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Vegetation Management Plan

1 Fairway Drive, Clear Island Waters
Lot 2 RP229324

Client: Surfers Paradise Golf Club
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1.0 Introduction

Urban Forest Concepts has been appointed by the *Surfers Paradise Golf Club* to prepare vegetation management documentation relating to maintenance, public safety and ongoing operation of the existing facility in general accordance with provisions of the following policies:

- *AS4970 – 2009: Protection of Trees on Development Sites*.
- *AS4373 – 2007: Pruning of Amenity Trees*.
- *GCCC City Plan s9.4.14 – Vegetation Management Code*.

Trees are a significant aspect of life in both urban and regional areas, providing many benefits to people and communities. Some of these benefits include climate moderation, enhancement of air quality and increase in property value as well as amenity/aesthetic significance.

Notwithstanding, all vegetation has the potential to become an unacceptable risk at some point and wherever trees are present, people, property/infrastructure and activities are potentially at risk of injury, damage or disruption.

An automatic condemnation of trees to 'be on the safe side' is however often not a desirable outcome for the wider built environment in the statutory sense, and landholders/asset managers instead have a duty-of-care to take a proactive and balanced approach to accepting and managing that risk. Benefits include identification of potentially high-risk situations before accidents/damage occur and determination of acceptable mechanical integrity (either existing or via remedial canopy/root works).

While it is not possible to eliminate all vegetation hazards, the primary goal of tree assessment is to minimise and manage that risk to a reasonable/practical level via a systematic approach over a specific horizon, while also recognising and incorporating their value into the built environment.

This is accomplished during qualitative vegetation assessment via determining the variables for probability and consequence of either tree failure and/or damage to identified human/ property assets.

Collectively these factors are used to categorise the level of risk, which inform pragmatic 'on-ground' recommendations for resolving the vegetation management objective over a structured timeframe, and a budget forecast for achieving the highest visual amenity and landscape character appeal within the urban context.

2.0 Site Details

The subject site is situated at 1 Fairway Drive, Clear Island Waters, and incorporates the following registered allotment:

- **Lot 2 RP229324**

This site is designated within the 'Sport and Recreation' Zone under provisions of Gold Coast City Council's *City Plan* document (refer **FIGURE 1**).

FIGURE 1: Zoning Map Excerpt (Source: GCCC Planning Scheme)

The site is additionally designated within the 'Urban Footprint' Regional Landuse Category of the *SEQ Regional Plan 2009 – 2031* (refer **FIGURE 2**).

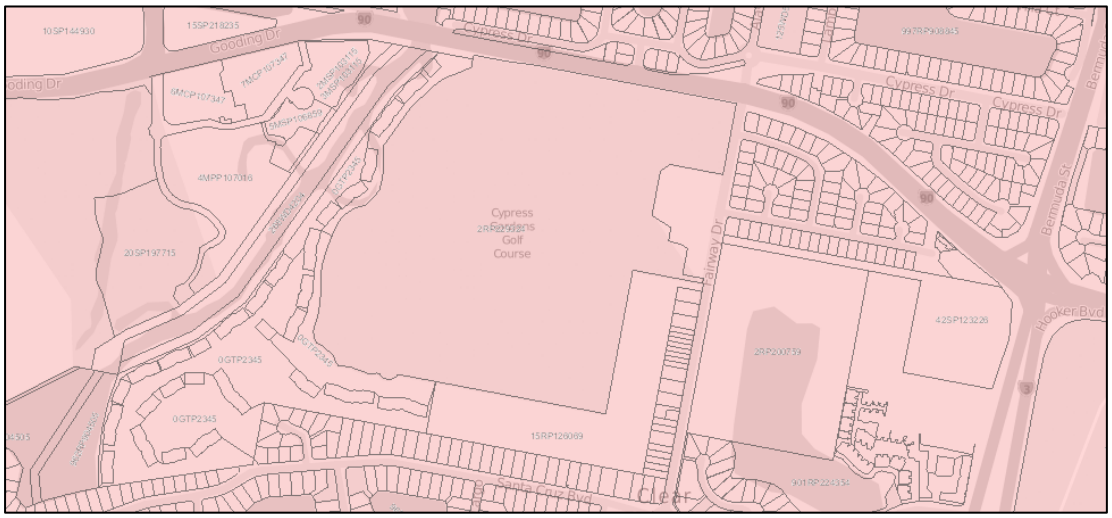


FIGURE 2: Land Use Map Excerpt (Source: SEQ Regional Plan)

This land has been previously modified commensurate with the designated sport and recreation strategic landuse and currently comprises the existing Surfers Paradise Golf Club facility with associated urban/commercial infrastructure throughout.

3.0 Vegetation Assessment

3.1 Methodology

The vegetation assessment process (refer **FIGURE 3**) can be summarised as follows:

1. Identification of targets (hazards/assets).
2. Analysis of the site for factors that could contribute to or mitigate risk i.e. structural or site conditions that may lead to failure/damage, the potential loads on a tree and a tree's adaptions to weakness, to judge the likelihood of failure/damage (consequence/ probability).
3. Evaluation of the targets' values and potential failure/damage risk to inform a systematic management program commensurate with the Client's risk tolerance/ objectives (project horizon/priority)
4. Mitigation options based on findings of the investigation and associated residual risks (recommended action/alternative strategy where relevant).
5. Ongoing monitoring of site for any change to conditions and communication of observations with Client.

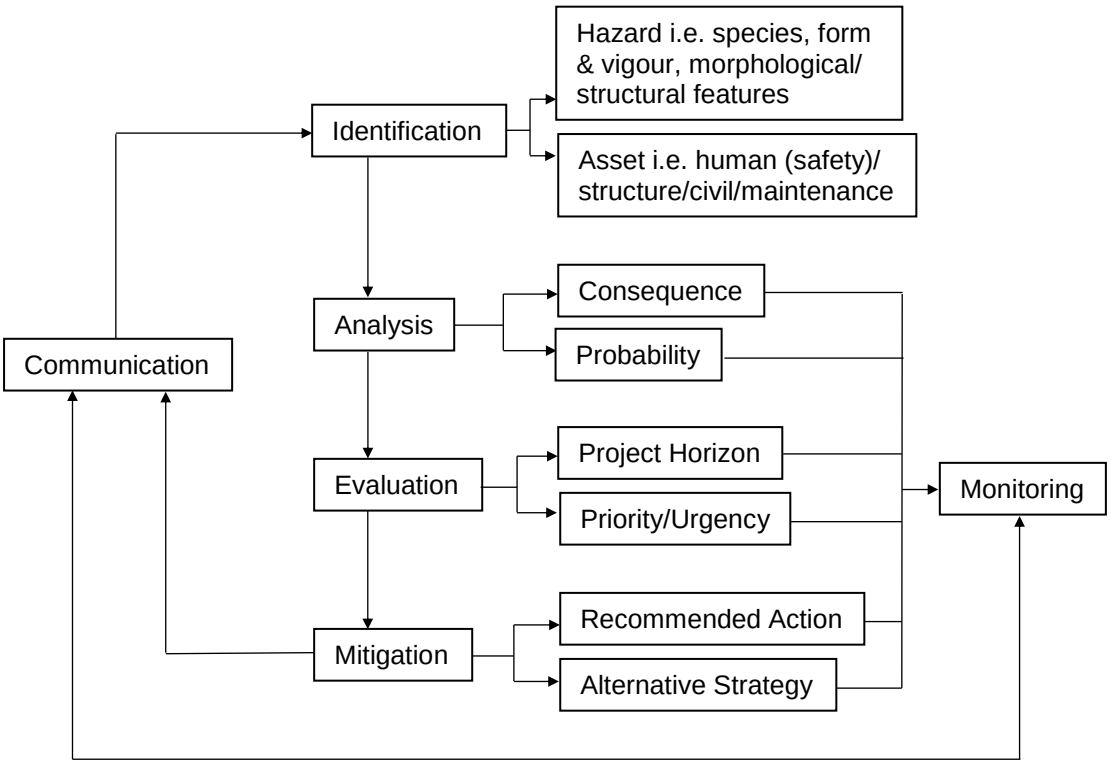


FIGURE 3: Vegetation Assessment Process Flowchart

3.2 Tree Inventory

3.2.1 AS4970

In general accordance with provisions of *AS4970 (2009) – Protection of Trees on Development Sites*, field inspections were undertaken to determine the 'Tree Protection Zone' (TPZ) and 'Structural Root Zone' (SRZ) of identified vegetation.

