

Arboricultural Appraisal Report

Structural Damage Investigation at:

Hornsey Reservoir,
Tile Kiln Lane
London
N6 5LG



CLIENT:	Dovetail Building Consultants
MWA REF:	TST1210527-494
MWA CONSULTANT:	Andy Clark
REPORT DATE:	18/08/2021

Introduction

Acting on instructions from Dovetail Building Consultants, the property was visited on 09/08/2021 to assess the potential role of vegetation in respect of structural damage.

We are instructed to provide opinion on whether influence by vegetation is a causal factor in the damage and give recommendations on what vegetation management, if any, may be carried out with a view to restoring stability.

The scope of our assessment includes opinion relating to mitigation of future risk. Vegetation not recorded is considered not to be significant to the current damage or pose a significant risk in the foreseeable future.

This is an initial appraisal report and recommendations are made with reference to the technical reports and information currently available and may be subject to review upon receipt of additional site investigation data, monitoring, engineering opinion or other information.

This report does not include a detailed assessment of tree condition or safety. Where indications of poor condition or health in accessible trees are observed, this will be indicated within the report. Assessment of the condition and safety of third-party trees is excluded and third-party owners are advised to seek their own advice on tree health and stability of trees under their control.

Property Description

The matter relates to the Victorian era, built boundary/retaining wall of the Hornsey reservoir, particularly the section which runs adjacent to the Tile Kiln Lane public highway to the north east of the site.

The areas surrounding the site generally slope downwards towards the north, with the reservoir site mostly level around the inboard side of the wall and raising up towards the centre of the site. Towards the northern end of the site the reservoir land stands approx. 2.0m higher than that of the adjacent Tile Kiln Lane, with the wall serving as a land retaining feature.

The northern end of the site is heavily vegetated, with mostly pioneer species trees [Ash, Sycamore etc], the majority of which are likely to originally have been self-sown and now range in ages from semi-mature to early mature. The site is located within a Conservation Area administered by the London Borough of Haringey.

Supporting Documents

We have been provided with the following documents:

- Inspection Report, Priestley Consulting, 28/09/2020
- Report photo ref. plan sheet 2, Priestley Consulting, 8/09/2020
- Report photo ref. plan sheet 3, Priestley Consulting, 8/09/2020

Damage Description & History

Damage relates to the reservoir site boundary/retaining wall, where cracking and displacement of the wall is observed in multiple locations. For a detailed synopsis of the damage please refer to the Priestley Consulting technical report. We have not been made aware of any previous damage incidents relating to vegetation.

Geology / Soils

The online 1:50 000 scale British Geological Survey map records the bedrock geology as being a combination of Claygate Member - Clay, silt and sand; and Bagshot Formation - Sand. No superficial deposits for the area are recorded. BGS records for this area also include historic borehole logs which record soils with a clay component.

Discussion

The potential for trees to damage buildings and light structures (patios, retaining walls etc.) can be broadly categorised into two actions:

- **Direct damage:**

This includes damage caused by falling branches or whole trees, the physical displacement of built structures/hard surfacing by tree roots, branches and main stems. Direct damage also includes the blocking of drains by tree roots.

- **Indirect damage:**

This is usually associated with the abstraction of moisture by tree roots from cohesive plastic clay soils below the foundations. This process may result in shrinkage of the soil and structural instability in buildings due to foundation movement. The presence of shrinkable clays is required for this type of damage to occur.

The technical report provided to us identifies that approx. 6 predominately vertical hairline cracks are evident in the wall, with the worst of the damage being towards the northern end of the wall, where horizontal cracking is also evident. Engineering opinion is that the wall appears to be on its limits of stability and as such there are safety concerns regarding collapse of the wall onto the Tile Kiln Lane public highway.

From review of the site, we have identified trees/vegetation in close proximity to the cracking which, in our view, are the causal elements of the damage predominantly by way of direct damage as a consequence of direct pressure from the roots against the boundary wall foundations; effectively pushing the wall as the roots and root flares grow and lay down new annual growth.

