



Structural Conditional Report for Existing Boundary Retaining Wall to Plot 2 Delf Garth, Dodworth

Prepared for:
Mr & Mrs D Whitaker

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Structural Solutions Ltd

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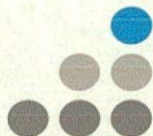


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1.0 Introduction

A previous conditional survey report was carried out by ourselves to the existing boundary retaining wall of the site, formerly occupied by the Pheasant Inn, at 88 – 90 High Street, Dodworth, Barnsley on the 12th April 2016. This comprised a visual inspection of the external boundary wall on to High Street in the south corner of the development.

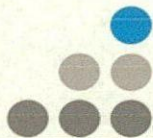
2.0 Discussion

From our observations, the boundary retaining wall is of solid coursed stone construction, approx. 450 thk, which extends 30m from the bottom corner boundary back up the hill before the construction changes to a 9" solid brick built wall. The existing stone wall is approx. 1.8m in height, of 8 courses and a coping / header stone. Refer to Photo 1.

It is our opinion that it will be necessary to undertake rebuilding works to the existing stone boundary wall. The lower section of the boundary wall, from the existing telegraph pole to the corner of the site, approx. 20m in length, has suffered distortion. The stone construction appears to be bulging, and sections of the coursed stone are cracked on the bed joints. Refer to Photo 2. We suggest that the structural issues viewed are a direct result of the influence of existing trees, which are in very close proximity to the boundary wall, refer to Photo 3.

An arboricultural report has also been produced by AWA Tree Consultants, dated 10th October 2016. The report discusses the impact and condition of trees located specifically with the confines of plot 2. There are 7 main trees, ref T1 – T7, of varying species, size and maturity and condition. A schedule and location plan of the trees is included in Appendix taken from AWA's report.

The arboricultural report states that it is likely the root growth of trees T1 & T2, as well as extended roots of T3, T4 & T5, are causing structural damage to the existing stone boundary wall. The report concludes that these 5 trees are not viable, or of value, to retain and could be removed.



3.0 Recommendations

We would suggest that although the wall has been damaged, due to pressures from tree root growth, it does appear that the wall is rotating about the foundation. From our inspection of the wall, the 2 courses of stone above pavement level appear to be structurally sound with no distortion. This would suggest that tree roots have pushed the upper section of the stonework outwards.

We would suggest that if the trees are removed this will remove surcharge pressure off the back of the upper section of the wall. In this regard, appropriate remedial works would be to take down rebuild and realign the upper section of the wall. To be able to undertake rebuilding remedial works to the wall, and to maintain the structural integrity following repairs it will be necessary to remove trees T1 – T5, as noted in AWA's report.

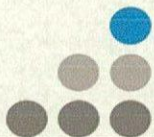
To undertake remedial works, aimed to retain the trees, a more robust new retaining wall would be required to be designed and built. It is our opinion that it would not be feasible to safely retain and protect the existing trees during construction works. It is likely that material from behind the wall would have to be removed to an extent to facilitate the safe construction of foundations and new wall, that the trees and root growth would be damaged and undermined.

4.0 Remedial Works

Prior to commencing any excavation works a specialist arboriculturist should be consulted to ensure that trees which are to remain are protected and that remedial works are not going to cause damage to the trees and roots.

It will be necessary for a specialist contractor to remove the canopy and trunks of the trees reference T1 – T5. No remedial works to the wall, or the removal of ground behind the existing wall, should be carried out before the removal of trees has been completed.

Once all necessary protection measures are in place to the trees remedial works to the damaged / destabilised section of the stone wall can then commence. We suggest the order of remedial works should be as follows,



1. Remove backfill material from directly behind the existing wall, and stockpile. No excavation plant machinery should be sited on raised / retained ground directly at the wall / boundary line. Any machinery employed should be sited at a distance away from the wall equal to the height of the wall plus a minimum of 1m.
2. The ground behind the wall should be battered to a safe angle of repose to facilitate a safe working zone to the rear of the wall.
3. Inspect the rear to the existing wall and the existing foundation construction. Amend construction proposals if required.
4. Removal of the top 7 courses of the wall, including the header stones, can be undertaken. This could be carried out in sections or in its entirety.
5. Re build the wall, using existing stonework if possible, allowing for movement joints in the coursed stone at 10m max intervals and/or at steps in the wall line depending on the wall span between previous joints.
6. Backfill wall in line with requirements, with arisings. Allow for installation of any necessary land drainage.
7. Remove tree protection measures.

