

**ARBORICULTURAL SURVEY**  
**at**  
**93 Main Street**  
**Little Downham**  
**Ely**  
**Cambridgeshire**  
**CB6 2SX**

**Client:**

Building Validation Solutions  
on behalf of Covea

**Client Address:**

Waters Meeting House  
1 Waters Meeting Road  
Bolton  
Lancashire  
BL1 8HQ

**Client Telephone:**

**Insured:**

Mr and Mrs Horner

**Claim Number:**

H021132576

**JCA Ref:**

18335c/TT – Rev 1

**Client Ref:**

0595635

**JCA** Limited

Arboricultural & Ecological Consultants



## Contents

<b>1. Introduction</b>	<b>3</b>
<b>1.1 Purpose of the Report</b>	<b>3</b>
<b>1.2 Terms of Reference</b>	<b>3</b>
<b>1.3 Scope of the Report</b>	<b>3</b>
<b>2. Survey Conditions and Methods</b>	<b>4</b>
<b>2.1 Date of Inspection and name of Inspector</b>	<b>4</b>
<b>2.2 Data Collection Methods</b>	<b>4</b>
<b>3. Ground Investigation, Soil &amp; Root Analysis</b>	<b>5</b>
<b>3.1 Introduction</b>	<b>5</b>
<b>3.2 Foundation Types and Depths</b>	<b>5</b>
<b>3.3 Soil Types</b>	<b>5</b>
<b>3.4 Root Analysis</b>	<b>6</b>
<b>4. Status of the Trees</b>	<b>10</b>
<b>5. Tree Descriptions &amp; Recommendations</b>	<b>10</b>
<b>6. Discussion</b>	<b>11</b>
<b>7. Summary of Tree Specific Recommendations</b>	<b>12</b>
<b>8. General Recommendations and Observations</b>	<b>13</b>
 <b>Appendix 1: Tree Descriptions and Recommendations</b>	 <b>15</b>
<b>Appendix 2: Site Plan</b>	<b>16</b>
<b>Appendix 3: Author Qualifications</b>	<b>17</b>

## 1. Introduction

### 1.1 Purpose of the Report

- 1.1.1 An Arboricultural review has been requested by our client (**Building Validation Solutions**) in relation to ongoing subsidence damage at **93 Main Street, Little Downham, Ely, Cambridgeshire, CB6 2SX**.

### 1.2 Terms of Reference

- 1.2.1 JCA visited the property in May 2022 as subsidence damage had occurred to the main dwelling. An arboricultural report was prepared (JCA Ref: **18335/AJB**, dated 20<sup>th</sup> May 2022), which recommended the removal of a large Poplar tree (**T2**) located in the neighbouring garden (No.97 Main Street).
- 1.2.2 We have been informed by **Building Validation Solutions** that the Poplar tree (**T2**) has not been removed and that damage is still occurring at the property. In addition, damage has now been observed to the subject property garage and to the boundary wall between No.93 and No.97 Main Street.
- 1.2.3 We have therefore been instructed to review our report findings based on the information provided and consider vegetation management options. We have not revisited the property on this occasion.
- 1.2.4 We have been supplied with details of the site investigation, which was carried out by **Geocore Site Investigations Ltd**, 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, if required.
- 1.2.5 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, detached house with a detached garage.
- 1.3.2 Damage has occurred to the rear right-hand corner of the building when viewed from the front (as indicated on the Site Plan at **Appendix 2**).
- 1.3.3 Damage has now also been reported to the garage and the boundary wall between No.93 and No.97 Main Street.
- 1.3.4 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 May 2022 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*, 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 Information regarding the foundation depth has not been included within the site investigation factual report.

#### 3.3 Soil Types

##### 3.3.1 Borehole 1A:

- The soils *plasticity index* ranged from 19% to 29%.
- *Moisture contents* within the soil samples ranged from 13% to 27%.
- The *plastic limit* of the soils ranged from 18% to 24%.
- The *liquid limit* of the soils ranged from 37% to 53%.

These results indicate that the clay soil found within **Trial Pit/Borehole 1** is of low to medium shrinkability and that the soil is desiccated at a depth of 4 metres.

