

ARBORICULTURAL SURVEY
at
7 Glamis Close
Waterlooville
Hampshire
PO7 8JN

Client:
360 Globalnet
on behalf of Natwest

Client Address:
360 Globalnet
Regus House
Herald Way
Pegasus Business Park
Castle Donnington
DE74 2TZ

Client Telephone:
0116 4781258

Insured:
Mr Evans

Claim Number:
DLG-SN-20-001935

JCA Ref:
16315/RH

Client Ref:
074274953

Contents

Contents	2
1. Introduction	3
1.1 Purpose of the Report	3
1.2 Terms of Reference	3
1.3 Scope of the Report	3
2. Survey Conditions and Methods	4
2.1 Date of Inspection and name of Inspector	4
2.2 Data Collection Methods	4
3. Ground Investigation, Soil & Root Analysis	5
3.1 Introduction	5
3.2 Foundations Types and Depths	5
3.3 Soil Types	6
3.4 Root Analysis	7
4. Status of the Trees	8
5. Tree Descriptions & Recommendations	8
6. Conclusions	9
7. Summary of Tree Specific Recommendations	10
8. General Recommendations and Observations	11
Appendix 1: Tree Descriptions and Recommendations	13
Appendix 2: Glossary of Terms & Abbreviations	14
Appendix 3: Replacement Planting	15
Appendix 4: Author Qualifications	16
Appendix 5: Site Plan	17
Appendix 6: Photos	18

1. Introduction

1.1 Purpose of the Report

- 1.1.1 This arboricultural report is required by our client as part of an investigation into subsidence damage at: **7 Glamis Close, Waterlooville, Hampshire, PO7 8JN.**

1.2 Terms of Reference

- 1.2.1 We are instructed by **360 Globalnet** to visit the site and carry out an arboricultural survey covering all vegetation within likely influencing distance of the subject property.
- 1.2.2 We have been supplied with details of the site investigation, which was carried out by others, and have included the salient points in this report. We have applied this information to our knowledge of trees and the arboricultural data we gathered on site in prescribing recommendations for action.
- 1.2.3 We are to prepare our findings in a detailed report, making specific recommendations as to any arboricultural management required to prevent further damage.

1.3 Scope of the Report

- 1.3.1 The subject property includes a two-storey detached dwelling and a double garage.
- 1.3.1 Damage has occurred to the rear extension.
- 1.3.2 Please see the 360 Globalnet Engineers Report for full details of the current damage at the subject property.
- 1.3.3 The distance between the vegetation surveyed and the building is measured from the closest part of the property.

2. Survey Conditions and Methods

2.1 Date of Inspection and name of Inspector

- 2.1.1 The site was surveyed during the month of September 2020 by **Robert Hickey** *FdSc (Arboriculture), TechArborA*

2.2 Data Collection Methods

- 2.2.1 The inspection was carried out at ground level using visual assessment of the tree canopy, stem and rooting area. No digging or drilling was carried out on this occasion.
- 2.2.2 The measurements were made using instruments including clinometers for tree *HEIGHT*, stem diameter tapes for *DIAMETER* (measured at 1.5m above ground level) and tape measures or electronic distometers for *CROWN SPREAD* and *DISTANCE TO PROPERTY*.
- 2.2.3 *AGE CLASS* and *LIFE EXPECTANCY* values are estimated based upon our knowledge of trees and the way they grow. No core sampling was carried out on this occasion.
- 2.2.4 The term *INFLUENCING DISTANCE* as used in this report is not derived from the NHBC's 'zones of influence' formula. It is merely an estimation of the potential of a tree or shrub to cause damage to the subject property after due consideration of many factors including soil characteristics, specimen size, vigour, species, likely water uptake and distance from the property.
- 2.2.5 '*NHBC WATER DEMAND*' (low, moderate or high) are categories originated by the National House Building Council. The concept was designed to be used as an aid for determining the correct foundation depths for new build situations where there are existing trees present.

