BY APPOINTMENT
TO HER MAJESTY THE QUEEN
TREE SURGEONS
F.A. BARTLETT TREE EXPERTS CO. LTD.

Bartlett Consulting

Date: 24th November 2021
Our Reference: JPL/210117/LR

Harrow Gospel Hall Trust
Pavilion
265 The Ridgeway
North Harrow
Harrow
HA2 7ED

Dear Trustees,

RE: TREE PRESERVATION ORDER NO. 965 THE RIDGEWAY (NO.2) WEST HARROW

This letter follows our site visit conducted on Thursday 11th November 2021.

Assignment

1. To ascertain the London Borough of Harrows Tree Preservation Order evaluation methodology and obtain a copy of it.

2. To undertake an independent evaluation of the trees T1, A1, A2 & A3 using the TreeAP Flowchart.

3. To provide a critique of the London Borough of Harrows methodology used for the creation of TPO No. 965.

4. If deemed reasonable to do so provide a robust objection on arboricultural grounds.

Following the central governments revision to Tree Preservation Order regulation in 2012 and the creation of *'The Town & Country Planning Act (Tree Preservation) (England) Regulations 2012'*, all Local Planning Authorities within England were informed to adopt a well-structured and well considered methodology for evaluating trees considered worthy of statutory protection from the creation of a new Tree Preservation Order.

The purpose of our assignment was to determine if the London Borough of Harrow Council has acted reasonably with regards to the creation and service of TPO No. 965 on The Ridgeway, West Harrow as a response to a planning application for development of the site, reference number P/1492/20.

1.0 TREE EVALUATION METHODOLGY

Following a telephone conversation held with the London Borough of Harrow (LB Harrow) Tree Protection Officer; Ms. Rebecca Farrar, we ascertained that LB Harrow had long since adopted TreeAP (Tree Assessment for Preservation), Draft 6.12-UK.

TreeAP is a structured system, using a flowchart, for assessing the suitability of trees for protection, or not. Its purpose is to help urban managers (Tree Protection Officers) assign appropriate weight to individual trees in the planning and management of urban green space. It is worth noting that TreeAP has been developed by an independent arboricultural consultant, and currently remains in draft status and unavailable for wider release.

The flowchart is used for evaluating *individual* trees and *groups* of trees, which are the most common tree preservation order designations. *Woodland* and *area* designated TPOs are deemed to be special cases and will require careful consideration that is not included within the TreeAP system.

The flowchart is designed to be a quick systematic checklist with the minimum of complication on the form. However, as with all tree assessment, the judgements are complex and must be carried out by someone with detailed knowledge and experience of tree management.

Copies of the LB Harrow TreeAP for TPO 965 are found in Appendix 1 at the end of this report. A blank reference copy is included below.

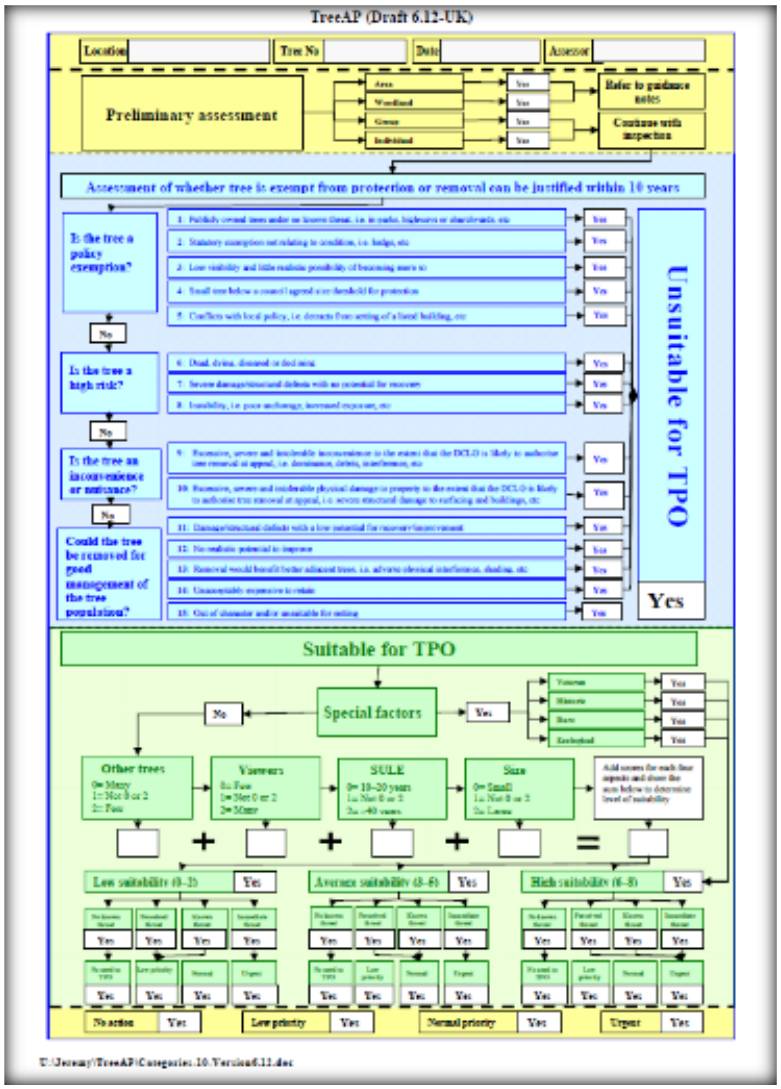


Figure 1: Blank copy of TreeAP, as provided by the author

2.0 TreeAP – FLOWCHART

2.1 T1 – Oak

The Pedunculate oak tree located within the curtilage of 265 The Ridgeway, North Harrow, Harrow, HA2 7ED, is situated adjacent to the railway line along the south-eastern boundary of the site. It is subject to individual protection status, recorded as T1 within TPO965. A copy of the LB Harrow TreeAP flowchart can be found in Appendix 1.

