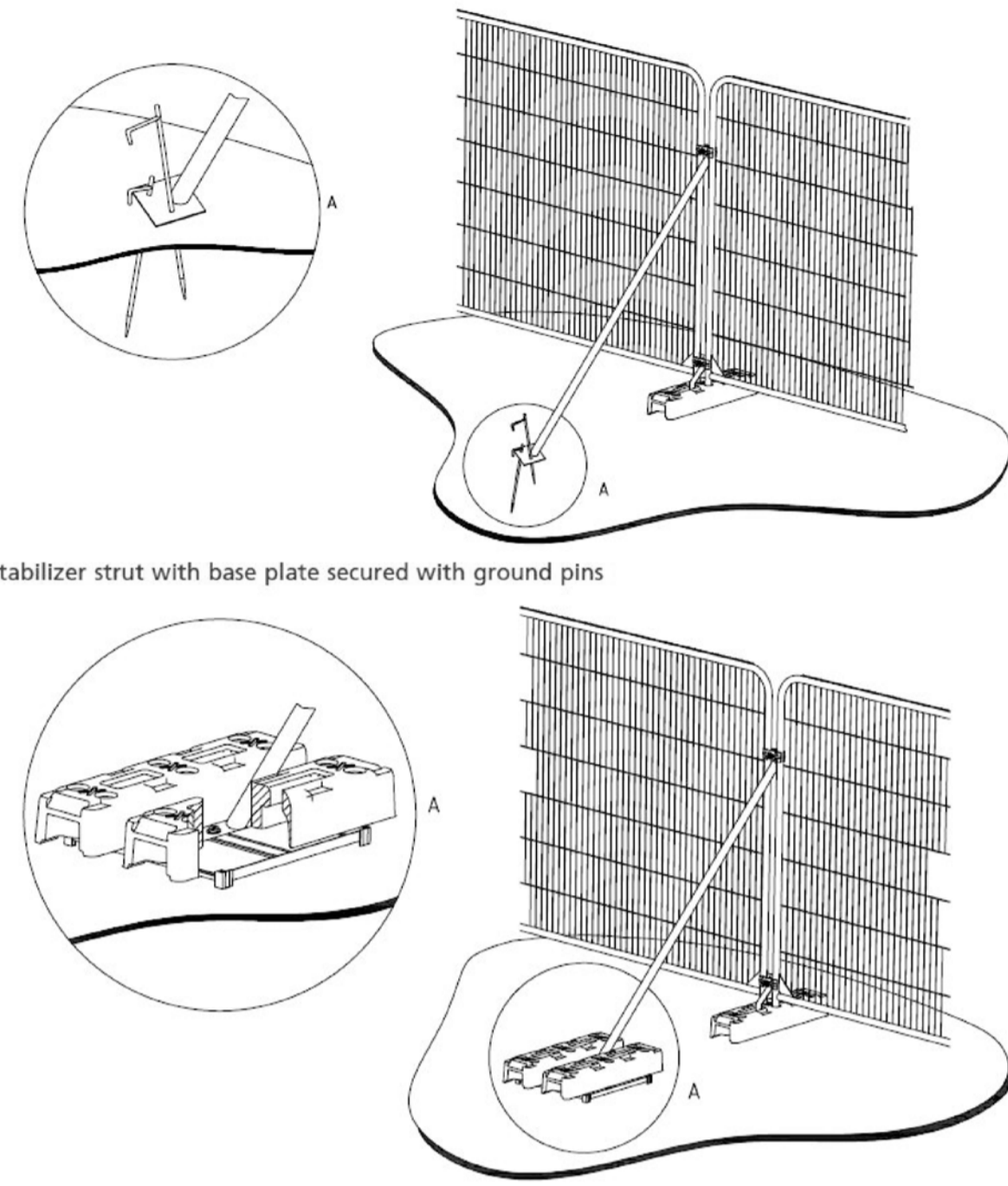


Appendix 7: Tree Protection Plan

KEY - BS 5837 : 2012 Categories

-  Tree Category A - High Quality
-  A Category - Hedgerow, Group, Woodland
-  Tree Category B - Moderate Quality
-  B Category - Hedgerow, Group, Woodland
-  Tree Category C - Low Quality
-  C Category - Hedgerow, Group, Woodland
-  Tree Category U - Unsuitable for Retention
-  Root Protection Area to BS:5837:2012
-  Shrub Mass / Offsite Tree
-  Tree Protection Barrier to BS:5837:2012 Primary Position
-  Tree Protection Barrier to BS:5837:2012 Secondary Position
-  Temporary Ground Protection to BS:5837:2012

