Tree Heritage
Arboricultural Contractors and Consultants

Established 1982

Alton Towers
Staffordshire

TREE SURVEY REPORT

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TREE SURVEY REPORT

Site: Alton Towers, Staffordshire

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1.0 Introduction

1.1 The proposed development site is on the location of the currently unused 'Black Hole' ride. The surrounding trees are mainly middle aged deciduous trees. The findings of our survey are listed in the Tree Schedule included as Appendix A to this report.

1.2 The purpose of this report is to be an aid to the design of the layout of the site. It identifies the better trees and specifies necessary protective measures that are required to keep the trees within the development. It may also give recommendations for remedial work that may be desirable in order to keep or improve the quality of the trees.

1.3 The survey complies with British Standard 5837:2005 *Trees in relation to construction – Recommendations*. All significant trees on the site have been inspected including any that may be on the boundary or on adjacent land that may be affected by any development. Included in the schedule of trees are the relevant areas of protection for the trees or the Root Protections Areas (RPAs). The relevant distance from each tree from which construction work should be excluded by the erection of a Protective Barrier is also listed.

1.4 The site visit was on 11th November and again on the 14th December 2011. Surveyor: Ben Williams BSc (Hons) Arb (M. Arbor A.). The weather conditions: Clear and dry.

2.0 Limitations of report

2.1 The trees were inspected from ground level only and no invasive tools were used.

2.2 Due to the changing nature of trees the report is valid for a period of 6 months for the condition and 2years for all other data.

2.3 Trees may affect buildings by indirect influence of their roots on the substrate on which structures are built and by direct action on foundations, drains and other underground services. This report does not attempt to address these issues.

2.4 Trees are dynamic structures that can change rapidly and can never be guaranteed 100% safe: even if they were deemed safe on the day of the inspection they can sometimes suffer damage in adverse weather conditions. All trees should be inspected following any bad weather.

3.0 Method

3.1 The survey was undertaken from ground level and includes all individual significant trees shown in position and numbered on the site plan. Low grade or sapling trees may be grouped together as numbered groups eg. G1. Schedule. The following information is collected and given in a schedule.

- Number
- Tree Species(Common Name)
- Height in metres
- Stem diameter at 1.5 metre above ground (if multi-stemmed then immediately above root flare) in millimetres.
- Crown Spread at compass points NSEW in metres.
- Crown clearance (height of lowest branch above ground) in metres.
- Age Class (Young, Middle-aged, Mature, Over mature and Veteran)
- Physiological Condition (Good, Fair, Poor or Dead).This is an overall assessment of the health of the tree based on leaf size, colour, density, annual growth increments and die-back or dead wood.
- Structural Condition (comments on decay, cavities, disease and other defects and issues that will affect its suitability for retention).
- Recommendations (These are based on the previous two categories and may include pruning or removal amongst other recommendations).
- Estimated Remaining Contribution (in years <10,10>20, 20>40 and 40+)
- Category Grading:

  R= Remove (unsuitable for retention due to its poor condition or less than 10 years contribution.

  A= High quality tree of good form with at least 40 years contribution

  B= Moderate quality tree with 20>40 years contribution

  C= Low quality tree (usually of poor form or condition). Also trees of less the 150mm stem diameter (these may be considered for relocation)

  Subcategory:

  1= mainly Arboricultural Merit

  2= mainly Landscape Merit

  3= mainly Cultural or Conservation Merit

4.0 Trees and Construction: General overview

4.1 Trees are large dynamic organisms that have basic requirements in order to survive. The obvious part of the tree is the trunks and branches with the leaves that are essential for survival and these are easily damaged by machines etc. This damage though is easily avoided and very obvious when it occurs. They have roots that anchor the tree into the ground but also take up moisture and oxygen as well as nutrients from the soil. Most tree roots are in the upper 0.5 metres of the soil and also extend well beyond the extent of the trees leafy canopy. Roots are easily damaged during any construction process although sometimes the immediate effect is not obvious. The main threats from construction work come from:

a) Compaction of the soil prevents gaseous exchange and water drainage.
b) Roots being severed or crushed.
c) Drainage being affected by alteration of levels and installation of trenches for services.
d) Physical damage to branches and trunks.
e) Poisoning of trees with contamination from fuel and oil leaks from machinery, run off from concrete mixers or other toxic materials used during construction.

