John F Hunt Ltd

Acorn House Demolition

Document Title:
Tree Protection Plan during the Demolition Phase

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Signature					

John F Hunt Ltd

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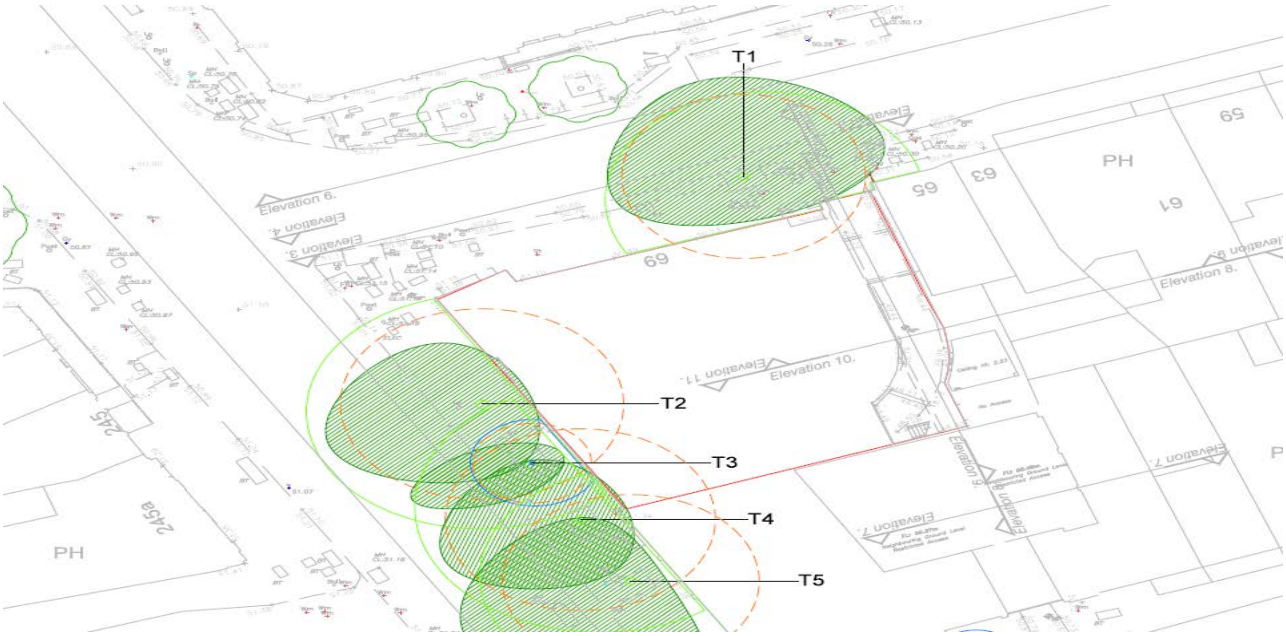
1.1 Executive Summary

1.1.1 Introduction

This tree protection plan has been compiled for the Acorn House Demolition Phase of works and is to be issued to the Local Authority for approval before any demolition enablement works commence. This plan outlines and describes all the tree protection methods and controls that John F Hunt Ltd will implement during the life of the demolition phase, to ensure that the trees are protected to at least the minimum standards described in BS5837:2012 "Trees in Relation to Construction".

The proposed development being undertaken relates to Acorn House (the site), which is situated on the corner of Gray's Inn Road and Swinton Street and is a short walk from King's Cross Station, the existing 7-storey building, predominantly office accommodation with 1no. residential unit and a lower ground floor car park, with vehicular access from Swinton St. Built c. 1965, the building has a distinctive saw-tooth façade to Swinton Street and external frame at ground floor. Swinton Street is a designated red route, is traffic light controlled at its junction with Gray's Inn Road and is the location for a bus stop to the east of the site, all of which present challenges in terms of construction vehicle movements therefore careful consideration is given to traffic flow and its interface with the proposed site access and Swinton Street construction delivery 'pit lane'.

The trees to be protected are London plane trees to both Gray's Inn Road and Swinton Street, namely T1, T2, T3 , T4 and T5 on the following plan:

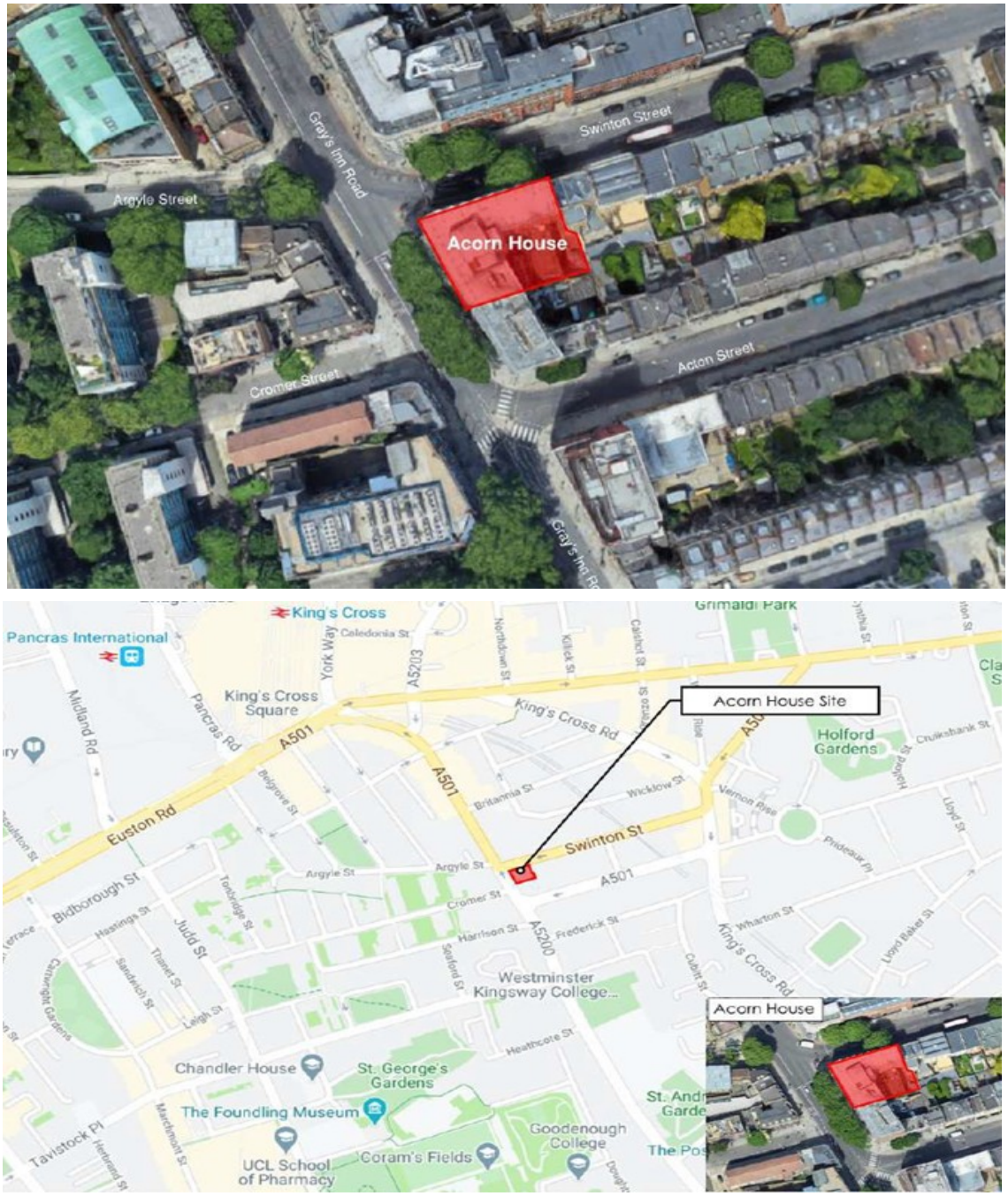


Sketch 1 Tree Plan

1.1.2 **Site Location:**

The site Address is: 314 – 320 Gray's Inn Road, London, WC1X 8DP.

The site is situated to the south of Swinton Street, to the east of Grays Inn Road, to the north of Acton Street, approximately 500m south-east of Kings Cross train station and more broadly within the London Borough of Camden. It has a central OS national grid reference of TQ 30572 82736. The surrounding land use is comprised of multi-storey, terrace properties of predominantly commercial use on all aspects. The location of the site within its environs is shown:



Sketch 2 Site Location

1.1.3 **Scope of Works:**

The following conclusion was determined by PJC in their Arboricultural Impact Assessment & Method Statement: 'The proposed redevelopment will not require tree removals. All trees are to be retained, protected, and incorporated into the proposals. Minor access facilitation pruning will be required to facilitate the installation of scaffolding and site hoarding. The intensity of pruning required is considered minimal and follows historical cyclical pruning already completed to provide sufficient clearance with the existing building. Therefore, pruning should not adversely impact upon the trees physiological condition or amenity value. All proposed areas of demolition and construction will be located outside the root protection areas of retained trees. Provided the exclusion zones and protection methodologies described in the Construction Management Plan, arboriculture method statement and Tree Protection Plan are followed, trees proposed for retention should not be adversely affected by the demolition works. Based on the above assessment, trees recommended for retention in this report can be protected during the construction period and successfully integrated into the site post development.'

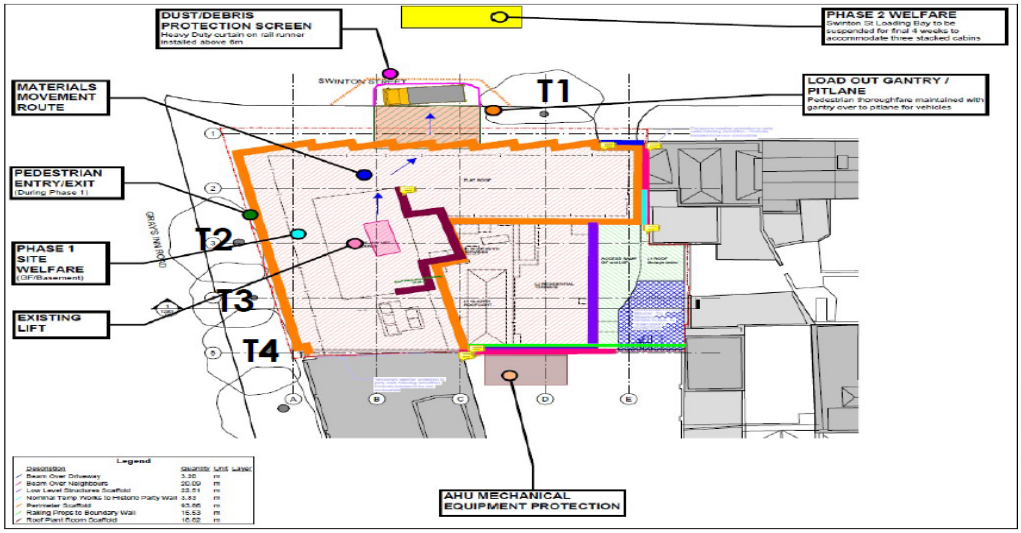
The above conclusion forms the basis for the tree protection during the following demolition phase activities, and are marked as to whether they have an impact on the T1 – T4 trees:

- Initial deliveries. (Tree 1 impact)
- Welfare set-up. (No tree impact)
- Temporary builders supply electrics and water installation. (No tree impact)
- Tree 1,2,3 & 4 pruning to create the space necessary for scaffold erection.
- Erection of scaffold pedestrian walkway & gantry and façade scaffold. (Tree 1,2,3 & 4 impact) (Working near the Canopy of T5 but no impact)
- Installation of hoarding/cladding to scaffold pedestrian walkway. (Tree 1,2,3 & 4 impact)
- Soft-strip and waste removal. (Tree 1 impact)
- Use of scaffold gantry and pit-lane to remove soft-strip waste. (Tree 1 impact)
- 1no visit from a Mobile Crane in Swinton Street to lift equipment onto the roof of Acorn House. (Tree 1 impact)
- Demolition of Acorn House from roof to ground floor level. (Tree 1,2,3 & 4 impact) (Working near the crown of T5 but no impact)
- Scaffold striking during demolition and removal of scaffold gantry. (Tree 1,2,3 & 4 impact) (Working near the crown of T5 but no impact)

1.2 The Current Tree Environment

1.2.1 Existing Trees

The trees which require attention and consideration during the demolition phase of Acorn House are T1, T2, T3, T4 and T5 as shown on the following tree plan:



Sketch 3 Tree Plan

1.2.2 **Tree T1** is a London Plane which is situated on Swinton Street southern pavement adjacent to the existing Acorn House vehicle entrance. It has a wide canopy that has been subject to historic pruning and its root radius falls partially under Swinton Street which is constantly subject to London traffic. This tree is positioned between the existing vehicle entrance and the future site pitlane, both of which will not pose any additional/heavier loading above what is already naturally imposed by normal Camden traffic and vehicles:

Sketch 4 Tree T1

The roots of T1 visually appear to be well grounded and there is no evidence of pavement or road surface heave where the roots are close to the surface. T1 leans away from Acorn House in search of sunlight and most of the canopy overhangs the Swinton Street carriageway above bus height being approx. 5m high.

