Arboricultural Safety Report

Report No:	**190121**
Client:	**Waddingham Parish Council**
Site Address:	**Waddingham Village Green, Waddingham, Lincolnshire**
Survey Date:	**21st January 2019**

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Introduction

Survey Details

I have been instructed by Andy White to visit the site at Waddingham and prepare my findings in a report.

The subject of the survey were the trees standing in four areas of public green space in the village of Waddingham. A map of these area was provided a copy of which can be found in Appendix 4. The survey included areas A, B, C and G only.

This report has been commissioned to assess the condition of the trees on site and the risks they pose, as well as to make recommendations to mitigate risks of a significant level.

The survey was conducted on 21st January 2019 by Daniel Kendall of Lincolnshire Tree Services.

Our reference number for this report is 190121.

Purpose of the Report

This report details the findings of an expert arboricultural safety survey and risk assessment of the trees on the site specified.

This report details the relevant arboricultural information which is required to inform the owners of the condition of their trees and provides specific management actions that, once undertaken, demonstrate that a duty of care has been taken with regards to tree management.

This report is compiled in accordance with the current British Standard BS 3998: 2010 – 'Recommendations for tree work'.

Survey Method

Inspection was made visually from ground level in order to assess the tree's condition and potential to cause harm. Measurements were obtained using GPS, clinometers, specialist tapes or electronic distometers. Where this was not possible measurements were estimated. Significant and suspected decay points were investigated using a sounding hammer and probe.

Where necessary, management recommendations have been made. This may include tree removal, pruning, future monitoring or the need for a further detailed inspection, such as climbed inspections or decay detection surveys.

Site Overview

The boundaries of the sites are outlined in the plan in Appendix 5. Only the areas A, B, C and G were subject to survey.

The sites were all public green spaces with a small number of trees standing within them. For the most part the trees stood away from the boundaries of the green spaces. This significantly limited the target values within their fall zones. Due to these circumstances, only those visiting or working in the green spaces could be reasonably contemplated to be at significant risk due to the trees on the site.

Tree Status

Tree Preservation Order (TPO) and Conservation Area conditions were checked for on West Lindsey's online mapping service on 24th January 2019. No Tree Preservation Order or Conservation Area conditions were found to apply to the site.

Discussion

1. During the survey the details of 14 individual trees and one group of trees were recorded. For the most part the trees were either young or semi-mature with only two reaching what could be considered maturity. Overall the trees have been maintained to a reasonable standard. Due to the condition and location of the trees the risks posed overall are negligible.

2. In total recommendations have been made to three trees. These recommendations are either for pre-emptive risk management or to mitigate minor risks that are already tolerable. As such the decision to carry out the works are purely discretionary. The full details of all recommendations can be found in Appendix 1.
   2.1. The common ash (4563) will likely require the closest scrutiny in the long term due to its weak main union. For now, despite the chance of occupancy during failure being very low, the site manager may wish to relocate the bench from within the fall zone of the tree's western stem. Planting a small area of shrubs in the impact zone on the southern side of the watercourse would also help to dissuade human occupation. In addition, the tree could have its deadwood and the constricting rope removed.
   2.2. The cherry (4567) has poor structural form and has suffered two significant failures in recent times. The tree's condition will make further significant failures and decline in the medium to long term highly likely. The site manager may wish to consider removing and replanting the tree.
   2.3. Through the natural course of crown development, the common oak (4570) has amassed a significant volume of deadwood. The site manager may wish to consider having the larger pieces of deadwood removed.

3. A further observation was made during the survey in relation to damage caused by grounds maintenance operations. A number of trees in area 'A' and the cherry (4572) have a degree of mower/strimmer damage on their lower stems/buttress roots. Although the trees are reaching the stage where wire flail strimmers will no longer cause harm, mower damage will still be an issue. It's always worth reminding a contractor to give adequate clearance from tree stems with mowers, and with shallow rooted trees such as the cherry (4572) to raise blades to give adequate clearance over protruding surface roots.

4. Finally, in regard to re-inspection intervals for the most part the trees can be re-surveyed in five years. In the case of the mature ash (4563) re-inspection should be at a more regular interval of two and a half years due to the tree's poor main union.

