Sustainably managing the trees in The Royal Parks

Ian Rodger,
Arboricultural manager

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The Royal Parks

Eight parks

77 million visitors a year

4774 acres (1945 hectares)

One World heritage site

One National Nature Reserve

Two parks are SSSI's

160,000 trees

One TPO

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Objectives

- Ensure the parks are a safe environment for visitors and staff.
- Protect and enhance the tree stock in The Royal Parks.
- Maintain the effective controls of current pest and disease problems.
- Monitor tree stock for potential future tree health issues.
- Update tree strategies to reflect changing environmental pressures.
- Establish and facilitate research into tree health concerns.
- Establish effective bio-security controls.

Trees mapped on Arbortrack

Hyde Park 3747

Kensington Gardens and Brompton cemetery 4253

St James and Green Park 1873

Regents Park 5753

Greenwich Park 3270

Bushy Park 7519

Longford river 1196

Richmond Park 9218

Total 36,829 trees mapped

Around 120,000 trees unmapped mostly in Richmond

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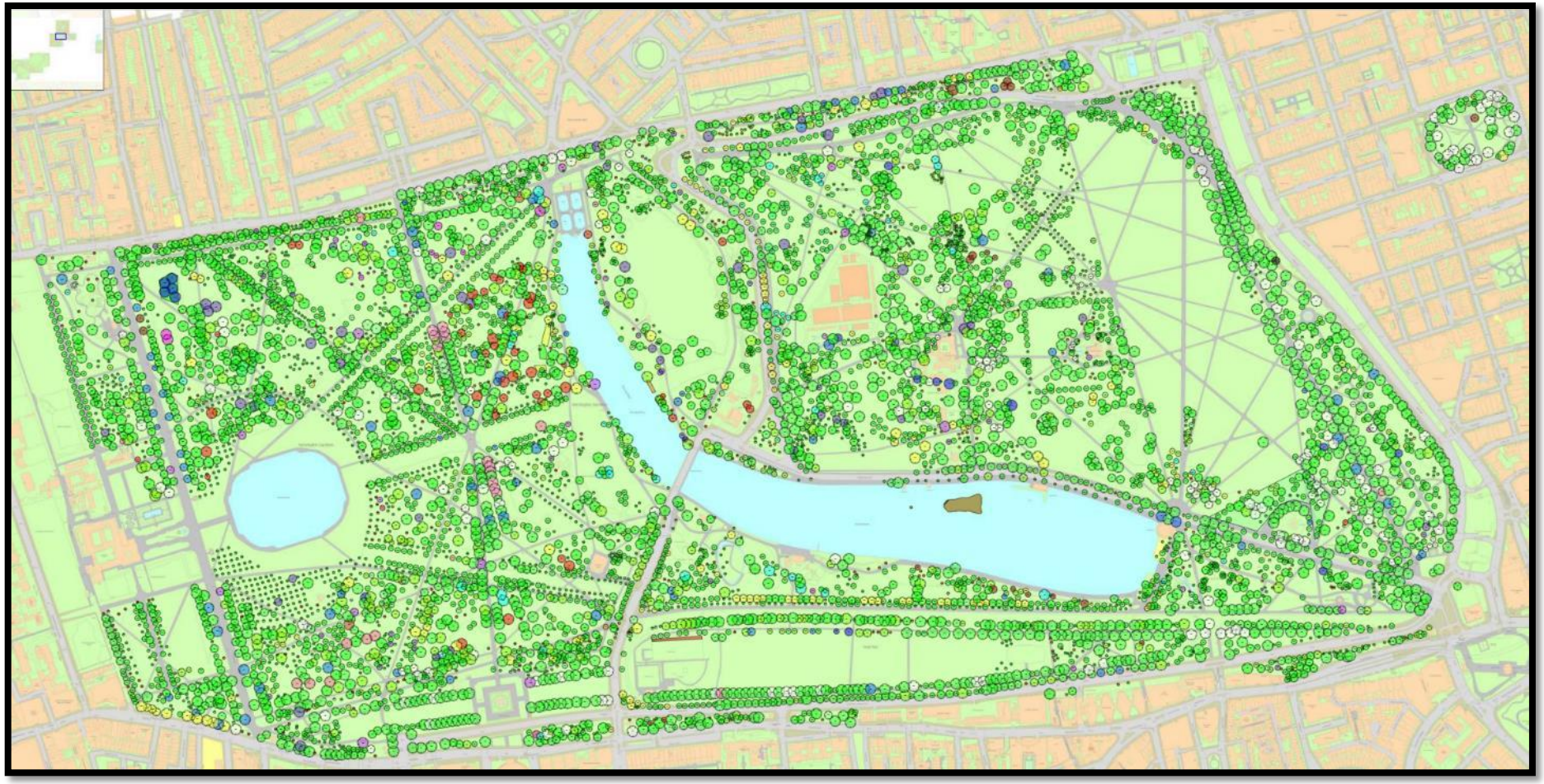
Arbortrack software