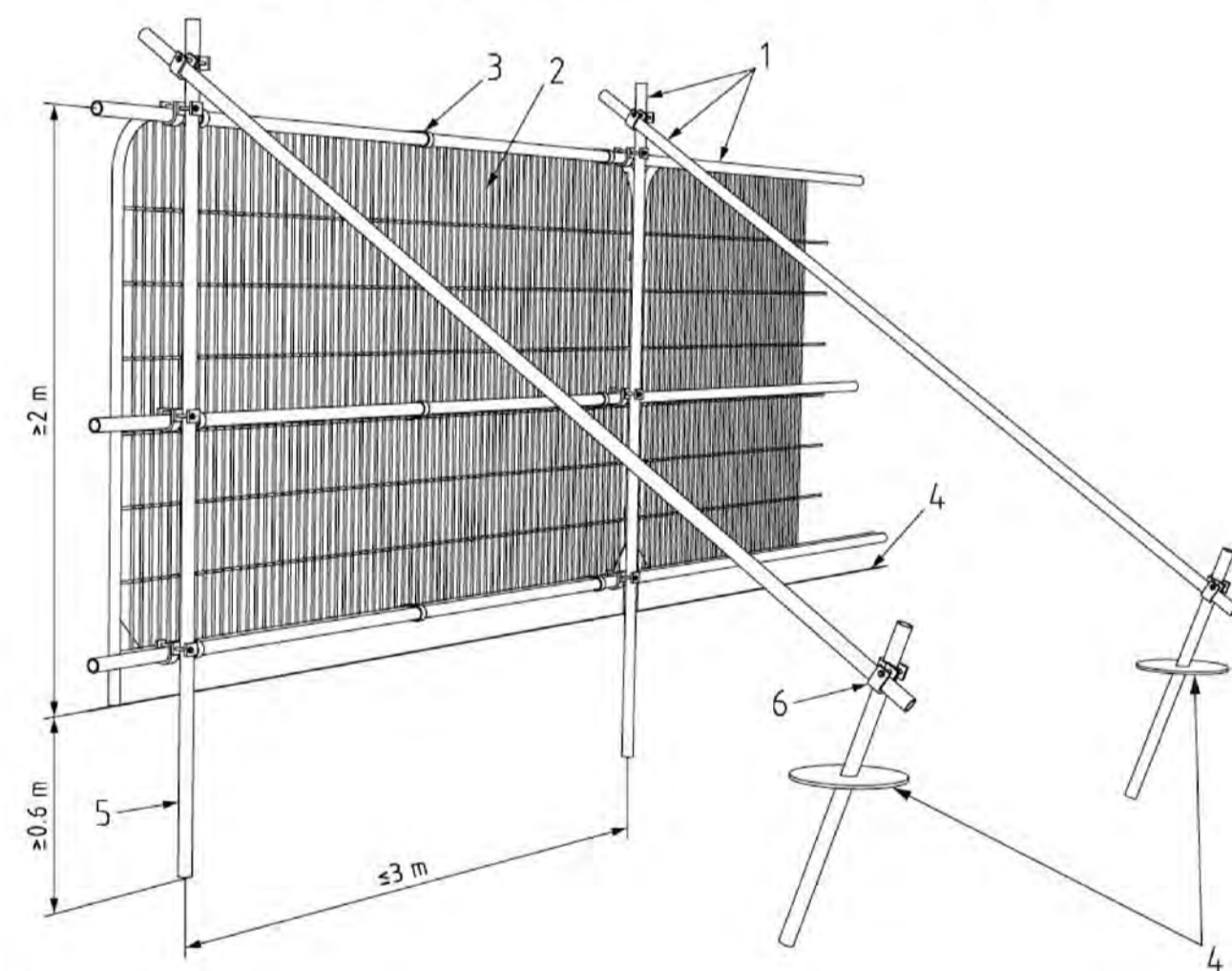
BS:5837:2012 Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins

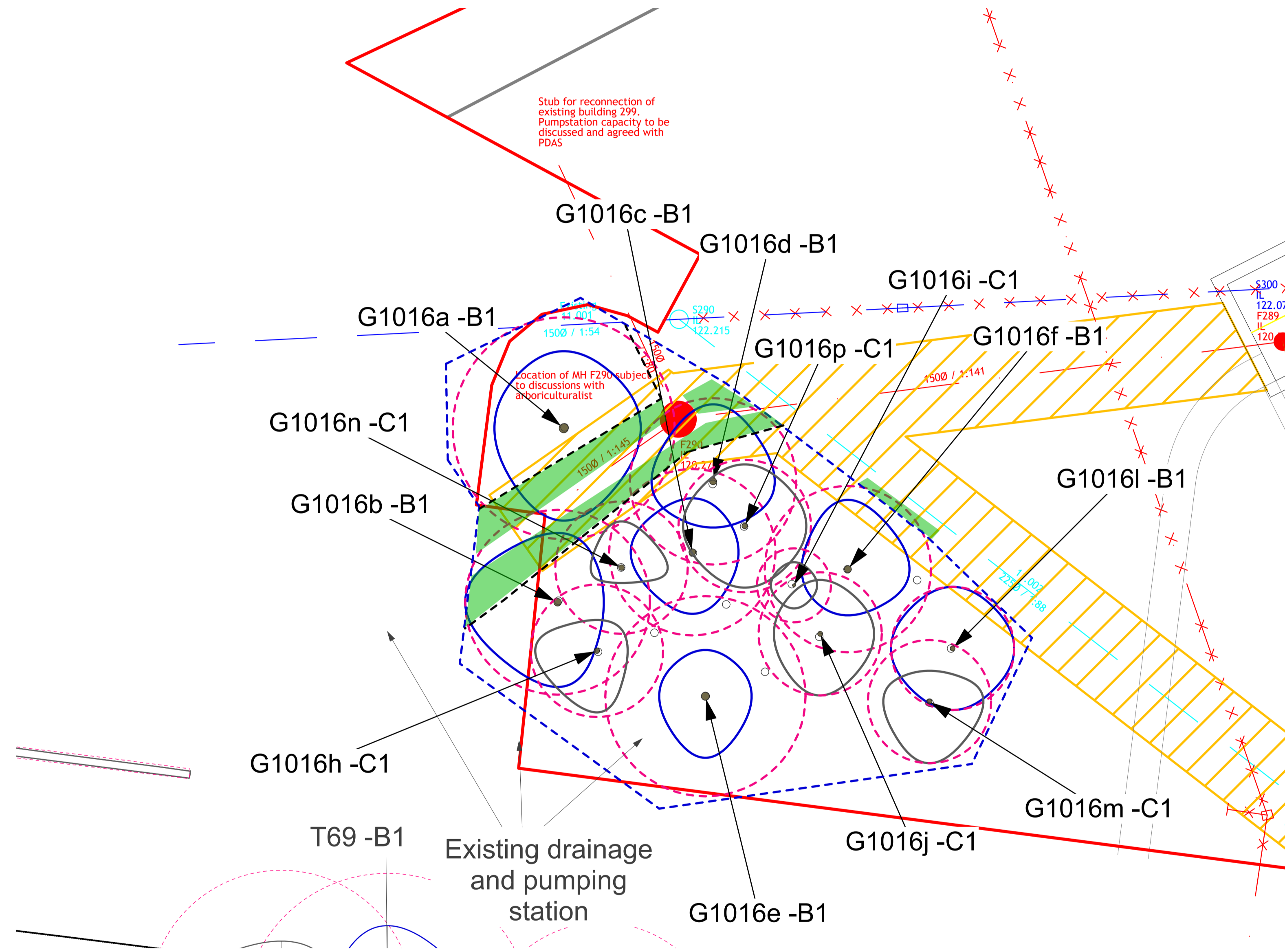
b) Stabilizer strut mounted on block tray

