

# Tree Condition Assessment

St James's Square  
Bath  
BA1 2TR

For St James's Square Bath Ltd

August 2022



## Record sheet

Report title	Tree Condition Assessment
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Report reference	22548TCA
Version	V02
Date of issue	24 <sup>th</sup> August 2022

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### Appendix 1 – Tree schedule

## 1.0 Introduction

I was instructed by Vicky Clarke to undertake an assessment of the trees in St James's Square in Bath.

## 2.0 Scope of survey

- 2.1 Undertake a visual assessment of the health and condition of the trees within St James's Square and record the findings.
- 2.2 Make recommendations, where appropriate, to reduce risk of harm to a level as low as reasonably practicable (ALARP).
- 2.3 Where appropriate, provide recommendations for long term management to improve the condition and longevity of the trees.

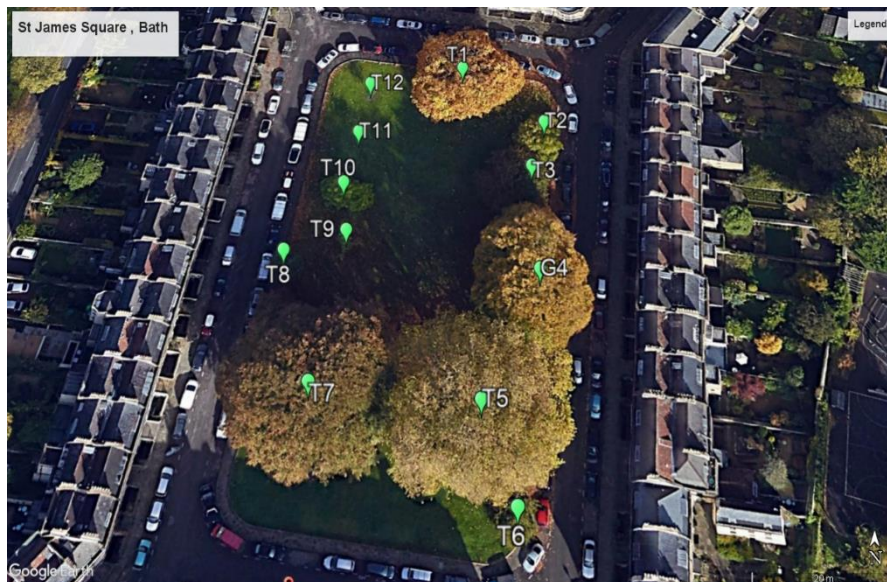


Fig. 1 - Aerial view of St James's Square showing tree locations

## 3.0 Inspection notes and limitations

- 3.1 The trees were inspected by Jim Walker on 23<sup>rd</sup> August 2022. The trees were previously surveyed in April 2020.
- 3.2 Internal decay assessments with use of a PiCUS sonic tomograph were carried out in January 2020 on the tulip tree (T1), London plane (T5) and copper beech (T7). An aerial assessment of T1 was undertaken in January 2021 to investigate defects in crown stems.
- 3.3 The survey starts with the tulip tree (T1) at the northern end of the square and proceeds in a clockwise direction finishing with the purple-leaved plum (T12). The survey data is presented in the attached tree schedule (Appendix 1).

- 3.4 The trees were visually inspected from ground level. Only binoculars, nylon mallet and metal probe have been used to aid tree assessment. No internal decay detection devices were used in assessing lower stem or basal condition.
- 3.5 Age of trees has been classified as young, semi-mature, early mature, mature, over mature and veteran. Stem diameters have been measured at 1.5m from ground level and rounded to the nearest 10mm. Tree heights have been measured with a clinometer. All other measurements are estimated and approximate.
- 3.6 No assessment has been made with regard to any impact the trees may have on buildings or structures with the exception of direct contact from aerial parts. Comments are restricted to arboricultural considerations associated with tree condition and safety.
- 3.7 Recommendations for tree work have been divided into three categories based on location, tree condition and potential risk of harm to people or damage to property.

1	High Priority	Work to be undertaken within one year
2	Moderate Priority	Work to be undertaken within two years
3	Low Priority	Work to be undertaken as part of routine estate management

#### Category 1 High Priority

This is non-urgent essential work to resolve safety issues arising from our inspection. This includes work to trees that, in our opinion if not addressed, pose a high short term risk of harm to people or damage to property. This may include dead, dying or diseased trees; trees with major defects in areas of high use; trees with low canopies over roads or paths, tree canopies that may damage a building or are obscuring streetlights, CCTV or signs. It also includes recommendations for further inspection where necessary. Budget allowance should be made for this work as soon as practicable with the objective of completion within one year.