The main consequences of the above in terms of damage are:

i) Compaction kills roots by preventing oxygen and water take-up
ii) Severance can lead to pathogenic fungi invading the tree and in the worst cases; it can also lead to instability.
iii) Loss of vitality caused by the above can dramatically affect the life span of the tree.
iv) Damage to the crown can also lead to disease and instability in the worst cases.

5.0 Protection of the trees that are retained

5.1 BS 5837:2005 is intended to give recommendations to protect the trees during development and ensure their survival following the construction work. To achieve this there are two main considerations. The first is to protect the roots of the trees and the second to protect the upper parts of the tree, the trunk and branches.

5.2 The main tool to achieve the above is to create “Construction Exclusion Zones” around the trees. These are based on the “Root Protection Area” or RPA as calculated using Table 2 of BS 5837:2005. The RPAs for all the trees are included in the survey schedule. In some circumstances, when advised by an Arboriculturalist and for individual open grown trees only, it may be permissible to off-set the RPA by as much as 20%. It is also possible to vary the RPA from a circle to allow for specific site conditions.

5.3 To achieve an effective “Construction Exclusion Zone” (CEZ) it is necessary to erect a protective barrier along the edge of the RPA’s. The details of this fencing are shown in Figure 2, which is included as an appendix (B) to this report. The barrier should be erected a minimum distance from each tree. This minimum distance is provided as a radius in the Survey Schedule and shown on the plan. It is essential that this barrier is well anchored into the ground to prevent it being moved. It is **not** acceptable to use “Herras” fencing in concrete or rubber feet as this can be too easily moved.

5.4 The Tree Protective Fencing should be installed before any construction work takes place. This includes demolition, site clearance and drainage work.

5.5 Notices should be fixed to the fencing warning personnel not to enter. They should read “Tree Root Protection Area – No Access”.

5.6 In some circumstances, with agreement from the LPA, it may be necessary to work within the RPA. In these circumstances the barrier may need to be realigned and ground protection used even for access on foot. If vehicular access is required then this will have to be specifically designed to prevent compaction and agreed in writing.

5.7 If the LPA agree to work within the RPA then any excavation work would have to be done by hand and usually supervised by the Arboriculturalist. Drives or access roads will also require specific Method Statement and include “No-Dig” construction methods.

5.8 Some operations such as the delivery of large section of buildings or the use of cranes for construction or demolition will need to be carefully organised and supervised to avoid accidental damage to the branches and stems of the retained trees. It may be advisable where damage is inevitable to carryout facilitation pruning to avoid initial conflict. This would have to be agreed by the Arboriculturalist and the LPA.

5.9 Tree should not be used to support notices and under no circumstances should nails, screws or bolts be driven into the trees. Likewise trees should not be used to support cables or lights.

5.10 Care should be taken to avoid the discharge of any material that could contaminate the soil within 15 metres of any tree. This would include: Washings from cement mixers, fuel or oil storage etc. This distance may need to be extended if the ground slopes towards the tree.

6.0 Arboricultural Methods

6.1 The Arboriculturalist or the LA Tree Officer should be consulted if there are any unforeseen issues in relation to any tree on site including any unexpected work within the Root Protection Areas.

6.2 All tree work should be carried out by highly skilled professionals and it is recommended that contractors are selected from the Approved List of Arboricultural Association Contractors. This is obtained from www.trees.org.uk

6.3 All tree work should be carried out to the latest standards based on BS 3998: 2010 ‘Recommendations for Tree Work’.

6.4 It is also advisable to draw up a final Arboricultural Method Statement and Tree Protection Plan to be agreed with the LPA.

7.0 Wildlife and Timing of Operations

7.1 Many animals including bats and birds are given special protection under the Wildlife and Countryside Act 1981(as amended) and the Countryside and Rights of Way Act 2001 amongst other legislation.