Section 3.2 of AS4970 defines a TPZ as the radial area measured from the centre of the stem at ground level and is calculated as follows:

- **TPZ = DBH x 12** (where DBH = Trunk Diameter measured at 1.4m above ground level)

Further, Section 3.3.5 of AS4970 defines a *Structural Root Zone* (SRZ) as the radial area required for tree stability measured from the centre of the stem at ground level and is calculated as follows:

- **SRZ = (DRB x 50)$^{0.42}$ x 0.64** (where DRB = Trunk Diameter measured above the root buttress)

3.2.2 General Particulars

Further to **SECTION 3.2.1** above, relevant metrics for each identified tree include the following:

- botanical name
- estimated height (m)
- average radial canopy projection (m)
- diameter at breast height (m)/tree protection zone (m)
- diameter of root buttress (m)/structural root zone (m)
- landscape amenity value
- overall form & vigour
- relevant structural features (i.e. stem/leader-arrangement, integrity of primary lateral attachments and deadwood prominence)

Findings are detailed within the *Vegetation Inventory* (refer **APPENDIX 1**) which corresponds with the *Vegetation Survey Plan* (refer **APPENDIX 2**) for visual cross-reference. Note that trees have been divided into two (2) categories within **APPENDIX 1** as follows:

- GCCC Assessable (Permit required for immediate/future vegetation works)
- Exempt/Not GCCC Assessable (No permit required for vegetation works)

Note further that 'Exempt/Not GCCC Assessable' trees have been identified in accordance with provisions of *s9.4.14 – Vegetation Management Code* under Council's *City Plan* as follows:

- Trees within 10 metres of an existing Council-approved building on allotments greater than 8000m2 (Tree Nos. 30 – 34, 44)
- Pest Species (Tree Nos. 35 – 43, 52 – 105)
- Trees within 6 metres of an existing property boundary fence on allotments greater than 8000m2 (Tree Nos. 45 – 51)

3.3 Risk Matrix

For each identified assessable tree, the hazard-type(s) were determined during field inspection i.e. public safety, unsuitable/senescent/dead specimen, weak attachment, unbalanced/ weighted canopy, pavement damage/cracking and slip hazard as relevant.

Recommended action priorities in accordance with a tree risk matrix (refer **FIGURE 4 & TABLE 1**) are subsequently determined via the probability of occurrence and level of consequence based on experienced interpretation/combination of numerous variables including but not limited to the following (findings detailed within **APPENDIX 1**):

- Tree specimen type/adjacent asset type(s).
- Any visible asset damage attributable to tree specimen.
- Structural features/morphological habit of tree specimen (including form/vigour).
- Separation between tree specimen and relevant asset(s).

	Probability		
Consequence	More Likely	Possible	Less Likely
Higher	**1**	**2**	**3**
Moderate	**2**	**3**	**4**
Lower	**3**	**4**	**5**

FIGURE 4: Risk Matrix – Probability/Consequence

TABLE 1: Risk Matrix – Priority/Recommended Timeframe

Priority	Recommended Timeframe
1	Immediate Action
2	Action within first year
3	Action within second/third year
4	Action within fourth/fifth year
5	Annual Monitoring

Recommended action priorities have been determined over a 5-year horizon/timeframe based on site-specific observations, which is considered generally practical/appropriate for achieving the overall vegetation management objective. A summary of action timeframes for assessable trees by both count and percentage is also designated within **TABLE 2 & FIGURE 5** following:

TABLE 2: Action Timeframes (by Count)

Priority	Count
1	4
2	9
3	8
4	1
5	7
TOTAL	**29**

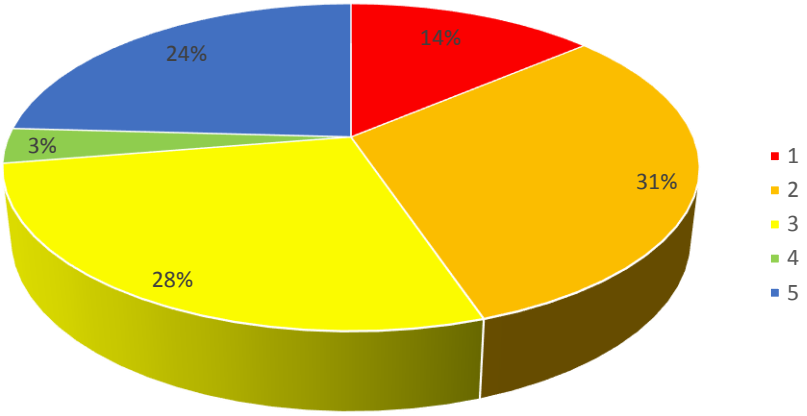
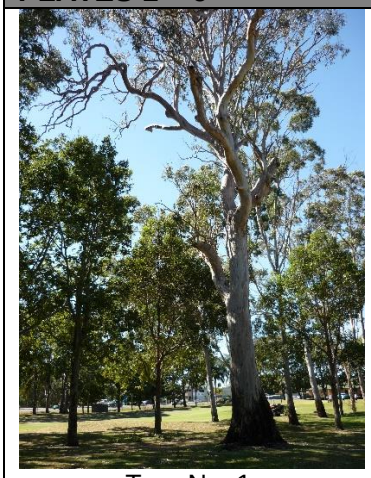
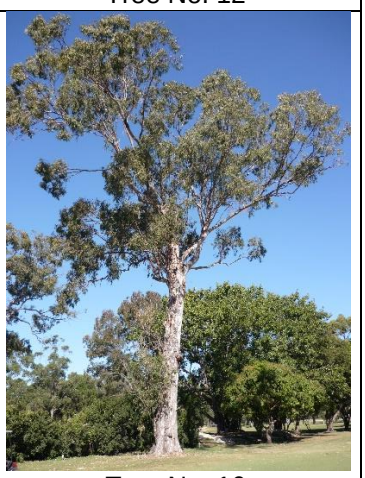
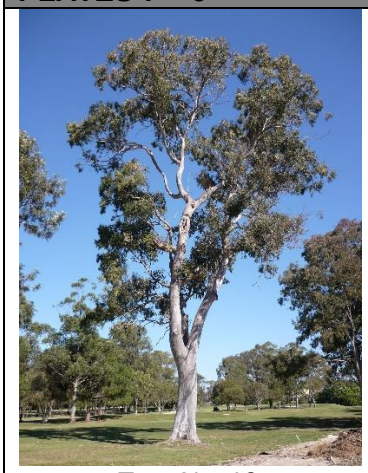


FIGURE 5: Action Timeframes (by Percentage)

Prominent examples of assessable tree risk include the following (refer **TABLE 3** and **PLATES 1 – 9**):

TABLE 3: Tree Risk Examples

PLATES 1 – 6		
 Tree No. 1	 Tree No. 4	 Tree No. 12
 Tree No. 13	 Tree No. 14	 Tree No. 16

PLATES 7 – 9		
		
Tree No. 19	Tree No. 21	Tree No. 22

(Note: not all identified assessable trees included within **TABLE 3** above).

3.4 Recommendations

Action-types recommended for the site (refer also **APPENDIX 2**) for achieving the vegetation management objective are as follows:

- Removal and replacement with more suitable specimen.
- Remove dead laterals/deadwood.
- Reduce co-dominance.
- Canopy-lift.
- Reduce to habitat tree/retain hollows.
- Annual monitoring.