Note: Work to young trees may also be included in this category to ensure that issues affecting successful establishment are addressed promptly. This may include weeding, irrigation, guarding, supporting and formative pruning.

#### Category 2 Moderate Priority

This work is considered essential to reduce longer term safety issues, but is of a lower priority than Category 1 works. This may be due to a tree's location in a less well-used area or that the identified defect is not so advanced to be considered a major safety risk at present. Where practicable, resources should be made for this work with the objective of completion within two years. However, provided that these trees are re-inspected within this time frame and the degree of risk remains tolerable, works may be deferred or re-prioritised.

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### Category 3 Low Priority

This work is not essential and may be undertaken as resources allow. This includes routine estate management; remedial work to important landscape trees of low risk; works to trees in areas of low use; remedial pruning or felling work to prevent hazards in the long term; long term landscape management proposals.

- 3.8 The removal of major dead wood (over 5cm diameter) has been recommended only where it is of potential risk to the safety of site users. In general, dead wood is beneficial to wildlife and should be retained where practical. In most cases, the dead wood may be reduced as far as necessary to ensure stability.
- 3.9 Ivy provides valuable wildlife habitat and does not directly impact on tree health. However, when extensive it can lead to increased wind loading/leverage on the tree or individual limbs. Ivy may also obscure defects such as cavities, cracks or decay fungi. In certain cases, it is therefore appropriate to remove or sever it.
- 3.10 All tree work should be undertaken to BS 3998:2010 'Tree Work - Recommendations' and carried out by a suitably qualified and experienced contractor.
- 3.11 Attention is drawn to the Wildlife and Countryside Act 1981 (as amended), Countryside and Rights of Way Act 2000, and The Conservation of Habitats and Species Regulations 2017. These acts and regulations provide statutory protection for listed species of flora and fauna. Of particular relevance to tree work is the comprehensive protection afforded to birds, bats and badgers. This has implications for timing of works as well as the requirement for surveys and licences in certain cases.
- 3.12 Bird nesting season is generally considered to extend from March until September. If work is required to trees within this period that has potential to disturb nesting birds then a qualified ecologist should be consulted and surveys may be necessary.
- 3.13 All bats are protected by law in the UK and it is an offence to disturb, kill or injure a bat as well as damage, destroy or obstruct a roost. All UK bats may use trees as roosts for summer breeding, winter hibernation or for transitory purposes. Prior to works commencing, all trees should be inspected for evidence of bats or potential roost features by someone with suitable knowledge and experience. Inspection of confirmed roosts and/or invasive surveys must be carried out by a licensed bat worker. Tree works that are likely to disturb a roost will require a bat licence from Natural England.
- 3.14 St James's Square lies within Bath conservation area; therefore a six week (section 211) notice must be submitted to the Local Planning Authority prior to any works commencing.
- 3.15 It is recommended that an annual walkover inspection is carried out of the five large mature trees (T1, G4, T5, T7) and after periods of extreme weather. The remaining trees on site should be reinspected in three years.

- 3.16 This report and the recommendations within it are valid for a period of twelve months from the date of survey.

## 4.0 Risk management

- 4.1 The overall risk to human safety from tree failure is extremely low. Each year between five and six people in the UK are killed by trees, which equates to a risk of about one in ten million.
- 4.2 The HSE's tolerability of risk framework recommends that risks above 1/10,000 per annum are generally considered unacceptable when placed on the public. Risks between 1/10,000 and 1/1,000,000 per annum are tolerable, but consideration should be given to managing them 'as low as reasonably practicable' (ALARP), where it is cost effective to do so. Risks below 1/1,000,000 are considered broadly acceptable and are comparable to those that people regard as insignificant within their daily lives (HSE 2001).
- 4.3 In 2011, following extensive industry and government consultation, The National Tree Safety Group (NTSG) produced its guide to tree risk management - Common Sense Risk Management of Trees. Its overall approach is that the evaluation of what is considered reasonable tree management should be based on a balance between the benefits and risks from trees. This position is underpinned by a set of five key principles:
- Trees provide a wide variety of benefits to society
  - Trees are living organisms that naturally lose branches or fall
  - The overall risk to human safety is extremely low
  - Tree owners have a legal duty of care
  - Tree owners should take a balanced and proportionate approach to tree safety management
- 4.4 Landowners, together with any party who has control over a tree's management, have a legal duty to take reasonable care for the safety of those who may come within the vicinity of a tree. Trees are dynamic, living organisms that may shed branches or fail as part of their natural processes. Although the risk of harm from failure is clearly very low, no tree can be considered entirely risk free. It would be unacceptable to attempt to remove all risk from trees, both in terms of loss of the many benefits that they provide, as well as the huge cost implications. A tree owner is not, therefore, expected to guarantee that their trees are safe. They should take only reasonable care such as could be expected from a reasonable and prudent landowner, to consider the risks posed by their trees (NTSG 2011).
- 4.5 Trees that have not been identified for remedial works should not be deemed to be free of defects or the risk of failure. They have been omitted because, in our opinion, the risk

of harm in the event of failure is considered to be either ALARP or broadly acceptable in accordance with the HSE's Tolerability of Risk Framework (HSE 2001).