The wall appears currently stable, however stability will likely deteriorate over time should the nearby trees/vegetation remain in situ.

The vegetation considered to be most significant in relation to the current damage are T1 Elder, T3 Ash, T4 Ash, T5 Ash, T6 Ash, T7 Sycamore, T8 Sycamore and T9 Ash. Understorey scrub, mostly Bramble growth and significant Ivy growing over the wall, will also be exacerbating the damage.

There is also a potential that the large third-party owned T20 Oak may also play a role in the damage, particularly to the northern-most end of the wall run. This large fully mature tree will have a significant presence of roots below the foundations of the wall and, given the presence of a clay subsoil, may be affecting soil moisture and volumes with the potential for subsidence damage to be a factor. This however should be verified by engineering review. A period of level monitoring may also be prudent to assess any vertical foundation movement of the wall arising from soils shrinkage and recovery [seasonal movement].

If an arboricultural solution is to be implemented to mitigate the influence of the trees/shrubs considered to be responsible for the damage we recommend that T1 Elder, T3 Ash, T4 Ash, T5 Ash, T6 Ash, T7 Sycamore T8 Sycamore and T9 Ash are removed in the first instance.

Further trees more inboard of the site are unlikely to affect the wall in the foreseeable future, but as maturity is reached the potential for damage to return in the longer term is possible. The client may wish to consider the installation of a root barrier inboard of the wall to ensure that the potential for future damage is minimised as far as possible should the trees be retained in the long term. Further advice in this regard can be given if required.

Observations and tree works recommendations are set out at Table 1 below for the trees inspected on site; this includes other vegetation not related to the wall damage and any arising advisory recommendations based on tree condition/situation as noted at the time of our site visit.

Consideration has been given to pruning alone as a means of mitigating the influence of the nearby trees, however in this case, this is not considered to offer a viable long-term solution to arrest the damage to the wall due to their proximity. Recommended tree works may however be subject to change upon receipt of additional information.

We note that the area is covered by Conservation Area status, and as such works of this nature would usually require notification to the Local Planning Authority. However, the reservoir owners Thames Water would have a degree of technical exemption from some works under such planning constraints as a Statutory Undertaker. Such exemption usually however relates to works only so far as is necessary for the undertaker to fulfil their associated duties, and in this regard formal advice should be sought from the council to confirm whether the prescribed works would be covered by the relevant exemptions.

The removal of Ivy and scrub growth below 75mm stem dia. at 1.5m from ground level would not require notification to the Local Planning Authority.

Works should be carried out in full compliance with best practice relating to health and safety and protected species legislation. A site-specific risk assessment should be carried out by contractors undertaking tree works prior to the commencement of works and any identified risks managed appropriately.

Table 1 Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to wall (m)	Age Classification	Ownership
T1	Elder with Viburnum and Philadelphus understorey	4.5	250	5.0	0.6	Semi-Mature	Hornsey Reservoir
Management history		Some understorey cut to 1.5-2.0m stumps - regrowth appears <5yrs					
Recommendation		Remove (fell) to near ground level and treat stumps to inhibit regrowth.					
T2	Sycamore	14.0	370	7.0	5.0	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Recent excavations within RPA - 1.2m from stem base with severed roots visible					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth [unrelated to wall damage – advisory due to root severance]					
T3	Ash	5.0	140 *	4.5	3.4	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Tree appears partially collapsed with stem lean >45° and asymmetrical crown towards E					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T4	Ash	9.5 *	190	5.0	3.1	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Tree appears partially collapsed with stem lean of approx. 20° and asymmetrical crown towards E					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T5	Ash	12.0	235 *	5.5	0.6	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Tree appears partially collapsed with stem lean of approx. 20° and asymmetrical crown towards E					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					

Ms: multi-stemmed

* Estimated value

Table 1 Tree Details & Recommendations (contd.)