Appendix 1: Survey Schedule

Tree ID	Common Name	Stems	Height (m)	Maturity	Overall	Next Survey (months)	QTRA Score	Recommendations	Work Priority	Comments
4559	Wild Cherry	1	8	Semi-mature	Good	60				A good specimen free from notable defects.
4560	Common Oak	2	6.5	Young	Good	60				Twin stemmed from 1.5m with a sound main union. A good specimen free from notable defects.
4561	Whitebeam	3	5	Young	Good	60				Trifurcated from 1m. SE stem with tight main unions. Bark wound at 1.25m on E stem, strong wound wood growth at margins.
4562	Mountain Ash	1	5.5	Young	Good	60				Minor mower/strimmer damage at base otherwise a good specimen free from notable defects.
4563	Common Ash	2	17	Mature	Good	36	>1000000	See Comments	No Priority	Twin stemmed from ground level with weak compression fork union. No signs of instability at present. Failure of W leader would primarily impact watercourse however bench to W of tree may be impacted. Rope constricting growth on first limb on W stem. All primary limb unions appear sound. Minor deadwood in crown. QTRA for failure on to bench T5 S2 P2. Where possible and without damaging bark remove rope from first limb on W leader. Remove deadwood greater than 50mm diameter. Move bench beyond impact zone of W leader. Plant impact area to dissuade human occupation. Currently the risks posed by the tree are tolerable. These works are not required to further

										mitigate these risks. Reinspect at more regular interval.
4564	Bird Cherry	3	10	Semi-mature	Good	60				Multi stemmed from ground level with tight main unions.
4565	Whitebeam	3	6	Young	Good	60				Multi stemmed from 0.75m. A reasonable specimen.
4566	Lime	2	12	Semi-mature	Good	60				Twin stemmed from 1.25m. Main union transitioning to a tension fork. A reasonable specimen.
4567	Bird Cherry	3	10.5	Semi-mature	Good	60		Remove and Replant	No Priority	Multi stemmed from ground level with weak compression fork unions throughout. Main N stem with recent failed limbs at 1 and 1.5m resulting in major wounds. Failures due to tight unions with bark inclusion. Due to poor structure and significant wounding the tree will see further major failures in the medium to long term. Removal and replanting may wish to be considered. Currently the risks posed by the tree are tolerable. These works are not required to further mitigate these risks.
4568	Mountain Ash	3	6	Young	Good	60				Minor mower/strimmer damage at base. Multi stemmed from 1.25m. Main unions transitioning to tension forks.
4569	Common Oak	1	11	Semi-mature	Good	60				A good specimen free from notable defects.
4570	Common Oak	1	14.5	Mature	Good	60	>1000000	Remove Deadwood	No Priority	A number of significant pieces of deadwood in crown otherwise a fine specimen free from notable defects. Remove deadwood greater than 50mm in diameter. Currently the risks posed by the

										tree are tolerable. These works are not required to further mitigate these risks.
4572	Wild Cherry	5	7.5	Semi-mature	Good	60				Multi stemmed from 1.25m. Unions transitioning to tension fork. Desiccated unidentifiable toadstool fruiting bodies at base to N. A reasonable specimen.
4573	Norway Maple	2	12	Semi-mature	Good	60				Mower damage on roots to SW. Twin stemmed from 3m with sound main union. Possible lightening scar on NE stem. Damage limited occluding well. Otherwise a reasonable specimen.
4574	A Group		7.5		Fair	60				Group of mature hawthorn and young sycamore growing in close competition. Stems ivy clad. Generally speaking poorer specimens.

Appendix 2: Glossary of Terms

Tabular Headings

Tree ID: Unique reference number (tree tag number is when available)

Tree Type: Common name of tree

Height/Size: Total height in meters either measure with a distometer or estimated. Where estimated to a size category heights are approximately as follows; S = >7m, M = 7-15m, L = >15-20m, XL = >20m.

Maturity: Approximate age class of tree categorised to; Young (Y), Semi-mature (SM), Mature trees (M), Over mature trees (OM)

Physiological Condition: Health of tree taking into account vigour, presence of disease, and dieback. Categorised to; Good (G), Fair (F), Poor (P), Dead (D)

Next Survey: Timescale within which trees should be re-inspected. Frequency indicates the potential level risk posed by the trees. Categorised to; 6 months, 18 months, 36 months, 60 months

Comments: Explanation of significant defects present

Recommendations: Remedial work advised

Work Time Scale: Timescale within which tree work should be completed. Duration indicates level of work priority. Categorised to; 1 month (Urgent Priority), 3 months (High Priority), 1 year (Medium Priority), 3 years (Low Priority)

General Terms

Access facilitation pruning. One off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site

Adaptive growth. In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress

Adaptive roots. The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading

Adventitious shoots. Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'