- 4.6 In line with current guidance, this survey aims to provide a reasonable assessment of risk, which balances the benefits that these trees provide with the duty of care owed by St James's Square Bath Ltd.

## 5.0 Summary

- 5.1 The tulip tree (T1) appears to be in good physiological condition with no obvious change since my last inspection.

The two *Rigidoporus* fruit bodies on the south and east aspects have not changed, but the fruit body on the north aspect is displaying fresh incremental growth and is now approximately 20cm in diameter.

The tree has a modified crown structure having last been pruned in January 2016 and before that in 2008. This has significantly reduced wind loading and increased the tree's overall safety factor. It has responded well to the 2016 pruning with approximately 2m of regrowth. There are also clear signs of adaptive incremental growth around the lower stem.

There is no obvious evidence of wind damage or changes to its structural condition.

The bench seat has now been removed from beneath the tree canopy.

Based on my survey findings, I recommend that a repeat (PiCUS) internal decay assessment of the tree base is carried out in autumn 2023. Provided there is no significant change to decay levels, the tree should be re-pruned as per the specification in winter 2023/24.

- 5.2 The two fern-leaf beech trees (G4) remain in good condition. A few dead branches in the lower crown should be removed, together with lifting of growth over the road to 5.5m above ground level (agl).

- 5.3 The London plane (T5) appears to be in good condition and the 2020 PiCUS survey revealed no significant basal defects. A climbing inspection (January 2021) also revealed no obvious crown defects.

The canopy appears largely free of anthracnose that was affecting leaves last year, probably due to the dry spring and early summer.

A large dead branch has recently failed and I noted a further two in the lower crown at 9m and 17m. These could be removed although the overall risk of harm is considered to be low.

Low growth over the road should be raised to 5.5m agl.



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- 5.4 The copper beech (T7) remains in good physiological condition and the 2020 PiCUS survey revealed no significant change in decay levels associated with the *Ganoderma* fungi. The single fruit body is now desiccated which may indicate that the rate of decay has slowed or may have been compartmentalised.

I recommend that a repeat (PiCUS) internal decay assessment of the tree base is carried out in autumn 2023.

Minor work is recommended to lightly reduce overextended limbs that overhang the road on the west and northwest aspects. There are three old steel cables in the crown attached by screw eyes which have now been grown over by the tree's incremental growth. It is not known when these cables were installed and I therefore suggest they are supplemented with 8t Cobra bracing to provide support should they fail in the future. This work should be carried out at the same time as removal of some large dead branches from within the crown.

- 5.5 The Catalpa (T10) is in very poor structural condition and will continue to shed branches. The risk of harm is low and the bench seat has been removed from beneath the canopy.

If the tree is retained, reduction/thinning of growth is recommended to reduce the risk of further structural failure.

- 5.6 The recently planted tulip tree (T11) is showing signs of drought stress and should be irrigated if the weather remains dry.

- 5.7 The remaining trees on site are in good condition and require no work at present.