7.2 **Bats**. It is an offence to "intentionally or recklessly disturb a bat" or "damage, destroy or block the access to the resting place of any bat". An assessment of trees on the site for "suitability for bats" is an essential part of the pre-planning stage. If bats are found or even reported to have used the trees for roosts then it is essential that a specialist in this field is contacted for advice. Natural England should be contacted on 0300 060 6000 or through www.naturalengland.org.uk for details of suitable specialists. It may be that a European Protected Species Habitat Regulations Licence is required before work can continue. Following advice it is usual that work to trees with potential for bat roosts is best done from late August to early October. March through to April is also suitable but there may be conflict with nesting birds. (see below)

7.3 **Birds**. It is an offence to disturb, injure or kill any bird whilst it is at or building a nest. This includes damage to or removal of the actual nest whilst it is in use or being built. Tree works that could lead to the above should therefore be avoided during the months of late March through until August.

7.4 To avoid problems with either it would be advisable to programme all necessary site clearance work and tree pruning during August to late October**.**

8.0 Planning Considerations

8.1 Full planning consent that includes any proposed tree works usually overrides the requirement to get specific permission even for trees that are within a Conservation Area or protected by a Tree Preservation Order.

8.2 If work is to be carried out prior to planning consent being sought then it may be necessary to apply for permission separately. In a Conservation Area it is a requirement to give Six Week Written Notice of any intended works. In the case of a TPO an application is required to the LPA on a 1APP form; in this case it may take 8-10 weeks before permission is given. It should be noted that permission is not required from the LPA to remove “Dead, Dying or Dangerous” trees although it is always best to inform the LPA of your intentions and supply suitable evidence to support your actions.

9.0 Overall Considerations for this site

9.1 The main area of trees is at the northern end of the site adjacent to the service road. These trees would have been planted as a screen, and therefore are all of similar age and size. The main species in this plantation is Beech (*Fagus sylvatica*). The majority of the Beech trees are also in a similar condition. They have major dead wood in the crown and most of them have weak or tight forks. These trees have therefore been categorised as C trees.

9.2 Within the plantation there are some more mature trees which are in good condition and should be retained. There are 3 category A trees in this area T11, 29 and 38, and 3 category B trees T28, 29 and 42. It is understood that an access road for maintenance of the new ride will be required, which will run through this plantation. Wherever possible the RPA’s of the category A and B trees should be avoided. If this is not possible special measures should be taken not to damage or disturb the rooting zones of these trees. This would include not altering ground levels and using load spreading materials to prevent compaction of the root plates. An example is shown in appendix E of this report.

9.3 T79 is a large Corsican pine (*Pinus nigra ‘Maritima’*). The tree is showing signs stress and is in decline with a sparse canopy. Also within the canopy there are brown patches of dead foliage. On inspection of the foliage this was shown to be caused by Red Band Needle Blight (*Dothistroma septosporum*). This is a fungus type disease that has only recently spread into this area with

devastating consequences for Pines in particular. The fungus spreads by spores that are released each year making the disease get progressively worse. It would appear that the disease is well established and has obviously not been stopped by the severe winter frosts. The Forestry Commission have stopped planting Corsican Pines because of this disease and recommend the removal of any infected trees in an attempt to prevent it spreading. This tree was removed in line with the Alton Towers tree management plan on the 14th November 2011.

9.4 To allow for the construction to take place some of the trees will need to be removed. These trees are indicated on plan THL-BW33 Rev3 outlined with a dotted red line and listed in the method statement tree schedule.

9.5 The exact position of the Tree Protection Barriers should be discussed on site with the agreement of the LPA Tree Officer. It is essential that they are erected before any work starts on the site.

Tree Heritage Ltd

Ben Williams

Ben Williams
BSc (Hons) Arb. M.Arbor.A
15th December 2011

Table 1 — Cascade chart for tree quality assessment

TREES FOR REMOVAL

Category and definition	Criteria	Identification on plan
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	• 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 R category trees (i.e. 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 (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality. NOTE Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).	DARK RED RGB code: 127-000-000 AutoCAD 246

TREES TO BE CONSIDERED FOR RETENTION

Category and definition	Criteria – Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A **Those of high quality and value**: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN RGB code: 000-255-000 AutoCAD 90
Category B **Those trees of moderate quality and value**: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	MID BLUE RGB code: 000-000-255 AutoCAD 170
Category C **Those trees of low quality and value**: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	GREY RGB code: 91-91-91 AutoCAD 252
	NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150 mm should be considered for relocation.			

