

ARBORICULTURAL REPORT
at
Russell Cottage
Bridgnorth Road
Bridgnorth
Shropshire
WV16 6JG

Client:
360Globalnet
on behalf of LV=Insurance

Client Address:
Regus House
Herald Way
Pegasus Business Park
Castle Donington
DErbyshire
DE74 2TZ

Client Telephone:
0116 4781258

Insured:
Mr Alan Matthews

Claim Number:
100-50-194734

JCA Ref:
19927-A/AJB

Client Ref:
LIV-SN-22-005195

Contents

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 Foundation 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. Discussion	9
7. Summary of Tree Specific Recommendations	9
8. General Recommendations and Observations	10
Appendix 1: Tree Descriptions and Recommendations	12
Appendix 2: Site Plan	13
Appendix 3: Author Qualifications	14
Appendix 4: Photo	16

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 suspected soil shrinkage subsidence damage at **Russell Cottage, Bridgnorth Road, Bridgnorth, Shropshire, WV16 6JG.**

1.2 Terms of Reference

- 1.2.1 We are instructed by **360Globalnet** to visit the site and carry out an arboricultural survey covering all vegetation within likely influencing distance of the subject property. It has been requested that we only consider vegetation management options for the purpose of this report. However, vegetation management work should only be carried out once all other possible causal factors have first been discounted.
- 1.2.2 We have been supplied with details of the site investigation, which was carried out by **Drainage Repair Company**, 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 and prescribed recommendations for current, or future action, where required.
- 1.2.3 We have also been provided with the **Geo-serv Limited Level Monitoring Report** which should be read in conjunction with this report.
- 1.2.4 We are to prepare our findings in a detailed report, making specific recommendations as to any arboricultural management which may be required.

1.3 Scope of the Report

- 1.3.1 The subject property is a two-storey, mid-terraced house with an extension to the rear.
- 1.3.2 Damage in the form of cracking has occurred to the house in the locations indicated on the attached plan at **Appendix 2**. Please see the **360 Globalnet Engineer's 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 January 2023 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 by JCA Ltd.

2.2.2 The measurements were made using instruments including clinometers for tree *HEIGHT*, diameter tapes for *STEM 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 entering the ground through precipitation or other means. 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 beyond that which would ordinarily occur prior to the removal of vegetation can cause 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 Foundation Types and Depths

- 3.2.1 Please refer to the site plan at **Appendix 2** for an indication of the trial pit/borehole locations.
- 3.2.2 **Trial pit/borehole 1** revealed a 450mm concrete foundation at a maximum depth of 650mm below ground level.

3.3 Soil Types

3.3.1 Trial Pit/Borehole 1:

- The soils *plasticity index* ranged from 18% to 41%.
- *Moisture contents* within the soil samples ranged from 25% to 42%.
- The *plastic limit* of the soils ranged from 17% to 24%.
- The *liquid limit* of the soils ranged from 35% to 65%.

The results indicate that the clay soil found within **Trial Pit/Borehole 1** is of low to high shrinkability and that the soil is not desiccated.

3.3.2 Borehole 2:

- The soils *plasticity index* ranged from 29% to 33%.
- *Moisture contents* within the soil samples ranged from 18% to 28%.
- The *plastic limit* of the soils ranged from 20% to 21%.
- The *liquid limit* of the soils ranged from 49% to 54%.

The results indicate that the clay soil found within **Trial Pit/Borehole 2** is of medium shrinkability and that the soil is desiccated between 4.1m and 4.8m.

3.3.3 Borehole 3:

- The soils *plasticity index* ranged from 28% to 36%.
- *Moisture contents* within the soil samples ranged from 16% to 26%.
- The *plastic limit* of the soils ranged from 20% to 22%.
- The *liquid limit* of the soils ranged from 48% to 58%.

The results indicate that the clay soil found within **Trial Pit/Borehole 3** is of medium shrinkability and that the soil is desiccated between 3.1m and 4.6m.

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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
2	0.6-2.6	<i>Fagaceae</i>	<i>Quercus</i>	Not specified	Positive
3	0.6-2.6	<i>Fagaceae</i>	<i>Quercus</i>		Positive

- 3.4.7 The root identification is a match to the vegetation identified as **T1** and **T2** in this report.

4. Status of the Trees

- 4.1 A Tree Preservation Order (TPO) and Conservation Area check was made in January 2023 with **Shropshire Council**.
- 4.2 We are informed that there is a Tree Preservation Order (TPO Ref: **SC/00270/16**) in force which affords protective status to the two trees which are the subject of this report.
- 4.3 Before any tree works are undertaken to protected trees, 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.
- 4.4 *No work must be done to protected 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 Please refer to the site plan at **Appendix 2** for the locations of the vegetation surveyed and all the relevant site features.