### 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.

<b>Trial Pit/ B/hole</b>	<b>Sample Depth (m)</b>	<b>Family</b>	<b>Genus</b>	<b>Diam. (mm)</b>	<b>Starch Test</b>
1	2.5-2.75	Salicaceae	Salix (Willows) or Populus (Poplars)	Not specified	Negative

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

### **3.5 Monitoring Results (Level Readings)**

- 3.5.1 Level readings at the subject property are being monitored in twelve separate locations. The first level readings were measured in June 2022, with further readings taken in August, October and December 2022 and in February 2023.
- 3.5.2 The results indicate seasonal movement, with subsidence in August 2022 when the weather was warmer/drier then showing signs of recovery from October 2022 through to February 2023, when the weather was wetter.
- 3.5.3 All the monitoring results can be viewed in the following tables.

## Level Readings (Displayed in metres)

Visits	2	3	4	5	6	7	8	9
07/06/2022	10.0009	10.0033	9.9898	9.9904	10.0002	10.0021	10.0015	10.0000
17/08/2022	10.0005	10.0026	9.9832	9.9763	9.9977	10.0014	10.0008	10.0000
14/10/2022	9.9999	10.0015	9.9808	9.9730	9.9973	10.0016	10.0010	10.0000
23/12/2022	9.9997	10.0016	9.9828	9.9758	9.9977	10.0013	10.0003	10.0000
23/02/2023	9.9995	10.0017	9.9846	9.9808	9.9984	10.0014	10.0007	10.0000

Visits	10	11	12	DATUM
07/06/2022				10.0239
17/08/2022				10.0230
14/10/2022				10.0229
23/12/2022	9.9434	9.9009	9.9108	10.0229
23/02/2023	9.9545	9.9058	9.9114	10.0229

**DATUM:** Datum is level station 1, it has an assumed value of 10,0000m. No suitable remote datum available. If this is not suitable please advise if a deep datum is required.

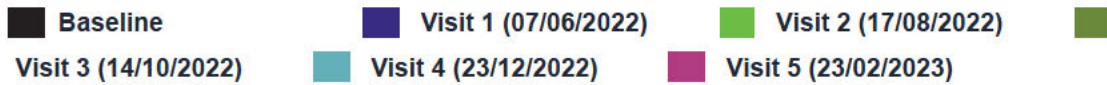
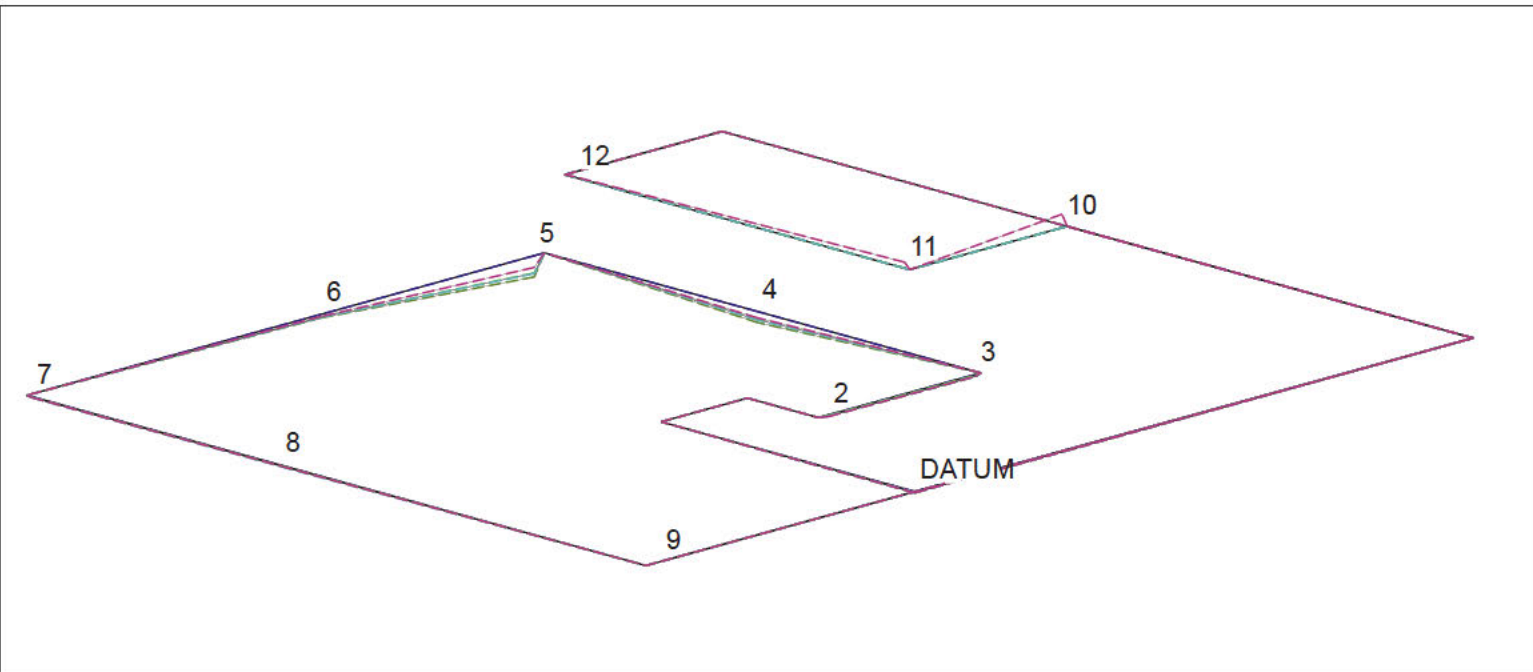
## Level Readings Difference (Displayed in millimetres)