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## Appendix 1

### Survey Schedule

Tree/Group no.	Common & scientific Name	Height (m)	Stem dia. (mm)	Crown spread dia. (m)	Age class	Physiological condition	Structural condition	Condition and site notes	Management recommendations	Work priority	Next inspection (mths)
T1	Tulip tree <i>Liriodendron tulipifera</i>	23	1850	20	OM	G	F	<ul style="list-style-type: none"> <li>• <i>Rigidoporus ulmarius</i> fruit bodies at base on north, south and west aspects. Fruit body on north aspect has new incremental growth and is now 20cm in diameter</li> <li>• PiCUS tomograph survey carried out 2020. Aerial internal decay assessment (IDA) 2021</li> <li>• Patch of dead bark at 1m on west aspect</li> <li>• Stem forks at 3m to two scaffold stems (south and north). Iron rod brace at 4m</li> <li>• South stem – Secondary stem at 5.5m on west aspect. Open cavity on upper aspect 2m x 30cm x 30cm (78% of stem radius - IDA 2021). Wound wood and adaptive growth with no obvious signs of fibre buckling on underside or defect at fork union. Supported by two 8t Cobra braces installed 2016 (at 10m) and one 4t brace at 7m (pre-2016)</li> <li>• North stem – Secondary stem at 5m on east aspect. Supported by one steel and one 4t Cobra brace pre-2016 (at 12m). Bark death at union on north aspect possibly historically related to installation of iron rod. Strong adaptive incremental growth on underside. Bark wound on upper surface at 6m (45cm length). No significant decay (IDA 2021)</li> <li>• 8t Cobra Brace at 16m between the two main scaffold stems (installed 2016) plus one 2t Cobra brace (pre-2016) supporting primary branch overhanging road</li> <li>• South limb at 6m with bark wound and decay at approx. 1.5m from union (56% of radius - IDA 2021)</li> <li>• Previous crown reduction in January 2016 with up to 2m extension growth and no significant dieback</li> <li>• Three 8t Cobra braces installed 2016 as detailed above. Age and installation date of remaining braces not known</li> <li>• Minor dead wood</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out PiCUS tomograph survey of base autumn 2023. If no change in condition carry out the following work winter 23/24:</li> <li>• Undertake light crown reduction and selective thin of outer growth by approximately 2m height and lateral extent to level of previous reduction.</li> <li>• Carefully reshape and balance to natural flowing outline, retaining all internal growth.</li> <li>• Replace two old (undersize) Cobra braces on east stem and primary north limb with 8t Cobra brace at minimum 2/3 length or height.</li> <li>• Install additional 8t Cobra Brace between main stem and vertical growth on western secondary stem.</li> <li>• Inspect all existing Cobra bracing and replace where necessary with 8t capacity bracing.</li> </ul>	1	12

Tree/Group no.	Common & scientific Name	Height (m)	Stem dia. (mm)	Crown spread dia. (m)	Age class	Physiological condition	Structural condition	Condition and site notes	Management recommendations	Work priority	Next inspection (mths)
T2	Magnolia <i>Magnolia sp.</i>	5	210	8	M	G	G	•	• No action		36
T3	Kanzan cherry <i>Prunus 'Kanzan'</i>	8	400	15	M	G	G	• Forks at 1.8m. Minor bacterial canker	• No action		36
G4	Fern-leafed beech <i>Fagus sylvatica 'Asplenifolia'</i>	20	970	16	M	G	G	<ul style="list-style-type: none"> <li>• Two trees with mutual canopy</li> <li>• No significant defects evident at base</li> <li>• Numerous occluded pruning wounds on main stem</li> <li>• Lapsed pollard at 4.5m to multi-stem crown</li> <li>• Crossing and rubbing limbs</li> <li>• Previous remedial work 2016</li> <li>• Major dead wood</li> <li>• Reverted growth</li> </ul>	<ul style="list-style-type: none"> <li>• Crown lift to 5.5m agl over road only</li> <li>• Remove major dead wood</li> </ul>	1	12
T5	London plane <i>Platanus x hispanica</i>	30	2100	25	M	G	G	<ul style="list-style-type: none"> <li>• PiCUS tomograph survey carried out 2020</li> <li>• Basal epicormics on southeast and west aspects</li> <li>• Bark dysfunction on northeast and east aspects from 1.2-5m possibly associated with past pruning</li> <li>• Main fork union at 9m. North stem forks again at 11m to two scaffold stems and one secondary stem</li> <li>• Large dead branches at 17m on southeast aspect and at 9m on west aspect</li> <li>• Past remedial work and aerial inspection January 2021</li> </ul>	• Crown lift to 5.5m agl over road only	1	12
									• Remove major dead wood	3	