1.2.3 **Tree T2** is situated in the eastern pavement of Gray's Inn Rd adjacent to Acorn House and is a London Plane. It is rooted in the middle of the pavement but has a disrupted root system which is breaking the surface of the pavement and has historically lifted a pipe service to above the pavement, which is visually exposed. Gray's Inn Road does not provide any vehicular logistical benefit to the project and T2 will therefore remain free from the effects of any vehicle loading. T2 historically has been pruned to reduce the crowns back away from Acorn House. This tree leans away from Acorn House in search of sunlight and most of the crown overhangs Gray's Inn Road:

Sketch 5 Tree T2

1.2.4 **Tree T3** is a small London Plane which is positioned between T2 and T4. It is situated in the eastern pavement of Gray's Inn Road directly adjacent to Acorn House. Its roots are well bedded under the pavement and there are no signs of heave.

1.2.5 **Tree T4** Tree T4 is similar in size to T2 and is positioned on the eastern pavement of Gray's Inn Road adjacent to the party-wall between Acorn House and Headland House. Its root system is in good condition and bedded below the pavement surface with no signs of heave. It also leans away from Acorn House in search for sunlight, but its crown is in close proximity to Acorn House even though the majority leans over Gray's Inn Road carriageway. This tree has historically been pruned to keep the branches away from Acorn House/ Headland House:

Sketch 6 Tree T4

1.2.6 **Tree T5** is a small London Plane which is outside of the influence zone so does not need any special protection but needs to be inspected regularly. No other actions required.

1.3 Tree Protection Measures and Controls

Access Facilitation Pruning for site readiness.

1.3.1 Before any external works commence to Swinton Street and Gray's Inn Road, namely scaffold gantry erection; scaffold erection; hoarding installation or pitlane construction, the T1, T2 and T4 trees must be pruned along the Acorn House building elevation to leave a clear 2m wide gap, free of branches.

1.3.2 John F Hunt have met with Camden Councils Highways officer and have agreed the tree pruning application process. John F Hunts have applied for the scaffold license on Swinton Street and Gray's Inn Road which kick starts the application for the tree pruning, with Camden Council.

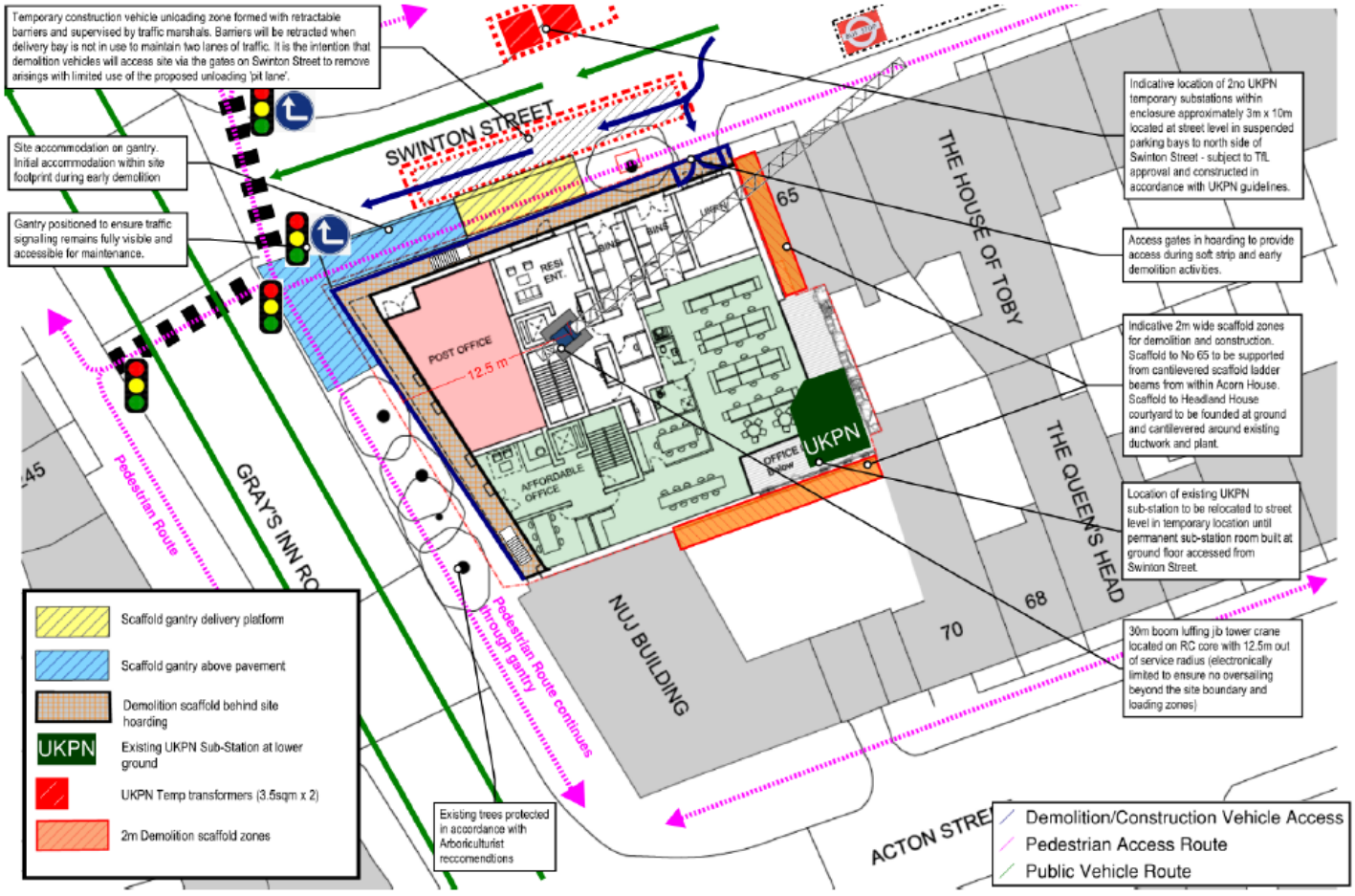
1.3.3 Camden Council will appoint one of their approved Tree Pruning contractors who will perform all the necessary checks and applications to carry out the tree pruning in a timely manner ready for the commencement of scaffold erection and the space required on Swinton Street elevation for the waste removal operation on the pitlane and gantry zone, ie additional branched may need to be trimmed to accommodate the pitlane curtain and bob-cat route. The key considerations will be:

- Trees to be checked for protected species before works are undertaken. It is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations.

- Nesting birds are protected by the Wildlife and Countryside Act. If protected species are discovered, Natural England should be contacted for advice.
- The tree works contractors should carry out all tree works to BS3998: 2010 'Tree works recommendations' as modified by research that is more recent. They should also carry relevant, adequate and up to date insurance.
- It is suggested that an Arboricultural Association approved contractor carry out all tree works. Approved contractors are expected to work to industry best standards.

Site Logistics and Set-up

1.3.4 The site logistics and positioning of all welfare, pitlane, gantries and UKPN Sub-Stations have been carefully decided to avoid any impact to the T1, T2, T3,T4 and T5 tree root protection zones. The following plan illustrates the Site Logistics:



Sketch 7 Site Logistics Plan

1.3.5 The pit-lane is positioned as close to the Swinton Street/Gray's Inn Road traffic lights as possible to ensure the furthest distance from Tree T1 root protection zone.

1.3.6 Gray's Inn Road will not accommodate any construction vehicle loading and will remain a public carriageway for the duration of the demolition phase.

1.3.7 The future temporary sub-station position has been reviewed and will be positioned in the Swinton Street parking bays on the opposite side of the street furthest from the root protection zone of Tree T1.

1.3.8 The demolition phase welfare will be constructed inside Acorn House and will therefore have no impact on the Trees T1, T2, T3, T4 and T5 root systems or canopies.

Initial Deliveries and vehicle movement.

1.3.9 The pre-demolition works which will take place before external works commence will be:

- internal service isolations to the existing head locations
- internal TBS service installations from the existing head locations
- R&D surveys and other surveys internally
- Internal structural investigations
- Photographic condition survey to the external pavements and neighbouring buildings.
- Commencement of asbestos removal
- Environmental cleaning
- Initial soft strip for parquet flooring removal

1.3.10 All the above activities do not require the use of a pitlane or need the perimeter scaffold to be constructed. This means that these activities can be serviced by small vehicles entering and parking inside the existing vehicle entrance from Swinton Street without having an impact on Tree T1. There will be no requirement at this stage for any vehicles to park in the nearside lane of Swinton Street adjacent to Acorn House, and this will be prohibited.

1.3.11 All small vehicle deliveries and access into the existing vehicle entrance will be controlled by John F Hunts traffic marshals who will ensure the vehicles reverse slowly into the existing vehicle entrance avoiding contact with Tree T1.

1.3.12 Note, these small light vehicles will have no more effect on the root system of T1 than what the high number of heavier public vehicles have whilst using Swinton Street carriageway. Ie buses and lorries.

Erection of scaffold pedestrian walkway, gantry and façade scaffold.

1.3.13 The erection of the scaffold pedestrian gantries and façade scaffold have a direct impact on Tree T1, T2, T3 and T4. No Impact on T5.

1.3.14 The first consideration will be at design stage to ensure that scaffold leg loads within the proximity of the tree root protection zones are designed to NOT exceed the acceptable Camden allowable pavement pressures to which the pavements have been designed.

1.3.15 The second consideration at design stage will be to ensure maximum distances between scaffold support standards and Tree 1,2,3 & 4 trunks.

1.3.16 Scaffold erection is an activity which involves scaffolders off-loading, transporting, swinging and erecting a large amount of steel tubes and fittings in a confined space on the pavements in this scenario. This contains the risk of errors of judgement by the scaffolders during their movement and striking the tree trunk and or branches with the scaffold tubes.

1.3.17 To eliminate this risk, we will construct trunk protection to each of the 4no trees directly before scaffold erection commences. This protection will meet the following criteria:

- The trunk will be wrapped in a flexible, durable protective material such as acoustic blanket and will be secured with rope tied top and bottom around the blanket to keep it in place and secured. No fixings are to be used that could scratch or damage the tree trunk. This blanket will cover a height of 2m from pavement level to ensure the zone of influence is protected.

- Next, a free-standing timber hoarding will be constructed around the trunk to a height of 2m from pavement level:

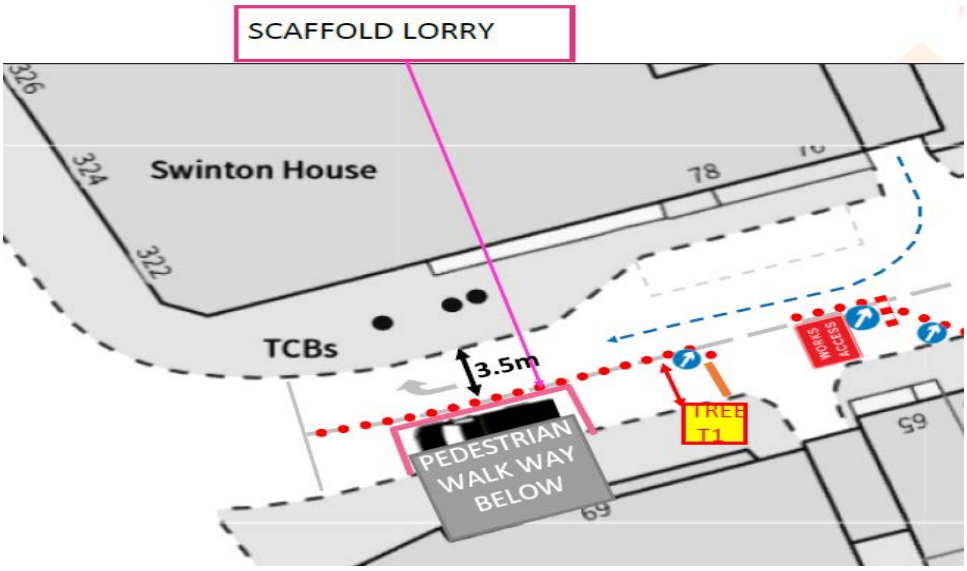
Sketch 8 Hoarding Protection

- The hoarding will be 300mm minimum distance from all sides of the trunk to ensure there is a gap preventing the timber from striking or leaning against the tree trunk. This timber hoarding will be secured at the bottom by timber posts driven into the ground at the 4no corners to a maximum depth of 600mm below pavement level as per BS5837:2012 "Trees in Relation to Construction" guidance.

- The above 2 step protection will be performed to the 4no trees.

- The scaffold erection will commence in Swinton Street where the scaffold delivery vehicle will park in the nearby lane adjacent to Acorn House (the future pitlane position) and the

scaffolders will commence off-loading scaffold tubes and fittings as and when they need them. The scaffold lorry in the future pitlane position will be clear of the root protection zone of T1 as shown in the following plan drawings:



Sketch 9 Scaffold Lorry Position

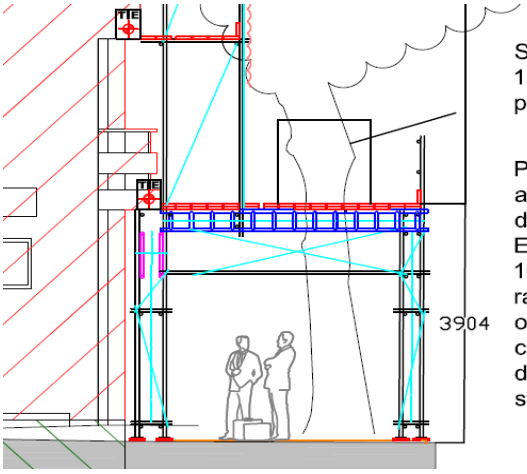
- The site engineer will set-out the positions of the scaffold standards adjacent the Tree T1 trunk to the exact requirements of the design, to ensure the tubes are in the correct agreed positions.
- The bearing board details will be incorporated under each standard to ensure the pressure applied to the pavement at each standard location is not exceeded.
- The entire scaffold erection operation will be supervised by the scaffold lead and John F Hunts environmental manager who will ensure the pace is correct to avoid any errors or tree striking. This operation will be performed slowly and carefully, especially in the tree locations.
- Once the scaffold pedestrian gantry to Swinton Street is constructed, the scaffold deliveries for the Grays's Inn Road gantry and the higher-level façade scaffold will be off-loaded onto the Swinton Street Gantry so that each delivery lorry can be released in a quicker action.
- The scaffolders will now continue to erect the scaffold pedestrian walkway/gantry to Gray's Inn Road. The trees T2, T3 and T4 will be protected with the acoustic blanket and timber hoarding as explained above and the scaffold erection will carefully follow.
- When the scaffold gantry and pedestrian walkways are completed, Swinton Street and Gray's Inn Road pavements will be handed over to the carpenters who will construct the timber and plywood cladding to the 3no faces of public-facing scaffold. This hoarding as such is the final protective measure to ensure all impact from the future demolition to the public is eliminated, ie dust etc. The pedestrian walkways are now effectively a safe, well-

lit tunnel free of sharp edges (scaffold clips) through which pedestrians can freely walk during the demolition works.