Site: Alton Towers Black Hole 2013
Surveyed by: Ben Williams BSc (Hons) Arb. M.Arbor.A
Date: 14/12/11

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APPENDIX A: TREE SURVEY SCHEDULE

KEY:

Measurements	Age Class	Physiological Condition	Category Grading	Symbols
Height - *Metres* Stem Diameter - *Millimetres at 1.5m above ground level* Branch Spread - *Metres (North, South, East and West)* Crown Clearance - *Metres* RPA Radius - *Metres* Estimated Remaining Contribution - *Years*	Y - *Young* MA - *Middle Aged* M - *Mature* OM - *Over-Mature* V - *Veteran*	G - *Good* F - *Fair* P - *Poor* D - *Dead*	A - *High (green)* B - *Moderate (blue)* C - *Low (grey)* R - *Poor/Trees for removal (red)* **Sub-Categories:** 1 - *Mainly Arboricultural value* 2 - *Mainly Landscape value* 3 - *Mainly Cultural value*	< - *Less than* ~ - *Approximately* > - *Greater than*
RPA - *Root protection area (equivalent to a circle with a radius 12x the stem diameter for single stem trees and 10x the basal diameter for trees with more than one stem arising below 1.5m above ground level)*				

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Tree Ref.	Species	Height	Stem Diameter	Branch Spread				Crown Clearance	Age Class	Phys. Condition	Structural Condition	Recommendations	Estimated Remaining Contribution	Category Grading	RPA Radius
				N	S	E	W								
T1	Beech (Fagus sylvatica)	15	600	4	4	6	3	1.5	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	7.2
T2	Lawson Cypress (Chamaecyparis lawsoniana)	14	230	1	3	2.5	2	3	MA	F	Weak fork.	No work required.	10-20	C1	2.3
T4	Lawson Cypress (Chamaecyparis lawsoniana)	15	510	3.5	3.5	3.5	3.5	4	M	G	Dead stem.	No work required.	20-40	C1	6.12
T5	Beech (Fagus sylvatica)	16	630	5.5	5.5	5.5	5.5	2.5	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	7.56
T6	Beech (Fagus sylvatica)	16	510	5.5	5.5	5.5	5.5	2.5	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	6.12
T7	Beech (Fagus sylvatica)	16	520	3	6	5.5	5.5	0	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	6.24
T8	Beech (Fagus sylvatica)	16	590	3	6	3	4	0	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	7.08
T9	Beech (Fagus sylvatica)	15	490	3	3	3	3	4	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	5.88
T11	Yew (Taxus baccata)	15	940	6	6	6	6	0	M	G	Good condition.	No work required.	>40	A1	11.28
T12	Sycamore (Acer pseudoplatanus)	16	300	3	3	3	3	4	MA	F		No work required.	10-20	C1	3.6
T13	Beech (Fagus sylvatica)	16	320	3	3	3	3	3.5	MA	F		No work required.	20-40	C1	3.84
T14	Goat Willow (Salix caprea)	14	240	2	5	3	2	3	MA	F		To be removed to allow for construction.	10-20	C1	2.88
T15	Goat Willow (Salix caprea)	14	240	2	5	3	2	3	MA	F		To be removed to allow for construction.	10-20	C1	2.88
T16	Beech (Fagus sylvatica)	15	510	0	6	4	4	0	MA	G	One sided crown.	To be removed to allow for construction.	20-40	C1	6.12
T17	Beech (Fagus sylvatica)	15	230	0	2	3	0	2	MA	F	Major deadwood in crown. One sided crown.	To be removed to allow for construction.	20-40	C1	2.76
T18	Beech (Fagus sylvatica)	15	410	3	3.5	3.5	3	2	MA	F	Major deadwood in crown.	No work required.	20-40	C1	4.92
T19	Beech (Fagus sylvatica)	16	600	5	5	5	5	2	M	F	Included bark present in main fork. Major deadwood in crown.	No work required.	20-40	C1	7.2
T20	Turkey Oak (Quercus cerris)	15	260	2.5	2.5	2.5	2.5	10	MA	F		No work required.	10-20	C1	3.12