Hyde Park and Kensington Gardens

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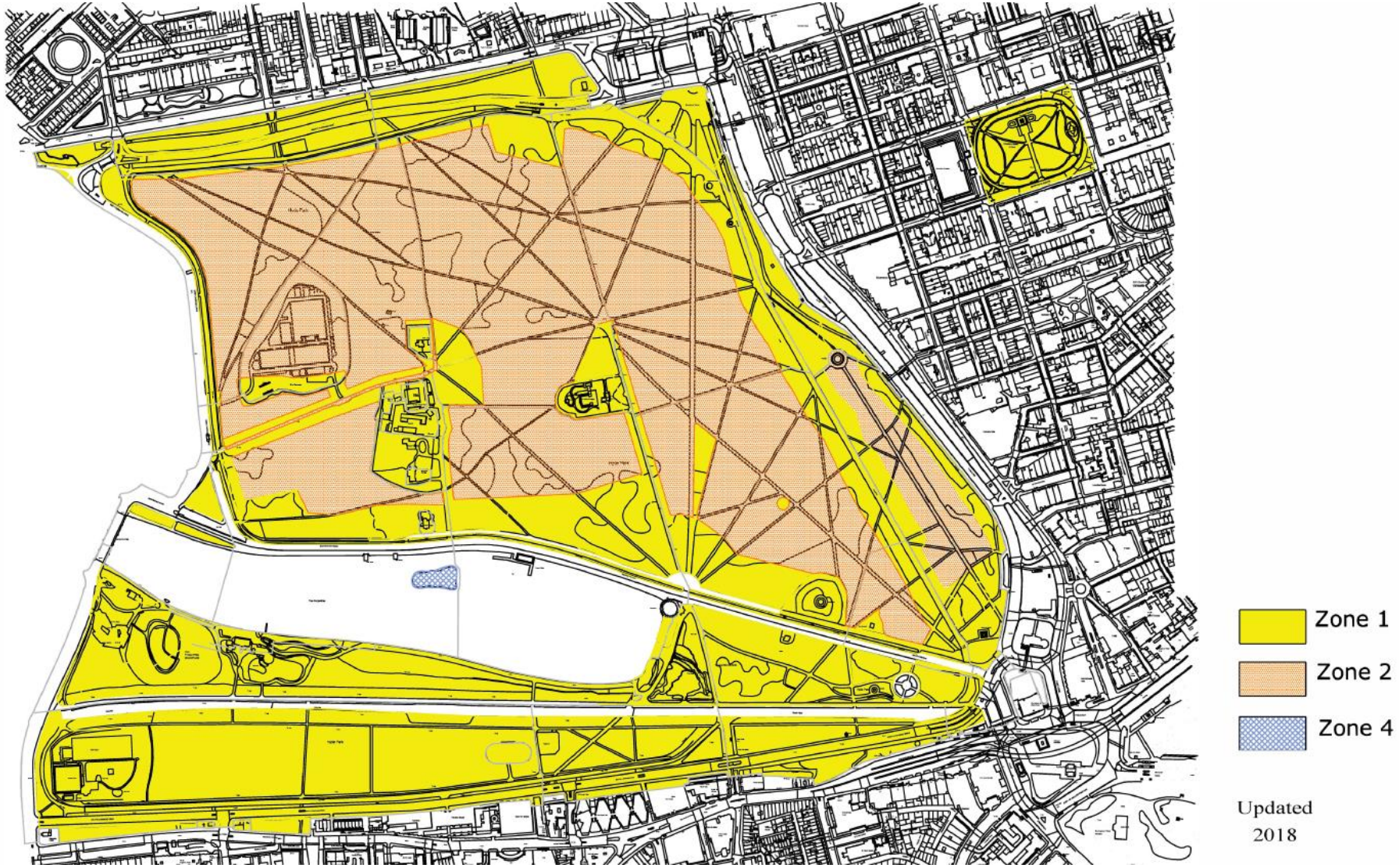
Hyde Park risk zones