- The pedestrian walkway tunnels will now be returned to public use and the natural crash-deck protection will be in place above head height, which will facilitate the safe erection of the façade scaffold over.

- At this stage, the protection to the Tree T1,2,3 and 4 at pavement level can be carefully removed.

- The typical scaffold pedestrian walkway will now look like this:



Scaffold Ranch Boarded tree protection. 1.5m x 1.5m x 2m high for each tree that passes through.

Pedestrian Gantry with 4:1 facade scaffold above. Lifts at floor levels, 3.2m high with dummy lifts and additional ties if required. Existing trees to be constructed around with 100mm gap for movement, also 1.5m high ranching around the trees to prevent operatives damaging. Gantry height to ceiling is 2.7m, this allows the facade side dolly to sit in under the 1st floor over hang structure.

Sketch 10 Scaffold Pedestrian Walkway

- Note, the scaffold platform around the tree trunk will have a 100mm physical gap between the scaffolder boards/ply decking and the trunk, to allow for any wind-blown movement in the truck. This 100mm gap will be covered with a rubber material which will be stiff enough to prevent dust falling through but flexible enough to absorb the wind-blown movement of the tree.

- Scaffold ranch boarded tree protection will now be constructed to the 4no tree trunks above the scaffold gantry deck to the dimensions shown in the sketch above. This will perform the same function in protection the tree trunk during the next phase of façade scaffold erection.

- With the branches pruned and the trunk protection in place, the scaffolders will carefully and steadily erect the façade scaffold in the even lifts as per the design.

- The scaffold erection will be supervised by the scaffold lead and the John F Hunt environmental manager, who will always ensure the pace is correct and that the scaffolders are constantly reminded to avoid striking trunks and branches.

- Note scaffolders will utilise tool tethers when working at height to eliminate the risk of tools, clips or tubes falling and striking the tree trunks and branches below.

- When the scaffold erection is complete, a permit to load will be issued by the TWC and the scaffolders will install the monoflex sheeting to the outside face of the scaffold which will

ultimately become the environmental barrier between the future demolition works and the trees. Dust and damage impact will be eliminated by this monoflex.

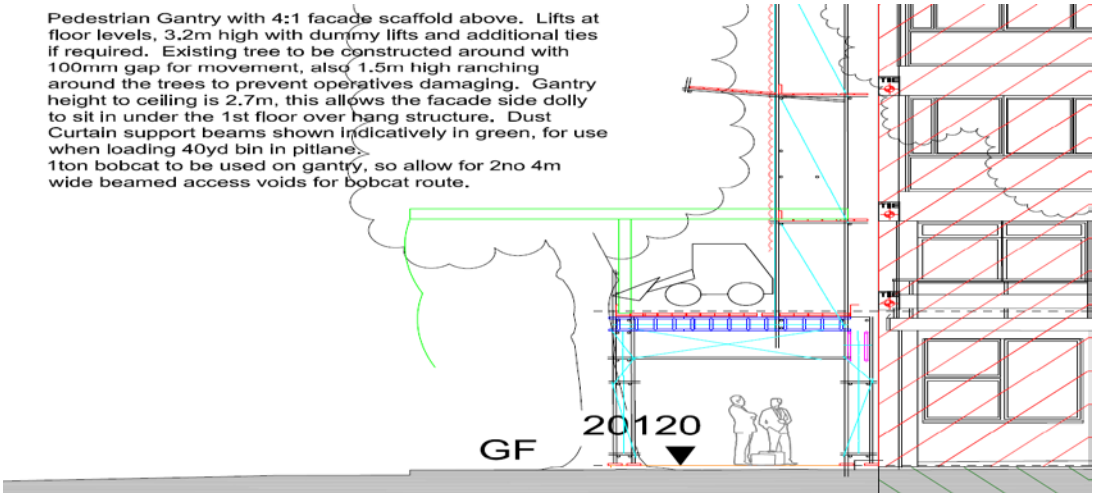
Soft-Strip and waste removal and use of Gantry for loading bin lorries.

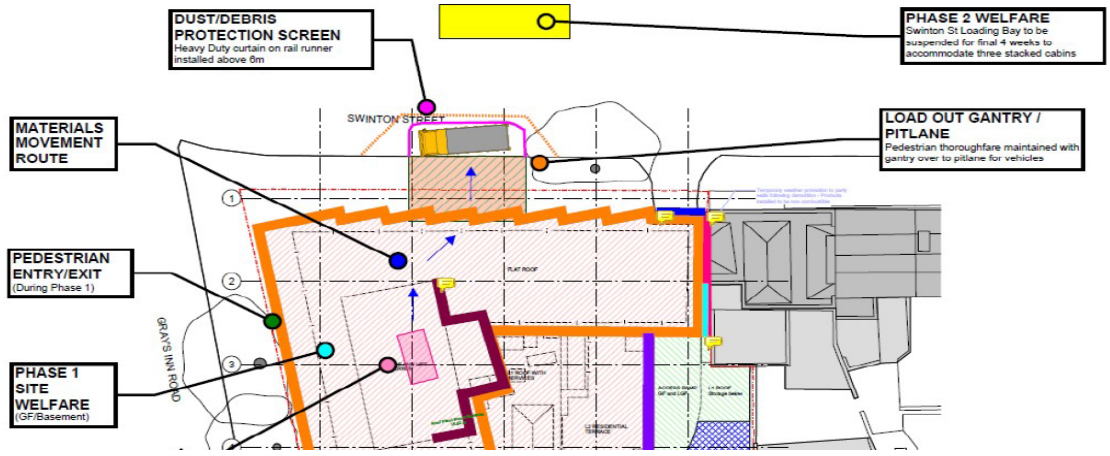
1.3.18 Before demolition works commence, all the 'soft-strip waste' known as soft furnishings, fittings, fixings, décor, and redundant services inside Acorn House must be stripped and removed from the building.

1.3.19 The 'soft-strip waste' will be transported from the different levels to 1st floor level by means of the internal lifts. This is good practise as it keeps all waste movement inside the building away from the trees for most of the activity.

1.3.20 Once the waste is on 1st floor level, operatives will utilise wheely bins to transport it to the Swinton Street gantry. Note a pre-prepared route has been constructed this stage between the 1st floor and the gantry by removing 2no façade windows for access.

1.3.21 The wheely bins will be loaded onto the gantry and the soft-strip waste will be thrown into the back of a 4oyd waste bin parked in the pitlane.:





Sketch 11 Soft-Strip Waste Route

1.3.22 At this stage, the Tree T1 which already has the ranch boarded protection, will also be separated from the loading activity at gantry level with physical barriers so that the waste removal operation cannot encroach into the protected tree area. The physical barriers will be installed at the maximum distance from the tree which still allows effective transportation of the wheely bins of waste. Ideally, in line with the window edge opening closest to the tree.

1no Mobile Crane visit in Swinton Street to lift demolition plant onto Acorn House Roof.

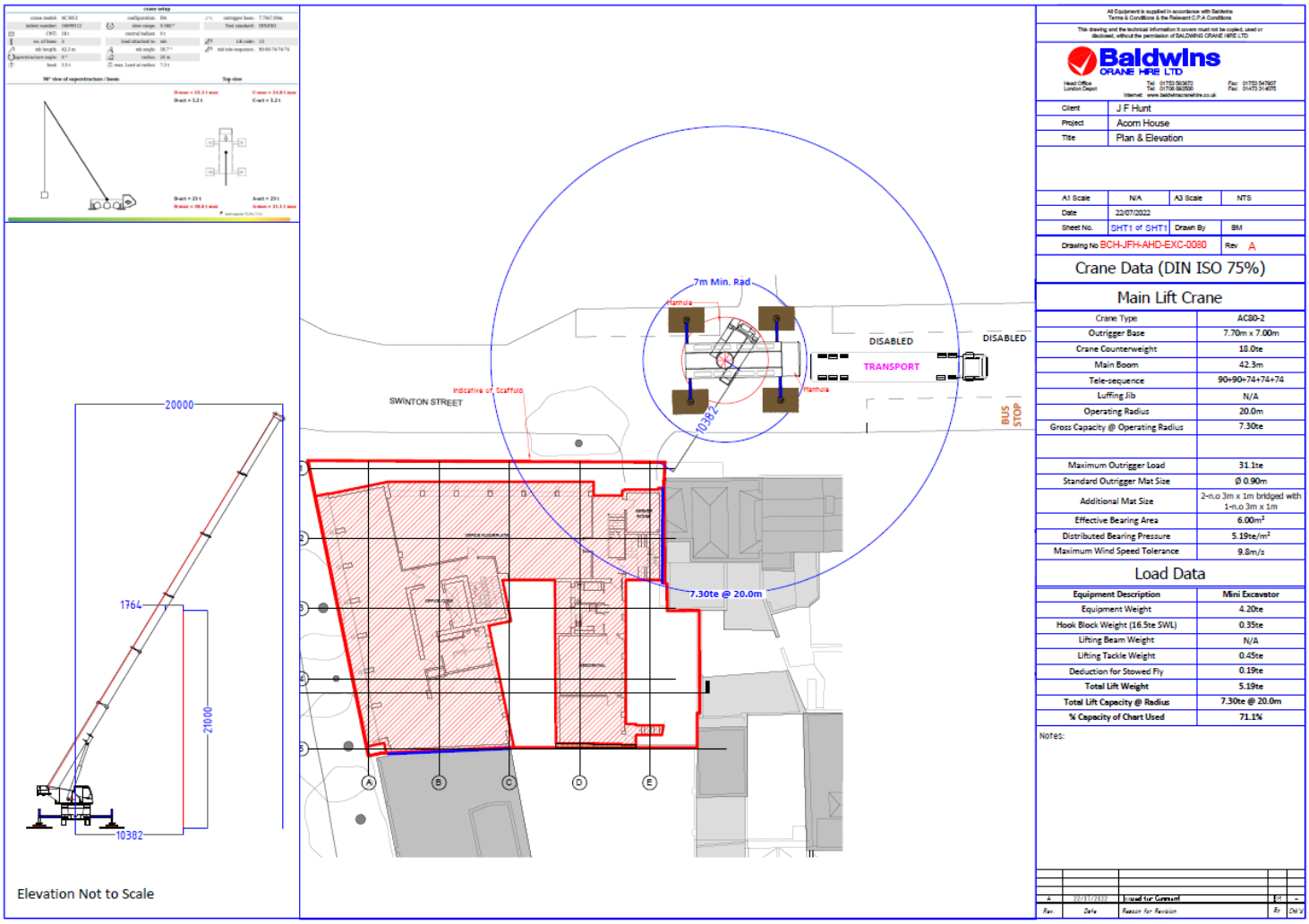
1.3.23 To facilitate demolition, there is a requirement for 1no mobile crane visit in Swinton Street to lift demolition excavators and equipment onto the roof of Acorn House.

1.3.24 This activity was carefully considered and planned with respect to the potential impact on trees in Swinton Street. Not only T1, but also the trees on the other side of the carriageway:

1.3.25 The 1st concerning factor with these trees are that their root protection zones spread into Swinton Street and do not leave much available space for the mobile crane out-riggers.

1.3.26 The 2nd concerning factor is the extension of the crown into Swinton Street carriageway which clashes with the body of the crane and would need substantial pruning for only 1no mobile crane visit.

1.3.27 So considering these two factors we decided to position the mobile crane further east along Swinton Street to outside of the tree zone altogether:



Sketch 12 Mobile Crane Set-up Location

1.3.28 As illustrated on the crane plan above, the 4no out-rigger mats are outside of the Tree T1 root protection zone. This satisfies the tree protection requirement.

1.3.29 The crane can also perform the required lifts from this position without requiring any additional pruning to Tree T1 as well.

1.3.30 The lifting operation will be supervised by both the crane appointed person and by John F Hunts environmental manager to ensure the crane is positioned in the exact location as illustrated above and that the crane lift does not touch any protruding branches from Tree T1.

Demolition of Acorn House from roof to ground floor level.

1.3.31 The demolition of Acorn House is to be performed by the method of Top-Down demolition, which involves the entire demolition operation being performed by small excavators within the confines of the monoflex clad scaffold.

1.3.32 The small excavators commence the floor-by-floor demolition from roof level, and steadily deconstruct the slab, beams, walls and columns at each level in a sequence opposite to how the

building was constructed to ensure all the generated debris is contained, and that no elements accidently escape the perimeter facades and fall out of the realms of the scaffold.