3. Ground Investigation, Soil & Root Analysis

3.1 Introduction

- 3.1.1 Trees influence soil conditions, and in some soil types root activity can create a soil moisture deficit (S.M.D.), which means that the amount of water being used by the tree and by natural evaporation has exceeded the amount of water falling naturally through precipitation. This deficit can lead to soil shrinkage which in turn can cause a building to move, particularly if its foundations are shallow. The result is *SUBSIDENCE*.
- 3.1.2 The soil's *PLASTICITY INDEX*, *PLASTIC LIMIT*, *MOISTURE CONTENT* and the likely water uptake of the tree/trees in question are key factors in determining whether shrinkage has occurred.
- 3.1.3 On shrinkable soils, damage to buildings can also occur as a result of tree removal. In such cases re-hydration of the soil causes an upwards movement of the ground which is known as *HEAVE*. Trees should not, therefore, be removed without due consideration of likely effects.
- 3.1.4 The ground investigation and root analysis at this site have been carried out by others. Results of these investigations are briefly summarised below.

3.2 Foundations Types and Depths

- 3.2.1 Please refer to the site plan at **Appendix 5** for an indication of trial pit/borehole locations.
- 3.2.2 **Trial pit/borehole 1** revealed a concrete foundation at a maximum depth of 1000mm.
- 3.2.3 **Trial pit/borehole 2** revealed a concrete foundation at a maximum depth of 1100mm.

3.3 Soil Types

3.3.1 Trial Pit/Borehole 1:

- The soils *plasticity index* was 46%.
- *Moisture contents* within the soil samples ranged from 27% to 28%.
- The *plastic limit* of the soils was 32%.
- The *liquid limit* of the soils was 78%.

These results indicate that the clay soil found within **Trial Pit/Borehole 1** is of high shrinkability and that the soil is desiccated.

3.3.2 Trial Pit/Borehole 2:

- The soils *plasticity index* was 53%.
- *Moisture contents* within the soil samples ranged from 27% to 30%.
- The *plastic limit* of the soils was 33%.
- The *liquid limit* of the soils was 86%.

These results indicate that the clay soil found within **Trial Pit/Borehole 2** is of high shrinkability and that the soil is desiccated.

3.4 Root Analysis

- 3.4.1 Microscopic examination of tree root anatomy generally enables the GENUS of roots recovered during the ground investigation to be established. However, it rarely identifies individuals to SPECIES level.
- 3.4.2 Certain species, for instance Willows and Poplars, are indistinguishable by these methods and identification can only be made at FAMILY level.
- 3.4.3 The diameter and the depth of the root can be an indication of its significance.
- 3.4.4 To establish whether the root is alive, iodine is used to test for starch which is stored in some cells of living tree roots but is broken down by micro-organisms upon the death of a root in the soil.
- 3.4.5 Live root samples are normally a prerequisite for establishing, on a balance of probability, which vegetation is the most likely cause of any damage noted.
- 3.4.6 Results of the analysis of root material recovered during the ground investigation are summarised in the table below.

Trial Pit/ B/hole	Sample Depth (m)	Family	Genus
1	1.0-2.5	<i>Cupressaceae</i>	<i>Cypress</i>
1	1.0-2.5	<i>Fagaceae</i>	<i>Quercus</i> (Oak)
2	1.1-2.5	<i>Cupressaceae</i>	<i>Cypress</i>
2	1.1-2.5	<i>Fagaceae</i>	<i>Quercus</i> (Oak)

- 3.4.7 The roots found in TP/BH1&2 are of the family *Cupressaceae* this matches the cypress hedges identified as **H1** and **H2** within this report.
- 3.4.8 The roots found in TP/BH1&2 are of the genus *Quercus* this matches the Oak trees identified as **T3**, **T4** and **T5** within this report.

4. Status of the Trees

- 4.1 A check was made on 15th September 2020 with **Havant Borough Council**.
- 4.1 We are informed that there is an Area Tree Preservation Order (TPO) in force on this site. TPO Ref **1101**.
- 4.2 Before any tree work is undertaken, written consent from the Local Authority must first be obtained. An application for tree works form must therefore be completed and submitted to the Local Authority outlining all the proposed works along with a suitable justification. A waiting period of eight weeks is then required
- 4.3 *No work must be done to any trees until permission has been granted.*

5. Tree Descriptions & Recommendations

- 5.1 Descriptions of the surveyed vegetation and all recommended work are detailed in the tables at **Appendix 1**.
- 5.2 Technical terms are explained in the glossary at **Appendix 2**.
- 5.3 Please refer to the site plan at **Appendix 5** for the locations of the vegetation surveyed and all the relevant site features.