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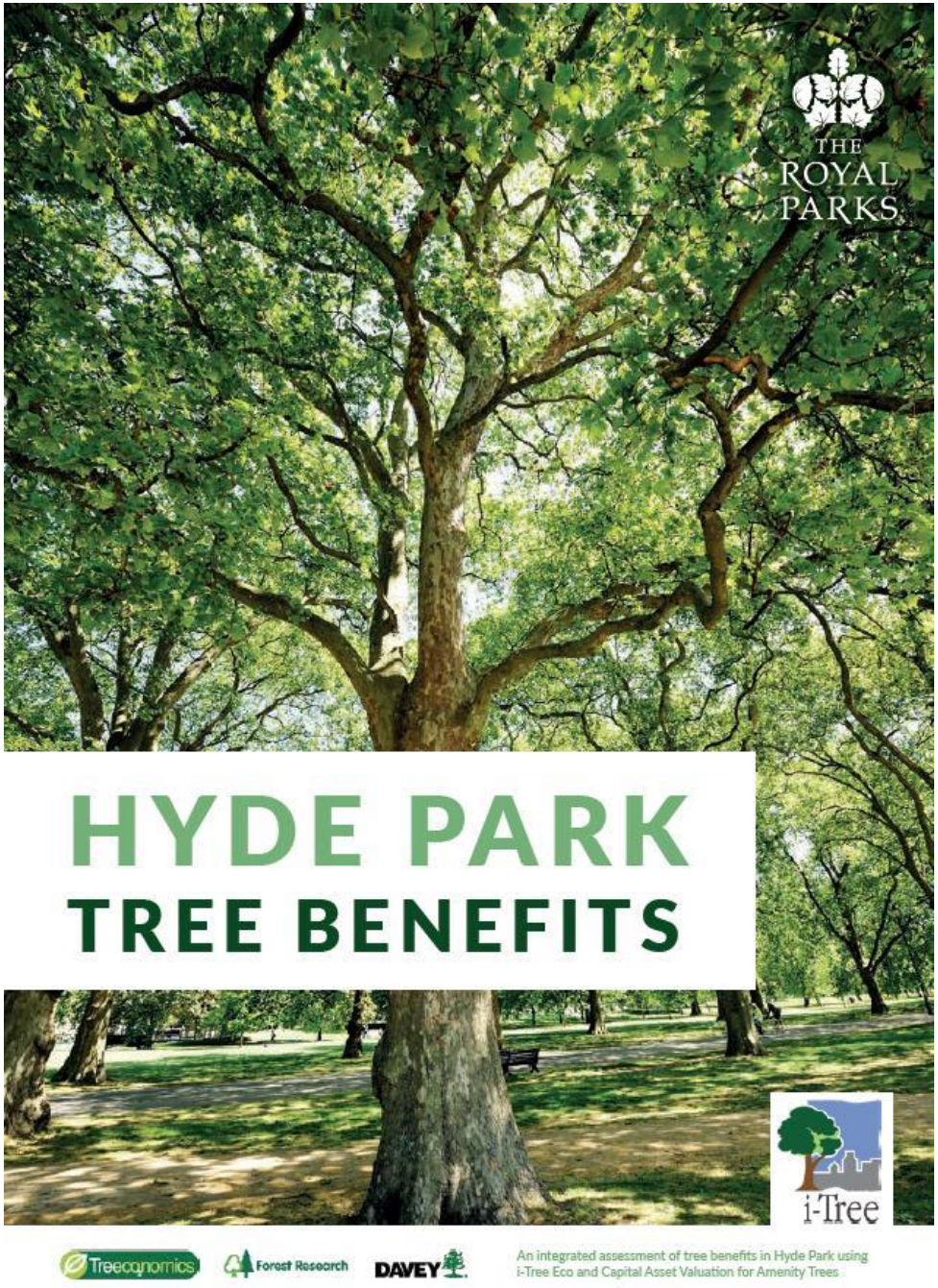
Typical zone one feature