Anchorage. The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree

Arboricultural Method Statement. Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained

Arboriculturist. Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction**Architecture.** In a tree, a term describing the pattern of branching of the
crown or root system

Axil. The place where a bud is borne between a leaf and its parent shoot

Bacteria. Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms

Bark. A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem

Basidiomycotina (Basidiomycetes). One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like strucres (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes

Bolling. A term sometimes used to describe pollard heads

Bottle-butt. A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification

Bracing. The use of rods or cables to restrain the movement between parts of a tree

Branch:
· **Primary.** A first order branch arising from a stem
· **Lateral.** A second order branch, subordinate to a primary branch or stem and bearing sub-lateral branches
· **Sub-lateral.** A third order branch, subordinate to a lateral or primary branch, or stem and usually bearing only twigs

Branch bark ridge. The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem

Branch collar. A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base

Brown-rot. A type of wood decay in which cellulose is degraded, while lignin is only modified

Compartmentalisation. The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region

Competent person. A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

Compression fork. An acute angled fork that is mechanically optimised for the growth pressure that two or more adjacent stems exert on each other

Compression strength. The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices

Compressive loading. Mechanical loading which exerts a positive pressure; the opposite to tensile loading

Condition. An indication of the physiological condition of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree

Construction. Site based operations with the potential to affect existing trees

Construction exclusion zone. Area based on the Root Protection Area from which access is prohibited for the duration of the project

Crown/Canopy. The main foliage bearing section of the tree

Crown lifting. The removal of limbs and small branches to a specified height above ground level

Crown thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure

Crown reduction/shaping. A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape

Crown reduction/thinning. Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape

Deadwood. Dead branch wood

Defect. In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment

Delamination. The separation of wood layers along their length, visible as longitudinal splitting

Dieback. The death of parts of a woody plant, starting at shoot-tips or root-tips

Disease. A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms

Distal. In the direction away from the main body of a tree or subject organism (cf. proximal)

Dominance. In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours

Dormant bud. An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so

Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood

Buckling. An irreversible deformation of a structure subjected to a bending load

Buttress zone. The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions

Cambium. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

Canker. A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria

Canopy species. Tree species that mature to form a closed woodland canopy

Cleaning out. The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree

DBH (Diameter at Breast Height). Stem diameter measured at a height of 1.5 metres (UK) or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

Deadwood. Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard

Engineer-designed hard surfacing. Hard surfacing constructed within the 'Root protection area' of a tree, which will be designed by a structural or geotechnical; engineer in collaboration with an arboriculturist as set out in clause 7.4 of British Standard BS5837:2012. The purpose being to minimise the effects of the construction on the health of the tree.

Epicormic shoot. A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot

Excrescence. Any abnormal outgrowth on the surface of tree or other organism

Excurrent. In trees, a system of branching in which there is a well-defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. decurrent)

Fastigiate. Having upright, often clustered branches

Felling licence. In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber

Field layer. Herbs, ferns, grasses and sedges

Flush-cut. A pruning cut which removes part of the branch bark ridge and or branch-collar

Girdling root. A root which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue

Ground layer. Mosses, ivy, lichens and fungi

Guying. A form of artificial support with cables for trees with a temporarily inadequate anchorage

Habit. The overall growth characteristics, shape of the tree and branch structure

Hazard beam. An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting

Heartwood/false-heartwood. The dead central wood that has become dysfunctional as part of the aging processes and being distinct from the sapwood

Heave. A term mainly applicable to a shrinkable clay soil which expands due to re-wetting after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate

High canopy tree species. Tree species having potential to contribute to the closed canopy of a mature woodland or forest

Incipient failure. In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part

Included bark (ingrown bark). Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact

Increment borer. A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood

Occlusion. The process whereby a wound is progressively closed by the formation of new wood and bark around it

Pathogen. A micro-organism which causes disease in another organism

Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules, and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products

Phytotoxic. Toxic to plants

Pollarding. The removal of the tree canopy, back to the stem or primary branches, usually to a point just outside that of the previous cutting. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species

Primary branch. A major branch, generally having a basal diameter greater than 0.25 x stem diameter

Primary root zone. The soil volume most likely to contain roots that are critical to the health and stability of the tree and normally defined by reference BS5837 (2012) Trees in Relation to design, demolition and construction

Probability. A statistical measure of the likelihood that a particular event might occur