6. Conclusions

- 6.1 We have been informed by our client that the damage observed at the property is due to clay shrinkage caused by vegetation.
- 6.2 Based on this information, having made a detailed survey of the site and having given due consideration to the other information supplied, we are satisfied that in this case some subsidence damage has occurred as a result of drying shrinkage caused by vegetation within influencing distance of the property.
- 6.3 We consider the vegetation identified as **T3** to be contributing to the damage observed at the subject property. We have therefore recommended that **T3** be removed. **T3** comes under to the Area TPO (**1101**).
- 6.4 We consider the vegetation identified as **H1**, **H2**, **T4** and **T5** to be of possible future concern to the subject property. We have therefore recommended that **H1**, **H2**, **T4** and **T5** maintained at their current size. These works are only recommended as a precaution and are not considered a priority to resolve the damage observed at the subject property.
- 6.5 We have summarised all our tree specific recommendations in **Section 7** and made general recommendations in **Section 8**. The effect of these recommendations should be to prevent further damage by reducing the moisture uptake close to the problem areas.

7. Summary of Tree Specific Recommendations

Item	Species	Recommended Action	Location	Planning Restriction
H1	Cypress	Maintain at current size and spread.	3 rd Party. 6 Glamis Close.	None.
H2	Cypress	Maintain at current size and spread.	Subject Property.	None.
T3	Oak	Fell to ground level and treat stump to prevent re-growth.	Subject Property.	TPO.
T4	Oak	Maintain at current size and spread.	Subject Property.	TPO.
T5	Oak	Maintain at current size and spread.	3 rd Party. 8 Glamis Close.	TPO.
G6	Dogwood, Ash, Portuguese Laurel	No action required.	Subject Property.	None.
Total estimated time to execute the above works		1 day		
Notes on the above estimate				
7.1	JCA Limited does not carry out tree work but we are experienced in the estimation of time involved in a job.			
7.2	We have based this estimation of time involved in carrying out the recommended works on a three person team with all the required equipment.			
7.3	Actual quotations given by contractors will additionally reflect travel costs and regional price variations.			
7.4	Clients are welcome to contact JCA Ltd to discuss a likely budget for these works.			

8. General Recommendations and Observations

- 8.1 This report is based upon a visual inspection. JCA Limited shall not be responsible for events which happen after this time due to factors which were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.
- 8.2 All work recommended in this report must be carried out to BS 3998: 2010 - *'Recommendations for Tree Work'*.
- 8.3 All the work as specified in this report should be carried out by qualified, experienced and skilled arboricultural contractors covered by adequate *public liability and employers liability insurance*. Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.
- 8.4 The influence of trees on the soil and on buildings may change as they grow, as climate varies or as other changes occur in the local environment. It is therefore advisable to have trees inspected by JCA Limited annually.
- 8.5 The property and the damage should be monitored by the project engineer on a regular basis after the recommended tree works are complete.
- 8.6 If, after the works have been carried out, there is little improvement, this may mean that the situation cannot be rectified by arboricultural means alone. If this point is reached the situation must be reassessed in conjunction with other experts.
- 8.7 No liability can be accepted by the consultant in respect of the trees unless the recommendations of this report are carried out under their supervision and within their timescale.
- 8.8 That the project engineer considers the possibility of heave.

Appendices

Tree Ref.	Age Common Name <i>Botanical Name</i>	Height (m)	Diameter (cm)	Spread (m)	Observations	Condition	Vigour	Distance to Property (m)	NHBC Water Demand	Life Expectancy (yrs)	Within Potential Influencing Distance	Root Identification Match	Contributing to Damage	Recommendations
H 1	Semi-Mature Cypress <i>Cupressus sp.</i>	2.5	10	2	3rd party hedge. Well maintained hedge. Has been previously topped. Circa 20-40 years old.	FAIR	MOD	1.5	HIGH	20+	Yes	Yes	Potentially	Maintain at current size and spread.
H 2	Semi-Mature Cypress <i>Cupressus sp.</i>	2.5	10	2	Well maintained hedge. Has been previously topped. Circa 20-40 years old.	FAIR	MOD	1	HIGH	20+	Yes	Yes	Potentially	Maintain at current size and spread.
T 3	Mature Oak <i>Quercus robur</i>	11	70	8	Single stemmed and vertical with a balanced crown. Pruning wounds noted on stem which are occluding well. Comes under Area TPO (1101) . Circa 50-100 years old.	FAIR	MOD	6	HIGH	10+	Yes	Yes	Yes	Fell to ground level and treat stump to prevent re-growth.
T 4	Early-Mature Oak <i>Quercus robur</i>	8	30	7	Single stemmed vertical with a balanced crown. Previously reduced. Comes under Area TPO (1101) Circa 50-100 years old.	FAIR	MOD	10	HIGH	10+	Yes	Yes	No	Maintain at current size and spread.
T 5	Early-Mature Oak <i>Quercus robur</i>	8	40#	8#	3rd party tree. Single stemmed vertical with a balanced crown. Pruning wounds noted within crown occluding well. Comes under Area TPO (1101) Circa 50-100 years old.	FAIR	MOD	15	HIGH	20+	No	Yes	No	Maintain at current size and spread.
G 6	Semi-Mature Dogwood, Ash, Portuguese Laurel.	6	15#	5	Mixed species group. Circa 10-20 years old.	FAIR	MOD	4	MOD	20+	No	No	No	No action required.