i-Tree

Assess the structure, composition and distribution of key elements of Hyde Park's trees

Quantify some of the benefits of Hyde park's trees in order to raise the awareness of this 'natural capital'

Establish a baseline from which to monitor trends and future progress.

i-Tree data spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1												Height		Crown Attributes				
2	Tree ID	Stat	Tree Species	HT DBH	DBH1	DBH2	DBH3	DBH4	DBH5	DBH6	Total Height	Live Top	Crown Base	Width N-S	Width E-W	% Missing	%Die Back	CLE
33	12	P	Tilia cordata	25							13.0	13.0	0.0	9.0	10.0	15%	0%	5
34	11	P	Tilia cordata	25							13.0	13.0	0.0	9.0	10.0	15%	0%	5
35	10	P	Tilia cordata	25							13.0	13.0	0.0	9.0	10.0	15%	0%	5
36	2798	P	Tilia cordata	25							13.0	13.0	0.0	9.0	10.0	15%	0%	4
37	76	P	Platunus hispanica	118							25.0	25.0	1.0	25.0	20.0	40%	0%	4
38	422	P	Platunus hispanica	118							25.0	25.0	1.0	25.0	20.0	40%	0%	3
39	423	P	Platunus hispanica	118							25.0	25.0	1.0	25.0	20.0	40%	0%	3
40	424	P	Platunus hispanica	118							25.0	25.0	1.0	25.0	20.0	40%	0%	4
41	74	P	Platunus hispanica	118							25.0	25.0	1.0	25.0	20.0	40%	0%	4
42	75	P	Platunus hispanica	118							25.0	25.0	1.0	25.0	20.0	40%	0%	3
43	19	P	Tilia x europeae	62							28.0	28.0	0.0	11.0	11.0	0%	5%	3
44	18	P	Tilia x europeae	62							28.0	28.0	0.0	11.0	11.0	0%	5%	3
45	20	P	Tilia x europeae	62							28.0	28.0	0.0	11.0	11.0	15%	10%	3
46	155	P	Tilia x europeae	57							22.0	22.0	1.5	12.0	16.0	5%	5%	2
47	45	P	Tilia x europeae	57							22.0	22.0	1.5	12.0	16.0	5%	5%	2
48	23	P	Tilia x europeae	57							22.0	22.0	1.5	12.0	16.0	5%	5%	2
49	457	P	Tilia x europeae	57							22.0	22.0	1.5	12.0	16.0	5%	5%	2
50	466	P	Tilia x europeae	57							22.0	22.0	1.5	12.0	16.0	5%	5%	2
51	35	P	Tilia x europeae	57							22.0	22.0	1.5	12.0	16.0	5%	10%	2
52	34	P	Tilia x europeae	45							18.0	18.0	1.0	12.0	16.0	5%	5%	2
53	32	P	Tilia x europeae	45							18.0	18.0	1.0	12.0	16.0	5%	5%	2
54	16	P	Tilia x europeae	45							18.0	18.0	1.0	12.0	16.0	20%	5%	2
55	24	P	Acer. Saccharinum	46							15.0	15.0	1.0	30.0	14.0	30%	0%	4
56	453	P	Quercus robur	47							15.0	15.0	2.0	15.0	13.0	35%	8%	3
57	2807	P	Tilia Petiolaris	17							10.0	10.0	1.0	6.0	6.5	5%	0%	5
58	2806	P	Tilia petiolaris	17							10.0	10.0	1.0	6.0	6.5	5%	0%	5
59	17	P	Fraxinus americana	39							18.0	18.0	1.2	14.0	11.8	5%	3%	5
60	15	P	Populus species	56							17.0	17.0	3.0	17.5	40.0	30%	5%	5