6. Discussion

- 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 Following our survey and study of the available facts, we are of the opinion that **T1** and **T2** are contributing to the subsidence damage at the subject property, and as such, it is recommended that both trees are removed, and their stumps treated to prevent regrowth. As third party, protected trees, their owner and the Local Authority will require sufficient proof that the trees are contributing to the damage. In this case we have evidence of:
- The trees being within influencing distance of the damaged property.
 - The soils being confirmed as being shrinkable.
 - Roots matching this species found in the Trial Pits at/below foundation level.
 - Cracking damage to the subject property.
 - Level monitoring indicating cyclical movement.
- 6.3 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

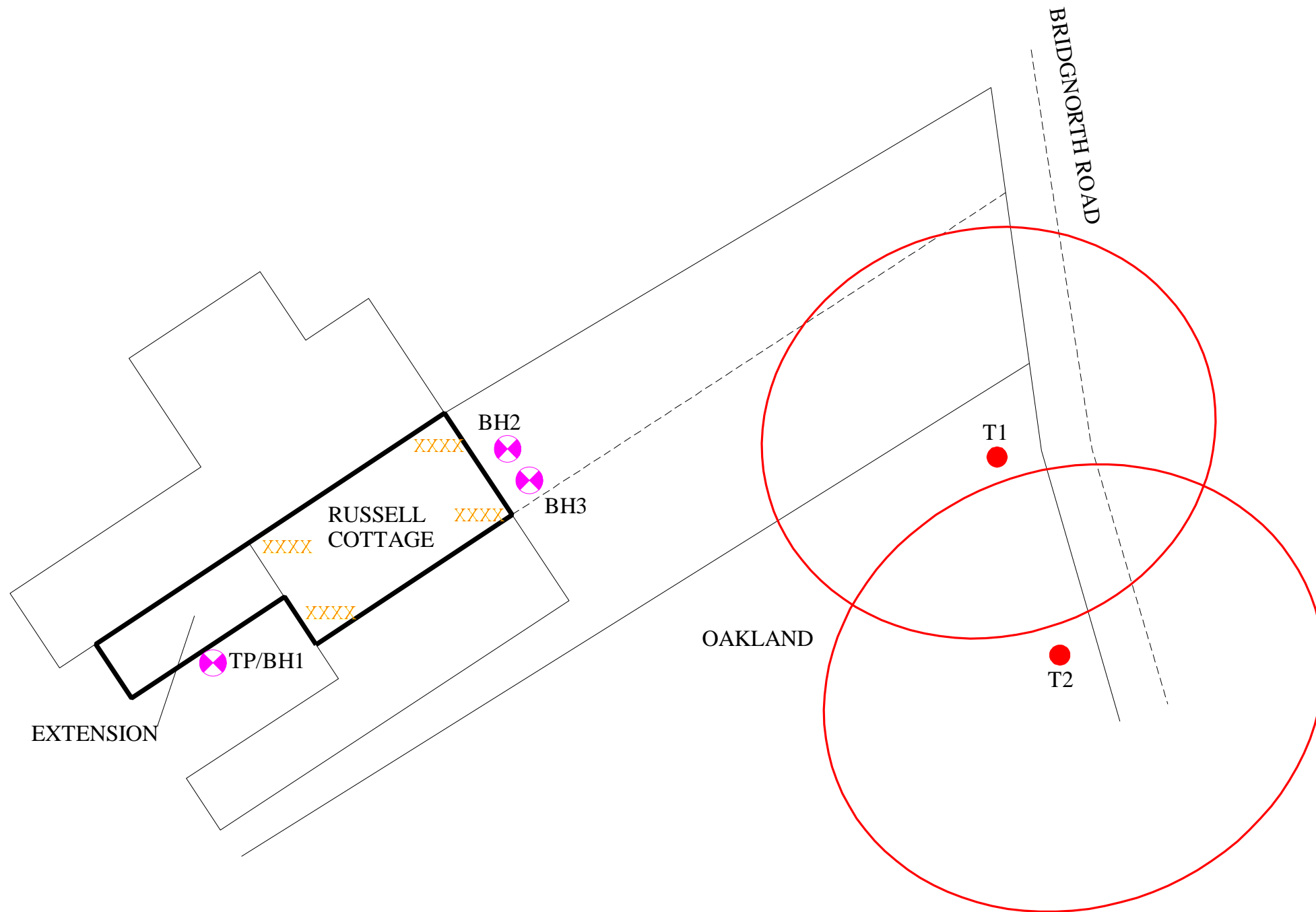
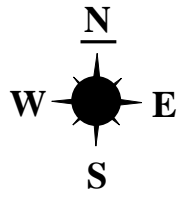
Item	Species	Recommended Action	Location/ Ownership	Planning Restriction
T1	English Oak	Remove to ground level and treat the stump to prevent regrowth.	Oakland	Tree Preservation Order
T2	English Oak	Remove to ground level and treat the stump to prevent regrowth.	Oakland	Tree Preservation Order