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to wall (m)	Age Classification	Ownership
T6	Ash	9.5 *	140	4.0	0.5 *	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Suppressed asymmetrical crown with weight bias to E Dense bramble and scrub growth restricts access to stem base					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T7	Sycamore	15.0 *	250 Ms	9.5	0.5	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Twin-stemmed growth habit from 0.5m Suppressed asymmetrical crown growth habit due to Oak T20 - weight bias to W					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T8	Sycamore	9.5 *	150 *	5.0	1.7	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Suppressed asymmetrical crown growth habit with weight bias to W Likely self-sown from T7					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T9	Ash	8.0 *	180 *	5.0 *	0.5 *	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Suppressed contorted stem growth and asymmetrical crown with weight bias to N Dense bramble and scrub restricts access to stem base					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T10	Elder	5.0 *	200 *	5.0 *	1.4 *	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Suppressed asymmetrical crown and stem growth habit with weight bias to N - possibly collapsed onto Northern boundary Dense bramble and scrub restricts access to stem base					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth [unrelated to wall damage – advisory due to H&S risk to 3P property]					

Ms: multi-stemmed * Estimated value

Table 1 Tree Details & Recommendations (contd.)

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to wall (m)	Age Classification	Ownership
T11	Elder	5.0 *	200 *	5.0 *	1.8 *	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Suppressed asymmetrical crown and stem growth habit with weight bias to N - possibly collapsed onto Northern boundary Dense bramble and scrub restrict access to stem base					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth [unrelated to wall damage – advisory due to H&S risk to 3P property]					
T12	Apple	5.5 *	240 *	7.5 *	8.0 *	Early-Mature	Hornsey Reservoir
Management history		No significant past management noted Swamped with Grape-vine growth - tree almost dead Dense bramble and scrub restricts access to stem base					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth. [unrelated to wall damage – advisory due to H&S risk]					
T13	Ash	10.0 *	140	5.0	9.3 *	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Suppressed asymmetrical crown with weight bias to N Dense bramble and scrub restricts access to stem base Significant stem lean - possibly resting on Northern boundary fence					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth. [unrelated to wall damage – advisory due to H&S risk to 3P property]					
T14	Apple	6.5 *	250 Ms *	10.5 *	7.7 *	Early-Mature	Hornsey Reservoir
Management history		No significant past management noted Multi-stemmed growth habit Sparse crown Swamped with Bramble and Ivy growth - restricts access to stem base					
Recommendation		No works required in relation to wall - remove scrub and Ivy if tree retained.					
T15	Apple	6.5 *	220 Ms *	9.0 *	7.7 *	Early-Mature	Hornsey Reservoir
Management history		No significant past management noted Multi-stemmed growth habit Swamped with Bramble and Ivy growth - restricts access to stem base					
Recommendation		No works required in relation to wall - remove scrub and Ivy if tree retained.					

Ms: multi-stemmed * Estimated value

Table 1 Tree Details & Recommendations (contd.)

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to wall (m)	Age Classification	Ownership
T16	Tulip Tree	13.0	380	6.0	9.3	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Heavily swamped with Ivy Recent excavations within RPA - 0.9m from stem base with visible root severance					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth [unrelated to wall damage – advisory due to root severance]					
T17	Oak	7.5 *	220 *	5.0	9.6	Semi-Mature	Hornsey Reservoir
Management history		Dead stump					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth. [unrelated to wall damage – advisory due to H&S risk]					
T18	Oak	10.0 *	220 *	5.0	9.4	Semi-Mature	Hornsey Reservoir
Management history		No significant past management noted Heavily swamped with Ivy and bramble					
Recommendation		No works required in relation to wall.					
T19	Ash	13.5 *	375 Ms	8.0	14.0	Semi-Mature	Hornsey Reservoir
Management history		Subject to past management/pruning - previously pollarded at approx. 6.0m					
Recommendation		No works required in relation to wall.					
T20	Oak	21.5	950 *	20.0	5.5	Mature	Third Party
Management history		No significant past management noted					
Recommendation		No works required at present (subject to review if movement persists).					