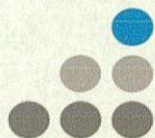


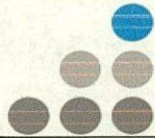
Photo 1



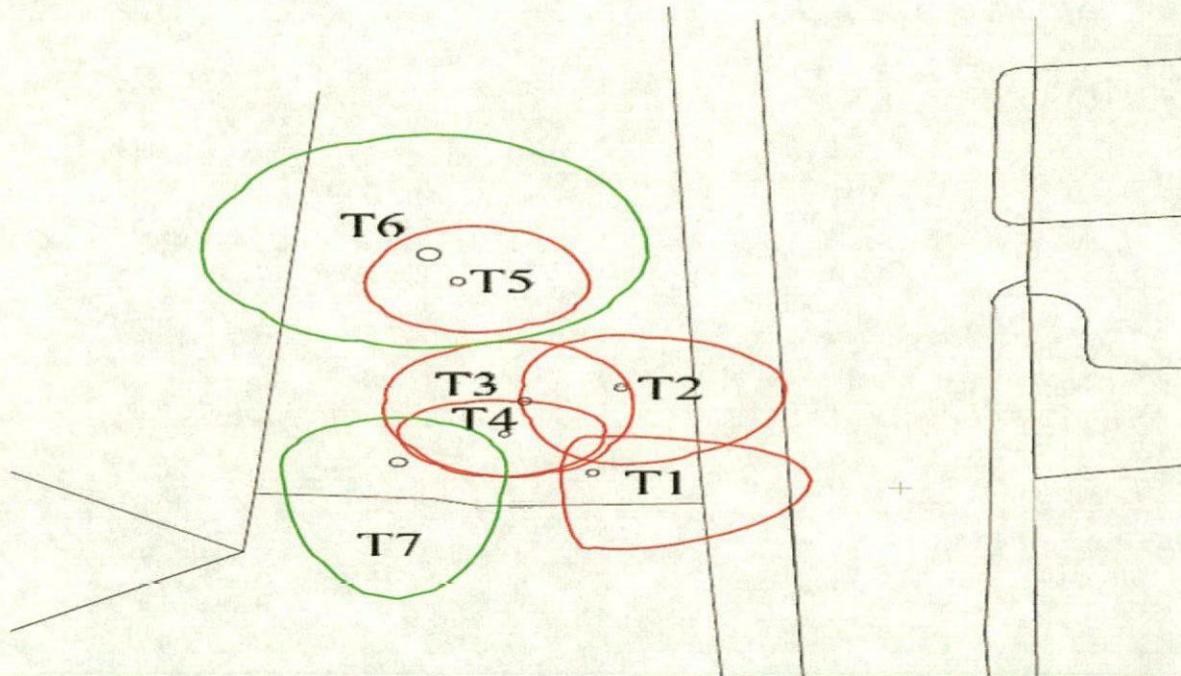
Photo 2



Photo 3



Existing Tree Plan



Tree ID	Tree Species		Measurements				Crown (m)				Tree Condition				Management					
	Common Name	Latin Name	Ageing	Height (m)	Stem	Stem Dia (cm)	Estimated	Avg Height	N	E	S	W	Roots	Stem	Crown	Comments	Review	Structure	Life Expectancy	Works
T1	Ash	<i>Fraxinus excelsior</i>	Early Mature	8	4	230, 260, 190, 180	No	2	2.5	8	5	1	Likely to be growing out to the damaged boundary retaining wall	Multiple stemmed at base. Significant lean.	Unbalanced. Overhanging adjacent land.	Overhanging road. No long term value	Fair	Poor	10 to 20 yrs	Remove
T2	Sycamore	<i>Acer pseudoplatanus</i>	Mature	17	1	490	No	7	3.5	6	5	3.5	Likely to be growing out to the damaged boundary retaining wall	Single stemmed. Slight lean. Bark damage.	Unbalanced. Overhanging adjacent land.	Overhanging road. Limited value.	Fair	Fair	20 to 40 yrs	Remove
T3	Sycamore	<i>Acer pseudoplatanus</i>	Mature	15	1	480	No	10	4	4	5	5	Likely to be growing out to the damaged boundary retaining wall	Single stemmed. Vertical. Bark damage.	Small/ sparse. High crown	Limited long term value.	Fair	Fair	20 to 40 yrs	Remove
T4	Sycamore	<i>Acer pseudoplatanus</i>	Early-mature	15	1	390	No	8	2	4	3	3.5	Likely to be growing out to the damaged boundary retaining wall	Single stemmed. Bark damage.	Small/ sparse. Moderate deadwood. Slightly unbalanced.	Suppressed by larger trees. No long term value.	Fair	Fair	>40 yrs	Remove
T5	Horse Chestnut	<i>Aesculus hippocastanum</i>	Mature	15	1	520	No	7	4	4	3	4	No visual defects	Single stemmed. Bark damage. Minor cavities. Minor decay. Slight lean.	Small/ sparse. Discolouration of leaves from leaf miner.	Nails in stem. Probable bleeding canker.	Fair	Fair	20 to 40 yrs	Remove
T6	Oak	<i>Quercus robur</i>	Mature	19	1	840	No	9	8	8	6	8	Decay. Damage to buttress roots.	Single stemmed. Bark damage. Vertical.	Normal. Slightly unbalanced.	Unbalanced due to previous adjacent trees which have since been removed.	Good	Good	>40 yrs	No action
T7	Oak	<i>Quercus robur</i>	Mature	17	1	600	No	8	3	4	9	4	No visual defects	Single stemmed. Slight lean. Bark damage.	Normal. Minor deadwood. Overhanging adjacent land.	Historic stem damage with reaction growth.	Good	Good	>40 yrs	No action



Sondelle Whitaker
Delf Garth
Dodworth
Barnsley

19th April 2019

Ref: AWA2665

Arboricultural Report

at:

'Plot 2', Delf Garth, High Street, Dodworth, Barnsley

Introduction

As instructed, we visited the above site in April 2019 and inspected, from ground level, the trees growing within the site. The trees were assessed with regard to health and safety, good arboricultural management and the structural integrity of the adjacent retaining wall structure.