... Area 2 - Table 1 | Area 2 - Table 2 | New area sheet - Table 1 | New area sheet - Table 2

Hyde Park values

Amounts and Values			£/ha
Pollution removal	2.71 tonnes	£183,454	£1,292
Carbon storage	3,872 tonnes	£800,123	£6,198
Carbon sequestration	88 tonnes	£20,028	£141
Avoided Runoff	3,584m^3	£5434	£38
Amenity Valuation (CAVAT)	£172,843,688		£1,217,209
Total Annual Benefits	£208,916		£1,471

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Hyde Park infographic

Users of the Hyde Park i-Tree:

Arb manager

Chair of the board and CEO

Comm's department

Friends of Hyde Park and Kensington Gardens

Winner of the 2018 i-Tree innovation award by the Society of municipal arborists in the USA

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Tree strategies

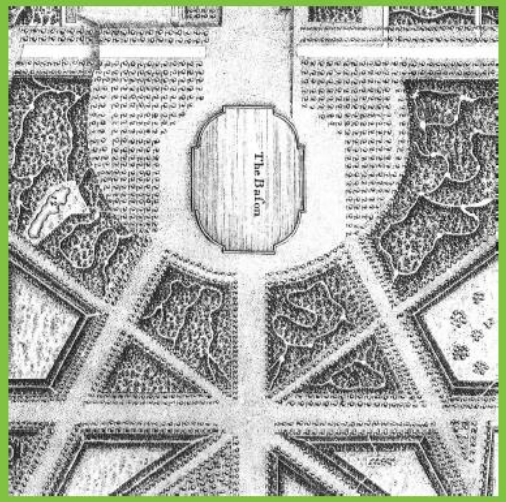
LUC

www.landuse.co.uk

Kensington Gardens Tree Strategy 2014

Version 3.0; Final

Prepared by LUC in association with Richard Flenley
16.03.2015



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Kensington Gardens avenue renovations

