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## **CONSULTANT ARBORIST**

### **ARBORISTS REPORTS**

#### **TREE SURVEYS & DIAGNOSIS**

INSTRUCTOR: CHEMICAL USER ACCREDITATION AQF LEVEL 3 & 4

## **ARBORISTS REPORT: TREES AT PROPOSED INDUSTRIAL DEVELOPMENT LOT 10 (no. 50) WYLLIE RD KEMBLA GRANGE**

*Prepared for:* TCG Planning a/c BiCorp Pty Ltd

### **SITUATION**

The subject site is a 21.72 ha building material storage and recycling facility, where expansions are proposed on the eastern section of the Lot. The KF Williams plan supplied for this report indicates widening of the entrance road, proposed new workshop and training room, with associated infrastructure such as hard surfacing for parking. The Ochre Landscape Plan incorporates these.

The landform containing the trees of interest forms an amphitheatre facing west from the high ground on the Wyllie Road frontage.

The Dennis Smith survey supplied (marked-up with the affected trees on page 2) recorded two groups of wattles, a large Moreton Bay Fig tree with two individual wattles adjacent, and two small groups of palm trees.

The arborist's site inspection on 3.12.2012 located these surveyed trees (tree groups) which, with the exception of Cocos Palms, come within Wollongong City Council's DCP 2009 Chapter E15 Section 9.4 *Preservation and Management of Trees and Vegetation* reporting requirement. Two other small trees of interest close to the large Moreton Bay Fig tree (a juvenile Fig and a Whalebone Tree) were added to the page 2 plan, for the record.

### **REPORT METHODOLOGY**

The two wattle thickets were found to be monocultures of *Acacia mearnsii*, colonising the disturbed land "vacuum" created by earlier clearing of the site. These Mearns Wattles, along with the two small groups of mixed Palms, were identified by species and average specifications, and shown generically in the report in their respective groups.

Several individual trees of interest (including the Moreton Bay Fig) were reported individually. The location numbers are marked-up on the page 2 plan.

#### **Inspection criteria and limitations**

Provenance, specifications, observable health & structural condition, and from this the Safe Useful Life Expectancy ("SULE") rating determined using the Barrell 1.4.01 format (see p. 12 glossary).

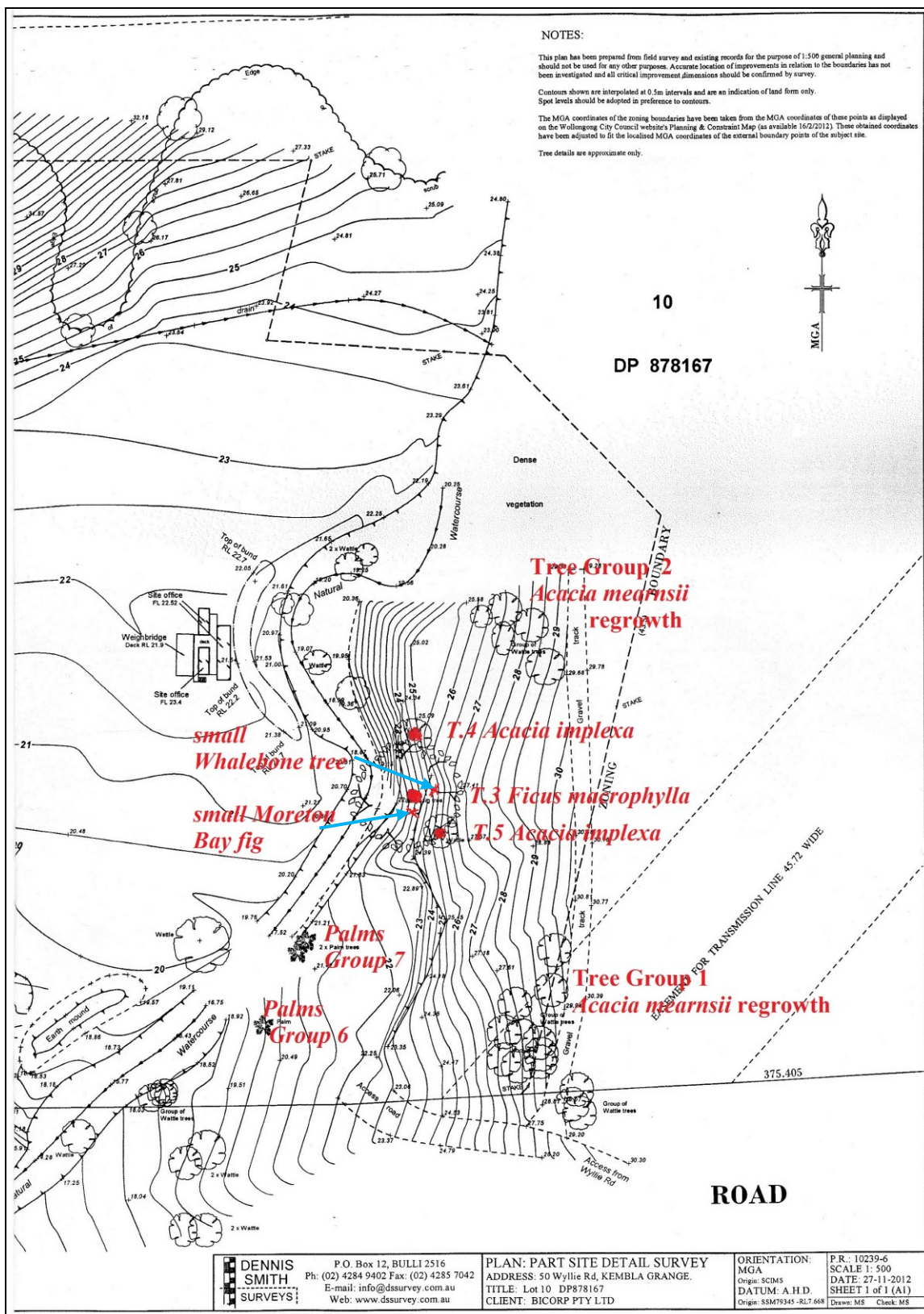
- Note that SULE ratings cannot predict the impact of extreme weather events on the subject trees, or necessarily detect internal defects in trunk or root plate. Expect shedding of canopy material from time to time as a natural occurrence on any tree.