The site forms part of a wider development site area known as Delf Garth. The site is at a higher level than the adjacent public footpath and road. A boundary wall drops down to the footpath along High Street. The site contains seven significant trees, numbered **T1** to **T7** on the attached plan. The tree data collected at the site visit is detailed on the attached Tree Data Schedule and the tree locations are plotted on the attached Tree Plan.



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Union Forge, 27 Mowbray Street, Sheffield, S3 6EN. AWA Tree Consultants Limited. Company No. 8520123. Registered in England & Wales.

Discussion

The trees T1 to T7 are situated on land that is at a higher level than the adjacent footpath and road of High Street. A stone retaining wall drops down at the edge of the site to High Street.

An associated site report from Design It Structural Solutions Ltd, Ref: NYP/15/188 Rev B, detailed that the wall had a clear outward lean, towards the road, with evidence of disturbance to the stone coursing and bonding of the wall. The report comments that it is clear that the root and trunk of the trees in the area directly behind the wall has caused and continues to cause the wall to be potentially unstable. The report recommends that the trees are removed, and the sections of damaged wall are removed and rebuilt.

It is very likely that roots from the tree T1 to T2 will be growing up to and along the boundary wall. It is also probable that roots from the trees T3 to T5 will be growing up to the boundary wall. It is likely that the roots of T1 to T5 will have contributed to the damaged the boundary wall, from the result of the direct pressure of the tree roots pressing against the retaining wall. In the future, as the tree roots continue to grow, it is foreseeable that the damage to the wall will increase. Trees T6 and T7 are situated further away from the damaged wall and so will be less likely to have impacted upon the walls poor condition.

The recommended removal and repair of the defective boundary wall sections would require excavation into the soil between the tree stems and the wall, and this will result in subsequent severing of roots. The required installation of footings and masonry at the lower section of wall will involve severing of the trees roots, and this is likely to be extensive and require roots being severed very close to the main stem of the trees T1 and T2, while some root severance and disturbance will be likely to occur to T3, T4 and T5.