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 tree work must be carried out to BS 3998: 2010 - '*Recommendations for Tree Work*'.
- 8.3 Any tree work 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 That the project engineer considers all possible solutions which may not involve vegetation works, if there is a wider public interest in retaining the trees influencing the property.
- 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 That the project engineer considers the possibility of heave.

Appendices

Tree Ref.	Age Common Name <i>Botanical Name</i>	Height (m)	Stem Diameter (cm)	Canopy Spread (m)	Owner / Occupier Observations	Condition	Distance to Property (m)	NHBC Water Demand	Life Expectancy (yrs)	Within Potential Influencing Distance	Root Identification Match	Contributing to Damage	Vegetation Management Option
T 1	Mature English Oak <i>Quercus robur</i>	16	75#	18	Oakland Multi-stemmed at 5m with a balanced crown. Estimated to be 80-100 years old.	GOOD	21#	HIGH	40+	Yes	Yes	Yes	Remove to ground level and treat the stump to prevent regrowth.
T 2	Mature English Oak <i>Quercus robur</i>	16	110#	20	Oakland Twin-stemmed at 6m with a balanced crown. Estimated to be 120-140 years old.	GOOD	22#	HIGH	40+	Yes	Yes	Yes	Remove to ground level and treat the stump to prevent regrowth.



Appendix 2: Site Plan

ADDRESS: Russell Cottage, Bridgnorth Road,
Bridgnorth, Shropshire, WV16 6JG.
JCA REF: 19927-A/AJB.

SCALE 1:200 PAPER SIZE: A3

SURVEYED BY: AJB DRAWN BY: AJB APPROVED BY: EW

	CANOPY OF TREE/SHRUB/GROUP TO BE RETAINED; NO ACTION REQUIRED
	CANOPY OF TREE/SHRUB/GROUP TO BE RETAINED; CURRENT OR FUTURE MANAGEMENT REQUIRED
	CANOPY OF TREE/SHRUB/GROUP TO BE REMOVED
	STEM OF TREE/SHRUB TO BE RETAINED
	STEM OF TREE/SHRUB TO BE REMOVED
	OUTLINE OF SUBJECT PROPERTY
	APPROXIMATE LOCATION OF THE DAMAGE
	BOREHOLE/TRIAL PIT LOCATION



Appendix 3: 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.

Operations Director

Charles Cocking *FdSc (Arboriculture), MArborA.* Charles joined JCA in January 2014 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, and is a Professional Member of the Arboricultural Association. Charles now oversees all internal operations for the company.

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.

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.

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.

Luke Wickham *FdSc (Arboriculture and Urban Forestry).* Luke joined JCA in 2021 after obtaining his Foundation Degree in Arboriculture and Urban Forestry at Askham Bryan College. Having previously worked within the industry for the past 4 years, running his own small business and sub-contracting for local firms, Luke brings a sound knowledge and understanding of the practical and academic sides of the industry.

Andrew McPhaden *BSc (Hons).* Andrew joined JCA in 2022 having spent 5 years working as an Arborist for various private companies in both the UK and Germany. During his time abroad he obtained the European Tree Worker Certification along with a tree inspector certification from the Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau. He brings a strong understanding of the practical sides of the industry and holds various NPTC qualifications.

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.

Jonnie Setterfield *BSc (Hons) MArborA. / Richard Daubeny* *Level 3 Arboriculture / Peter Wilkins* *BA (Hons) MArborA MIEnvSc.* Jonnie, Richard and Peter are based in the south-east of the UK and assist JCA by undertaking surveys in the south of the country.

Administrative Staff

Catherine Cocking Accounts Manager.
Kelly Saunders Accounts Assistant.

Lorraine Spink Administrative Assistant.
Lisa Beedham Marketing Manager.

Appendix 4: Photo

A photograph showing T1 and T2.



We 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 our knowledge and belief.

Signed



Andrew Bussey *LANTRA Accredited PTI.*

20th July 2023

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)

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