Ms: multi-stemmed

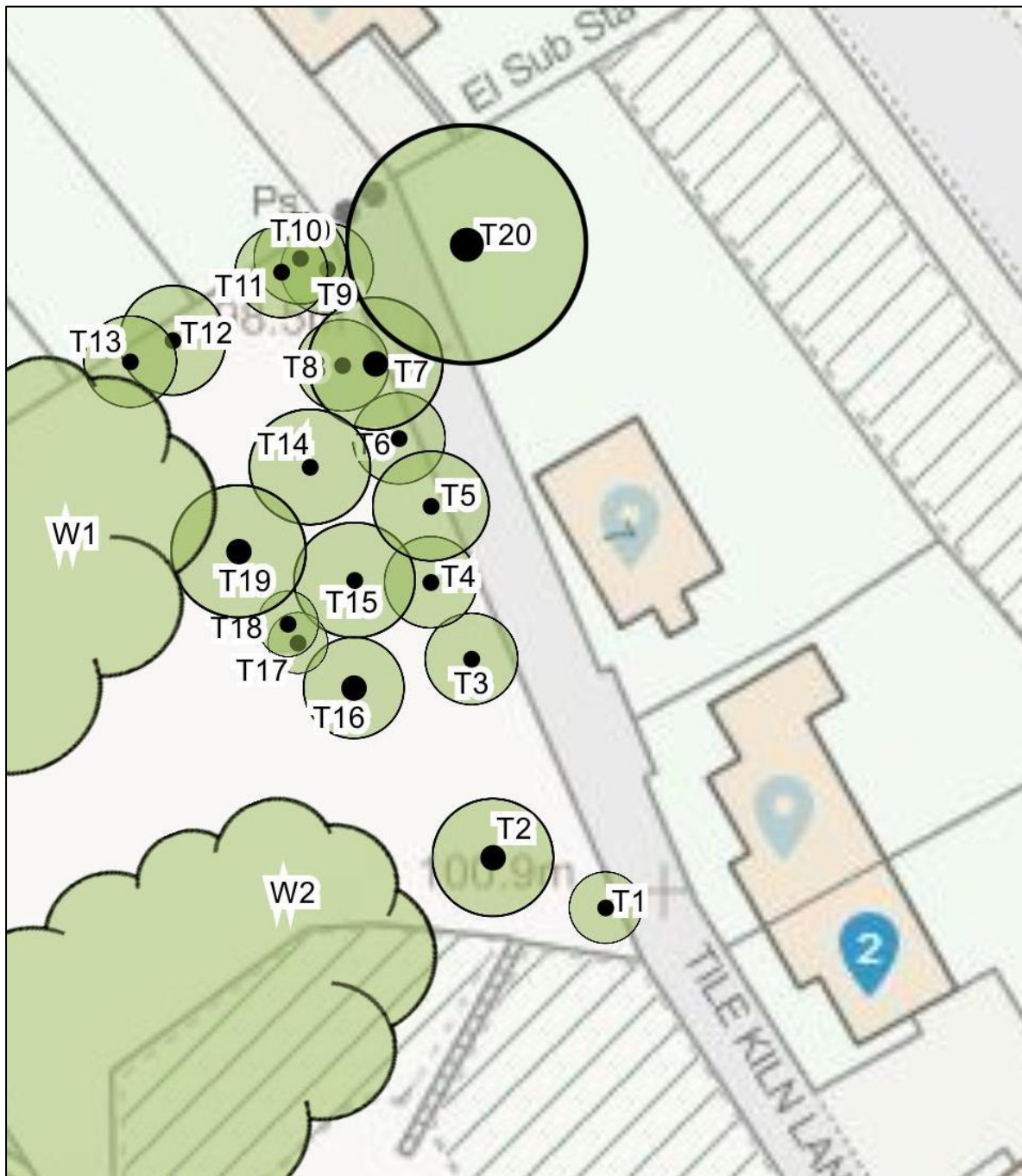
* Estimated value

Table 1 Tree Details & Recommendations (contd.)

