Poynton Town Council Response to Planning Application 23/4152M – Poynton Pool Dam Embankment

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Poynton Town Council does not support this application from Cheshire East Council. We believe that it will have a highly detrimental impact on the environment of Poynton and also the health and well-being of local people, and is contrary to:

- The legal obligations of Cheshire East to conserve biodiversity and protected species and promote public health.

- Cheshire East's own Local Plan and Site Allocations and Development Policies Document (SADPD) and the Poynton Neighbourhood Plan

Cheshire East's own website states that:
"Poynton Park is situated just a few minutes walk from the centre of Poynton village. It is a valuable amenity with its pool, ancient trees and wildlife. The Park covers 21 hectares including the pool."

https://www.cheshireeast.gov.uk/leisure,_culture_and_tourism/ranger_service/countryside_sites/poynton_park.aspx

It is wrong to consider only the actual area of work, as the proposed changes to the dam, and removal of the trees will affect all the Pool and the Park, plus the wider area. The Pool alone is at least 900 metres long and covers more than 1 hectare.

The Town Council has significant concerns in relation to this planning application. These include the rationale for the scheme, planning policy and environmental considerations.

There are a number of factual inaccuracies, contradictions and misrepresentations contained within the planning documents that have been lodged by Cheshire East Council. The Town Council believes that a number of documents which should have been lodged in support of this application have not been made available to the public.

In addition, the reports raise significant uncertainties around how the dam was constructed, the volume of water in the lake and the catchment area all of which should be investigated before works are undertaken.

1. Description of the Reservoir

1.1 The Summary Options Report (BRJ10627-J470-DOC-001 P03) lodged with the planning application states that the embankment dam is 6m high and 500m long (Flood Risk Assessment section 1.2). **However, this is factually incorrect. The dam is 7m high only for a section of around 30m in length where it crosses a small gully** (see below – Spillway Upgrade Initial Options Paper BRJ10627-JAC-XX-XX-RP-C- 0001 – Executive Summary).

The dam is unusual in that the A523 (since reclassified as B5092) runs on a berm along the downstream face, so that the upper dam is up to 1.6m, with the dam below the road is typically only around one metre high, although it is locally around 5m high for around 30m length where it crosses a small gully. As the reservoir is over

This Flood Risk Assessment contained in the summary options report exaggerates the size of the dam and therefore the risk it poses.

1.2 Paragraph 1.2 of the Summary Options Report states that the reservoir stores a volume of approximately 130,000m^3. However, the Environment Agency and Cheshire East concede that the actual volume of the reservoir is unknown. Friends of Poynton Pool have carried out a basic survey of the pool which appears to indicate that the volume of the pool is significantly less than the current recorded volume of 130,000m^3. **At a meeting on the 13th November the Environment Agency agreed to undertake a bathometric survey of the reservoir. The Town Council believes that the application should be deferred until the volume of the dam is accurately understood.**

1.3 The Flood Study Report (D01 C01) states "the level of the embankment clay core is unknown. It is recommended that this should be established along with other geotechnical properties of the embankment, in order to quantify the risk of seepage through the dam". Understanding the properties of the dam is key to assessing potential modes of failure for the dam. This work has not been undertaken by Cheshire East Council despite the recommendation in the Flood Study Report.

1.4 Catchment – The Flood Study Report confirms that "Poynton Pool Reservoir is a small ungauged catchment. Flow estimates form small ungauged catchments are open to greater uncertainty than for larger gauged catchments. … Historic flooding information could give verification data for the model" Residents have been informed that no data is available for Poynton Pool. The Town Council is concerned about the way the catchment has been redrawn and also believes that the catchment may be impacted by the historic coal mines and underground workings which lie directly to the east of Poynton Pool. The assertions in the reports that the dam will overtop in a 5% AEP rain event is not supported by local knowledge (see pages 4-6 below). The Town Council would ask that the catchment area (rainfall, inflows and outflows) is monitored so that the catchment area is better understood and this data can be used as verification evidence for any model.

2. Supporting Documentation

2.1 Section 1.1 of the Summary Options Report sets out the background documentation for the scheme. Apart from the Report of the Inspection under S10 (2) all other documents listed in this section have been amended. The report should be updated to include the correct references for the reports. It would also be helpful if a link to the documents on the Cheshire East Council website could be provided.

2.2 There are a number of missing appendices in the Spillway Upgrade Options Report dated 25th September 2023 including Appendix A – Topographic Survey, 2019. A more recent survey has been undertaken and the latest survey should be included) Appendix E – RARS Tier 2 Screening Breach and Consequences

Assessment, Appendix F, Environment Agency Reservoir Flood Mapping Summary Sheet to 2016 specification.

3. The proposed works

3.1 Paragraph 2.2.2 of the Planning Statement (BRJ10627-JAC-XX-XX-RP-PL-0002) and paragraph 2.2 of the Environmental Assessment Report (BRJ10627-JAC-XX-XX-RP-EN-0011 P01) appears to contradict figures given in other supporting document as it states that “A low crest marker (kerb) will be also be added to ensure a consistent level. The resultant freeboard, after these works would then be 90.3mOD-89.63mOD=.67m i.e a maximum increase of 0.3m (for the low points). However, the Flood Risk Assessment (BRJ10627-JAC-XX-XX-AS-HY-0100) (paragraph 4.4) states “The lowest point of the dam is currently 90.86 mAOD and the regulated height after the works will be 91.3 mAOD”. This would include increasing the height of the lowest sections by 0.44m. As the topographic survey is missing from the Spillway Upgrade Initial Options Report, it isn’t possible to confirm which of these figures are correct. The figures should be clarified if further explanation is required or corrected.

3.2 The Flood Risk Assessment shows (figure 3.3) that flooding could occur in two locations along the dam.

Figure 3-3: Extent of reservoir flood risk surrounding Poynton Lake © Environment Agency copyright and/or database right 2021. All rights reserved. Contains Ordnance Survey data © Crown copyright and database right 2010-2023.

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3.3 It doesn’t appear from the flood map that the proposed works will prevent the flooding to the south of the proposed works as this area of the dam will be unaffected by the works. The Flood Risk Assessment confirms that following the works the water level within the reservoir will increase by 0.18m during the 1%, 0.1% and 0.01% AEP design flood events. Will the increased water levels result in even more flooding in the area to the south of the proposed works? In addition, it is noted that the Flood Risk Assessment concedes that the higher levels of water in the dam will

result in additional garden flooding at neighbouring properties on Anglesey Drive. **The Town Council notes that despite these works potentially increasing flood risk to properties on Anglesey Drive none of the properties impacted were consulted as part of the planning process.**

The Flood Risk Assessment states that the nature of the ditch is unknown, The Town Council is surprised that no further investigation has been carried out. Residents in this area have reported to the Town Council that the ditch during wet weather discharges into Poynton Pool. Residents in this area are concerned that the changes in the water levels together with proposed mitigation to install flap valves could result in increased flooding to their properties.

3.4 **The Town Council notes that there are currently no maps showing the extent of the flooding at Vicarage Lane, Tulworth Road or to properties on Anglesey Drive. Flow maps showing the extent of any flooding after the works are completed compared to the current situation should be made available.** This is a crucial piece of information which will provide, certainty to local residents about how their properties might be affected by the works and the planning application should be deferred until this evidence is available.

4. Historic flooding

4.1 Throughout the reports lodged in support of the planning application, various figures have been provided for overtopping. Section 1.1 of the Planning Statement states that the dam risk of overflow in flood event in excess of 1 in 50 chance per year. This is in line with the information provided in the Flood Study (see table below), although does not accord with local knowledge or the historical record that no incidents of flooding of the pool are known.

Table 6.4: Critical storm durations for T-Year, including drainage network bypassing of the reservoir.

Event (year)	Peak stillwater flood level (mAOD)	Reservoir Inflow (m^3/s)	Reservoir Inflow Volume (m^3)	Peak culvert outflow (m^3/s)	Peak dam crest overflow (m^3/s)	Length of crest overtopped (m)	Linear overtopping (l/s/m)
1% AEP (100-year return period)	91.981	3.79	41,300	0.80	0.71	68	10
2% AEP (50-year return period)	90.856	2.61	27,400	0.74	0.00	0	0

Note: Minimum embankment crest level = 90.88mAOD

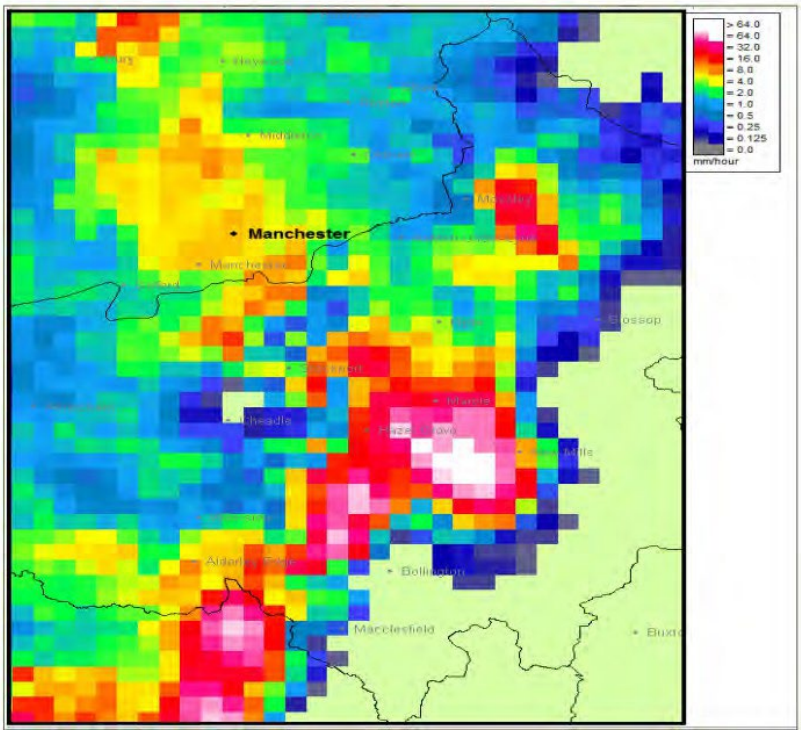
However, paragraph 4.3.3 the same report states 2 “As a result of the proposed development, the reservoir will be expected to overflow the western dam during the 0.1% AEP compared to the 5% AEP under the current scenario.” This is echoed by the other documents lodged with the planning application, including the Summary Options Report and Flood Risk Assessment.

The Poynton FRA Model Report references the Flood Study and states “the assessment indicated that the existing historic reservoir does not satisfy the current safety design requirements, with the existing weir crest expected to experience significant overtopping from the 3.33% (AEP 1:30) year event”. However, these figures do not accord with table 6.4 above which is taken from the Flood Study 2019. The Flood Study states the 2% AEP (50 year) event has modelled still water that is just 24mm **below** (our emphasis) the lowest point on the dam crest…overflow events of greater magnitude will cause overtopping of the dam.” We can find no reference in the published Flood Study Report October 2023 to the dam having significant overtopping from a 3.33% (AEP 1:30) year event. It should also be noted that the baseline figures shown in table 5.1 of the Poynton FRA Model Report vary from the original figures provided in the study, no explanation has been given regarding the variance. **We would ask that the Planning Officer and the Strategic Planning Committee requests information on why the data has been amended and requests the document references to these claims made within the supporting documents.**
This information should be shared with the public prior to the consideration of the planning application.

4.2 The Summary Options Report at section 1.3 sets out examples of extreme flooding in the UK. The example includes 2019 Toddbrook Reservoir. The report continues “the fact that such a flood has not yet occurred at the reservoir does not mean that it won’t happen this year”. **This is factually incorrect, there have been significant flooding events in Poynton. It should be noted that Poynton was significantly impacted by the Toddbrook event referred to in the report and a major incident had to be declared.** The rain event leading to the incident at Toddbrook and flooding is detailed in the ‘Cheshire East S19 flood investigation report on Catchments of: Poynton Brook, River Dean, River Bollin, Harrop Brook and tributary of Toddbrook’. The Section 19 Report confirms that areas surrounding and adjacent to Poynton Pool were confirmed to have flooded but there were no reports of flooding from Poynton Pool “A number of unnamed ordinary watercourses drain into Poynton Pool, the bifurcation stream from Park Lane stream and others along South Park Drive, Anglesey Drive and from the pond on Towers Road. In these areas flooding was reported from various mechanisms including surface water, sewer and ordinary watercourse.”

4.3 In addition, there were two significant flooding events exceeding the 1% AEP in 2016 “The gauge at Hazel Grove suggests that on June 11th 2016 45mm of rain fell over 6hrs. United Utilities have calculated a suggested rainfall return period for the June 11th 2016 as a 1 in 510 year reoccurrence interval. The gauge at Hazel Grove suggests that on the 13th September 2016, 30mm of rain fell over 2hrs. United Utilities have calculated a suggested rainfall return period for the June 11th 2016 as a 1 in 350 year reoccurrence interval.” (Paragraph 4.2 of the S19 report – Poynton - https://www.cheshireeast.gov.uk/pdf/highways/flood-risk-strategy/flood-investigation-poynton-2016.pdf)

Figure 2 Hydrad Image; 11th June 2016



From the hydrad image it is clear to see that this rainfall fell within the catchment.

The antecedent conditions were “In summary, the available data indicates that the ground conditions were heavily saturated and more saturated than average in June 2016 in the Poynton area. These saturated ground conditions mean that more surface water runoff than typical for the time of year would have been generated for any given rainfall event, with a greater potential for rapid surface water flooding and prompt increases in river levels.”

As with the extreme event in 2019 there were no reports of overtopping at Poynton Pool. Within living memory no one can recall the Pool overtopping despite 26 floods happening in Poynton between 2011 and 2017.

5. Risk

5.1 The Executive Summary of the Summary Options Report states that “improvements are therefore needed to the dam to reduce the likelihood of it failing in an extreme weather event”. The Town Council would ask that for clarity, information is provided on the current risk of the dam failing. **The likelihood of the dam currently failing is not set out in the document or what the reduction in that risk would be.**

The summary goes on to say that “in the event of failure of the dam and release of the reservoir around 3,500 people would be present in the area at risk of injury and death…and on average around two people would be killed”. However, this statement fails to make it clear that these figures are for dam failure on a wet day

event. Jacobs initial options report BRJ10627 – J470-DOC-001/004 notes that the "the other important factor in evaluation of the potential impact of dam failure on a wet (relevant to spillway capacity) is the flood would be happening anyway even with no dam failure".

It should be noted that the report in table 4.4 from the Initial Options Report (see below) shows that the failure of the dam alone (dry day) would result in an estimated 274 people in the population being impacted and likely loss of life is 0.12. The text included in the table confirms that the Environment Agency do not use the figure of an average of two people being killed which has been quoted widely through the lodged planning documents.

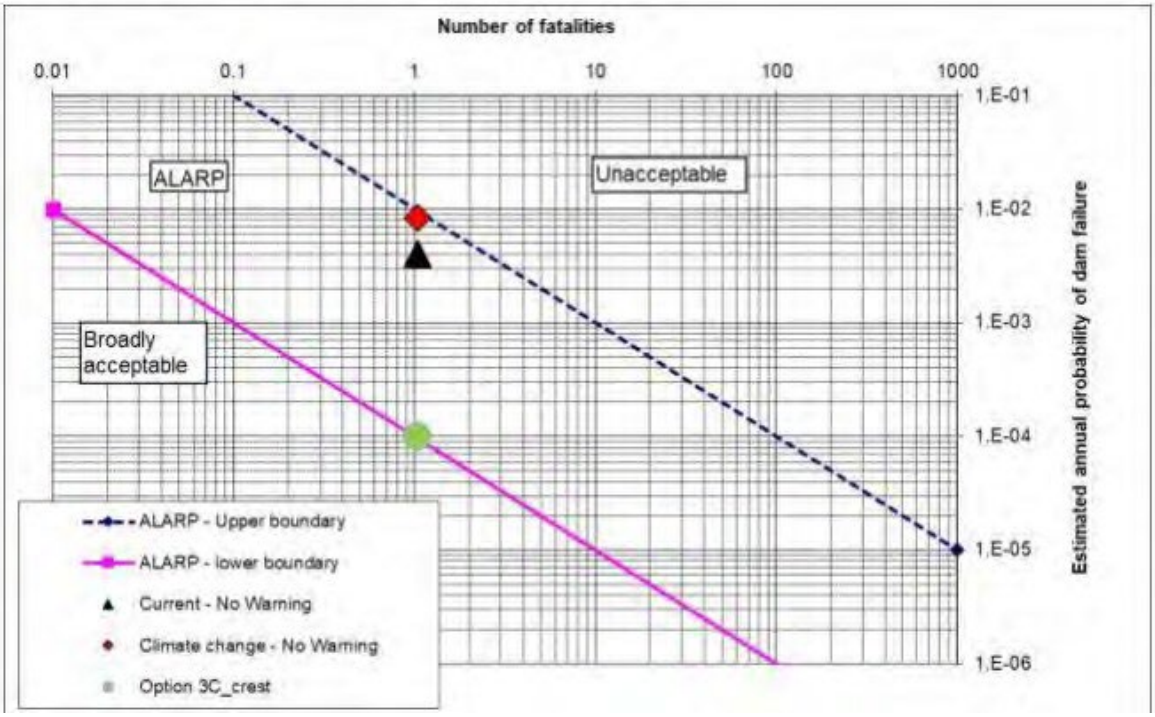
For the purposes of the economics ALARP assessment, the base case likely incremental loss of life provided by the Environment Agency, is adopted as 1.04. In practice in the event of dam failure the public downstream are likely to assign the overall impact of 1.97 lives as being the responsibility of the Undertaker. (Cheshire East council)

Table 4.4 Screening estimate of risk to life (wet day)

Source	Scenario	Number of houses at risk (Note 1)	Maximum/ Time averaged population at risk	Likely loss of life		Property damage £M	Source comment
				No warning	with warning		
Environment Agency 2016 dambreak	Dry day		274/ 184	0.12		6	
	Wet day		3538/ 2246	1.97		79	
	Incremental wet day		2031/ 1306	1.04		45	

5.2 Section 1.4 and 1.5 of the Summary Options Report states that the risk of loss of life and property damage to those living downstream is unacceptably high. However, the Jacobs Initial Options report had to be amended following the discovery by Friends of Poynton Pool of a significant error showed that the risk was not in the unacceptable zone but actually in the As Low as Reasonably Practicable (ALARP) region. Please see below.

Figure 4-3 FN Frequency-Consequence Chart plot of societal risk



5.3 In addition, Section 4.3.2 of the Planning Statement states in relation to Flood Risk that "the residual risk from breach failure is significantly reduced by the proposed works". **However, the Flood Risk Assessment lodged with the application states at page 21 that "The residual risk of dam failure/breaching is considered to remain negligible". No figures are provided in the Flood Risk Assessment in relation to the residual risk of dam failure/breaching. The whether more proportionate work to reduce a negligible risk should be considered by Cheshire East Council.**

5.4 The Planning Officer and the Strategic Planning Board are asked to consider the report of Professor Ball, (Appendix A) who is a risk management expert regarding the risk assessments, the risk to life and the proportionality of the work.

6. Trees

6.1 Section 1.1 of the Planning Statement sets out the historical background to the planning application and refers to a Section 10 safety report from 2019. This is incorrect, the S10 report was carried out in 2016 not 2019. This section of the planning statement goes on to assert that "The existing trees along the dam embankment also pose dam resilience safety concerns, as tree roots can damage the embankment dam structure retaining the reservoir and increase the likelihood of structural failure of the dam, which therefore increase the risk of flooding downstream due to dam failure".

However, the Section 10 report referred to as justification for the works actually states on page 8 "A further potential problem is the presence of many mature trees

that exist on the dam. It is not an ideal situation to have large trees on a water retaining embankment. However given that this is a small dam and that the trees have been in existence for many years, it is **acceptable** (our emphasis) provided that the trees are managed in a proper manner."

This view was echoed in the earlier 2005 report which stated "The upper part of the upstream face is not protected from erosion in a formal manner but tree roots do help to prevent erosion of the fill material" and further "The extensive tree roots are mostly preventing erosion of the bank and where erosion is occurring it is in the open areas.

The Annual Supervising Engineers Reports in 2019, 2021 and 2022 states "Fortunately, the crest is very wide and there does not appear to be a risk of the entire crest width being damaged by a fallen tree along the upstream face" this statement casts doubt on the assertion that the trees increase the likelihood of structural failure".

6.2 **It is unclear where the view that trees must be removed for dam safety has come from and it would appear to be contrary to the findings of previous S10 reports and the supervising engineer's reports.** This mis-representation regarding the danger posed by the trees is repeated in both the Options Summary Report and the Flood Risk Assessment which appears to contradict the Annual Supervising Engineers report by stating "Additionally, the current extent of tree vegetation growing on the dam presents a risk to the safety of the reservoir and is therefore increasing the risk of reservoir flooding to the existing site for a number of reasons: flooding during overtopping could cause trees to fall, potentially further damaging the embankment; tree roots damage the embankment and increase likelihood of dam failure;"

6.3 The Town Council would draw the Strategic Planning Board and the Planning Officer's attention to the arboricultural objection (appendix B) which should be read in conjunction with the Tree Survey commissioned by Poynton Town Council (appendix C) and valuation of the trees undertaken on behalf of the Town Council (appendix D). **The Town Council believes that the Arboricultural Impact Assessment (AIA) is inaccurate in that it fails to identify a number of trees and undervalues many of the trees present.** While it is claimed by the applicant's agents that only two trees are Grade A, a report commissioned by Poynton Town Council from a professional arborist has confirmed that 34 trees are actually Grade A. These trees have enormous value, both for their appearance as part of a historic landscape and as an essential part of the ecology and biodiversity of Poynton Pool and Park.

6.4 Policy ENV 6 in the Site Allocation and Development Policy Document adopted by Cheshire East Council in 2022 supports the use of CAVAT to value the loss of trees "Contributions to off-site replacement trees will be calculated using an appropriate cost equivalent replacement calculation agreed with the council, such as capital asset valuation of amenity trees (CAVAT). Compensation for the loss of woodland due to the impact of development shall be calculated in accordance with the DEFRA biodiversity offsetting metric referred to in Policy ENV 2 'Ecological implementation'

The valuation of the trees at Poynton Pool indicated a CAVAT value of just over £3million. The Town Council believes that the loss of the trees should be appropriately valued and that this should be taken into consideration when conducting the cost to save a life as set out in the initial Jacobs options report and to off site replacement of the trees.

6.5 The Town Council would urge the Cheshire East Trees Officer to fully review the reports submitted by the Town Council in relation to the trees which will be impacted by these works.

7. Planning Considerations

7.1 The **Cheshire East Local Plan (CELP)** specifically identifies Poynton Pool as a Site of Biological Importance / Local Wildlife Site.

- Paragraph 2.23 of the CELP states that: *"Key nature conservation sites are shown in Figure 2.7 below."*

- Paragraph 2.24 of the CELP states that *"The most prominent environmental designations in Cheshire East are: … 416 Sites of Biological Importance / Local Wildlife Sites."*

- The map in Figure 2.7 of the CELP clearly shows Poynton Pool and nearby woodland in the Park as a Site of Biological Importance / Local Wildlife Site.

Conclusion: The Cheshire East Local Plan confirms that Poynton Pool and nearby woodland is a "key nature conservation site" with a "prominent environmental designation" as a Site of Biological Importance / Local Wildlife Site.

The description of Poynton Pool in the Cheshire East Local Plan disproves any claims that it is "a non-designated Site of Biological Importance (SBI)." Paragraph 2.24 of the CELP makes clear that the site has an "environmental designation" and is a "key nature conservation site."

7.2 **Policy SE3** of the Cheshire East Local Plan covers Biodiversity and Geodiversity stating:

"Development proposals which are likely to have a significant adverse impact on a site with one or more of the following local or regional designations, habitats or species will not be permitted except where the reasons for or benefits of the proposed development outweigh the impact of the development:
… ii. Sites of Biological Importance (SBI) or Local Wildlife Sites"

<u>Site Allocations and Development Policies Document (SADPD)</u>
Poynton Pool and Park are part of the Core Area of the Ecological Network in Cheshire East as shown in Figure 4.1 in the SADPD, and Paragraph 4.5 states:

"The ecological network will assist in the provision of nature conservation and ecosystem services that are essential for sustainable development, including water

management, carbon capture and access to nature with associated recreational and health benefits."

Paragraph 4.6 of the SADPD states:
"Core areas contain concentrations of habitats that are rare or important because of the wildlife they support and areas of irreplaceable natural habitat such as ancient woodland, glacial meres and peatlands, which are impossible to re-create. They include protected wildlife sites … local wildlife sites (LWS) and UK priority habitats. Buffer zones are incorporated into the core areas and protect the individual sites and habitats from external adverse impacts such as pollution and disturbance."

As Cheshire East have identified Poynton Pool and Park in their Site Allocations and Development Policies Document (SADPD) as a Core Area of the Ecological Network, clearly any development that inflicts major damage to the environment should be rejected.

7.3 **Planning Policy:** More generally, the proposed development conflicts with numerous policies in the Cheshire East Local Plan (CELP), Poynton Neighbourhood Plan (PNP) and the Cheshire East SADPD. The Town Council would also draw the Planning Officer's and the committee's attention to the report from the Cheshire Wildlife Trust prepared as part of the evidence base for the Poynton Neighbourhood Plan (appendix E.)

Poynton Town Council urges Cheshire East to reject the application from Jacobs (on behalf of Cheshire East) for this proposed scheme of works at Poynton Pool and Park. They are contrary to numerous policies (see below) in the Cheshire East Local Plan, Poynton Neighbourhood Plan and the SADPD.

7.3.1 Removal of the trees and vegetation, plus widening of the path along the western side of Poynton Pool will have a serious impact on the local environment. Poynton Park and Pool are a Local Wildlife Site (LWS), with extensive populations of birds, mammals (including bats), reptiles and invertebrates. **Cheshire East Council** have been made aware of additional wildlife recording. Despite this new information **being made available, the RECORD data, desk study and walk over were conducted in May 2022, over 18 months ago have not been updated.**

Relevant Policies: Cheshire East Local Plan:

- MP1 (Presumption in Favour of Sustainable Development),
- SD1 (Sustainable development),
- SD2 (Sustainable development),
- SE1 (Design),
- SE2 (Efficient Use of Land),
- SE3 (Biodiversity),
- SE4 (the landscape)
- SE5 (Trees, hedges and woodlands).

Poynton Neighbourhood Plan:

- EGB2 (Open Spaces),
- EGB3 (Natural and Historic Environment),
- EGB7 (Landscape Enhancement),

- EGB8 (Protection of Rural Landscape Features)
- EGB9 (Nature Conservation).

SADPD:

- GEN1 (Design Principles),
- ENV1 (Ecological Network),
- ENV2 (Ecological Implementation),
- ENV3 (Landscape Character), ENV5 (Landscaping),
- ENV6 (Trees, Hedgerows and Woodlands)
- REC1 (Open Space Protection).

7.3.2 **The Boathouse on Poynton Pool is a locally listed heritage asset. The Park and Pool are both included as non-designated heritage assets in the Poynton Neighbourhood Plan and will be extensively damaged by these proposals.**

Relevant Policies: Cheshire East Local Plan

- SE7 (The Historic Environment)

Poynton Neighbourhood Plan:

- EGB15 (Heritage Assets),
- EGB20 (Non-designated Heritage Assets),
- EGB21 (Protecting and Enhancing Non-Designated Heritage Assets)
- EGB22 (Development within the setting of a listed building).

SADPD:

- HER1 (Heritage Assets)
- HER7 (Non-designated heritage assets).

No mention is made in the Environmental Assessment Report of the potential loss of cultural heritage as a result of this scheme. This is despite the Development Manager Archaeologist for Cheshire making the following comments in relation to the previous EIA screening application.

“Thank you for consulting APAS on this EIA scoping application, having reviewed the supporting documentation along with the information held on the Cheshire Historic Environment Records, I note that heritage is considered in the screening letter under cultural heritage, however this focuses heavily on the built heritage of the surrounding area and not the potential archaeology which may be impacted by this proposed development.

Poynton Pool is visible on the first edition OS Map of the area (1873) forming part of the pleasure gardens associated with Poynton Towers and therefore may have below ground remains which will need to be addressed within the supporting documentation for any formal proposal for these works.

It is accepted that the effect of the proposals on the archaeological significance of the area is unlikely to be sufficient to trigger a requirement for an EIA but as noted

above the area may have below ground archaeological remains relating to its use of a pleasure garden and potentially remains relating to the earlier use of Poynton towers as a residence. Further study of historic maps, aerial photographs, LIDAR, and readily available secondary sources will almost certainly reveal other features of interest which, where affected by development works, may require further evaluation and mitigation.

It is, therefore, essential, that the proposed Heritage Assessment is expanded to include a consideration of the archaeological issues and sources noted above. It should also consider the likely effect of specific aspects of the development process on any features identified. This study will assist in defining the need for any further evaluation work and mitigation that may be required should the development proceed.

This advice has been prepared in line with the guidance contained in Paragraph 194, Section 16 (Conserving and Enhancing the Historic Environment) of the National Planning Policy Framework (Revised 2021), published by the Department for Communities and Local Government and Managing Significance in Decision-Taking in the Historic Environment, Historic Environment Good Practice Advice in Planning: 2 (Historic England 2015)."

The Town Council notes that although the expansion of the Heritage Assessment to include the consideration of the archaeological features was deemed as "essential" by the Development Manager Archaeologist, no further assessment has taken place. The Town Council would strongly urge that an archaeological assessment of the site as set out above should be undertaken as a matter of urgency in ordr to protect any features of historic and archaeological significance.

7.3.3 The Pool and Park are extensively used for leisure purposes, contributing to the health and happiness of local people. The well-used path along the western side of the Pool is a public footpath (number 89).

Relevant Policies: Cheshire East Local Plan

- CO1 (Sustainable travel),
- SD1 (Sustainable development),
- SC1 (Leisure and Recreation) and
- SE6 (Green Infrastructure).

Poynton Neighbourhood Plan:

- EGB4 (Access to the countryside),
- EGB5 (Improving access to the countryside),
- TAC1 (Walking and Cycling),
- HEWL1 (Encouraging a Healthy Lifestyle),
- HEWL2 (Getting About within Poynton) and
- HEWL3 (Access to Green Spaces).

SADPD:

- REC1 (Open Space Protection) and
- INF1 (Cycleways, Bridleways and Footpaths).

7.3.4 As set out in the Environmental Assessment Report vegetation will be cleared for the full length of the works. This includes the removal of at least 31 trees, partial removal of two groups of trees (no detail has been provided as to how much of the groups of trees will be removed, pruning to include crown lifting of 44 trees and removal of all shrubs and other vegetation. The removal of the vegetation on the western side of Poynton Pool, bordering London Road North will increase traffic noise, and environmental disturbance or pollution, affecting residents of nearby homes.

The Town Council does not accept that there will be no effect on noise sensitive receptors once the construction is completed. The current trees and understory provide an important barrier to noise. No shrubs or trees will be allowed to regrow in two areas of the site totalling 80m long. In addition, the Aboricultural Impact Assessment concedes that only 6 trees will not be impacted by the works. **The removal and substantial pruning of the trees will have a significant impact on noise, which will be irreversible in large part. As set out in the Environmental Impact Report section 6.7 even after 15 years there will be two permanently cleared areas and the canopy will have only partially closed.**

Relevant Policies: Cheshire East Local Plan:

- SD1 (Sustainable development),
- SD2 (Sustainable development in Cheshire East),
- SE1 (Design),
- SE5 (Trees, hedges and woodlands),
- SE12 (Pollution and land containment).

