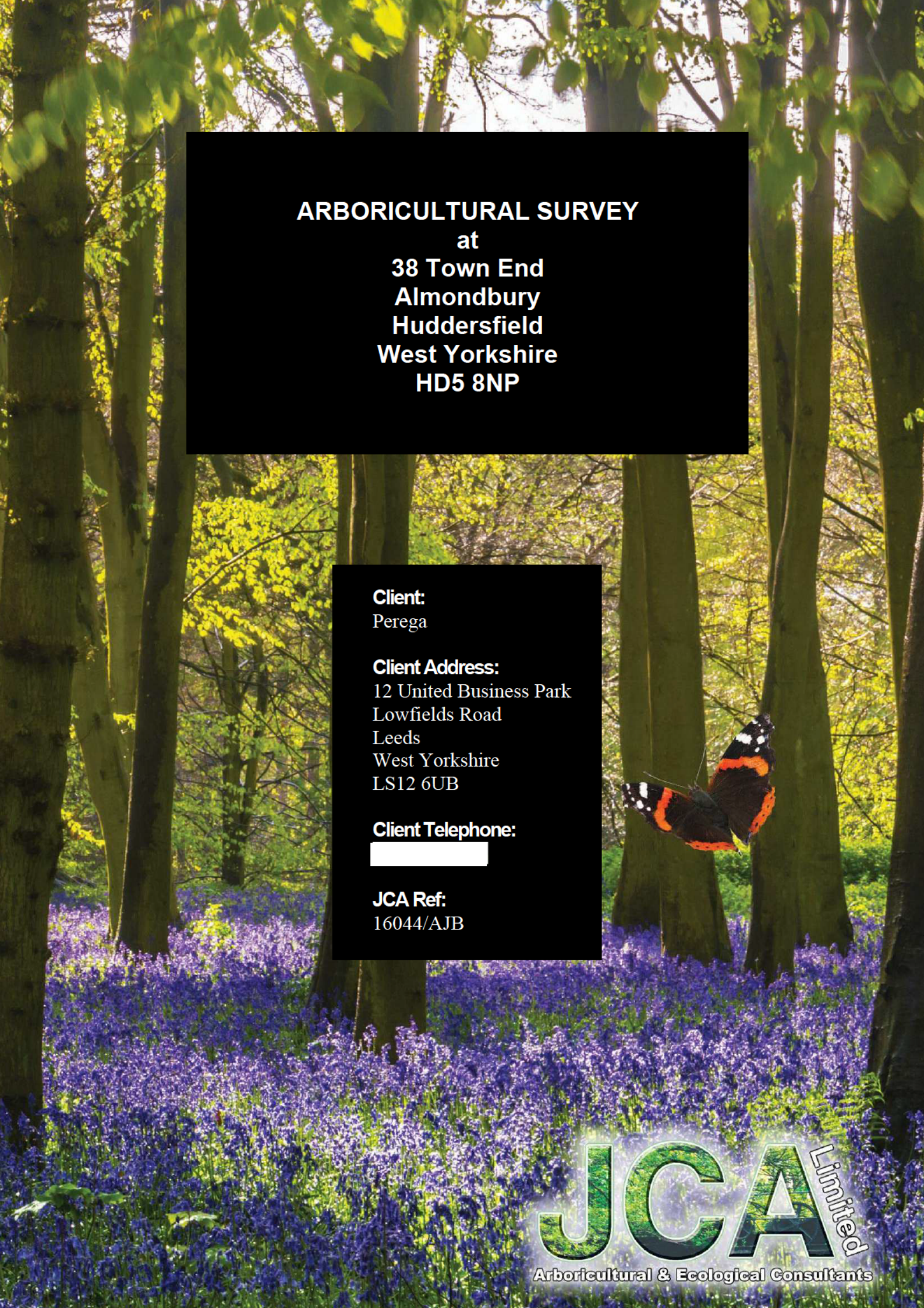


ARBORICULTURAL SURVEY
at
38 Town End
Almondbury
Huddersfield
West Yorkshire
HD5 8NP

Client:
Perega

Client Address:
12 United Business Park
Lowfields Road
Leeds
West Yorkshire
LS12 6UB

Client Telephone:
[redacted]

JCA Ref:
16044/AJB

JCA Limited
Arboricultural & Ecological Consultants

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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:

38 Town End, Almondbury, Huddersfield, West Yorkshire, HD5 8NP.

1.2 Terms of Reference

1.2.1 We are instructed by **Perega** 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 In this case the subject property is a detached, two-storey house with extensions to the front and rear.

1.3.2 Damage in the form of cracking has occurred to the external and internal structure of the building. Please see the Perega Engineers Report for full details of the 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.

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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 June 2020 by Andrew Bussey *LANTRA Accredited PTI*.

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 to determining the correct foundation depths for new build situations where there are existing trees present.