### **THE REPORT**

**Part 1 Tree inspection summaries (pages 3-8)**

**Part 2 The trees and the development (page 9-11)**

The tree location plan follows



Dennis Smith survey, marked-up with trees of interest for this report. The unlabelled trees in the watercourse are out of the project zone. The red dashed line shows the TPZ fencing for the Fig tree



## REPORT PART 1: INSPECTION SUMMARIES

### GROUP 1 *Acacia mearnsii* Mearns Wattle (see plan page 2)

A dense thicket of sapling *Acacia mearnsii* on the north side of the entrance to the site, with 12 older *A. mearnsii* terminating the group at the north-west end.

The young Mearns Wattles formed a dense thicket, averaged 8m tall x 1m canopy radius, DBH 10cm, etiolated (tall, spindly), with a *Lantana camara* understory. Based on the specifications of these wattles, this portion would have been cleared about 10 years ago.

The older Mearns wattles are well into senility, typical fast growing short-lived pioneer types, now infested with Longicorn borer. They averaged 9m tall x 4m canopy radius, DBH 23cm



Views of the sapling wattle regrowth, on the right entrance into the site.



Just downhill from the saplings some senile wattles remain from earlier clearing

- The Group 1 Wattles are proposed for removal in the project

**GROUP 2 *Acacia mearnsii* Mearns Wattle** (see plan page 2)

These are mature wattles at the north end of the project area. Whilst not physiologically senile, they reflected injury from machinery activity in the past (presumed during unloading of sandstone boulders).

Their average specifications were: height 11m canopy radius 4m, DBH 18-20cm.



As noted above, these Mearns Wattles appeared in satisfactory physiological condition but a closer inspection shows most have extensive trunk damage and a mediocre prognosis.

- **The Group 2 Wattles are proposed for removal in the project**



### **TREE 3 *Ficus macrophylla* Moreton Bay Fig** (see plan page 2)

This is the visually dominant tree in the study area. Whilst not of great age, its height and high-branching single-trunk stature suggest development in a forest environment. It is growing on the steep hillside and has extended extensive roots, particularly downhill west.

**Specification:** age: mature (not aged); height 22m x canopy radius av. 14m; DBH (above buttresses) was 130cm.

**Inspection notes** (*illustrative photos follow next page*).

- Canopy thinned, now about 70% expected of a full canopy; foliage healthy, strong latex stream to distal branchlets; Fig Psyllid present but negligible. New season's leaves developing normally.
- There is one large decaying stub at 11m up west side.
- The primary trunk has a vertical fissure mid-trunk.
- Noted also a 2m fissure into the butt of the Fig (south side) complete with a bees nest inside (European honey bee, not native bees).

### **Safe Useful Life Expectancy (SULE)**

Considered physiologically healthy and sound enough to retain, conservatively rated SULE Category 2 (to 40 years).