SADPD:

- HOU12 (Amenity)

7.3.5 Cheshire East Landscape Character Assessment, Cheshire East Borough Council (LUC 2018) identifies Poynton Park within LCA 5 Wooded Estates and Meres: LCA 11a Adlington. It specifically identifies Poynton Park as a high quality feature (page 50 Environmental Impact Report). **The Town Council does not agree with the summary of the Environmental Impact Report that there would be a barely perceptible chance on the LCA 11a Adlington. There will be permanent removal of vegetation from two strips of land of at least 80m which is nearly 17% of the development site.** In addition, 34 trees and 10 groups of trees will have their crowns lifted to 5m and two further groups will be partially removed. After 15 years it is accepted in the reports that the canopy will have only partially closed, and this is without additional loss of trees which will be impacted and pushed into terminal decline by the work.

The Town Council would request that a 3D visual street scene is produced showing existing and the proposed street scene following tree and vegetation removal, crown lifting and pruning for both 1 year post construction and 15 years post construction.

Trees which are identified as likely to be lost as a result of the construction work should also be shown.

7.3.6 Alternative solutions could be developed to address any flood risk from the Pool, including an additional outlet between the Pool and Poynton Brook and flood prevention measures such as “leaky dams” in the Pool’s catchment area east of Towers Road.

Relevant Policies: Cheshire East Local Plan: SE13 (Flood Risk)

Poynton Neighbourhood Plan: EGB1 (Surface water management)

SADPD: ENV16 (Surface water management and flood risk)

7.3.7 **The Town Council considers highly relevant the comment of the Cheshire East Principal Forestry and Arboricultural Officer on application 21/5509M (Erection of three dwelling houses at the former Council Road Depot, London Road North, Poynton) which borders the west side of Poynton Pool:**

“… the loss of trees within the site would have a significant impact on the wider amenity of the area …”

7.4 Legal Obligations

Protected Habitat: Local councils have a legal duty with regard to conserving biodiversity in the exercise of their normal functions. As shown in the above extracts from the Cheshire East Local Plan and SADPD, the habitat at Poynton Pool is one of principal importance:

A local resident has supplied a list of 66 protected species which have been found at the site (appendix F).

The Natural Environment and Rural Communities Act (NERC) 2006 places a duty on every public authority, in exercising its functions, to have regard to the purpose of conserving biodiversity, so far as is consistent with the proper exercise of those functions. This scheme will seriously reduce biodiversity.

7.4.1 The proposal by Cheshire East to plant some replacement trees at a site in Stockport Council’s area is a totally inadequate response to the proposed loss of mature trees at the publicly accessible Poynton Pool site. The fact that the trees will take up to 27 years to mature and the site will be closed to the public and largely invisible from nearby roads and paths are further aggravations. **This scheme will not address or resolve the many planning, ecological and technical issues raised by the proposed spillway works at Poynton Pool.**

7.4.2 The Town Council do not accept that the stated loss of woodland comprises of 0.1782ha. The full area of woodland is approximately 0.712ha. There will be permanent removal of vegetation from two strips of land of at least 80m which is nearly 17% of the development site. In addition, 34 trees and 10 groups of trees will

have their crowns lifted to 5m and two further groups will be partially removed. A number of trees have not been identified in the AIA report and we believe that these will be at risk. As only 6 trees will not be impacted by the works, we believe that the loss of woodland will far exceed the 0.1782ha quoted in the biodiversity net gain report and which has been used in the calculation on net gain.

7.4.3 In addition, the report states that the 0.1782ha of lost woodland will be replaced with 'Other neutral grassland in moderate condition'. However, currently the area would be classed as 100% woodland and forest due to the canopy and root system coverage and unsurfaced path. Under the current plans much of the lost woodland habitat will be replaced with a 2m wide surfaced path so the site habitat creation has been overstated.

7.4.4 In its response to the previous Environment Impact Assessment Screening application. Cheshire Wildlife Trust recommended that "Any loss of habitats (including hedgerows and watercourses) on this site should also result in a significant measurable net gain for biodiversity. Given this is a Site of Biological Importance we advise this is substantially above the minimum 10% mandated in the Environment Act (2021) and suggest a target of at least a 20% net gain." We note that the scheme currently falls short of the 10% net gain requirement.

7.4.5 **The Town Council would ask that the figures and calculations set out in the Biodiversity Net Gain Report, and the comments from Cheshire Wildlife Trust regarding the uplift in biodiversity net gain given the site is of Biological Importance, should be reviewed carefully to ensure that appropriate biodiversity net gain is achieved for this site.**

8. Conclusion

The Town Council would urge the Planning Officer to consider the points raised by the Town Council including the numerous errors, omissions and contradictions that currently exist in the lodged planning documents and the supporting documentation.

These should be addressed before this planning application is considered further. In addition we would request that the application is delayed until uncertainties around the volume of water held in the pool, the material from which the dam has been constructed and the catchment are resolved.

While the report of Professor Ball, the expert consulted by the Town Council, disagrees with Cheshire East's assessment of the risk of the dam failing and causing serious flooding, if Cheshire East do remain committed to this scenario, then we urge this application is deferred and alternative and less damaging solutions are re- examined with an open mind. These may include constructing a second spillway culvert between the Pool and Poynton Brook or reinforcing and raising the wall alongside London Road North to retain any flood waters.

Appendix A

Report for Poynton Town Council

Proportionality and Practicability of Proposed Flood Alleviation Measures at Poynton Pool

by

Professor David J Ball

29 August 2023

1. Introduction

1.1 On 24 July 2023 Poynton Town Council instructed me to comment on aspects of proposed new flood control measures for Poynton Pool, in particular on the 'proportionality' and 'practicability' of the proposals and related issues.

1.2 The matter arises because the Pool, which is artificial and was constructed circa 1750, has been designated as a reservoir under The Reservoirs Act 1975 because of its volume, which in turn has triggered a hazard rating which concluded that overtopping followed by a dam breach event at the Pool posed a significant risk to a road (A523)[1] and human life. This led to a search for control measures. These involve substantial engineering works which would have a negative impact upon the established environment of the Pool. The Council, a local community group known as 'The Friends of Poynton Pool' and others, have queried the need for the works and the science behind the proposals. One response to these queries has been to imply that 'it's a matter of one's preference for saving either lives or trees.'

1.3 The historical record, so far as it is known, has identified no instances of over-topping during the known major flood events although it is surmised in the Jacobs report that 'there could have been minor overtopping which went unnoticed' (Jacobs, 2019).

1.4 Poynton has experienced actual flood events recently in 2016 and 2019. These events were not associated with the Pool. A monitoring station has been established on Poynton Brook by the Environment Agency (EA) to provide warnings.

1.5 In writing this report I clarify that I am not a flood engineer. I am a Professor of Risk Management at Middlesex University, Director of its Centre for Decision Analysis and Risk Management (DARM), and Director of Risk Assessment and Management Associates Ltd (RAMA). The current work is undertaken by RAMA. My experience includes research for national / international regulators of risk and spanning diverse fields ranging from nuclear and offshore safety to environmental protection and consumer safety. Recently, I was convenor of an international panel of scientists on behalf of the European Institute for Science, Media and Democracy (EISMD) which led to publication of 'Principles of risk management.'[2]

2. The fundamental approach to risk management v the Jacobs methodology

2.1 A key source of advice for UK public policy decision makers is HM Treasury's 'The Green Book'.[3] This has been available for over 30 years and is regularly updated. Its purpose is to act as a best practice guide with the aim of bringing consistency to decision making across government and the wider public sector, including decisions about risk and safety. Consistency is important because where there is inconsistency resources will not be allocated to provide best public value. The Green Book (p4, 2022) says that for consistency, departmental guidance *should be aligned with it*. It also points out that the approach it describes is *not a mechanical or deterministic decision-making device* (p3, 2022).

[1] Recent opening of the Poynton relief road means that the London Rd is now classified as a B road
[2] https://www.eismd.eu/wp-content/uploads/2020/02/Capur-Statement-of-Principles.pdf
[3] https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent/the-green-book-2020

2.4 The approach set out in The Green Book requires an assessment of the costs, benefits and risks of alternative ways of meeting objectives. It is concerned with overall social welfare efficiency, and not just economic market efficiency. Likewise, social or public value includes all significant costs and benefits that affect the welfare and wellbeing of the population either nationally or, in the case of place-based decisions, locally. These might include environmental, cultural, health, justice etc. considerations, sometimes referred to as 'externalities.' They may apply to the natural environment via the concept of 'natural capital' which includes consideration of landscape, tranquillity, inland water bodies, wildlife and biodiversity and opportunities for recreation in urban areas and the associated physical health benefits. The Green Book describes approaches to valuing these non-traded goods.

2.5 If one compares the above Green Book approach to decision making with that of the Jacobs report there is a conspicuous divergence. The Jacobs approach, which appears to follow that described in the EA's SC090001/R2 (2013),[4] takes no account of collateral effects and unintended consequences of the proposed flood mitigation measures. Collateral effects would include ecosystem impacts, public health or heritage considerations. These are largely side-lined other than for brief acknowledgements of their existence (e.g., p44, Jacobs report 11 June 2021 where it is merely said that any remediation work should be detailed to minimise impact on the area). The Green Book, however, states that collateral effects and unintended consequences need to be thought about when developing and appraising options, i.e., not left until choices have been made such that only remedial patches can be applied. There is no attempt to incorporate these issues early on (even though these are what most commentators are concerned about) into the appraisal of the control options which is limited to consideration of discounted net costs of each scheme versus its hypothetical discounted lifesaving potential. The dangers of not including these factors from the beginning are several: a non-optimal solution may be chosen; there is no guarantee of the extent and form of the proffered remediation work; decisions might be resented.

2.6 Thus, while it might be argued that the Jacobs work follows established practice in flood risk management, the practice is not consistent with that in The Green Book, nor with modern understanding of how risks to the public should be managed.[5] The modern approach would be much more sensitive to such things as taking too narrow a view from the outset, meaningful communication (multi-way) between experts and all stakeholders from the outset, unintended consequences of control measures and uncertainty, all of which figure in the 2022 edition of The Green Book and in much earlier editions too. Similar issues about what is important in managing public risk have been brought up by the former Risk and Regulation Advisory Council 20 years ago,[6] and in countless other publications on risk management.

[4] The EA's 2013 'Guide to risk assessment for reservoir safety management.'

[5] The Independent Reservoir Safety Review by David Balmforth (2021) notes (p100) that reservoir legislation has not kept pace with approaches to safety management in other sectors. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985172/reservoir-safety-review-report.pdf

[6] https://webarchive.nationalarchives.gov.uk/ukgwa/20100104183913/http:/www.berr.gov.uk/deliverypartners/list/rrac/index.html

2.7 From the various notes and minutes of meetings which I have seen it appears that the justification for the exclusion of these factors[7] will be along the lines of the Jacobs approach being established practice in flood management. In my opinion, I would say that the established practice, which is embedded in a mechanical and formulaic approach, and which delegates decisions to engineering judgement, lags modern thinking on risk management and this is one reason why the current dispute has arisen. This is not to say that flood engineers do not have a valuable contribution to make. It is obvious that they do, but the issue is how that knowledge and expertise is introduced into the decision process and where authority lies.

2.8 To mention just one other publication on the management of risks to the public, EISMD's 'Principles of risk management' (2020), this summarises current thinking and I reproduce in Figure 1 below a list of their principles. It could be argued without great difficulty that all of Principles 1 to 5 have been violated by the Jacob's approach.

Principles 9

Guidance for decision makers on using risk concepts in making policy decisions

Principle 1: Risk decision making involves more than numbers 9

Principle 2: The concept of reasonableness must underpin all decisions 10

Principle 3: There is an inextricable ethical dimension to risk decision making 11

Principle 4: Risk elimination in public life is rarely sensible and potentially increases danger . . . 11

Suggestions for improving the quality of risk analysis for public policy making

Principle 5: Risk communication should be integral to risk management activity 13

Principle 6: Policy makers should reflect on the appropriateness of attempts to alter people's behaviour 13

Principle 7: Approaches to risk management must address the issue of trust in institutions 14

Principle 8: Participative / Deliberative approaches have potential both to promote sound risk management and legitimise decisions 15

Suggestions for helping the public to make better risk decisions for themselves

Principle 9: Risk literacy can be improved 17

Principle 10: The role of vested interests should be made more transparent. 17

Principle 11: It should be recognised that all approaches to risk are provisional and are based upon currently available evidence and prevailing social mores 18

Figure 1: Principles of risk management (EISMD, 2020)

[7] The EA guidance does acknowledge impacts upon environment and cultural heritage, but only from the point of view that they might be affected by floods. The possibility that control options might have unintended consequences (which they almost always do) is not incorporated. It could be said that the guidance is valid in situations not giving rise to concern over collateral effects.

3. Reasonable practicability, ALARP and gross disproportion

3.1 These three concepts, which originated and are closely tied to occupational safety and health (OSH) law, are much in evidence in the Jacobs report. The concepts are also used in nuclear safety.[8] They can be found in the EA's guide to flood risk management (2013), having, it seems, been embraced.

3.2 I have discussed these terms, and their roots, in relation to the Jacobs calculations in Appendix A. In brief, the term 'practicability' is strongly linked with a 1949 legal case concerning the death of a coal miner in Wales. The Court of Appeal held that 'reasonably practicable' is a narrower term than 'physically possible' and implies a computation between quantum of risk on the one hand and the time, cost and trouble of safeguards on the other.[9] Thus, the notion of ALARP (as low as reasonably practicable) arises in that OSH law requires all practicable (or ALARP) measures, i.e., those for which the risk reduction afforded by some control measure outweighs the cost and trouble, to be implemented.

3.3 However, a complication arose in the OSH sphere, which is that the Court, in deciding the Edwards case, ruled that a control measure must be implemented as long as the costs are not grossly disproportionate to the risk. It has been suggested that the reason the judge did this was because in those days (the 1940s) human safety was grossly undervalued whereas nowadays the valuation is based on willingness to pay and consequently should not be upgraded by a gross disproportion factor (see Box 1 and discussion by Professor Andrew Evans of gross disproportion in the context of road and rail safety). The argument about the current legitimacy of gross disproportion in OSH has never been entirely settled in court and so simmers on, though only on the sidelines.

3.4 Were a gross disproportion factor to be used in OSH, there is a further obvious issue which is the magnitude of the factor. Few authorities have attempted to assign a numerical value to it, although John Locke, the first Director General of the HSE, suggested a range of from one to ten, the chosen value depending on circumstances, in particular, the level of individual risk being experienced.

3.5 So far as I am aware there is no law which requires the introduction of gross disproportion factors in flood risk management. Nonetheless, the Jacobs report introduces a very substantial factor (five) into its assessment of the proportionality of the various options. While, as with Professor Evans (Box 1), I accept the principle of linking the definition of what is reasonably practicable to the value of preventing a fatality, which is what Jacobs have done in their approach to the assessment of the proportionality of the various flood control options, I do not accept the introduction of the gross disproportion factor. Effectively, this discriminates against the cost of control and all the other unintended but real consequences of the various options, such as environmental damage, which I suspect would not be so weighted even if they had been included in the calculations of what was proportionate.

[8] In the context of the disposal of nuclear waste it has long been recognised that solutions are not purely scientific – see the work of CoRWM.

[9] Edwards v National Coal Board [1949] 1 All ER 743 CA

The writer accepts the principle of linking the definition of what is reasonably practicable to the value of preventing fatalities (VPF) and injuries. In that case, a safety measure is regarded as reasonably practicable if its cost of preventing fatalities (CPF) is less than or equal to its VPF. That is broadly the definition adopted by the railways. However, in the case of roads it is clear from section 4.1 that there are many possible road safety measures for which the CPF is less than the VPF, but which are not implemented. It follows that either the ALARP principle is not applied to roads, or else that road authorities adopt a different definition of reasonable practicability.

On gross disproportion, the writer agrees with the Rail Safety and Standards Board in their discussion document Valuing Safety[7] that:

> "If we have correctly weighed the safety benefits | there can be no justification for demanding that duty-holders take action disproportionate to its benefits, and even less for the much-quoted requirement that it should be `grossly disproportionate'" (page 3).

It may be useful to observe that the valuations of preventing fatalities current at about the time of the Edwards v National Coal Board "gross disproportion" judgement in 1949 were very much lower in real terms than they are today. As shown in Table 1, the first roads VPF published for 1952 by Reynolds[8] was of £2,000—admittedly described as a minimum—which is equivalent to £37,500 at 2004 prices and 1/37th of the 2004 VPF. The amount of compensation paid to the widow of the miner in the Edwards v National Coal Board case after her successful appeal was £984 at 1948 prices, equivalent to £23,000 at 2004 prices. If the judgement is interpreted as requiring that safety managers spend much more than sums such as these on preventing fatalities, it is clear that subsequent generations are already implementing that requirement.

Box 1: Memorandum by Professor Andrew Evans to Select Committee on Economic Affairs (2006)

https://publications.parliament.uk/pa/ld200506/ldselect/ldeconaf/183/6021402.htm

3.6 According to the EA guidance, the purpose of gross disproportion factors is to "allow for the imprecision of estimates of costs and benefits and also to ensure that the duty holder robustly satisfies the ALARP principle" (EA p151). I understand this is the justification used by Jacobs. However, there is no evidence that this was ever the intention behind gross disproportion.

3.7 In public life, disproportion in decision making has created difficulties and anomalies. In the 2000s it was realised that safety requirements which impinged on the public were at times becoming unbalanced and were actually stopping people from doing useful and beneficial things. In 2006 the Government felt it necessary to pass The Compensation Act which says as follows:

> "A court considering a claim in negligence or breach of statutory duty may, in determining whether the defendant should have taken particular steps to meet a standard of care (whether by taking precautions against a risk or otherwise), have regard to whether a requirement to take those steps might—
>
> (a) prevent a desirable activity from being undertaken at all, to a particular extent or in a particular way, or
>
> (b) discourage persons from undertaking functions in connection with a desirable activity."[10]

3.8 For similar reasons the Cameron government also found it necessary to initiate the Löfstedt inquiry into OSH.[11] Numerous public bodies were struggling against restrictions placed on public life by perceived OSH requirements and this led to the formation of groups such as the UK Play Safety Forum and the National Tree Safety Group which pressed for recognition of the benefits of risky things and risky activities. Ultimately this required a new approach to risk assessment, one which recognised that there was more often than not a trade-off between risk and benefit and that risk control alone was not the name of the game.

3.9 In 2023 the International Standards Organisation published ISO 4980 on what is called 'benefit risk assessment.' This was in the context of sport and recreation, but essentially continues the trend in public risk management away from non-compensatory decision making which focuses on one thing, e.g., risk reduction, towards compensatory decision making which weighs the positive and negative attributes of the considered alternatives and allows positive attributes to compensate for negative ones. The relevance here is that the Jacobs approach omits to consider the loss of the positive aspects of the Poynton Pool being essentially a non-compensatory approach.

4. Societal risk and FN curves

4.1 The Jacobs report introduces the concept of societal risk and FN diagrams. Societal risk is a term which usually refers to situations in which multiple lives are at risk of death. Multiple lives are generally taken to mean more than 10. The projected number of fatalities should the dam fail, according to the Jacobs report, is 1.04. On that basis societal risk is of marginal applicability. The Jacobs report nonetheless contains an FN diagram. FN diagrams are used to show the relationship between frequency of failures and number of persons killed.

4.2 Figure 2 shows an example FN plot from the EA guide. This has two sloping lines drawn on it which are used to denote three regions of risk: unacceptable, broadly acceptable and an in between region where it is usually taken that the risk is tolerable but any control measures which satisfy the ALARP cost-benefit test must be implemented.

4.3 The position and gradient of these lines is obviously important but there is no universal agreement on where they should lie. Various agencies have come up with propositions[12]. For example, the HSE has suggested in the nuclear context, and bearing in mind public aversion

[10] https://www.legislation.gov.uk/ukpga/2006/29/section/1

[11] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/66790/lofstedt-report.pdf

[12] Ball and Floyd, report to HSE.

to nuclear accidents, that the upper line should pass through the (100, 10^{-4}) point, that is, the point at which the risk of an incident in which there are ≥100 fatalities has a likelihood of once per 10,000 years.[13] The gradient of the line is another issue. A gradient of -1 is roughly speaking risk neutral in that it does not apply extra weight to high fatality incidents. The upper line on Figure 2 fits the HSE criteria in that it passes through (100, 10^{-4}) and has a gradient of -1. The lower line mirrors the upper but is set at probabilities which are 100 times lower.

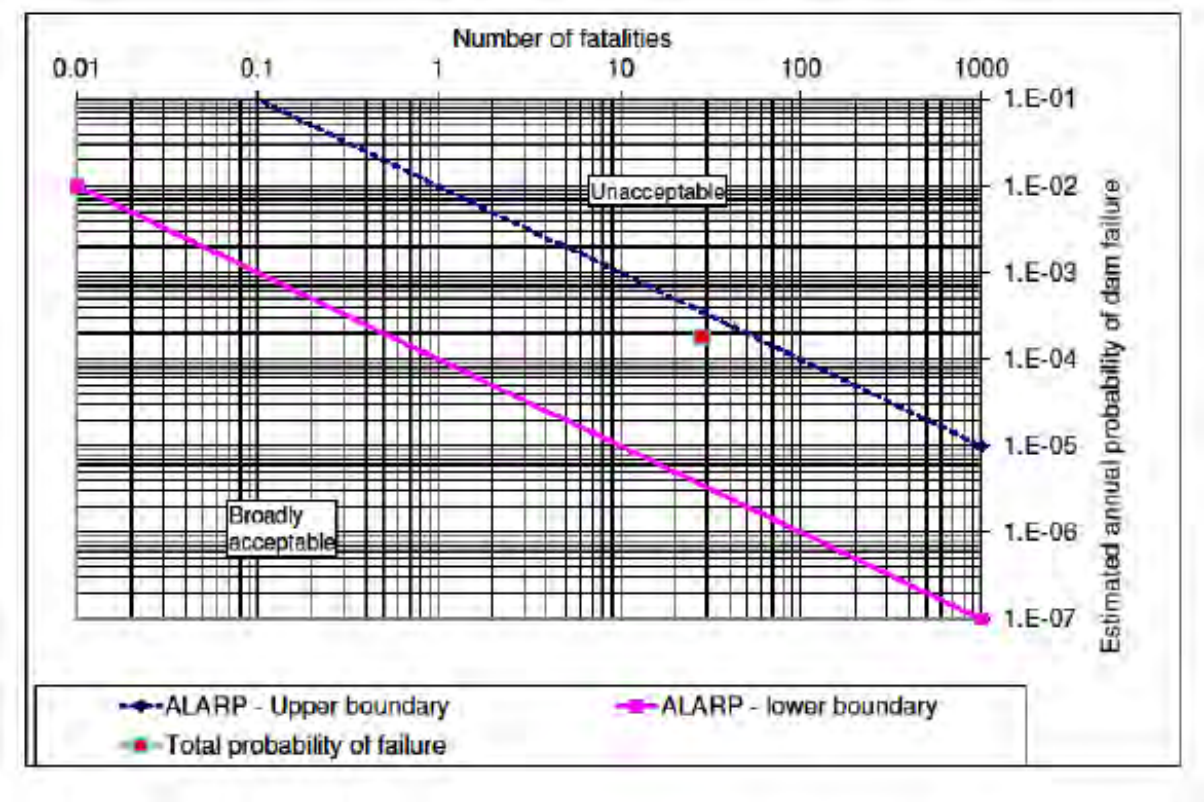


Figure 2: Example of FN plot (EA p146)

4.4 Figure 3 shows an FN plot as reported by Jacobs (p31). There are several points marked on it. The black triangle is the (1.04, 1/250) point based on the likelihood of dam failure of 1/250 per annum with 1.04 fatalities as reported by Jacobs. According to the Jacobs report this indicates that the current risk from the dam is unacceptable (because the point is above the upper dashed line). However, the line is not positioned according to the EA or HSE proposals and its origin is unknown. Were the HSE criteria for the position of the upper line used then the estimated current risk from the dam would be in the ALARP region.

4.5 Personally I don't think the discussion of societal risk in Jacobs or in this report is of much relevance as the dam does not threaten a catastrophe in which multiple lives would be lost. The matter needs only to be addressed because the proposition by Jacobs that the risk from the current dam is unacceptable generates an emotional argument.

4.6 It should also be recognised that FN lines and FN criteria are seldom strictly applied. Their main purpose is to provide information, not to regulate. In the case of Poynton Pool my

[13] A less stringent anchor point of (500, 2 x 10^{-4}) was referenced in a study of the societal risk posed by the Canvey Island petrochemical complex.

view is that considerations of acceptability or tolerability should be largely based on individual risk criteria and extended cost benefit analysis.

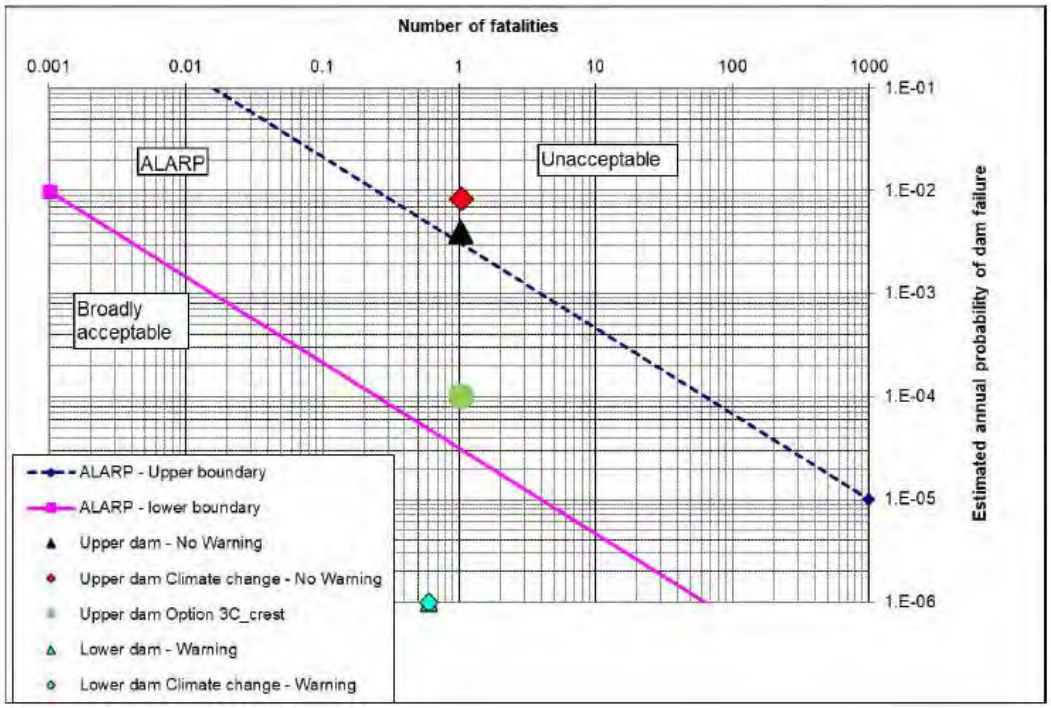


Fig 3: Jacobs FN plot (11/6/21, p31)

5. Risk estimates and uncertainty

5.1 The calculations in the Jacobs reports are lengthy and difficult to follow in places so I have investigated some in detail to comprehend the methodology and meaning of the numbers. In Appendix A of this report, I examine the analysis underlying the Jacobs data in their example provided in Appendix C (p52) of their 11/6/2021 report. I will now use the information from that exercise to examine Table 6.2 of that same report. Table 6.2 is a summary of the costs and benefits of the different options as estimated by Jacobs, and calculations of the cost to save a life (CSL) for each option.

5.2 Table 1 below is my truncated version of Jacobs' Table 6-2 with added explanations in the interests of clarity, and to enable a closer look at the issue of proportionality. The calculations are for options 2 to 3C Upper, excluding climate change (because of the uncertainty), and for dam failure with release of reservoir with no prior warning. I chose dam failure rather than flooding of the A523 (now a B road) as I thought it was likely the main public concern.

5.3 With reference to my Table 1, and for Option 2, the risk of dam failure per annum is said to be reduced from 1/250 to 1/6000. In column 3 I have calculated the change in annual risk provided by Option 2. Column 4 then calculates the 100-year risk reduction (the benefit of the measure) by the simple device of multiplying by 30 (not 100) as per the Jacobs report. Thirty is a discounted value which takes account of supposed consumer preferences (crudely, for cake today rather than tomorrow). This enables the value of averted property damage over

this 100-year period to be estimated. The footnote to Table 6-2 says £5M of property is at risk, so in column 5 £5M is multiplied by the number in column 4 (the 100-year risk reduction factor) to estimate the saving through averted property damage (£0.575M), which is subtracted from the cost of the Option in column 1. This gives a net cost of Option 2 of £0.725M. The cost to save a life is then calculated by dividing £0.725M by the number of lives saved during the 100-year period. It is a quirk of the data that this can be done by dividing the number in column 6 by the number in column 4. This is because the base case loss of life in the Jacobs report is very close to unity, i.e., 1.04 (p29 of report), so the numbers in column 4 coincide almost exactly with the estimated loss of life over the 100 years.

	1	2	3	4	5	6	7
Option	Budget cost	Annual risk of dam failure	Change in annual risk by option	Change in 100-year risk at discounted rate (x30)	Property damage averted £M	Net cost of scheme £M	Cost to save a life
Existing situation		1/250					
2	£1.3M	1/6000	1/250 – 1/6,000 = 0.0038	0.115	£5m x 0.115 = £0.575M	£1.3M - £0.575M = £0.725M	£0.725M/0.115 = £6.3M
3A	£0.75M	1/500	1/250 – 1/500 = 0.002	0.060	£0.30M	£0.45M	£0.45M/0.060 = £7.5M
3B	£0.73M	1/1,000	0.003	0.090	£0.45M	£0.28M	£0.28M/0.09 = £3.1M
3C upper	£0.54M	1/10,000	1/250 – 1/10000 = 0.004	0.12	£0.60M	-£0.06M	-£0.06/0.12 = -£0.5M

Table 1: Cost and benefit calculations for options

5.4 In Table 1 I have repeated the calculations for Options 3A, 3B and 3C upper. Option 3C upper has been pinpointed by Jacobs as "worthwhile whilst the other options are marginally proportionate" (Executive summary). For 3C upper I have put some figures in red. This is to highlight that these numbers are negative. The reason is all about the estimated projected savings on property damage which comes to £0.60M over 100 years and is marginally greater than the projected preset-day cost of the scheme. If the Jacob's cost estimates are correct,[14] this would suggest 3C upper is a rational choice because the benefits of the scheme in the form of reduced property damage would exceed its costs, even were it to save no lives. The question of proportionality, which in these contexts is usually about life saving costs, is not

[14] In the Jacobs report of 15 October 2021 Option 3C with a footpath is costed as £1.34M suggesting much potential volatility in the proportionality assessments.

engaged and this is exemplified by the negative numbers for the cost of saving a life which have been generated. However, Table 1, its data and methodology, identifies and raises issues.

Data Accuracy and Implications

5.5 It can be seen in Table 1 that currently the annual risk of dam failure has been given as 1 in 250 which means that calculations indicate the dam will fail once in every 250 years. All the options then considered reduce the annual risk of failure by a factor of between 2 (Option 3A) and 40 (Option 3C upper). Column 3 of Table 1 shows, however, that the change in annual risk provided by each of the options falls within a narrow range of, essentially, 0.002 (Option 3A) to 0.004 (Options 2 and 3C upper). There is not a lot to choose between them in terms of risk reduction potential and given that there will be considerable uncertainty around the input data it may be that from a statistical perspective there is no difference.

5.6 It is notable that the Jacobs report contains no analysis of uncertainty. This is a serious deficiency given that there is likely considerable uncertainty around, e.g., the 1/250 base case risk estimate and the projected number of lives lost, both of which estimates will be reliant upon many assumptions. The CSL numbers in column 7, used to assess proportionality, are calculated from the quotient of two numbers of unknown certainty and should therefore be treated with considerable caution. In the case of the 1/250 risk, if this were in error by relatively small factors which, given the complexity of the calculations which must underlie them, could easily be in the range of 2, 3 or more, then the argument that 3C upper is proportionate is overturned.