It is likely that the extent of root severance would lead to a significant loss of tree vigour, of T1 and T2, with major crown and branch dieback likely to follow in subsequent years. In addition, it is foreseeable that the stability of the trees will be compromised. The ability of trees to withstand wind forces is provided by the main structural roots close to the base of the tree. The structural root system has little redundancy, meaning that there is a danger that root cutting can compromise the support function of roots and increase the risk of the tree blowing over during periods of strong wind, resulting in the tree posing an unacceptable danger to people and property. As such, it does not appear feasible to both retain the trees T1 and T2, and repair the damaged wall. Furthermore, while the root severance of T3, T4 and T5 will be likely to be less severe it is likely that some crown and branch dieback is likely to follow in subsequent years.

In general arboricultural terms, the Oak trees T6 and T7 are better value trees with good visual amenity and good long term prospects. Trees T1 to T5 are lower value trees in with more limited visual amenity and long term prospects. The retention of the Oak trees T5 and T6 will maintain a similar level of visual amenity at the site and the negative visual impact of the recommended tree removals could be further mitigated for by replacement plantings, in suitable locations and of suitable species, after the wall repair.

Recommended Tree Works

It is understood trees at this site are protected by virtue of a Tree Preservation Order. Due to the large potential penalties for illegally carrying out work to protected trees, before authorising any tree works, you should contact your Local Planning Authority to gain written statutory permission before any works can take place.

When appointing a tree surgeon, please use only properly qualified and experienced companies and check that they carry adequate Public Liability and Employer's Liability Insurance. All tree work should be carried out according to British Standard 3998: 2010 – *tree work - recommendations*.

Conclusion

It is likely that the trees T1 to T5 are contributing to the current damage to the boundary wall, and it is foreseeable this will increase over time. The excavations required to repair the wall will result in the severing of tree roots. It is likely this will lead to a loss of tree vigour of trees T1 to T5 and make the trees T1 and T2 unstable. As such, it is recommended to remove trees T1 to T5 prior to repairing the wall and to undertake suitable replacement planting.

If we can be of further assistance in arranging the recommended works, or should you require further information, please do not hesitate to contact us at the office.

Yours sincerely

A. Winson

Adam Winson MSc, BSc (Hons), Chartered Arboriculturist, MICFor, ACIEEM.

