



**TREE SURVEY
AND
ARBORICULTURAL IMPACT
ASSESSMENT**

AT

**WIDE LANE/SOUTH STREET
PROPOSED SIGNALISED JUNCTION
EASTLEIGH**

MAY 2006

Carried out by:

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CONTENTS

| | Page No. |
|--|-----------------|
| INTRODUCTION | 2 |
| THE SITE | 2 |
| THE SURVEY | 3 |
| DETAILED FINDINGS | 3 |
| ARBORICULTURAL IMPLICATION ASSESSMENT | 4 |
| CONCLUSIONS AND RECOMMENDATIONS | 4 |
| RECOMMENDATIONS- SOUTH STREET TREE PLANTING | 6 |
| | |
| APPENDIX 1- TREE SCHEDULE | 7 |
| APPENDIX 2- SPECIFICATION FOR TREE PLANTING | 10 |
| APPENDIX 3 -TREE SURVEYOR'S CV | 14 |

1. Introduction

- 1.1 On instructions received from the client, Neil Smith of PBA Consulting undertook a further ground level, visual assessment of the trees at the junction of Wide Lane and South Street, Eastleigh. The purpose of the survey was to assess the likely impact on any trees within the proposed new road widening scheme, in accord with *BS 5837: 2005 Trees In Relation To Construction* and to provide detailed mitigation measures to protect any trees that may be affected.
- 1.2 As part of the brief recommendations are also provided for the new tree planting proposed within South Street.
- 1.3 For the purposes of this survey we were provided with drawings by the client. Most tree positions were marked on the drawing No.TS0405/070. The drawing was annotated on site with a logical numbering sequence to identify all the trees within the proposed Section 278 works and to enable the colour coded site plan for the trees to be completed by the client's architect in accordance with *BS 5837:2005*.
- 1.4 Any additional trees surveyed have been manually plotted on drawing No.TS0405/070
- 1.5 Tree dimensions are also shown on the topographical survey drawing No.TS0405/070 prepared by the client and details, where appropriate, have been amended within this report.
- 1.6 For completeness the colour classification as required in BS5837:2005 is shown within the schedule of trees.

2. The Site

- 2.1 The proposed new Section 278 widening of the road is at Wide Lane, Eastleigh at the junction with South Street, as marked on the drawing provided ES0405/070.

3. The Survey

3.1 The condition, form and work required to each tree has been assessed and detailed in accord with *BS5837: 2005 Trees In Relation To Construction*, applying best arboricultural practice and taking into consideration the requirements of (any proposed development) as appropriate. The assessment also includes the likely impact of the proposed works on trees and any mitigating measures to reduce this impact. The dimensions of each tree had already been recorded by the land surveyor as noted above and where appropriate, has been amended and recorded within the tree schedule in Appendix 1.

3.2 The 'code' given to each surveyed tree is the classification of the tree's suitability for retention, in accordance with *BS5837: 2005 Trees in Relation to Construction*. The key to this classification system is as follows: -

Category R - Trees for removal (to be identified on tree location plan in dark red).

Category A – Those trees of high quality and value (to be identified on tree location plan in light green)

Category B – Those trees of moderate quality and value (to be identified on tree location plan in mid blue)

Category C - Those trees of low quality and value (to be identified on tree location plan in grey)

The justification for the particular classification of each tree surveyed is given in the "notes" columns in the attached tree schedule within Appendix 1.

4. Detailed Findings

4.1 There are eleven mature trees within this proposed Section 278 widening scheme along Wide Lane .

4.2 All eleven trees appear to be highway owned trees.

4.3 All trees, but one, are situated in the grass verge on the south east side of the road and all are within 1.5-2m of the road edge. These are limes and range from 7 to 15m tall. They are all in good condition and of excellent form and their useful life expectancy are estimated to be over 40 years.

- 4.4 There is a mature 6m cherry tree on the south west side of the road which is amongst hedgerow and is in fair condition. Its useful life expectancy is estimated to be up to 20 years.
- 4.5 In accordance with BS5837 and due to their importance as significant avenue trees all of the ten trees on the southeast side would be considered category A1 for retention within any proposed scheme.
- 4.6 The mature cherry is considered to be C1 category and has no special significance and does not qualify for higher grading.
- 4.7 Full details of the eleven trees are given in the tree schedule in Appendix 1.