5.7 The Jacobs report goes on to compare the CSL numbers with the going rate for CSL[15] multiplied by Jacobs' chosen Gross Disproportion Factor of 5. I have discussed the background to gross disproportion factors in Section 3 of this report. It is undeniable that the introduction of arbitrary factors into cost benefit distorts the analysis and discriminates against other attributes affected by the decision.

5.8 It might also be felt by residents that the individual risk posed by dam failure is not particularly high. Even with the estimate of 1 in 250 of dam failure and with the suggested consequence of about one fatality within a population of a certain size, the individual risk might well be quite small compared with other risks which people routinely face.

5.9 The local community is also much concerned about the environmental impact upon the lake and surrounding habitat. Trees which would likely be sacrificed have been valued at £3M (range £0.4M to £5.4M) (Morris, 2023). The Jacobs methodology notes but takes no account of environmental losses in its calculations. A compensatory decision process, which takes on board the wider impacts (positive and negative) of a scheme, would include such costs. Were the £3M added to the costs of 3C upper the Option would shift from proportionate to entirely disproportionate, and alternatives which are less destructive of the environment might appear more plausible.

6. Other issues

Historical experience

[15] The CSL figure of £1.7M used by Jacobs is in fact a 2010 figure whereas the 2020 figure is around 17% higher at £2M

6.1 The historical record, so far as known, has identified no instances of over-topping although, as noted earlier, it is surmised in the Jacobs report that 'there could have been minor overtopping which went unnoticed' (Jacobs, 2019). Jacobs also use this information to justify the 1/250 per annum estimate of the risk of dam failure. They say that this is consistent with the age of the reservoir of around 250 years with no reported failures.

6.2 This, however, is not a valid argument. If the annual likelihood of failure were 1/250, the likelihood of zero failures during the following 273 years is approximated by:

$$(249/250)^{273} = 0.33$$

6.3 In other words, if the annual risk of failure is 1/250, then the likelihood of no failure occurring during 273 years (the actual supposed age of the dam) is 33%. This does not provide evidence of consistency. It does hint that the risk might be lower than 1/250.

Erodibility of existing bank

6.4 One obvious requirement for a reliable estimate of the likelihood of dam failure is information on the erodibility of the embankment, but this has not been investigated. Jacobs suggest it is a 'research exercise.' While that may be so, without such information it cannot be possible to estimate the risk of failure with much reliability. The EA guidance (Figure 1.3, p4) (see below) identifies embankment foundations as one of three key elements in assessing the likelihood of failure.

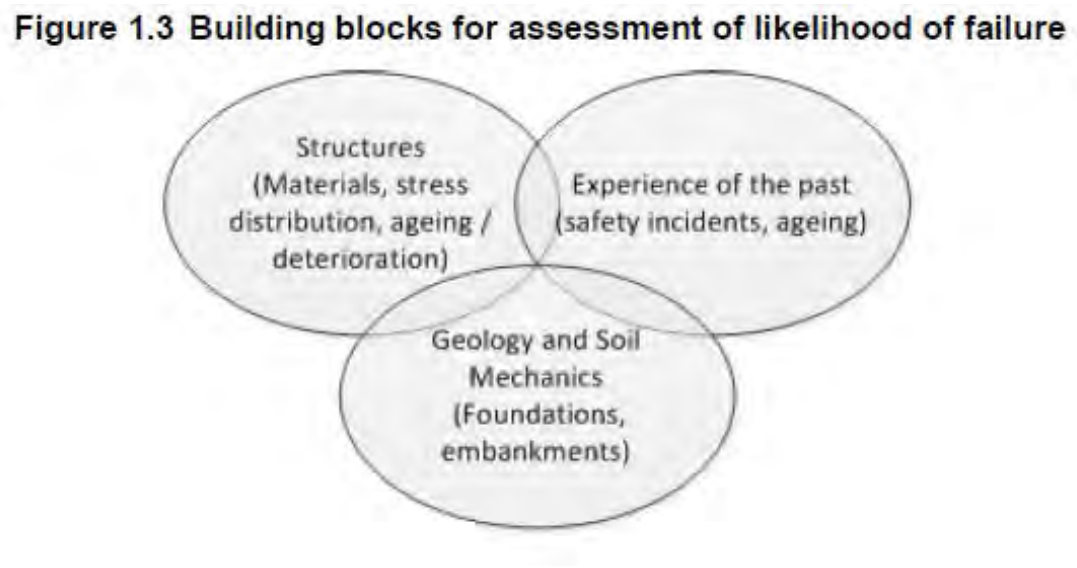


Figure 4: Dam failure assessment (EA, p4)

Catchment behaviour

6.5 Another important source of uncertainty is the behaviour of the catchment, including assumptions about its size, and the inflow and outflow characteristics of the Pool during storms. Much has been done in the way of computer modelling, but such models should be validated. It is suggested here that this might be approached by measuring the level of Poynton Pool and its inflows and outflows continuously over an extended period of time and the results correlated against weather patterns. Preferably this might be done over a period

of a few years. This might seem long, but it is not considering the decade or so delay in making a decision, and the implications for the Pool and its environment. Even after a few years of monitoring it cannot be expected that data on extreme events would become available because of their rarity, however, some testing of the models and assumptions would be possible, an added benefit of which would be increased public confidence in the work.

Warning systems

6.6 The risk estimates assume that residents will have no warning of an extreme event. Is this realistic and if so could it be rectified? The Balmforth review (2021, p100) notes that warning protocols have been successfully implemented in other industries and at reservoirs in other parts of the world, and that they can make risks tolerable.

Tree removal

6.7 The impact of tree removal and vegetation change on the stability of the earth bank has not been considered in the Jacobs report.

Public consultation

6.8 The fact that a dispute has arisen is symptomatic of an approach with insufficient public consultation. Modern approaches to stakeholder (public) engagement would be integral to the process from the outset. The strong reliance upon engineering judgement and engineering procedures in the face of such a sensitive matter is inappropriate in the 21st C. Certainly engineering input, computer models and cost benefit should figure in the discourse but not to the exclusion of inputs from the local community.

6.9 Principle 8 (Figure 1) notes that participatory / deliberative approaches have potential both to promote sound risk management and legitimise decisions. These procedures fuse expert and lay knowledge and seek to accommodate all concerns. They have been used by, for example, the UK Committee on Radioactive Waste Management. Jacobs themselves suggest (p15) that an alternative approach would be to hold a workshop of key stakeholders to agree an event tree describing the failure process and probability of each step. Although participatory / deliberative processes require somewhat more, this appears to be a step towards them.

7. Conclusions and recommendations

7.1 Any suggestion that the debate over Poynton Pool is simply ‘a matter of one’s preference for saving either lives or trees’ is inaccurate. The situation is more appropriately described as one of *uncertain benefits of flood control measures versus certain losses to an established environment*. Tradeoffs of this kind appear in virtually every public policy decision that is made and need to be carefully scrutinised, hence the utility of The Green Book and the methodologies it recommends.

7.2 The methodology used by Jacobs to assess the need for flood control and appraise options, which is based on 2013 EA recommendations, is not consistent with current or historic HM Treasury advice on public policy decision making. The approach taken is mechanical and deterministic and deviates on several counts from currently accepted principles of good risk management as set out in The Green Book and other sources.

7.3 The approach veers towards relegating impacts of remedial works on the environment and heritage to afterthoughts and inevitably creates public anxiety.

7.4 The proportionality assessment excludes consideration of externalities such as environmental impacts, public health, heritage, and amenity etc., all of which are of local concern.

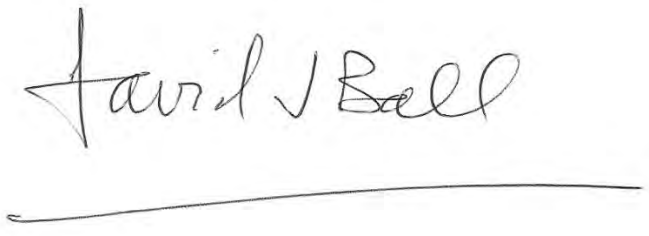
7.5 The approach fails to give an account of uncertainty in its estimates. Consideration of uncertainties could have a major impact on determinations of proportionality.

7.6 The approach inserts a gross disproportion factor of five into its cost benefit calculations which distorts the findings.

7.7 The individual risk posed by the hazard of dam failure might be tolerable in exchange for the benefits of the existing Poynton Pool.

7.8 Given the situation and the already substantial delay, it is suggested that further work is necessary as proposed in para. 6.5 aimed at reducing uncertainty in the risk and consequence estimates before a decision is made. This would have the added benefit of improving understanding of the behaviour of the Poynton catchment which has already witnessed flood events in recent years unrelated to the Pool. Such work might include monitoring. The time could also be used to promote public engagement.

7.9 It is believed by the present author that the above is consistent with the conclusions of the Balmforth review which found that "The current system for managing reservoir safety has become over reliant on compliance at the expense of ensuring due diligence in managing safety. A different emphasis is now needed to adequately protect the public" (p80). Balmforth goes on to recommend more emphasis on monitoring and periodic inspection in order to achieve solutions which are reasonably practicable.



David J Ball

APPENDIX A: The Approach Used to Assess Proportionality / Practicability

A.1 Appendix C (p52) of the 11/6/2021 report by Jacobs sets out the method used by them to address the issue of proportionality and practicability. The method described is quite widely used in decision making being based on cost-benefit analysis (CBA). For example, CBA is used by the National Institute for Health and Care Excellence (NICE) to decide upon which medicines and medical procedures are appropriate in the NHS. This is necessary because NHS resources are limited, and some health interventions are extremely costly. The Department for Transport also uses CBA to decide which road traffic safety interventions to support, as do other agencies.

A.2 The simple rule is that if you can quantify the expected benefits (B) of some intervention and also its costs (C), then it would be rational to proceed with the intervention if B is greater than C. Mathematically this can be written as:

$$\text{proceed if } B > C$$

A.3 However, interventions, for whatever purpose, often have unintended consequences, or consequences not related to the primary objective. These can be positive or negative and should also be factored into the above equation for decision making purposes. For example, drugs have side effects and Smart Motorways create new risks.

A.4 The way in which Jacobs have addressed the proportionality issue is first to calculate the 'implied value of a human life' for each control option. This is done by estimating the cost of the intervention and dividing by the number of lives it is projected to save (here the number of lives saved is the benefit, B). For example, if a new spillway were to cost £1M and it is thought that during the spillway's lifetime it would prevent 10 fatalities, then the implied value of preventing a fatality (VPF) by that means would be £1M÷10, or £100,000.

A.5 Having made a calculation of this type, Jacobs then compare the implied VPF with the 'going rate'. The 'going rate' for the VPF used in the UK for road transport safety is currently around £2M.[16] This value originates from earlier academic research sponsored by the DfT into how much consumers were willing to pay to reduce traffic risks to themselves. The Health & Safety Executive adopted the same value for the assessment of workplace safety interventions, and this is from whence the term 'practicability' originates.

A.6 The term 'practicability' is most strongly linked with a 1949 legal case concerning the death of a coal miner in Wales. The Court of Appeal held that 'reasonably practicable' is a narrower term than 'physically possible' and implies a computation between quantum of risk on the one hand and the time, cost and trouble of safeguards on the other.[17] Thus, the use of CBA is supported even in situations where people are exposed to potentially fatal risks.

A.7 A further complication arises in the occupational safety sphere, which is that the Courts, in deciding the Edwards case, ruled that a control measure must be implemented if the costs are not grossly disproportionate to the risk. That could be written (mathematically):

[16] Jacobs use the 2010 value which is £1.7M.
[17] Edwards v National Coal Board [1949] 1 All ER 743 CA

Proceed if B (the risk reduction) x GDF > C

where GDF is the gross disproportion factor.

A.8 The use of GDF factors, other than unity, is not universal and there is some controversy around them. Further, few authorities have attempted to assign a numerical value to the GDF, although John Locke, the first Director General of the HSE, suggested a range of from one to ten, the chosen value depending on circumstances.

A.9 Returning to Appendix C, Jacobs say (p52) that "At its simplest where the CPF (Cost of Preventing a Fatality) is less than the "value of preventing a fatality" (VPF) then the candidate works would be *proportionate risk reduction measures*; whilst where CPF exceeds VPF then the cost is *disproportionate*." The CPF is then calculated from:

> CPF = (Cost of risk reduction measure minus the Present Value of property damage averted by the measure) divided by the Present value of the change in the number of lives lost as a result of the intervention

A.10 It is normal procedure to subtract avoided property damage costs from the cost of the measure as in the above formula. To calculate this term the procedure is to multiply the projected value of the property damage by the change in risk brought about by the intervention. The calculation in Appendix C uses as an example a present risk of 1/20,000 per annum and a risk after intervention of 1/200,000 per annum (ten times lower) and the property damage as £35M. Thus, the annual expected property damage diminishes from £35M/20,000 to £35M/200,000, i.e., from £1,750 to £175, the reduction being £1,575. Jacobs then multiply this by 30 to estimate the savings from property damage avoidance over the next 100 years. There are two assumptions here, namely, the intervention is good for 100 years and that the present value of recurring costs over 100 years is 30 times the annual value (this involves consideration of discount rates). If this is accepted, the accumulated saving is 30 x £1,575 = £ 47,250.

A.11 The net cost of the intervention is then the cost of the candidate works (given as £300,000 in Appendix C) minus £47,250, or £252,750.

A.12 Appendix C then assumes that 32 lives would be lost in an incident with a probability of 1/20,000 per annum without the intervention, reducing to 1 in 200,000 with the intervention. Thus, on an annual basis 0.0016 lives could be expected to be lost per year as things stand, and 0.00016 per year after the intervention. The lifesaving potential of the intervention is thus the difference between these numbers (0.00144 lives saved per year). Again, the calculation is done for 100 years with the discounted factor of 30 applied, leading to an equivalent lifesaving over the century of 0.0432 persons.

A.13 From this, the CSL (cost of saving a life for this intervention) is calculated as £252,750 divided by 0.0432 which equals £5.85M.

A.14 This CSL is clearly greater than the 'going rate' of £2M which would suggest that there are questions about its proportionality. However, Jacobs then introduce a GDF of 5 which reverses this position. This is done on the basis that "The purpose of a PF (Proportion Factor) "grossly" greater than unity is to allow for the imprecision of estimates of costs and benefits

and also to ensure that the duty holder robustly satisfies the ALARP principle.” Jacobs go on to say that the public are not aware of the risk from dams and hence the risk is involuntary and therefore warrants a PF exceeding 5.

Appendix B

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ARBORICULTURAL OBJECTION

IN RESPECT OF

PLANNING APPLICATION 23/4152M

AT

POYNTON POOL RESERVOIR, POYNTON PARK

LONDON ROAD NORTH, POYNTON

ON BEHALF OF

POYNTON TOWN COUNCIL

Author: Glyn Thomas

Our Ref: CW/11044-OBJ

LPA Ref: 23/4152M

Date: 20 December 2023

CONTENTS

1. INSTRUCTION

1.1. Cheshire Woodlands is instructed by Poynton Town Council to review arboricultural supporting information submitted with planning application 23/4152M and produce a written objection.

2. INTRODUCTION

2.1. I am Glyn Thomas, senior consultant with Cheshire Woodlands Limited and my area of expertise is arboriculture.

2.2. This objection is informed by a review of the arboricultural information submitted in support of a planning application that seeks consent for works to the Poynton Pool dam embankment to increase the flood resilience of the reservoir.

2.3. I have reviewed the following planning submission documents:

- Arboricultural Impact Assessment and Arboricultural Method Statement BRJ10627-JAC-XX-XX-RP-EN-0009 (June 2023);
- Red Amber Green (RAG) Tree Removal Report BRJ10627-JAC-XX-XX-RP-EN-0004 Revision P01 (17 January 2023); and
- BS5837:2012 Tree Survey Report BRJ10627-JAC-XX-XX-RP-EN-0001 Revision P01 (7 October 2022).

2.4. Grounds for objection to the planning application are informed by:

- British Standard 5837:2012 Trees in relation to design, demolition and construction - Recommendations (BS5837);
- Cheshire East Local Plan Policy SE5 Trees, Hedgerows and Woodland; and
- Cheshire Woodland's Report CW/11044-R (4 January 2023)

3. OBSERVATIONS

3.1. Tree categorisation

3.1.1. The Jacobs survey records 86 individual trees (2 A category, 62 B category and 22 C category) and 12 C category tree groups.

3.1.2. 29 of the Jacobs B category trees are identified as A category in the Cheshire Woodlands survey. 11 of the Jacobs C category trees are identified as B category, or are part of a B category group, in the Cheshire Woodlands survey. 10 of the Jacobs C category groups are part of a B category group in the Cheshire Woodlands survey. The two Jacobs C category understorey groups are integral to the visual integrity and long-term sustainability of the Cheshire Woodlands A category woodland.

3.1.3. The Cheshire Woodlands survey identifies around 25 additional A and B category trees that are not assessed individually in the Jacobs survey, and with their sizes far exceeding the maximum measured height of 6 metres and estimated maximum stem diameters of 150mm, these 25 trees are not included in their C category understorey groups G11 and G12.

3.2. Root Protection Areas (RPA)

3.2.1. The Jacobs stem diameter measurements and RPA radii are listed in the Tree Schedule at Appendix A of the CEC Arboricultural Impact Assessment and Arboricultural Method Statement (AIA).

3.2.2. An initial comparison of the Cheshire Woodlands measured RPA radii and the Jacobs RPA radii for 42 of the higher quality A and B category individual trees, shows that 14 (30%) are within a range of tolerance from 10% to more than 50% tolerance.

3.2.3. The AIA suggests that the effects of existing site conditions on RPAs has been taken into consideration, and acknowledges that there is unlikely to be any root growth beneath the public highway on the west side of the trees, or within the pond to the east.

3.2.4. The Jacobs Tree Survey Report states *'The extent of the RPA is calculated in accordance with BS5837:2012, and is an important metric for understanding the impact a proposal will have on tree removal and retention and how to protect those trees retained.'* And adds *'An RPA provides a notional circular buffer around a given stem based on the stem diameter taken at 1.5m. However, this is not necessarily representative of a tree root system e.g. the roots may extend beyond the RPA boundary on one side and remain inside it on the opposite. The root network extent is dependent on many factors including species, age, soil conditions, topography and exposure etc. <u>The assessment has not taken consideration of these above and shows RPAs as an indicative circular form as per the BS5837:2012 guidance.'</u>* (My underlining).

3.2.5. BS5837 advises *'Where pre-existing site conditions….indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.'*

3.2.6. The initial indicative RPAs of many of the surveyed trees extend into the public highway and/or the pond, so could not be said to reflect a soundly based arboricultural assessment of likely root distribution.

3.3. Veteran trees

3.3.1. The Jacobs tree survey states *'The Jacobs qualified arboriculturists did not identify any trees during survey which they considered ancient or veteran.'*

3.3.2. Several oak and willow trees with veteran characteristics have been identified within the survey area and, subject to more detailed assessment and where appropriate, will be uploaded in due course to the Woodland Trust's Ancient Tree Inventory for validation.

3.4. Survey methodology

3.4.1. BS5837 advises:

- *'Trees growing as groups or woodland should be identified and assessed as such where the arboriculturist determines that this is appropriate.'*
- *'….an assessment of individuals within any group should still be undertaken if there is a need to differentiate between them'*
- *The term 'group' is intended to identify trees that form cohesive arboricultural features either aerodynamically…., visually….., or culturally, including for biodiversity'*

3.4.2. On the basis of this advice, the Cheshire Woodlands survey identifies and assesses the trees in the area between the footpath bordering the pond and London Road North as 'woodland'. A rationale for this approach is included in section 6 of the Cheshire Woodland's Report CW/11044-R.

3.4.3. The Jacobs survey describes the 'study area' as *a 'tree belt with an understorey of holly, hawthorn and hazel'*, acknowledges that *'the value of the trees surveyed lies in the collective rather than the individual'* and adds that the trees *'as a collective, greatly contribute to the local landscape'*.

3.4.4. Contrary to BS5837 guidance, and their own description of the 'tree belt', the Jacobs survey identifies the principal woodland trees as individuals, with the understorey assessed as two groups.

3.5. Tree removals

3.5.1. In the AIA, 27 individual B category trees, 4 C category individual trees and sections of 2 C category groups are identified for removal to facilitate construction. 11 of these B category trees are identified as A category in the Cheshire Woodlands survey; one is described as having veteran features.

3.6. Retained trees

3.6.1. The AIA lists only 5 individual B category trees and one individual C category tree for retention with *'no impact'*. These are trees that are recorded in the tree survey but unaffected by the development. As they are outside the work area they can be protected during construction in accordance with BS5837.

3.6.2. 2 individual A category trees, 30 individual B category trees, 17 individual C category trees and 10 C category groups are variously described as *'impacted'* or *'encroached'* by the proposed construction works, and all are described as *'compromised and likely lost'*. 15 of these B category trees are identified as A category in the Cheshire Woodlands survey, and 5 of the C category pond-side trees are identified as B category and having veteran characteristics.

3.6.3. The AIA accepts that the *'impacted'* trees cannot be protected during construction in accordance with BS5837, will suffer damage to their rooting environment, and their long-term sustainable retention is uncertain and cannot be assured.

3.6.4. The AIA states *'It is the view of Jacobs arboriculturists that trees indicated as encroached are viable for retention (in most cases)'* but without any reference to detailed assessments of construction impacts on their modified RPAs.

3.6.5. In the absence of more detailed assessments of the impacted/encroached trees, their continued health and life expectancy should be considered as under threat from development for the purposes of Local Plan Policy SE5.

3.7. Trees T6 and T47

3.7.1. Table 2.4 of the AIA lists trees T6 and T47 - the only A category trees in the Jacob's survey – as *'compromised but retainable'* subject to a 4m crown reduction.

3.7.2. The AIA advice is that both trees *'could be retained, despite suffering damage to their rooting environment'*, *'any significant damage will be avoided if the AMS is followed and tree protection measures are installed correctly'*, and *'….the trees should only suffer minor root damage and therefore can be retained with a long useful life expectancy.'* This without the benefit of a detailed assessment on the basis of modified RPAs, and a reasoned justification for the proposed crown reduction works.

3.7.3. The AIA advice is entirely at odds with the RAG Assessment, which concludes *'…..T6 and T47 are both situated close to the proposals and, as such, are significantly impacted by the proposals…..such significant canopy reduction works, and proposed root disturbance, is likely to result in both items being pushed into terminal decline.'*

3.8. Mitigation

3.8.1. The AIA concludes '*It is proposed to replace the trees <u>which will be removed to facilitate the proposals</u> with off-site planting at Walnut Tree Farm.*' (My underlining).

3.8.2. Local Plan Policy SE5 does not distinguish between *'loss of'* and *'threat to the continued health and life expectancy'* of '*trees that provide a significant contribution to the amenity, biodiversity, landscape character or historic character of the surrounding are* a'.

3.8.3. SE5 adds '*Where <u>such impacts</u> are unavoidable, development proposals must satisfactorily demonstrate a net environmental gain by appropriate mitigation, compensation or offsetting*'. (My underlining).

3.8.4. Mitigation solely for the removed trees, and which ignores the additional impacts on the impacted/ encroached trees, is not in accordance with Policy SE5.

4. CONCLUSIONS AND GROUNDS FOR OBJECTION

4.1. There is significant uncertainty around the accuracy and reliability of RPA data in the tree survey.

4.2. Identification and assessment of the majority of the principal trees as individuals rather than as a group or woodland is not in accordance with BS5837.

4.3. The tree quality assessment appears to have consistently undervalued many of the trees.

4.4. Several significant trees within the survey area have not been identified and assessed.

4.5. The indicative RPAs do not reflect a soundly based arboricultural assessment of likely root distribution.

4.6. There are trees with veteran characteristics within the survey area, which require more detailed evaluation.

4.7. In the tree survey, all of the principal trees within the work area are either identified for removal or listed as '*impacted*'. In the RAG, all of the principal trees within the work area are either identified for removal or listed as '*compromised and likely lost*'

4.8. There is insufficient information to inform reasoned judgments on removal, retention or management of the 'impacted' trees, which can only be made on the basis of modified rather than indicative RPAs.

4.9. In the absence of detailed assessments of the construction impacts on the 'impacted' trees, their continued health and life expectancy can only be classed as *'under threat from development'* for the purposes of Local Plan policy SE5.

4.10. The combined impacts of the proposed tree removals and the threat to the continued health and life expectancy of the 'impacted' trees on the amenity of the site and the surrounding area cannot be justified in the context of Local Plan policy SE5.

4.11. There is contradictory advice around the removal, retention and management of the A category trees T6 and T47.

4.12. Mitigation that ignores the 'impacted' trees is not in accordance with Local Plan policy SE5.

Appendix C

CHESHIRE WOODLANDS

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REPORT

ON

A SURVEY OF TREES AT POYNTON POOL

IN RELATION TO PROPOSED

RESERVOIR SPILLWAY IMPROVEMENTS

ON BEHALF OF

POYNTON TOWN COUNCIL

Author: M J Ellison

Our Ref: CW/11044-R

Date: 4 January 2023

CONTENTS

APPENDICES

1. TERMS OF REFERENCE

1.1. Instruction

1.2. Cheshire Woodlands is instructed by Poynton Town Council to:

- Supply Ordnance Survey Vector Map Local base mapping data
- Survey trees in accordance with the general requirements of BS5837:2012 Trees in relation to design, demolition and construction – Recommendations. The survey shall be for the sole purpose of informing the evaluation of the Poynton Pool Spillway proposal
- Produce a Tree Survey Plan and Tree Survey Schedule.

1.3. Limitations

1.4. This report and associated documents remain the copyright of Cheshire Woodlands Limited and there should be no transfer of rights to any third party without express written consent.

1.5. The sole purpose of the survey was to collect data to inform an evaluation of Cheshire East Council's 'Poynton Pool Spillway' project in relation to trees, when technical details become available. The trees were assessed in sufficient detail to inform the evaluation. Appraisal of their structural condition is of a preliminary nature and whilst the Tree Survey Schedule at Appendix 1 (the Schedule) is not a tree safety inspection record, the surveyors may record obvious defects when they are observed and considered to be potentially significant to safety. Unless otherwise agreed, data in the Schedule are time limited to one year, after which they should be reviewed.

1.6. Trees are assessed from ground level without invasive investigation and are viewed from within the site or from areas with public access. Assessment may be restricted where site conditions limit access or where trees are wholly or partially off-site or obscured by vegetation. The disclosure of hidden defects cannot be expected.

2. INTRODUCTION

2.1. I am Michael Ellison, principal arboricultural consultant with Cheshire Woodlands Limited and my area of expertise is arboriculture.

2.2. The development proposal comprises modifications to the northernmost 560 metres of the dam wall on the west side of Poynton Pool as outlined on the Cheshire East website under the heading '*Poynton Pool Spillway Improvements*'[1] (the Proposal). Trees and woodland affected by the proposal extend to approximately 610 metres of the Poynton Park boundary with the A523 (London Road North). 44 trees between the Pool and the Park boundary are proposed for removal and a further 37 are stated to be at risk of removal. The area of land affected by the proposal extends to some 1.48 hectares, within most of which trees will be rooting. A detailed proposal is not available for appraisal at the time of issuing this report.

2.3. The following documents have been considered in the evaluation:

- Jacobs *BS5837:2012 Tree Survey Report* ref. BRJ10627-JAC-XX-XX-RP-EN-001 dated 7 October 2022
- '*Poynton Pool Spillway Improvements*' accessed online.

2.4. Technical terms used in this report and survey are included in the *Glossary of Terms* in Appendix 5.

[1] https://www.cheshireeast.gov.uk/highways_and_roads/roadworks/major-projects/poynton-pool-spillway-improvements.aspx

3. THE SITE

3.1. Poynton Park is a well-used public park with a circular walking route that passes along the eastern bank of the Pool, and a footpath through woodland on the west side of the Pool between South Park Drive to the south and Anglesey Drive to the North over a distance of around 880 metres. At the northwestern corner is a small car park, bounded by woodland on its east side. The Park is generally level with a minor fall from east to west up to the eastern edge of the Pool. From the western edge of the Pool is the earth dam bounded on its west side by the A523, along part of which is a stone boundary retaining wall.

3.2. The British Geological Survey - *Geology of Britain Viewer*[2] identifies the superficial geology for the Park as '*Till, Devensian – Diamicton*'.

3.3. Till is a general term referring to any kind of sediment deposited directly from glacier ice; typically unstratified and unsorted and sometimes called boulder-clay. Trees growing on cohesive clay soils are often more reliant on roots growing within the upper horizons and are potentially more sensitive to changes to the upper soils than trees on more open sandy soils. It is assumed that the dam is formed from clay soils excavated to form the Pool.

4. STATUTORY PROTECTION

4.1. An online search of Cheshire East Council's interactive mapping facility[3] confirmed that trees on and immediately adjacent to the site are not protected by a tree preservation order and the Park is not in a conservation area. Trees in the Park are subject to the provisions of The Forestry Act[4] subject to specified exceptions, some of which may apply to the felling of some trees in relation to the spillway project.

[2] Geology of British Viewer
[3] Cheshire East Council Public Map Viewer
[4] The Forestry Act 1967 (as amended)

4.2. See Appendix 4 for further guidance on the statutory protection of trees, hedgerows, and wildlife.

5. SURVEY METHODOLOGY

5.1. The trees were surveyed on 14 December by Glyn Thomas and Tom Baron, qualified arboricultural consultants with Cheshire Woodlands Limited.

5.2. The survey is recorded in the Schedule and on the Tree Survey Plan in Appendices 1 and 2 respectively. Using the method set out in Appendix 3, the comparative values of trees are considered broadly in line with the guidance of BS5837:2012 and the retention, protection, management or removal of trees should be informed by this evaluation.

5.3. The Ordnance Survey Vector Map Local plan for the site was overlaid with the Jacobs Tree Constraints Plan and aerial imagery. This formed the base for the Tree Survey Plan. Tree stems from the Jacobs plan are represented by an open circle. Stem diameters and canopy spreads were measured using a tape and tree heights using a tape and clinometer. Where dimensions are estimated this is identified in the Schedule.

5.4. The survey first assessed the collective value of the trees, which were identified in four groups (G1 – G3 and W1). The 'visual prominence' of trees was assessed in four groups and they were broadly categorised in accordance with Table 1 of BS5837:2012. See Appendix 3 for further guidance on the method. The colour-coded categories for individually plotted trees are represented by a circle around the plotted tree stems. A small number of trees were identified as having veteran tree characteristics and these are identified by an additional orange circle around the tree stem position.

5.5. Below-ground constraints for the individually plotted trees are represented on the Tree Survey Plan as Root Protection Areas (RPA), calculated in accordance with section 4.6 and Table D.1 of BS5837:2012. There are further constraints from other trees not individually plotted on this plan.

6. THE TREES

6.1. Dating back to the mid-1700s, the woodland was planted on the entire length of the dam embankment and extends north by a further 360 metres beyond Anglesey Drive, lining the busy A523 up to the Towers Road junction.

6.2. The woodland contains a range of species, and ages from young to post-mature. It provides a mature and continuous backdrop to the Pool and historic parkland, and is part of a tree-lined corridor between Poynton to the south and Hazel Grove to the north.

6.3. The trees and woodland are part of a wildlife corridor along the A523 that provides a link in an extensive wider wooded habitat network extending from Middlewood and Lyme Park in the east, Poynton Coppice to the south, and Wigwam Wood and Bramhall Park to the west.

6.4. Whilst the survey generally did not record specific wildlife habitats, the survey area contains many trees and a length of hedging that have potential to host bird nesting, bat roosts, and habitats for small mammals, invertebrates, lichens, and fungi. See Appendix 4 for further guidance.

6.5. Having collapsed into the Pool, the Willow trees in group G3 are likely to provide nesting sites for a range of waterfowl and other birds. Whilst a small number have veteran tree characteristics, none of the trees could be definitively classified as veterans. There is high potential for the alders to be rooting in and beneath the pool, and for the willows to be rooting into the margins.