Visits	2	3	4	5	6	7	8	9
07/06/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17/08/2022	-0.40 ↓	-0.70 ↓	-6.60 ↓	-14.10 ↓	-2.50 ↓	-0.70 ↓	-0.70 ↓	0.00 =
14/10/2022	-0.60 ↓	-1.10 ↓	-2.40 ↓	-3.30 ↓	-0.40 ↓	0.20 ↑	0.20 ↑	0.00 =
23/12/2022	-0.20 ↓	0.10 ↑	2.00 ↑	2.80 ↑	0.40 ↑	-0.30 ↓	-0.70 ↓	0.00 =
23/02/2023	-0.20 ↓	0.10 ↑	1.80 ↑	5.00 ↑	0.70 ↑	0.10 ↑	0.40 ↑	0.00 =

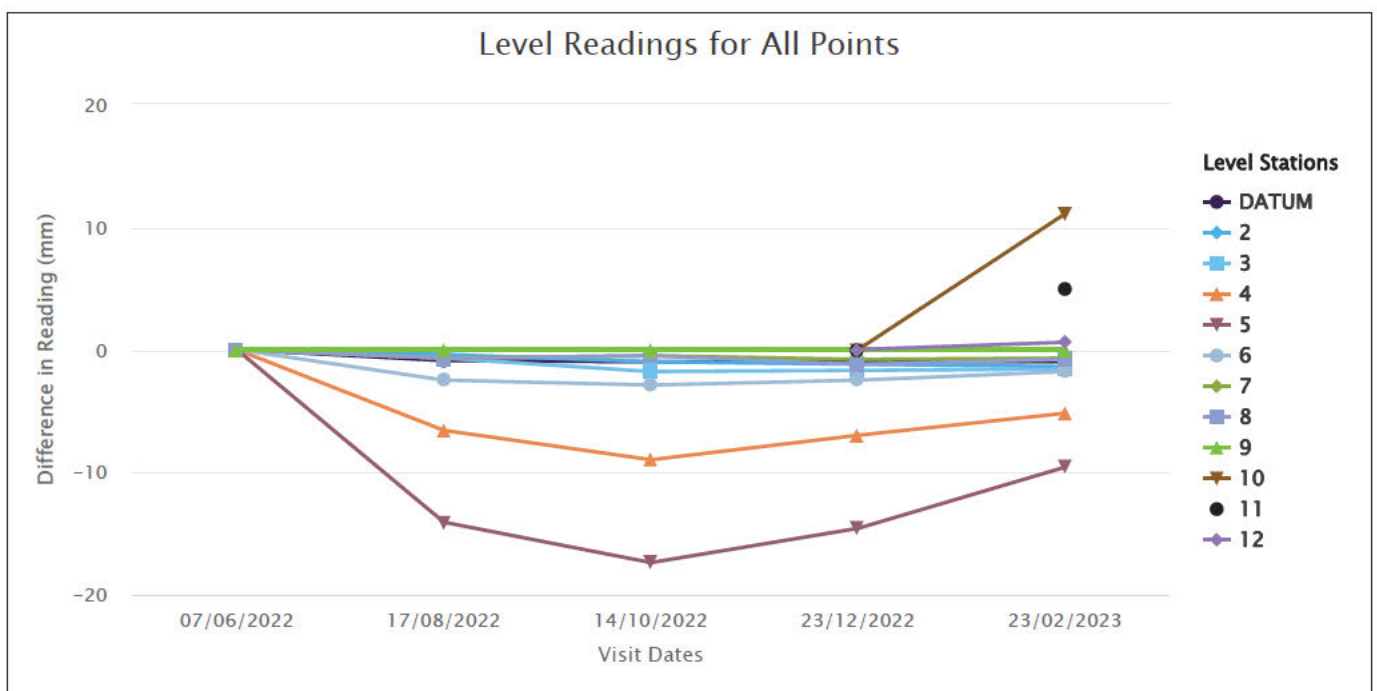
Visits	10	11	12	DATUM
07/06/2022				N/A
17/08/2022				-0.90 ↓
14/10/2022				-0.10 ↓
23/12/2022	0.00 =	0.00 =	0.00 =	0.00 =
23/02/2023	11.10 ↑	4.90 ↑	0.60 ↑	0.00 =



