



BS5837 Arboricultural Survey and recommendations for Tribeca Fields, Great  
George Street, regarding the proposed New China Town development on  
behalf of PHD1 Construction

## **Introduction**

This survey was undertaken and prepared by Stephen Nicholls Dip Arb (L4). Instructions were received to undertake a survey due to development proposals at Tribeca Fields, Great George Street, regarding the proposed New China Town development. The survey was undertaken on Tuesday 14/07/2015 in clear dry conditions and identifies trees which may be impacted by development and conclusions with recommendations for protective measures if trees are to be retained where required.

## **Tree survey and arboricultural impact assessment**

The tree survey is attached as appendix 1 and should be consulted along with the notes below, maps and map key.

## **Area**

The site of the New China Town development is set within an area of Liverpool with the frontage on Great George Street. It is overlooked by housing and light industrial and commercial. It also lies close to the Anglican Cathedral. The area has been undergoing gradual redevelopment and is now the focus of development plans. The site is divided into three sections each triangular in nature consisting of mainly grassland and scrub with some individual trees and groupings mainly around the perimeter of the site. Developments should try to fit in with the natural environment but it should also be accepted that this is not always practical particularly in an inner city environment but mitigating planting may help offset the loss of any trees. The site sits within the Liverpool City Council area of the county of Merseyside

The site is extensive covering approximately 3 hectares containing a number of trees which would be classed as amenity planting. This planting is from previous development within the area and as such has suffered from various degrees of damage. A number of trees have been removed from site previously. The survey has identified all individual trees on site and immediately adjacent to the site which may be affected by the development. The trees are mainly classified as C with a number classified as B.

## **Trees requiring works prior to development**

A number of trees may require preliminary works regardless of development pressures.

T14 and T24 should be removed regardless of development as T14 is dead and T24 is in poor condition and will become a hazard in a very short period of time.

## **Arboricultural impact statement**

### **Trees impacted on by the development and appropriate controls to minimize risk of damage**

Given the size of the site and the potential size and impact of the proposed development it is likely that the developer will not wish to retain the existing tree stock. The tree survey identifies two trees requiring removal regardless of development these are T14 and T24. Four trees have been identified as having potential within the current setting and in the current use of the land and have been classified as category B. The remainder of the trees are categorized as category C trees due to various defects including basal wounding or sparse crowns which can be indicative of an early tree decline.

Within the context of a development the loss of the trees is unlikely to be significant given the locality and low density of planting within the site and the surrounding area. To mitigate any loss of trees is recommended that an appropriate planting scheme is incorporated, where possible, within the development.

The trees, present on site, are of generally lower quality and of a limited species so provide little variety in visual amenity and also have limited minimal wildlife potential.

The trees are, on the whole, densely planted which ultimately limits the quality of individual trees in terms of visual amenity. Most of the trees are around the perimeter of the site. If removal of tree stock occurs impact planting within a development where one or more, higher quality trees are utilized would provide more visual amenity than the current tree stock, the majority of which are in a degree of decline.

The current trees if retained, in particular the maples, are prone to sap leakage as a result of greenfly which leaves sticky residue which can be problematic on footways and windows.

### **Recommendations**

Removal of trees T14 and T24 regardless of development as both poor quality and in serious decline or dead.

Given the lower quality of tree stock on site the removal of some or all of the trees would be appropriate to maximize the development potential provided a robust planting scheme is incorporated which will sit, as far as possible, in harmony with the new development. Careful consideration should be given to the species and size of trees to be planted within the development to reduce the risk of future arboricultural pressures on the trees.

If trees are to be retained on site tree protection measures must be employed. These are outlined below.