TREE DATA

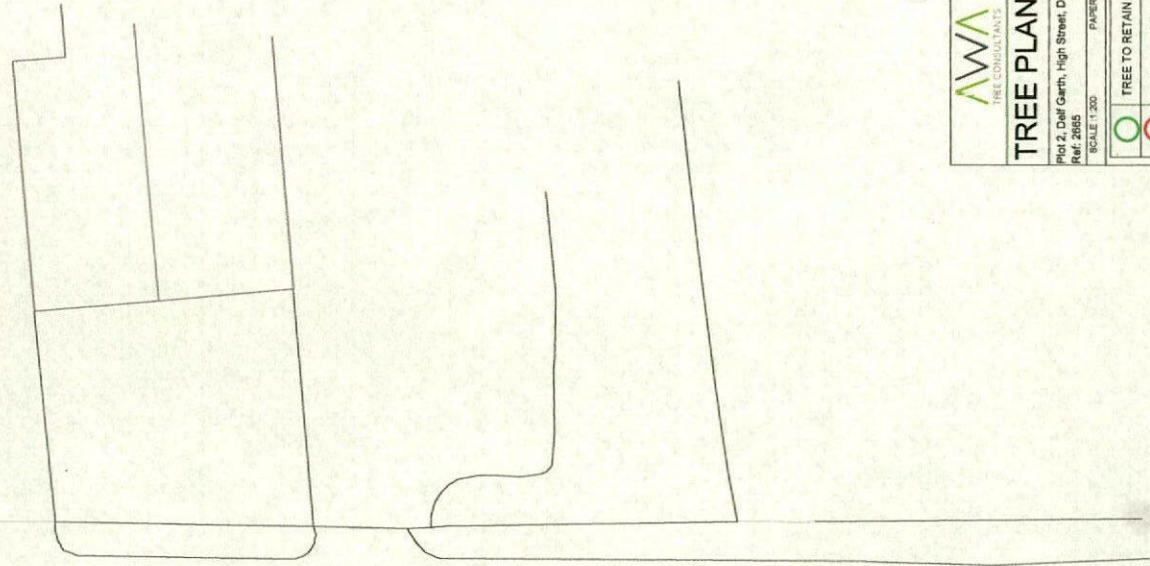
AWA Ref:266E

Tree Species			Measurements				Crown (m)				Tree Condition				Value		Management				
Tree ID	Common Name	Latin Name	Maturity	Height (m)	Stems	Stem Dia (mm)	Estimated	Ave Height	N	E	S	W	Roots	Stem	Crown	Comments	Physiology	Structural	Life Expectancy	Amenity	Works
T1	Ash	<i>Fraxinus excelsior</i>	Mature	8	4	230, 260, 190, 180	No	2	3	8	5	1	No visual defects	Multiple stemmed at base. Significant lean. Minor cavities. Minor decay.	Unbalanced. Overhanging adjacent land.	Overhanging road. No long term value	Fair	Fair	20 to 40 yrs	Low	Remove to ground level
T2	Sycamore	<i>Acer pseudoplatanus</i>	Mature	17	1	490	No	7	4	6	5	4	No visual defects	Single stemmed. Slight lean. Bark damage. Epicormic growths.	Unbalanced. Overhanging adjacent land.	Overhanging road.	Fair	Fair	>40 yrs	Moderate	Remove to ground level
T3	Sycamore	<i>Acer pseudoplatanus</i>	Mature	15	1	480	No	10	4	4	5	5	No visual defects	Single stemmed. Vertical. Bark damage. Epicormic growths.	Small sparse. Minor deadwood. Snapped/hanging branch.	High crown.	Fair	Fair	>40 yrs	Low	Remove to ground level
T4	Sycamore	<i>Acer pseudoplatanus</i>	Early-mature	15	1	390	No	8	2	4	3	4	No visual defects	Single stemmed. Bark damage. Epicormic growths. Minor Cavities. Minor Decay	Small sparse. Moderate deadwood. Slightly unbalanced.	Suppressed by larger trees. Lots of minor cavities with decay. 1 large dead limb to west at approximately 10m.	Fair	Fair	>40 yrs	Low	Remove to ground level
T5	Horse Chestnut	<i>Aesculus hippocastanum</i>	Mature	15	1	520	No	7	4	4	3	4	No visual defects	Single stemmed. Bark damage. Minor cavities. Minor decay. Slight lean.	Small sparse. Minor deadwood.	Nails in stem. Maybe previous bleeding canker. Discolouration of leaves. Large bark wound to north of stem at 0.5m to 1.5m	Fair	Fair	>40 yrs	Low	Remove to ground level

TREE DATA

AWA Ref:2665

Tree ID	Tree Species		Measurements				Crown (m)				Tree Condition					Value	Management				
	Common Name	Latin Name	Maturity	Height (m)	Stems	Stem Dia (mm)	Estimated	Ave Height	N	E	S	W	Roots	Stem	Crown	Comments	Physiology	Structural	Life Expectancy	Amenity	Works
T6	Oak	Quercus robur	Mature	19	1	840	No	9	8	8	6	8	Decay. Damage to buttress roots.	Single stemmed. Bark damage. Vertical.	Slightly unbalanced. Minor deadwood. Old pruning wounds. Stubs	Unbalanced due to previous adjacent trees which have since been removed.	Good	Good	>40 yrs	Moderate	No action required
T7	Oak	Quercus robur	Mature	17	1	600	No	8	3	4	9	4	No visual defects	Single stemmed. Slight lean. Bark damage. Epicormic growths	Normal. Moderate deadwood. Overhanging adjacent land.	Historic stem damage. Reaction growth to buckling. High proportion of minor deadwood.	Fair	Fair	>40 yrs	Moderate	No action required





AWA
TREE CONSULTANTS

TREE PLAN

Plot 2, Delf Garth, High Street, Dodworth
Ref: 2005
SCALE 1:200
PAPER A3

	TREE TO RETAIN
	TREE TO REMOVE
	TREE STEM