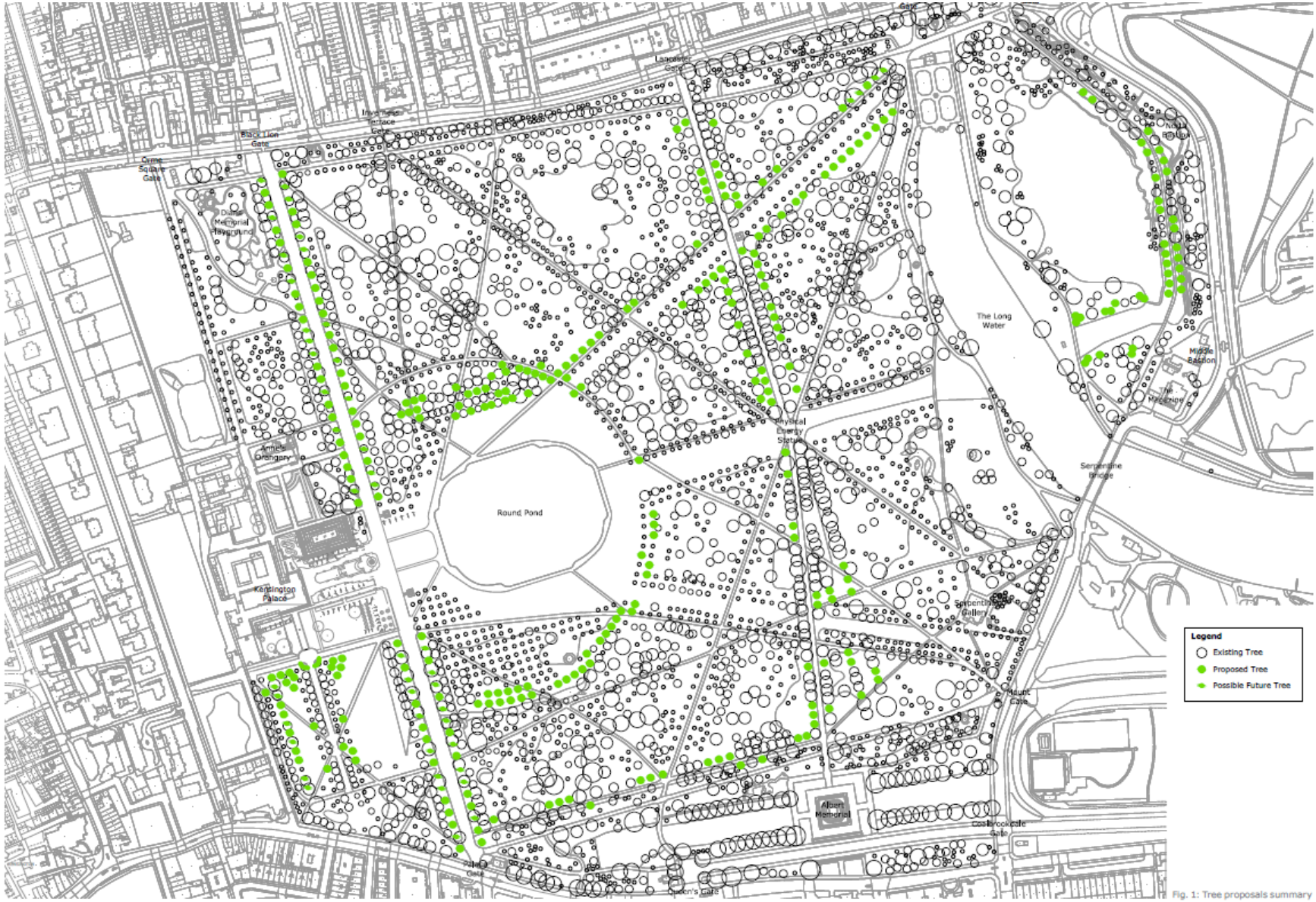

Fig. 1: Tree proposals summary

Advantages of tree strategies

- Structured planning over a set period.
- Accessible information format and timetable.
- Stakeholders and external organisations love them.
- Can smooth over contentious planning opposition.

Disadvantages of tree strategies

- Cost.
- Lengthy to produce with lots of consultation.
- Can just sit on the shelf with no actions followed up.

Improving habitat and biodiversity

Monoliths

Recycling timber

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Phoenix trees

Phoenix trees

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Veteran tree individual management plans (IMP's)

Tree 749

Castanea sativa
Sweet Chestnut

Viability

Probability of Failure from Collapse: Low
Probability of Failure from Decline: Moderate to
Vitality: Low

Viability Score

17

Aspect North (2016)

Individual Management

Management objective. Maintain at current scale; manage root environment, competition & structural stability.		
Inspect.	Within 1 year	
Vitality - Condition soil / mulch. Apply 100mm of uncomposted woodchip mulch (same or similar species is recommended) up to 2m beyond crown dripline. Leave 30cm gap between mulch & tree stem / buttresses.	Within 1 year	Repeat once in every 1 years for the following 5 years
Manage target zone - Restrict access. To beyond crown dripline (ideally restrict access up to mid-line ofe drive on west aspect). Implement measures to prevent removal of epicormic growth, ground compaction, root damage & browsing, where feasible. This action will also reduce public safety risks associated with this tree.	Within 1 year	
Deadwood - Stabilise / reduce. Retain maximum habitat feasible.	Within 1 year	
Thin crown - Adjacent competition. Thin crown of 1 sweet chestnut (candidate veteran) to south by 30% & prune back by 2m (use habitat creation techniques where feasible).	Within 4 years	