6.6. Trees in W1 and group G3 form a continuous woodland unit but have been separated in the survey due to their distinctive characteristics. The individually plotted trees are the most prominent, but many other trees form an essential component of the woodland structure and these should be plotted and recorded and considered as potential constraints on any future construction or ground remodelling.

6.7. Located next to a section of the busy A523 that is frequently subject to standing traffic, the woodland is likely to be particularly valuable for its interception of atmospheric particulates[5], having a direct impact on air quality for neighbouring residents.

6.8. The species of individually plotted trees are as listed below:

Species	**No.**	**%**
Beech	23	25
Oak	16	17
Lime	24	26
Horse chestnut	4	4
Sycamore	15	16
Norway maple	4	4
Other	5	5
Total	91	

6.9. The Jacobs *BS5837:2012 Tree Survey Report* ref. BRJ10627-JAC-XX-XX-RP-EN-001, at section 3, States:

> *"It is recommended that once a fixed scheme layout is developed the tree schedule date and tree constraints plan is used to carry out an Arboricultural Impact Assessment (AIA) of the scheme. This document will assess the impact of the proposals on the current stock and will identify which will need to be removed, which can be retained, and which trees may require special measure adopting to allow for their retention should their RPA be compromised by the development."*

[5] https://www.fs.usda.gov/research/treesearch/14743

6.10. The proposal states:

> *"We are aware that users of the area feel that trees provide some protection from noise and pollution. There is evidence that areas of dense woodland with greenery all year round can help to reduce noise and pollution. However, the trees in Poynton Park form a narrow belt, are quite widely spaced and lose their leaves at some times of the year and therefore only offer limited protection.*
>
> *The trees must be removed as this work is mandatory and cannot be replanted in the same location due to safety risks.*
>
> *The Council are trying to reduce the of level disruption the works will cause, by maintaining some level of screening for park users through retention of the lower shrubs through these sections."*

7. CONCLUSIONS

7.1. The overall health of the woodland is good, with a small number of trees exhibiting reduced vitality and some dead trees. Whether by design or accident, the occasional removal of mature trees over the past half century has provided opportunities for natural colonisation by trees and has resulted in a species and age structure that provides for the long-term continuity of this important landscape and ecological asset.

7.2. Providing a backdrop to Poynton Park, the woodland is a component of a designed landscape that extends beyond the boundaries of the current Park. It screens the busy A523 from views within the Park and from residential properties beyond, and is a well-used recreational amenity that provides connections with woodland habitats to the north, south, east and west that cannot be replaced elsewhere. Along with other ecosystem services, these benefits are considerable, and their loss should be considered as a cost in the cost benefit analysis of any project that has potential to affect their health or long-term viability.

7.3. The *Poynton Pool Spillway Improvements* scheme appears to have been advanced without the benefit of an Arboricultural Impact Assessment as recommended in the Jacobs tree report (6.8). The likely impact of the proposals is far wider reaching than removal of the 81 trees stated. All trees along the 610 metres of the proposal are at risk from direct impacts of excavation, regrading of ground, and construction activity.

7.4. Management of the risks from falling trees and branches requires careful consideration and it is evident that the woodland has been proactively managed in this regard. Regarding the integrity of the dam, our assessment did not identify any trees that singly or in combination are likely to breach the dam in the event that they were uprooted. Tree roots, having high tensile strength and forming a dense mat in most organic and 'A horizon' soils, and would generally serve to limit surface erosion and stabilise soil.

7.5. Regarding the requirement to apply for a felling licence under the Forestry Act, the application of exceptions to the requirement to apply for a felling licence requires close consideration. Several exceptions could apply, but consideration of these is beyond the scope of this report.

8. RECOMMENDATIONS

8.1. The current and any future proposal should be the subject of a full Arboricultural Impact Assessment that considers the impact on the overall landscape asset as well as on individual trees.

8.2. The lost benefits from trees removed or adversely affected by the proposal should be fully accounted for in a cost benefit analysis for the project.

8.3. Alternative, tree friendly, solutions to improve resilience of the dam should be investigated with the direct input of an arboriculturist.

8.4. As recommended in the Jacobs tree report, the proposal or any alternative scheme should be managed and closely monitored in accordance with a detailed and satisfactory Arboricultural Method Statement in accordance with BS5837:2012.

APPENDIX 1

PRELIMINARY TREE SURVEY SCHEDULE

(TO BE FINALISED ON COMPLETION OF LAYOUT PROPOSAL)

PROJECT: POYNTON POOL SPILLWAY
CLIENT: POYNTON TOWN COUNCIL
REF: CW/11044-SS1
REVISIONS:

SURVEYED BY: G. THOMAS & T. BARON
DATE: 14 DECEMBER 2022
PAGE: 1

No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
T1	Lime	M	3	3	550	N	• Standing stump with regrowth in car park		2	U		N/A
G1	1 Sycamore Hornbeam Beech	M Y-EM Y	≤15	≤12 (EST)	≤650	N	• Closely spaced group to edge of car park • Dense basal growth • Low ground clearance • Unmanaged section of highway boundary hedge beneath crown, with natural colonisation of hornbeam and beech		3	A		≤7.8
G2	Sycamore	EM	≤23	≤10 (EST)	≤600	N	• Western edge of broadleaved woodland bordering car park • Several trees colonised by ivy • Ground clearance down to 3m over car park		3G	A		≤7.2

The sole purpose of the survey was to collect data to inform the design of the current project in relation to trees. Whilst this is not a tree safety inspection record, the surveyor may record obvious defects when they are observed and considered to be significant to safety. Unless otherwise agreed, data in this schedule are time limited to one year, after which they should be reviewed.

HEADINGS & ABBREVIATIONS

Age Range Y = young SM = semi-mature EM = early-mature M = mature PM = post-mature V = veteran
Stem Dia Stem diameter (measured in accordance with Figure C.1 of BS5837: 2012) (MS = multi-stemmed EST = estimated)
Crown Spread Maximum crown spread (EST = estimated)
Vitality A measure of physiological condition. N = normal range for the species and age R = reduced, P = poor, MD = moribund, D = dead
Visual (Visual Prominence) Broad indication of prominence in the landscape (1 = low up to 4 = very high) (G = contributes to a wider group)
Retention Category Existing Broadly in accordance with Table 1 of BS5837: 2012 (considers the merits of the tree or group in the context of the existing land-use)
Retention Category Proposed Broadly in accordance with Table 1 of BS5837: 2012 (considers the merits of the tree or group in the context of a development proposal)
BS5837 RPA Radius Calculated in accordance with Table D.1 of BS5837: 2012
Common Plant names Only common names are used in this schedule. For scientific names refer to Mitchell, A. 2001. *Collins Field Guide – Trees of Britain & Northern Europe*. Harper Collins, London. pp. 420.

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PRELIMINARY TREE SURVEY SCHEDULE

(TO BE FINALISED ON COMPLETION OF LAYOUT PROPOSAL)

CHESHIRE WOODLANDS

PROJECT: POYNTON POOL SPILLWAY
CLIENT: POYNTON TOWN COUNCIL
REF: CW/11044-SS1

SURVEYED BY: G. THOMAS & T. BARON
DATE: 14 DECEMBER 2022
PAGE: 2

No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
G3	Alder Willow Ash Sycamore	SM-M SM-PM SM-M SM	≤15 (EST)	≤12 (EST)	≤780 (MS) (EST)	N-D	• Discontinuous linear group along edge of pond • A mix of individual trees and closely spaced groups • Mainly multi-stemmed alder and willow • Most of the alder trees have been coppiced in the past • The willows have collapsed and are rooting into the pond • Several willow trees with veteran characteristics • Occasional dead trees • General ground clearance of 4 – 5m over footpath		3G	B		≤9.3 (EST)
W1	Norway maple Sycamore Holly Beech Yew English oak Turkey oak Holm oak Lime Elm Ash Elder Cherry Silver birch Laburnum Horse chestnut	M EM SM-EM Y-M SM-EM SM-M SM-M EM SM-M SM Y-SM SM Y-EM SM SM SM-M	≤25	≤20 (EST)	≤950	N-D	• Linear mixed species plantation belt • High canopy layer of mainly beech, sycamore and oak, with an understorey of holly and young-semi-mature natural colonisation of mainly beech, oak and holly • Partially maintained boundary hedge along western edge • Signs of past tree safety management • Occasional dead trees • Signs of decline in a small number of mature beeches • An oak tree with veteran characteristics • Several trees contain features that provide potential bird nest/bat roost sites • Opportunities for silvicultural management, enrichment planting and restoration of the boundary hedge		4	A		≤11.4

APPENDIX 2

T1 U
G1 A
G2 A
W1 A
G3 B

TREE SURVEY PLAN

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CLIENT	POYNTON TOWN COUNCIL
PROJECT	POYNTON POOL LONDON ROAD POYNTON
JOB REF	CW/11044-P-TS
DATE	20 DECEMBER 2022
SCALE	NOT DEFINED

- SURVEYED INDIVIDUAL TREE
- SURVEYED GROUP OF TREES
- SURVEYED WOODLAND
- TREE WITH VETERAN CHARACTERISTICS
- STEM POSITION APPROXIMATED
- BS 5837 RETENTION VALUE
- BS5837 ROOT PROTECTION AREA RADIUS
- BS5837 CATEGORY 'A' TREES
- BS5837 CATEGORY 'B' TREES
- BS5837 CATEGORY 'C' TREES
- BS5837 CATEGORY 'U' TREES

APPENDIX 3

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Guidance Note - Visual Prominence and Tree Categorisation

Visual Prominence

A broad indication of visual contribution to the landscape. The evaluation considers:

- location
- public views
- landscape function
- tree size
- growth potential
- useful life expectancy

Visual prominence values are classified as follows:

(1) Low - visual contribution restricted to the site

(2) Moderate - visual contribution to the site and immediate surroundings

(3) High - visual contribution to the site, immediate surroundings and neighbourhood, estate or locale

(4) Very high - visual contribution to a conurbation, or trees of exceptional landscape value

Groups of trees are assessed as a single unit.

Tree Categorisation

Broadly in accordance with section 4.5 and Table 1 of British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

Trees or groups of trees are evaluated twice. Firstly, they are assessed and categorised in the pre-development context to provide a broad valuation of all of their attributes and their contribution to the amenity of the area. Secondly, they are similarly assessed and categorised in the context of a development proposal. The evaluations consider:

- useful life expectancy
- visual prominence (see above)
- landscape function
- numbers of other trees and their maturity (continuity for landscape, amenity, habitat)
- wildlife habitats (including continuity)
- safety
- conflicts with the built environment or other land-use
- cultural, historical or other value

Groups of trees are assessed and categorised as a single unit.

Pre-Development assessment

The tree or group of trees is assessed and placed into one of the following categories (A, B, C or U)

The valuation considers the benefits and disbenefits of retaining the tree or group of trees in the pre-development context

Any specific issues are noted in the tree survey schedule

(A) High quality - Trees the retention of which is most desirable and that have an estimated useful life expectancy of at least 40 years

Wholly appropriate and without significant conflict

(B) Moderate quality - Trees the retention of which is desirable and that have an estimated useful life expectancy of at least 20 years

Appropriate but not of highest value

(C) Low quality - Trees that could be retained and have an estimated useful life expectancy of at least 10 years

Ill-suited but could be retained with moderate conflicts

Trees of no particular merit

(U) Trees unsuitable for retention

Could not reasonably be retained for longer than 10 years

Post-Development assessment

The tree or group of trees is assessed and placed in one of the following categories (A, B, C or U)

The valuation considers the benefits and disbenefits of retaining the tree or group of trees in the context of a development proposal

Any specific issues are noted in the tree survey schedule.

(A) High quality - Trees the retention of which is most desirable and that have an estimated useful life expectancy of at least 40 years

Wholly appropriate and without significant conflict

(B) Moderate quality - Trees the retention of which is desirable and that have an estimated useful life expectancy of at least 20 years

Appropriate but not of highest value and/or having only minor conflicts

(C) Low quality - Trees which could be retained and have an estimated useful life expectancy of at least 10 years

Ill-suited but could be retained with moderate conflicts

Trees of no particular merit

(U) Trees for removal

Would need to be removed to accommodate the development proposal, or could not reasonably be retained for longer than 10 years

APPENDIX 4

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Guidance note - Statutory Controls

Trees and Hedges

Subject to specified exceptions, an application must be made to the local planning authority [LPA] to carry out work on or remove trees that are protected by a tree preservation order [TPO][1]

Six weeks' notice must be given to the LPA of intention to carry out work on or remove trees within a conservation area and not protected by a TPO[1]

LPA consent may be required to carry out work on or remove trees, shrubs and hedges that are affected by planning conditions

LPA consent may be required for the removal of hedgerows[2]

Your Council's planning department will advise whether or not any of the above controls apply to your trees, shrubs and hedges

Subject to specified exemptions, a licence may be required for the felling of growing trees[3]

Your nearest Forestry Commission or Natural Resources Wales office will advise whether you require a felling licence

[1] https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas
[2] https://www.gov.uk/guidance/countryside-hedgerows-regulation-and-management
[3] https://www.gov.uk/guidance/tree-felling-licence-when-you-need-to-apply

Wildlife

Nesting birds and all species of bat are afforded statutory protection.[4] It is an offence to:

- disturb a nesting bird
- disturb a roosting bat or damage, destroy or block access to a bat roost
- intentionally kill, injure or take a bat
- sell, hire, barter or exchange a bat, dead or alive
- be in possession or control of a bat or anything derived from a bat

Your local Wildlife Trust or your Council's Ecologist will provide guidance on statutory controls relating to wildlife.

[4] https://www.gov.uk/topic/planning-development/protected-sites-species

APPENDIX 5

GLOSSARY OF ARBORICULTURAL TERMS

Abscission. The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way

Abiotic. Pertaining to non-living agents; e.g. environmental factors

Absorptive roots. Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients

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 'epicomic'

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

Ancient tree. A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species. An ancient tree is one that has all or most of the following characteristics: a) biological, aesthetic or cultural interest, because of its great age; b) a growth stage that is described as ancient or post-mature; c) a chronological age that is old relative to others of the same species

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

Axial. Aligned along the axis of the stem, branch or root

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

Bark expansion crack. The pattern of axial strips of bark on smooth-barked trees that have grown faster than the adjacent bark. A growth response to stretching of the bark by expansion of the underlying xylem

Basidiomycotina (Basidiomycetes). One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (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

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

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

Cellulose. A carbohydrate consisting of glucose molecules joined end-to-end, so as to form long filaments; a principal constituent of plant cell walls

Chlorosis. The loss of green pigment from plant tissues, caused by mineral deficiency. Chlorotic (adj.)

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 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

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

Decurrent. In trees, a system of branching in which the crown is borne on a number of major widely-spreading limbs of similar size (cf. excurrent). In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly

Decay. (of organic tissue) decomposition by fungi or bacteria

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

Desire-line footpath. A footpath that has been created by regular use rather than by design and construction

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

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

Early-wood. The wood laid down around the time of the main flush of shoot growth in the early part of the growing season

Endophytes. Micro-organisms that live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture

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

Fibre-buckling. The kinking if wood fibres and failure of other xylem elements when exposed to compressive loading

Field layer. Herbs, ferns, grasses and sedges

First-order branch. A high order branch, usually arising from a stem

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

Haloing. Removing or pruning trees from around the crown of another (usually mature or post-mature) tree to prevent it becoming supressed

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

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

Internode. The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches

Laser Rangefinder. A device that uses a laser beam to measure distance, angle, and height.

Lateral branch: A side branch

Late-wood. The wood laid down after the time of the first main flush of shoot growth. Usually denser than the early-wood

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

Lesion. Death or abnormal change in tissues, usually associated with disease or trauma

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 end-loading

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

Loam. A soil with roughly equal proportions of sand, silt, and clay

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

Marginal browning of leaves. Death of a tissues to the margin or edge of the leaf

Mature Heights (approximate)**:**

- **Low maturing** – less than 8 metres high
- **Moderately high maturing** – 8 – 12 metres high
- **High maturing** – greater than 12 metres high

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

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

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)

Obvious defects. Defects that are so apparent that most people, whether specialist or not, would recognise them on taking a general, but not necessarily close view of the tree. Whether an 'obvious defect' is significant depends on both a structural assessment, which may be purely visual, and on the land-use context

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

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

Phloem. Vascular tissue that distributes the products of photosynthesis (sugars) around the plant

Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules and combine it with carbon dioxide to form carbohydrates that are be basic building block for plant growth. Photosynthetic capacity is the plants ability to produce carbohydrates

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

Priority. Works may be prioritised, 1. = high, 5. = low

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

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

Rhizomorph. A root-like aggregation of fungal hyphae

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-buttresses. A buttress-like formation at the transition between roots and stems

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

Saprophytic fungi. Fungi that live on dead or decomposing matter (in the tree) as opposed to functional, living tissues

Sap-run. Liquid running down a stem, branch, or root buttress and providing a food source or other habitat resource. Originating from phloem or xylem death or infections, or water that has accumulated in or run through decaying material.

Sapwood. Living xylem tissues

Safety factor. The ratio of the maximum stress that a structural part of a tree can withstand to the maximum stress experienced under normal conditions

Screef. To clear surface vegetation (commonly up to a depth of around 20mm)

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

Senescence. The condition or process of deterioration with age.

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

Shoot. The elongating region of a stem or branch

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

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

Single-up. Removal of stems from a multi-stemmed tree with the aim of developing a tree with a single stem.

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

Soil auger. A hand-held steel auger 60mm diameter auger used for extracting soil samples.

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

Soil horizons. A layer parallel to the soil surface, whose physical characteristics differ from the layers above and beneath:

- **O)** Organic matter - Litter layer of plant residues
- **A)** Surface soil - Layer of mineral soil with accumulation of organic matter
- **B)** Subsoil - This layer accumulates mineral and organic compounds.
- **C)** Parent rock - Layer of large unbroken rocks
- **R)** Bedrock - Partially weathered bedrock at the base of the soil profile

Soil sample. A sample of soil extracted for the purpose of either field or laboratory testing to determine mineral, chemical or structural composition, and or moisture content and shrinkability.

Sounding hammer. A small plastic or nylon hammer used for assessing the audible signs of decay, cracks and other features in trees

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

Sporophore. The spore bearing structure of fungi

Sprouts. Adventitious shoot growth erupting from beneath the bark

Squirrel damage. Stripping of the bark from stems or branches by squirrels. This can result in the death of branches or even entire trees

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

Stem taper. The downward tapering of a tree stem out into the flare of the root buttresses

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

Strain. In mechanics, the distortion of an object caused by a stress

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

Terminal xylem. The last layers of xylem cells produced at the end of the growing season

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

Translocation. In plant physiology, the movement of water and dissolved materials through the body of the plant

Transpiration. The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells

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

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

Understorey. This layer consists of younger individuals of the dominant trees, together with smaller trees and shrubs which are adapted to grow under lower light conditions

Understorey tree species. Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland

Vascular cambium. Sometimes described simply as 'cambium'. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

Vascular dysfunction. Dysfunction of water conducting cells

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. A tree that has the physical characteristics of an ancient tree but is not ancient in years, compared with others of the same species

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

Vitality. A measure of physiological condition. N = within normal range for species and age, R = reduced from the normal range for the species and age, P = poor

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

Weeping lesion. Exudations from a lesion in plant tissue

Wet flush. Where water from underground flows out onto the surface to create an area of saturated ground, rather than a well-defined channel

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

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

Xylem. Secondary xylem; the main structurally supporting and water-conducting element of trees (refined definition specific to this case)

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

Appendix D

TREE SURVEY REPORT
TREE VALUATIONS

- BS 5837 categorisation
- QTRA risk assessment
- Helliwell system
- CAVAT method
- CTLA DRC method

subjects at

Poynton Pool, East Cheshire

for

Poynton Town Council

February 2023

23202

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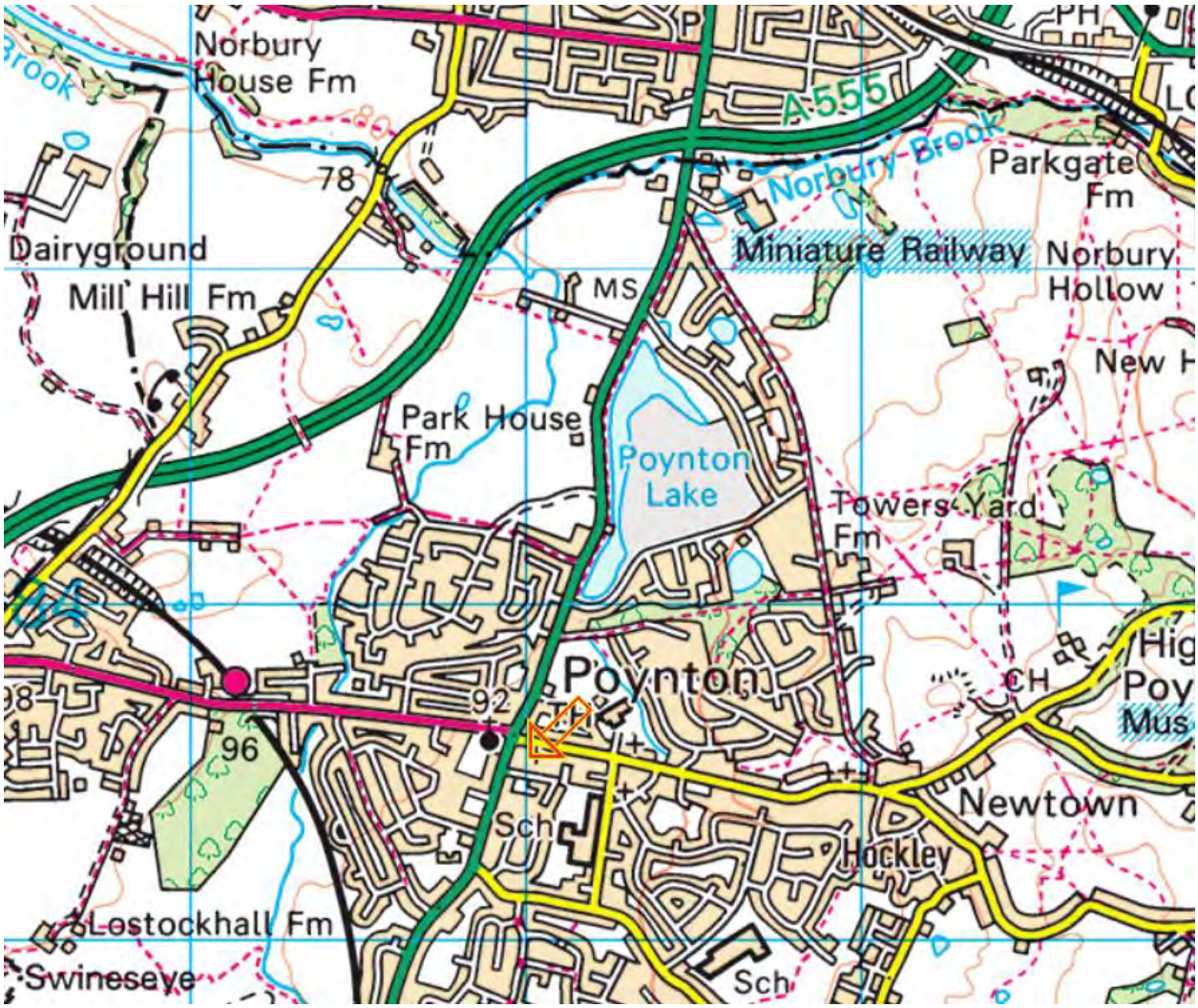
CONTENTS

1. INTRODUCTION

1.1 Instruction

I have been instructed by Poynton Town Council to conduct an arboricultural survey and to report on any trees on the westmost embankments of the reservoir known as Poynton Pool, also known as Poynton Lake. The reservoir is situated about 1 km north of Poynton town centre in East Cheshire.



I am then instructed to provide valuations of all trees and groups of trees along the western edge, using a number of published methods. In addition, the service includes the provision of categorisations of the trees in accordance with BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* and preliminary risk assessments using the Quantified Tree Risk Assessment system.

The context has been explained to me, and the following is my general understanding – it should not be misconstrued as an opinion or a factual basis for any of my findings.

- East Cheshire Council, as owner, has decided that the Pool comprises a 'Reservoir' and therefore has recently undergone a periodic check of its compliance with current reservoir standards.
- One such check is whether the reservoir is resilient against a major flood event.
- The Council's engineers have found that compulsory safety improvements are necessary, and that the Council is required to take action which will improve the site's resilience against extreme flooding.
- According to the engineers, the west side of Poynton Pool has a 900m long bank and footpath and that in large floods, water will flow over this bank, meaning it could be considered as an emergency spillway to control the level of water in the pool; that the bank along the west side of the reservoir is not at a consistent level, and there are parts that are lower; that in a large flood event, water would not flow over the bank evenly and would cause damage to the bank, leading to an uncontrolled release of water; that, therefore, improvements to this bank are required.
- A programme of works is proposed to improve the flood resilience of the perimeter bank.

The programme of works is currently the subject of an Environmental Impact Assessment screening request. The proposal is somewhat imprecise but is stated as requiring the removal of 44 trees located within the direct footprint of the works and the possible removal (dependent on root structure and depth) of up to 37 more trees that are located close to the area of the proposed Scheme.

1.2 Reproduction, assignation and reliance

This report has been prepared for the sole use of the client – no other party is entitled to rely or act upon it or to reproduce all or any part of it without the express prior written consent of the author. The author cannot be held liable for any third party claim arising.

Notwithstanding, this report may be made available without the author's express consent to any statutory consultees insofar as the report may be required for Planning matters.

1.3 Surveyor and author relevant qualifications and experience

The author of this report is a former Chartered Surveyor (MRICS) with 20 years' experience as a property valuer and an additional 15 years' experience in the arboriculture industry, including providing tree valuations for a range of clients (such as for local authorities promoting and implementing flood prevention schemes) and as an expert witness in tree valuation in various court proceedings.

The author has also a wealth of experience of assessing trees using 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* and is an experienced registered user of the *Quantified Tree Risk Assessment* system. Current and recent clients are public (including 10 local authorities) and private bodies.

The tree survey work and reporting has been carried out by Julian Morris, a professionally qualified and experienced Chartered Arboriculturist holding a Bachelor of Science Degree, the Arboricultural Association Technicians Certificate, the LANTRA Professional Tree Inspectors Certificate, Certificate of Public Sector Administration and the RICS Diploma in Surveying. Being a Professional Member (MICFor) of the Institute of Chartered Foresters and a member of the Arboricultural Association he is bound by their Codes of Professional Conduct.

2. GENERALITIES (PRE-SURVEY)

In this report, terms used that have Initial Capitals are proper nouns, have a recognised formal meaning or are defined in the Glossary appended to the report.

2.1 Purpose and scope

Purpose

A report is required which gives the assessment (by a number of methods) of the trees that might be affected by the flood prevention proposals. This may be used by interested parties to inform an evaluation of the impact of the proposals and/or to evaluate alternative proposals.

The following is an outline of the methods to be used; fuller details can be found by following the full references in the Bibliography appended to this report –

2.1.1 BS 5837:2012 "*Trees in relation to design, demolition and construction – Recommendations*"

This records the results of a tree survey for each tree or group, giving an above-ground height and spread and other information that can be used to delineate appropriate above ground constraints and below ground Root Protection Areas ("RPAs") for all trees or groups of trees. Taking into account the quality, life expectancy and condition of each of each, a ranked categorisation (A, B, C or U) is assessed, which represents the relative retention desirability for each. This can be used as a selection criterion in the event of design and development.

The tree survey data, plotted on a site plan to show tree locations and constraints, may be used as a design tool to inform decisions (in terms of constraints above and below ground, tree quality and longevity) as to which trees are to be retained and which are to be removed, avoided or pruned to accommodate a specific form of development.

Trees and groups are assessed independently of any specific design layout.

2.1.2 Quantified Tree Risk Assessment

This provides an assessment of the risk of harm or damage from failure of each tree or any part of it. Using ranges of values, the tree assessor considers (i) the land-use in terms of vulnerability to impact (damage to property) and likelihood of occupation (harm to

persons) (ii) the consequences of an impact, taking account of the size of the part that might fail and (iii) the probability of failure onto the assessed land-use. These factors are then used to derive an annual Risk of Harm for a tree and to make risk reduction recommendations by comparison with published advisory risk thresholds.

The risk associated with trees can be expressed in accordance with general advice from the Health & Safety Executive (2001).

In short, the magnitude of risk is a combination of *Probability of failure x Severity of harm or damage x Likelihood of someone or something being present.*

The risk is quantified and recorded for each component part within broad categories that combine to give, within an order of magnitude, overall risk categories.

Negligible → Acceptable → Tolerable (medium) → Tolerable (high) → Unacceptable

2.1.3 Valuation (generalities)

At present a number of published methods co-exist in the UK for attaching monetary value to amenity trees. The appropriateness of each depends on circumstances and no generalisation is readily possible.

Tree valuations are not 'Valuations' as defined in the Royal Institute of Chartered Surveyors "RICS Valuation – Global Standards, (or the RICS 'Red Book Global' as it has become widely known). Rather, they are monetisation of tree benefits under specific headings. For the purpose of this report the terms 'Valuation' and 'value' are used in that restricted context.

2.1.3.1 Valuation – Helliwell system

This system is published by the Arboricultural Association. It is for valuation of the visual amenity provided by trees and groups. It allocates scores to each tree or group under factors of size, expected duration (life expectancy), importance in the landscape, other tree cover present, suitability to setting and form. These are combined (multiplicatively) and the product is converted to a monetary value using a points-to-£s factor published by the Tree Council from time to time.

2.1.3.2 Valuation – CAVAT system

This system has been developed mainly by the London Tree officers Association. CAVAT ('Capital Asset Value for Amenity Trees') and gives two similar methods. The Full Method is used to provide a compensation replacement value for single trees or groups of trees, to be used when precision is required and sufficient time

is available for a full assessment. The Quick Method is used to determine the value of a population of public tree stock as a financial asset.

Since the methods can give substantially different figures for the same tree or group, for the purpose of this report the 'Full Method' has been used as the one that is more precise.

The Method uses the trunk cross sectional area to scale up the published replacement cost of a notional small replacement tree. This is then adjusted for local population density, public accessibility and visibility, physical depreciation and safe life expectancy to give something akin to a Depreciated Replacement Cost value.

2.1.3.4 Valuation – CTLA

This system is a suite of methods developed by the Council of Tree and Landscape Appraisers, published by the International Society of Arboriculture. It is aimed primarily at assessment of privately owned trees for compensation purposes. Of the suite, only the Functional Replacement Method is appropriate to this project.

It is a Depreciated Replacement Cost method that uses the stem cross sectional area to scale up the local tree nursery cost of the same or similar species, which is then depreciated for condition and functional redundancy.

2.2 Practicalities and assumptions

Plans, precision and accuracy

The site is identified on the OS Vectormap drawing provided to me, and this has been adapted by me to show only the trees and groups of trees recorded during the tree survey.

To assist with the plotting and interpretation of the tree data, additional base mapping has been acquired at OS Mastermap scale, and this has been added as an inset to the Vectormap mapping.

I have not been provided with a topographic survey plan showing the position of any trees.

Where tree positions have been plotted during the tree survey, this has been done using a combination of GPS positions and positions relative to physical features shown on the base map.

A degree of inaccuracy is inevitable, though rarely significant, but the position of trees may have to be plotted more accurately if they are found to be in very close proximity to proposed development.

Minimum sizes, grouping

Only trees and large shrub species with a stem diameter of 150 mm or more are to be recorded.

Where it is deemed appropriate, individual trees within homogeneous groups will not be identified; instead the group will be delineated, measured and described collectively.

Levels

BS5837 suggests that in a topographic survey spot levels at the base of trees should be recorded at the base of each tree. Where this has been done the information will already be available to designers, but it cannot be captured during a tree survey.

Risk and BS5837

The assessed risk will be reflected in the categorisation of the tree on the assumption that any recommended works have been carried out.

2.3 Generalities – limitations and statutory restrictions

The survey was carried out in accordance with the Methodology set out in the Appendix to this report. This report is based on a visual inspection from ground level only.