View of the Fig from the south side. The left arrow points to the juvenile Moreton Bay Fig, the right arrow indicates location of the Whalebone Tree (*Streblus brunonianus*), both shown on the p.2 tree location plan. These two are to be retained in the Fig's reserve (see Report Part 2 page 10).



Decaying stub, 11m up



Cavity in the base south (appears a result of fire), occupied by a European honeybee's nest



Fissure in the trunk. The Fig leaves in the photo lower left are a healthy juvenile 8m tall *Ficus macrophylla*



Extensive surface root buttressing on the steep hillside

- **Tree 3 Moreton Bay Fig (and the juvenile Fig and Whalebone tree at the base) is to be protected and retained in the project**

**Tree 4 *Acacia implexa* Hickory** (see plan page 2)

This specimen is located north of the Fig, a mature example of Hickory.

**Specifications:**

Age: mature; height 9.5m x canopy radius 5.5m; DBH 44cm

**Inspection notes**

Canopy healthy but structurally compromised by codominant trunk fork at 2.5m up. It will split apart in due course.

**Safe Useful Life Expectancy (SULE)**

Poor structural prognosis, rated SULE Category 3 (5-15 years at best).

- **Tree 4 is recommended for removal.**



Codominant trunks on T.4 will split apart

**Tree 5 *Acacia implexa* Hickory** (see plan page 2)

This hickory is just south-east of the Moreton Bay Fig.

**Specifications**

Age: mature; height 8m x canopy radius 5m; DBH 35cm

**Inspection notes**

Canopy healthy but with about 15% dieback, mostly in the lower canopy.

High competition from *Lantana camara*.

**Safe Useful Life Expectancy (SULE)**

A longer-lived wattle than the Mearns Wattles, rated SULE Category 2 (15+ years)

- **Tree 5 is a candidate for removal (see report Part 2) in context of creating a reserve to retain and improve the growing conditions of the nearby Moreton Bay Fig.**



### GROUP 6 Mixed Palm species (see plan p.2)

Discrete group comprising:

- Juvenile Washington palm (*Washingtonia robusta*) 2m tall
- Mature Cocos Palm (\**Syagrus romanzoffianum*) 7m tall
- Two juvenile Cocos Palms 4m and 4.5m tall.

\*Note that *Syagrus romanzoffianum* is exempt from Council's tree Management Order



The leafy tree in the foreground is a Mulberry, Cocos behind left of frame, and the juvenile Washington Palm bottom right of the photo. The palm seen on the bottom left is a seedling of Phoenix Palm

- **Palm Group 6 is proposed for removal**

### GROUP 7 Mixed Palm species (see plan p.2)

Another discrete group comprising

- Two Cocos palms both 9m tall
- Two juvenile Alexander Palms (*Archontophoenix alexandrae*) 4m tall



Cocos Palm in the foreground, smaller Alexander Palms on the right

- **Palm Group 7 is proposed for removal**



## PART 2: THE TREES AND THE DEVELOPMENT

Part 1 of this report provided an inventory of trees in the area designated for this report.

### 2.1 Trees in/trees out

In summary, the following outcomes are proposed in the project:

- Group 1 regrowth *Acacia mearnsii* **Proposed for removal**
- Group 2 regrowth *Acacia mearnsii* **Proposed for removal**
- Tree 3 Mature *Ficus macrophylla* **Proposed for retention** (details follow)
- Tree 4 Mature *Acacia implexa* **Proposed for removal**
- Tree 5 Mature *Acacia implexa* **Proposed for removal**
- Group 6 3x Cocos and 1 juvenile Washington Palm **Proposed for removal**
- Group 7 2x Cocos Palms and 2 juvenile Alexander Palms **Proposed for removal**

### 2.2 Notes on retaining Moreton Bay Fig T. 3 safely for the long term

Impacts that would be injurious and/or eventually lethal to this Fig tree would be:

- Disruption of the root zone, including “cut”, fill (placement of fill or concrete surfaces).
- Intrusions such as excavation through the root zone for underground services.
- Seepage of industrial effluent including cleaning agents, washdown chemicals, fuel/oil.