# Relative Movement (Relative Survey, for illustration purposes only)



## Level Readings Chart



## 4. Status of the Trees

- 4.1 A Tree Preservation Order (TPO) and Conservation Area check was made in March 2022 with ***East Cambridgeshire District Council***.
- 4.2 We are informed that the site is within the **Little Downham Conservation Area**.
- 4.3 Before any work is organised for trees with a stem diameter of above 75mm, 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 trees with a stem diameter of above 75mm 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 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 house is due to clay shrinkage caused by vegetation, with the damage to the garage being due to a combination of subsidence damage and mechanical damage.
- 6.2 Based on this information, having previously made a detailed survey of the site and having given due consideration to the information supplied, we remain satisfied that subsidence damage has occurred as a result of drying shrinkage caused by vegetation within influencing distance of the property.
- 6.3 We remain satisfied that the Poplar tree (identified as **T2**) remains the principal cause of the damage to the house, especially considering its size and the roots identified. In addition, **T2** is also potentially contributing to the subsidence damage reported to the garage. To negate its influence on the house and garage, the only vegetation management option available is to remove **T2** and treat its stump to prevent regrowth, as previously advised.
- 6.4 With regards to the damaged boundary wall, based on the species, the location, and the size of the adjacent hedge (**H1**), based on probability, these specimens are the most likely cause of the damage reported. It should also be noted that **H1** could also be potentially contributing to the damage observed to the house and garage.
- 6.5 With regards to the damaged garage, as mentioned above, **T2** is likely to be contributing to this. However, considering the species, the size, and the location of **H1**, **T3** and **T4**, these trees are also likely to be contributing to the damage.
- 6.6 To negate their influence on the boundary wall, the garage and the house, we have recommended the removal of **H1**, **T3** and **T4** (with the stumps of **T3** and **T4** being treated to prevent regrowth).
- 6.7 We consider the vegetation identified as **T5**, **T6** and **T7** to be of possible future concern to the subject property, if left unmanaged. We have therefore recommended that **T5**, **T6** and **T7** be maintained at their current height and spread over the forthcoming years. These works are only recommended as a precaution and are not considered a priority to resolve the damage observed at the subject property.
- 6.8 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 area.

## 7. Summary of Tree Specific Recommendations

Item	Species	Recommended Action	Location	Planning Restriction
H1	Leyland Cypress	Remove to ground level.	95 and 97 Main Street	Conservation Area
T2	Poplar	Remove to ground level and treat the stump to prevent regrowth.	97 Main Street	Conservation Area
T3	Lime	Remove to ground level and treat the stump to prevent regrowth.	97 Main Street	Conservation Area
T4	Cherry	Remove to ground level and treat the stump to prevent regrowth.	Subject Property	Conservation Area
T5	Copper Beech	Maintain at current height and spread over the forthcoming years.	Subject Property	Conservation Area
T6	Camperdown Elm	Maintain at current height and spread over the forthcoming years.	Subject Property	Conservation Area
T7	Walnut	Maintain at current height and spread over the forthcoming years.	Subject Property	Conservation Area