We concur with the LB Harrow Tree Preservation Officer that tree satisfies the criteria found within the first part of the flowchart and is suitable for a TPO, however we do not necessarily agree with the values assigned to the tree.

Following our independent site visit on 11th November 2021, we also applied this flowchart, please refer to the overview table below:

	Other trees	Viewers	SULE	Size	Total
	0 = Many 1 = Not 0 or 2 2 = Few	0 = Few 1 = Not 0 or 2 2 = Many	0 = 10 – 20 years 1 – Not 0 or 2 2 = >40 years	0 = Small 1 = Not 0 or 2 2 = Large	
London Borough of Harrow	1	2	2	2	**7**
Bartlett Tree Expert Company Ltd.	0	2	2	1	**5**
Rationale	There are many trees located adjacent to the sites eastern boundary, it is challenging to identify this tree as an individual.	Its location adjacent to TFL London Underground Tube Line, qualifies this tree to have many viewers.	This tree is semi-mature. It has reached up-to 2/5 of trees life-cycle.	Measuring approximately 13 metres in height* is not classified as being small or large.	
Conclusion	We therefore awarded 0.	We therefore awarded 2.	We therefore awarded 2.	We therefore awarded 1.	

* using a Tru-Pulse (model) laser rangefinder

Following our use of the TreeAP flowchart, T1 attains a total score of 5 points, qualifying this tree for *'Average Suitability'*.

Whilst continuing further with the flowchart and in particular the *'Threat'* assessment, we identify that LB Harrow Tree Protection Officer considers there to be a *'Known Threat'*, of which we would challenge.

We have been provided with a copy of a written statement, confirming the content of a verbal agreement was reached during February 2021, between the Trustees of the Gospel Hall Trust and several LB Harrow Officers, including Selina Hotwani & Rebecca Farrar (Tree Protection Officer), following tree felling operations during December 2020.

The Trustees gave assurances that there would be no further lopping, topping or felling to any of the existing trees on site (apart from what may be necessary and reasonable for safety or security). Please refer to Appendix 2, TPO 18 11 21 letter to Council ref TPO.pdf.

As a result of this verbal and written letter of assurance from the Trustees of the Gospel Hall Trust, we do not consider it qualifies for anything other than *'No known threat'*, as such the flowchart concludes with *'No need to TPO'.*

2.0 TreeAP – FLOWCHART (Continued…)

2.2 A1 – AREA

Mixed species comprising mainly Ash, Field Maple, Holly, Hazel, Whitebeam within the area marked A1. A copy of the LB Harrow TreeAP flowchart can be found in Appendix 1.

On this occasion, we do not concur with the LB Harrow Tree Preservation Officer that these trees satisfy the criteria found within the first part of the flowchart and as such do not consider these trees suitable for a TPO. Particular reference is given to the following:

Section 6: Dead, dying, diseased or declining.
The majority of the trees contained within this area are Ash species, many of which exhibiting decline, branch dieback and lesions, all of which are associated with Ash Dieback (*Hymenoscyphus fraxineus*). This is a fungal disease with a potentially devastating impact upon the native Ash tree population. We do not believe that the Ash trees within the designated A1 have a Safe & Useful Life Expectancy (*SULE*) greater than 10 years.

Section 7: Severe damage/structural defects with no potential for recovery
Similarly, Field Maple and Norway Maple form a large number of the trees in this area, all of which have bark loss and significant cambial damage, caused by Grey Squirrels. Internal decay and branch death was also observed on many of these trees, and Norway Maple is known to be a particularly 'weak' trees with regards to decay and dead branches. As above, we do not believe that the Maple trees within designated A1 have a Safe & Useful Life Expectancy (*SULE*) greater than 10 years.

Due to the presence of a large number of diseased Ash trees (Ash Dieback) and severely damaged Field maple & Norway maples (Grey Squirrel), continuation of the flowchart is prohibited, as such the trees within A1 are deemed to be '*Unsuitable for TPO*'.

Following our independent site visit on 11th November 2021, we also applied this flowchart, please refer to the overview table below:

	Other trees	Viewers	SULE	Size	Total
	0 = Many 1 = Not 0 or 2 2 = Few	0 = Few 1 = Not 0 or 2 2 = Many	0 = 10 – 20 years 1 – Not 0 or 2 2 = >40 years	0 = Small 1 = Not 0 or 2 2 = Large	
London Borough of Harrow	1	2	1	1	**5**
Bartlett Tree Expert Company Ltd.	0	2	0	1	**3**
Rationale	There are many trees located adjacent to the sites western boundary.	Its location adjacent to The Ridgeway & public allotments, qualifies this tree to have many viewers.	Many of these trees are diseased. Many of these trees are severely damaged.	Measuring approximately 6 metres in height is not classified as being small or large.	
Conclusion	We therefore awarded 0.	We therefore awarded 2.	We therefore awarded 0.	We therefore awarded 1.	