Generated By

MyTREES tree management software

Surveyor: Luke Fay

Bushy Park Veteran Tree Survey

Treework Environmental Practice

Tree 749

Castanea sativa
Sweet Chestnut

Easting: 515612
Northing: 170289

Tree

Girth @ 1.30m:	960 cm
Bole Height (m):	None
Crown spread (m):	10
Tree height (m):	9
Number of Trunks:	1
Veteran Type:	Ancient / Veteran
Tree Form:	Maiden Tree
Standing/Fallen:	More or Less upright
Live Growth:	Live growth occupies 25%-50% of current crown outline
Crown Loss:	Tree has shed 50%-75% of likely peak crown framework
Shade:	Close Shade - shaded on three or four sides, not from above
Epicormic Growth:	Base, Stem & Crown
Past Management:	Other Aboricultural Work
Distance to Nectar Source:	up to 5m
Condition / Context:	Branch - Suspended, Root environment - Compacted, Root damage - Suspected

Tree Habitat 22

Bark Condition:	Stem & Crown	Rot:	White
Bark Flux:	Dry	Deadwood Attached:	45
Split Limbs :	0	Deadwood Fallen:	0
Tears:	0	Holes:	11
Scars:	2	Hollowing in Crown:	4
Lightning:	None	Hollowing - Top:	Moderate hollowing 15 - 30cm
Live Stubs:	0	Hollowing - Mid:	Minor hollowing <15cm
Water Pockets:	0	Hollowing - Base:	Apparently solid trunk

Tree Associates 4

Invertebrate species	3	Exit holes. Web.
Vertebrate species	1	Bird foraging.
Epiphyte species	1	Lichen (crown).
Fungi species	1	Skin-like (crown).

Surveyor Luke Fay

Survey date: 18/03/2016

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Exclusion to divert desire lines

Naturalising areas

Mowing regimes

Halo mowing around trees

Meadow creation

Leaf clearance

Hedge management

Veteran tree propagation

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Tree health issues

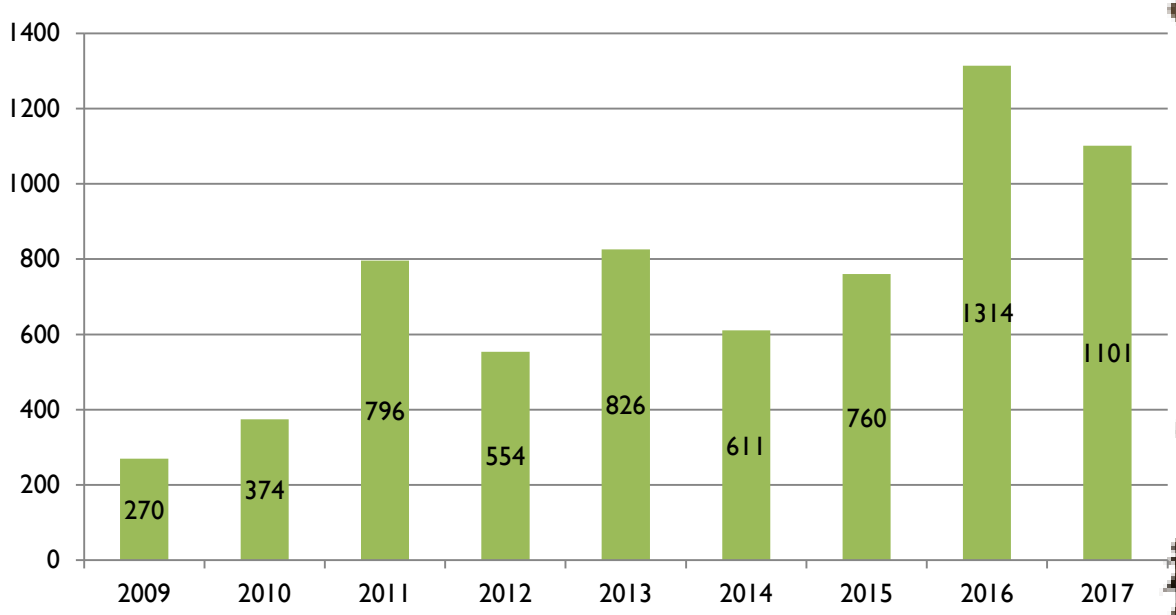
The Royal Parks are currently dealing with five major tree health issues.