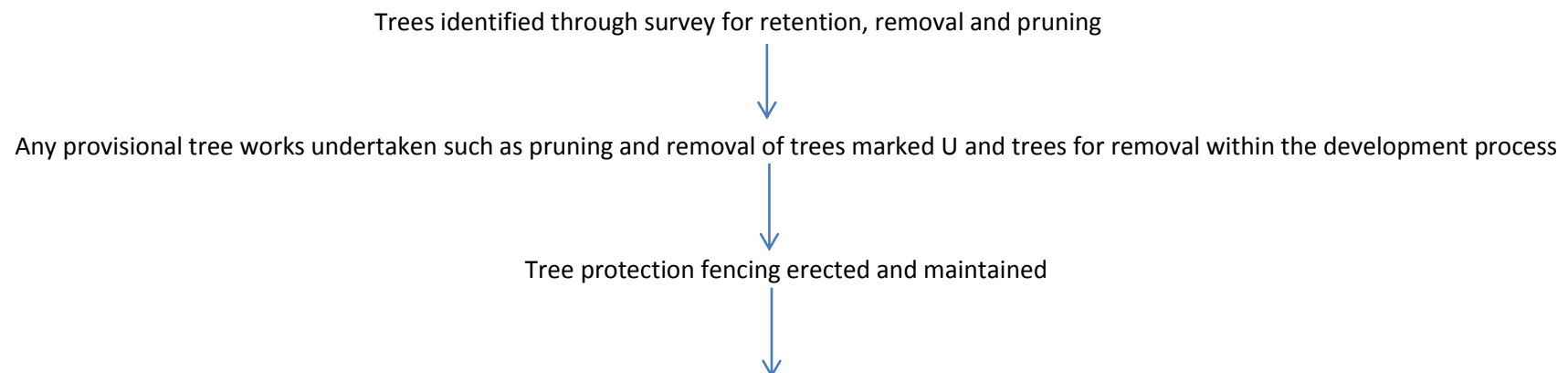
### **Tree Protection (if required)**

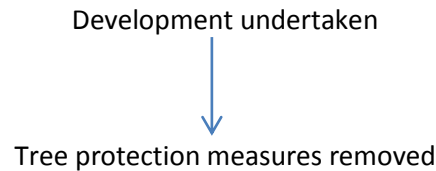
If trees are to be retained then the RPA of trees should be considered when building works are to commence.

RPA – The root protection zone or RPA of a tree is the area where tree roots are most likely to occur. The diameter of which is outlined within the survey for individual trees. Where the tree may be directly impacted by the development root protection methods should be employed. This usually consists of a fence but could also be a walkway over the zone. The purpose of this is to avoid unnecessary root compaction which will lead to the early decline and loss of trees which would be otherwise preventable. Storage of machines or materials and the mixing of materials must not occur within the RPA and protection methods must be maintained throughout the development program.

### **Method Statement**

There are a number of trees that have been outlined for removal both due to sound arboricultural reasoning. There are also trees that may be impacted if trees are to be retained. The process for undertaking works in relation to trees should follow the flow diagram below sections can be removed for example if no tree stock remains.





At any point during the development if changes occur which may impact upon any retained trees an arboriculturalist must be consulted.

### **Methods of Tree Protection (if required)**

#### **Ground Protection**

##### **Ground protection during demolition and construction**

**6.2.3.1** Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.

**6.2.3.2** Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

**6.2.3.3** New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

*NOTE The ground protection might comprise one of the following:*

- a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;*
- b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;*
- c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*

**6.2.3.4** The locations of and design for temporary ground protection should be shown on the tree protection plan and detailed within the arboricultural method statement (see **6.1**).

**6.2.3.5** In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.

## **Barriers**

### **6.2.1 General**

**6.2.1.1** All trees that are being retained on site should be protected by barriers and/or ground protection (see **5.5**) before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. Where, due to site constraints, construction activity cannot be fully or permanently excluded in this manner from all or part of a tree's RPA, appropriate ground protection should be installed (see **6.2.3**).

**6.2.1.2** Areas of retained structural planting, or designated for new structural planting, should be similarly protected, based on the extent of the soft landscaping shown on the approved drawings.

**6.2.1.3** The protected area should be regarded as sacrosanct, and, once installed,

barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority.