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Tree Ref.	Species	Height	Stem Diameter	Branch Spread				Crown Clearance	Age Class	Phys. Condition	Structural Condition	Recommendations	Estimated Remaining Contribution	Category Grading	RPA Radius
				N	S	E	W								
T21	Beech (Fagus sylvatica)	15	300	0	5	2	2	1	MA	G	One sided crown.	No work required.	20-40	C1	3.6
T22	Beech (Fagus sylvatica)	10	220	0	6	2	2	2	MA	F	Crown distorted due to group pressure. One sided crown.	No work required.	10-20	C1	2.64
T23	Beech (Fagus sylvatica)	10	260	0	6	2	2	2	MA	F	Crown distorted due to group pressure. One sided crown.	No work required.	10-20	C1	3.12
T24	Beech (Fagus sylvatica)	10	230	0	6	2	2	2	MA	F	Crown distorted due to group pressure. One sided crown.	No work required.	10-20	C1	2.76
T25	Beech (Fagus sylvatica)	16	580	5	5	5	5	1	MA	F		No work required.	20-40	C1	6.96
T26	Turkey Oak (Quercus cerris)	16	340	3	3	3	3	11	MA	F		No work required.	10-20	C1	4.08
T27	Turkey Oak (Quercus cerris)	16	550	5	4.5	4.5	4.5	11	MA	F	Major deadwood in crown.	No work required.	10-20	C1	6.6
T28	Sycamore (Acer pseudoplatanus)	16	690	6	6	6	6	0	M	G	Major deadwood in crown.	No work required.	20-40	B1	8.28
T29	Turkey Oak (Quercus cerris)	18	800	6	6	6	6	4	M	G	Major deadwood in crown.	No work required.	>40	A1	9.6
T30	Beech (Fagus sylvatica)	15	380	3	3	3	3	1.5	MA	F	Weak fork. Major deadwood in crown.	No work required.	20-40	C1	4.56
T31	Beech (Fagus sylvatica)	14	240	3	3	2	2	2	MA	G		No work required.	20-40	C1	2.88
T35	Ash (Fraxinus excelsior)	16	370	3	3	3	3	11	M	F		No work required.	20-40	C1	4.44
T36	Beech (Fagus sylvatica)	15	300	0	6	3	3	1	MA	F	Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure.	No work required.	20-40	C1	3.6
T37	Beech (Fagus sylvatica)	15	330	4	4	4	4	1	MA	F	Major deadwood in crown.	No work required.	20-40	C1	3.96
T38	Beech (Fagus sylvatica)	16	770	7	7	7	7	2	M	G		No work required.	>40	A1	9.24
T39	Beech (Fagus sylvatica)	16	610	4	7	7	7	2	M	G	Major deadwood in crown.	No work required.	>40	B1	7.32

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				N	S	E	W								
T41	Beech (Fagus sylvatica)	15	420	0	6	4	4	0	MA	F	Unbalanced crown shape. Crown distorted due to group pressure.	No work required.	20-40	C1	5.04
T42	Sycamore (Acer pseudoplatanus)	16	740	7	7	7	7	2	M	G	Major deadwood in crown.	No work required.	20-40	B1	8.88
T43	Ash (Fraxinus excelsior)	17	670	4	6	5	5	3.5	M	F	Broken branches in crown. Major deadwood in crown.	No work required.	20-40	C1	8.04
T44	Beech (Fagus sylvatica)	14	460	0	8	4	4	1	MA	F	Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure.	No work required.	20-40	C1	5.52
T45	Scots Pine (Pinus sylvestris)	10	180	3	3	3	3	2.5	Y	G		To be removed to allow for construction.	20-40	C1	2.16
T46	Scots Pine (Pinus sylvestris)	10	180	3	3	3	3	2.5	Y	G		To be removed to allow for construction.	20-40	C1	2.16
T47	Horse Chestnut (Aesculus hippocastanum)	11	440	6	6	6	6	2	MA	F	Heavy branch weight.	No work required.	20-40	C1	5.28
T48	Wellingtonia (Sequoiadendron giganteum)	12	480	4	4	4	4	0	Y	G	Good condition.	No work required.	>40	A1	5.76
T49	Coast Redwood (Sequoia sempervirens)	10	370	4	4	4	4	0	Y	G	Good condition.	To be removed to allow for construction.	>40	A1	4.44
T50	Shore Pine (Pinus contorta)	8	270	4	4	4	4	2	MA	G		To be removed to allow for construction.	20-40	C1	3.24
T51	Shore Pine (Pinus contorta)	7	160	3	3	3	3	2	Y	G		No work required.	20-40	C1	1.92
T52	Shore Pine (Pinus contorta)	9	230	4	4	4	4	2	MA	G		No work required.	20-40	C1	2.76
T53	Austrian Pine (Pinus nigra)	9	260	3.5	3.5	3.5	3.5	2	MA	F		No work required.	20-40	C1	3.12
T54	Shore Pine (Pinus contorta)	7	220	3	3	3	3	1.5	Y	G		No work required.	20-40	C1	2.64
T55	Shore Pine (Pinus contorta)	7	240	3	3	3	3	1.5	Y	G		No work required.	20-40	C1	2.88
T56	Shore Pine (Pinus contorta)	7	230	3	3	3	3	1.5	Y	G		No work required.	20-40	C1	2.76