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to wall (m)	Age Classification	Ownership
W1	Mixed species woodland of mostly Ash and Sycamore with understorey of Yew and Hazel	15.5 *	450 Ms *	10.0	10.0	Early-Mature	Hornsey Reservoir
Management history		Subject to past management/pruning – multiple trees previously pollarded at varying heights					
Recommendation		No works required in relation to wall.					
W2	Mixed species woodland of mostly Ash and Sycamore with understorey of Holly and Elder	19.0 *	350 Ms *	11.5	13.1	Early-Mature	Hornsey Reservoir
Management history		No significant past management noted					
Recommendation		No works required in relation to wall.					

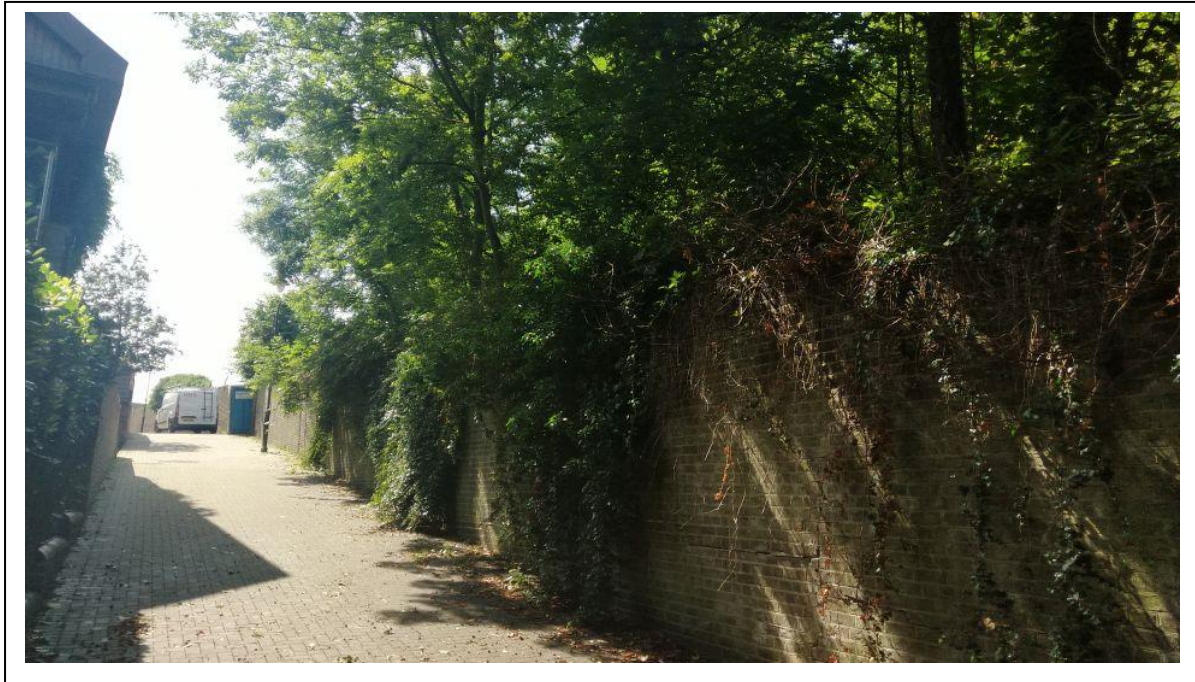
Ms: multi-stemmed * Estimated value

Site Plan



Plan not to scale – indicative only

Images



Overview of area of interest from Tile Kiln Lane looking south



Overview of area of interest from Tile Kiln Lane looking north



View from site interior of T1 Elder and T2 Sycamore, with W2 woodland area visible to right of frame



View from site interior of T6, T5 and T4 Ash



View from site interior of T7 Sycamore and T9 Ash, with T20 Oak visible beyond



View of T20 Oak