**6.2.1.4** Where required, pre-development tree work may be undertaken before the installation of tree protection measures, with the agreement of the project arboriculturist or local planning authority if appropriate (see also **8.8.1**).

**6.2.1.5** It should be confirmed by the project arboriculturist that the barriers and ground protection have been correctly set out on site, prior to the commencement of any other operations.

## **6.2.2 Barriers**

**6.2.2.1** Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). Barriers should be maintained to ensure that they remain rigid and complete.

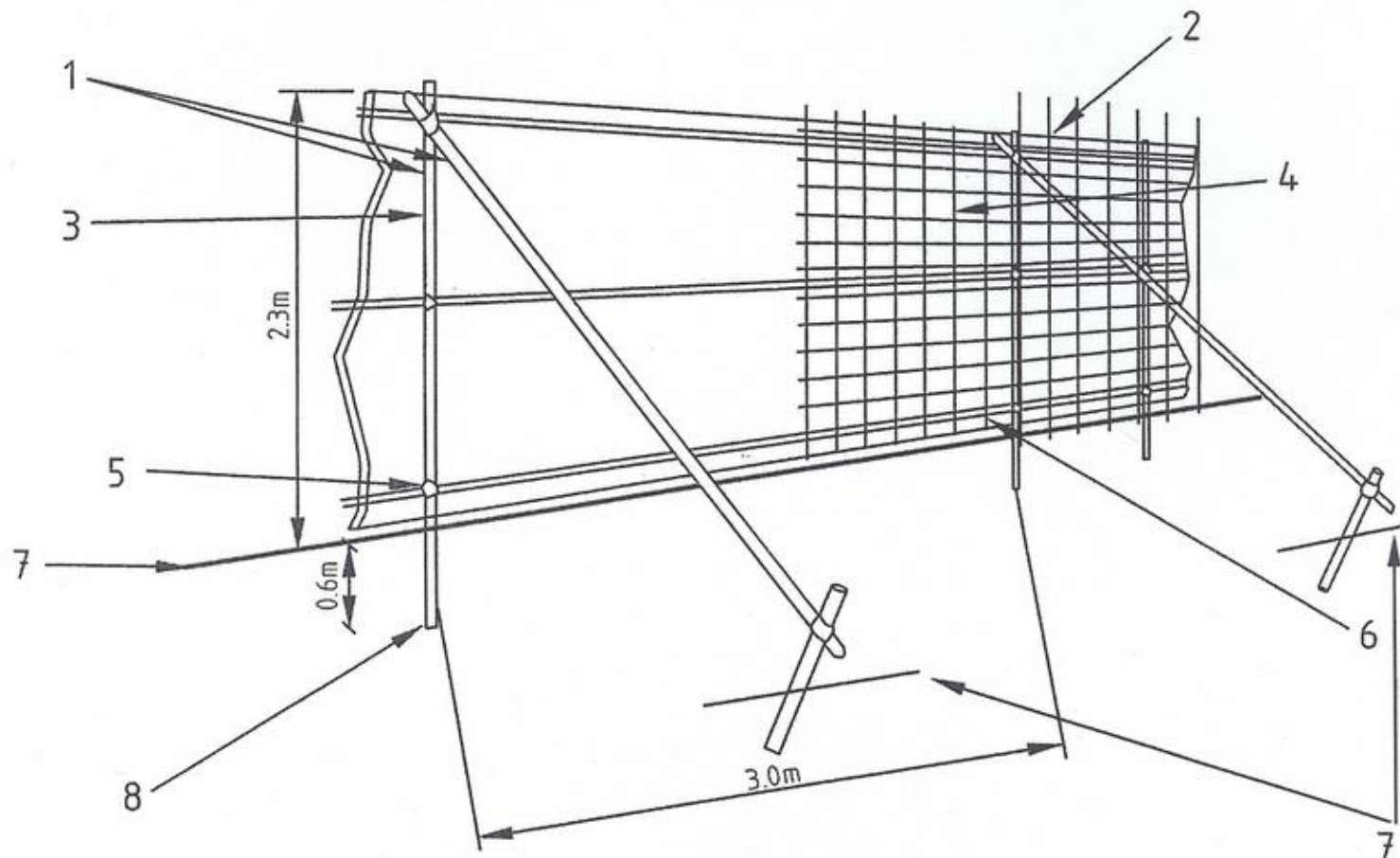
**6.2.2.2** The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2. The vertical tubes should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.