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Tree Ref.	Species	Height	Stem Diameter	Branch Spread				Crown Clearance	Age Class	Phys. Condition	Structural Condition	Recommendations	Estimated Remaining Contribution	Category Grading	RPA Radius
				N	S	E	W								
T57	Common Oak (Quercus robur)	15	780	6.5	8	7	6.5	2	M	G		No work required.	>40	A1	9.36
T58	Yew (Taxus baccata)	15	800	7	7	7	7	1.5	M	G		No work required.	>40	A1	9.6
T59	Yew (Taxus baccata)	15	840	6	6	6	6	1.5	M	G		No work required.	>40	A1	10.08
T60	Cedar of Lebanon (Cedrus libani)	8	320	4	4	4	4	2.5	MA	G		No work required.	>40	B1	3.84
T61	Yew (Taxus baccata)	11	510	5.5	5.5	5.5	5.5	0	M	G		No work required.	>40	B1	6.12
T62	Sycamore (Acer pseudoplatanus)	14	550	5.5	6	5	5	3	M	F		No work required.	20-40	C1	6.6
T63	Lawson Cypress (Chamaecyparis lawsoniana)	13	320	3	3	3	3	2	M	F	Weak fork.	No work required.	10-20	C1	3.84
T64	Sycamore (Acer pseudoplatanus)	16	780	6	6	6	6	3	M	G	Squirrel damage in crown.	No work required.	20-40	B1	9.36
T65	Sycamore (Acer pseudoplatanus)	14	540	6	6	6	6	3	M	G	Squirrel damage in crown. Crown heavily reduced.	No work required.	20-40	C1	6.48
T66	Sycamore (Acer pseudoplatanus)	13	340	3	6	3	4	2	M	F	Crown distorted due to group pressure.	No work required.	20-40	C1	4.08
T69	Beech (Fagus sylvatica)	16	370	6	6	6	6	7	M	G		No work required.	20-40	B1	4.44
T70	Beech (Fagus sylvatica)	13	480	8	4	5	5	1	M	G	Crown distorted due to group pressure.	No work required.	20-40	C1	5.76
T71	Yew (Taxus baccata)	13	680	7	7	7	7	2	M	G		No work required.	>40	A1	6.8
T72	Beech (Fagus sylvatica)	15	540	6	6	6	6	5	M	G		No work required.	20-40	B1	6.48
T73	Yew (Taxus baccata)	14	900	7	7	7	7	0.5	M	G		No work required.	>40	A1	10.8
T75	Sycamore (Acer pseudoplatanus)	15	440	4.5	4.5	4.5	4.5	5	MA	F	Weak fork. Major deadwood in crown. Squirrel damage in crown.	No work required.	20-40	C1	5.28
T76	Sycamore (Acer pseudoplatanus)	11	220	3	3	3	3	3	MA	F	Major deadwood in crown. Squirrel damage in crown.	No work required.	<10	C1	2.2

Site: Alton Towers Black Hole 2013
Surveyed by: Ben Williams BSc (Hons) Arb. M.Arbor.A
Date: 14/12/11