BS:5837:2012 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



Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

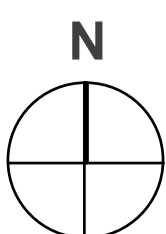
Revision	Description	Date
-	First issue	11/5/22
A	Second issue	27/6/22
B	Third issue	24/11/22
C	Fourth issue	11/1/23

LANDARB SOLUTIONS

Project:
Upper Heyford Phase 10
Description:
Tree Protection Plan - Sheet 2 of 2

Status:
For Planning

Scale: 1:200@A1
Job Number: LAS 242
Drawn I Checked: DP MP
Date: 11/01/2023
Drawing Number: 02
Revision: C





Appendix 8: Drainage Plan

NOTES

- Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported to the Architect or Engineer before proceeding. © This drawing is copyright.
- All plans and drawings are drawn true to stated scales and can be used for the purpose of planning only. Responsibility is not accepted for errors made by others in scaling from this drawing.
- Reproduced from OS Sitemap @ by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright 2008. All rights reserved. Licence number 100007126.
- Until technical approval has been obtained from the relevant authorities, all drawings are issued as preliminary and not for construction. Should the Contractor commence site work prior to approval being given it is entirely at his own risk.
- FFLs are +- 450mm subject to detailed design.
- External levels and drainage subject to detailed design, Section 38 approval and Section 104 approval.

KEY

- Existing drainage
- Proposed adoptable surface water sewer
- Proposed adoptable foul water sewer
- Notable retaining walls (over 1m high)
- Proposed 1:3 banking

FOR PLANNING PURPOSES ONLY

F	AMENDED TO SUIT PH10 REDESIGN	DSH	AT	16.01.23
E	FGLs ADDED. FFLs 83, 85 & 96 UPDATED TO SUIT	AT	JF	02.10.22
D	UPDATED TO SUIT LATEST LAYOUT	AT	JF	27.06.22
C	S290b-S291 RELOCATED	AT	JF	27.04.22
B	UPDATED TO SUIT LATEST LAYOUT	AT	JF	26.04.22
A	UPDATED TO SUIT LATEST LAYOUT	AT	JF	25.04.22

REV	DESCRIPTION	DRN	CHD	DATE	
<input type="checkbox"/>	PRELIMINARY	<input type="checkbox"/>	INFORMATION	<input type="checkbox"/>	TENDER
<input type="checkbox"/>	CONSTRUCTION	<input type="checkbox"/>	AS BUILT		