The trees have been assessed only on the basis of expected endemic weather patterns for the location.

No intrusive or destructive tests were carried out, the survey did not include exhaustive foliar examination (except for purposes of identifying the species) and the inspection was primarily visual and was conducted from the ground and no climbing was done.

The trees have been assessed during a single visit in a single season, in the weather conditions noted in the 'Findings' section of the report, with the limitations that this brings, such as the opportunity to assess the reaction of the tree to a variety of wind strengths and directions, the presence of seasonal fungal Fruiting Bodies, visibility of branch structures or fruit/foliage vitality.

Dense basal epicormics and/or ivy on trees, and occasionally dense undergrowth can obstruct the full inspection of trees. No permission has been sought from the owners to allow the removal of such obstructions, and none have been removed.

I have not been instructed to check the relevant Local Authority as to the existence of Conservation Area designation or Tree Preservation Orders. Such designations could

have the statutory effect of prohibiting certain tree works or be indicative of the Local Authority's existing view of the importance of the trees to the amenity of the area.

2.4 Generalities - Soil and other ground conditions

No sampling, examination or analysis of the soil was done. Unless otherwise stated at s.3.5 below, only general assumptions have been made in the course of the survey and reporting about likely ground conditions, related in part to observations of current tree vitality.

BS5837 suggests that a soil assessment should be undertaken by a competent person to inform any decisions relating to the root protection area (RPA), tree protection, new planting design and foundation design to take account of retained, removed and new trees. For existing trees, unless vitality is obviously being affected by ground conditions, soil testing is not always necessary. Ground conditions may be attributable to other factors, particularly hydrological ones, which may not be informed by soil tests.

Ground conditions, particularly shrinkable clays, relative to new planting design and foundation design to take account of retained, removed and new trees are beyond the scope of this report.

2.5 Generalities - Tree categorisation protocols

For a tree (or group of trees) to qualify under any given category, it should fall within the scope of that category, as defined in the British Standard BS5837:2012.

The main criteria are set out in Appendix 5 to this report.

3. INVESTIGATIVE FINDINGS (DURING SURVEY)

3.1 Practicalities

The tree survey was undertaken on 8th and 9th January 2023.

The conditions were overcast, intermittently dry to rainy, cold and with a moderate westerly breeze.

Access was taken to any land where (and to the extent that) this appeared to be unrestricted and where access was desirable to improve on the quality of the tree assessments.

Access to the base of some of the trees in the east side of the site was physically prevented or restricted due to water.

GPS signals were unusually poor in some parts of the site, particularly under dense tree cover, and the plotted tree positions reflect the resulting imprecision. For this survey it was found that the accuracy of plotting of trees was reasonably good, to within 1 to 2 metres.

No tags have been applied to any of the trees, nor were any older tags found. A sequential number has been assigned to each tree or group of trees.

Where trees were found to form cohesive arboricultural features either aerodynamically, visually or culturally (including for biodiversity), they have been recorded as Groups.

3.2 Site description (general)

The site comprises the west embankments of Poynton Pool, bounded as follows-

On the west by the heel of the footpath of the A523 Poynton to Stockport road.

On the north by Anglesey Drive.

On the east by the east side of the public car park and thereafter in a southwards direction by the Pool's water's edge.

On the south by an arbitrary position on the embankment where the ground level rises noticeably into an elongate mound heading southwards (beyond which point it is assumed that flood resilience is not in question).

The extent of the survey is shown on the plans following this report.

3.3 Trees and groups recorded

A total of about 150 trees and groups were recorded individually.

The spread of the crowns of the recorded trees have generally been estimated at 4 cardinal points. Only the average spread has been given where crowns were found to be approximately circular in horizontal extent.

Holly and other shrub species were noted but are generally considered shrubs that do not come within the remit of the British Standard, and individuals have only been recorded if they had the stature of what one would ordinarily call a 'tree' and/or.

There are a number of trees on the east edge of the land, all white willows or a hybrid thereof, which have collapsed eastwards and are partly in the reservoir. It is not possible to assess these as amenity trees using any of the chosen methods. Accordingly they have not been included in the survey, but their positions have been noted. They may have considerable ecological value which is not expressed in tree amenity valuations. There may be operational reasons why they cannot be retained in a reservoir, but this is not explored in this report.

The investigative findings for the survey stage (species, description, measurements, characteristics, categorisation etc.) are summarised in **the first Appendix** to this report.

The appendix is a precis of a much larger data set, and where there are empty parts in the table there may also be hidden data that has been used to inform the overall conclusions for each tree and group.

3.4 Veteran or ancient trees and ancient woodland

The survey did not identify the presence of individual veteran or ancient trees on or around the site.

3.5 Soil and ground conditions and conclusions

At 2.3 above the generalities of soil and other ground conditions have been stated.

The solid geology in the area is known to be Manchester Marls Formation - Mudstone. Sedimentary bedrock formed between 272.3 and 252.2 million years ago during the Permian period (north half of the survey area) and Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period.

Superficial deposits in the area (where present) are known to be Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

During the course of the survey, no additional relevant observations were possible except to note that where trees have been windthrown in the past the soil exposed appeared to be clay-rich and pebbly. It is also surmised that the embankment is likely to comprise made ground, albeit won locally.

Due to past disruption, it is not possible to reach a conventional view on the suitability of the soils for tree growth and stability.

3.6 QTRA (Risk assessment data)

It was observed over the two survey days that use of the footpath through the survey area was at the low end of the QTRA range '8 to 72 persons per hour'. This is based on 2 weekday daytime winter days in moderately poor weather. It is predicted that this range is not likely to be exceeded habitually, even at peak times such as summer weekends in good weather.

Almost no pedestrian traffic was observed on the public footway of the adjacent public road. The average occupancy level is therefore estimated at the high end of QTRA range '7 to 2 persons per hour' and not habitually exceeding that range in peak usage.

Published vehicular traffic levels on the adjacent public road are of the order of 6,300 daily northbound and 7,400 daily southbound. The speed limit is 40 miles per hour. The occupation is therefore in QTRA occupancy range 1, '36,000 to 3,700 per day'.

3.7 Valuation data

In addition to the data required for BS5837 purposes, for each tree or group of trees, the data required for valuations by the Helliwell, CTLA and CAVAT valuation methodologies was gathered. This comprised –

- Crown spread diameter (north to south)
- Crown spread diameter (east to west)
- Tree live height
- Height to crown base
- % crown missing
- % Crown condition

- Crown light exposure
- Location Factor
- Functional Structural value
- Functional Crown value
- Adjustment Factor
- Safe Life Expectancy
- Value (%) retained
- Crown size
- Expected duration
- Position (importance)
- Other trees
- Relation to setting
- Form
- Physical deterioration and %
- Functional Limitations and %
- External limitations and %
- Direction to closest building
- Distance to closest building

For groups, the data used for each valuation are different. This is particularly so for groups, where the Helliwell system uses the visual area of the group whereas CAVAT and CTLA are based on the value of the components of the groups, times the number of components. To facilitate this, each group is recorded twice, the first for a Helliwell valuation and the second for a CTLA and CAVAT valuation.

The CTLA methodology requires the unit cost of the largest commonly available functional replacement nursery tree and associated transportation costs. This has been costed from data provided by several tree nurseries.

The CAVAT methodology requires a ‘Community Tree Index’ which is an indication of the relative density of population in the area. Indices for local authority areas in England are published by CAVAT, but no index is provided for East Cheshire. The appropriate index has therefore been calculated using government data of population and land area.

4. BS5837 TREE CONSTRAINTS (POST-SURVEY)

The tree constraints plan(s) referred to in the following sections are available in CAD format for use in detailed design. CAD plans will allow the constraints from each tree to be seen more clearly and for one or more trees (for example, all Category U trees) to be 'switched off' to clarify what the remaining constraints are.

4.1 Above ground constraints

The extent of the crowns is plotted on the plan appended to this report, colour-coded to give an immediate overview of their relative retention desirability.

For groups, the extent of the Group including the crown spreads of edge trees, is shown on the plan.

Within groups the spread of individual trees may overlap, such that the removal of individual trees from the group, may not allow construction in the volume that had been occupied by those trees. Importantly, removal of trees from Groups will result in loss to the remaining trees of companion shelter and may reduce the wind-firmness of remaining trees within the Group or the whole Group and/or may result in storm breakages of limbs or forks.

Using the plan as a guide, it may be appropriate to define areas within which development may be constrained by the presence of tree crowns or canopy. That said, the crown spreads do not necessarily represent the height at which crowns might constrain development.

To aid with this I have provided an average or representative crown or canopy height. For offsite or boundary trees this is the representative height of the on-site part of the crown.

Development below this height may be possible, or selective branch removal may be possible whilst retaining the rest of the tree.

4.2 Below ground constraints (present)

The root protection area ("RPA") indicates the 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.

Although the data necessary to plot these has been gathered, it is not immediately required for the purpose of the report at present, and it has not been portrayed on the Plan.

4.3 Tree shade and shadow

BS5837 provides an optional method of trying to portray the effect of tree shade and shadow on development sites. This has not been done because daylighting aspects are unlikely to be of relevance to the design of flood protection measures.

4.4 Retention desirability categorisation

The retention desirability categorisation of trees follows the guidance in BS5837. Greatest consideration could be given to retaining Category A and B trees (i.e. generally those with an estimated Remaining Contribution of 20 or more years).

Typically designers make the assumption that the amenity contribution of Category C trees (typically, those having and Estimated Remaining Contribution of 10 to 20 years) and Category U trees are likely to be exceeded by the design life of any proposed development, and these may be suitable for retention only in low risk or low visibility locations, as contributions to high/moderate quality tree groups or in positions where a replacement tree would be desirable in due course.

Through shared data on aspects like estimated life expectancy and condition, there is a general correlation between the categorisations and the monetary value of trees, and the plans attached to this report can therefore in a general sense indicate- and give an immediate impression of- (by colour coding) the positions and locations of the ‘best’ trees.

5. RISK FINDINGS AND RECOMMENDATIONS

5.1 Assessed risks (current usage)

Where failure of any tree or part of it cannot be reasonably foreseen in endemic weather conditions, the risk is automatically deemed to be ‘Acceptable’ or ‘Negligible’, as no further assessment of Target or Severity value is required.

No trees were found that presented a less than ‘Acceptable’ risk. The vast majority of the trees were found to have a ‘Negligible’ risk.

Accordingly, no risk reduction works are recommended in the context of current usage of the site at present.

6. VALUATION FINDINGS

Using the gathered data, each individual tree or group of trees has been valued according to the three methods (see 2.1.3 above).

The results of the valuations for each tree or group by each method are given in the appendix to this report.

7. CONSTRAINTS

7.1 Statutory constraints

I have not checked with the relevant Local Authority as to the existence of Conservation Area designation or Tree Preservation Orders which has or could have the statutory effect of prohibiting certain tree works or tree damage, or be indicative of the Local Authority's existing view of the importance of the trees to the amenity of the area.

Separate consent or notification would normally be required for tree works or wilful tree damage in a Tree Preservation Order or Conservation Area. It should be noted, though, that the cutting down, topping, lopping or uprooting of a tree when (and only to the extent that) that work is immediately required for the purposes of carrying out development authorised by detailed planning permission does not require separate consent.

A 'felling licence' is usually required from the Forestry Commission for larger volumes of timber. A number of exemptions exist, including for trees with a diameter not exceeding 10 centimetres, trees in orchards, gardens, churchyards or public open spaces, felling where the aggregate cubic contents 5 m^3 in any, the prevention of immediate danger to persons or to property, trees badly affected by Dutch Elm Disease and dead trees.

There is also an exemption for the felling of a tree where immediately required for the purposes of carrying out development authorised by planning permission granted or deemed to be granted under the Planning Acts.

7.2 Woodland or tree removal policy constraints

Woodland removal can trigger Government policies protecting against the loss of woodlands generally. Protection can be more stringent where remnants of ancient woodland character are present.

A definitive assessment of whether any parts of the site comprise protected woodland is beyond the scope of this report.

It is noted that East Cheshire Council's 'Site Allocations and Development Policies Document - Adopted December 2022' endorses the use of CAVAT as a means of assessing lost tree amenity in development situations.

8. SUMMARY

As an aid to (i) project design and selection of trees for retention and protection and (ii) assessing risk in the current usage of the site and (iii) consideration of the amenity value of the trees, all the trees and groups of trees on the site have been identified, measured and recorded and then (i) categorised for relative retention desirability, all in accordance with BS5837, (ii) assessed for risk using the Quantified Tree Risk System and (iii) the monetary value has been calculated using the Helliwell, CAVAT and CTLA valuation systems.

The qualifications and tree valuation expertise and experience of the surveyor are stated at the start of the report.

Where tree positions have been plotted during the tree survey, this has been done using a combination of any available topographic survey information, GPS positions and positions relative to physical features shown on the base map.

A degree of inaccuracy is inevitable, though rarely significant, but the position of trees may have to be plotted more accurately if they are found to be in very close proximity to proposed development. For this tree survey, the plotting of trees could be achieved at 1 to 2 metres accuracy.

The position of the trees and groups of trees, and the extents of their crowns and combined canopies (colour coded for relative retention desirability) are represented on the Plan immediately following this report.

A number of collapsed willows in the Pool itself, emanating from the east side of the embankment have been noted but cannot be assessed for amenity value using any of the methods. Separate consideration of their ecological value may be appropriate.

The data has been collected that would be required to plot the Root Protection Areas of the trees, but the plotting has not been done at this time.

The printed plan may not be convenient or adequate on its own for detailed design choices. A CAD version of the plan is being made available for viewing in greater detail and for use by designers if required. This allows each category of tree to be selected and/or the constraints of individual trees to be viewed.

The survey did not note the presence of any ancient or veteran trees on the site. No attempt has been made to establish whether any parts of the site comprise woodland of sufficient size and density to be relevant to Government policies on woodland removal if removal were proposed.

No checks have been made on Conservation Area or Tree Preservation Order restrictions on tree works. Separate consent would normally be required for tree works in a Tree Preservation Order area or Conservation Area or the felling of larger volumes of timber, unless exempted, and in particular by the grant of detailed planning permission.

No trees were found that might present an imminent and serious hazard to life or property or to constitute a less than 'Acceptable' risk, and the vast majority were assessed as constituting a 'Negligible' risk.

The trees and groups have been valued individually in accordance with the Helliwell, CAVAT and CTLA systems, to provide monetary values for each tree or group. These are provided in the Appendix to this report.

The individual figures, in conjunction with the BS5837 categorisation and the risk assessments may be used as the basis for assessing the arboricultural impact and monetising the collective effect on lost tree amenity for the proposed- or any other- flood prevention scheme.

Considerable differences arise between the total values derived from the 3 systems, as illustrated by the total figures for all trees and groups -

Helliwell	£ 418,490
CAVAT	£3,081,070
CTLA	£5,442,000
Mean value	£2,980,520

In view of the Council's policy on the use of CAVAT in development situations (See section 7.2 above), and since it gives and aggregate figure that is close to the mean value for all 3 methods, the CAVAT figures appear to represent the most suitable starting point for application of values to the development situation.

The values attributed to each tree can be used to calculate the total for any chosen development scenario.

Julian A. Morris

Signed 

Dated February 2023

Path

Car Park

90.1m

El Sub Sta

ANGLESE

utfall

Wayside

Poynton Pool

89.6m

Path

White House

Ward Bdy

89.8m

90.2m

RIVE

Category A group spread

Category B group spread

Category C group spread

Category 'A' Category 'B' Category 'C' Category 'U'

0 120m

Julian A Morris Professional Tree Services
149 Langlea Avenue, Cambuslang, G72 8AN
0141 641 0245 jamorris@mail.com

PROJECT: Poynton Pool tree valuation

DRAWING: Overview

SCALE : 1 : 1500 @ A3

DATE : 07/02/2023

N

The original of this drawing was produced in colour
- a monochronme copy should not be relied upon

Julian A Morris Professional Tree Services
149 Langlea Avenue, Cambuslang, G72 8AN
0141 641 0245 jamorris@mail.com

PROJECT: Poynton Pool

DRAWING: Tree and group positions and categorisations
North section (1 of 2)

SCALE : 1 : 750 @ A3 | DATE : 07/02/2023

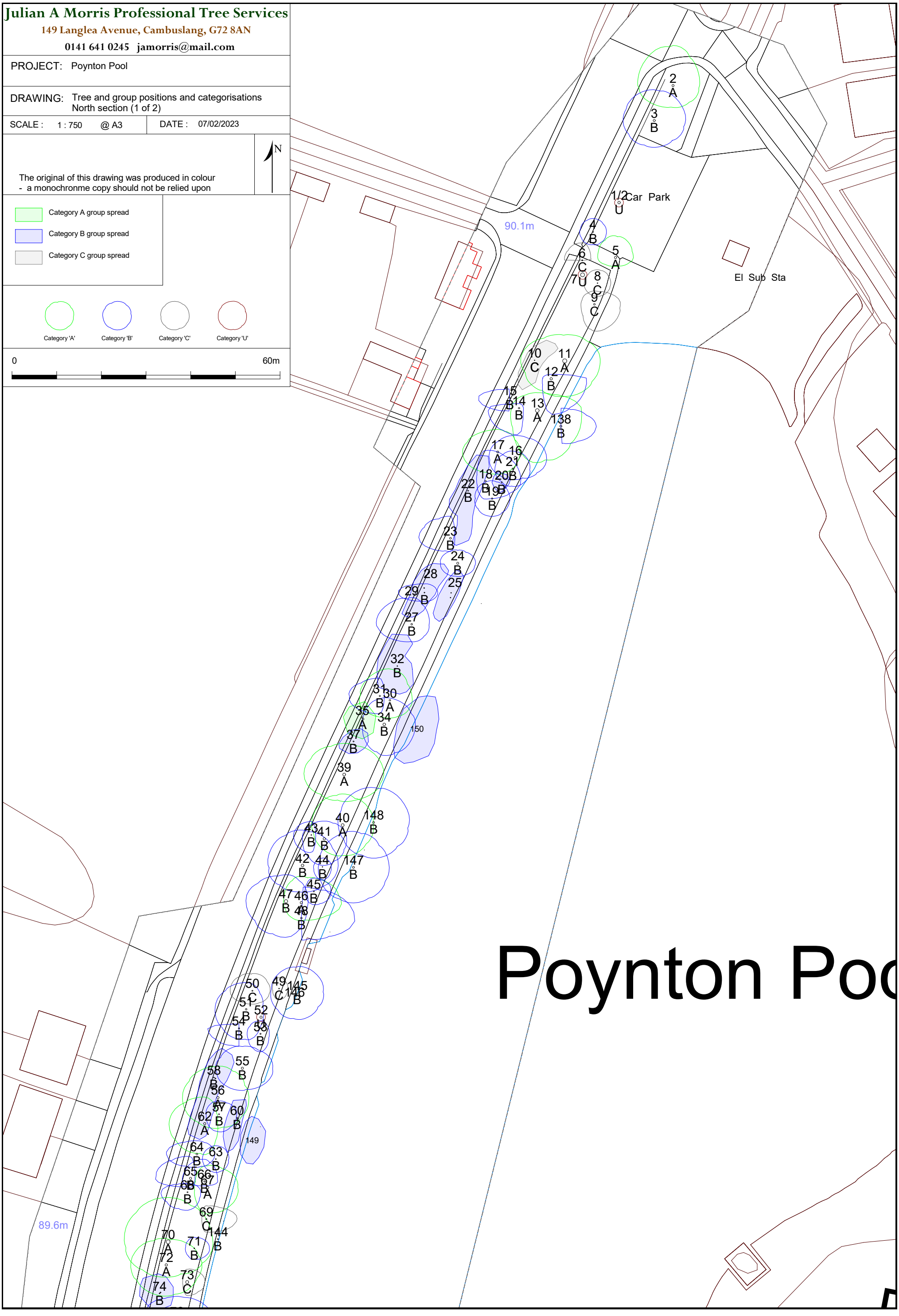
N

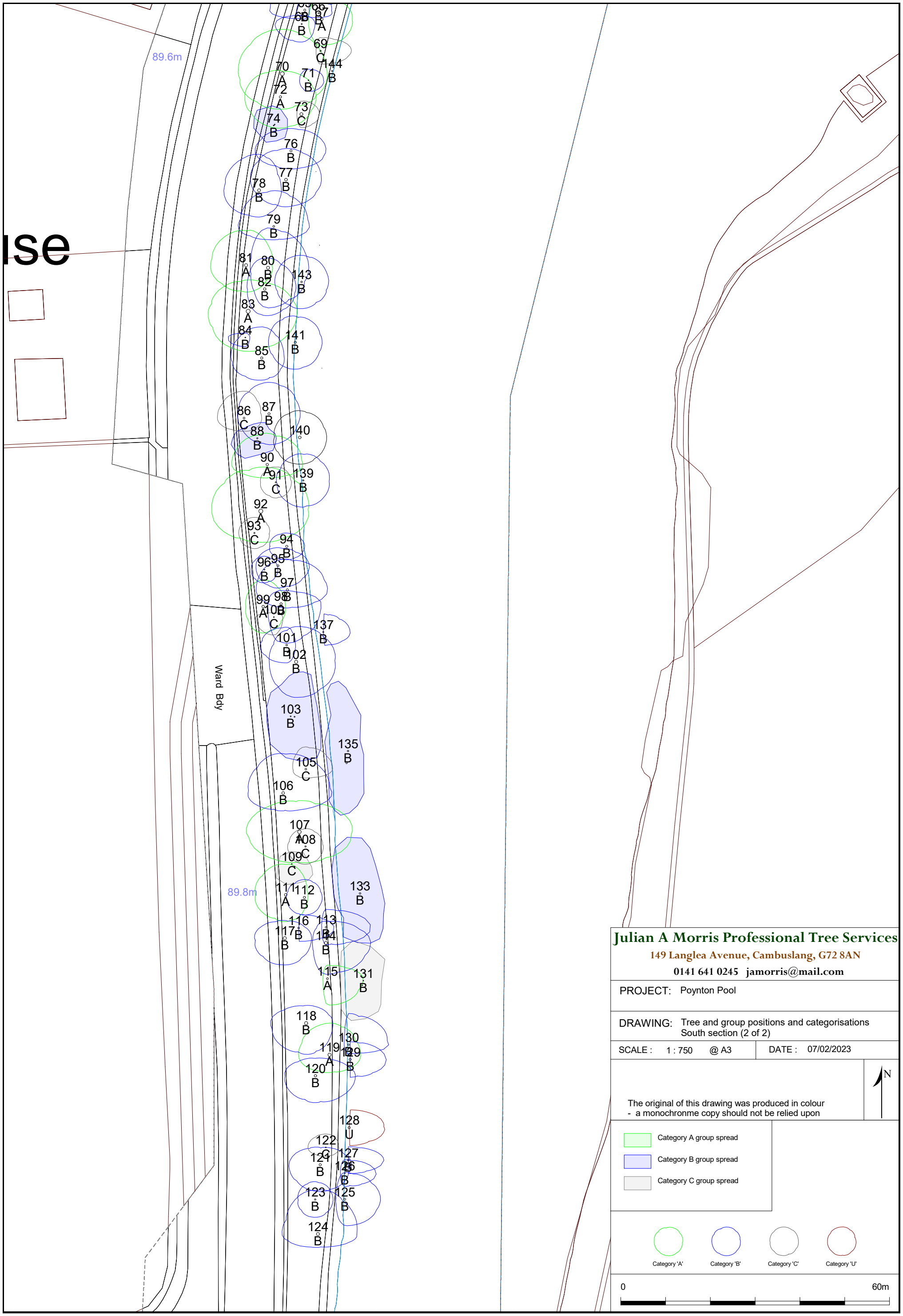
The original of this drawing was produced in colour
- a monochronme copy should not be relied upon

Category A group spread
Category B group spread
Category C group spread

Category 'A' Category 'B' Category 'C' Category 'U'

0 60m




89.6m
Ward Bdy
89.8m
Julian A Morris Professional Tree Services
149 Langlea Avenue, Cambuslang, G72 8AN
0141 641 0245 jamorris@mail.com
PROJECT: Poynton Pool
DRAWING: Tree and group positions and categorisations
South section (2 of 2)
SCALE : 1 : 750 @ A3
DATE : 07/02/2023
N
The original of this drawing was produced in colour
- a monochronme copy should not be relied upon
Category A group spread
Category B group spread
Category C group spread
Category 'A'
Category 'B'
Category 'C'
Category 'U'
0
60m

Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
	Individual Trees	***West of path***																										
1	Common Lime	*Tilia x europaea*		600	3	3	0	1	1	1	1	Stump. Kretzschmaria around base	Negligible	None	Poor	n/a	< 10	U	0.375	43	£20	18.44	52138	£470	2827	26	1	£2,200
2	Hornbeam	*Carpinus betulus*	2	500	10	10	1	9	6	5	8	Twin stemmed from base. Dense decurrent crown	Negligible	None	Good	Mature	> 40	A	243	43	£10,450	18.44	36207	£30,960	1964	26	1	£47,500
3	Sycamore	*Acer pseudoplatanus*		500	18	18	2.5	7	7	6	7	Upright largely excurrent. Light ivy to mid crown. Lower branch removal stub W	Negligible	Sever ivy around base	Fair to Good	Early-mature	> 40	B	162	43	£6,970	18.44	36207	£27,860	1964	26	1	£51,100
4	Lime	*Tilia sp.*		230	13	13	2	3	3	3	3	Topped at 9m and regenerating as multistemmed	Negligible	None	Fair to Good	Semi-mature	> 40	B	54	43	£2,320	18.44	7661	£6,550	415	26	1	£7,900
5	Sycamore	*Acer pseudoplatanus*		510	18	18	3.5	5	4	2	4	Slight lean N. Crown lifted. Dense ivy to mid crown	Negligible	None	Fair to Good	Early-mature	> 40	A	90	43	£3,870	18.44	37670	£32,210	2043	26	1	£38,800
6	Sycamore	*Acer pseudoplatanus*		230	10	10	2.5	4	2	0	4	Suppressed from S. Suppressing now gone. One sided	Negligible	None	Fair to Good	Semi-mature	> 40	C	26.25	43	£1,130	18.44	7661	£4,420	415	26	1	£9,300
7	Unknown broadleaf			900	7	7	2.5	1	1	1	1	Probably Norway Maple, 3 buds. Topped presumably inclusion fork risk	Negligible	None	Poor	Mature	< 10	U	1.5	43	£60	18.44	117310	£260	6362	26	1	£13,200
8	Holly	*Ilex aquifolium*	3	150	5	5	0	3	3	3	3	Shrubby and multistemmed from base	Negligible	None	Fair to Good	Young	> 40	C	31.5	43	£1,350	18.44	3259	£2,790	177	26	1	£4,300
9	Sycamore	*Acer pseudoplatanus*		390	16	16	4	3	6	6	3	Formerly suppressed from NW. Large stub at base S	Negligible	None	Fair	Semi-mature	10 to 20	C	38.25	43	£1,640	18.44	22028	£7,750	1195	26	1	£22,700
11	Beech	*Fagus sylvatica*		950	25	25	2.5	6	8	8	10	Upright balanced slight stem torsion	Acceptable	None	Fair to Good	Mature	> 40	A	117	43	£5,030	18.44	130707	£111,750	7088	26	1	£156,200
12	Pedunculate Oak	*Quercus robur*		550	23	23	2.5	1	8	8	2	Moderate bias SE.	Negligible	None	Fair to Good	Early-mature	> 40	B	67.5	43	£2,900	18.44	43810	£29,970	2376	26	1	£54,400
13	Pedunculate Oak	*Quercus robur*		850	23	23	4	4	10	12	6	Upright balanced decurrent. Lower deadwood. Slight thinness of crown	Negligible	None	Good	Mature	> 40	A	144	43	£6,190	18.44	104638	£80,520	5675	26	1	£127,600
14	Sycamore	*Acer pseudoplatanus*		350	20	20	2.5	1	1	6	7	Crown bias W. Moderate ivy to mid crown	Negligible	None	Fair	Semi-mature	20 to 40	B	50.6	43	£2,180	18.44	17741	£8,620	962	26	1	£23,300
15	Pedunculate Oak	*Quercus robur*		220	11	11	5	2	0	3	7	Lean and bias W over road	Negligible	None	Fair to Good	Young	> 40	B	30	43	£1,290	18.44	7010	£4,050	380	26	1	£7,600
16	Sycamore	*Acer pseudoplatanus*		600	19	19	3	5	7	5	6	Twin stemmed from good fork at 2.5m. midheight deadwood and breakages	Acceptable	None	Fair to Good	Mature	> 40	B	126.5625	43	£5,440	18.44	52138	£40,120	2827	26	1	£60,200
17	Sycamore	*Acer pseudoplatanus*		460	21	21	2.5	5	5	5	8	Upright slight bias W. Twin stemmed from 6m	Negligible	None	Fair to Good	Early-mature	> 40	A	87.75	43	£3,770	18.44	30646	£19,650	1662	26	1	£40,200
18	Sycamore	*Acer pseudoplatanus*		350	13	13	3.5	7	8	4	2	Decurrent. Moderate deadwood	Negligible	None	Fair	Semi-mature	20 to 40	B	51.75	43	£2,230	18.44	17741	£5,110	962	26	1	£22,000
19	Holly	*Ilex aquifolium*	6<10	320	8	8	2	4	4	4	4	Multistemmed from base. Close to path	Negligible	None	Good	Early-mature	> 40	B	42	43	£1,810	18.44	14830	£12,680	804	26	1	£17,100

Julian A Morris Professional Tree Services,
149 Langlea Avenue, Cambuslang, G72 8AN

Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
21	Yew	*Taxus baccata*		300	9	9	2	4	4	4	4	Poorly crown lifted	Negligible	None	Fair to Good	Early-mature	> 40	B	81	43	£3,480	18.44	13034	£10,030	707	26	1	£15,000
23	Pedunculate Oak	*Quercus robur*		430	19	19	2	5	1	3	7	Crown bias W. Lower deadwood	Negligible	None	Fair to Good	Semi-mature	> 40	B	55	43	£2,370	18.44	26779	£13,740	1452	26	1	£35,100
24	Sycamore	*Acer pseudoplatanus*		480	19	19	3.5	3	4	3	4	Dense ivy to mid crown. Poor lower vigour	Negligible	Sever ivy around base	Fair to Good	Semi-mature	> 40	B	75	43	£3,230	18.44	33368	£25,680	1810	26	1	£40,700
27	Pedunculate Oak	*Quercus robur*		370	18	18	3	6	4	4	8	Blocking streetlight	Negligible	Prune back from streetlight	Good	Semi-mature	> 40	B	78	43	£3,350	18.44	19827	£14,870	1075	26	1	£24,600
30	Beech	*Fagus sylvatica*		380	22	22	4	7	5	4	7	Upright balanced excurrent	Negligible	None	Good	Semi-mature	> 40	A	175.5	43	£7,550	18.44	20913	£14,900	1134	26	1	£27,400
31	Sycamore	*Acer pseudoplatanus*		310	12	12	2.5	4	1	4	7	Distorted form.	Negligible	None	Fair to Good	Semi-mature	20 to 40	B	34.5	43	£1,480	18.44	13918	£6,010	755	26	1	£16,100
34	Sycamore	*Acer pseudoplatanus*		610	18	18	3.5	6	7	7	5	Lower deadwood. Decurrent from 9m	Negligible	None	Good	Early-mature	> 40	B	117	43	£5,030	18.44	53890	£41,470	2922	26	1	£65,700
39	Turkey Oak	*Quercus cerris*		670	28	28	4	7	9	6	9	Suppressed SE. Minor deadwood	Negligible	None	Good	Mature	> 40	A	96	43	£4,130	18.44	65013	£37,060	3526	26	1	£75,000
40	Lime	*Tilia sp.*		680	30	30	4	7	7	7	7	Well buttressed upright balanced	Negligible	None	Good	Mature	> 40	A	216	43	£9,290	18.44	66968	£57,260	3632	26	1	£92,500
41	Common Lime	*Tilia x europaea*		550	28	28	0	4	5	6	5	Dense basal epicormics. Burred stem. Upper breakages.	Negligible	None	Fair	Mature	20 to 40	B	51.75	43	£2,230	18.44	43810	£21,030	2376	26	1	£45,100
42	Norway Maple	*Acer platanoides*	2	620	25	25	5	8	8	6	8	Twin stemmed from long inclusion fork with fair adaptive growth	Acceptable	None	Fair	Mature	20 to 40	B	51.75	43	£2,230	18.44	55672	£21,040	3019	26	1	£50,400
43	Holly	*Ilex aquifolium*		180	6	6	0	3	1	4	4		Negligible	None	Good	Early-mature	> 40	B	31.5	43	£1,350	18.44	4692	£3,520	254	26	1	£6,200
44	Holly	*Ilex aquifolium*		170	6	6	0	2	2	3	2		Negligible	None	Good	Early-mature	> 40	B	30	43	£1,290	18.44	4186	£3,580	227	26	1	£5,500
45	Holly	*Ilex aquifolium*		230	10	10	0	3	4	3	2		Negligible	None	Good	Early-mature	> 40	B	54	43	£2,320	18.44	7661	£7,280	415	26	1	£10,600
46	Horse Chestnut	*Aesculus hippocastanum*		550	20	20	2.5	6	9	4	4	Well buttressed. Crown bias E. Suppression S recently removed	Negligible	None	Good	Mature	> 40	A	175.5	43	£7,550	18.44	43810	£28,090	2376	26	1	£50,600
47	Turkey Oak	*Quercus cerris*		760	20	20	2	6	5	8	9	Suppression S recently removed. Imbalanced crown E. Midsize deadwood	Negligible	None	Fair to Good	Mature	> 40	B	64.4	43	£2,770	18.44	83653	£40,150	4536	26	1	£86,100
48	Pedunculate Oak	*Quercus robur*		380	17	17	3	7	12	5	0	Steady lean E	Negligible	None	Fair to Good	Early-mature	20 to 40	B	128.0813	43	£5,510	18.44	20913	£13,380	1134	26	1	£24,500
49	Holly	*Ilex aquifolium*	3	210	6	6	1.5	2.5	2	2.5	1.5	3 related stems	Negligible	None	Fair to Good	Semi-mature	> 40	C	33.75	43	£1,450	18.44	6387	£3,690	346	26	1	£8,400
50	Lime	*Tilia sp.*		250	12	12	0	4	4	3	5	Maturing basal epicormics. Crown damaged by adjacent tree	Negligible	None	Fair	Semi-mature	20 to 40	C	34.5	43	£1,480	18.44	9052	£4,400	491	26	1	£9,900

Julian A Morris Professional Tree Services,
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Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
51	Lime	*Tilia sp.*		370	18	18	1.5	6	4	7	7	Upright. Blocking streetlight	Negligible	Prune back from streetlight	Fair to Good	Semi-mature	> 40	B	78	43	£3,350	18.44	19827	£12,710	1075	26	1	£22,900
52	Sycamore	*Acer pseudoplatanus*		540	7	7	0.5	1	1	1	1	Large basal cavity. Removed at 5m and regenerating weakly	Negligible	None	Poor	Early-mature	< 10	U	5.1	43	£220	18.44	42232	£250	2290	26	1	£4,800
53	Yew	*Taxus baccata*		260	8	8	0	3	2	4	3	Decaying stubs at base E	Negligible	None	Fair to Good	Early-mature	> 40	B	42	43	£1,810	18.44	9790	£7,530	531	26	1	£10,700
54	Sycamore	*Acer pseudoplatanus*		300	12	12	2.5	1	0	4	7	Imbalanced crown E	Negligible	None	Fair to Good	Semi-mature	> 40	B	33.75	43	£1,450	18.44	13034	£7,520	707	26	1	£15,000
55	Common Lime	*Tilia x europaea*		500	25	25	0	5	7	5	6	Dense basal epicormics	Negligible	None	Fair to Good	Early-mature	> 40	B	202.5	43	£8,710	18.44	36207	£20,900	1964	26	1	£44,200
56	Lime	*Tilia sp.*		500	28	28	3	7	7	7	8	Well buttressed upright balanced	Negligible	None	Good	Early-mature	> 40	A	144	43	£6,190	18.44	36207	£25,800	1964	26	1	£51,100
57	Yew	*Taxus baccata*		240	9	9	2	3	4	4	3		Negligible	None	Fair to Good	Early-mature	> 40	B	72	43	£3,100	18.44	8342	£6,260	452	26	1	£11,800
62	Beech	*Fagus sylvatica*		550	21	21	5	6	3	7	8	Well buttressed upright balanced. Suppression E gone	Negligible	None	Good	Mature	> 40	A	126	43	£5,420	18.44	43810	£31,210	2376	26	1	£51,300
63	Holly	*Ilex aquifolium*		190	8	8	0	3	3	3	3		Negligible	None	Fair to Good	Semi-mature	> 40	B	42	43	£1,810	18.44	5228	£4,470	284	26	1	£6,400
64	Horse Chestnut	*Aesculus hippocastanum*		430	16	16	2	3	4	3	7	Decurrent	Negligible	None	Fair to Good	Semi-mature	20 to 40	B	37.95	43	£1,630	18.44	26779	£11,570	1452	26	1	£27,200
65	Beech	*Fagus sylvatica*		480	21	21	1	5	1	2	8	Heavily biased W. Deadwood at 4m	Negligible	None	Fair to Good	Early-mature	> 40	B	30	43	£1,290	18.44	33368	£19,260	1810	26	1	£36,300
66	Horse Chestnut	*Aesculus hippocastanum*		330	18	18	2.5	5	3	1	5	Close to larger lime	Negligible	None	Fair to Good	Semi-mature	20 to 40	B	46	43	£1,980	18.44	15772	£5,680	855	26	1	£20,700
67	Common Lime	*Tilia x europaea*		600	23	23	2	5	7	6	3	Dense and maturing basal epicormics. Twin stemmed from 4m.	Negligible	None	Good	Mature	> 40	A	90	43	£3,870	18.44	52138	£49,530	2827	26	1	£61,000
68	Common Lime	*Tilia x europaea*		250	18	18	1.5	2	3	4	6	Maturing basal epicormics	Negligible	None	Fair to Good	Semi-mature	20 to 40	B	41.25	43	£1,770	18.44	9052	£4,890	491	26	1	£9,900
69	Sycamore	*Acer pseudoplatanus*		300	13	13	2	3	7	3	1	Decayed hollow stem with fair adaptive growth. Leaning E	Acceptable	None	Poor	Semi-mature	10 to 20	C	38.25	43	£1,640	18.44	13034	£2,870	707	26	1	£7,000
70	Beech	*Fagus sylvatica*		900	30	30	2	10	10	8	10	Upright balanced. Light ivy	Negligible	None	Good	Mature	> 40	A	96	43	£4,130	18.44	117310	£64,520	6362	26	1	£145,600
71	Horse Chestnut	*Aesculus hippocastanum*		200	7	7	0	2.5	3.5	2.5	2		Negligible	None	Fair to Good	Semi-mature	> 40	B	37.5	43	£1,610	18.44	5793	£5,500	314	26	1	£8,200
72	Beech	*Fagus sylvatica*		550	24	24	3	6	8	7	8	Upright balanced decurrent	Negligible	None	Good	Early-mature	> 40	A	144	43	£6,190	18.44	43810	£31,210	2376	26	1	£54,400
73	Pedunculate Oak	*Quercus robur*		700	11	11	1.5	3	4	3	1	Large cavities. Topped at 10m	Negligible	None	Fair	Mature	10 to 20	C	11.9	43	£510	18.44	70966	£9,760	3848	26	1	£53,000

Julian A Morris Professional Tree Services,
149 Langlea Avenue, Cambuslang, G72 8AN

Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
76	Beech	*Fagus sylvatica*		500	20	20	2.5	5	8	4	8	Burred stem with large cavity developing	Negligible	None	Fair	Early-mature	20 to 40	B	103.5	43	£4,450	18.44	36207	£15,210	1964	26	1	£34,700
77	Horse Chestnut	*Aesculus hippocastanum*		650	20	20	2	7	8	6	8	Large basal cavity W	Negligible	None	Fair to Good	Mature	20 to 40	B	110.4	43	£4,750	18.44	61190	£30,840	3318	26	1	£59,200
78	Beech	*Fagus sylvatica*		700	20	20	1	8	5	6	8	Small cavity developing at base	Negligible	None	Good	Mature	20 to 40	B	69	43	£2,970	18.44	70966	£38,320	3848	26	1	£81,900
79	Lime	*Tilia sp.*		430	18	18	2.5	8	8	3	8	Crown bias N	Negligible	None	Good	Early-mature	> 40	B	135	43	£5,810	18.44	26779	£25,440	1452	26	1	£37,800
80	Beech	*Fagus sylvatica*		710	24	24	4	9	9	9	4	2 large basal cavities. Triple stemmed from fair inclusion forks at 4m	Acceptable	None	Fair to Good	Mature	20 to 40	B	73.6	43	£3,160	18.44	73008	£46,720	3959	26	1	£70,900
81	Common Lime	*Tilia x europaea*		700	27	27	2	8	6	6	8	Crown bias E. Minor deadwood. Blocking streetlight	Negligible	None	Good	Mature	> 40	A	96	43	£4,130	18.44	70966	£45,510	3848	26	1	£81,400
82	Beech	*Fagus sylvatica*		580	24	24	5	7	7	6	4	Well buttressed upright. Imbalanced crown E. Large basal cavity N. Rocking slightly in wind	Acceptable	None	Fair to Good	Early-mature	20 to 40	B	69	43	£2,970	18.44	48720	£31,180	2642	26	1	£50,200
83	Beech	*Fagus sylvatica*		920	27	27	5	7	11	9	9	Upright balanced decurrent	Negligible	None	Good	Mature	> 40	A	144	43	£6,190	18.44	122582	£87,340	6648	26	1	£172,800
84	Sycamore	*Acer pseudoplatanus*		210	9	9	3	1	1	2	4	Crown bias W	Negligible	None	Fair to Good	Semi-mature	> 40	B	26.25	43	£1,130	18.44	6387	£3,640	346	26	1	£7,800
85	Common Lime	*Tilia x europaea*	3	530	22	22	1.5	7	5	5	7	Triple stemmed from base with light basal epicormics	Negligible	None	Good	Early-mature	> 40	B	135	43	£5,810	18.44	40682	£34,780	2206	26	1	£49,600
86	Common Lime	*Tilia x europaea*	6<10	430	20	20	2.5	6	4	3	6	Multistemmed stump regeneration with central decay	Negligible	None	Fair	Semi-mature	10 to 20	C	33.15	43	£1,430	18.44	26779	£7,730	1452	26	1	£21,300
87	Common Lime	*Tilia x europaea*	2	500	22	22	3	7	7	7	7	Twin stemmed with maturing basal epicormics	Negligible	None	Fair to Good	Mature	> 40	B	90	43	£3,870	18.44	36207	£30,960	1964	26	1	£44,000
90	Lime	*Tilia sp.*		560	24	24	6	7	8	3	8	Upright balanced. Blocking streetlight	Negligible	None	Good	Early-mature	> 40	A	135	43	£5,810	18.44	45418	£32,360	2463	26	1	£59,600
91	Lime	*Tilia sp.*	2	270	8	8	2	3.5	3.5	3.5	3.5	Twin stemmed from base. Suppressed	Negligible	None	Fair to Good	Semi-mature	20 to 40	C	27.6	43	£1,190	18.44	10558	£3,550	573	26	1	£12,400
92	Beech	*Fagus sylvatica*		930	24	24	1.5	10	11	7	11	Well buttressed upright balanced. Slight historic lean N self corrected	Negligible	None	Good	Mature	> 40	A	144	43	£6,190	18.44	125262	£119,000	6793	26	1	£176,600
93	Lime	*Tilia sp.*	2	280	16	16	1	3.5	3.5	3.5	3.5	Multistemmed stump regeneration with central decay	Negligible	None	Fair	Semi-mature	10 to 20	C	25.5	43	£1,100	18.44	11354	£2,530	616	26	1	£9,600
94	Common Lime	*Tilia x europaea*		500	19	19	2.5	3	4	3	4	Dense basal epicormics. Weak crown	Negligible	None	Fair to Good	Early-mature	20 to 40	B	50.6	43	£2,180	18.44	36207	£13,900	1964	26	1	£39,800
95	Lime	*Tilia sp.*		450	20	20	2.5	4	7	5	5		Negligible	None	Good	Early-mature	> 40	B	117	43	£5,030	18.44	29328	£20,900	1590	26	1	£41,400
96	Holly	*Ilex aquifolium*	3	240	6	6	0	3	3	3	3	Triple stemmed from base	Negligible	None	Good	Semi-mature	> 40	B	63	43	£2,710	18.44	8342	£5,350	452	26	1	£11,800

Julian A Morris Professional Tree Services,
149 Langlea Avenue, Cambuslang, G72 8AN

Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
97	Lime	*Tilia sp.*		540	23	23	4	7	9	4	7		Negligible	None	Good	Early-mature	> 40	B	90	43	£3,870	18.44	42232	£36,110	2290	26	1	£40,400
98	Beech	*Fagus sylvatica*		520	16	16	1	3	9	9	3	Well buttressed. Crown bias SE	Negligible	None	Good	Early-mature	> 40	B	90	43	£3,870	18.44	39161	£25,110	2124	26	1	£55,200
99	Turkey Oak	*Quercus cerris*		580	20	20	2.5	6	5	6	4	Lower deadwood	Negligible	None	Good	Mature	> 40	A	84	43	£3,610	18.44	48720	£31,240	2642	26	1	£53,000
100	Sycamore	*Acer pseudoplatanus*		190	9	9	1.5	1	2	4	4	Decaying basal stubs	Negligible	None	Fair to Good	Semi-mature	10 to 20	C	11.475	43	£490	18.44	5228	£920	284	26	1	£5,000
101	Norway Maple	*Acer platanoides*		380	14	14	2	4	2	4	6	Stem knotholes. Rather suppressed	Negligible	None	Fair to Good	Early-mature	20 to 40	B	69	43	£2,970	18.44	20913	£8,030	1134	26	1	£17,900
102	Beech	*Fagus sylvatica*		750	23	23	3	8	9	8	6	Crown bias E	Negligible	None	Good	Mature	> 40	B	96	43	£4,130	18.44	81466	£52,240	4418	26	1	£88,700
105	Beech	*Fagus sylvatica*		410	10	10	1.5	5	6	2	3	Large decaying stub at base	Negligible	None	Fair	Early-mature	10 to 20	C	17.85	43	£770	18.44	24346	£6,330	1320	26	1	£25,100
106	Turkey Oak	*Quercus cerris*		620	20	20	4	9	11	4	8		Negligible	None	Good	Mature	> 40	B	90	43	£3,870	18.44	55672	£35,700	3019	26	1	£64,200
107	Beech	*Fagus sylvatica*		800	24	24	5	7	12	7	12	Well buttressed upright balanced	Negligible	None	Good	Mature	> 40	A	216	43	£9,290	18.44	92690	£66,040	5027	26	1	£130,700
108	Lime	*Tilia sp.*	4	300	11	11	1	4	4	4	4	Multistemmed stump regeneration	Negligible	None	Fair to Good	Semi-mature	10 to 20	C	22.95	43	£990	18.44	13034	£3,870	707	26	1	£13,400
111	Beech	*Fagus sylvatica*		630	24	24	5	7	5	6	7	Well buttressed upright balanced . Twin stemmed from 8m	Negligible	None	Good	Mature	> 40	A	84	43	£3,610	18.44	57482	£40,960	3117	26	1	£75,400
112	Common Lime	*Tilia x europaea*		500	14	14	0	4	4	4	4	Dense and maturing basal epicormics. Somewhat suppressed	Negligible	None	Fair to Good	Early-mature	20 to 40	B	51.75	43	£2,230	18.44	36207	£17,600	1964	26	1	£44,900
113	Holm Oak	*Quercus ilex*		390	11	11	1	4	10	4	1	Strong bias E over path and pool. Large flush cut on stem at 2m. Rocking slightly in eind	Negligible	None	Fair to Good	Mature	20 to 40	B	93.15	43	£4,010	18.44	22028	£12,690	1195	26	1	£21,400
114	Beech	*Fagus sylvatica*		700	22	22	4	5	10	7	3	Well buttressed upright reasonably balanced . Buttress abrasion	Negligible	None	Good	Mature	> 40	B	73.6	43	£3,160	18.44	70966	£45,990	3848	26	1	£81,900
115	Holm Oak	*Quercus ilex*		440	11	11	2	3	8	6	1	Steady lean over path and pool	Negligible	None	Good	Mature	> 40	A	67.5	43	£2,900	18.44	28039	£21,580	1521	26	1	£39,500
116	Sycamore	*Acer pseudoplatanus*		410	20	20	5	3	8	3	0	Suppressed	Negligible	None	Fair to Good	Early-mature	20 to 40	B	69	43	£2,970	18.44	24346	£9,350	1320	26	1	£34,300
117	Horse Chestnut	*Aesculus hippocastanum*		720	19	19	1	4	6	6	7	Maturing basal epicormics l. Decaying stubs	Negligible	None	Fair to Good	Mature	20 to 40	B	59.8	43	£2,570	18.44	75079	£32,430	4072	26	1	£72,900
118	Turkey Oak	*Quercus cerris*		750	17	17	4	4	6	7	8	Heavily imbalanced crown W. Decurrent	Acceptable	None	Fair to Good	Mature	20 to 40	B	24.15	43	£1,040	18.44	81466	£39,590	4418	26	1	£95,300
119	Beech	*Fagus sylvatica*		750	19	19	4	7	7	4	7	Slight crown bias E . Roots on path exposed	Negligible	None	Good	Mature	> 40	A	75	43	£3,230	18.44	81466	£77,390	4418	26	1	£88,700

Julian A Morris Professional Tree Services,
149 Langlea Avenue, Cambuslang, G72 8AN

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120	Sycamore	*Acer pseudoplatanus*		570	16	16	2.5	4	9	6	7	Decurrent	Negligible	None	Good	Early-mature	> 40	B	90	43	£3,870	18.44	47055	£30,170	2552	26	1	£66,300
121	Beech	*Fagus sylvatica*		550	19	19	6	4	7	6	7	Minor deadwood	Negligible	None	Fair to Good	Early-mature	> 40	B	62.1	43	£2,670	18.44	43810	£33,710	2376	26	1	£51,300
122	Beech	*Fagus sylvatica*		210	7	7	1.5	3	3	2	4	Pruning stubs	Negligible	None	Fair to Good	Semi-mature	> 40	C	15	43	£650	18.44	6387	£5,460	346	26	1	£6,600
123	Lime	*Tilia sp.*	4	330	12	12	1	4	4	4	4	Multistemmed stump regeneration or maturing basal epicormics	Negligible	None	Fair to Good	Semi-mature	20 to 40	B	34.5	43	£1,480	18.44	15772	£6,810	855	26	1	£16,200
124	Beech	*Fagus sylvatica*		700	22	22	4	10	9	3	8	Twin stemmed from good tensile fork at 3m	Negligible	None	Good	Mature	> 40	B	144	43	£6,190	18.44	70966	£60,680	3848	26	1	£81,400
125	Alder	*Alnus glutinosa*	4	450	15	15	0	6	8	6	2		Negligible	None	Good	Mature	20 to 40	B	51.75	43	£2,230	18.44	29328	£14,250	1590	26	1	£19,500
126	Sycamore	*Acer pseudoplatanus*		250	12	12	3	3	7	3	1		Negligible	None	Fair to Good	Semi-mature	> 40	B	55.2	43	£2,370	18.44	9052	£4,400	491	26	1	£7,700
127	Alder	*Alnus glutinosa*		400	13	13	0	3	8	3	0	Steady lean E	Negligible	None	Fair to Good	Mature	20 to 40	B	55.2	43	£2,370	18.44	23172	£11,260	1257	26	1	£16,400
128	Alder	*Alnus glutinosa*		500	14	14	1.5	4	8	4	0	Fungus at base. Rapid crown decline. Deadwood over pool	Negligible	None	Poor to Fair	Mature	< 10	U	30.6	43	£1,320	18.44	36207	£490	1964	26	1	£11,800
129	Alder	*Alnus glutinosa*		520	13	13	1.5	4	8	4	0	Steady lean E	Negligible	None	Fair to Good	Mature	20 to 40	B	55.2	43	£2,370	18.44	39161	£19,030	2124	26	1	£29,400
130	Alder	*Alnus glutinosa*	4	380	14	14	0	7	9	2	1	Steady lean E. Multistemmed from base Light ivy	Negligible	None	Fair to Good	Mature	20 to 40	B	55.2	43	£2,370	18.44	20913	£10,160	1134	26	1	£16,600
137	Alder	*Alnus glutinosa*	3	260	10	10	2	4	6	3	0	Triple stemmed from base leaning E	Negligible	None	Good	Semi-mature	> 40	B	41.4	43	£1,780	18.44	9790	£4,760	531	26	1	£8,400
138	Alder	*Alnus glutinosa*	3	480	8	8	0	4	8	4	0	Triple stemmed from base. Leaning E.	Negligible	None	Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	1810	26	1	£26,500
	Individual trees	***East of path***																										
139	Alder	*Alnus glutinosa*		330	8	8	0	3			6	Triple stemmed from base. Leaning E.	Negligible	None	Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	855	26	1	£12,500
140	Alder	*Alnus glutinosa*	3	630	8	8	0	3			6		Negligible	None	Fair to Good	Mature	20 to 40	B	41.4	43	£1,780	18.44	33368	£14,410	3117	26	1	£43,200
141	Alder	*Alnus glutinosa*	4	500	8	8	0	3			6	4 stemmed from base. Leaning E.	Negligible	None	Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	1964	26	1	£28,800
n/a	Willow	*Salix sp.*											Negligible	None														
143	Alder	*Alnus glutinosa*	3	360	8	8	0	3			6	Triple stemmed from base. Leaning E.	Negligible	None	Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	1018	26	1	£14,900

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n/a	Willow	*Salix sp.*										Fallen	Negligible	None														
n/a	Willow	*Salix sp.*										Fallen	Negligible	None														
144	Unknown	*unk.*		250									Negligible	None	Fair	Semi-mature	20 to 40	B	32.2	43	£1,380	18.44	33368	£18,020	491	26	1	£7,200
n/a	Willow	*Salix sp.*										Fallen	Negligible	None														
n/a	Willow	*Salix sp.*										Fallen	Negligible	None														
145	Ash	*Fraxinus excelsior*		0									Negligible	None	Poor to Fair		< 10	U	0	43	£0	18.44	33368	£80	0	26	1	£0
146	Alder	*Alnus glutinosa*		350	10	10	0	3			6	Leaning E	Negligible	None	Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	962	26	1	£14,100
n/a	Willow	*Salix sp.*										Fallen	Negligible	None														
147	Alder	*Alnus glutinosa*		450	10	10	0	4			8	Leaning E	Negligible	None	Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	1590	26	1	£23,300
n/a	Willow	*Salix sp.*										Fallen	Negligible	None														
148	Alder	*Alnus glutinosa*		450	12	12	0	4			8	Leaning E	Negligible		Fair to Good	Early-mature	> 40	B	41.4	43	£1,780	18.44	33368	£18,020	1590	26	1	£23,300
n/a	Willow	*Salix sp.*										Fallen	Negligible															
	Groups	***West of path***																										
10	Group - mixed species broadleaf		6<10	130	8	8	0.5	0				Mostly with dense ivy. Leaning towards road	Negligible	None	Fair	Young	20 to 40	C	31.05	43	£1,340							
10	Group - mixed species broadleaf		6<10	130	8	8	0.5	0				Mostly with dense ivy. Leaning towards road	Negligible	None	Fair	Young	20 to 40	C				18.44	2448	£7,210	133	26	7	£15,400
20	Group - Single species broadleaf		2	200	8	8	0	0				2 holly cut as hedge on path side	Negligible	None	Fair to Good	Early-mature	> 40	B	60	43	£2,580							
20	Group - Single species broadleaf		2	200	8	8	0	0				2 holly cut as hedge on path side	Negligible	None	Fair to Good	Early-mature	> 40	B				18.44	5793	£8,920	314	26	2	£12,600
22	Group - mixed species broadleaf		11<20	230	12	12	1	0				Oak sycamore elm ash along roadside. Ivy	Negligible	None	Fair to Good	Semi-mature	> 40	B	108	43	£4,640							
22	Group - mixed species broadleaf		11<20	230	12	12	1	0				Oak sycamore elm ash along roadside. Ivy	Negligible	None	Fair to Good	Semi-mature	> 40	B				18.44	7661	£3,930	415	26	1	£8,800

Julian A Morris Professional Tree Services,
149 Langlea Avenue, Cambuslang, G72 8AN

Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
25	Group - mixed species broadleaf		4	150	8	8	0	4.5	2	4.5	2	Holly and birch	Negligible	None	Fair to Good	Semi-mature	> 40	B	54	43	£2,320							
25	Group - mixed species broadleaf		4	150	8	8	0	2	2	2	2	Holly and birch	Negligible	None				B				18.44	3259	£11,160	177	26	4	£16,000
32	Group - mixed species broadleaf		6<10	180	13	13	1	0					Negligible	None				B	66	43	£2,840							
32	Group - mixed species broadleaf			180	13	13	1	3	3	3	3	Sycamore and holly	Negligible	None	Fair to Good	Semi-mature	> 40	B				18.44	4692	£2,410	254	26	1	£5,400
35	Group - Single species broadleaf		2	370	20	20	2	0				2oak	Negligible	None				A	36	43	£1,550	18.44	19827					
35	Group - Single species broadleaf		2	370	20	20	2	4	3	5	5	2 oak close together on break of slope	Negligible	None	Fair to Good	Semi-mature	> 40	B				18.44	19827	£22,880	1075	26	2	£45,800
37	Group - mixed species broadleaf		4	250	11	11	1	0				Whitebeam cherry sycamore	Negligible	None	Fair to Good	Early-mature	20 to 40	B	69	43	£2,970							
37	Group - mixed species broadleaf		4	250	10	10	1	3	3	3	3		Negligible	None				B				18.44	9052	£9,560	491	26	4	£40,000
58	Group - mixed species broadleaf		6<10	200	9	9	1	0				Holly hornbeam hawthorn. Leaning over road	Negligible	None				B	67.5	43	£2,900							
58	Group - mixed species broadleaf		8	200	9	9	1	2	1	2	4		Negligible	None	Fair to Good	Semi-mature	> 40	B				18.44	5793	£33,040	314	26	8	£50,400
60	Group - mixed species broadleaf		6<10	230	10	10	0	0				Holly	Negligible	None	Fair to Good	Semi-mature	> 40	B	60	43	£2,580							
60	Group - Single species broadleaf		7	230	10	10	0	2	2	2	1	Line of holly	Negligible	None	Good			B				18.44	7661	£34,370	415	26	7	£61,600
74	Group - mixed species broadleaf			200	9	9	1.5	0				4 oak sycamore beech	Negligible	None	Good	Semi-mature	> 40	B	42	43	£1,810							
74	Group - mixed species broadleaf		3	200	9	9	1.5	3	3	3	3		Negligible	None	Good			B				18.44	5793	£12,390	314	26	3	£22,800
88	Group - mixed species broadleaf		4	300	16	16	1.5	0				Beech and sycamore	Negligible	None	Fair to Good	Semi-mature	> 40	B	135	43	£5,810							
88	Group - mixed species broadleaf		4	300	16	16	1.5	2.5	2.5	2.5	2.5		Negligible	None				B				18.44	13034	£33,440	707	26	4	£64,800
103	Group - mixed species broadleaf		6<10	230	16	16	0	0				Holly beech other	Negligible	None	Good	Semi-mature	> 40	B	135	43	£5,810							
103	Group - mixed species broadleaf		9	230	16	16	0	3	3	3	3	9 trees	Negligible	None	Good			B				18.44	7661	£39,780	415	26	9	£85,500
109	Group - Single species broadleaf		3	150	12	12	2	0					Negligible	None	Fair to Good	Semi-mature	> 40	C	60	43	£2,580							

Julian A Morris Professional Tree Services,
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Ident-fier	Common name	*Binomial*	No of stems (if >1) or trees	Effective dia. (mm)	Tree Height [alive + dead] (m)	Live height [if different] [iT]	Height to crown base (m)	Spread N (m) or ave.	Spread E (m)	Spread S (m)	Spread W (m)	Observations	Risk [QTRA]	Inter-ventions	Cond-ition [iT]	Lifestage	ERC [BS5837]	BS5837 category	Helliwell points	Point value	Helliwell value (£)	CAVAT unit value (£/cm2)	Basic value	CAVAT VALUE (£)	Cross sectional area (cm2)	Unit cost (£/cm2)	No. of trees	CTLA VALUE (£)
109	Group - Single species broadleaf		3	150	12	12	2	2.5	2.5	2.5	2.5	Sycamore	Negligible	None				C				18.44	3259	£2,090	177	26	1	£4,600
	Groups	***East of path***																										
131	Group - Single species broadleaf		3	180	11	11	0	0				Alder leaning E	Negligible	None	Good	Semi-mature	> 40	B	55.2	43	£2,370							
131	Group - Single species broadleaf		3	180	11	11	0	2	7	2	1		Negligible	None				B	0	43	£0	18.44	4692	£6,840	254	26	3	£11,100
133	Group - Single species broadleaf		4	380	10	10	0	0				Alder leaning E. Mostly multistemmed	Negligible	None	Good	Early-mature	> 40	B	69	43	£2,970							
133	Group - Single species broadleaf		4	350	10	10	2	3	7	3	0		Negligible	None				B	0	43	£0	18.44	17741	£8,620	962	26	1	£15,200
135	Group - mixed species broadleaf		11<20	350	13	13	0	n/a				12 alder and sycamore	Negligible	None	Fair to Good	Early-mature	20 to 40	B	110.4	43	£4,750							
135	Group - mixed species broadleaf		12	350	13	13	1	3	7	2	0	12 Alder and sycamore leaning E	Negligible	None				B	0	43	£0	18.44	17741	£112,060	962	26	13	£163,800
149	Group - Single species broadleaf		3	450	12	12	1					3 Alder leaning E	Negligible	None	Fair to Good	Mature	20 to 40	B	110.4	43	£4,750							
149	Group - Single species broadleaf		3	450	12	12	1	3	6	3	1		Negligible	None				B	0	43	£0	18.44	29328	£42,750	1590	26	3	£62,400
150	Group - mixed species broadleaf		4	450	12	12	1					3 Alder and 1 Willow leaning E	Negligible	None	Fair to Good	Mature	20 to 40	B	110.4	43	£4,750							
150	Group - mixed species broadleaf		4	450	12	12	1	2	7	2	0		Negligible	None				B	0	43	£0	18.44	29328	£57,000	1590	26	4	£83,200

Total Helliwell values	**£418,490**		**Total CAVAT values**	**£3,081,070**	**Total CTLA values**	**£5,442,000**

APPENDIX 2 - GLOSSARY OF TERMS

Adaptive growth: An increase in wood production in localised areas in response to a decrease in wood strength or external loading to maintain an even distribution of forces across the structure.
Adventitious/epicormic growth: New growth arising from dormant or adventitious buds directly from main branches/stems or trunks.
Binomial: Unless otherwise stated the Linnaean binomial name of the species is stated for the avoidance of any ambiguity arising from varying usage of common names.
Bracing: The installation of cables, ropes, rods and/or belts to reduce the probability of failure of parts of the tree structure due to weakened elements under excessive movement.
Callus: Undifferentiated tissue initiated as a result of wounding and which become specialised tissues ('Woundwood') of the repair over time.
Cavity: A void within the solid structure of the tree, normally associated with decay or deterioration of the woody tissues.
Co-dominant stems: Two or more, generally upright, stems of roughly equal size and vigour competing with each other for dominance.
Compression fork: an inherently weak fork in which continued radial growth of two competing substems results in pressure which tends to push the fork apart.
Conservation Area: A designation made under the Planning Acts in the interest of preserving or enhancing the special architectural or historic character or appearance of an area.
Crown: The foliage bearing section of the tree formed by its branches and not including any clear stem/trunk.
Crown Lifting: The removal of the lowest branches and/or preparing of lower branches for future removal.
Crown Reduction: The reduction in height and/or spread of the crown of a tree.
Crown Spreads: The extent of the live crown, measured from the centre of the base of the canopy, in each of the four cardinal points (in the order north, east, south, west)
Crown Thinning: The removal of a portion of smaller/tertiary branches, usually at the outer crown, to produce a uniform density of foliage around an evenly spaced branch structure.
Condition:

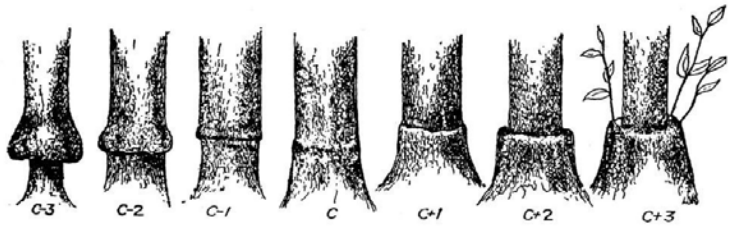
Good	Generally free from defects and in good health
Fair	Reasonably healthy but defects are present that may adversely affect Estimated Remaining Contribution but that may be addressed in the short term by minor intervention
Poor	In decline and/or defective requiring major intervention
Dead	No signs of life or so little that death is inevitable

Construction Exclusion Zone (CEZ): area based on the Root Protection Area (and low crowns) from which access is prohibited for the duration of a project
Decurrent: Widely spreading on several limbs
DBH/Diameter: Stem diameter, more fully known as Diameter at Breast Height (1.5m).
Dieback: No signs of life on branch tips due to age or external influences.
Epicormic Growth: See Adventitious Growth
Excurrent: Having a main stem and radiating limbs of limited length
Estimated Remaining Contribution: The number of years that the tree in substantially its current form (or better) is expected to continue to make an arboricultural or landscape contribution.