1.3.33 The generated debris during the demolition will be constantly cleared from the demolition floor by the excavators or bobcats and will be tipped down an internal well-hole to the 1st floor from where the debris will be loaded into tipper lorries from the scaffold gantry and pitlane on Swinton Street similarly as the soft strip removal was performed.

1.3.34 The focus on the demolition vs tree impact is mainly the suppression of dust to ensure that the trees do not get contaminated with concrete dust.

1.3.35 At all times during the demolition, there will be a pumped water supplied suppression system which will be operated by designated individuals whose sole job it is to damp down and eliminate dust at the face of the works. This will ensure that air-born dust is eliminated at the source.

1.3.36 During the demolition, the slurry created from suppressed dust will be swept up and bagged and removed from the building.

1.3.37 The well hole will be prepared with a ranch board wall at each level which will effectively form a shaft. Additional monoflex will be installed to the face of the ranch boards as well, to help contain the dust generated by the dropping debris.

1.3.38 The well hole will be serviced by a water spray suppression system at the top of the well hole facing down to effectively rain down onto dropping debris and keep it saturated.

1.3.39 The next control is the monoflex to the outside face of the perimeter scaffold which generally keeps all the un-suppressed dust inside the footprint of the building.

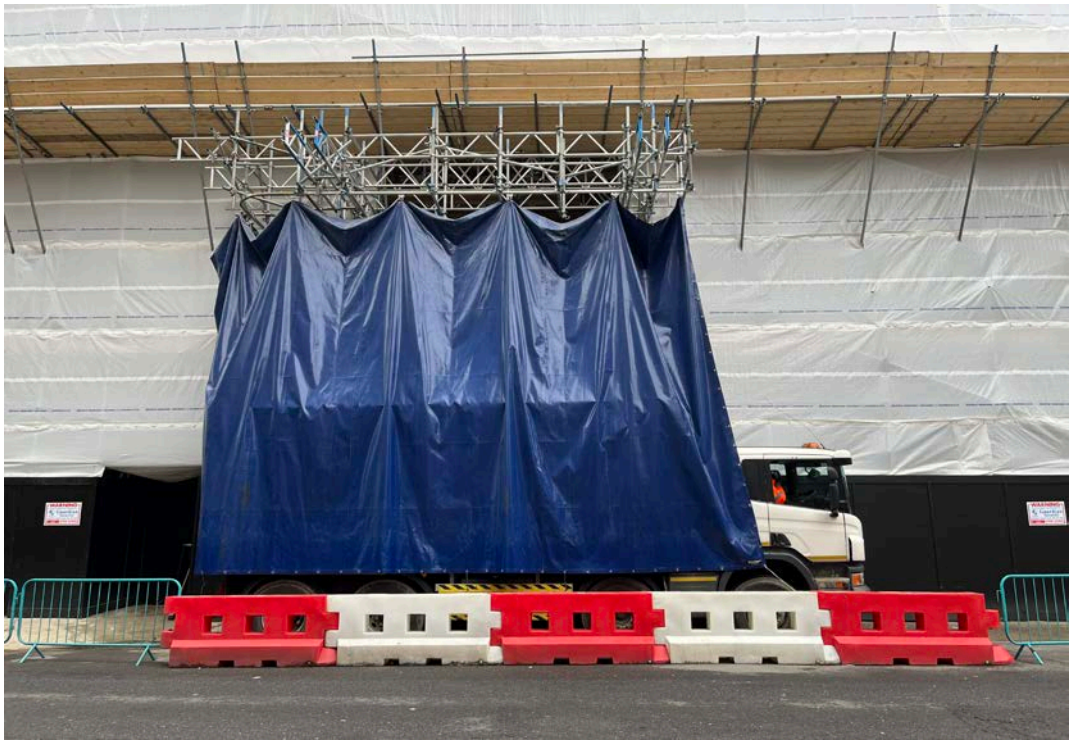
1.3.40 Lastly, we will have dust monitors at each street receptor elevation which will monitor airborne dust and notify of any immediate exceedances by text or email alert to the site management. This means that any unlikely exceedance will be notified immediately, and the work activities stopped until the dust issue is resolved. This will also result in a change of methodology to ensure that specific activity which caused the exceedance does not re-occur.

1.3.41 Demolition will continue in the floor-by-floor sequence until the ground level is reached.

1.3.42 During the demolition debris removal, bobcats will transport the debris that has been dropped to the first floor down the well hole, to the pitlane gantry and will tip the debris into awaiting tippers. Note the barriers which had been installed at soft-strip removal stage will still be in place and will ensure the bobcat does not drive into the tree protection area at deck level.

1.3.43 There will be a purpose made curtained dust containment around the tipper lorry being loaded which will ensure the containment of any dust and debris over spill from the bob-cat loading operation. This curtain will only be used when a lorry is being filled and will be drawn back when the pit-lane is vacant.

1.3.44 The curtain will be positioned on cantilever beams running from the gantry scaffold over the nearside Swinton Street carriageway. These beams will be 5m high to ensure they are clear of a double decker bus during out of hours and weekends when the pit-lane is not operational:



Sketch 13 Pitlane Dust Curtain

1.3.45 At the pruning stage, consideration must be made to any pruning required to facilitate these beams, although on visual inspection it does not seem necessary.

Scaffold removal during demolition and removal of scaffold gantry.

1.3.46 The scaffold will generally be struck with the demolition progress, ensuring that there is always a 2m height of monoflexed scaffold above the demolition level. This is crucial to maintain the dust barrier between the demolition and the external trees.

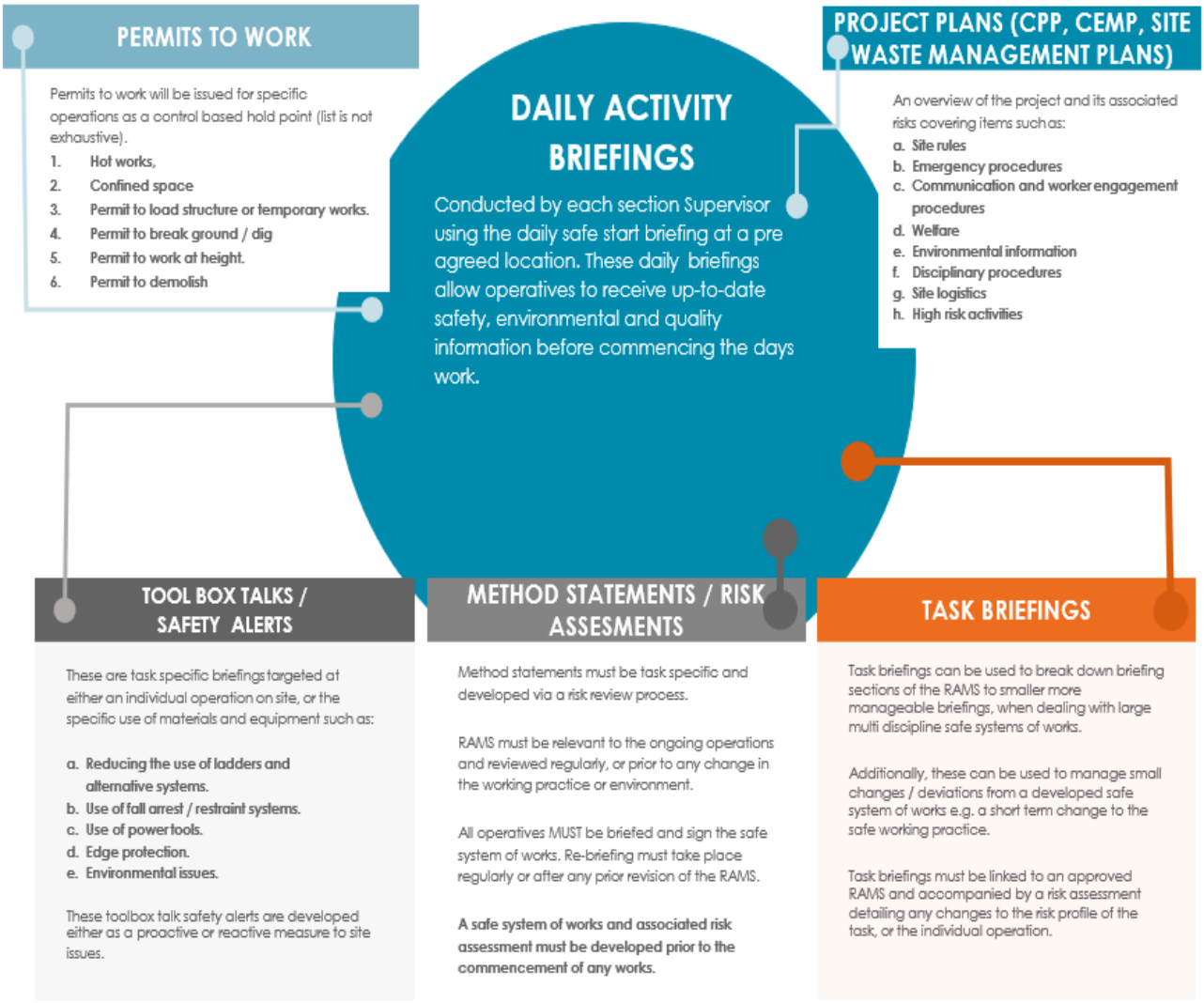
1.3.47 The scaffold will be removed in the reverse of how it was constructed, maintaining all the control measures that were in place during the construction.

1.3.48 Any pully's will be operated on the intersection of Swinton Street and Gray's Inn Road, which is clear of any trees and close to the pitlane, making it ideal for storing materials in readiness for a scaffold collection.

Additional Controls during the works.

1.3.49 Staff and the workforce will be briefed on the contents of this Tree Protection Plan during their induction to ensure there is commitment from all the team to enforce the controls required.

1.3.50 Regular toolbox talks will be given on Tree Management, and it will be reminded in the DABS (Daily Activity Briefings) on a regular basis.



1.3.51 The site management will perform a weekly visual inspection of the trees and will record the findings on their site inspection form.

1.3.52 The physical tree protection will be inspected weekly and recorded on the Temporary Works Register. Any issue or required repairs will be reported to site management immediately.

1.3.53 The site security cameras will be positioned to capture the street and pavement elevations and ultimately the 5no trees. This will ensure recorded security for the trees and will record the cause of any unlikely incidents or damage that occurs so that site management can remove the cause of the damage/incident and ensure it does not re-occur.

1.3.54 AM and PM spray downs will be performed to the demolition floors to maintain a high level of dust suppression during the demolition.

1.3.55 Traffic marshals will be stationed at all plant and vehicle moving interfaces to ensure that the trees are not struck during the works. The marshals will ensure that vehicle barriers are in place at all times as per the relevant traffic management plans ie pitlane, mobile crane, scaffold erection and striking etc.

1.3.56 During Hoarding painting the painters will ensure they do not allow paint or thinners to contaminate the Trees T1,2,3 and 4. Although there will be protection around the tree, care must be taken. No washing of paint brushes on the pavement where paint or thinners could seep into the ground or in the root protection zone.

1.3.57 No items of work equipment, leads, lighting, clothing, signage, or fixings are to be connected or hung from the trees or branches at any time.

1.3.58 The following tree signage must be displayed at regular intervals on the scaffolding, tree protection and hoarding to highlight awareness of tree protection and respect:

Tree Protection Sign

Sketch 14 Tree Protection Signage

1.3.59 **General**

- All trees that are being retained on site should be protected by barriers and/or ground protection before any materials or machinery are brought onto the site, and before any demolition works commence. Where all activity can be excluded from the Root Protection Area (RPA), vertical barriers should be erected to create a demolition exclusion zone. Where, due to site constraints, construction activity cannot be fully or permanently excluded in this manner from all or part of a tree's RPA, appropriate ground protection should be installed.
- Areas of retained structural planting, or designated for new structural planting, should be similarly protected, based on the extent of the soft landscaping shown on the approved drawings.