Tree/Group no.	Common & scientific Name	Height (m)	Stem dia. (mm)	Crown spread dia. (m)	Age class	Physiological condition	Structural condition	Condition and site notes	Management recommendations	Work priority	Next inspection (mths)
T6	Holly <i>Ilex x altaclerensis</i> 'Golden King'	9	370	7	M	G	G	<ul style="list-style-type: none"> <li>Codominant stems from 1.5m</li> </ul>	<ul style="list-style-type: none"> <li>No action</li> </ul>		36
T7	Copper beech <i>Fagus sylvatica</i> 'Purpurea'	29	1540	28	M	G	G	<ul style="list-style-type: none"> <li>Desiccated <i>Ganoderma sp.</i> fruit body at ground level on west aspect, with decay to approx. 35cm radial depth. PiCUS tomograph survey carried out 2020</li> <li>Exposed buttress roots with minor mower damage</li> <li>Lapsed pollard at 4m to seven scaffold stems</li> <li>Three steel cable braces at 10m</li> <li>Overextended limbs in lower crown on west and northwest aspects overhanging road</li> <li>Previous remedial work 2014</li> <li>Rubbing limb at 12m on east aspect</li> <li>Partially fused limb at 12m on west aspect</li> <li>Minor drought stress</li> <li>Major dead wood in mid and upper crown</li> </ul>	<ul style="list-style-type: none"> <li>Carry out PiCUS tomograph survey of base autumn 2023</li> <li>Lightly reduce overextended limbs on west aspect and northwest aspects overhanging road by maximum 2m</li> <li>Supplement existing steel cables with three 8t Cobra braces at approx. 2/3 stem height</li> <li>Install one additional 8t Cobra brace between NE and SW scaffolds</li> <li>Remove major dead wood</li> <li>Aerial inspection of pollard union and report</li> </ul>	1	12
T8	Silver holly <i>Ilex aquifolium</i> 'Argenteo-marginata'	10	350	6	M	G	G	<ul style="list-style-type: none"> <li>Codominant stems from 0.75m partially fused at 4m</li> </ul>	<ul style="list-style-type: none"> <li>No action</li> </ul>		36
T9	Maidenhair tree <i>Ginkgo biloba</i>	8	120	5	SM	G	G	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>No action</li> </ul>		36

Tree/Group no.	Common & scientific Name	Height (m)	Stem dia. (mm)	Crown spread dia. (m)	Age class	Physiological condition	Structural condition	Condition and site notes	Management recommendations	Work priority	Next inspection (mths)
T10	Indian bean tree <i>Catalpa bignonioides</i>	7	520	10	OM	F	P	<ul style="list-style-type: none"> <li>• Extensive decay in stem from ground level to fork at 1.8m and into crown limbs</li> <li>• Failed limbs at 2m on east and northeast aspects</li> <li>• Truncated at 3.5m</li> <li>• Aerial roots developing in cavity</li> <li>• Tangential crack in limb on west aspect</li> <li>• Very poor structural condition with high risk of further branch failure</li> </ul>	<ul style="list-style-type: none"> <li>• Fell to ground level and plant replacement</li> </ul> Or <ul style="list-style-type: none"> <li>• Reduce/thin over extended/decayed branches by 1m-2m to reduce endloading</li> </ul>	3	12
T11	Tulip tree <i>Liriodendron tulipifera</i>	4.5	<50	1.5	Y	F	G	<ul style="list-style-type: none"> <li>• Drought stress</li> </ul>	<ul style="list-style-type: none"> <li>• Irrigate in dry weather</li> </ul>	1	36
T12	Purple-leafed plum <i>Prunus cerasifera Nigra</i>	7	150	4	SM	G	G	<ul style="list-style-type: none"> <li>• </li> </ul>	<ul style="list-style-type: none"> <li>• No action</li> </ul>		36

## Key to Schedule

Height (m)		Height estimated in metres	
Stem dia. (mm)		Stem diameter in millimetres measured at 1.5m or immediately above root flare for multi-stem trees rounded to the nearest 10mm	
Crown spread dia. (m)		Average crown spread diameter estimated in metres	
Age class	Y	Young	Newly planted tree 0-10yrs
	SM	Semi-mature	Tree in first third of normal life expectancy for species
	EM	Early mature	Tree in second third of normal life expectancy for species
	M	Mature	Tree in final third of normal life expectancy for species
	OM	Over mature	Tree beyond normal life expectancy for species
	V	Veteran	Tree that is of interest biologically, aesthetically or culturally because of its age, size or condition
Physiological condition	G	Good	Fully functioning biological system with normal extension growth, leaf/bud size, crown density, incremental growth for species
	F	Fair	Fully functioning biological system but displaying below average extension growth, leaf/bud size, crown density, incremental growth for species.
	P	Poor	Biological system with low functionality. Symptoms include: - poor extension growth, small and/or chlorotic leaves, small buds, limited incremental growth, sparse crown and/or die back.
	D	Dead	Tree is dead
Structural condition	G	Good	Tree without any significant structural defects
	F	Fair	Tree with minor defects that may be remedied with appropriate management
	P	Poor	Tree with significant defects that cannot be remedied
Work priority		Risk category determining timing of work	
	1	High	Recommended works to be undertaken within one year
	2	Moderate	Recommended works to be undertaken within two years
	3	Low	Recommended works to be undertaken as part of routine estate management
Next inspection (mths)		Recommended reinspection interval in months	