Cost-estimates provided (refer **APPENDIX 2**) include allowance for the following scope of works (refer **TABLE 4**):

TABLE 4: Cost Estimate Inclusions

Action Type	Scope Allowance/Inclusions
❑ **Removal and replacement with more suitable specimen**	▪ Minimum AQF level 3 arborist to undertake works ▪ Removal of all cut-vegetation ▪ Stump-grinding (minimum 200mm depth) ▪ Removal of all stump-grindings ▪ Green waste tip fees ▪ Supply/install replacement tree ▪ Site left clean and tidy on completion of works

Action Type	Scope Allowance/Inclusions
❑ **Remove dead laterals/ deadwood**	▪ Minimum AQF level 3 arborist to undertake works ▪ All works carried out to *AS4373 – 2007: Pruning of Amenity Trees* ▪ Removal of dead branches ▪ Minimum diameter of dead branches to be cut is 50mm ▪ Removal of all cut-timber ▪ Green waste tip fees ▪ Site left clean and tidy on completion of works
❑ **Reduce co-dominance**	▪ Minimum AQF level 3 arborist to undertake remedial pruning works ▪ All works carried out to *AS4373 – 2007: Pruning of Amenity Trees* ▪ All cut vegetation to be chipped and re-used on site ▪ Site left clean and tidy on completion of works
❑ **Canopy-lift**	▪ Minimum AQF level 3 arborist to undertake remedial pruning works ▪ All works carried out to *AS4373 – 2007: Pruning of Amenity Trees* ▪ All cut vegetation to be chipped and re-used on site ▪ Site left clean and tidy on completion of works
❑ **Reduce to habitat tree/retain hollows**	▪ Minimum AQF level 3 arborist to undertake remedial pruning works ▪ Where possible timber should be recycled ▪ Limbs to be removed back to hollows with minimum diameter of 200mm ▪ QPWS spotter-catcher on site during removal of limbs
❑ **Annual monitoring**	▪ Minimum level 5 arborist to monitor trees ▪ Monitor tree vitality (health & vigour) ▪ Monitor pest and disease activity ▪ Reporting & any recommended actions to be taken

Note that, to avoid uncertain assumptions about ultimate/final delivery of the project by any landholder, cost estimates stated within **APPENDIX 2** are current at time of writing but subject to final tender and not adjusted for CPI/any potential economies of scale.

3.5 Limitations

Trees are a complex living organism for which growth habit and structural integrity depend on a range of dynamic biological/climatic variables, and subject to the potential effects of external influence an annual audit of findings is advisable. Recommendations herein are only provided based on industry 'best-practice' and as such Urban Forest Concepts will not be held liable for damage/loss incurred by any trees.

4.0 Vegetation Management

4.1 Tree Specifications

4.1.1 Tree Species Suitability

Different species of trees are suited to different planting typologies, and vary with regard to a number of factors including, among others:

- General physiological requirements
- Soil moisture and nutrient requirements
- Adaptation to local climate and microclimates
- Long-term maintenance requirements (e.g., pruning)
- Root system characteristics
- Canopy form and aesthetics
- Pest and disease susceptibility
- Pollution tolerance
- Fruit and seed production
- Invasive potential and 'weediness'

4.1.2 Tree Installation

Proper plant material installation is one of the most critical elements of successful tree establishment and long-term survival. The following factors must be considered during the installation of plant materials. Implementation of best practice outlined below will significantly increase the likelihood of successful establishment and long-term tree survival.

In addition to general planting site constraints (soil quality, soil volume, drainage, above- and below-ground conflicts, etc.), there are additional factors which must be considered prior to, during, and following the installation of plant materials. These include:

- Root pruning
- Season of planting
- Plant material transportation and handling
- Planting hole preparation
- Backfilling and irrigation
- Staking/guying

These factors notwithstanding, the majority of failed plantings result from one or more of three key factors: planting too deep, and under- or over-watering. If healthy, site-appropriate trees are planted at the correct depth and are properly irrigated, the plantings will stand a much higher chance of success.

- **Root pruning**

Trees 150 mm or larger may benefit from having been root pruned at least one growing season prior to harvesting. After root pruning the trees will need additional water. Better growers will do this as part of their normal practice. To ensure that this is undertaken, large trees should be pre-purchased at least one year in advance and arrangements with the grower made to root prune and maintain the trees.

- **Season of planting**

In general, trees should be planted in early spring or fall, thereby avoiding periods of active shoot elongation when roots may grow poorly. Ideally, project schedules should take the appropriate planting season for the proposed plant material into consideration to ensure that the likelihood of tree survival is improved. If schedules are inflexible, smaller planting stock or larger root ball to calliper ratios may increase the chances of survival.

- **Plant material transportation and handling**

Plant material is fragile, and must be handled accordingly. The overall objectives of handling planting stock are to maintain root ball integrity, prevent stem scarring, and reduce the likelihood of plant tissue desiccation. Trees should therefore be thoroughly irrigated at the nursery prior to shipping, should be shipped in closed trucks or with foliage wrapped to reduce evapotranspiration, and should be kept out of direct sunlight until planting.

Additionally, trees should not be rolled on their root balls (to prevent cracking), and should never be lifted by the trunk or dropped. If trees are to be held on-site for an extended period of time (exceeding two hours), they should be regularly irrigated. The holding area should be sheltered from both sun and wind.

- **Planting hole preparation**

Proper preparation of the planting hole will have a significant effect upon the outcome of tree installation, and must take into account characteristics of the site soils. In well-drained soils, the planting hole should be dug as wide as possible to a depth not exceeding or slightly shallower than the height of the root ball. Planting the tree too deep will deprive the root system of oxygen, prevent gas exchange, and restrict water. The bottom of the hole should be undisturbed; if disturbed, soil should be lightly compacted to prevent root ball subsidence. The holes should be dug wide as possible, and at least three times the root ball diameter. The sides of the planting hole should be sloped and scarified. The tree should be installed so that the top roots in the root ball are just below the soil surface; this may require removal (by hand) of some soil from the root ball. The trunk flare should be set slightly above final grade.

- **Backfilling and irrigation**

Backfill soil should be loose and friable, with most large clods of soil being broken up. Some soil clods should be retained to provide pore space and improved soil structure. Backfill soil should be lightly tamped by foot once one-half of the planting hole is filled, and should be irrigated to eliminate air pockets and provide moisture. The remainder of the planting hole should then be filled, without adding soil to the top of the root ball. In well-drained soils, a 25 to 40 mm high saucer of soil should be formed around the edge of the root ball. Mulch should be added on top of and around the root ball to a depth not exceeding 80 mm, and set a minimum of 40 mm away from the root flare/trunk. Following planting, the root ball should be thoroughly irrigated; irrigating too quickly and for too short a period of time may not allow water to adequately penetrate the root ball.

- **Staking/guying**

Staking or guying can be used for two purposes: to anchor an unstable root ball, and to support a weak trunk. The objective of anchor staking is to prevent root ball rotation, which can lead to

newly-planted trees falling over and can prevent proper root development. Anchor staking is usually achieved by driving two or more wooden stakes or metal posts into the ground and tying the tree to the stake. Stakes should be installed so that the root ball is firmly supported while allowing the trunk to move slightly. This encourages strengthening of the trunk, as the tree compensates for inherent weaknesses by developing wood where required.

A number of different anchor staking systems are available, and selection of the proper system will be site- and species-dependent. All trees, however, should be tied to stakes using hessian jute webbing, 50mm wide. Hose-wrapped wire should not be used. Most anchoring systems should be removed within one year following planting, unless trees are planted in poorly-drained or highly sandy soils which may inhibit the rapid development of strong anchor roots or a firm root/soil interface. Where appropriate, staking should be avoided altogether.

Trunk support staking may be required when small-caliper or poorly-developed trees are to be planted. It is always preferable to avoid planting trees with weak or poorly-developed stems, but when such planting is required, support stakes should be installed. These stakes should be installed to the lowest point necessary to hold the tree upright, and should be installed close to the trunk using soft webbing or similar materials.

All anchor and support staking must be removed in a timely manner, or the newly-planted trees risk being girdled or otherwise deformed.

4.1.3 Tree Maintenance

Four key horticultural elements must be taken into consideration following proper planting and mulching. These include:

- Watering
- Pruning
- Fertilisation
- Pest, disease and competition control

❑ **Watering**

Planted trees require supplemental irrigation until they become successfully established, at which time natural rainfall should be sufficient to supply the water needs of trees planted in good sites. The critical zone for irrigation is the newly-planted tree's root ball. Irrigating surrounding soils is not necessary and can in fact be counter-productive.