2.0 TreeAP – FLOWCHART (Continued…)

2.2 A2 & A3 – AREA

Mixed species comprising mainly Ash, Maple, Hazel within the area marked A2.

Mixed species comprising Hawthorn, Elder, Oak, Ash within the area marked A3.

A copy of the LB Harrow TreeAP flowchart can be found in Appendix 1.

On this occasion, again, we do not concur with the LB Harrow Tree Preservation Officer that these trees satisfy the criteria found within the first part of the flowchart, and are not considered suitable for a TPO. Particular reference is given to the following:

Section 6: Dead, dying, diseased or declining.
As with A1 above, the majority of the trees contained within these *area* designations are Ash species, many of which exhibiting decline, branch dieback and lesions, all of which are associated with Ash Dieback (*Hymenoscyphus fraxineus*). Therefore, we do not believe that these trees have a Safe & Useful Life Expectancy (*SULE*) greater than 10 years.

It is our understanding that land/embankment located adjacent to The Ridgeway, in which A3 – Area occupies falls under the ownership and responsibility of LB Harrow. It is therefore deemed unnecessary and in this instance unreasonable to protect Local Planning Authority lands, and following on from the revisions of TPO regulations in 2012 is now considered to be bad practice.

As with A1 above, due to the presence of a large number of diseased Ash trees (Ash Dieback) and severely damaged Field maple & Norway maples (Grey Squirrel), continuation of the flowchart is prohibited, as such the trees within A1 are deemed to be '*Unsuitable for TPO*'.

Following our independent site visit on 11th November 2021, we also applied this flowchart to both A2 and A3, please refer to the overview table below:

	Other trees	Viewers	SULE	Size	Total
	0 = Many 1 = Not 0 or 2 2 = Few	0 = Few 1 = Not 0 or 2 2 = Many	0 = 10 – 20 years 1 – Not 0 or 2 2 = >40 years	0 = Small 1 = Not 0 or 2 2 = Large	
London Borough of Harrow	1	2	1	1	**5**
Bartlett Tree Expert Company Ltd.	0	2	0	1	**3**
Rationale	There are many trees located adjacent to the sites southern boundary.	Its location adjacent to The Ridgeway, qualifies this tree to have many viewers.	Many of these trees are diseased.	Measuring approximately 11 metres in height is not classified as being small or large.	
Conclusion	We therefore awarded 0.	We therefore awarded 2.	We therefore awarded 0.	We therefore awarded 1.	

3.0 PHOTOGRAPHIC OVERVIEW

Figure 1: Annotated photograph highlighting the location of T1 – Oak in the landscape, as viewed from the railway bridge.

Figure 2: Annotated photograph highlighting the location of T1 – Oak in the landscape, as viewed from within the site.

3.0 PHOTOGRAPHIC OVERVIEW (Continued…)

Figure 3: Annotated photograph highlighting number of Maple trees within A1 – Area, as viewed from the Ridgeway.

Figure 4: Annotated photograph highlighting the extensive Squirrel damage caused to the Maple trees within A1 – Area.

3.0 PHOTOGRAPHIC OVERVIEW (Continued…)

Figure 5: Annotated photograph highlighting number of Ash trees within A2 – Area, as viewed from within the site.

Figure 6: Annotated photograph highlighting number of Ash trees within A2 & A3 – Area, as viewed from the Ridgeway.

4.0 CONCLUSION

Following our independent assessment of the trees subject to the provisional TPO965, we would conclude that the TPO appears to have been made in haste and under some level of pressure, only serving to protect trees in the short term and not having any benefit for the long-term retention and management of trees – for which TPO's are designed and intended.

The creation of *area* designations is generally only applied during instances considered to be an emergency, where there is an imminent risk of trees being felled – which we have disproved above.

Furthermore, Government guidance advises that *area* TPOs should be reviewed, and modified to individual and group designations. Through our discussions and review above, all Ash and Maple trees will be excluded from a review and modification of the *area* designation, leaving only a small number of low valued trees, no longer worthy of being subject to a TPO.

The creation of A3 on trees and land currently under the ownership and responsibility of LB Harrow, is contrary to Government guidance and appropriateness of a TPO, as the council has essentially protected their own trees, which are under good management and at no risk of removal. Furthermore, through the submitted MacIntyre Tree Report AIA, they have shown that these trees will not be impacted by the proposed development of the site.

Whilst we do not dispute that T1 – Oak is a good specimen, we challenge the public visibility and amenity rating of the tree by LB Harrow, as well as their size classification of the tree, diminishing its prominence in the landscape and overall score using the TreeAP system.

In light of the verbal and written agreements held between the Trustees and the LB Harrow Officer providing assurances that no trees would be felled, we do not consider that the creation of this TPO is "expedient in the interests of public amenity" as there is no risk to the trees, nor do most of them merit protection.