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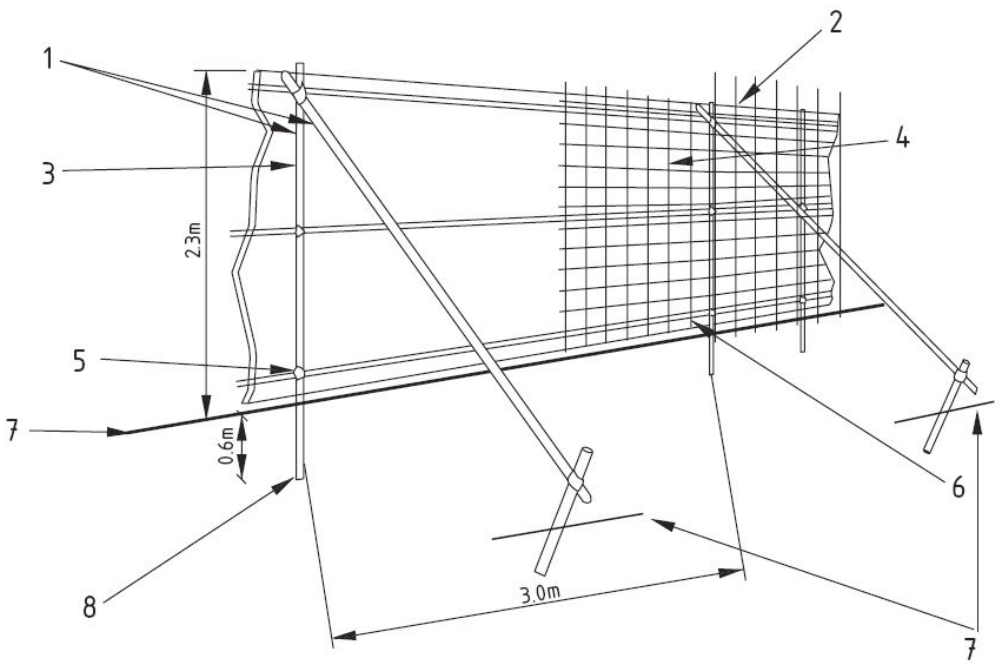
Tree Ref.	Species	Height	Stem Diameter	Branch Spread				Crown Clearance	Age Class	Phys. Condition	Structural Condition	Recommendations	Estimated Remaining Contribution	Category Grading	RPA Radius
				N	S	E	W								
T77	Goat Willow (Salix caprea)	14	600	5	5	5	5	3	MA	F	Weak fork.	No work required.	10-20	C1	6
T78	Sycamore (Acer pseudoplatanus)	11	270	0	5	3	4	1	MA	F	Squirrel damage in crown.	No work required.	10-20	C1	3.24
G1	Corsican Pine (Pinus nigra 'Maritima')	8	170	3	3	3	3	2	Y	G		G1c & G1d to be removed to allow for construction. (See Plan)	20-40	C1	2.04
G2	Mixed Conifers. Lawson's Cypress, Juniper.	8	80	2	2	2	2	0	Y	G		To be removed to allow for construction.	10-20	C1	0.96
S1	Horse Chestnut (Aesculus hippocastanum)														

NB. Trees T3,10,32,33,34,40,67,68,74 and 79 have been removed on the grounds of safety in line with Alton Towers tree management policy.
This followed discussions with SMDC Tree and Woodlands officer Steve Massey.

Appendix B – Tree Protective Barrier: Figure 2 BS 5837:2005



1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside face of fencing to avoid easy dismantling
7 Ground level
8 Approx. 0.6 m driven into the ground

Figure 2 — Protective barrier

Notes:

1. Do not scale off this drawing. Tree canopy's are symbolic only and are representative of the average spread; this may not represent the true outline. Note that the tree stem may not sit centrally to canopy. The stem is not shown to scale - see schedule.

Rev:	Date:	Status/Amendments:	By:

Key:

- Category A Tree
- Category B Tree
- Category C Tree
- Category R Tree
- Branch Spread
- Tree to be Removed
- Root Protection Area (RPA)
- Root Protective Barrier
- Special Measures

Tree Heritage

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Client:	Alton Towers
Project:	Alton Towers AT 2013
Drawing Title:	Arboricultural Implications Assessment
Scale: 1:200	Paper Size: A0
Date Created: 15/12/2011	
Drawing Number: THL/BW33	Drawing Revision: 3