5. Arboricultural Implication Assessment

- 5.1 Following inspection it appears that six mature lime trees may be significantly affected by the proposed widening works.
- 5.2 The scheme shows the widening of the road and a new kerb to tie into the existing kerb line which is proposed to cut through the middle of four trees, numbered 4 to 7. The impact on these trees is obviously high and the proposed scheme will require the felling of these 4 trees.
- 5.3 It appears that trees numbered 3 and 8 will be affected by the proposed works. New kerb alignments will run within the crown spread of these trees. The impact should be less significant and their safe retention should be secured provided adequate mitigation measures are put in place. (See paragraph 6.3)
- 5.4 All other trees should be unaffected by the proposed widening scheme based on the detailed plans. Space within the verge appears to be limited and it does not appear feasible to amend the scheme to allow for the retention of the four mature lime trees.

6. Conclusions and Recommendations

- 6.1 It is recommended that trees 4 to 7 (four in total) are felled before construction work commences.
- 6.2 To compensate for the loss of such valuable trees at least four semi-mature lime trees should be replanted. A recommended specification for planting and importantly the aftercare is given in Appendix 2. The number and location of replacement trees should be agreed with the client and Hampshire County Council (HCC).

- 6.3 Trees 3 and 8 should be retained and protected during construction work. From the survey findings and Arboricultural Implication Assessment, root protection areas have been calculated in accord with *BS5837:2005 Trees in Relation to Construction* and plotted manually on the drawing No.TS0405/070. This is required to avoid damage to these trees and root areas during construction and to allow protection fences to be located. These areas should be treated as exclusion zones for any construction works or storage areas. No machinery or heavy movement should be allowed over the root protection areas.
- 6.4 Trees 3 and 8 and all remaining category A1 trees should be retained and protected during construction work by the use of fencing erected before any work commences. This fencing should be erected to protect the root protection areas as designated in paragraph 6.3 and on drawing No.TS0405/070. The fencing should be 2.3m high and supported on a scaffold framework as detailed in *BS5837:2005 Trees in Relation to Construction*, paragraph 8.2.3. The use of weld mesh panels is recommended. Care should also be taken to avoid changes in soil level and drainage regimes inside the root protection areas of the retained trees.
- 6.5 Furthermore, to mitigate and minimise any other potential damage during works it is also recommended that the stems of trees 3 and 8 be protected, from ground level to the first branch, by encasing in a sturdily constructed timber box of marine ply or similar 1m from the tree.
- 6.6 No work should be carried out within 1.2m of the base of the trees 3 and 8.
- 6.7 During trenching works within the crown spread of trees mechanical methods should not be used. Hand digging should be adopted in accordance with *BS5837:2005* guidelines. Moreover, due to the close proximity of probable works it is recommended that an arboricultural consultant should be in attendance to monitor the works and provide supervision for any root severance or stability issues.
- 6.8 Also prior to trenching work commencing around the trees at least 1 weeks notice shall be given to HCC so that they may be in attendance if any significant roots (over 25mm) are severed. The impact on these trees during these works may be significant although it is unlikely that stability will be affected. If in the unlikely event that the tree has to be removed a suitable replacement will be planted by Bovis Homes, the size and type to be agreed with HCC.

- 6.9 Because several of the trees have low crowns which will affect works and clearance, work will be required to crown lift trees numbered 1, 2, 3 and 8 to a minimum of 5.3m above ground level up to a maximum of 6m. This should be carried out prior to construction work commencing.
- 6.10 Because the category C1 tree is of less significance and should not be affected by any works no special protection measures are warranted.
- 6.11 Care should also be taken to avoid changes in soil level and drainage regimes close to retained trees.
- 6.12 Drift maps and building details have not been studied, and the retention recommendations above assume that the construction methods will be adequate to remove any potential subsidence risk.
- 6.13 The scheme does not show service runs. The positioning of services should be planned with due consideration for the protection of the trees, and any excavation work should follow the guidelines in *National Joint Utilities Group Publication No 10 - Guidelines for the planning, installation and maintenance of utility services in proximity to trees and BS5837:2005 Trees in Relation to Construction*, paragraph 11.7.