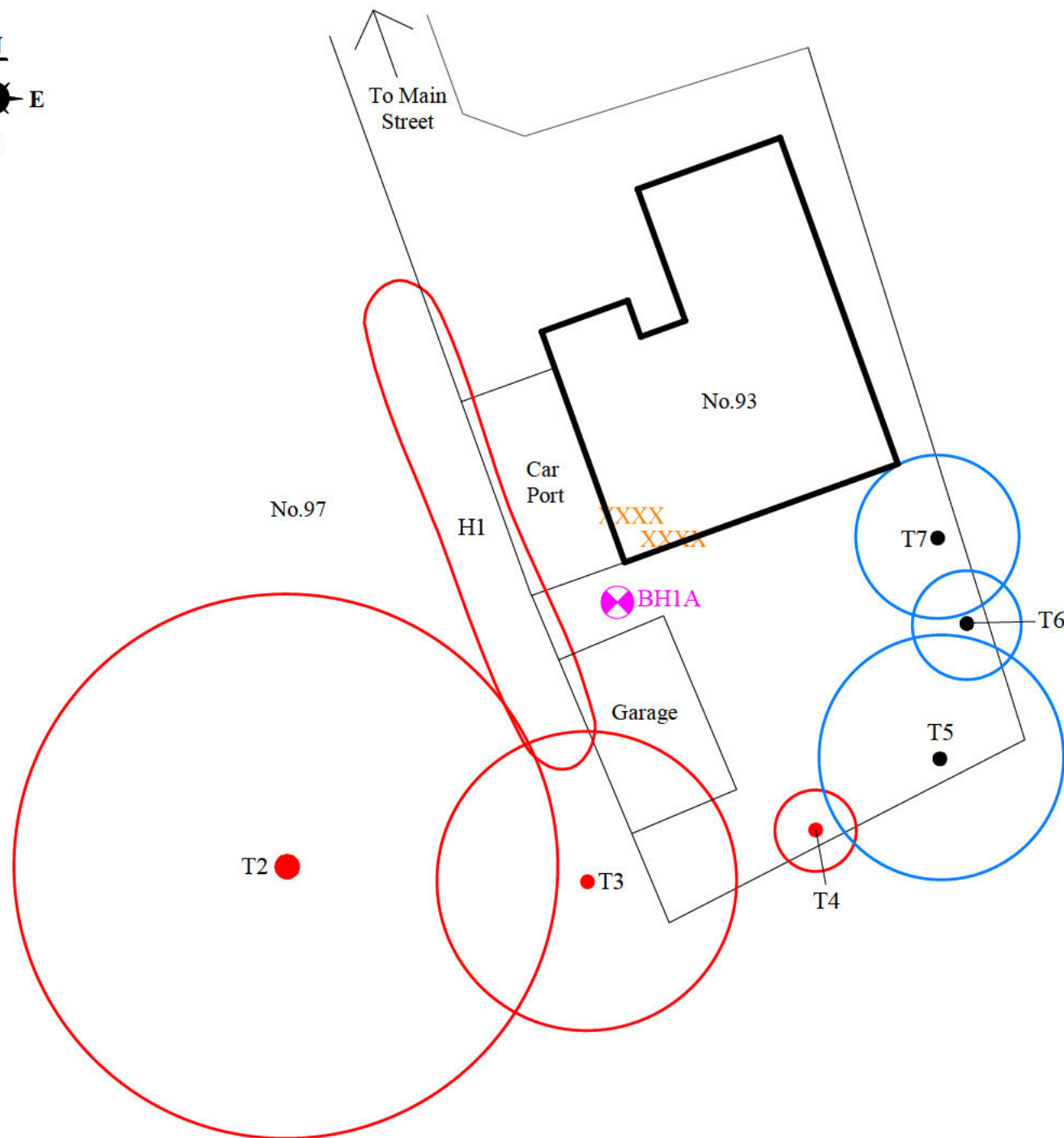
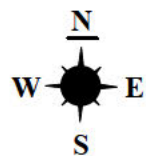