To avoid this, the following restraints apply:

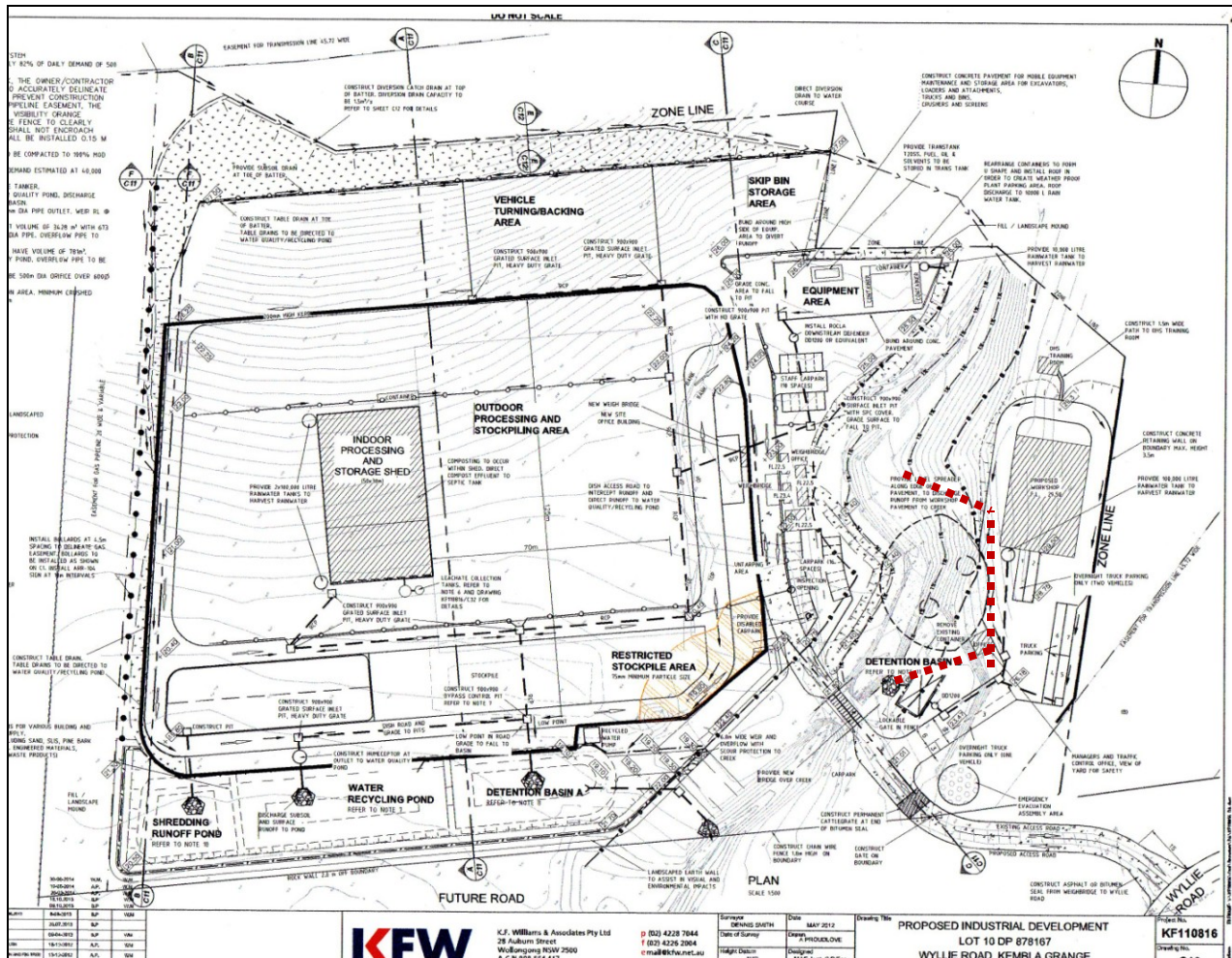
- Retain a reserve : 20m downhill towards watercourse (west) x 20m uphill (north) x 20m (south) x 11.5m (east). There is already rubble and fill starting at 11.5m east of the tree.
- Remove the Hickory Wattles 4 & 5 (simply by cutting out with a chainsaw, not heavy machinery) which will disrupt the Fig’s roots.
- Remove the Lantana infestation.
- Retain the small Whalebone Tree east of the Fig, and the young Moreton Bay Fig about 7m south-west of the Fig (locations on p.2 plan). The young, very healthy Fig is good insurance if something happens to the large Fig, such as extreme storm damage.
- Securely quarantine the Fig’s reserve on the works (i.e. east) side with a steel picket and ribbon fence (known as a *Tree Protection Zone/TPZ* exclusion fence).
- No works (apart from Lantana & Hickory removal) within this zone, as listed in the “impacts” described above.