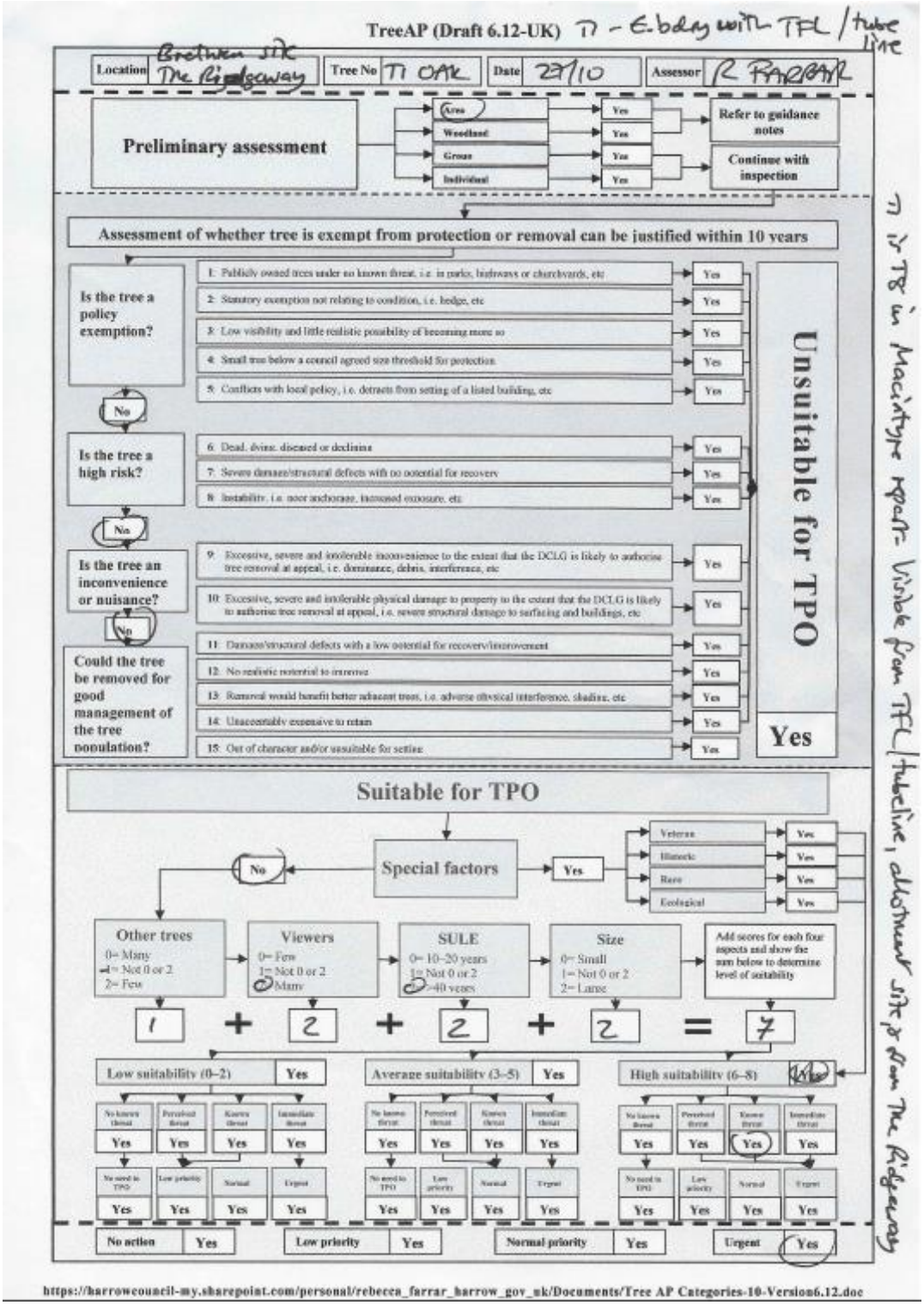
To conclude we would advise that Tree Preservation Order No. 965 The Ridgeway (No.2) West Harrow, is not confirmed by LB Harrow, and instead allowed to lapse, as we have shown that the TPO does not meet the key criteria or 'spirit' of tree preservation, and that the trees themselves do not warrant preservation. Therefore, the TPO has been served inappropriately, wasting valuable time and resources in the process.

We trust that the contents of this report were helpful, informative, and easy to understand. Please do not hesitate to contact us if we can be of further assistance.