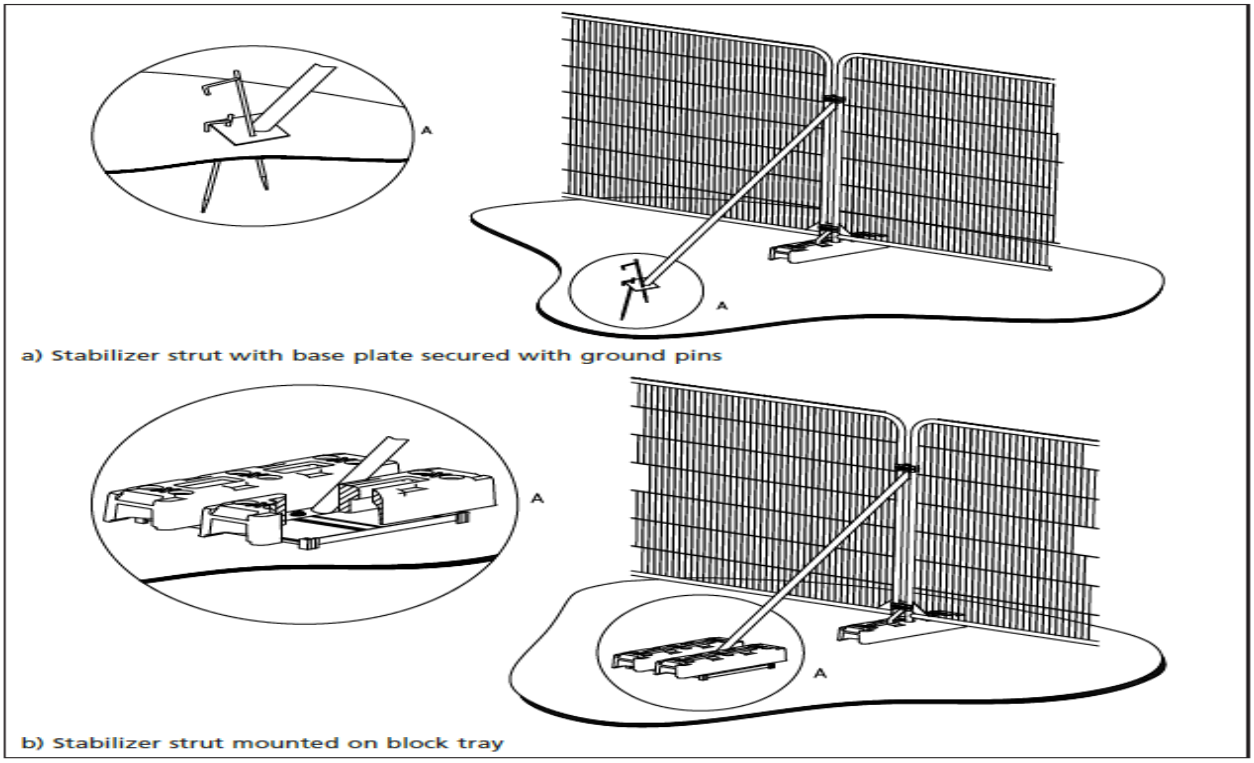
- The protected area should be regarded as sacrosanct, and once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority.
- Where required, pre-development tree work may be undertaken before the installation of tree protection measures, with the agreement of the project arboriculturist or local planning authority if appropriate. It should be confirmed by the project arboriculturist that the barriers and ground protection have been correctly set out on site, prior to the commencement of any other operations.
- Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site. New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.
- Ground protection methods comprise one of the following:

  for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g., 100 mm depth of woodchip), laid onto a geotextile membrane.

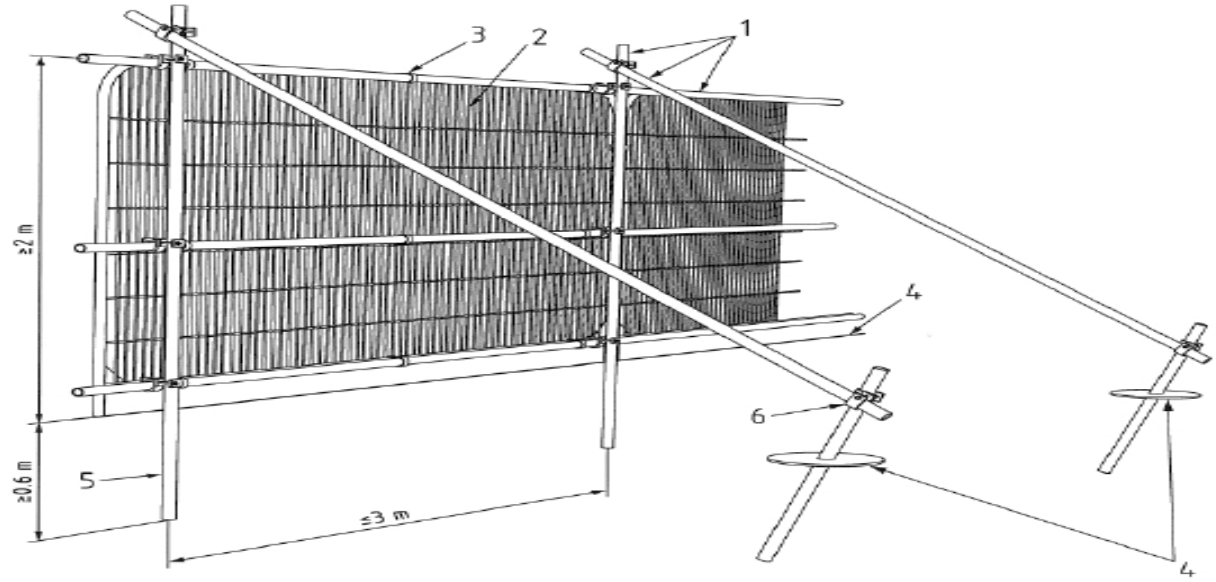
  for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150 mm depth of woodchip), laid onto a geotextile membrane.

  for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g., proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

Figure 3 Examples of above-ground stabilizing systems



Tree Protection Fencing Specification (T1)



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

Sketch 15 Protection Barrier Details

Annex D
(normative)

Root protection area

The RPAs given in Table D.1 should be used for single stem trees and the equivalent resultant combined stem diameter for multi-stemmed trees.

Table D.1 Root protection areas

Single stem diameter mm	Radius of nominal circle m	RPA m²	Single stem diameter mm	Radius of nominal circle m	RPA m²
75	0.90	3	675	8.10	206
100	1.20	5	700	8.40	222
125	1.50	7	725	8.70	238
150	1.80	10	750	9.00	255
175	2.10	14	775	9.30	272
200	2.40	18	800	9.60	290
225	2.70	23	825	9.90	308
250	3.00	28	850	10.20	327
275	3.30	34	875	10.50	346
300	3.60	41	900	10.80	366
325	3.90	48	925	11.10	387
350	4.20	55	950	11.40	408
375	4.50	64	975	11.70	430
400	4.80	72	1 000	12.00	452
425	5.10	81	1 025	12.30	475
450	5.40	92	1 050	12.60	499
475	5.70	102	1 075	12.90	519
500	6.00	113	1 100	13.20	547
525	6.30	124	1 125	13.50	573
550	6.60	137	1 150	13.80	598
575	6.90	150	1 175	14.10	625
600	7.20	163	1 200	14.40	652
625	7.50	177	1 225	14.70	679
650	7.80	191	1 250+	15.00	707

Sketch 16 Root Protection Zone Table

1.3.60 **Fire Management**

1.3.61 As soft-strip and demolition works can pose a high risk of fire, a suitable fire-fighting system needs to be in place. Fire-fighting equipment will be procured in accordance with the site Fire & Emergency plans (Compiled by the JFH Project Manager with reference to the site Fire Risk Assessment).

1.3.62 Fire points will be installed at the 2no escape route of each building at each floor level. As shown on the Fire Plans in Appendix 6, and will consist of the following:

- Wireless fire alarm point (with battery back-up)
- Fire extinguishers, suitable for the environment (1 x 9ltr AFFF, 1 x 5Kg Co2)
- Laminated copy of the site evacuation plan - with mobile phone contact details for the site fire marshals & first aider(s)
- The site evacuation plan will show the emergency assembly point which will be established in Swinton Street outside of the site.

- Controls:

- Fire drills must be carried out regularly to test the plan and the results recorded.
- Wireless alarm systems are to be interlinked and are to be tested weekly. The alarms must have the ability to be heard from all areas of the site.
- Trained fire-marshals are to be in place and their photo, name and contact number displayed on posters in the welfare, site entrance and notice boards.

- Flammable liquids and gases must be stored in an excluded location away from the effects of hot-works and demolition. The initial location is to be furthest from the tree facing elevations inside the site. Liquids and gases must be stored with a distance between them. Drip trays and cages must be used appropriately.
- Mono flex must be flame retardant to LPS1215 Certification.
- All hot-works must be accompanied by a relevant hot-works permit.

1.3.63 **Waste & COSHH Management**

1.3.64 Waste is to be stored in the designated waste area, skips must be labelled appropriately, and this labelling must include the designated EWC code *

1.3.65 Provision must be taken to prevent the storage and handling of harmful chemicals within the root protection areas of retained trees.

1.3.66 Harmful chemicals include fuels, oils, bitumen, builders sand (which has a high salt content) and cement. Provision shall also be made to prevent the storage and handling of harmful chemicals in areas proposed for further planting if the existing soil is intended to be retained.

1.3.67 Cement mixing shall always occur outside the root protection area of retained trees. If cement mixing is to occur close to the root protection area of retained trees, or there is the potential for cement washings to leech into a root protection area, adequate, bunded ground protection measures must be used. This could comprise impermeable plastic sheeting under wooden boards (to prevent tears) surrounded by a raised lip.

1.3.68 All other chemicals that are harmful to trees must be stowed in suitable containers and stored away from the root protection areas of retained trees unless adequate, bunded ground protection measures are implemented to prevent spillages leeching into root protection areas.

1.3.69 COSHH is to be always placed in designated COSHH bins/Storage Locker. Place secure COSHH storage locker & affix contents label.

1.3.70 Used COSHH items / empty containers must be segregated from other waste streams and temporarily stored then disposed of correctly

1.3.71 Excavators will be re-fuelled inside the site on concrete hard-standings away from tree roots or drains, and a spill-kit will always be available at the fuelling location.

1.4 Programme of works, site working hours & potential interface with others

1.4.1 Duration of Site Mobilisation is anticipated to be between September 2022 to November 2022.

1.4.2 Duration of Demolition works is anticipated to be between December 2022 to February 2023

1.4.3 All construction activities will take place during core working hours, i.e. weekdays - 08:00 to 18:00 Saturday - 08:00 to 13:00 except in the case of an emergency, unless prior approval is obtained from Camden Council.

1.4.4 All plant, equipment and noise control measures applied to plant and equipment shall be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable. All plant and vehicles will comply with the WCC emissions standard and NRMM legislation.

1.5 Amendments to the safe systems of work

Amendment/Revision 1 – *Provide brief details of amendments*
Amendment completed by –
Amendment approved by –
Date Amendments made –

1.6 Document review requirements

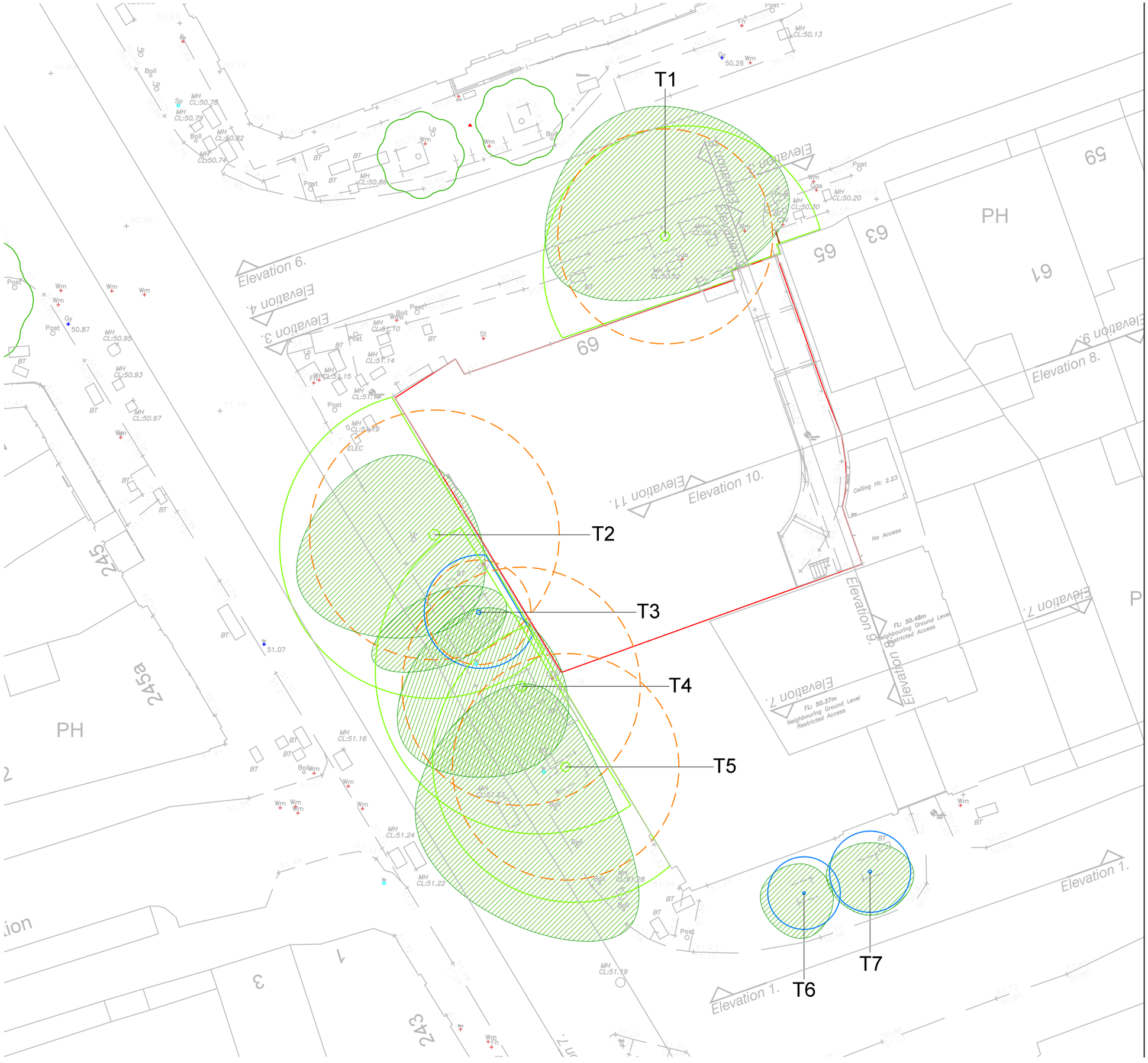
Site management and supervision, visiting managers and safety managers (as named previously) will monitor compliance with the Tree Protection Plan.