40+ years	corresponding with BS 5837 40+ years
20 to 40 years	corresponding with BS 5837 20+ years
10 to 20 years	corresponding with BS 5837 10+ years
0 to 10 years	corresponding with BS 5837 less than 10 years

Fruiting bodies: The fruiting body is the spore bearing, reproductive structure of that fungus.
Graft: The growing together, naturally or deliberately, of two plant parts (including from different

species or varieties) with joined vascular cambia. Varying degrees of compatibility (see below)



Hazard beam: Upwardly curving part of a tree prone to longitudinal splitting
Inclusion fork: A compression fork further weakened by the inclusion of bark from both competing substems at their interface.
Life Stage:

Newly planted	Not fully established and capable of being transplanted or easily replaced
Young	Establishing, usually with good vigour
Early mature	Established, usually vigorous and increasing in height
Mature	Fully established around half their species' life expectancy, generally good vigour and achieving full height potential but crown still spreading
Late mature	Moderate vigour, no additional height expected and growth rate slowing
Over-mature	Fully mature, in last quarter of life expectancy, vigour decreasing
Veteran	See Veteran definition
Ancient	Beyond maturity, old in comparison with other trees of the same species; showing Veteran (see below) values and characteristics because of age rather than past events

Occlusion: growth of callus and wound wood, sealing wounds.
Planning Acts: Primary Planning legislation in England relevant to trees and their protection, principally the Town & Country Planning Act 1990, as amended in particular by the Planning Act 2008.
Pollard: The removal of the top of a young tree at a prescribed height to encourage multi-stem branching from that point, repeated on a cyclical basis always retaining the initial pollard point.
Quality/Value Category: As defined and used by BS5837 -

A	Trees of high quality and value
B	Trees of moderate quality and value
C	Trees of low quality and value

Subcategories of these record the main value of the tree

1	Mainly Arboricultural values
2	Mainly landscape values
3	Mainly cultural values, including conservation

Retrenchment pruning: A form of reduction intended to encourage development of lower shoots and emulate the natural process of tree aging.
Risk Category: In accordance with the Health & Safety Executive's general parameters.
Lower than 1:1,000,000 'Acceptable' Between 1:1,000,000 and 1:1,000 'Tolerable'
Higher than 1:1,000 'Unacceptable' So low that it cannot be quantified, 'Negligible'.
Root Protection Area (RPA) layout design tool indicating the 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.
Tree Preservation Order: An Order made under the Planning Acts in the interests of the amenity of an area.
Veteran: A survivor that has developed some of the habitat features such as wounds or decay found on an ancient tree, not necessarily as a consequence of time, but of past events or its environment. It may look old relative to other trees of the same species.
Vigour: The health and resilience of a tree reflected in shoot extension, leaf size and density.
Woundwood: lignified and differentiated tissue produced as a response to wounding.

APPENDIX 3 - SURVEY METHODOLOGY & LIMITATIONS

This methodology complements the methodology requirements of BS5837, which are not restated here.

Each tree is inspected initially from a distance to ensure closer inspection is safe.

The position of trees or the outline of groups is captured on site using a Geographic Information System ('GPS') and the trees' attributes are recorded as a map layer. These are brought into the report as an Excel spreadsheet for processing and use. The data includes a 16 digit Ordnance Survey grid reference, which may be used to plot trees or group polylines on a georeferenced plan. The strength and position of satellite signals used by GPS is variable in quantity, strength and quality, and reflections from buildings, fences or vehicles can result in aberrations. Generally 1.5 metre GPS accuracy is achieved, suitable only for indicative relative position of trees. If these are within 12 x their stem diameter of any linear features, their distance and orientation relative to those features is measured and recorded.

The height is estimated by the use of a clinometer and trigonometry. Distances are measured using calibrated paces or a laser measuring device, adjusted where necessary for the terrain.

Diameters of stem are measured using a diameter tape which measures circumference ('girth') and gives the equivalent average diameter. Where trees are multistemmed from below 1.5m, either the diameter at a lower representative point, or the equivalent stem diameter of the combined cross sectional area of all the stems is given. For offsite trees, stem diameters are estimated using a laser measurement device and tacheometry; distances are estimated.

The tree species is identified from knowledge supported by Johnson and Moore (see Fuller Citation at Appendix 4) using bark, buds, twigs, fruit, flowers, form and habit.

Binoculars are used where appropriate to examine visible features and structures above a few metres in height. A hand lens is used to examine small features and to help narrow down the list of possible species of any pathogen growths on the tree.

Whilst it is not possible without laboratory examination and testing to confirm definitive identifications of pests, diseases and fungal infections, all reasonable attempts are made to eliminate possibilities and in most cases a species or genus or a common name can be state with a reasonable degree of confidence that the implications arising from the identification will be appropriate to the other outcomes of the report such as risk assessment, recommendations and Estimated Remaining Contribution.

Soundings will be taken either with a rubber mallet or a nylon-tipped hammer to try and ascertain the existence and likely extent of cavities or other invisible decay. Cavities will be inspected visually with a torch only insofar as this is reasonably possible from the ground, removing only enough of loose material as is necessary to reach conclusions about the extent and nature of decay or defects.

Except to the extent stated in the report, the assessment is based on a visual inspection from ground level only, from publicly accessible and privately available vantage points.

Soil present around the base of trees is not removed and root collars are not examined except where, and to the extent, they are already exposed. No sampling, examination or analysis of the soil was done. No intrusive or destructive tests is carried out. The survey does not include exhaustive foliar examination (except for purposes of identifying the species).

Trees are generally assessed during a single visit, with the limitations that this brings, such as the opportunity to assess (i) the reaction of trees to a variety of wind strengths and directions, (ii) the presence of seasonal fungal Fruiting Bodies, (iii) foliage density (iv) structural elements concealed by foliage. Only a broad indication of the intensity of usage of the site and the immediately surrounding land and pedestrian/vehicle routes is gained from a single visit.

Obstacles liked dense basal epicormics and/or ivy on trees, and occasionally dense undergrowth can obstruct the full inspection of trees, including their rooting area. Only enough to reach a preliminary or final conclusion about any such affected trees will be removed.

APPENDIX 4 - Fuller citation of texts, if referred to

Mattheck and Breloer (1994) – *The body language of trees*

Roberts, Jackson and Smith (2006) – *Tree Roots in the Built Environment*

British Standards Institute (2011) – *BS3998: Recommendations for tree work*

British Standards Institute (2012) – *BS5837: Trees in relation to design, demolition and construction - Recommendations.*

Johnson and Moore (2004) – *Collins Tree Guide*

White, John and Forestry Commission (1998) - *Estimating the Age of Large and Veteran Trees in Britain' - Forestry Commission Information Note*

Schwartze, Engels and Mattheck (2000) - *Fungal Strategies of Wood Decay in Trees*

Mynors (2022) – *The Law of Trees, Forests and Hedgerows (3rd edition)*

Health & Safety Executive (2001) - *Reducing Risk, Protecting People*

BS EN 17037:2018 "*Daylight in buildings*"

Littlefair, Paul, BRE (2011) – *Site Layout Planning for Daylight and Sunlight*

British Standards Institute (2015) BS8596 *Surveying for bats in trees and woodland – guide*

British Standards Institute (2015) *Microguide to surveying for bats in trees and woodland*

Statutory Nature Conservation Organisations/ Bat Conservation Trust (2015) – *Method Statement for the Appropriate Use of Endoscopes by Arborists*

Arboricultural Association (2017) Guidance Note 11 *Aerial Inspections: A guide to good practice*

Arboricultural Association (2020) Guidance Note 12 *The use of cellular confinement systems near trees: A guide to good practice*

Council of Tree & Landscape Appraisers (2019) *Guide for Plant Appraisal 10th Edition*

Arboricultural Association (2017) Guidance Note *4 Visual Amenity Valuation of Trees and Woodlands - The Helliwell System 2008*

Doick and others (2018) - *CAVAT (Capital Asset Value for Amenity Trees): valuing amenity trees as public assets*

APPENDIX 5

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

Appendix E

Protecting and Enhancing Poynton's Natural Environment

June 2015

Introduction

Neighbourhood Planning has provided an important opportunity for communities to shape their local environment for future generations. Identifying and evaluating opportunities and constraints will mean that communities are in an informed position and therefore better able to protect their valuable natural assets.

In 2011 the government published their Biodiversity 2020 '*strategy for England's Wildlife and Ecosystem services*' which built on the recommendations of the earlier Natural Environment white paper. The mission of the Biodiversity 2020 strategy is to *'halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.'*

The NPPF, published in 2012 drew on these principles and protecting and enhancing biodiversity and creating ecological networks are central to this framework. Indeed 'biodiversity' is mentioned 15 times in the NPPF with protection and improvement of the natural environment as core objectives of the planning system.

According to Biodiversity 2020 there are numerous ways to work towards achieving these aims, with landowners, conservation charities and individuals playing a part. However the planning system has a central role in achieving the aims of Biodiversity 2020, particularly strategic planning, but also development control. At a local level Neighbourhood Planning has the potential to be a key factor in determining whether the aims of Biodiversity 2020 are realised, by identifying local priorities for nature conservation and ensuring these are taken into consideration in the planning process.

Objectives of the study

The first stage to protecting and enhancing the natural environment is to identify the natural assets that exist in the neighbourhood. This report aims to identify the core, high ecological value (high distinctiveness) sites for nature conservation in Poynton as well as sites deemed to be of medium value (semi-natural habitat). The high value sites are recommended for protection through the neighbourhood planning process and the medium value sites could be considered as biodiversity opportunity areas subject to further evaluation. Medium and high value sites should also act as an alert in the planning system triggering full evaluation should they be proposed for future development.

The report also aims to identify key local and regional ecological networks within the neighbourhood planning area and recommends that these are protected through the neighbourhood plan. It also identifies key characteristics associated with the landscape character of the Poynton area so these can be referenced in planning policies.

Background – ecological networks

In 2010 Professor Sir John Lawton submitted a report to DEFRA entitled 'Making Space for Nature:

A review of England's Wildlife Sites and Ecological Network'. The report identified that we need a step change in our approach to wildlife conservation from trying to hang on to what we have, to one of large-scale habitat restoration and recreation, under-pinned by the re-establishment of ecological processes and ecosystem services, for the benefits of both people and wildlife. The report also identified that this vision will only be realised if we work at local scales in partnership with local people.

The natural environment is fundamental to our well-being, health and economy and provides us with a range of ecosystem services such as food, water, materials, flood defences and carbon sequestration – and biodiversity underpins most, if not all, of them. The pressures on our land and water are likely to continue to increase and we need to learn how to manage these resources in ways which deliver multiple benefits, for example, achieving profitable and productive farming while also adopting practices which enhance carbon storage, improve flood water management and support wildlife.

England's wildlife habitats have become increasing fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations. Ecological networks have become widely recognised as an effective way to conserve wildlife in environments that have become fragmented by human activities.

Ecological networks generally have five components (see Figure 1) which reflect both existing and potential ecological importance and function.

- *Core areas*

These are areas of high nature conservation value which form the heart of the network. They contain habitats that are rare or important because of the wildlife they support or the ecosystem services they provide. They generally have the highest concentrations of species or support rare species. They include protected wildlife sites and other semi-natural areas of high ecological quality.

- *Corridors and stepping stones*

These are spaces that improve the functional connectivity between core areas, enabling species to move between them to feed, disperse, migrate or reproduce. Connectivity need not just come from linear, continuous habitats; a number of small sites may act as 'stepping stones' across which certain species can move between core areas.

- *Restoration areas*

These are areas where measures are planned to restore or create new high value areas (which will ultimately become 'core areas') so that ecological functions and species populations can be restored. They are often situated so as to complement, connect or enhance existing core areas.

- *Buffer zones*

These are areas that closely surround core areas, restoration areas, 'stepping stones' and ecological corridors, and protect them from adverse impacts from the wider environment.

- *Sustainable use areas*

These are areas within the wider landscape focussed on the sustainable use of natural resources and appropriate economic activities, together with the maintenance of ecosystem services. Set up appropriately, they help to 'soften the matrix' outside the network and make it more permeable and less hostile to wildlife, including self-sustaining populations of species that are dependent upon, or at least tolerant of, certain forms of agriculture. There is overlap in the functions of buffer zones and sustainable use areas, but the latter are less clearly demarcated than buffers, with a greater variety of land uses.

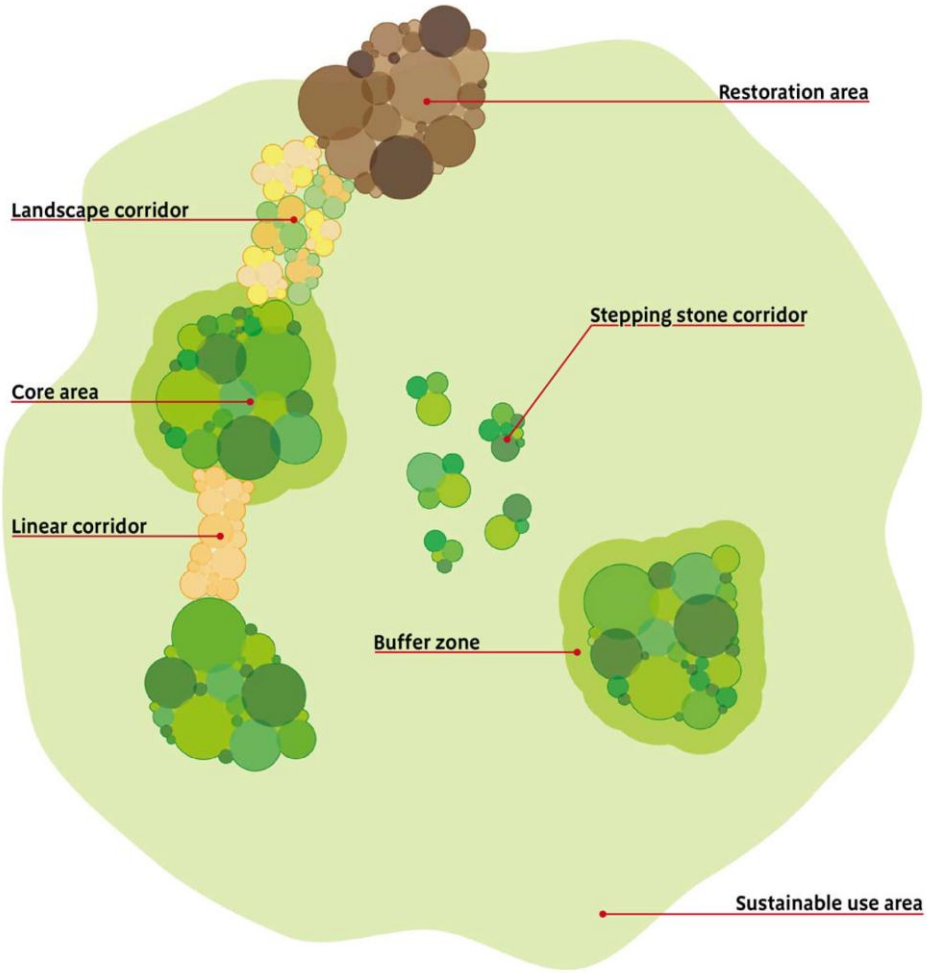


Figure 1. The components of ecological networks (Making Space for Nature report)

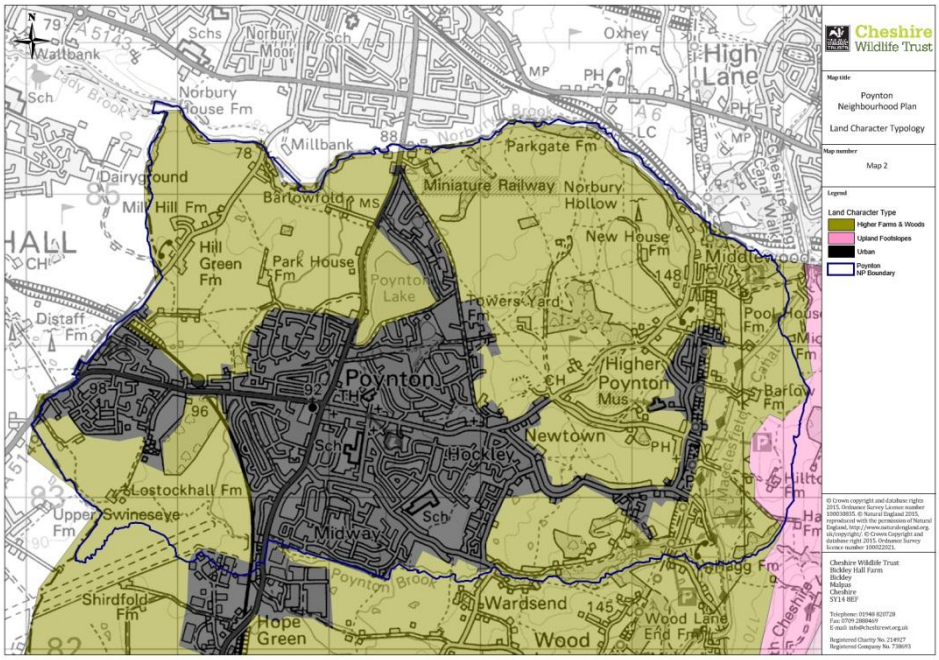
The principles of creating coherent ecological networks have since been embedded within many planning and policy documents. The Natural Environment White Paper 'The Natural Choice' which was published in 2011 reiterated a Government commitment to move from net biodiversity loss to net gain, by recognising the importance of supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks.

The National Planning and Policy Framework published in 2012 also includes the establishment and conservation of a coherent ecological network as a core principle including:

- The planning system should contribute to and enhance the natural and local environment by establishing coherent ecological networks that are more resilient to current and future pressures.
- Local planning authorities should set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.
- To minimise impacts on biodiversity planning policies should identify and map components of the local ecological networks, including the hierarchy of sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation; and promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations.

Landscape Character Assessment for the Cheshire region

On a national level Poynton lies within National Character area 61 Shropshire Cheshire and Staffordshire Plain, a pastoral area of rolling plain which is particularly important for dairy farming. More locally the Cheshire Landscape Character Assessment of 2008 identifies recognisable patterns in the landscape and classifies the Cheshire Landscape into 20 broad Landscape Character Types (LCTs). Different aspects such as geology, landform, soils, vegetation and landuse have been used to identify character areas. The assessment is intended to be used as a basis for planning and the creation of future landscape strategies as well as raising public awareness of landscape character and creating a sense of place.



The Landscape Character Assessment identifies two recognisable character types (LCTs) within the Poynton Neighbourhood planning area. These are further refined and subdivided into Landscape Character Areas (LCAs):

LCT Type 16 - Higher Farms and Woods
LCT Type 18 – Upland footslopes

Type 16 - Higher Farms and Woods

Key characteristics

- Gentle rolling and moderate undulating topography
- A mix of medieval and post medieval reorganised fields (irregular, semi-regular and regular up to 8 ha)
- Hedgerow boundaries and hedgerow trees
- High density of woodland (blocks, coverts and riparian)
- Predominantly low density dispersed settlement
- Ponds
- Small mossland areas

Subtype HFW3 Adlington Character area
The underlying geology is sandstone with Chester Pebble beds and Pennine lower coal measures. The area is undulating farmland of medium scale, predominantly under pasture and increasing in elevation towards the east. Fields are generally large and post medieval in origin apart from an area near to Dean Row which has small irregular fields dating to the medieval period.

The landscape sits between urban centres such as Poynton and Bollington and the higher Upland Footslopes. Its position in the landscape is reflected in the character of the area, with the rural character diminished by the conversion of farm buildings and the existence of several golf courses. Hedgerow management is often lacking, leading to the deterioration of traditional field patterns. Elsewhere isolated settlements and farmsteads are connected by narrow winding roads and the character remains very rural.

Woodland is an important feature, particularly along the steep sided stream valleys such as Norbury Brook. The Macclesfield canal runs along the eastern edge of the character area and provides interest with small stone bridges where narrow country roads cross over the canal.

Type 18 - Upland Footslopes

Key Characteristics

- Upland inclines and undulations, steep slopes c100-370m AOD
- Wooded steep sided stream and river valleys – large proportion which is ancient woodland
- Small surviving patches of heathland

- Dense network of streams and tributaries
- Dispersed settlement – farms and houses
- Stone built houses, structures and boundary walls
- Gritstone exposures in quarries
- Medieval field patterns with hedgerow boundaries surviving on lower slopes
- Areas of semi-improved and unimproved neutral and acid grassland
- Extensive views dependent upon the location
- High rainfall – reservoirs, open and covered
- Follies and distinctive landmarks

Subtype UFS6 Kerridge Character area

This area occupies the far east of the Poynton Neighbourhood planning area where the land rises to meet the Pennine foothills on the Lyme Park Estate. It occupies the land to the east of the Macclesfield canal by Hill Top Farm and Ben's Wood, stretching as far as High Lane to the north and continuing south towards Eddisbury on the outskirts of Macclesfield.

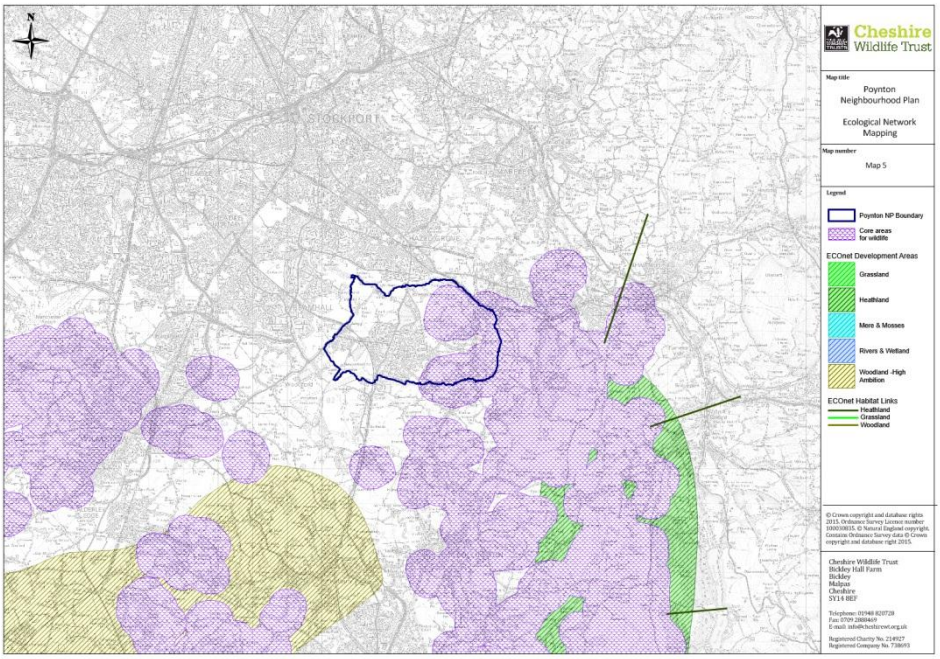
The area is characterised by steep slopes, with dry stone walls on the upper slopes and hawthorn hedges on the lower slopes. Woodland is frequent in the valley bottoms and on the steep valley sides. The character area is recognised for its quarrying with many abandoned quarries now havens for wildlife. Dairy farming is predominant on the lower slopes with sheep farming on the poorer acid soils of higher elevations. Unimproved and species rich grassland is a feature of this character type but is largely confined to steep unproductive hillsides or areas which have escaped agricultural intensification.

Econet – Integrated vision of the Cheshire County Ecological Network

Between 1999 and 2003 the then Cheshire County Council were a partner within the Life ECOnet Project. A project supported by the Life-Environment Programme of the European Commission to demonstrate in Cheshire and in Emilia-Romagna and Abruzzo (Italy) how ecological networks can help achieve more sustainable land use planning and management, as well as overcome the problems of habitat loss, fragmentation and species isolation.

The Econet study is an integrated vision of a Cheshire County Ecological Network of ecological cohesion. The vision acts as a framework for nature conservation in the region by identifying areas of strategic importance for wildlife. It is intended as a guideline for making decisions in local and strategic planning in relation to biodiversity.

The 2003 study identified numerous core areas of key importance for wildlife. It also identified development areas which were assessed as having the greatest potential to contribute to the viability of the core areas through habitat restoration and creation schemes. The aim of any future work should be to expand the core areas and to create habitat connectivity (wildlife corridors) in order to create an ecological network in Cheshire. The guidance provided by the Econet project has been incorporated into the conclusions of this report created for the Poynton Neighbourhood Plan.



Towards the east of Poynton there are areas which are fundamental components of the county wide ecological network. These core areas include the Local Wildlife Sites at Park Pit Grasslands, Prince's Wood, Poynton Coppice, Ben's Wood, Norbury Brook and Jackson's brickworks. The sites have been recognised for their intrinsic value but also for their ecological connectivity and associated contribution to the county wide network.

Methodology

Creating a habitat distinctiveness map

In line with current Defra methodologies to determine 'no net loss' habitat data from the sources listed below was attributed to one of three categories listed in the table:

Habitat type band	Distinctiveness	Broad habitat type covered	Colour on map
High	High	Priority habitat as defined in section 41 of the NERC Act	Red
Medium	Medium	Semi-natural	Orange
Low	Low	E.g. Intensive agricultural but may still form an important part of the ecological network in an area.	n/a

Habitat type bands (Defra March 2012)

1. Four published data sets were used to produce the habitat distinctiveness maps.

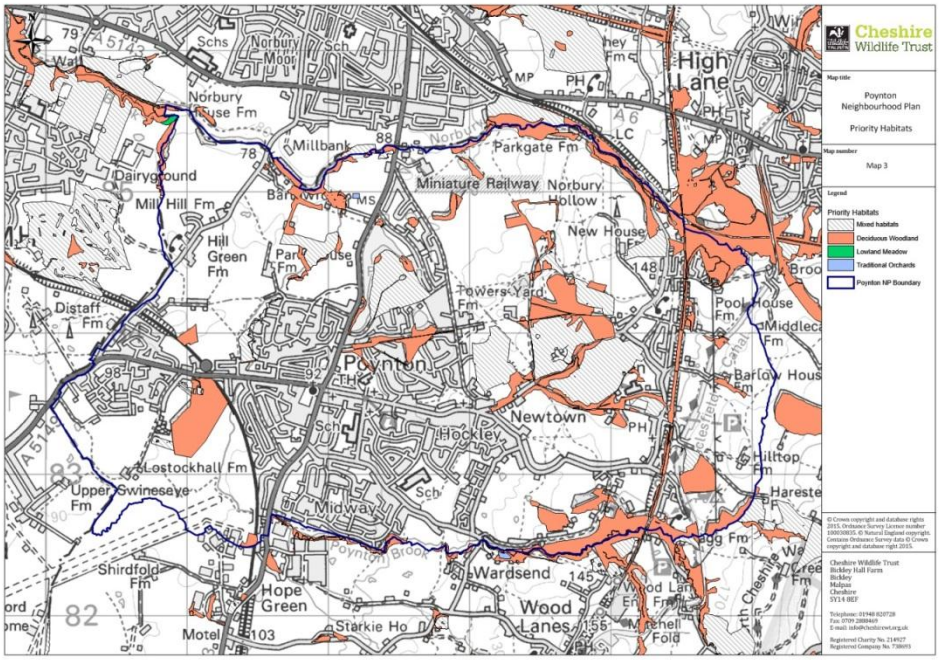
   - BAP habitat Natural England– coded as high distinctiveness
   - Protected sites (SSSI, LWS, LNR), Natural England, CWT/CE Local Authority – coded as high distinctiveness
   - Agricultural land classification Natural England - grade 4 medium distinctiveness, grade 5 high distinctiveness
   - Landcover data Centre for Ecology and Hydrology 2007. Priority habitats (principal importance) and semi-natural habitats coded as medium distinctiveness (data in appendix 1)

2. In addition habitat data from recent planning applications in Poynton was used in the analysis.

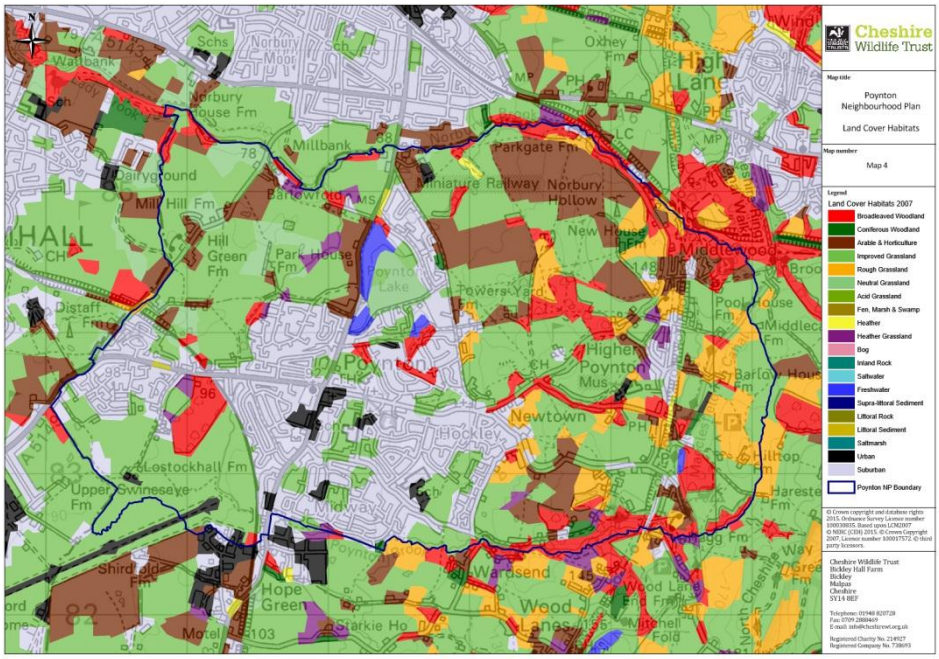
3. Aerial photography (Microsoft Bing ™ Imagery) was used to validate the results by eye.