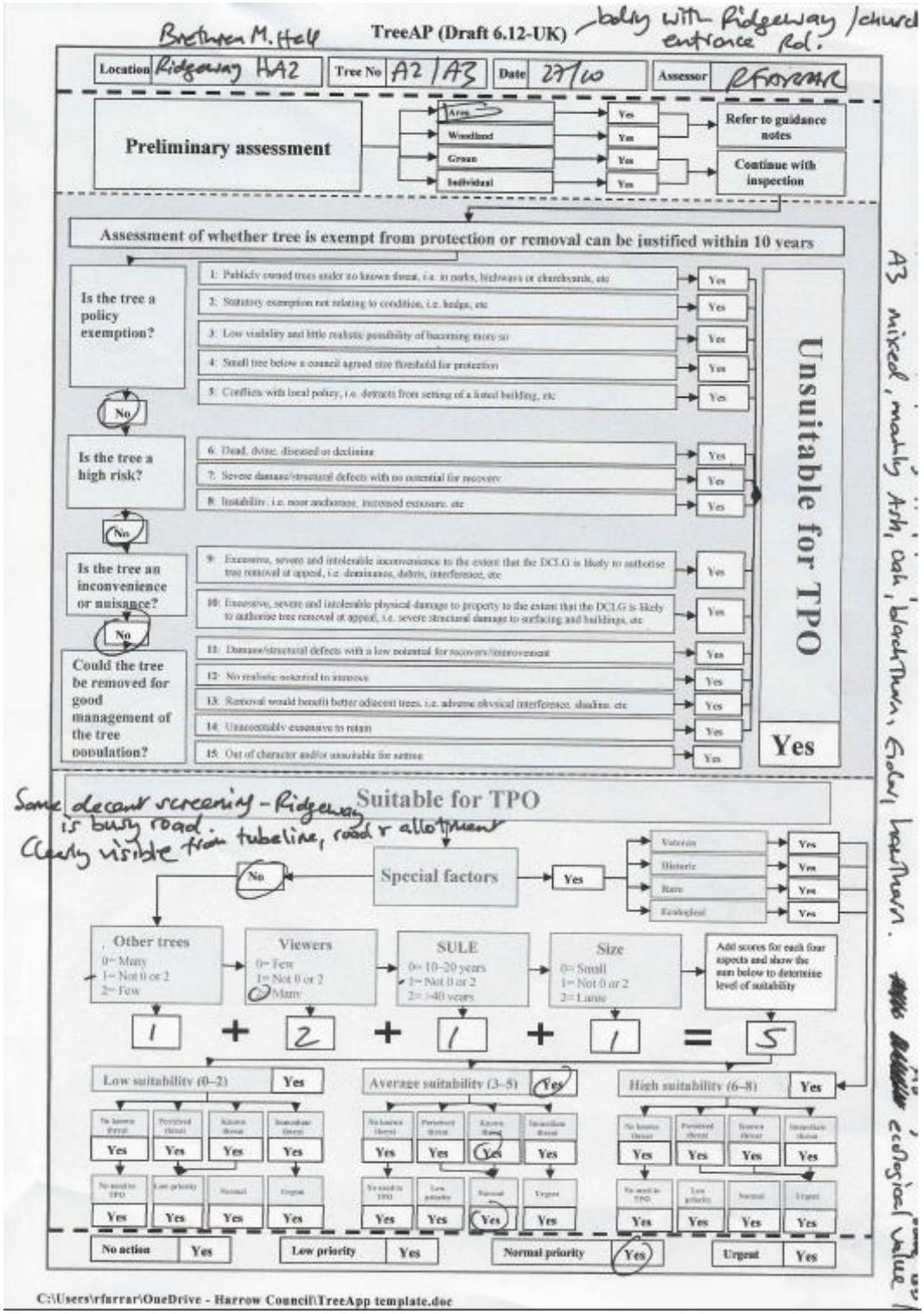
Yours Sincerely,

James Percy-Lancaster Cert Arb (Lv.4) *TechArborA*
Senior Arboricultural Consultant

APPENDIX 1: LB HARROW TreeAP FLOWCHARTS



APPENDIX 1: LB HARROW TreeAP FLOWCHARTS (Continued…)



APPENDIX 2: HARROW GOSPEL HALL TRUST LETTER TO COUNCIL

HARROW GOSPEL HALL TRUST

265 The Ridgeway, Harrow, HA2 7DA

Registered Charity No 1159074

18 November 2021

To whom it may concern.

We write in connection with the interim Tree Preservation order issued by L B Harrow dated 29th October Ref No:- 965.

We have instructed Bartletts Tree Experts to survey the trees in question both from within and from outside the boundary of the site. We have invited Bartletts to include this letter as an addendum to their report. Bartletts' appraisal will be an arboricultural assessment based on established criteria agreed between the Council's Tree officer and Bartletts' own professional representative.

It is noteworthy that the matter of the trees on the site was discussed at a 'virtual' meeting in February 2021. This meeting was attended by the Trustees and a number of the Council's officers including Selina Hotwani & Rebecca Farrar. During that meeting the trustees gave a verbal undertaking not to Lop, Top or Fell any more trees on the site (apart from what may be necessary and reasonable for safety or security of the site) before the planning process had been finally determined. This letter further confirms the undertaking made at that time. Any trimming operations that may be necessary (for instance to prevent tripping of the security alarm by foliage) will be undertaken in co-operation with the Council's Tree Officer. Should Council officers require further clarification and / or feel that a legally binding commitment as outlined above is needed then the trustees offer this as a preferable alternative to the imposition of a TPO on the trust's land.

It should be noted that the interim TPO includes an area of ground (area A3 on the Council's plan) which is owned by L B Harrow, outside the Trusts ownership. The trust is unable to give an undertaking on that land since it has no control over what the Council does on its own land.

Signed:-

For and on behalf of the trustees of The Harrow Gospel Hall Trust.

Dated 18th November 2021.

Trustees: S. P. Barnes, R. M. Jay, C. H. Kingston, N. S. Purdom, L. P. Smith

APPENDIX 3: Report Limitations & Methodologies

This report is restricted to the trees detailed in the Assignment above.

Our TreeAP assessment of T1, A1, A2 & A3 located at 265 The Ridgeway, North Harrow, Harrow, HA2 7ED, is based on a single site visit on Thursday 11th November 2021. All photographs, samples, and readings, if applicable, were taken at the time the assessment was performed.

This assessment was limited by the following factor(s): ground covering vegetation within A3.

This information is solely for the use of the tree owner and manager to assist in the decision making process regarding the management of their tree or trees.

The statements, findings and recommendations made within the report do not take into account any effects of extreme climate and weather incidences, vandalism, changes in the natural and/or built environment around the trees after the date of this report, nor any damage whether physical, chemical or otherwise.

Tree risk ratings are derived from a combination of three factors: the likelihood of failure, the likelihood of the failed tree part impacting a target, and the consequences of the target being struck. These factors are then used to categorize tree risk as extreme, high, moderate or low. The factors used to define your risk rating are identified in this report.