They will assess compliance against safety legislation, contract conditions, site rules and document contents. Therefore, our works will be monitored to ensure that the planned sequence of operations is not deviated from in any way.

JF Hunt site management will perform frequent inspections of the site and works, to ensure the sub-contractor supervisors and their operatives are obeying the methods of work as described in this Tree Protection Plan. If compliance is not being up held, the supervisors/operatives will be re-briefed and then subsequently warned verbally if non-compliance re-occurs. The supervisors and operatives will have the right to advise on changing work methods which if relevant safe and practical, will be incorporated into a new revision of this document. Offenders repeatedly non-complying will be removed from site.

This Tree Protection Plan will be reviewed and updated as necessary, where changes are required to reflect a changing environment or introduction of a new risk.

Appendix 1 PJC Arboriculturist Constraints Plan, Retention Plan, Protection Plan and Tree Survey Schedule



Key:

- Root protection area of category A* tree *(based on rooting constraints)*
- Root protection area of category B* tree *(based on rooting constraints)*
- Root protection area of category C* tree *(based on rooting constraints)*
- Root protection area of category U* tree *(based on rooting constraints)*
- Traditional root protection area
- Tree canopy
- Survey area boundary
- Topographical Survey

* Tree categorised in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction - Recommendations*'.

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. PJC/5493/20/01 contains further information for each tree.

This drawing should be viewed in colour.

Tree numbers suffixed with PA indicate the tree position is approximate.

Drawing no: PJC/5493/20/A **Rev:** 01 **Sheet number:** 1 of 1

Client and site:
Access Self Storage
Acorn House
314-320 Grays Inn Road
London
WC1X 8DP

Drawing title: Tree Constraints Plan

Date drawn: 17/03/2020

Scale: 1:250 at A3

Drawn by: LW **Checked by:** PD

PJC Consultancy
Arboricultural, Ecological & Landscape Consultancy

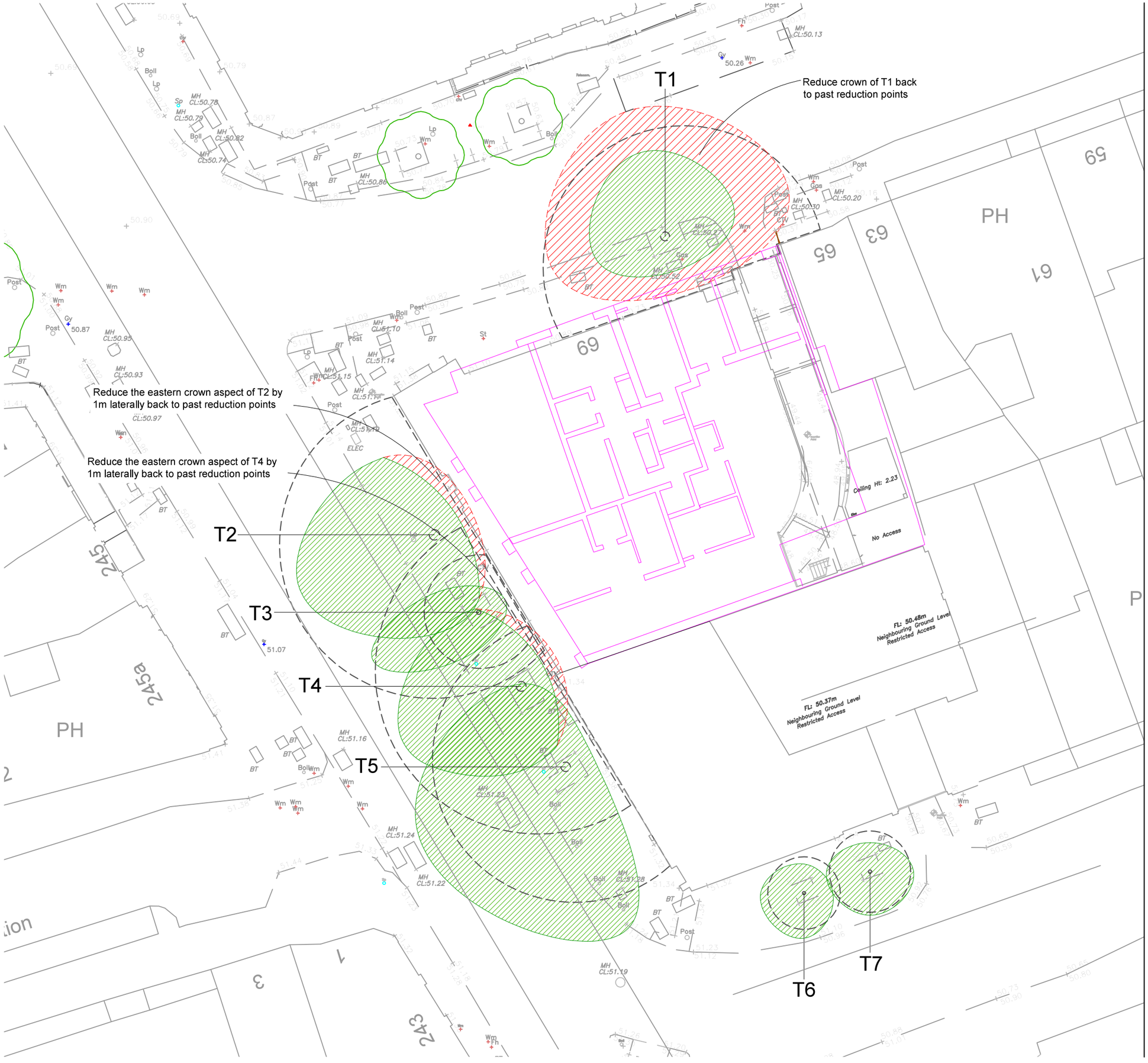
Sussex
Rocks Yard, Victoria Road, Herstmonceux, Hailsham, East Sussex, BN27 4TQ.

t: 01323 832120

Kent
Unit 1, Hanover Mill, Mersham, Ashford, Kent, TN25 6NU.

t: 01233 225365

w: www.pjconsultancy.com



Key:

- Root protection area of tree to be retained
- Canopy of tree to be retained
- Section of canopy of tree to be pruned to facilitate access
- Topographical survey base map
- Proposed ground floor outline

* Tree categorised in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction - Recommendations*'.

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. PJC/5493/20/02 contains further information for each tree.

This drawing should be viewed in colour.

Tree numbers suffixed with PA on the survey schedule indicate the tree position is approximate.

Drawing no: PJC/5493/20/B **Rev:** - **Sheet number:** 1 of 1

Client and site:
Access Self Storage
Acorn House
314-320 Grays Inn Road
London
WC1X 8DP

Drawing title: Tree Retention Plan

Date drawn: 25/06/2020

Scale: 1:250 at A3

Drawn by: LW **Checked by:** PD

PJC Consultancy
Arboricultural, Ecological & Landscape Consultancy

Sussex
Rocks Yard, Victoria Road, Herstmonceux, Hailsham, East Sussex, BN27 4TQ.

t: 01323 832120

Kent
Unit 1, Hanover Mill, Mersham, Ashford, Kent, TN25 6NU.

t: 01233 225365

w: www.pjconsultancy.com

Unloading zone

Temporary substations

Contractors cabin

Scaffold gantry above pavement

Scaffolding/timber hoarding erected to contain demolition/construction works. Scaffolding to be sheeted to contain debris within works area.

Crowns of retained trees tied back where necessary to allow erection of scaffold.

Existing footway surface retained.

Free-standing timber hoarding erected around the stem of T1

T1

T2

T3

T4

T5

T6

T7

FL: 50.48m
Neighbouring Ground Level
Restricted Access

FL: 50.37m
Neighbouring Ground Level
Restricted Access

Ceiling Ht: 2.23

No Access

0 5 10 15 20

Key:

- Root protection area of tree to be retained
- Canopy of tree to be retained
- Tree protection hoarding installed
- Sheeted scaffold / hoarding installed
- Scaffold gantry
- Proposed ground floor outline
- Topographical survey base map

* Tree categorised in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction - Recommendations*'.

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. PJC/5493/20/02 contains further information for each tree.

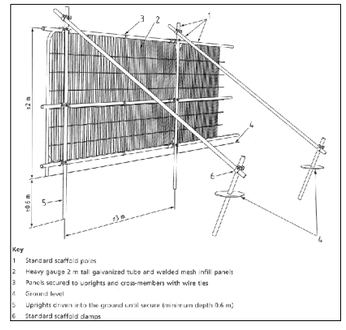
This drawing should be viewed in colour.

Tree numbers suffixed with PA on the survey schedule indicate the tree position is approximate.

This drawing is to be read in conjucntion with Construction Management Plan 2020.05.01 - Acorn House - CMP *(Real PM Ltd)*

Example tree protection warning sign

Example tree protection fencing around T1



Drawing no: PJC/5493/20/C **Rev:** - **Sheet number:** 1 of 1

Client and site:
Access Self Storage
Acorn House
314-320 Grays Inn Road
London
WC1X 8DP

Drawing title: Tree Protection Plan

Date drawn: 25/06/2020

Scale: 1:250 at A3

Drawn by: LW **Checked by:** PD

PJC Consultancy
Arboricultural, Ecological & Landscape Consultancy

Sussex
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t: 01233 225365

w: www.pjconsultancy.com

Survey Date: Friday 6th March 2020

Tree Survey Schedule (AIA)

Site: Acorn House, 314-320 Grays Inn Road, London. WC1X 8DP.

Surveyor: Luke White *FdSc Arboriculture M.Arbor.A*

Tree ref.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments and Preliminary Management Recommendations	Category grading	Root Protection Area (m^2)	Root Protection Radius (m)
T1. pa	London plane *(Platanus x acerifolia)*	16	620	N: 9 E: 9 S: 4 W: 8	Crown: 4 average Branch: 6 east	Mature	Good	Good	Reduce crown back to historical reduction points to provide sufficent space for contractor compound and material movement.	A1+2	174.1	7.4
T2. pa	London plane *(Platanus x acerifolia)*	18	720	N: 6 E: 3 S: 6 W: 10	Crown: 7 average Branch: 7 west	Mature	Good	Fair	Reduce crown laterally on eastern aspect by 1m to allow erection of scaffold. Retain and protect throughout development.	A1+2	234.8	8.6
T3. pa	London plane *(Platanus x acerifolia)*	13	300	N: 2 E: 2 S: 2 W: 8	Crown: 3 north Branch: 10 average	Early mature	Good	Fair	Retain and protect throughout development.	B2	40.8	3.6
T4. pa	London plane *(Platanus x acerifolia)*	17	680	N: 6 E: 3 S: 5 W: 9	Crown: 8 west Branch: 4 north	Mature	Good	Fair	Reduce crown laterally on eastern aspect by 1m to allow erection of scaffold. Retain and protect throughout development.	A1+2	209.5	8.2
T5. pa	London plane *(Platanus x acerifolia)*	17	650	N: 6 E: 2 S: 12 W: 11	Crown: 7 west Branch: 5 west	Mature	Good	Fair	Not impacted by the proposed re-development. Retain and protect throughout development.	A1+2	191.4	7.8
T6. pa	Norway maple *(Acer platanoides)*	7	210	N: 2 E: 2 S: 3 W: 3	Crown: 3 average Branch: 2 average	Early mature	Good	Good	Not impacted by the proposed re-development.	B1+2	20.0	2.5

Survey Date: Friday 6th March 2020

Tree Survey Schedule (AIA)

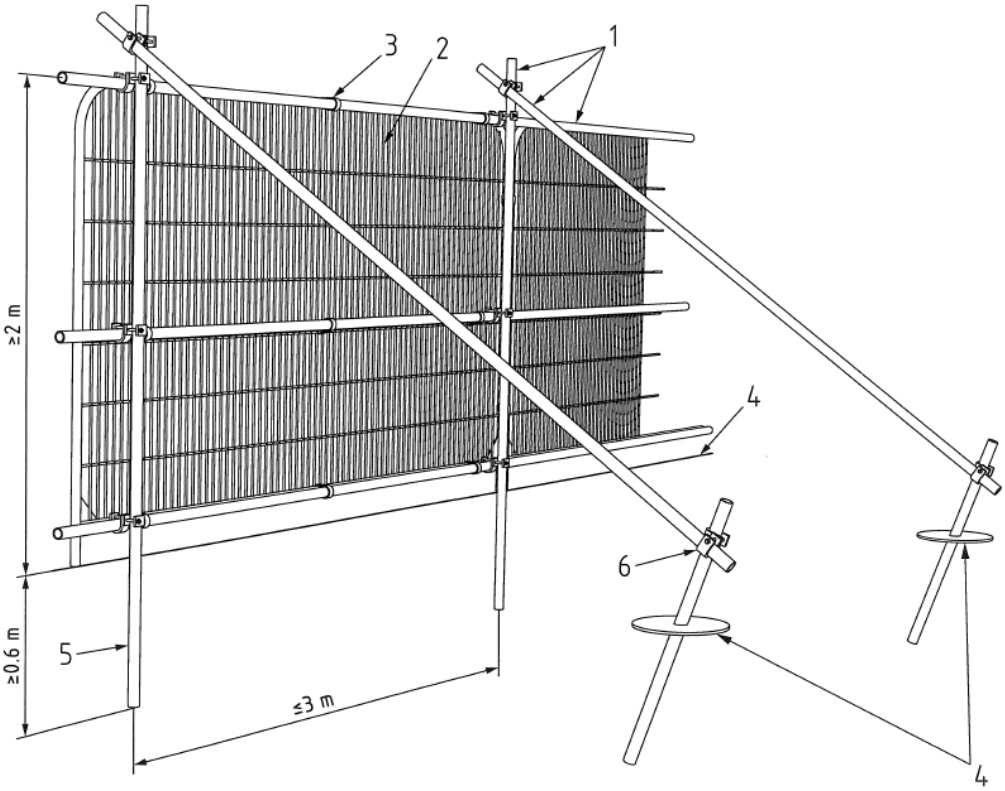
Site: Acorn House, 314-320 Grays Inn Road, London. WC1X 8DP.