Adequate supplemental irrigation of the root ball encourages establishment by increasing the rate of root development, especially root penetration out of the root ball and into surrounding landscape soils.

Irrigation is absolutely critical to the success of tree plantings. If irrigation is cut off before establishment, the likelihood of tree mortality is substantially increased. Conversely, overabundant irrigation, especially in poorly drained clay or compacted soils, can essentially drown roots by depriving them of gas and nutrient exchange capacity.

Proper watering needs to consider the timing of watering, and the amount of water provided. Until the establishment period, trees should be watered manually. In general, trees planted in early spring or autumn will require watering every other day for approximately 1-2 months, with subsequent once-weekly watering until establishment.

Trees planted in mid-summer should be watered daily for at least one week, and then on the schedule outlined previously. Periods of drought may necessitate more frequent watering for

spring or autumn planted trees. Larger trees may require watering every other day for up to three months, and ex-ground trees may have a longer establishment period than bagged stock.

Trees should be irrigated such that soil is kept moist at nearly all times, but complete soil saturation should be avoided. There is no 'right amount' of water to apply, but as a general rule a tree in well-drained soil should receive between four and eight litres of water per 2.5 cm trunk diameter at each irrigation. The exact amount will vary depending on soil drainage and other site-specific requirements.

A simple test to determine soil moisture content can be conducted by squeezing a handful of root ball soil. If water drips from the soil ball, water volume should be reduced. If the soil crumbles, water volume should be increased. Ideally, the soil should stay together. Root ball moisture content can also be felt by inserting a finger into the root ball.

- **Pruning**

Newly-planted trees should not be pruned to 'compensate' for root loss due to transplanting, as such pruning is ineffective and may in fact slow root growth. However, young tree pruning should be undertaken to promote good canopy structure, particularly for trees with a natural decurrent (rounded and spreading) growth habit. Pruning should be undertaken at least 3 times within the first 10 to 15 years following planting, and more if required. The focus of such pruning should be to eliminate or prevent poor structural conditions such as included bark, co-dominant stems or sprouts, or to remove broken, dead, diseased, badly injured or infested branches.

Young trees should be trained to develop a central leader, if possible, although some species will not respond well to such pruning due to their natural form. Training should also be undertaken to encourage and maintain appropriate clearance from structures and over streets and footpaths. Consideration should be given to retaining temporary branches for two to five years, with the purpose of encouraging good stem taper and protecting the trunk.

- **Fertilisation**

Trees generally do not need to be fertilized at time of planting. This does not mean, however, that fertilization is never appropriate – the decision to fertilize should always be supported by a soil fertility analysis and recommendations of a soil test.

- **Pest, Disease and Competition Control**

Due to the stresses associated with transplanting, newly-planted trees may be more susceptible to pest infestation, disease and pathogen infection, and competition from other types of vegetation.

  - **Pests and diseases**

Pests and disease problems affecting young trees frequently begin in the nursery before the trees are transplanted into the landscape. For this reason, careful inspection of nursery stock before delivery is important to ensure diseased or infested stock is not established. Should newly-planted trees show signs or symptoms of pest infestation or disease, an Integrated Pest Management (IPM) approach should be implemented to control the problem (refer **SECTION 4.6** following).

  - **Competing vegetation**

Tree establishment can be delayed and overall tree health may suffer on sites with competing vegetation, particularly herbaceous weeds and turfgrass. Horticultural practices to minimise weed competition should be undertaken when trees are planted in the landscape.

As outlined below, strategies to minimize weed competition include proper site design, correct site preparation and planting, and adequate subsequent maintenance.

- ✓ **Site design requirements**

  - Select densely-canopied trees to shade out weeds
  - Design sites for easy maintenance access

- ✓ **Site preparation**

  - Remove weeds and cultivate site soils prior to planting
  - Prepare the site to ensure good drainage
  - Provide adequate irrigation
  - Plant new trees properly
  - Apply mulch

- ✓ **Site maintenance**

  - Monitor and remove weeds regularly throughout the growing season, and remove weeds before they are well established
  - Establish thresholds for acceptable weed levels
  - Maintain adequate mulch levels
  - Reduce mowing intensity to encourage deeper turf/grass rooting
  - Avoid soil cultivation and edging in root zones, as it causes soil compaction and injures shallow roots

4.2 Tree Recommendations

Recommended replacement species for assessable trees on the site include the following three types (refer **PLATES 10 – 12** following) to be planted @ 1:1 (remove:replace) ratio and minimum 100L stock-size generally in accordance with the specifications included in **SECTION 4.1** above (and also **APPENDIX 3)**:

PLATE 10: Kauri Pine (*Agathis robusta*)

PLATE 11: Hoop Pine (*Araucaria cunninghamii*))

PLATE 12: Norfolk Island Pine (*Araucaria heterophylla)*

Recommended replacement species for non-assessable trees on the site include the following three types (refer **PLATES 13 – 15** following) to be planted @ ~3:1 (remove:replace) ratio and minimum 45L stock-size generally in accordance with the specifications included in **SECTION 4.1** above (and also **APPENDIX 3)**:

PLATE 13: Native Frangipani (*Hymenosporum flavum*)

PLATE 14: White Oak (*Grevillea baileyana*)

PLATE 15: Blueberry Ash (*Elaeocarpus reticulatus*)

Note that typical landscape architecture/design protocol is to maximise visual benefit by siting of replacement specimens in prominent locations from the public viewpoint where practical in relation to surrounding features/maintenance constraints.

4.3 Remove Dead Laterals/Deadwood

Deadwooding is the removal of dead laterals/branches. The minimum diameter of dead timber to be removed is 50mm. The location of the final cut is to be as close to the branch collar as possible. The live tissue is not to be damaged when removing deadwood from within the canopy.

4.4 Reduce Co-dominance

When removing co-dominant stems/leaders, the stem bark ridge shall be used to determine the angle of the cut. Co-dominant stems may have stem bark ridges which are very long or may be difficult to identify. In such cases, the positions of the angles of the joins between the tissue of declining or dead stems and those of healthy stems elsewhere on the tree, may provide a guide to the position and angle of the final cut. In removing one stem, the adjacent stem/stems should not be damaged.

4.5 Canopy-lift

Canopy-lifting is the removal of lower branches from a tree and is a form of canopy modification. The outcome is to change the form and habit of the tree. Canopy-lifting is usually done to balance the tree, to allow vehicle or pedestrian access, allow light to penetrate certain areas or to remove limbs near structures or buildings.

To minimise stress to the tree and to develop or maintain good trunk taper, at least one half of the foliage distribution in trees should be on the branches that arise in the lower two-thirds of the trunk.

4.6 Reduce to Habitat Tree/Retain Hollows

Habitat trees are mature to old-aged trees which provide numerous living places (habitats and micro-habitats) for many kinds of animals and plants. These trees have many hollows, cracks and crevices of various size where animals may live, breed or shelter. Old and dead trees are an essential part of native forests.

Structural integrity should be identified by "sounding" timber with a rubber mallet. The minimum opening-diameter left within the habitat tree should be 200mm. Where possible timber should be recycled or left around the base of the tree as additional ground habitat.

All timber removed which include hollows must be inspected by a QPWS spotter catcher to prevent injuring animals within the tree.

4.7 Annual Monitoring

The inspection shall include an assessment of tree health, condition, growth-habit, structure, stability, hazards and the proximate growing environment. The distribution of foliage and amount of deadwood will also be considered. The need for any pruning will be determined as well as the potential impacts that tree roots are having on the surrounding hardscapes and infrastructure.

Incorporating an integrated pest management system may be required, and can be formulated to create a successful, cost effective solution to controlling insects if damaging the ornamental trees within the site.

The foundations for integrated pest management are based on a four-tiered approach including:

- **Setting action thresholds**: set action thresholds which will be a point at which pest populations indicate pest control action must be taken.

- **Monitoring and identifying pests**: by monitoring and identifying the pests, it removes the possibility that pesticides will be used when they are not really needed or that the wrong kind of pesticide is used. Monitoring also ensures the appropriate control decisions are made in conjunction with action thresholds.