Tools used in the assessment included: a nylon hammer to 'sound' the tree and tree parts; a probe to measure the depth of cavities and open wounds, as well as explore soil conditions; and binoculars to observe upper portions of the tree. Tree dimensions were recorded using hand tools such as a laser range finder; diameter tape and measuring tape.

This information is solely for the use of the tree owner and manager to assist in the decision making process regarding the management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

APPENDIX 4: Risk Assessment Limitations & Client Duty of Care

Limitations of Tree Risk Assessments

It is important for the tree owner or tree manager to know, and understand, that all trees pose some degree of risk from failure or other conditions, and as trees are living and dynamic organisms, it is not possible to maintain them free of risk. Some level of risk must be accepted in order to experience the full range of benefits that trees provide. As such, we reference the National Tree Safety Group (NTSG) publication *Common Sense Risk Management of Trees* (Forestry Commission 2011). This document provides guidance on trees and public safety in the UK for owners', managers, and advisors.

The information and recommendations within this report have been derived from the level of tree risk assessment identified in this report, using the information and practices outlined in the *International Society of Arboriculture's Best Management Practices for Tree Risk Assessment*, as well as the information available at the time of the inspection.

However, the *overall tree risk rating*, the mitigation recommendations, or any other conclusions do not preclude the possibility of failure from undetected conditions, weather events, or other acts and/or influences of human or nature on the tree(s). Trees can unpredictably fail even if no defects or other conditions are present. Tree failure can cause adjacent trees to fail resulting in a "domino effect" that impacts *targets* outside the foreseeable *target zone* of this tree. It is the responsibility of the tree owner or manager to schedule repeat or advanced assessments, determine actions, and implement follow up recommendations, monitoring and/or mitigation.

Bartlett Consulting and Bartlett Tree Experts can make no warranty or guarantee whatsoever regarding the safety of any tree, trees, or parts of trees, regardless of the level of tree risk assessment provided, the risk rating, or the residual risk rating after mitigation. Bartlett Consulting and Bartlett Tree Experts cannot accept any liability in connection with these factors, nor where recommended tree management is not carried out in accordance with modern tree health care techniques, within the timelines proposed and specification provided.

The information in this report should not be considered as making safety; legal; architectural; engineering; landscape architectural; nor land surveying advice, nor any other professional advice.

This information is solely for the use of the tree owner or tree manager to assist in the decision-making process regarding their duty of care, tolerability of risk, and management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

All recommendations made by Bartlett Tree Experts will be based on the defects that are present and detectable at the time of the inspection or assessment, and the commonly accepted industry practices for reducing or minimising the risks associated with the trees and are meant to assist the owner/client with the decision making process regarding the trees. Tree conditions, though, can change, and some features/hazards may not be present or detectable through the inspection process. As such, Bartlett Tree Experts can make no guarantees or warranties of any kind that all features/hazards will be detected; nor can Bartlett Tree Experts accept any liability in any manner whatsoever for any damage caused by any tree on this property, whether the tree was assessed or not, or whether any recommendations to mitigate risk were followed or not.

Therefore, to the fullest extent permitted by law, the owner/client agrees to indemnify and hold harmless Bartlett Tree Experts from any third party law suits or claims based on the past, present, or future conditions of the owner/client's trees, or decisions made by the owner/client regarding the trees, or injuries or damages caused by any future tree or tree part failures, which are under the ownership and control of the owner/client, that Bartlett Tree Experts may suffer as the result of any negligent action, inaction, or decisions made by the owner/client regarding the trees. Such obligations shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph.

APPENDIX 4: Risk Assessment Limitations & Client Duty of Care (continued…)

Tree Owner's Duty of Care

A tree owner has a duty of care to ensure that all visitors, guests, employees, etc. to their land shall be safe from harm, and that there is no exposure to risks to that visitor's health and safety. This duty of care means that reasonable care must be taken to avoid acts or omissions that could be reasonably foreseen, leading to harm.

This duty must also be reasonable, proportionate, and reasonably practicable when managing tree risk. Therefore, the tree owner can take a balanced approach to manage the risk, retain the many benefits trees provide, and not waste resources on unnecessary tree management.

Tolerability of Risk

Some level of risk must be accepted in order to experience the full range of benefits that trees provide, and an evaluation of what is reasonable to balance the benefit of trees and the risk they pose should be undertaken by the tree owner.

Risks which are considered tolerable are risks which the tree owner, visitors, guests, employees, and the wider public are prepared to accept in order to secure the associated tree benefits. However, tolerable risks come with expectations, such as the trees being properly assessed; control measures being in place; residual risk as low as reasonably practical; and the risk rating is periodically reviewed.

APPENDIX 5 – Tree Risk Assessment Glossary

Bartlett Consulting uses the International Society of Arboriculture's (ISA) Tree Risk Assessment methodology, referred to as TRAQ. This is a 'qualitative' system which uses a matrix-based combination of ratings, to reach a conclusion of associated risk. The standard Bartlett Consulting timeline within the TRAQ system is three (03) years, unless otherwise stated within the report.

Risk is the combination of the 'likelihood' of an event: in this case the failure of a tree or part of a tree, and the severity of the potential consequences. A hazard is the likely source of harm. The two tables below define both the likelihood and risk levels as per the TRAQ system.