The dashed line demarks the “fill” line measured at 11.5metres east from the trunk.  
The Fig’s trunk is obscured in the background by Lantana

### 2.3 Notes for the Landscape Architect

- Please mark-out the TPZ enclosure on the landscape plan.
- Please add tree groups or tree numbers as on the page 2 plan.
- Please add plan notations regarding trees in/trees out corresponding to the list above.
- Please add notations that the Whalebone Tree (which will be ribboned by the arborist for identification) and juvenile Moreton Bay Fig are to be retained in the Fig reserve.
- After clean up of the Lantana and removal of the two wattles (T.'s 4 & 5) the area under the Fig should be deeply mulched with woodchip produced by the tree removals.



The KFW July 2014 plan as shown above conforms to the Fig protection measures set out in the preceding text. The TPZ sequence is elaborated in Part 2.4 next page.

## 2.4 Tree Protection Zone (TPZ)

In practical terms, the TPZ stipulated and marked-up on the plan in Part 2.3 requires the following:

- The arborist to ribbon (or paint) the trees in the Fig TPZ to “flag” the retained trees (Whalebone Tree & juvenile Fig) and removals (Hickory Wattles tagged 4 & 5)
- Remove the two Hickories 4 & 5 (by chainsaw not machinery) and the Lantana.
- Spread woodchip mulch (available from removal of wattles etc) over the TPZ area, up to 100mm thick
- Install a steel picket fence with high visibility ribbon along the TPZ line (in red on page 10 plan) or, if practical, building-site exclusion weldmesh panels.
- Ensure operators preparing earthworks and building the structures just east of the Fig understand the stipulations to protect the Fig (see Part 2.2 page 9), and this is a no-go zone.
- The Council will require the arborist to certify these measures are undertaken *before* work starts. Note that arborists cannot provide retrospective certification.

As the photo on page 5 indicates, the Moreton Bay Fig will be a distinctive landscape feature enhancing this industrial site, and this is appreciated by the site owners. A drip irrigation system added under the canopy will greatly assist the Fig’s health in dry periods.

## END OF REPORT

Glossary of inspection terms follows



## Tree inspection definitions

Co-dominant trunks: may occur where a trunk divides with a narrow fork, which tends to wedge apart over time, set up hairline partition and a decay court inside the fork, which may split in time (various indicators if this is occurring).

DBH: this is the trunk diameter in centimeters at “breast height”, this taken to be 1.5m above ground level.

Deadwood: expected on mature trees – to a degree. Beyond a point, the percentage of deadwood in the overall canopy will downgrade the SULE prognosis. In some cases, may indicate a progressive dieback pattern, or limb death caused by termites.

Epicormic branches: brittle-attached leafy shoots or branches, usually sprout from the trunk or limbs, as response to unsuitable environment (“stress”), fire, “lopping” or natural senility. Beyond a point, the percentage of epicormics in the overall canopy will downgrade the SULE prognosis.

Lesion: (generic) refers to any localised pathology such as decay, disease, infected wound, morbid tissue.

Provenance: Australian or exotic centre-of-origin of the species

TPZ: secure exclusion fencing as indicated by the arborists report and/or Landscape Plan

## SAFE USEFUL LIFE EXPECTANCY “S.U.L.E.” CATEGORIES (Barrell Jan 2001 update)

**1. LONG SULE (40+ years):** *Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.*

**1a)** Structurally sound trees located in positions that can accommodate future growth.

**1b)** Trees that could be made suitable for retention in the long term by remedial tree care.

**1c)** Trees of special significance for historical, commercial or rarity reasons that would warrant extraordinary efforts to secure their long term retention.

**2. MEDIUM SULE (15-40 years)** *Trees that appeared to be retainable at the time of assessment for 15-40 years with an acceptable level of risk.*

**2a)** Trees that may only live between 15 and 40 years.

**2b)** Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.

**2c)** Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.

**2d)** Trees that could be made suitable for retention in the medium term by remedial tree care

**3. SHORT SULE (5-15 years)** *Trees that appeared to be retainable at the time of assessment for 5-15 years with an acceptable level of risk.*

**3a)** Trees that may only live between 5 and 15 years

**3b)** Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.

**3c)** Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.

**3d)** Trees that require substantial remedial care and are only suitable for retention in the short term

**4. REMOVE** *Trees that should be removed within the next 5 years.*

**4a)** Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.

**4b)** Dangerous trees because of instability or recent loss of adjacent trees.

**4c)** Dangerous trees because of structural defects including cavities, decay, included bark, wounds, poor form.

**4d)** Dangerous trees that are clearly not safe to retain.

**4e)** Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.

**4f)** Trees that are damaging or may cause damage to existing structures within 5 years.

**4g)** Trees that will become dangerous after the removal of other trees for the reasons given in a) to f).

**4h)** Trees in categories a) to g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.