7. Recommendations- South Street Tree Planting

- 7.1 Because of the limited planting space within the verges and proximity of buildings new trees proposed for planting along South Street should have a compact habit and provide, if possible, good year round interest.
- 7.2 The trees recommended are as follows: -
- Prunus Spire -a fine, small upright cherry,
 - Betula ermanii- a birch tree with good habit and year long interest,
 - Acer campestre Elsrijk – a good conical form of field maple
 - Prunus Pandora – a small cherry with ascending branches
- 7.3 The type of tree suggested and planting locations are shown on drawing No.TS0405/070.
- 7.4 The trees should be specified as extra heavy standard trees of 14-16cm girth, root balled or container grown (if planted in the growing season) and it is recommended that below ground staking methods be used.

Appendices

Appendix 1
Tree Schedule

WIDE LANE/SOUTH STREET, EASTLEIGH
 TREE IMPACT ASSESSMENT

| Tree Ref. No. | Species | Common Name | Age | Height (m) | Stem Diameter. (mm) | Crown Spread NE/SW | Crown Class | Condition | Defects | Work Needed | Estimated useful life (Years) | BS 5837 Class | Root Protection Area(RPA) m2 | Notes |
|---------------|----------------|------------------|--------|------------|---------------------|--------------------|-------------|-----------|---------|---------------------|-------------------------------|----------------|------------------------------|---|
| 1 | Tilia cordata | Lime | Mature | 12 | 400 | 5/3/5/5 | Dominant | Good | | Crown lift to 6 | >40 | A1 Light Green | 72 | Excellent avenue tree |
| 2 | Tilia cordata | Lime | Mature | 14 | 500 | 6/4/6/6 | Dominant | Good | | Crown lift to 6 | >40 | A1 Light Green | 113 | Excellent avenue tree |
| 3 | Tilia cordata | Lime | Mature | 15 | 500 | 6/4/6/6 | Dominant | Good | | Crown lift to 6-7m | >40 | A1 Light Green | 113 | Excellent avenue tree /Close to new kerb line |
| 4 | Tilia cordata | Lime | Mature | 10 | 400 | 4/2/4/4 | Dominant | Good | | Fell | >40 | A1 Light Green | | Excellent avenue tree |
| 5 | Tilia cordata | Lime | Mature | 12 | 450 | 6/4/6/6 | Dominant | Good | | Fell | >40 | A1 Light Green | | Excellent avenue tree |
| 6 | Tilia cordata | Lime | Mature | 7 | 350 | 3/2/3/4 | Dominant | Good | | Fell | >40 | A1 Light Green | | Excellent avenue tree |
| 7 | Tilia cordata | Lime | Mature | 14 | 450 | 4/2/4/5 | Dominant | Good | | Fell | >40 | A1 Light Green | | Excellent avenue tree |
| 8 | Tilia cordata | Lime | Mature | 15 | 500 | 5/3/5/5 | Dominant | Good | | Crown lift to 6-7m | >40 | A1 Light Green | 113 | Excellent avenue tree /Close to new kerb line |
| 9 | Tilia cordata | Lime | Mature | 8 | 400 | 3/2/3/4 | Dominant | Good | | No preliminary work | >40 | A1 Light Green | 72 | Excellent avenue tree Fair vitality |
| 10 | Tilia cordata | Lime | Mature | 12 | 400 | 5/3/5/5 | Dominant | Good | | No preliminary work | >40 | A1 Light Green | 72 | Excellent avenue tree |
| 11 | Prunus species | Flowering Cherry | Mature | 6 | 300 | 3/3/3/3 | Dominant | Fair | | No preliminary work | >20 | C1 Grey | 40 | No special significance |

Appendix 2
**Specification for Tree Planting
and Maintenance**

The replacement trees shall be specified as root balled extra heavy standard lime trees, *Tilia cordata* 'Greenspire', at a girth of 30-35cm. The specification for planting and maintenance should be as follows: -