Tree risk assessment has a unique set of terms with specific meanings. Definitions of all specific terms may be found in the International Society of Arboriculture's *Best Management Practice for Tree Risk Assessment*. Definitions of some of these terms used in this report are as follows:

Classification	**Description of Likelihood of Failure** (As per Dunster, Smiley, Matheny, Lilly 2017)
Improbable	The tree or tree part is not likely to fail during normal weather conditions, and may not failure in extreme weather conditions, within the specified time frame.
Possible	Failure may be expected in extreme weather conditions, but it is unlikely during normal weather conditions, within the specified time frame.
Probable	Failure may be expected under normal weather conditions, within the specified time frame.
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind, weather, or increased load.

Targets are people, property, or activities that could be injured, damaged or disrupted by a tree failure.

Likelihood of Impact may be categorized as high meaning that a failed tree or tree part will most likely impact a target; medium meaning the failed tree or tree part is as likely to impact the target as not; low meaning that the failed tree or tree part is not likely to impact a target; and very low meaning that the likelihood of a failed tree or tree part impacting the specified target is remote.

Consequences of a known target being struck may be categorized as severe meaning that impact could involve serious personal injury or death, damage to high-value property, or disruption to important activities; significant meaning that the impact may involve property damage of moderate to high value, considerable disruption, or personal injury; minor meaning that impact could cause low to moderate property damage, small disruptions to traffic or a communication utility, or very minor injury; and negligible meaning that impact may involve low-value property damage or disruption that can be replaced or repaired, and do not involve personal injury.

Risk Level	**Description of Risk** (As per Dunster, Smiley, Matheny, Lilly 2017)
Extreme Risk	Failure is *imminent*, impact & failure is *very likely*, and the consequences of the failure are *severe*. Mitigation will be a high priority or targets must be temporarily controlled.
High Risk	Impact & Failure is *likely* to *very likely* with *significant* consequences; or consequences are *severe,* and the Impact & Failure is *likely*. Mitigation measures should be taken.
Moderate Risk	Impact & Failure is *likely* to *very likely* with *minor* consequences; or consequences are *significant* to *severe* with a *somewhat likely* Impact & Failure. Mitigation will be determined by tolerance of risk.
Low Risk	Consequences are either negligible or minor, with corresponding Impact & Failure ratings of either unlikely or somewhat likely respectively. Mitigation may be desirable but not strictly necessary.

Overall Tree Risk is the highest individual risk identified for the tree.

Residual Risk is the level of risk the tree should pose after the recommended mitigation

APPENDIX 6 – Tree Survey & Assessment Glossary

The scientific study of tree hazard evaluation and assessment is not an exact science, and there is still much to learn with constantly developing technology, research and calculations. Most limitations of tree hazard evaluation arise from uncertainties with trees and the loads the trees are subjected to.

The three levels of tree evaluation and assessment employed by Bartlett Consulting are those defined in the International Society of Arboriculture's (ISA) *Best Management Practices for Tree Risk Assessment* and *ANSI A300 Tree Risk Assessment Standard*. All three levels are described below, along with the basic limitations of each.

I. Level 1 Limited Visual Assessment

A *Level 1 Limited Visual Assessment* (also referred to as a Hazard Survey or Negative Tree Survey) is a visual assessment from a specific perspective of an individual tree or a population of trees near specified targets. These assessments are conducted to identify obvious defects or specified tree conditions (such as dead trees) as agreed with the client and tree owner / manager.

A *Level 1 Limited Visual Assessment* is typically performed from a pre-defined and specified perspective (i.e. from the pavement, street, car parking area(s), woodland edge, etc.), and typically of one side of the tree from that specified perspective. The specified tree or trees are visually assessed to identify tree features, defects, or specific conditions constituting a hazard which result in a likelihood of failure of probable or imminent and would impact the specified target(s).

Level 1 Limited Visual Assessments are typically performed to quickly assess large populations of trees to identify trees with the highest likelihood of failure ratings in the population, or trees that are recommended for higher level of assessment.

A *Level 1 Limited Visual Assessment* typically includes:

1. Identifying the location and/or selection criteria of trees to be assessed.
2. Determining and documenting the most efficient route to be taken.
3. Determining and documenting the method of visual assessment (e.g. walk-by, drive-by).
4. Recording the location of, and assessing the condition of, tree(s) of concern from the defined perspective meeting the predefined criteria (e.g. dead trees, broken branches).
5. Evaluating the risk (a risk rating is optional).
6. Identifying trees needing a higher level of assessment (*Level 2 Basic or Level 3 Advanced*) and/or priority corrective action.
7. Submitting risk mitigation recommendations and/or report.

Limitations of *Level 1 Limited Visual Assessments*

As the least thorough means of assessment, tree features and/or conditions may not be visible as the inspection is from a particular viewpoint; not all tree features and observations may be visible or apparent at different times of the year; climbers, undergrowth, basal growth, etc. will not be removed inhibiting the inspection; and the inspection may not be adequate enough to make a risk mitigation recommendation. Residual risk designations for trees are not included.

APPENDIX 6 – Tree Survey & Assessment Glossary (Continued…)

II. Level 2 Basic Visual Assessment

A *Level 2 Basic Visual Assessment* is a more detailed visual inspection of a tree and its surrounding site, and a synthesis of the information collected. It requires complete inspection around a tree including the site and ground conditions / growing environment; visible buttress roots; main stem(s); and branches (as defined in the International Society of Arboriculture's (ISA) *Best Management Practices for Tree Risk Assessment* and *ANSI A300 Tree Risk Assessment Standard*).