Proximal. In the direction towards from the main body of a tree or other living organism (cf. distal)

Pruning. The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs

Radial. In the plane or direction of the radius of a circular object such as a tree stem

Rams-horn. In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross-section

Rays. Strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood

Reactive Growth/Reaction Wood. Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth)

Removal of deadwood. Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branchwood and broken snags

Infection. The establishment of a parasitic micro-organism in the tissues of a tree or other organism

Lever arm. A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch

Lignin. The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification

Lions tailing. A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to endloading

Loading. A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure

Longitudinal. Along the length (of a stem, root or branch)

Lopping. A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

Microdrill. An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density

Minor deadwood. Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree

Mulch. Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material

Mycelium. The body of a fungus, consisting of branched filaments(hyphae)

Occluding tissues. A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood)

Removal of major deadwood. The removal of, dead, dying and diseased branchwood above a specified size

Respacing. Selective removal of trees from a group or woodland to provide space and resources for the development of retained trees

Residual wall. The wall of non-decayed wood remaining following decay of internal stem, branch or root tissues

Rib. A ridge of wood that has usually developed because of locally increased mechanical loading. Often associated with internal cracking in the wood of the stem, branch or root.

Ring-barking (girdling)**.** The removal of a ring of bark and phloem around the circumference of a stem or branch, normally resulting in an inability to transport photosynthetic assimilates below the area of damage. Almost inevitably results in the eventual death of the affected stem or branch above the damage

Ripewood. The older central wood of those tree species in which sapwood gradually ages without being converted to heartwood

Root-collar. The transitional area between the stem/s and roots

Root-collar examination. Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and/or stem

Root protection area (RPA). Layout design tool indicating a national minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability and where the protection of the roots and soil structure is treated as a priority

Root zone. Area of soils containing absorptive roots of the tree/s described. The **Primary** root zone is that which we consider of primary importance to the physiological well-being of the tree

Sapwood. Living xylem tissues

Secondary branch. A branch, generally having a basal diameter of less than 0.25 x stem diameter

Selective delignification. A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose

Service. Any above- or below-ground structure or apparatus required for utility provision e.g. drainage, gas supplies, ground source heat pumps, CCTV and satellite communications

Shedding. In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales

Silviculture. The practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values

Silvicultural thinning. Removal of selected trees to favour the development of retained specimens to achieve a management objective

Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate

Snag. In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point

Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole

Spores. Propagules of fungi and many other life-forms; most spores are microscopic and dispersed in air or water

Shrub species. Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees

Sporophore. The spore bearing structure of fungi

Sprouts. Adventitious shoot growth erupting from beneath the bark

Tree Risk Assessment. An assessment and description of the risks and where appropriate the values associated with a tree or trees. The primary risk being considered is that from falling trees. Other risks, such as damage to infrastructure, interruption of service and building subsidence may also be considered

· Walkover – A general view of the tree population considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

· Drive-by - A general view of the tree population from a moving vehicle and considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

· Individual – the assessment of risks from a single tree considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional

Vessels. Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees

Veteran tree. Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. These characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem

Vigour. The expression of carbohydrate expenditure to growth (in trees)

Volunteer trees. Trees arising from natural colonisation rather than having been planted

White-rot. A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded

Stem/s. Principle above-ground structural component(s) of a tree that supports its branches

Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature

Stress. In mechanics, the application of a force to an object

Stringy white-rot. The kind of wood decay produced by selective delignification

Storm. A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes

Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree

Structure. Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork

Subsidence. In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots

Subsidence. In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight

Taper. In stems and branches, the degree of change in girth along a given length

Target canker. A kind of perennial canker, containing concentric rings of dead occluding tissues

Targets. In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it

Topping. In arboriculture, the removal of the crown of a tree, or of a major proportion of it

Torsional stress. Mechanical stress applied by a twisting force

Tree Protection Plan. Scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures

Wind exposure. The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity

Wind pressure. The force exerted by a wind on a particular object

Windthrow. The blowing over of a tree at its roots

Wound dressing. A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection; only of proven value against fresh wound parasites

Woundwood. Wood with atypical anatomical features, formed in the vicinity of a wound

Appendix 3: Guidelines & Limitations

All work must be to BS 3998: 2010 - 'Recommendations for tree work'.

Staff carrying out the work must be qualified, experienced contractors, and should be covered by adequate public liability insurance.