Appendix 2: Glossary of Terms & Abbreviations

Arboriculture	The cultivation of trees in order to produce individual specimens of the greatest ornament, for shelter or any primary purpose other than the production of timber.
Canker	Disease damaged area of a tree, usually caused by a fungus or bacteria.
Co-dominant Stem	A stem which has grown in direct competition to the main stem and which has formed a substantial size influencing the appearance of the tree.
Crown Lift	The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance underneath for vehicles etc.
Crown reduce	The reduction of a tree's height or spread while preserving its natural shape.
Crown thin	The removal of some of the density of a tree's crown, usually 5-25%, allowing more light through its canopy and reducing wind resistance.
Deadwood	Either dead branches, or a procedure involving the removal of dead, dying and diseased branches.
Dieback	Where branches are beginning to show signs of death usually at the tips in the crown.
Epicormic shoots	Small branches that grow in clusters around a tree's base or stem, often as a result of bad pruning or some other stress factor.
Formative pruning	The pruning of a tree to encourage a good growth habit. This will reduce the likelihood of future structural problems.
Included bark	Where the bark on two adjoining branches or stems is growing tight together, forming a joint with limited physical strength.
Pollarding	A method of tree management in which the main trunk of the tree is cut at about 4m, and the resulting re-growth is then removed every few years.
Remedial pruning	The removal of old stubs, deadwood, epicormic growth, rubbing or crossing branches and other unwanted items from the tree's crown. Sometimes referred to as crown cleaning.
Topping	Topping is a form of pruning that removes terminal growth leaving a 'stub' cut end. Topping can cause serious health and structural problems to a tree in the longer term.

Appendix 3: Replacement Planting

- A3.1 Where trees are to be removed because they are considered to be contributing to subsidence, it is often desirable (indeed, it may be mandatory) to plant replacements. Often, trees recommended for removal are unsuitable species for the location and replanting with more appropriate species presents fewer risks for the future.
- A3.2 Appropriately sited, trees will mature in a garden setting with minimal risk to property and can provide substantial benefits in terms of amenity, shelter and environmental health.
- A3.3 Consideration must be given to location and species choice in order to avoid future problems. The position of the tree will be dictated by the characteristics of the species. There is a wide range of species available.

Appendix 4: Author Qualifications

Principal Consultant and Managing Director

Jonathan Cocking *F.R.E.S., Tech. Cert. (Arbor.A), PDipArb (RFS) FArborA CBiol MSB. MICFor.* Jonathan is a Registered Consultant and Fellow of the Arboricultural Association and sits on its Professional Committee. He has 31 years' experience in the Arboricultural profession and served for eight years as Senior Arboriculturist with a large local authority before establishing JCA in 1997. Jonathan has since developed JCA's portfolio of services and its extensive client base. He is a Chartered Biologist, a Chartered Arboriculturalist and an Expert Witness with much experience of litigation work.

Technical Director

Toby Thwaites *BSc (Hons), HND (Arboriculture), MArborA.* Toby joined JCA in 1998 after graduating in Ecology at the University of Huddersfield and has since graduated in Arboriculture at the University of Central Lancashire. A former JCA team leader and Consulting Arboriculturist, Toby is now Technical Director and oversees all office and on-site activities at JCA and is on hand to offer technical support and advice.

Consulting Staff: Arboriculture

Andrew Bussey. Andrew started working in consultancy at JCA in 2006 having spent 12 years working as an arborist for various private companies before joining a Local Authority forestry team. He has various NPTC qualifications, is QTRA qualified and is a LANTRA Accredited Professional Tree Inspector.