SCALE 1:500 @ A1 DATE NOV 2021

DRAWN AT CHK JF

DRAWING NO. HEYF-5-1300 REV F

TITLE **CAMP ROAD UPPER HEYFORD**

DETAILS **PHASE 10 LEVELS & DRAINAGE STRATEGY**

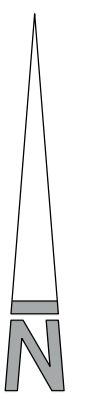
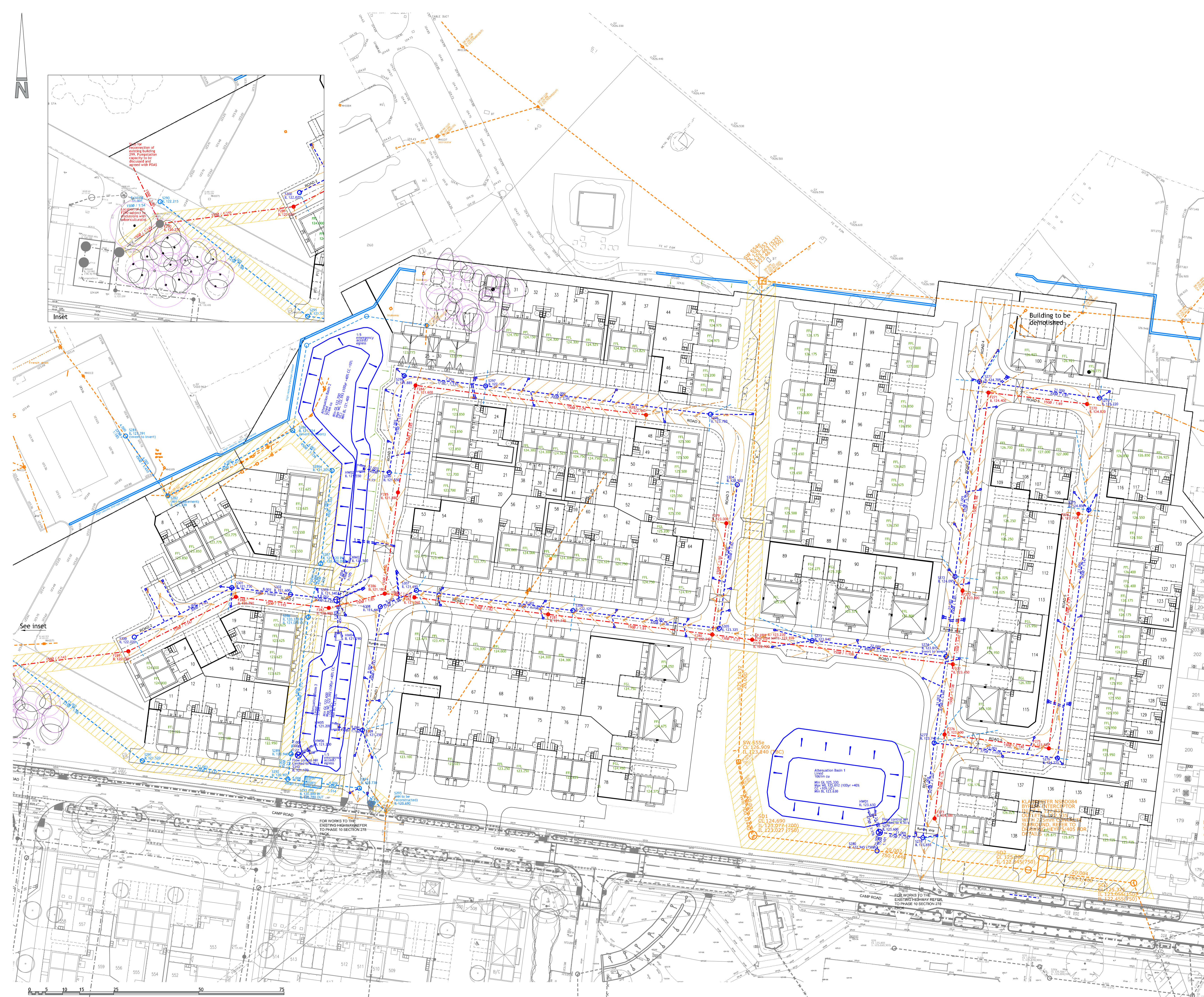
Woods Hardwick
Architecture | Engineering | Planning | Surveying

BEDFORD : HEAD OFFICE
15-17 Goldington Road
Bedford MK40 3NH
T: +44 (0) 1234 268862

BIRMINGHAM
Fort Dunlop, Fort Parkway
Birmingham B24 9FE
T: +44 (0) 121 6297784

ONLINE: mail@woodshardwick.com | woodshardwick.com

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS DRAWING



See inset

Building to be demolished

FOR WORKS TO THE EXISTING HIGHWAY REFER TO PHASE 10 SECTION 278

FOR WORKS TO THE EXISTING HIGHWAY REFER TO PHASE 10 SECTION 278



Appendix 9: Example Ground Protection

TREE ROOT PROTECTION DURING CONSTRUCTION PROJECTS

The Department for Communities and Local Government's guide "Tree Roots in the Built Environment" states that "ground protection should be installed before any materials or machinery is brought onto the site" (Section 9.3.3.2) [Crown Copyright acknowledged]

It has been shown that "the major contribution to soil compaction from vehicle movements comes from the first passes of vehicles over the ground" (Section 4.2.3) Thus it is essential that ground protection is specified and installed from day one of construction projects.