**6.2.2.3** Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority. For example, 2 m tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the

fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

**6.2.2.4** All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".





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

**Figure 2. – Protective fencing for RPA**

**Arboricultural Survey and recommendations for New China Town development (Appendix 1)**

Tree Number	Tree Species (common name)	Physiological Health	Structural Health	Age Classification	Stem diameter at 1.5m (mm)	Height (m)	Lowest Branch to ground (m)	Height above ground (m)	Crown Spread (m)				Root Protection area		Life Expectancy	Preliminary Arboricultural Recommendations and notes	BS5837 Category
									N	S	E	W	Radius (m)	Area (m²)			
T1	<i>Sorbus</i> subg. <i>Aria</i> (whitebeam)	G	F	SM	400	7.6	3	2	3	3	3	3	4.8	72.3	10+	Basal wounding present	C2
T2	<i>Prunus avium</i> (cherry)	F	G	SM	350	9	3	2	2	3	3	3	4.2	55.4	10+	Crown becoming sparse	C2
T3	<i>Acer platanoides</i> (Norway maple)	G	F	SM	350	8.6	3	2	3	4	2	4	4.2	55.4	10+	Basal wounding present	C2
T4	<i>Acer platanoides</i> (Norway maple)	G	F	SM	380	9	3	2	2	2	2	2	4.5	65.3	10+	Basal wounding present	C2
T5	<i>Acer platanoides</i> (Norway maple)	G	F	SM	280	8	3	2	1	3	3	3	3.36	35.5	10+	Basal wounding present	C2

T6	<i>Acer platanodes</i> (Norway maple)	G	F	SM	320	8	3	3	2	2	2	2	3.84	46.3	10+	Leans towards road	C2
T7	<i>Acer platanodes</i> (Norway maple)	F	F	SM	400	9	3	2	3	3	4	3	4.8	72.4	10+	Crown becoming sparse	C2
T8	<i>Prunus avium</i> (cherry)	G	F	SM	320	9	3	2	3	3	3	3	3.84	46.3	10+	Basal wounding present  Presence of bacterial canker	C2
T9	<i>Prunus avium</i> (cherry)	P	G	SM	380	10	3	2	3	3	5	3	4.5	65.3	10+	Western aspect of crown becoming sparse	C2
T10	<i>Prunus avium</i> (cherry)	P	F	SM	380	10	3	2	4	4	4	4	4.5	65.3	10+	Poorly pruned, Basal wound present, evidence of bacterial canker	C2
T11	<i>Acer platanoides</i> 'Royal Red'  (Red Norway Maple)	G	F	SM	320	12	3	2	3	3	3	3	3.84	46.3	20+	Tree currently as expected	B2
T12	<i>Acer platanoides</i> 'Royal	G	F	SM	340	10	3	2	3	3	3	3	4.1	52.5	10+	Wound at 1.5m on northern side of trunk	C2

	Red'  (Red Norway Maple)																
T13	Acer platanoides 'Royal Red'  (Red Norway Maple)	G	F	SM	320	10	3	2	2	2	2	2	3.84	46.3	20+	Tree currently as expected	B2
T14	Dead Tree	P	P	SM	150	6	3	3	0	0	0	0	1.8	10.2	<10	Dead Tree	U
T15	Acer platanoides 'Royal Red'  (Red Norway Maple)	G	P	SM	360	12	3	2	3	3	3	3	4.3	58.3	10+	Large wound possible stress cracking on eastern and western sides of trunk	C2
T16	Acer platanoides 'Royal Red'  (Red Norway Maple)	G	F	SM	340	9	3	2	1	4	4	2	4.1	52.5	10+	Sparse Crown	C2