Phil Humeniuk *FdSc (Arboriculture).* Phil joined JCA having spent 3 years working for various tree surgery companies and as a Tree Officer for a Local Authority. He also has several years' experience working as a consultant both for JCA and for another consultancy. Phil obtained his foundation degree in Arboriculture at the University of Central Lancashire and has various NPTC's and is LANTRA certified in Professional Tree Inspection.

Emily Wilde *FdSc (Arboriculture).* Emily joined JCA having previously worked for various private tree surgery and consultancy companies over the past 8 years. She initially obtained a ND in Forestry & Arboriculture, followed by a FdSc in Arboriculture at Askham Bryan College, York. Emily has various NPTC certificates and is QTRA qualified.

Mick Eltringham *ND (Forestry).* Mick joined JCA after spending 12 years working in the industry for various private companies in the north and south of England. He has also spent the last five years working as a consultant for two canopy research projects in the Amazon Rainforest, working with Oxford University and the University of Arizona. He has various NPTC Qualifications.

Charles Cocking *FdSc (Arboriculture), MArborA.* Charles joined JCA in January 2014 as an Apprentice having previously worked for the company on a part time basis during 2013. Charles obtained his Foundation Degree in Arboriculture at Askham Bryan College, York.

Dan Kemp *FdSc (Arboriculture).* Dan joined JCA with nearly 30 years' experience in arboriculture. He worked as a London Tree Officer for 12 years and in several arboricultural and horticultural management posts, specialising particularly in tree risk assessments and tree related subsidence.

Robert Hickey *FdSc (Arboriculture), TechArborA.* Robert joined JCA in January 2019 having obtained his foundation degree in Arboriculture at the University of Central Lancashire. He has various NPTC's qualifications and has previously worked for several Arboricultural contractors.

Ryan Bateman *BSc (Hons), FdSc (Arboriculture), TechArborA.* Ryan joined JCA in 2020 after working as a Lecturer on the Foundation Degree in Arboriculture at Askham Bryan College in York. Ryan has both practical skills, NPTC qualifications and theoretical knowledge and owned his own contracting business prior to, and whilst working as a lecturer.

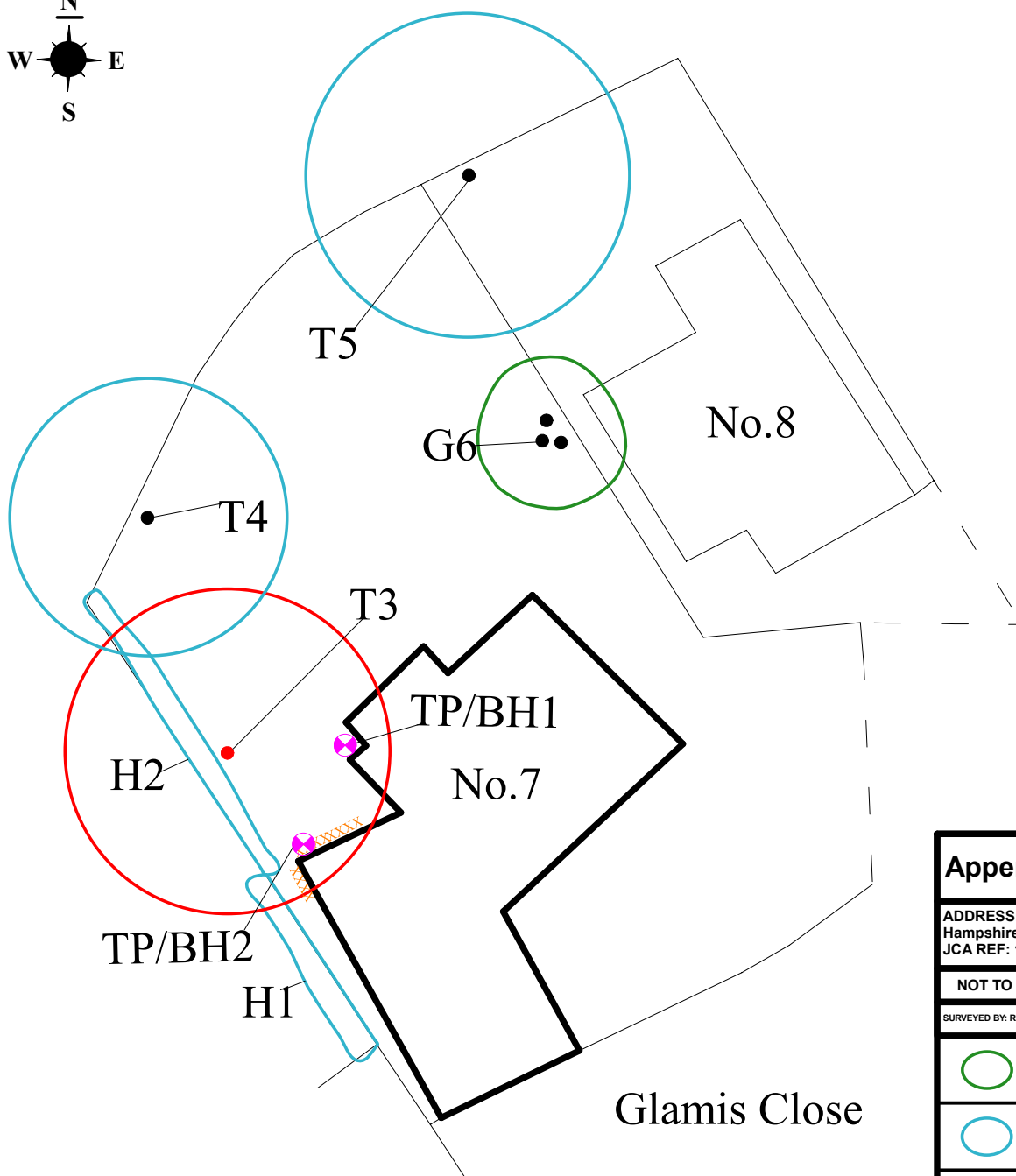
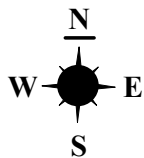
Matt Large *DipArb LA (ABC) TechArborA.* Matt is based in Northampton and assists JCA by undertaking surveys in the south of the country. He has been involved in the arboricultural sector since 1996 and obtained a Level 4 Diploma in Arboriculture in 2011. Matt is a LANTRA Accredited Professional Tree Inspector.