4. The Poynton NP area Land Character Assessment and Econet categories were mapped and the results were used to inform the conclusions.

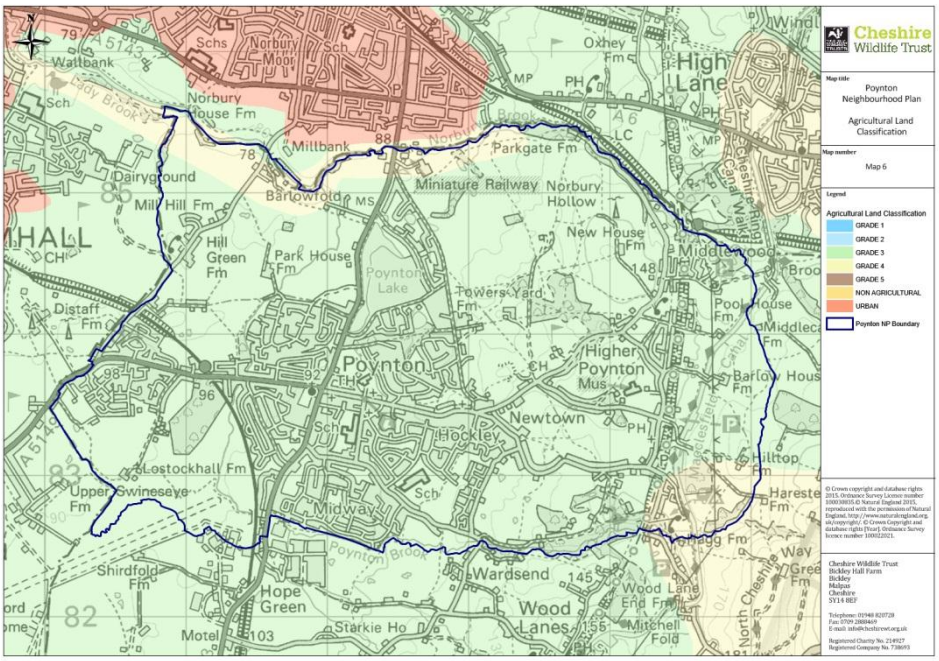
Priority habitat – Natural England



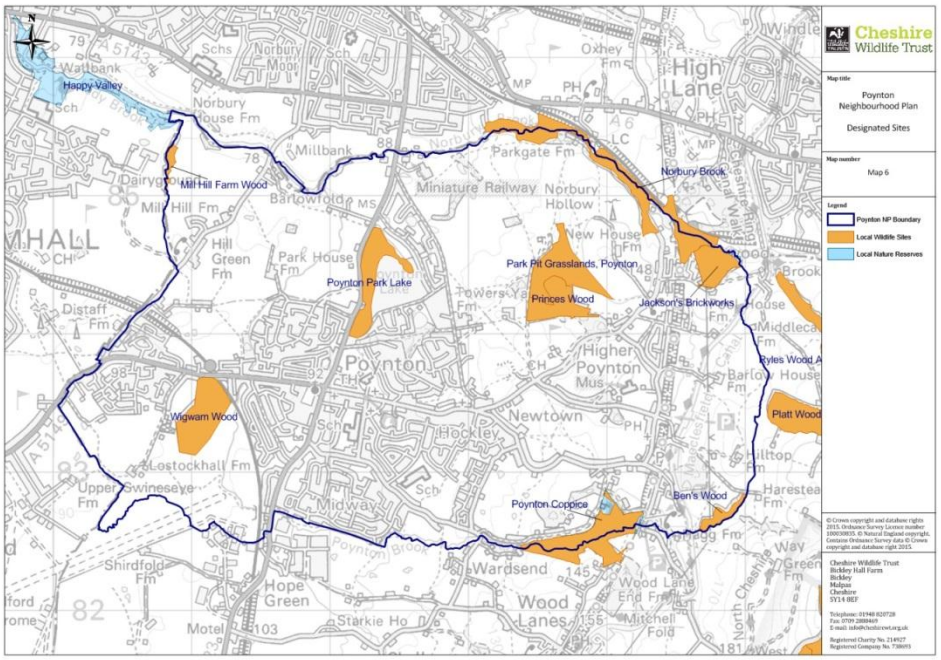
Land Cover Map 2007 (LCM2007) is a parcel-based classification of satellite image data showing land cover for the entire United Kingdom derived from a computer classification of satellite scenes obtained mainly from the Landsat sensor



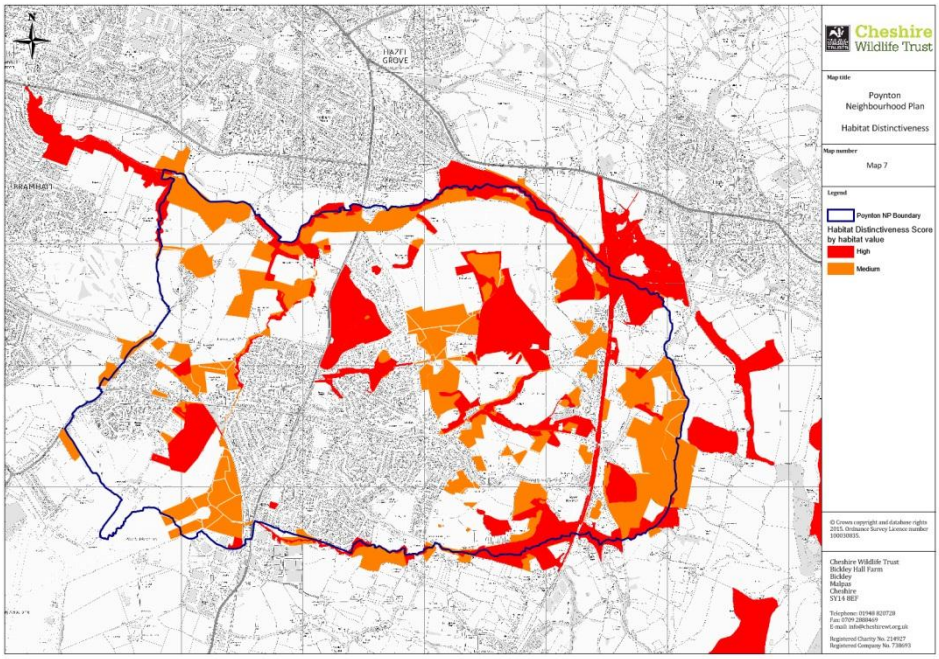
Agricultural land grading



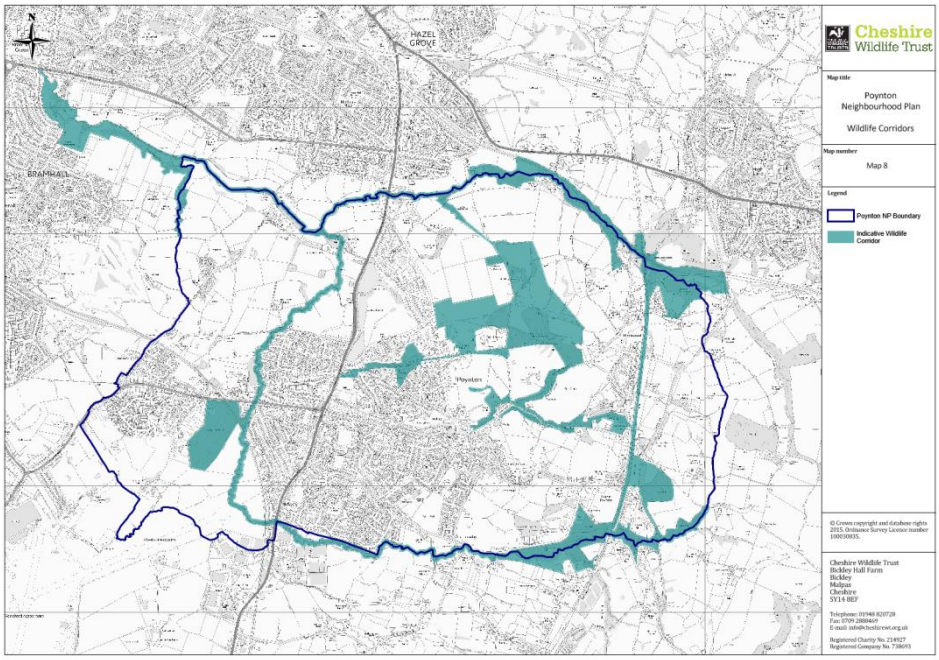
Protected sites including Sites of Special Scientific Interest, Local Wildlife Sites, Local Nature Reserves



Habitat distinctiveness map



Indicative wildlife corridors



Results

This study has identified areas of high value habitat (high distinctiveness) in the Poynton NP area. These are shown on map 7 and include 9 areas designated as Local Wildlife Sites: Norbury Brook, Jackson's Brickworks, Ben's Wood, Poynton Coppice, Mill Hill Farm Wood, Poynton Park Lake, Wigwam Wood, Park Pit grasslands, Princes Wood. Poynton Coppice and Jackson's Brickworks are also designated Local Nature Reserves.

Further areas of undesignated high distinctiveness woodland habitat are located at Elm Wood, Poynton Coppice, Barlowfold and Higher Poynton.

This study has also identified undesignated areas of 'medium habitat distinctiveness' which provide important wildlife habitats acting as ecological stepping stones. The majority of these areas are thought to be semi-natural or species rich grassland which is consistent with the Landscape Character Assessment which noted that *'unimproved and semi-improved acid and neutral grassland is a feature….*' (Type 18 - Upland Footslopes). The largest parcels occur east of Towers Road, Woodford Aerodrome and east of the Macclesfield canal.

Discussion

The results of this study can be used as a guide for future decisions regarding planning policy and development control. The analysis has identified a 'wildlife corridor network' (shown in map 8) with high ecological connectivity within and beyond the Poynton Neighbourhood Planning area.

A major wildlife corridor tracks the course of Poynton Brook incorporating land of high and medium distinctiveness along its banks and links to the Middlewood Way. This corridor connects the Local Wildlife Sites at Wigwam Wood, Poynton Coppice, Ben's Wood, Prince's Wood, Park Pit Grassland and Jackson's Brickworks and continues westwards along Norbury Brook to Mill Hill Farm Wood. Although the corridor is bisected by the A523 and the railway (and the future SEMMS road), the majority of its length has good ecological connectivity.

It is highly recommended that the wildlife corridor network, is identified and protected in the Neighbourhood Plan so that the guidance relating to ecological networks set out in the NPPF may be implemented at a local level.

Wildlife corridors are a key component of local ecological networks as they provide connectivity for species to move to and from core areas of high wildlife value/distinctiveness. For this reason habitat enhancement along the corridor network is likely to improve the long term viability of the core high value areas. Enhancement of the corridor may be facilitated by opportunities arising through the planning process (e.g. S106 agreements, biodiversity offsetting/compensation) or through the aspirations of the local community.

In addition to the wildlife corridors this study has identified further areas of high or medium 'habitat distinctiveness' (map 7) which, although sit outside the wildlife corridor network, nevertheless may provide important wildlife habitats acting as ecological stepping stones. These areas comprise semi-

natural or species-rich grassland, semi-natural woodlands and ponds. One example is Woodford Aerodrome (allocated for housing) which has been identified as supporting large areas of semi-improved neutral grassland important for breeding curlew, skylark and lapwing and populations of brown hares (all priority S41 species).

Old meadows supporting species-rich grassland are the fastest disappearing habitats in the UK. These grasslands are particularly important for pollinating insects and insectivorous birds and mammals. It is extremely important that the highlighted 'medium distinctiveness' areas should be thoroughly evaluated in the development control process. If they are found to support species-rich grassland they should be re-classified as 'high distinctiveness' (priority/principal importance) habitat and they should not be built on (as stipulated in the Local Plan and the NPPF). In order to achieve no 'net loss' of biodiversity, compensation may be required should these areas be lost to development when avoidance and mitigation strategies have been applied in line with the guidance set out in the local plan.

From a regional perspective Poynton is important because woodland and grassland sites in the east of the parish contribute to the County Ecological Network due to their high level of ecological connectivity. This means that any work to improve local connectivity will contribute to the regional ecological network.

Conclusion

By bringing together all the available information relating to land use and habitats in the Poynton NP area, this study has identified areas of high and medium 'habitat distinctiveness' as described in the Defra Biodiversity Offsetting metric. By attributing habitat distinctiveness values to different land parcels the results of this study should act as a guide when planning decisions are made. We strongly recommend that further (phase 1) habitat survey work is undertaken at the appropriate time of year, in particular to verify that 'medium value' habitats have not been over or under-valued.

Most notably the analysis has identified a wildlife corridor network which largely follows the courses of Norbury and Poynton Brooks, incorporating a section of the Middlewood Way and eight designated Local Wildlife Sites.

We recommend that the corridor network is identified in the Neighbourhood Plan and protected from development. Map 8 shows an indicative boundary for the wildlife corridor network, however this is likely to require refinement following detailed survey work. The corridor should be wide enough to protect the high and medium distinctiveness areas identified in map 7 and we suggest that an adjacent non-developable buffer zone is identified. The buffer may be in the region of 15 metres in order to fully protect high value habitats.

Furthermore we advise that measures to mitigate possible ecological impacts are included in any development adjacent to buffer zones and high/medium distinctiveness areas identified in map 7. An example of this may be that bat sensitive lighting is recommended for use on the outside of

buildings or in carparks/pathways. Surface drainage water from developed areas should always be directed away from sensitive areas due to the risk of pollution.

To summarise, future development of Poynton village should respect the natural environment. The most intact landscapes, in terms of biodiversity, landform and historic/cultural associations should be valued highly when planning decisions are made. Protection and enhancement of Poynton's natural assets is of crucial importance to nature conservation but it is also important for the enjoyment of future generations.

Recommendations for improving and protecting habitat in order to create a coherent ecological network

Following adoption of the neighbourhood plan CWT advises that the following recommendations should be actioned:

1. **Improve the quality of the 'Poynton Wildlife Corridor' and assess against Local Wildlife Site selection criteria**

The 'Poynton Wildlife Corridor' incorporates eight designated Local Wildlife Sites at Wigwam Wood, Poynton Coppice, Prince's Wood, Park Pit Grasslands, Ben's Wood, Jackson's Brickworks, Norbury Brook and Mill Hill Farm Wood; however it is highly likely that other land within the wildlife corridor network would meet the criteria for Local Wildlife Site selection. These areas should be designated if the criteria are met, as LWS designation is likely to provide a greater level of protection within the planning system.

The wildlife corridor network should be in 'favourable condition'[1] to provide breeding, foraging and commuting habitat for the species that live there. Ideally the corridor should be surveyed by a qualified ecologist and management recommendations should be implemented where this is possible. To increase the functionality of the corridor a priority should be to connect Long Plantation with high value habitat to the north of Park Pit Grasslands. Other restoration work may include measures such as invasive species control.

2. **Protect, enhance and connect areas of high/medium value which lie outside the wildlife corridor**

Opportunities should be explored to restore or create more wildlife friendly habitat especially where connectivity with other areas of high or medium value habitat can be achieved or where valuable sites can be buffered. Larger areas of better connected habitat support larger and healthier species populations and help prevent local extinctions.

[1] The definition of 'favourable condition' for Local Wildlife Sites is provided in appendix 2

Ways to enhance connections or to buffer sites may include restoring hedgerows, creating low maintenance field margins and sowing locally sourced wildflower meadows. Woodland expansion is desirable; however tree planting should only occur on species-poor (low value) grasslands. Professional advice should always be sought when creating new habitat.

3. Phase 1 habitat mapping

It is strongly recommended that the Poynton Neighbourhood Planning area is phase 1 habitat mapped. This will provide a high level of detail and could be used to verify the results of the habitat distinctiveness mapping (map 7). Phase 1 mapping may identify further areas of medium or high distinctiveness (priority) habitat. Areas identified as having medium value habitat in this report should be targeted for survey as a priority. Phase 1 mapping should also be used to determine the exact position of the Poynton Wildlife Corridor.

Appendices

Appendix 1

Habitats, LCM2007 classes[2] and Broad Habitat subclasses for LCM2007 CEH

LCM2007 class	LCM2007 class number	Broad Habitat sub-class	Broad habitat sub-class code	Habitat Score
Broadleaved woodland	1	Deciduous	D	Medium
		Recent (<10yrs)	Dn	Medium
		Mixed	M	Medium
		Scrub	Sc	Medium
'Coniferous Woodland'	2	Conifer	C	Low
		Larch	Cl	Low
		Recent (<10yrs)	Cn	Low
		Evergreen	E	Low/Medium
		Felled	Fd	Medium
'Arable and Horticulture'	3	Arable bare	Aba	Low
		Arable Unknown	Aun	Low
		Unknown non-cereal	Aun	Low
		Orchard	O	Medium

[2] No habitat scores higher than 'medium distinctiveness' due to the reliability of the data

		Arable barley	Aba	Low
		Arable wheat	Aw	Low
		Arable stubble	Ast	Low
Improved Grassland'	4	Improved grassland	Gi	Low
		Ley	Gl	Low
		Hay	Gh	Low
Rough Grassland	5	Rough / unmanaged grassland	Gr	Medium
'Neutral Grassland'	6	Neutral	Gn	Medium
'Calcareous Grassland'	7	Calcareous	Gc	Medium
Acid Grassland	8	Acid	Ga	Medium
		Bracken	Br	Medium
'Fen, Marsh and Swamp'	9	Fen / swamp	F	Medium
Heather	10	Heather & dwarf shrub	H	Medium
		Burnt heather	Hb	Medium
		Gorse	Hg	Medium
		Dry heath	Hd	Medium
Heather grassland	11	Heather grass	Hga	Medium

'Bog'	12	Bog	Bo	Medium
		Blanket bog	Bb	Medium
		Bog (Grass dom.)	Bg	Medium
		Bog (Heather dom.)	Bh	Medium
'Montane Habitats'	13	Montane habitats	Z	Medium
Inland Rock'	14	Inland rock	Ib	Medium
		Despoiled land	Ud	Medium
Salt water	15	Water sea	Ws	Medium
		Water estuary	We	Medium
Freshwater	16	Water flooded	Wf	Medium
		Water lake	Wl	Medium
		Water River	Wr	Medium
'Supra-littoral Rock'	17	Supra littoral rocks	Sr	Medium?
'Supra-littoral Sediment'	18	Sand dune	Sd	Medium
		Sand dune with shrubs	Sds	Medium
		Shingle	Sh	Medium?
		Shingle vegetated	Shv	Medium
'Littoral Rock'	19	Littoral rock	Lr	Medium
		Littoral rock / algae	Lra	Medium

Littoral sediment	20	Littoral mud	Lm	Medium
		Littoral mud / algae	Lma	Medium
		Littoral sand	Ls	Medium
Saltmarsh	21	Saltmarsh	Sm	Medium
		Saltmarsh grazing	Smg	Medium
Urban	22	Bare	Ba	Low
		Urban	U	Low
		Urban industrial	Ui	Low
Suburban	23	Urban suburban	Us	Low

Appendix 2

In order for a Local Wildlife Site to be recorded as in positive management all four of the following should be met:

- The conservation features for which the site has been selected are clearly documented.
- There is documented evidence of a management plan/management scheme/advisory document which is sufficiently targeted to maintain or enhance the above features.
- The management requirements set out in the document are being met sufficiently in order to maintain the above features. This should be assessed at 5 year intervals (minimum) and recorded 'not known' if the interval is greater than 5 years.
- The Local Sites Partnership has verified the above evidence.

Appendix F

Poynton Pool – Protected species records up to 04/01/2024

This document contains wildlife records for all protected species mainly within the last 6 years in the Poynton Pool area.
It provides evidence that proper ecological assessment must be undertaken as part of reviewing the planned proposal.

These observations cover the area of the pool, the woodland habitats around the pool and the park area, **all are within the 1km zone of influence**. This is not a large area in total and includes the woodland area where trees are proposed for removal and the reedbed area at the north end which will also be impacted. It is an important consideration to understand how the wildlife interacts with the woodland and relies on it as part of the wild habitat in this area of Poynton. What may seem like a very localised habitat removal will have a much wider impact.

The species listed are a sub-set of approximately 16,700 bird records and over 700 non-bird records. In total there are records for over 110 bird species and hundreds of non-birds species. It is not an exhaustive list and there would be an expectation that many more would be recorded there with additional surveying, for example a good population of moths would be expected on the basis of the number and variety of bats that inhabit the site.

All records are also available with more detail within the rECOrd system:
https://record-lrc.co.uk/
In summary, within the rECOrd system there are over 17,000 records of nearly 400 species.

Protected Habitat
Local councils now have a legal duty with regard to conserving biodiversity in the exercise of their normal functions. There is also protected habitat directly connected to the area of impact:
Section 41 habitat of principal importance: Woodland: Lowland mixed deciduous woodland

Protected Species
To summarise, a total of 67 species with protections have been found:

Protection type	Number of species listed
Redlist(Red)	15
Redlist(Amber)	31
LBAP	15
WCA	20
NERC	21
EPS	5

Key:
NERC – Section 41 Species of Principal Importance, Natural Environment and Rural Communities (NERC) Act 2006
LBAP – Local (Cheshire) Biodiversity Action Plan
WCA – Wildlife and Countryside Act 1981
Redlist – IUCN listed species within the UK that are of conservation concern
EPS – European Protected Species

Common Name	Scientific Name	Observation Date	Protections
Lesser Redpoll	Acanthis cabaret	25/01/23	Redlist(Red), NERC
Eurasian Sparrowhawk	Accipiter nisus	05/12/23	Redlist(Amber)
Sedge Warbler	Acrocephalus schoenobaenus	09/05/19	Redlist(Amber)
Eurasian Skylark	Alauda arvensis	15/10/21	Redlist(Red), LBAP, NERC
Common Kingfisher	Alcedo atthis	26/10/23	WCA
Green-winged Teal	Anas crecca	11/06/23	Redlist(Amber)
Mallard	Anas platyrhynchos	31/12/23	Redlist(Amber)
Greylag Goose	Anser anser	16/10/23	Redlist(Amber)
Pink-footed Goose	Anser brachyrhynchus	25/01/23	Redlist(Amber)
Meadow Pipit	Anthus pratensis	09/10/23	Redlist(Amber)
Common Swift	Apus apus	16/06/23	Redlist(Red)
European Greenfinch	Chloris chloris	04/04/23	Redlist(Red)
Black-headed Gull	Chroicocephalus ridibundus	31/12/23	Redlist(Amber)
Stock Dove	Columba oenas	15/12/23	Redlist(Amber)
Common Wood-Pigeon	Columba palumbus	31/12/23	Redlist(Amber)
Rook	Corvus frugilegus	05/10/23	Redlist(Amber)
Whooper Swan	Cygnus cygnus	09/02/21	WCA
Common House-Martin	Delichon urbicum	10/07/23	Redlist(Red)
Lesser Spotted Woodpecker	Dryobates minor	17/11/18	NERC
Reed Bunting	Emberiza schoeniclus	28/04/23	Redlist(Amber), LBAP, NERC
Merlin	Falco columbarius	12/01/19	WCA
Peregrine Falcon	Falco peregrinus	24/12/20	WCA
Eurasian Hobby	Falco subbuteo	06/09/21	WCA
Eurasian Kestrel	Falco tinnunculus	12/12/23	Redlist(Amber)
Brambling	Fringilla montifringilla	10/02/20	WCA
Common Snipe	Gallinago gallinago	30/11/20	Redlist(Amber)
Eurasian Moorhen	Gallinula chloropus	31/12/23	Redlist(Amber)
Eurasian Oystercatcher	Haematopus ostralegus	26/05/22	Redlist(Amber)
Mediterranean Gull	Ichthyaetus melanocephalus	04/02/96	WCA
Herring Gull	Larus argentatus	15/12/23	Redlist(Red), NERC
Common Gull	Larus canus	05/12/23	Redlist(Amber)
Lesser Black-backed	Larus fuscus	07/12/23	Redlist(Amber)

Gull			
Eurasian Wigeon	Mareca penelope	28/03/22	Redlist(Amber)
Gadwall	Mareca strepera	28/02/22	Redlist(Amber)
Common Scoter	Melanitta nigra	19/03/21	WCA, NERC
Red Kite	Milvus milvus	13/08/22	Redlist(Amber), WCA
Gray Wagtail	Motacilla cinerea	09/10/23	Redlist(Amber)
Western Yellow Wagtail	Motacilla flava	04/05/21	Redlist(Red), NERC
Spotted Flycatcher	Muscicapa striata	11/08/18	Redlist(Red), LBAP, NERC
Eurasian Curlew	Numenius arquata	21/02/21	Redlist(Red), NERC
Northern Wheatear	Oenanthe oenanthe	25/04/15	Redlist(Amber)
Osprey	Pandion haliaetus	05/04/08	WCA
House Sparrow	Passer domesticus	30/11/23	Redlist(Red), LBAP, NERC
Willow Warbler	Phylloscopus trochilus	16/04/22	Redlist(Amber)
Dunnock	Prunella modularis	12/12/23	Redlist(Amber), NERC
Eurasian Bullfinch	Pyrrhula pyrrhula	11/02/22	Redlist(Amber), LBAP, NERC
Eurasian Woodcock	Scolopax rusticola	19/01/23	Redlist(Red)
Northern Shoveler	Spatula clypeata	07/12/23	Redlist(Amber)
Tawny Owl	Strix aluco	23/04/21	Redlist(Amber)
European Starling	Sturnus vulgaris	31/12/23	Redlist(Red), LBAP, NERC
Eurasian Wren	Troglodytes troglodytes	15/12/23	Redlist(Amber)
Redwing	Turdus iliacus	02/12/23	Redlist(Amber), WCA
Song Thrush	Turdus philomelos	30/06/23	Redlist(Amber), LBAP, NERC
Fieldfare	Turdus pilaris	04/11/23	Redlist(Red), WCA
Mistle Thrush	Turdus viscivorus	12/12/23	Redlist(Red)
Northern Lapwing	Vanellus vanellus	14/10/21	Redlist(Red), LBAP
Cetti's Warbler	Cettia cetti	21/02/23	WCA, NERC
Tree Pipit	Anthus trivialis	26/08/19	NERC
Hawfinch	Coccothraustes coccothraustes	16/10/17	NERC
Common Noctule	Nyctalus noctula	18/09/19	LBAP, WCA, NERC, EPS
Common Pipistrelle	Pipistrellus pipistrellus	18/09/19	LBAP, WCA, EPS
Pygmy Pipistrelle	Pipistrellus pygmaeus	18/09/19	LBAP, WCA, NERC, EPS

Brown Long-eared Bat	Plecotus auritus	18/09/19	LBAP, WCA, NERC, EPS
Daubenton's bat	Myotis daubentonii	18/09/19	LBAP, WCA, EPS
European Toad	Bufo bufo	06/01/21	WCA, NERC
Bluebell*	Hyacinthoides non-scripta	28/04/23	LBAP, WCA
Ringlet Butterfly	Aphantopus hyperantus	30/06/23	LBAP

*Hyacinthoides × massartiana (Hybrid Bluebell) can be found at the south end of the pool, H. non-scripta is found in multiple places directly within the impacted area of woodland.

Additional notes:

Lesser Spotted Woodpecker:
This difficult to spot species has been seen on multiple occasions in the last 10 years in the Poynton Pool area (also with photographic evidence from multiple sources) with breeding in nearby woodland. It cannot be understated how important it is to protect habitats where they still exist.
The population of this species is estimated to have fallen by 83% since 1970, with an estimate of no more than 2,000 pairs left in the UK. It is classified as Red under the Birds of Conservation Concern 4: the Red List for Birds (2021) and it is a priority Species under the UK Post-2010 Biodiversity Framework, a section 41 species of principal importance.
The Cheshire and Wirral Bird Atlas states 'from work in Sweden, the recommendation for conservation of Lesser Spotted Woodpeckers is to have a minimum of 40 ha of woodland dominated by deciduous trees, which may be fragmented over a maximum of 200 ha'. Although the proposed tree removal at Poynton Pool may be considered a small percentage of a territory it is a valid corridor connecting woodland belts and would disproportionally degrade the area via fragmentation of the wildlife corridor of woodland along the pool. There is also additional degradation of the habitat via 'tidying up' the trees and woodland floor by eradicating deadwood severely reducing its value to the Lesser Spotted Woodpecker population.

Bats:
The belt of woodland along the pool edge provides good shelter and protection from disturbance of both noise and light for bats and their prey species. The shelter the trees provide reduces the impact of wind and exposure for weaker flying invertebrate species allowing a good population of moths, caddis and other invertebrates the bats feed on as well as the trees being a source of invertebrate food themselves.
There are at least 5 species of bat living at the pool and on a summer evening their population can measured well into three figures. Simply searching the trees for roosting sites is not an adequate mitigation for these legally protected species. Reducing the volumes of their food source will inevitably reduce the population size and may even cause some species to die out in the area. Bats, like all wildlife, need habitats with a good food source and degrading this will be severely detrimental to them.
An understanding of the negative impacts the proposed changes could bring is very important prior to any decision making.

Impacts on waterbirds using the Pool:
Birds nest in the trees and vegetation overhanging the bank in the summer, species that use this bank to nest include Coot, Moorhen, Greylag Goose and Mallard
The reedbed at the north end is an important habitat, species using this habitat type at the pool include Water Rail, Reed Bunting (breeding), Snipe and most recently Cetti's Warbler
The overhanging trees also provide shelter for overwintering waterfowl including Northern

Shoveler, Common Teal, Wigeon, Mallard, Gadwall, Moorhen and Goosander
The removal of tree cover and opening up the bank, as well as increasing noise, will silhouette recreational users and make dogs more visible, this will negatively impact both the species and populations of waterfowl that currently find the pool a desirable habitat.

Invertebrates:
Poynton Pool is a good location for Blue Tailed Damselfly, the Cheshire branch of the British Dragonfly Society have listed it as a species with reduced occupancy rates (i.e. it is in decline) and so it is now a 'locally important' species to monitor. The proposed works will clear 25% of the vegetation on the banks around the pool including areas with reeds, in it's current state this proposal will have a devastating impact on the population of this species as well as the many other invertebrates that require bank-side vegetation to survive.
The lowland mixed deciduous woodland is a BAP priority habitat and so will contain a wide variety of species that will live on both the living and dead wood. The dead wood is especially important for beetles and other invertebrate life and will be a key food source for the Lesser Spotted Woodpecker.
Breaking the tree cover along such a large section of the bank will increase the light pollution and have negative impacts on the moth population within the park.
Invertebrates are a key part of the food chain and removing them has impacts on all other wildlife and their population sizes, especially birds and bats.

Biology:
The pool is designated as a Site of Biological importance, it is designated for its woodland, marginal/emergent/inundation vegetation and its ornithological interest.
The pool has a good mix of habitat along it's banks supporting a wide variety of plant and tree species including patches of reedbed and species such as European Royal Fern (which is locally scarce). This provides homes for many other species of wildlife and is a key reason for the high biodiversity the pool supports. A concrete kerb and cleared vegetation with reduced trees on 25 % of the bank edge will have a devastating impact which is as yet unknown and unquantified.

General area context:
While a small area, in the context of Poynton is it a very important corridor providing connectivity for wildlife between the north and south areas of the Park, this has become even more important in the area since the new road has sliced through the habitats to the West. When considering wildlife, developments need to consider the surrounding habitat to provide context, the impacts go much further than the immediate boundaries. There are many upcoming threats within Poynton such as potential impacts on the priority habitat woodland corridors surrounding the current Poynton Sports Club which appears to also now be a consideration for more development.

Habitat loss and degradation is a key reason driving population declines in all of our wildlife which is a key reason why seemingly 'common' species are now redlisted. While this may seem like a small area of habitat it is driving a 'death by a thousand cuts' of wildlife in the wider Poynton area when taking into account the multiple recent developments centred on housing and road building. The new roads will have caused the local extinction of lowland breeding Curlew and had severe and as yet unquantified impacts on Northern Lapwing, Little Ringed Plover, Eurasian Skylark, Eurasian Oystercatcher and many other bird species.