T17	<i>Sorbus</i> subg. <i>Aria</i> (whitebeam)	G	P	SM	380	8	3	2	4	4	4	4	4.5	64.5	<10	Fire damage to base, bark peeling excessively	C2
T18	<i>Acer</i> <i>platanoides</i> (Norway maple)	F	F	SM	280	9	3	2	3	3	3	3	3.36	35.4	10+	Basal wounding present	C2
T19	<i>Sorbus</i> subg. <i>Aria</i> (whitebeam)	G	G	SM	320	9	3	2	5	5	5	5	3.84	46.3	10+	In adjacent garden	C2
T20	<i>Sorbus</i> subg. <i>Aria</i> (whitebeam)	G	G	SM	320	8	3	2	3	3	3	3	3.84	46.3	10+	In adjacent garden	C2
T21	<i>Fraxinus</i> <i>excelsior</i>  (ash)	G	G	SM	450	10	3	2	5	5	5	5	5.4	91.5	10+	On top of wall low over path	B2
T22	<i>Sorbus</i> <i>acuparia</i>  (rowan)	F	F	SM	200	7	3	2	2	2	2	2	2.4	18.1	10+	Die back in crown on northern aspect	C2
T23	<i>Acer</i> <i>platanoides</i> 'Royal Red'  (Red Norway Maple)	G	F	SM	280	10	3	2	4	4	4	4	3.36	35.4	10+	Wound on lower trunk	C2

[illegible]

[illegible]

## Key

Tree Number	Identifies individual tree on the plan. Plan on map matches that on survey
Species of tree	Identifies tree
Physiological health	Indicated as Good, Fair, Poor or dead (G, F, P,D)
Structural/Mechanical Health	Indicated as Good, Fair, Poor or dead (G, F, P, D)
Age Classification	Y- Young in early life stage SM – Semi Mature Approaching physiological and structural maturity M – Mature At the trees optimal level OM – Tree beginning to decline due to age related change D – Dead
Stem diameter at 1.5m	Indicator of size
Height of lowest branch	Height measured in meters from the floor to the lowest branch union
Height above ground	Height measured in meters from the floor to the lowest branch tips.
RPA radius and area	Gives figures for root protection area
Useful life expectancy	Gives an indication as to the overall quality of the tree for the classification
Preliminary arboricultural recommendations	These are recommendations based upon sound arboricultural reasoning rather than to facilitate the development
BS5837:2012 categories	U = Trees unsuitable for retention. Trees 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.  A = Trees of high quality. Trees of high quality with an estimated remaining life expectancy of at least 40 years.  B = Trees of moderate quality. Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. These trees are shown on the tree plans with blue centres.  C = Trees of low quality. Trees of low quality with an estimated remaining life expectancy of at least 10

	<p>years, or young trees with a stem diameter below 150mm.</p> <p>Sub=categories</p> <p>Trees of notable quality are graded as Category A or Category B. These trees are divided further into sub-categories. Sub-category 1 is allocated where it has been assessed that the tree has mainly arboricultural qualities. Sub-category 2 is allocated where it is assessed that the tree has mainly landscape qualities. Sub-category 3 is allocated where it is assessed that the tree has mainly cultural qualities, including conservation.</p> <p>Trees can be allocated more than one sub category</p>
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To be used in conjunction with attached tree plan.

### **Map Key**

Key to plan

Trees on plan allocated colours as per BS5837: (2012) Trees in relation to design, demolition and construction.

### **Identification of tree categories**

U Dark red 127-000-000

A Light green 000-255-000

B Mid blue 000-000-255

C Grey 091-091-091

The root protection zones are outlined in orange

Reference:

BS5837: (2012) Trees in relation to design, demolition and construction