- The planting pits should be dug to a size of 1.5m x 1.5m and to a depth of 1.5m.
- The subsoil in the pit base shall be broken up and the sides of the pit scarified. Any existing topsoil shall be set aside for use as backfill and the remainder removed to an appropriately licensed tip off the area provided by the contractor. On no account shall pits be left open overnight.
- Imported topsoil to BS3882 general grade shall be used to make up shortfall of backfill. The backfill shall comprise the best of the excavated soil (or new topsoil if this does not conform to the topsoil specification) and an approved compost (peat free) in an 80% topsoil. 20% compost mixture that is thoroughly mixed.
- A 75mm diameter perforated plastic irrigation pipe shall be inserted during planting, of sufficient length to coil around the root system or root ball.
- To secure the new trees an underground-anchored guying system shall be installed, with cross-bracing over the root ball and turnbuckles for adjustment. Proposed method to be submitted by the contractor to the Bovis engineer for approval.
- Each tree shall be well watered in to field capacity on the same day as planting. To ensure successful establishment of the trees the contractor shall carry out the watering during any prolonged dry period. A minimum quantity of 100 litres of water shall be applied to each tree or more as needed to return soil to field capacity, at weekly intervals until such time as sufficient normal seasonal rainfall occurs. The contractor shall only terminate these additional watering operations when agreed with an engineer from Bovis Group. Before the first application of water and after any break of more than five weeks, the ground surface around the tree for a radius of 500mm shall be loosened with a fork to aid penetration into the soil. The water shall be applied at a steady rate to avoid run off to the surrounding area.

- The contractor shall ensure that there is no delay in the execution of watering by obtaining all necessary licenses and permissions from the relevant water authorities for the efficient execution of watering on any particular site including stand pipes, pressure reducing valves, hoses, bowsers, pumps, sprinklers and the like, so that work can proceed without delay.
- Water to the trees shall be applied either by low pressure hose or through irrigation hoses to the base of the plants ensuring thorough soaking of the ground occupied by the root system of the plant. Where necessary the contractor shall fork or form a depression around the stem base of the plant to ensure that water reaches the root zone and does not run off at the surface onto the surrounding ground.
- The contractor shall supply and spread timber mulch 1m around newly planted trees, to a depth of 75mm after settlement.

The newly planted trees shall be included in a maintenance contract for a period of 3 years to ensure that successful establishment is ensured. The trees shall be inspected twice a year (every 6 months) and maintained as follows: -

- Irrigation, (minimum quantity per tree-100 litres), as necessary throughout the season, sufficient to return pit soil and root-ball to field capacity at each time of watering
- Inspection and adjustment of tree anchoring systems if required
- All weeds removed from around the base of the tree; to a radius of 500mm, by hand and/or chemical means as appropriate.
- Formative pruning (including epicormic shoots) and removal of deadwood.
- Replacement of any dead/defective trees for 3 years following planting.
- Topping-up of organic mulch to weed-free circle, where it exists.
- Reporting to an engineer any defects requiring further action.

WIDE LANE/SOUTH STREET, EASTLEIGH
TREE IMPACT ASSESSMENT

The client will arrange a meeting at the end of the 3 year period of maintenance with the arboricultural consultant and HCC to determine whether the trees have successfully established and are ready for suitable adoption by the Highway department.

APPENDIX 3

Curriculum Vitae for Neil Smith

Curriculum Vitae for Neil Smith

KEY QUALIFICATIONS National Diploma in Arboriculture
National Certificate in Horticulture
ATB Management Courses A & B

SUMMARY OF EXPERIENCE Neil has over 20 years experience in horticulture and arboriculture. He has held various positions in the private sector and local authorities as Horticulturist, Arborist/Landscaper; Arboricultural Officer, Assistant Planning Officer and has gained a thorough knowledge of all aspects of local authority and highway tree care practices.

He has been involved in the private sector and produced reports and given advice on a wide range of tree related matters.

Neil has extensive experience in tree inspection and survey techniques using GIS/GPS systems and arborsonic decay detection equipment.

Neil is also experienced in conservation, contract management, strategy development, planning and tree law.