Surveyor: Luke White *FdSc Arboriculture M.Arbor.A*

Tree ref.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments and Preliminary Management Recommendations	Category grading	Root Protection Area (m^2)	Root Protection Radius (m)
T7. pa	Norway maple *(Acer platanoides)*	7	230	N: 2 E: 3 S: 3 W: 3	Crown: 3 average Branch: 2 average	Early mature	Good	Good	Not impacted by the proposed re-development.	B1+2	24.0	2.8

APPENDIX 5

Tree Protection Fencing Specification (T1)



Key

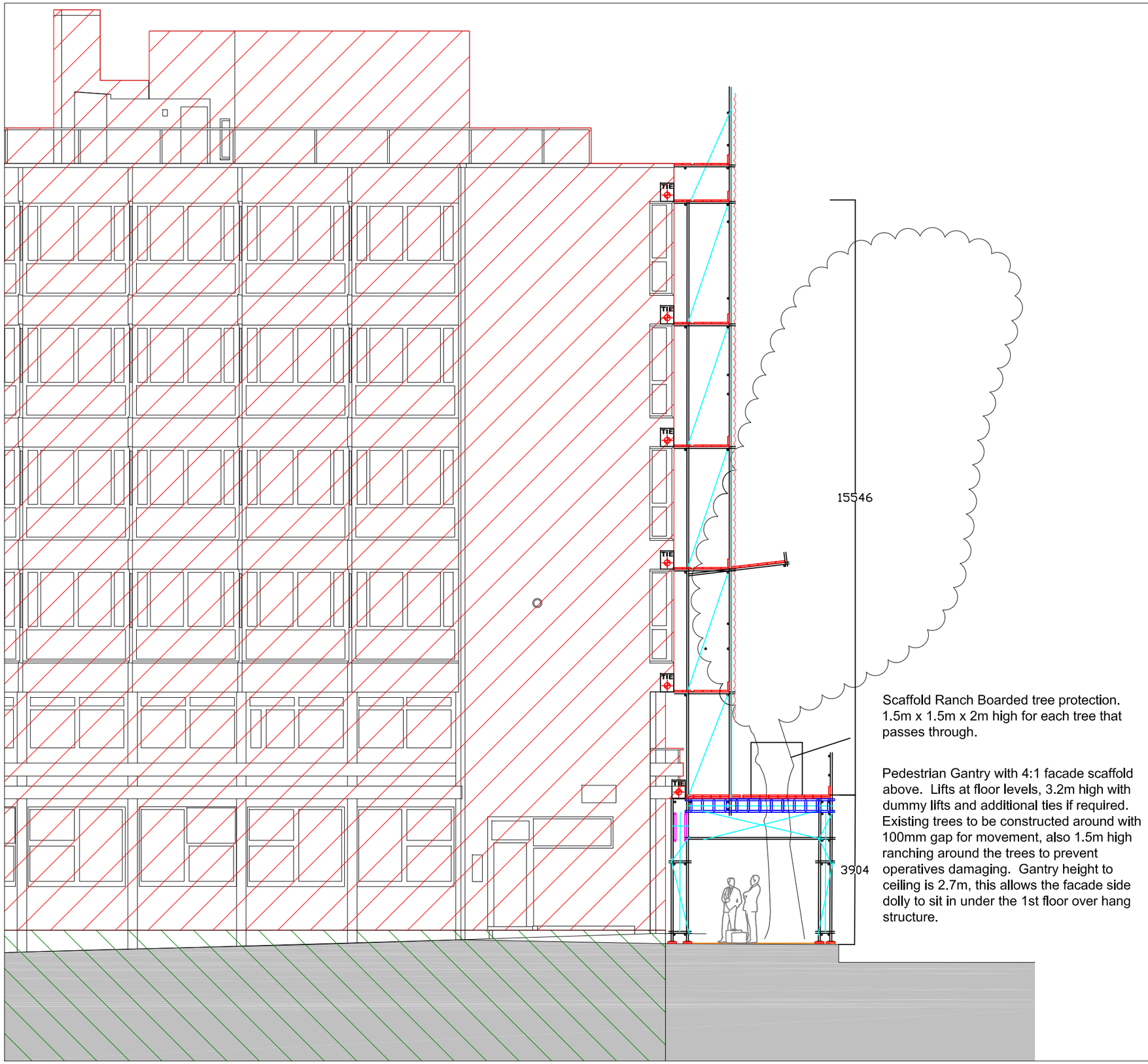
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

PJC Consultancy
Arboricultural, Ecological & Landscape Consultancy

APPENDIX 5

Tree Protection Sign

Appendix 2 Logistics Plans

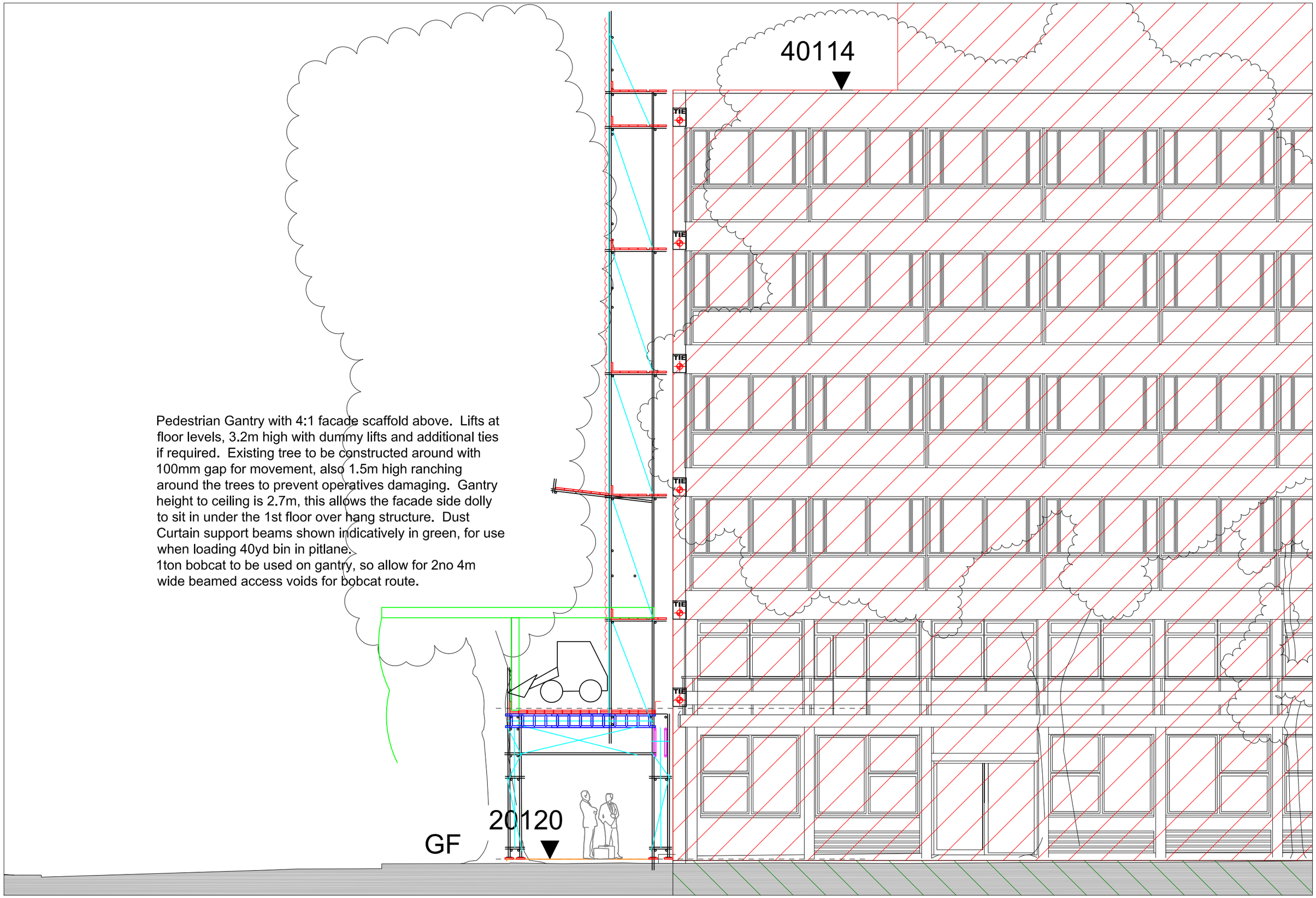


Scaffold Ranch Boarded tree protection. 1.5m x 1.5m x 2m high for each tree that passes through.

Pedestrian Gantry with 4:1 facade scaffold above. Lifts at floor levels, 3.2m high with dummy lifts and additional ties if required. Existing trees to be constructed around with 100mm gap for movement, also 1.5m high ranching around the trees to prevent operatives damaging. Gantry height to ceiling is 2.7m, this allows the facade side dolly to sit in under the 1st floor over hang structure.

Acorn House Grays Inn Rd Section

Pedestrian Gantry with 4:1 facade scaffold above. Lifts at floor levels, 3.2m high with dummy lifts and additional ties if required. Existing tree to be constructed around with 100mm gap for movement, also 1.5m high ranching around the trees to prevent operatives damaging. Gantry height to ceiling is 2.7m, this allows the facade side dolly to sit in under the 1st floor over hang structure. Dust Curtain support beams shown indicatively in green, for use when loading 40yd bin in pitlane.
1ton bobcat to be used on gantry, so allow for 2no 4m wide beamed access voids for bobcat route.

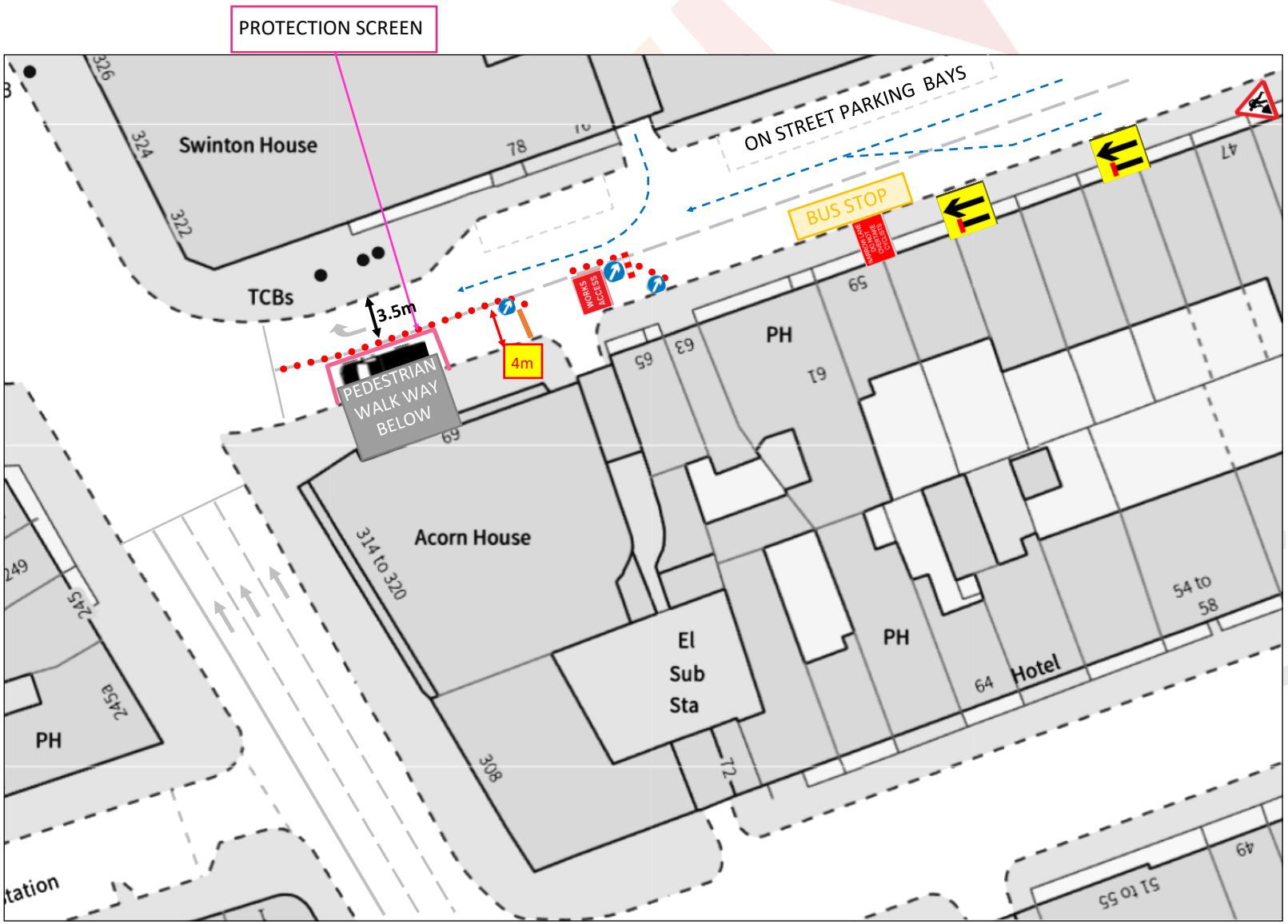


Acorn House Swinton Street Section

RED & WHITE CONE LINE

PEDESTRIAN BARRIER (ACCESS GATE)