- Massaria
- Oak processionary moth
- Bleeding canker of Horse Chestnut
- Acute Oak decline
- Ink stain of Sweet Chestnut (*Phytophthora cinnamomi*)

Each of these has cost and labour implications over and above the normal maintenance regime of the parks.

Massaria numbers

TRP MDP affected trees 2009 - 2017 (total London Planes: 2654)



Total costs for 2017 £145,836

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Massaria

Massaria on limb over the Broadwalk Hyde

Failed Massaria limb from the Broadwalk Hyde

Oak processionary moth

- Richmond 2017
  9700 nests removed.
- Operational costs across TRP for 2017 was **£239,145**

Oak processionary moth

- Toxic hairs on caterpillars are a significant threat to human health, causing skin rashes, eye irritation and sometimes breathing difficulties.

- Also affects animals including dogs – first confirmed UK case in Richmond Park in 2016.

Rash due to caterpillar hairs

Oak processionary moth

Multiple large nests

Extensive tree defoliation

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Oak processionary moth

Training volunteer surveyors

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Oak processionary moth

OPM nest removal

Oak processionary moth

Research

- TRP 2013 commissioned study on effect of spraying on non-target organisms.
- Forest Research work facilitated since 2011 including:
- Pheromone trapping
- Population behaviour in different habitats
- Effectiveness of spraying
- Testing for and DNA coding of parasitoids,

  Carcelia iliaca fly a significant discovery in Richmond Park and been found in the central parks 2018

***Carcelia iliaca* fly**

Waiting in the wings (high risk)
Ash Dieback.

Not yet found in The Royal Parks

Ash Dieback causes leaf loss, crown dieback and bark lesions in affected trees.

Increased walk through inspections for symptoms to meet statutory obligations, 1160 Ash across all parks, monitor national and local disease spread.

Leaf symptoms

Waiting in the wings

There is a **moderate** risk from five other tree health issues.

Canker Stain of Plane: Present in France, has potential to devastate Central parks!

Sweet Chestnut blight: Outbreaks in UK so far contained.

Asian and Citrus Longhorn Beetles: 28,000 potential host trees in TRP, previous outbreak in UK contained.

***Xylella fastidiosa*:** Currently southern Europe but spreading.

Sweet Chestnut blight

Asian Longhorn Beetle

What can be done?

Tree vitality is key!

Soil de-compaction and mulching.

Alter mowing regimes.

Constant monitoring and participation in research.

Facilitation of research.

Increased biosecurity controls.

Considered tree selection.

Continued recognition by the organisation of the risks to landscapes posed by tree diseases.

Relieving soil compaction around the bases of stressed trees

Incorporating Biochar around the base of Chestnuts as part of our Phytophthora control study in Greenwich Park

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Wood chip mulch with compost tea bio stimulant as part of the Massaria study in Kensington Gardens

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Using tree strategies, advanced planting specifications and tree selection to future proof The Royal Parks trees

Biosecurity statement

TRP will NOT purchase any plants which have been imported into the UK UNLESS they have been held in a UK nursery for one full growing season during which time they have been subjected to rigorous inspection for pest and disease and regular DEFRA visits to the nursery.

Due to the high risk of imported plants being infected with ***Xylella fastidiosa*** the plants on the DEFRA list of potential hosts should be checked for origin and **never** be purchased directly or indirectly from European suppliers.

Plant, tree and shrub purchases made as part of contract works should be made by TRP staff or if by contractors, through recommended TRP suppliers.

Canker stain of Plane

Thank you!

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