## 8. General Recommendations and Observations

- 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 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 That the project engineer considers all possible solutions which may not involve vegetation works, if there is a wider public or ecological interest in retaining the trees influencing the property.
- 8.6 The property and the damage should be monitored by the project engineer on a regular basis after the recommended tree works are complete.
- 8.7 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.
- 8.8 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.
- 8.9 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	Recommendations
H 1	Early-mature Leyland Cypress <i>X Cupressocyparis leylandii</i>	To 7	To 20#	See plan	The Policy Holder has informed us that this hedge is located in the garden of 95 Main Street and 97 Main Street.  A previously topped hedge. We are informed that these trees are now damaging the boundary wall.	GOOD	4 (house)	HIGH	20+	Yes	No	Likely	Remove to ground level.
T 2	Mature Poplar <i>Populus sp</i>	25#	90#	20#	The Policy Holder has informed us that this tree is located in the garden of 97 Main Street.  A large tree which could not be fully inspected due to off-site location.	GOOD	17#	HIGH	40+	Yes	Yes	Yes	Remove to ground level and treat the stump to prevent regrowth.
T 3	Early-mature Lime <i>Tilia sp.</i>	14	40, 30#	12#	The Policy Holder has informed us that this tree is located in the garden of 97 Main Street.  Twin-stemmed at 1m with a balanced crown. Not inspected due to off-site location. We are informed that damage has now occurred to the garage.	GOOD	11# (house) 3# (garage)	MOD	40+	Yes	No	Likely	Remove to ground level and treat the stump to prevent regrowth.
T 4	Semi-mature Cherry <i>Prunus sp</i>	6	15	3	Policy Holder  Single-stemmed and vertical with a balanced crown. We are informed that damage has now occurred to the garage.	GOOD	10.2 (house) <3.5 (garage)	MOD	40+	Yes	No	Likely	Remove to ground level and treat the stump to prevent regrowth.
T 5	Early-mature Copper Beech <i>Fagus sylvatica 'Atropurpurea'</i>	14	28	9	Policy Holder  Single-stemmed and vertical with a balanced crown.	GOOD	9.5	MOD	40+	Yes	No	No	Maintain at current height and spread over the forthcoming years.
T 6	Early-mature Camperdown Elm <i>Ulmus glabra 'Camperdownii'</i>	2.5	25	4	Policy Holder  A tree with a weeping form.	GOOD	5.8	HIGH	40+	Yes	No	No	Maintain at current height and spread over the forthcoming years.
T 7	Early-mature Walnut <i>Juglans regia</i>	5	25	6	Policy Holder  Single-stemmed and vertical with a balanced crown. Previously crown reduced.	GOOD	3	MOD	40+	Yes	No	No	Maintain at current height and spread over the forthcoming years.



## Appendix 2: Site Plan

ADDRESS: 93 Main Street, Little Downham,  
Ely, Cambridgeshire, CB6 2SX.  
JCA REF: 18335c/TT - Rev 1

NOT TO SCALE

PAPER SIZE: A4

SURVEYED BY: AIB DRAWN BY: TT APPROVED BY: DK



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 TO THE HOUSE



BOREHOLE/TRIAL PIT LOCATION



Arboricultural & Forestry Consultants



## 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.

**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 Daubeney** *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.

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



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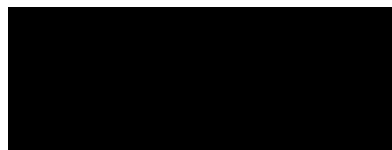
**Toby Thwaites** *BSc (Hons), HND (Arboriculture), MArborA..*

2<sup>nd</sup> May 2023

For and on behalf of **JCA Ltd**

**Registered Office**

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*Report printed on recycled paper*

# JCA Ltd. Arboricultural and Ecological Consultants

## Professional Tree and Ecology Advice nationwide

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### ARBORICULTURAL SERVICES

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#### Guidance for Architects and Developers

- British Standard 5837 Tree Surveys
- Arboricultural Implication Assessments (AIA)
- Arboricultural Method Statements (AMS)

---

#### Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

---

#### Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

---

#### Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

---

#### Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

---

#### Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

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### ECOLOGICAL SERVICES

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#### Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- 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)

---

#### HEAD QUARTERS:

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