A *Level 2 Basic Visual Assessment* allows for all aspects of the tree(s) to be surveyed and removal of climbers, undergrowth and basal growth. The crown, branches, stem(s), and buttress roots of the specified tree(s) are all assessed to look for notable features including any defect, decay, dysfunction or other structural weakness, as well as assessing the overall health and vitality of the tree(s). A *Level 2 Basic Visual Assessment* will include the use of hand-tools such as a sounding hammer; depth probe; binoculars; and measuring tapes / laser range finders to record tree dimensions; and possibly a trowel to uncover buttresses. Recommendations for trees that need a higher level of assessment are typically included.

A *Level 2 Basic Visual Assessment* typically includes:

1. Locating and identifying the tree or trees to be assessed.
2. Determining the *targets* and *target zone* for the tree or branches of concern.
3. Reviewing the site history and conditions, and species failure profile.
4. Assessing the potential load on the tree and its parts.
5. Visually assessing general tree health based on observable features at the time.
6. Completing the tree inspection and assessment using tools listed above.
7. Recording all details and observations.
8. Analysing all captured field data to determine the *likelihood of failure* and *consequences of failure* in order to complete a tree risk assessment.
9. Developing mitigation options, recommending a further Level 3 Advanced Assessment, if deemed necessary, and estimating *residual risk* for each mitigation option.
10. Producing and submitting the report, including when appropriate, advice on re-inspection intervals.

Limitations of Level 2 Basic Visual Assessments

This visual assessment will only include details and information on tree features and conditions that can be detected from a ground-based inspection on the day of the assessment, using the tools listed in the introduction above. The extent of some internal decay, as well as the type of wood decay, and below ground or high canopy features or conditions may be difficult to observe, determine or assess.

APPENDIX 6 – Tree Survey & Assessment Glossary (Continued…)

III. Level 3 Advanced Assessment

A *Level 3 Advanced Assessment* is performed to provide detailed information about specific tree parts, conditions or features, targets, or site conditions. A *Level 3 Advanced Assessment* typically incorporates all aspects of a *Level 2 Basic Visual Assessment* and is usually conducted after a *Level 2 Basic Visual Assessment* with client approval.

Specialized equipment, data collection and analysis, and/or expertise are typically required for these advanced assessments to provide detailed and in-depth information about a specific tree parts, conditions or features, and the likelihood of failure, previously identified in a *Level 2 Basic Visual Assessment*.

A *Level 3 Advanced Assessment* typically includes:

1. Locating and identifying the tree or trees to be assessed.
2. Determining the *targets* and *target zone* for the tree part of concern.
3. Reviewing and updating the *Level 2 Basic Visual Assessment* data as necessary.
4. Completing the advanced assessment using methods and/or techniques as determined necessary and appropriate by the Arborist, and as defined in the Scope of Work.
5. Interpreting and analysing the advanced assessment data and information to update and revise the *likelihood of failure* and *consequences of failure* in order to complete a tree risk assessment.
6. Developing mitigation options and estimating *residual risk* for each mitigation option.
7. Producing and submitting the report, including when appropriate, advice on re-inspection intervals.

Limitations of Level 3 Advanced Assessments

Using technology, methodologies and equipment listed below always involves a degree of uncertainty as well as limitations in use. Furthermore, most data are not accurate measures, but a qualified or quantified estimation.

Arborists employing advanced assessment equipment and technology must have an advanced knowledge of the application and use of the various equipment (e.g. when and where it is appropriate for use and which method); in-depth knowledge of decay fungi and host tree species relationships; training and experience in interpreting data; and likelihood of failure assessment.

APPENDIX 7 – Tree Survey & Assessment Glossary (Continued…)

III. Level 3 Advanced Assessment (continued…)

Table 4: Methods of Advanced Assessment

Procedure	Methodology
Aerial Tree Inspection (evaluation of tree structure within crown)	• visual inspection from within the tree crown or from a lift • unmanned aerial vehicle (UAV) photographic inspection • decay testing of branches
Detailed Target Analysis	• property value • use and occupancy statistics • potential disruption of activities
Detailed Site Evaluation	• history evaluation • soil profile inspection to determine root depth • soil mineral and structural testing
Decay Testing	• increment boring • drilling with small-diameter bit • resistance-recording drilling • single path sonic (stress) wave • sonic / impulse tomography • electrical impedance tomography • radiation (radar, X-ray) • advanced analysis for pathogen identification
Tree Health Evaluation	• tree ring analysis (in temperate zone trees) • shoot length measurement • detailed health/vigour analysis • starch assessment
Root Inspection and Evaluation	• root and root collar excavation • root decay evaluation • ground-penetrating radar • sonic / impulse tomography
Storm / Wind Load Analysis	• detailed assessment of tree exposure and protection • computer-based estimations according to engineering models • wind reaction monitoring over a defined interval
Measuring & Assessing the Change in Tree Lean	• visual documentation • plumb line • digital spirit level
Load Testing	• hand pull • measured static pull • measured tree dynamics

Note: All levels of tree inspection, evaluation and assessment consider visible, and detectable, tree observation, conditions, and features in proximity to the known and/or assigned targets of the tree or trees being assessed. Regardless of the level selected, any tree risk assessment will be limited to the tree or trees selected, and the detectable conditions at the time of the defined and assigned assessment. The client should also recognize that not all defects will be detectable, and not all failures can be predictable