TRAFFIC FLOW



N

PLAN No	DRAWN AT
001	A4 - (NOT TO SCALE)

SITE ADDRESS

ACORN HOUSE, SWINTON STREET
WC1X 8DP

CLIENT

John F Hunt

KEY:

Controlled by	- LANE REDUCTION
Suspended Crossing	- NO
Parking Suspension	- YES
Bus Lane Suspension	- NO
Bus Stop Suspension	- NO
Switch Out Required	- NO
Running Road Width	- 3.5m (minimum)
Road Speed Limit	- 20mph
Cone line	••••

TASK / JOB

PIT LANE

DURATION

MINOR PIT LANE

DRAWN BY	DATE DRAWN
Paul	17 / 08 / 2022

WORKS / EVENT DATE

** / ** / 2022

Quality TM & Events Ltd.
20-22 Wenlock Road,
London,
England,
N1 7GU
admin@qtm.org.uk

Quality TM & Events Ltd

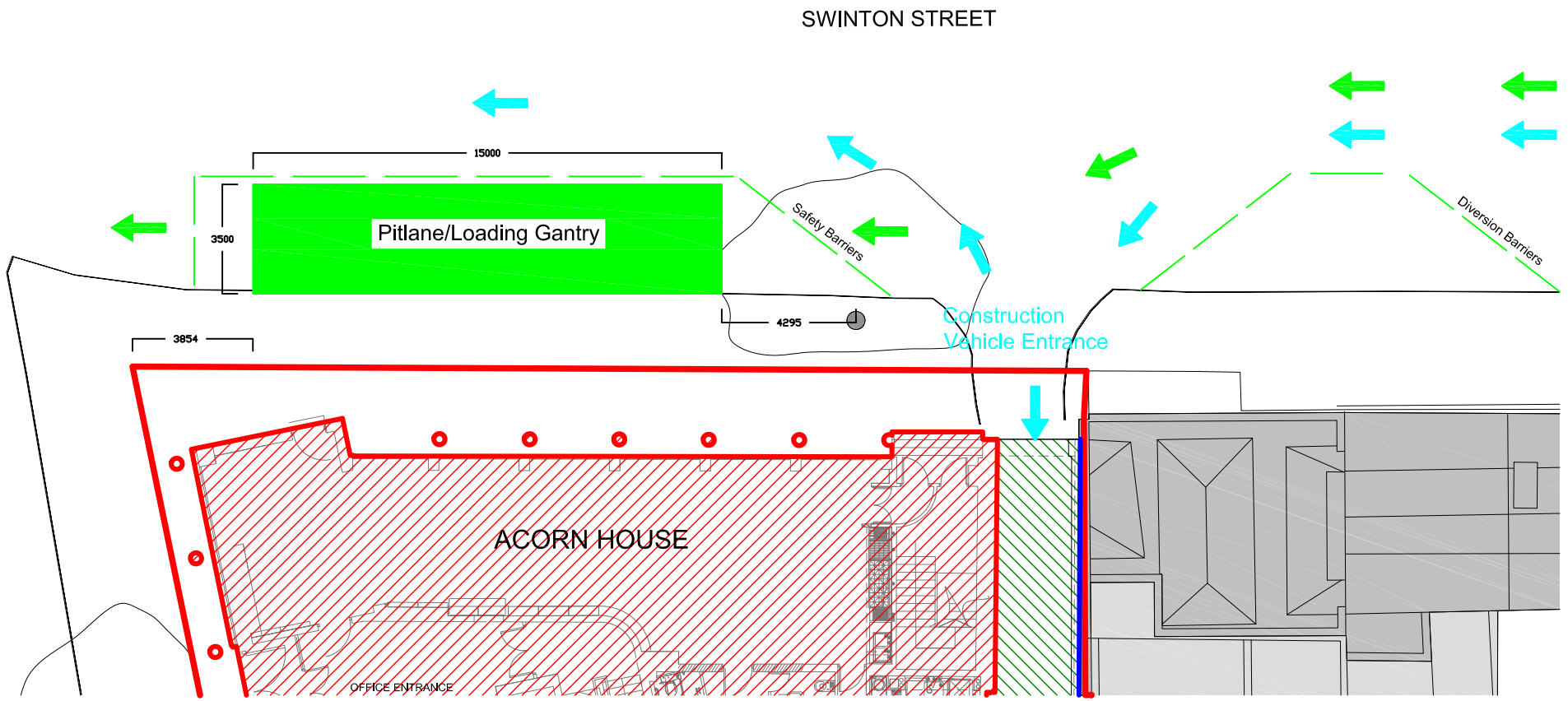
COMMENTS

LENGTH OF PIT LANE - 24m

WIDTH OF PIT LANE - 4m

Traffic Management Notes

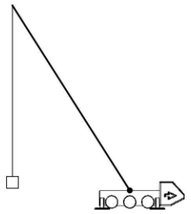
1) All temporary traffic management shall be in accordance with Chapter 8 of the Traffic Signs Manual
2) All temporary traffic management shall be in accordance with the Traffic Signs Regulations & General Directions 2016
3) All temporary traffic management shall conform to the Safety at Street Works, A code of practice 2002
4) All temporary traffic management sign locations & equipment depicted are indicative and subject to change during installation.


SWINTON STREET
15000
3500
Pitlane/Loading Gantry
Safety Barriers
Diversion Barriers
4295
3854
Construction
Vehicle Entrance
ACORN HOUSE
OFFICE ENTRANCE

crane setup

crane model:	AC 80-2	configuration:	HA	outrigger base:	7.70x7.00m
indent number:	16699112	slew range:	0-360 °	Test standard:	DIN/ISO
CWT:	18 t	central ballast:	0 t		
no. of lines:	3	load attached to:	mb	LK-code:	13
mb length:	42.3 m	mb angle:	58.7 °	mb tele-sequence:	90-90-74-74-74
superstructure-angle:	0 °	radius:	20 m		
load:	5.5 t	max. Load at radius:	7.3 t		

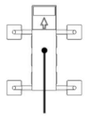
90° view of superstructure / boom



Top view

D-max = 25.2 t max
D-act = 5.2 t

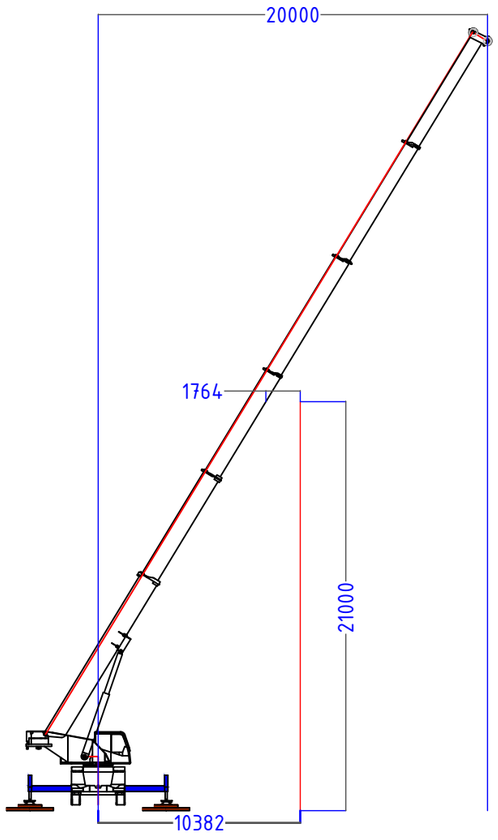
C-max = 24.8 t max
C-act = 5.2 t



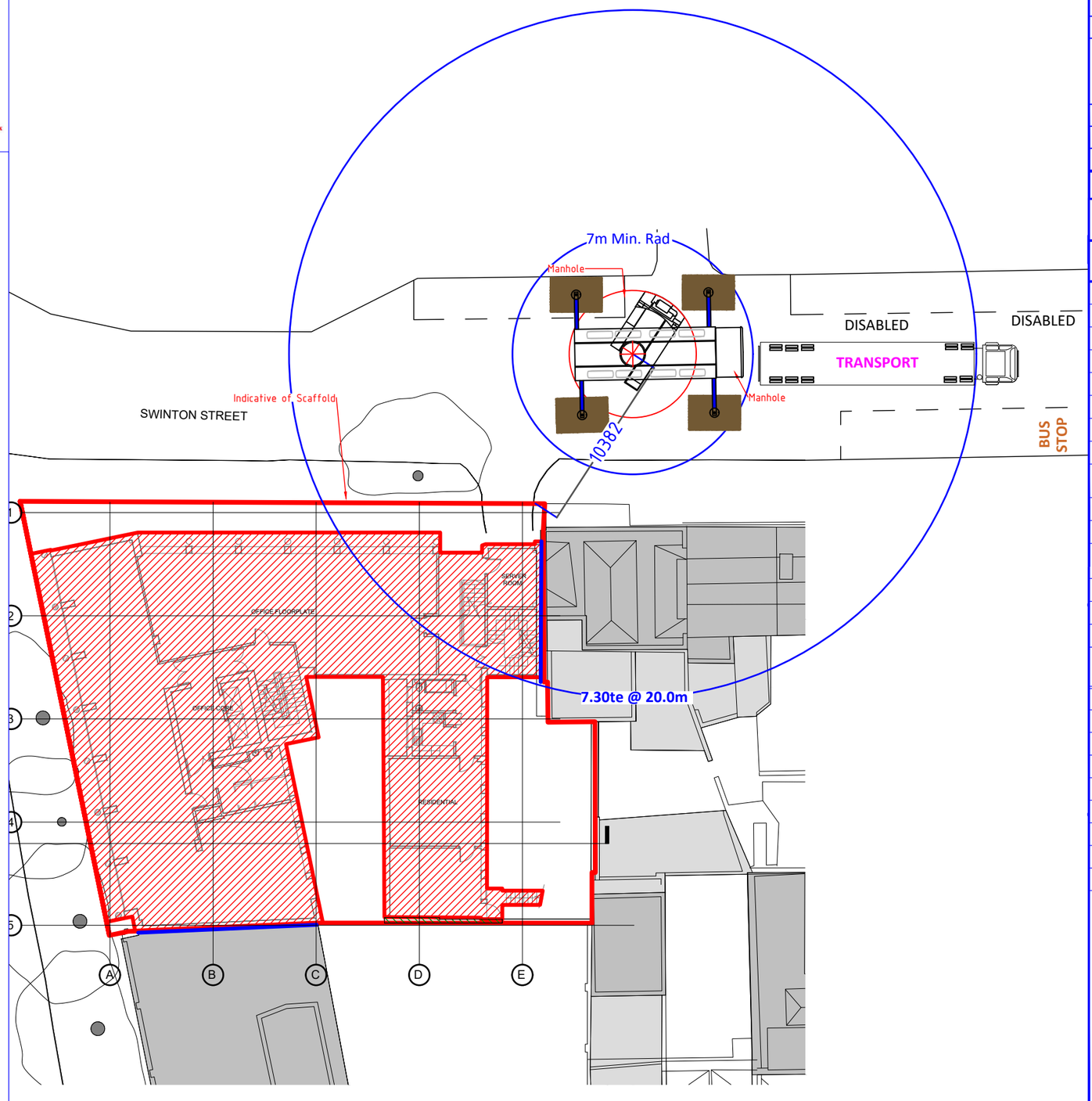
B-act = 25 t
B-max = 30.6 t max

A-act = 25 t
A-max = 31.1 t max

load capacity 75.3% / 7.3 t



Elevation Not to Scale



Baldwins CRANE HIRE LTD

Head Office
London Depot
Tel: 01753 583872
Tel: 01708 892500
Internet: www.baldwinscranehire.co.uk
Fax: 01753 547937
Fax: 01473 314075

Client	J F Hunt
Project	Acorn House
Title	Plan & Elevation

A1 Scale	N/A	A3 Scale	NTS
Date	22/07/2022		
Sheet No.	SHT1 of SHT1	Drawn By	BM
Drawing No	BCH-JFH-AHD-EXC-0080	Rev	A

Crane Data (DIN ISO 75%)

Main Lift Crane

Crane Type	AC80-2
Outrigger Base	7.70m x 7.00m
Crane Counterweight	18.0te
Main Boom	42.3m
Tele-sequence	90+90+74+74+74
Luffing Jib	N/A
Operating Radius	20.0m
Gross Capacity @ Operating Radius	7.30te
Maximum Outrigger Load	31.1te
Standard Outrigger Mat Size	Ø 0.90m
Additional Mat Size	2-n.o 3m x 1m bridged with 1-n.o 3m x 1m
Effective Bearing Area	6.00m²
Distributed Bearing Pressure	5.19te/m²
Maximum Wind Speed Tolerance	9.8m/s

Load Data

Equipment Description	**Mini Excavator**
Equipment Weight	4.20te
Hook Block Weight (16.5te SWL)	0.35te
Lifting Beam Weight	N/A
Lifting Tackle Weight	0.45te
Deduction for Stowed Fly	0.19te
Total Lift Weight	**5.19te**
Total Lift Capacity @ Radius	**7.30te @ 20.0m**
% Capacity of Chart Used	**71.1%**

Notes:

Rev.	Date	Reason for Revision	By	Chk'd
A	22/07/2022	Issued for Comment	BM	-