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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 see the attached site plan for an indication of trial pit/borehole locations.

3.2.2 **Trial pit/borehole 1** revealed a foundation at a maximum depth of 760mm.

3.2.3 **Trial pit/borehole 2** revealed a foundation at a maximum depth of 1200mm.

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3.3 Soil Types

3.3.1 **Trial Pit/Borehole 1:**

- The soils *plasticity index* was 36%.
- The *moisture contents* within the soil sample was 22%.
- The *plastic limit* of the soil was 26%.
- The *liquid limit* of the soil was 62%.

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

3.3.2 **Trial Pit/Borehole 2:**

- The soils *plasticity index* was 38%.
- *The moisture contents* within the soil sample was 33%.
- The *plastic limit* of the soil was 28%.
- The *liquid limit* of the soil was 66%.

These results indicate that the soil found within **Trial Pit/Borehole 2** is of a moderate shrinkability and that there is an onset of desiccation.

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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	Diam. (mm)	Starch Test
1	0.76-1.5	*Oleaceae*	*Fraxinus* (Ash)	Not specified	Negative
2	1-1.4	*Ulmaceae*	*Ulmus* (Elm)	Not specified	Positive
2	1-1.4	*Fagaceae*	*Fagus* (Beech)	Not specified	Positive

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4. Status of the Trees

4.1 A check was made on 19th June 2020 with **Kirklees Metropolitan Council**.

4.2 We are informed that the site is within Almondbury Conservation Area.

4.3 Before any work is organised, a 'notice of intent' must be submitted to the Local Authority, outlining all the proposed works along with a suitable justification. A waiting period of six weeks is then required, during which time the Local Authority may or may not decide to afford the trees with further protective status. If, after the required timescale has lapsed and/or the authority does not wish to allocate a Tree Preservation Order (TPO), the works may commence as planned.

4.4 ***No work must be done to any trees until the above process has been completed and the trees have not been allocated with a TPO.***

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.

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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 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.

6.2 We consider the recently removed tree identified as **Stump 1** to be the primary cause of the damage observed at the subject property.

6.3 We consider the vegetation identified as **T2** and **G3** to be contributing to the damage observed at the subject property. We have therefore recommended that **T2** and **G3** be removed to ground level and their stumps treated in order to prevent regrowth.

6.4 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.

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7. Summary of Tree Specific Recommendations

Item	Species	Recommended Action	Location	Planning Restriction
T1	Beech	No action required.	Third party land	Yes
T2	Elm	Remove to ground level and treat the stump to prevent regrowth.	Third party land	Yes
G3	Hawthorn, Elder, Elm, Goat Willow and Common Ash	Remove to ground level and treat the stumps to prevent regrowth.	Third party land	Yes
S4	Buddleja	No action required.	Subject Property	Unknown

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.

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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.

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Appendices

Tree Ref	Age Common Name *Botanical Name*	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
St 1	Mature Beech *Fagus sylvatica*	/	70#	/	Situated on adjacent land A stump remaining from a recently felled tree	DEAD	N/A	8#	MOD	Dead	Yes	Yes	Yes	No action required
T 2	Early-mature Elm *Ulmus sp.*	13	35#	7	Situated on adjacent land Single-stemmed and vertical with a balanced crown	GOOD	MOD	7 5	HIGH	20+	Yes	Yes	Yes	Remove to ground level and treat the stump to prevent regrowth
G 3	Semi to early-mature Mixed species *Details in observations*	To 9	To 20	See plan	Situated on adjacent land An unmaintained Hawthorn and Elder hedge with self-seeded Elm, Goat Willow and Common Ash within The Elm and the Common Ash within this group are linked to the root identification provided The Elm, Goat Willow and the Hawthorn within this group are of a high water demand The removal of the low water demand species (Elder) and the moderate water demand species (Common Ash) is recommended as a precautionary measure	GOOD	MOD	3+	LOW TO HIGH	20+	Yes	Yes	Yes	Remove to ground level and treat the stumps to prevent regrowth
S 4	Semi-mature Buddleja *Buddleja sp.*	2	3 x 4	3	Multi-stemmed at ground level with a balanced crown A unmaintained shrub	GOOD	MOD	3	NO DATA	10+	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 trees 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.

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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.

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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

Toby Parsons *Cert. Arb. (RFS), Tech. Cert. (Arbor.A).* Toby joined JCA after spending 6 years working as a senior climber for various Arboricultural contractors in the East Midlands and the South-West. He has gained the Level 2 Certificate in Arboriculture (RFS) and an Arboricultural Technicians Certificate. Toby is LANTRA certified in Professional Tree Inspection.

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.