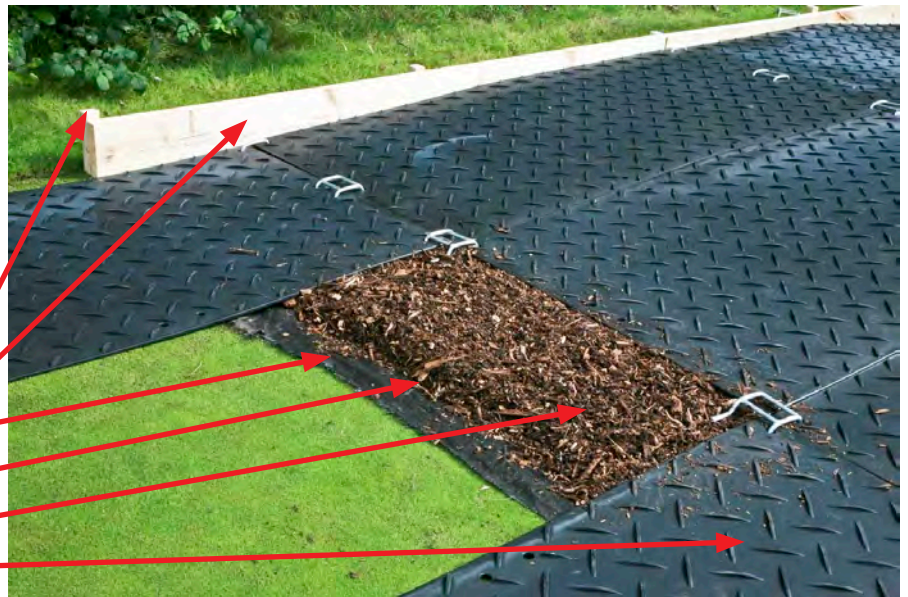
Failure to protect the ground from compaction will lead to reduced water and oxygen infiltration to the tree roots and can ultimately lead to the decline of the tree.

TREE ROOT PROTECTION METHOD

GroundGuards trackway mat systems are frequently used on construction sites to protect the ground from erosion and damage by construction vehicles. Where a temporary roadway must pass near to trees, the following extra precautions must be taken in order to provide cushioning for the ground under the tree canopy:

1. Edge rails of 200 x 50mm sawn timber should be installed where the trackway will pass under the tree canopy. These should be staked on either side of the trackway using 50 x 50 x 500mm timber stakes at 1.5m spacings.
2. A layer of geotextile membrane should be laid to cover at least the area under the tree canopy and preferably under the whole of the trackway.
3. A pad of trackway mats should be laid on top of the geotextile membrane, between the timber rails.
4. A 150mm deep layer of wood chipping should be laid over the mats
5. The trackway can then be laid so that it rises over the wood chippings as it passes under the tree canopy.

50x50x500 timber stakes
200x50 timber rails
Geotextile Membrane
Base layer of trackway mats
Wood chippings
Upper layer of trackway mats



Three trackway systems suitable for tree root protection are available for hire or sale:



MultiTrack

MultiTrack

These mats quickly clip together and are suitable for medium weight construction traffic. Where they pass over tree roots, install a double layer of mats with 150mm of wood chippings between to cushion the ground.



MaxiTrack

MaxiTrack

This is a unique heavy duty matting system with overlapping flanges and bolt-together connection, for heavier traffic. Again, use a sandwiched layer of wood chippings where there are tree roots.



XtremeMats

XtremeMats

For very heavy traffic, over extended periods, these rigid 4x2m mats spread the load to protect the ground. Double layering is not necessary, but 150mm of wood chippings should be used in areas with tree roots.