Jonnie Setterfield *BSc (Hons) MArborA. / Richard Daubeney* *Level 3 Arboriculture.* Jonnie and Richard are based in the south-east of the UK and assists JCA by undertaking surveys in the south of the country.

Administrative Staff

Sue Guest Administrative Team Leader.
Catherine Cocking Accounts Manager.
Kelly Saunders Accounts Assistant.

Simeon Haigh *BSc (Hons).* IT Director.
Lorraine Spink Administrative Assistant.
Lisa Hampson Marketing Manager.



Appendix 5: Site Plan

ADDRESS: 7 Glamis Close, Waterlooville,
Hampshire, PO7 8JN.
JCA REF: 16315/RH

NOT TO SCALE

PAPER SIZE: A4

SURVEYED BY: RH

DRAWN BY: RH

APPROVED BY: AJB



CANOPY OF TREE/SHRUB/GROUP
REQUIRING NO ACTION



CANOPY OF TREE/SHRUB/GROUP
TO BE MANAGED



CANOPY OF TREE/SHRUB/GROUP
TO BE REMOVED



STEM OF TREE/SHRUB



STEM OF TREE/SHRUB
TO BE REMOVED



OUTLINE OF SUBJECT PROPERTY



APPROXIMATE LOCATION
OF THE DAMAGE



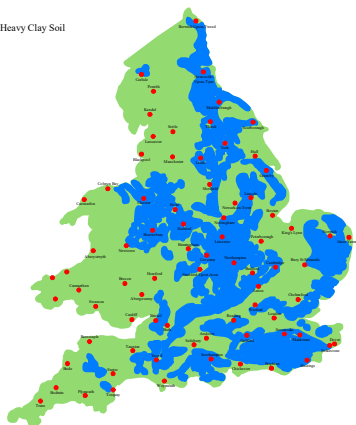
BOREHOLE/TRIAL PIT LOCATION



Arboricultural & Forestry Consultants

Inset 1: Distribution of Heavy Clay Soil

Heavy Clay Soil



The distribution of clay soils in England and Wales is shown on the map. Considerable local variation of soil type and texture will of course occur within these areas. Precision technology may permit such localised variation to be identified.

Appendix 6: Photos



Photo above shows T3

I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact the author.

The contents of this report are true to the best of my knowledge and belief.

Signed



.....

11th November 2020

Robert Hickey *FdSc (Arboriculture), TechArborA.*

For and on behalf of **JCA Ltd**

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- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)

HEAD QUARTERS:

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