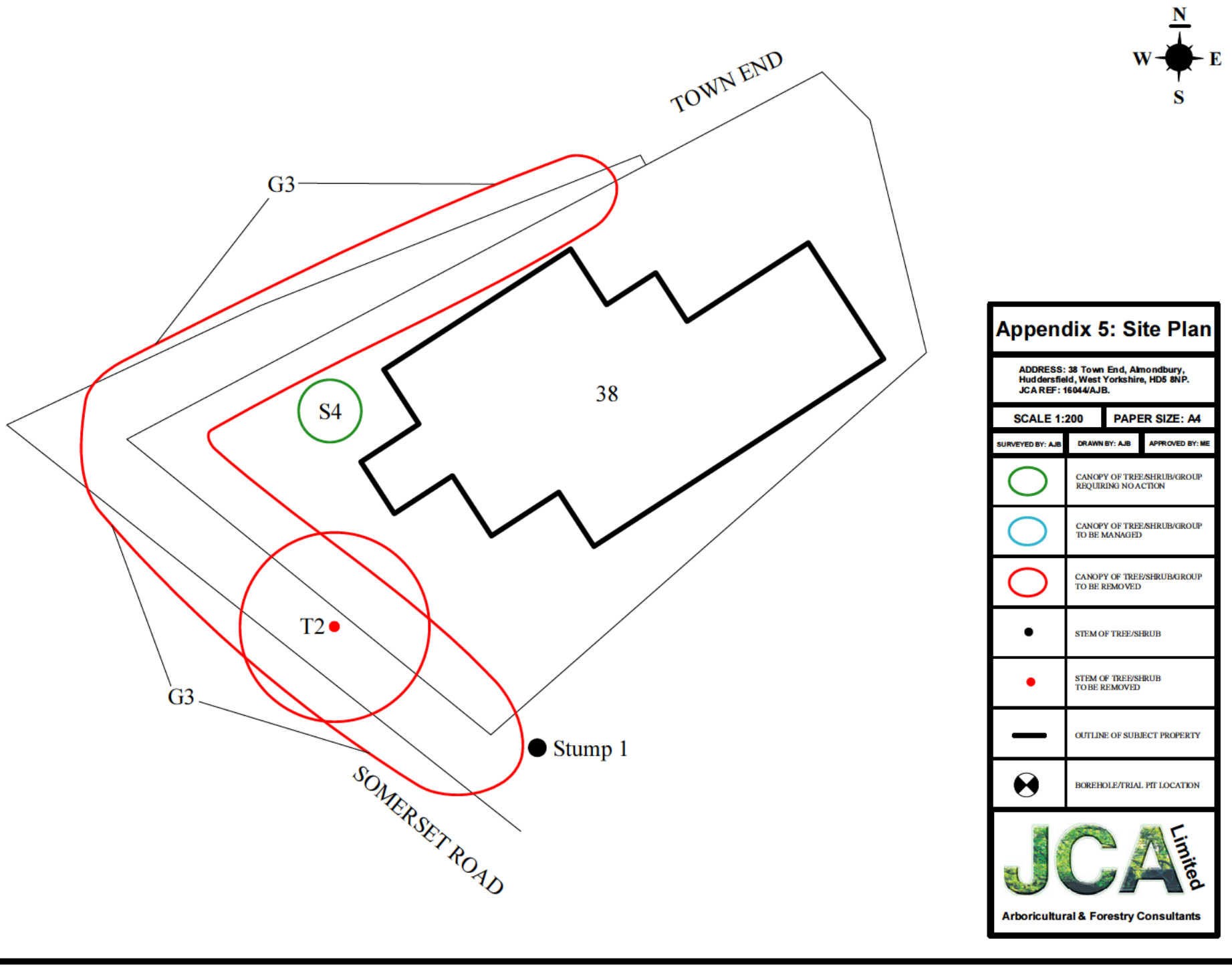
Matt Large *DipArb L4 (ABC) TechArborA.* Matt is based in Northampton and assists JCA by undertaking surveys in the south of the country. He has been involved in the arboricultural sector since 1996 and obtained a Level 4 Diploma in Arboriculture in 2011. Matt is a LANTRA Accredited Professional Tree Inspector.

Oliver Tong *ND Arb TechArborA.* Oliver is based in Essex and assists JCA by undertaking surveys in the south of the country. He has been involved in the arboricultural sector since 2005 and obtained a National Diploma in Arboriculture in 2006. Oliver is a LANTRA Accredited Professional Tree Inspector.

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.

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Appendix 5: Site Plan

ADDRESS: 38 Town End, Almondbury, Huddersfield, West Yorkshire, HD5 8NP.
JCA REF: 16044/AJB.

SCALE 1:200	PAPER SIZE: A4

SURVEYED BY: AJB	DRAWN BY: AJB	APPROVED BY: ME

	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
	BOREHOLE/TRIAL PIT LOCATION

JCA Limited
Arboricultural & Forestry Consultants

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

19th June2020

Andrew Bussey *LANTRA Accredited PTI.*

For and on behalf of ***JCA Ltd***

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- Protected Species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- 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)



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