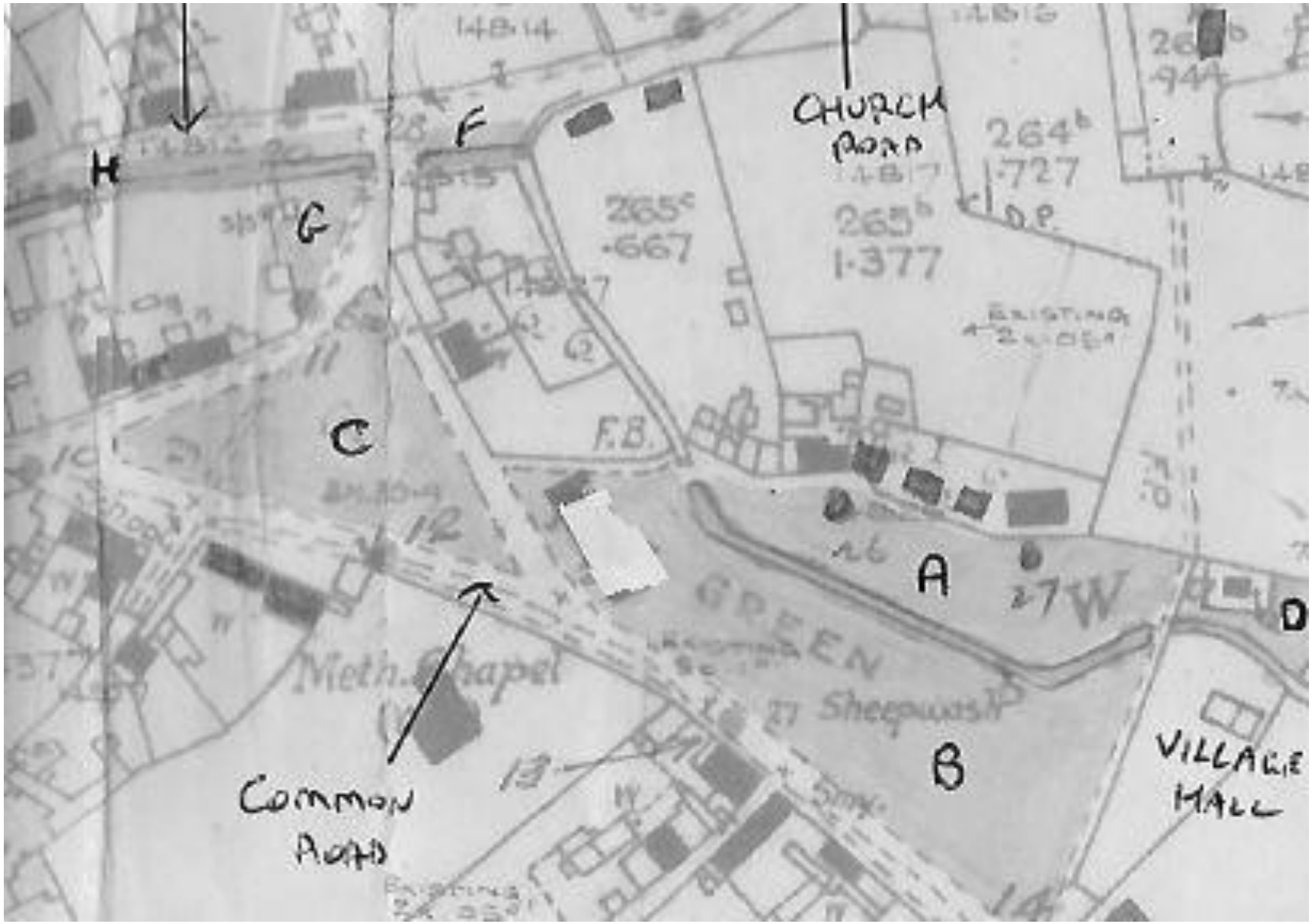
This report is based upon a visual inspection. The consultant shall not be responsible for events which happen after this time due to factors which were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

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.

No liability can be accepted by the consultant in respect of the trees unless the recommendations of this report are carried out as outlined and within the stated timescales.

It is advisable to have trees inspected by an arboricultural consultant regularly. In this instance it is recommended that these inspections are made as per the recommended re-inspection timings in this report. Furthermore it is recommended that trees be re-inspected following certain events. These include; severe weather events, significant changes to site usage, changes that affect wind loading on the trees (e.g. Removal of neighbouring trees, erection/demolition of buildings).

Appendix 4: Site Plan



Appendix 5: Tree Plan