- **Prevent pests from becoming a threat**: usually if a tree has poor health and vigour due to undesirable growing conditions, it will create more sugars and starches to overcome the problem thus making them more attractive to insect attack. By facilitating optimal growing conditions a tree has a stronger resistance to attack.

- **Control**: once monitoring, identification and action thresholds indicate that pest control is required, and preventative methods are no longer effective or available, creating a control method is required. These methods include chemical spraying, physical control, removing dying fronds attacked by pests and burnt to prevent further spread, killing any adults, cocoons with pupae in, and exposed larvae. Cultural controls may include removal of severely infested trees and/or varying the species of trees planted together to help prevent pests moving from one tree to the next.

If a condition is observed requiring attention subsequent to the initial investigation, that condition should be documented and scheduled in with an appropriate timeframe using the Urban Forest Concepts risk matrix.

5.0 Vegetation Summary

This document has been prepared with regard to vegetation management works relating to maintenance, public safety and ongoing operation of the Surfers Paradise Golf Club facility.

Tree assessment metrics have been determined in the field and probabilities/consequences of a risk matrix applied to identified specimens to inform pragmatic 'on-ground' recommendations for resolving the vegetation management objective over a structured timeframe, and a budget forecast for achieving the highest visual amenity and landscape character appeal within the built environment.

Compliance with relevant provisions of the Gold Coast City Plan document is contained within **APPENDIX 4**.

6.0 Appendices

APPENDIX 1 – Vegetation Inventory

APPENDIX 2 – Vegetation Survey Plan

APPENDIX 3 – GCCC Tree and Shrub Planting Detail

APPENDIX 4 – Vegetation Management Code

7.0 Bibliography

Australian Standard AS4373 (2007)*: Pruning of Amenity Trees*.

Australian Standard AS4970 (2009). *Protection of Trees on Development Sites*.

Gold Coast City Council (2016): *Gold Coast City Plan*.

Office of the Queensland Parliamentary Council (2016). *Planning Act*.

APPENDIX 1

VEGETATION INVENTORY

Vegetation Inventory

Priority	Recommended Timeframe
1	Immediate Action
2	Action within first year
3	Action within second/third year
4	Action within fourth/fifth year
5	Annual Monitoring

ID#	Botanical Name	Height	RCP	DBH^	TPZ	DRB	SRZ	Amenity	Arboricultural Assessment						Recommended Action	Priority	Cost Estimate (ex. GST)
									Form	Vigour	Structural Features	Hazard	Consequence	Probability			
	Surfers Paradise Golf Club – GCCC Assessable																
1	*Eucalyptus tereticornis*	18	10	1.37	15~	2.05	4.48	High	Average	Average	Multi-leadered @ ~5m, sound branch unions, deadwood ~30%	Public safety	Higher	Possible	Remove dead laterals/ deadwood	2	$800.00
2	*Ficus benghalensis*	16	12	3.66	15~	3.94	5.89	Medium	Sound	Sound	Multi-leadered @ base, included bark, deadwood ~10%	Unsuitable specimen	Lower	Possible	Remove/replace with more suitable specimen	4	$3,300.00
3	*Eucalyptus tereticornis*	17	8	0.89	10.68	1.05	3.38	Medium	Average	Sound	Multi-leadered @ ~1.6m, included bark, deadwood ~10%	Weak leader-attachment	Moderate	Possible	Reduce co-dominance	3	$450.00
4	*Eucalyptus tereticornis*	24	8	1.17	14.04	1.49	3.92	High	Average - Sound	Average - Sound	Apically dominant, sound branch unions, deadwood ~25%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -
5	*Eucalyptus microcorys*	18	5	0.46	5.52	0.65	2.76	Low	Average - Poor	Poor	Co-dominant @ ~8m, sound branch unions, deadwood ~99%	Senescent/dead	Higher	More Likely	Remove/replace with more suitable specimen	1	$950.00
6	*Eucalyptus grandis*	18	8	0.72	8.64	0.98	3.28	Medium	Average - Sound	Sound	Co-dominant @ ~3m, sound branch unions, deadwood ~15%	Phototropic lean/ weighted canopy	Moderate	Possible	Remove/replace with more suitable specimen	3	$1,100.00
7	*Eucalyptus grandis*	18	10	0.71	8.52	0.83	3.06	Medium - High	Sound	Sound	Co-dominant @ ~8m, sound branch unions, deadwood ~15%	Phototropic lean/ weighted canopy	Moderate	Possible	Canopy-lift	3	$100.00
8	*Eucalyptus grandis*	18	10	0.78	9.36	1.09	3.43	Medium - High	Sound	Sound	Apically dominant, sound branch unions, deadwood ~15%	Phototropic lean/ weighted canopy	Moderate	Possible	Canopy-lift	3	$100.00
9	*Eucalyptus grandis*	18	8	0.73	8.76	1.01	3.32	Medium - High	Sound	Sound	Apically dominant, sound branch unions, deadwood ~10%	Phototropic lean/ weighted canopy	Moderate	Possible	Canopy-lift	3	$100.00
10	*Eucalyptus grandis*	20	10	0.88	10.56	1.17	3.53	Medium - High	Sound	Sound	Co-dominant @ ~4m, sound branch unions, deadwood ~15%	Phototropic lean/ weighted canopy	Moderate	Possible	Canopy-lift	3	$100.00
11	*Eucalyptus grandis*	16	5	0.41	4.92	0.63	2.73	Low	Poor	Poor	Apically dominant, sound branch unions, deadwood ~100%	Senescent/dead	Higher	More Likely	Remove/replace with more suitable specimen	1	$650.00
12	*Eucalyptus tereticornis*	30	15	2.31	15~	2.72	5.04	Medium	Average - Sound	Average	Multi-leadered @ ~10m, sound branch unions, deadwood ~40%	Public safety	Higher	Possible	Reduce to habitat tree/retain hollows	2	$2,500.00
13	*Eucalyptus tereticornis*	25	12	1.68	15~	1.94	4.38	Medium	Average	Average - Sound	Co-dominant @ ~8m, sound branch unions, deadwood ~20%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -
14	*Eucalyptus tereticornis*	25	15	1.51	15~	2.17	4.59	High	Average - Sound	Sound	Co-dominant @ ~8m, sound branch unions, deadwood ~30%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -

ID#	Botanical Name	Height	RCP	DBH^	TPZ	DRB	SRZ	Amenity	Arboricultural Assessment						Recommended Action	Priority	Cost Estimate (ex. GST)
									Form	Vigour	Structural Features	Hazard	Consequence	Probability			
	Surfers Paradise Golf Club – GCCC Assessable																
15	*Hibiscus tiliaceus*	12	12	1.41	15⁻	1.68	4.12	Medium	Average	Sound	Multi-leadered @ base, included bark, deadwood ~15%	Unsuitable specimen	Moderate	Possible	Remove/replace with more suitable specimen	3	$2,100.00
16	*Eucalyptus tereticornis*	24	24	1.39	15⁻	1.65	4.09	Medium	Average - Sound	Average - Sound	Apically dominant, sound branch unions, deadwood ~30%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -
17	*Casuarina glauca*	12	12	0.61	7.32	0.71	2.87	Low	Poor	Poor	Multi-leadered @ ~1m, sound branch unions, deadwood 100%	Senescent/dead	Higher	More Likely	Remove/replace with more suitable specimen	1	$640.00
18	*Eucalyptus tereticornis*	18	18	1.02	12.24	1.33	3.73	High	Sound	Sound	Co-dominant @ ~4m, sound branch unions, deadwood ~15%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -
19	*Eucalyptus tereticornis*	24	24	1.43	15⁻	2.02	4.45	Medium	Average - Sound	Average - Sound	Multi-leadered @ ~6m, sound branch unions, deadwood ~35%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -
20	*Cupaniopsis anacardioides*	10	10	0.8	9.6	1.08	3.42	Low	Sound	Poor	Multi-leadered @ ~3m, included bark, deadwood ~60%	Dieback/senescent	Moderate	Possible	Remove/replace with more suitable specimen	3	$950.00
21	*Eucalyptus tereticornis*	30	30	2.02	15⁻	2.78	5.09	Medium - High	Average - Sound	Average - Sound	Multi-leadered @ ~10m, sound branch unions, deadwood ~30%	Public safety	Higher	Possible	Reduce to habitat tree/retain hollows	2	$2,500.00
22	*Eucalyptus tereticornis*	22	22	1.67	15⁻	1.92	4.36	Medium	Average - Sound	Average - Sound	Co-dominant @ ~3m, sound branch unions, deadwood ~25%	Public safety	Lower	Less Likely	Annual monitoring	5	$ -
23	*Libidibia ferrea*	8	8	0.52	6.24	0.54	2.55	Medium - Low	Average - Sound	Average - Sound	Multi-leadered @ ~1.2m, included bark, deadwood ~20%	Adjacent pavement damage/cracking	Moderate	More Likely	Remove/replace with more suitable specimen	2	$700.00
24	*Archontophoenix alexandrae*	10	3.2	-	4.2@	-	-⁺	Medium	Sound	Sound	Apically dominant, sound branch unions, deadwood ~5%	Seed maintenance/ slip hazard	Moderate	More Likely	Remove/replace with more suitable specimen	2	$380.00
25	*Archontophoenix alexandrae*	8	3.1	-	4.1@	-	-⁺	Medium	Sound	Sound	Apically dominant, sound branch unions, deadwood ~5%	Seed maintenance/ slip hazard	Moderate	More Likely	Remove/replace with more suitable specimen	2	$380.00
26	*Archontophoenix alexandrae*	9	1.9	-	2.9@	-	-⁺	Medium	Sound	Sound	Apically dominant, sound branch unions, deadwood ~5%	Seed maintenance/ slip hazard	Moderate	More Likely	Remove/replace with more suitable specimen	2	$380.00
27	*Archontophoenix alexandrae*	8	1.8	-	2.8@	-	-⁺	Medium	Sound	Sound	Apically dominant, sound branch unions, deadwood ~5%	Seed maintenance/ slip hazard	Moderate	More Likely	Remove/replace with more suitable specimen	2	$380.00
28	*Archontophoenix alexandrae*	8	3.9	-	4.9@	-	-⁺	Medium	Sound	Sound	Apically dominant, sound branch unions, deadwood ~5%	Seed maintenance/ slip hazard	Moderate	More Likely	Remove/replace with more suitable specimen	2	$380.00
29	*Eucalyptus microcorys*	17	4	0.52	6.24	0.76	2.95	Low	Poor	Poor	Apically dominant, sound branch unions, deadwood ~100%	Senescent/dead	High	Likely	Remove/replace with more suitable specimen	1	$950.00
	Surfers Paradise Golf Club – Exempt/Not GCCC Assessable																
30-32	*Archontophoenix alexandrae*														Remove/replace with 1 x more suitable specimen		$400.00
33	*Buckinghamia celsissima*														Remove/replace with more suitable specimen		$410.00

ID#	Botanical Name	Height	RCP	DBH^	TPZ	DRB	SRZ	Amenity	Arboricultural Assessment						Recommended Action	Priority	Cost Estimate (ex. GST)
									Form	Vigour	Structural Features	Hazard	Consequence	Probability			
	Surfers Paradise Golf Club – Exempt/Not GCCC Assessable																
34	*Xanthostemon chrysanthus*														Remove/replace with more suitable specimen		$410.00
35-43	*Corymbia torelliana*														Remove/replace with 3 x more suitable specimens		$3,010.00
44	*Eucalyptus tereticornis*														Remove/replace with more suitable specimen		$610.00
45-51	*Casuarina glauca*														Remove/replace with 2 x more suitable specimens		$2,570.00
52-53	*Syagrus romanzoffiana*														Remove/replace with 1 x more suitable specimen		$360.00
54-55	*Pinus elliottii*														Remove/replace with 1 x more suitable specimen		$1,060.00
56-85	*Pinus elliottii*														Remove/replace with 9 x more suitable specimens		$14,940.00
86-105	*Syagrus romanzoffiana*														Remove/replace with 6 x more suitable specimens		$2,960.00

^ $DBH_{total} = \sqrt{(DBH_1)^2 + (DBH_2)^2 + (DBH_3)^2}$ under AS4970.
** TPZ minimum 2m radius under AS4970.*
~ TPZ maximum 15m radius under AS4970.
@ TPZ not less than 1m outside the RCP for monocotyledons under AS4970.
 # SRZ minimum 1.5m radius under AS4970.
+ SRZ does not apply to monocotyledons under AS4970.

APPENDIX 2

VEGETATION SURVEY PLAN

(Adapted From: Digital Globe/DNRM)

URBAN FOREST CONCEPTS

URBAN FOREST CONCEPTS
P: PO BOX 1714, SOUTHPORT BC QLD 4215
E: chay@urbanfc.com.au/mark@urbanfc.com.au
M: 0416 038 296/0438 789 296

N

PROJECT:

VEGETATION MANAGEMENT PLAN
1 FAIRWAY DRIVE,
CLEAR ISLAND WATERS

CLIENT:

SURFERS PARADISE GOLF CLUB

DRAWING:

VEGETATION SURVEY - AERIAL IMAGE (KEY PLAN)

PROJECT NO.:	DRAWING NO.:
FAI02	FAI02_VSAI(KP)

DATE:	SCALE:
AUGUST 2017	1:3000 @ A3

ISSUE:	DRAWN:	SHEET NO.:
A	CK/MJ	1 OF 6

LEGEND:

FOCUS AREA
1069 SHEET#

NOTES:

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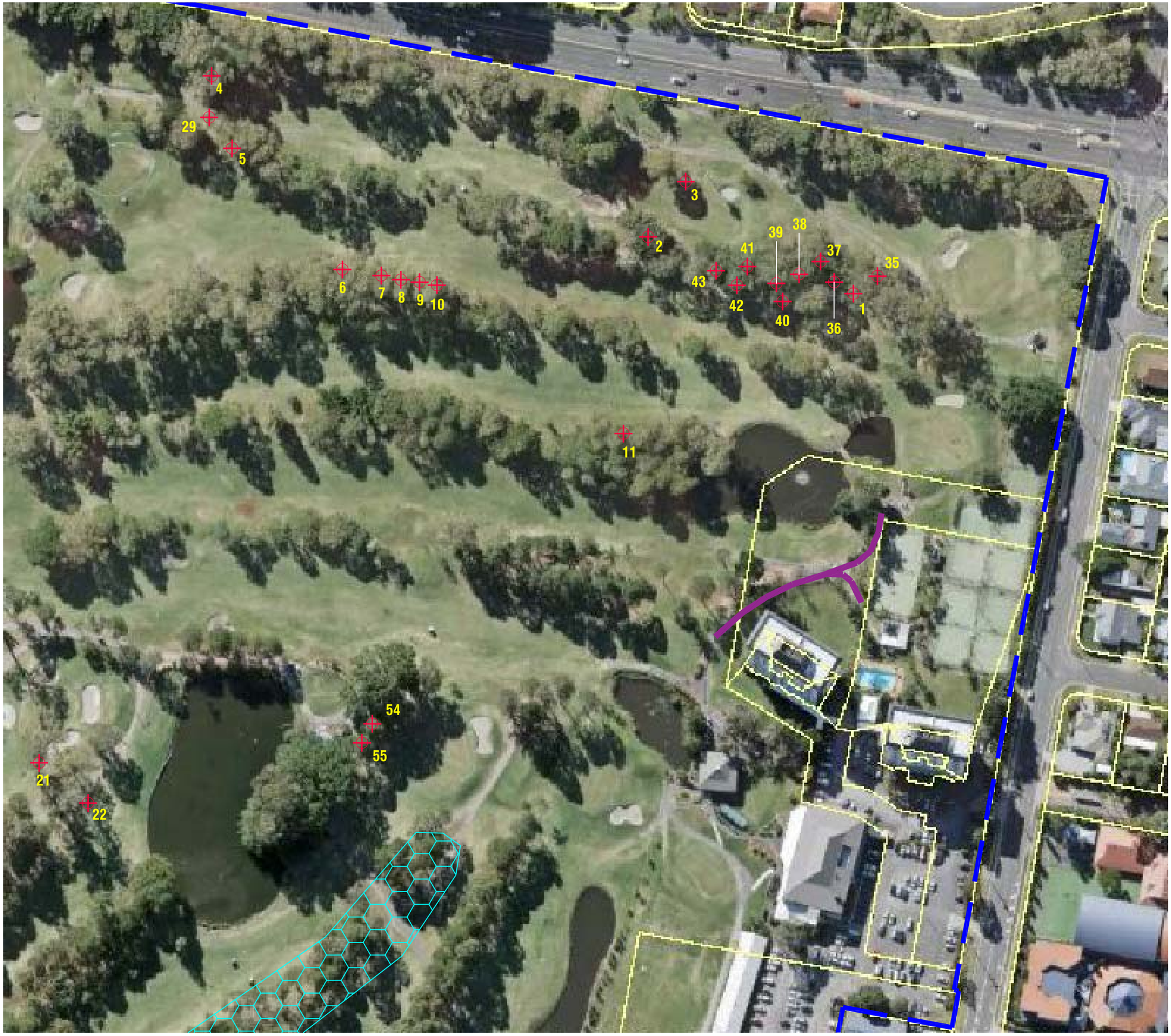
ADAPTED FROM:

DIGITAL GLOBE
DNRM



URBAN FOREST CONCEPTS

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E: chay@urbanfc.com.au/mark@urbanfc.com.au
M: 0416 038 296/0438 789 296

N

PROJECT:

VEGETATION MANAGEMENT PLAN
1 FAIRWAY DRIVE,
CLEAR ISLAND WATERS

CLIENT:

SURFERS PARADISE GOLF CLUB

DRAWING:

VEGETATION SURVEY - AERIAL IMAGE

PROJECT NO.:	DRAWING NO.:
FAI02	FAI02_VSAI

DATE:	SCALE:
AUGUST 2017	1:1500 @ A3

ISSUE:	DRAWN:	SHEET NO.:
A	CK/MJ	2 OF 6

LEGEND:

- TREE LOCATION
- 1069 ID#
- SITE BOUNDARY
- COPSE WITH SLASH PINES
- AVENUE WITH COCOS PALMS

NOTES:

—

ADAPTED FROM:

DIGITAL GLOBE
DNRM

URBAN FOREST CONCEPTS

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M: 0416 038 296/0438 789 296

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PROJECT:

VEGETATION MANAGEMENT PLAN
1 FAIRWAY DRIVE,
CLEAR ISLAND WATERS

CLIENT:

SURFERS PARADISE GOLF CLUB

DRAWING:

VEGETATION SURVEY - AERIAL IMAGE

PROJECT NO.:	DRAWING NO.:
FAI02	FAI02_VSAI

DATE:	SCALE:
AUGUST 2017	1:1500 @ A3

ISSUE:	DRAWN:	SHEET NO.:
A	CK/MJ	3 OF 6

LEGEND:

- TREE LOCATION
- 1069 ID#
- SITE BOUNDARY
- COPSE WITH SLASH PINES
- AVENUE WITH COCOS PALMS

NOTES:

—

ADAPTED FROM:

DIGITAL GLOBE
DNRM

URBAN FOREST CONCEPTS

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PROJECT:

VEGETATION MANAGEMENT PLAN
1 FAIRWAY DRIVE,
CLEAR ISLAND WATERS

CLIENT:

SURFERS PARADISE GOLF CLUB

DRAWING:

VEGETATION SURVEY - AERIAL IMAGE

PROJECT NO.:	DRAWING NO.:
FAI02	FAI02_VSAI

DATE:	SCALE:
AUGUST 2017	1:1500 @ A3

ISSUE:	DRAWN:	SHEET NO.:
A	CK/MJ	4 OF 6

LEGEND:

- TREE LOCATION
- 1069 ID#
- SITE BOUNDARY
- COPSE WITH SLASH PINES
- AVENUE WITH COCOS PALMS

NOTES:

—

ADAPTED FROM:

DIGITAL GLOBE
DNRM

URBAN FOREST CONCEPTS

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M: 0416 038 296/0438 789 296

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PROJECT:

VEGETATION MANAGEMENT PLAN
1 FAIRWAY DRIVE,
CLEAR ISLAND WATERS

CLIENT:

SURFERS PARADISE GOLF CLUB

DRAWING:

VEGETATION SURVEY - AERIAL IMAGE

PROJECT NO.:	DRAWING NO.:
FAI02	FAI02_VSAI

DATE:	SCALE:
AUGUST 2017	1:1500 @ A3

ISSUE:	DRAWN:	SHEET NO.:
A	CK/MJ	5 OF 6

LEGEND:

- TREE LOCATION
- 1069 ID#
- SITE BOUNDARY
- COPSE WITH SLASH PINES
- AVENUE WITH COCOS PALMS

NOTES:

—

ADAPTED FROM:

DIGITAL GLOBE
DNRM

URBAN FOREST CONCEPTS

N

URBAN FOREST CONCEPTS
P: PO BOX 1714, SOUTHPORT BC QLD 4215
E: chay@urbanfc.com.au/mark@urbanfc.com.au
M: 0416 038 296/0438 789 296

PROJECT:

VEGETATION MANAGEMENT PLAN
1 FAIRWAY DRIVE,
CLEAR ISLAND WATERS

CLIENT:

SURFERS PARADISE GOLF CLUB

DRAWING:

VEGETATION SURVEY - AERIAL IMAGE

PROJECT NO.:	DRAWING NO.:
FAI02	FAI02_VSAI

DATE:	SCALE:
AUGUST 2017	1:200 @ A3

ISSUE:	DRAWN:	SHEET NO.:
A	CK/MJ	6 OF 6

LEGEND:

- TREE LOCATION
- 1069 ID#
- SITE BOUNDARY
- COPSE WITH SLASH PINES
- AVENUE WITH COCOS PALMS

NOTES:

—

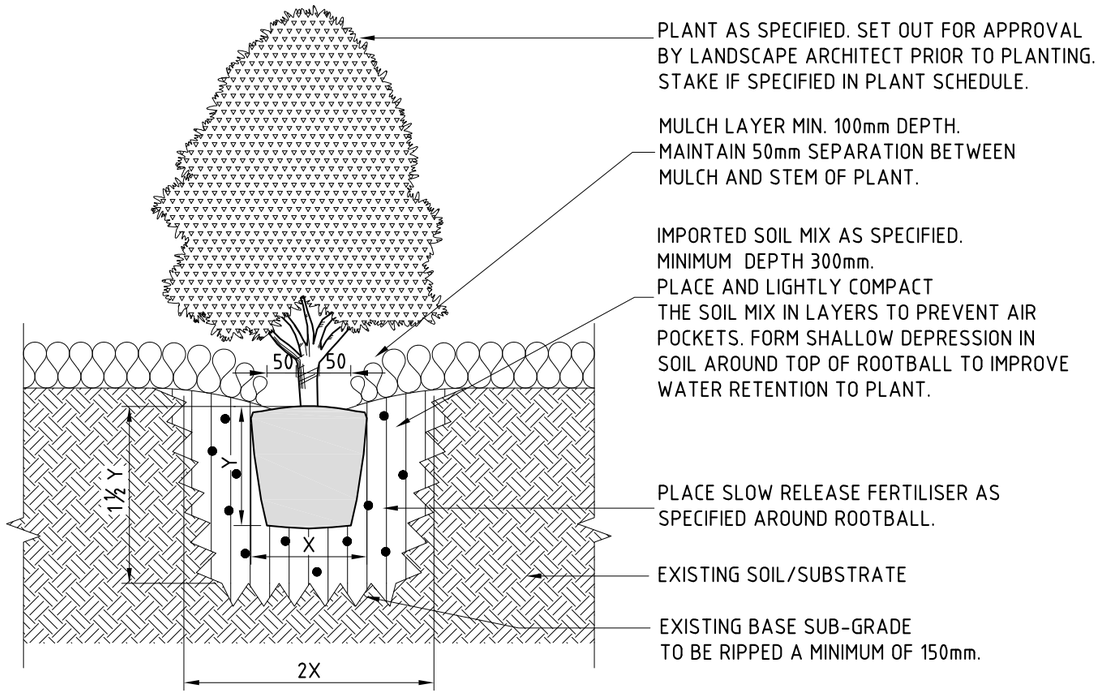
ADAPTED FROM:

DIGITAL GLOBE
DNRM

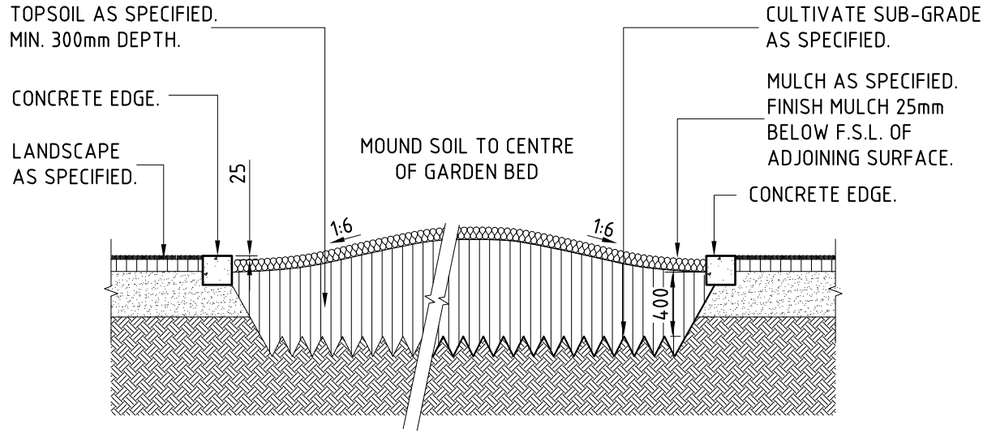
APPENDIX 3

TREE AND SHRUB PLANTING DETAIL

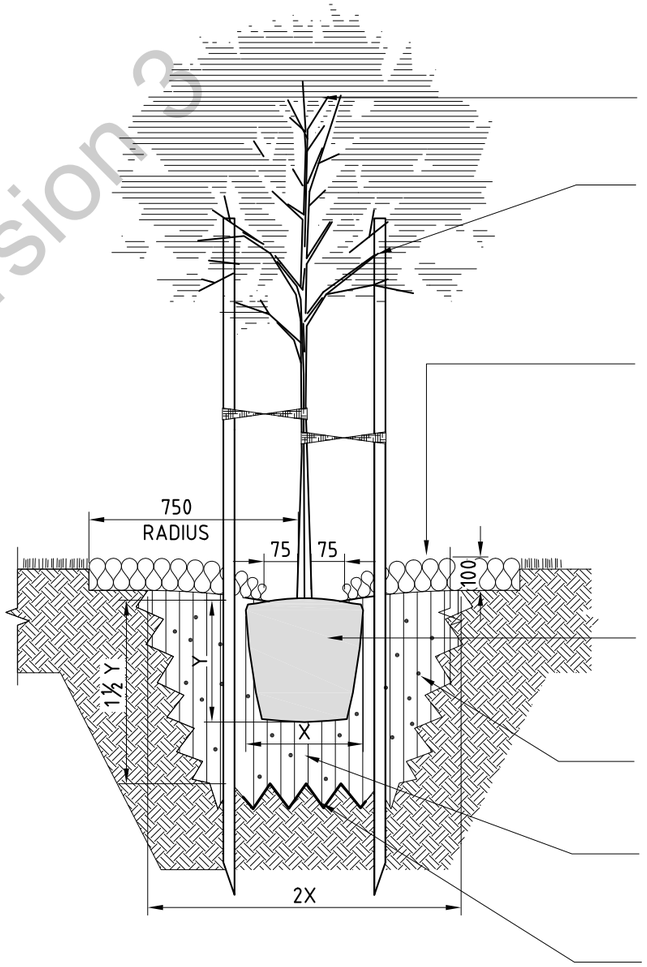
(Source: GCCC)



TYPICAL SHRUB/GROUNDCOVER PLANTING - SECTION



TYPICAL PLANTING BED - SECTION



TYPICAL TREE PLANTING - SECTION

PLANTING NOTES

CULTIVATE EXISTING SUB-GRADE TO 150mm DEPTH. REMOVE STONES EXCEEDING 50mm DIAMETER AND ANY ORGANIC MATTER EXCEEDING 25mm ø INCLUDING ROOTS, STICKS AND WEEDS BROUGHT TO THE SURFACE DURING CULTIVATION. REMOVE ANY MATERIAL DETRIMENTAL TO PLANT GROWTH.

EITHER AMELIORATE EXISTING SITE TOPSOIL AS SPECIFIED OR IMPORT SOIL MIX. ALL IMPORTED SOIL MIXES SHALL COMPLY WITH AS 4419-2003 'SOILS FOR LANDSCAPING AND GARDEN USE'- CLAUSE 4.6 "SOIL BLEND", COMPLYING WITH THE REQUIREMENTS OF AS4419 SECTIONS 5, 7 AND 8 WITH pH FALLING WITHIN THE RANGE REQUIRED FOR NON ACID NOR ALKALINE SOILS AS DEFINED BY CLAUSE 5.6(a), WITH PHOSPHOROUS CONTENT SUITABLE FOR PHOSPHOROUS-SENSITIVE PLANTS AS DEFINED BY CLAUSE 5.9 AND THE FURTHER REQUIREMENTS THAT THE ELECTRICAL CONDUCTIVITY WHEN TESTED IN ACCORDANCE WITH AS4419 APPENDIX D, NOT EXCEED 1.2 dS/m. PROVIDE TEST CERTIFICATE FOR IMPORTED SOIL MIX PRIOR TO BRINGING ON SITE. REFER TO SPECIFICATIONS.

AFTER APPROVAL OF THE PROPOSED SOIL MIX, DEPOSIT AND SPREAD SOIL MIX TO ACHIEVE A 300mm MINIMUM THICKNESS TO ALL PLANTING AREAS AFTER SLAB OR EDGE CONSTRUCTION. EXCAVATE THE PLANTING HOLES FOR TREES TO A MINIMUM OF TWICE THE WIDTH (2x) AND ONE AND A HALF TIMES ($1\frac{1}{2}$x) THE DEPTH OF THE ROOTBALL.

COMPACT SOIL MIX LIGHTLY IN LAYERS OF 150mm, ENSURING THAT NO AIR POCKETS REMAIN IN THE SOIL. RAKE OVER LIGHTLY TO ACHIEVE SMOOTH SOIL PROFILES, AND ENSURE THAT ANY MOUNDING HAS A SMOOTH AND EVEN PROFILE.

USE 25mm GRADE HOOP PINE BARK OR EQUIVALENT MULCH IN A 100mm LAYER, FREE FROM SOIL, WEEDS & ANY OTHER MATERIAL TOXIC TO PLANT GROWTH. SPREAD EVENLY & RAKE SMOOTH. FINISH MULCH 25mm BELOW FINISHED SURFACE LEVEL OF SURROUNDING EDGE/TREATMENT.

CITY OF GOLDCOAST.
City of Gold Coast
PO Box 5042
Gold Coast MC 9729
P: 1300 GOLDCOAST

THIS DRAWING IS NOT TO BE AMENDED WITHOUT REFERENCE TO STANDARDS COMMITTEE

CONTROLLED DOCUMENT

No.	AMENDMENT	APPROVED	DATE	ISSUED

DO NOT SCALE
TAKE FIGURED DIMENSIONS ONLY

DRAWN BY CITY OF GOLD COAST

PASSED - COORDINATOR OPEN SPACE ASSETS
NAME: CAMERON TAYLOR 17/10/13

APPROVED - MANAGER PARKS & RECREATIONAL SERVICES
NAME: RON JACOBS 17/10/13

STANDARD DRAWING

TREE AND SHRUB PLANTING DETAIL

THIS DRAWING HAS BEEN SOURCED FROM BRISBANE CITY COUNCIL STANDARD DRAWINGS 2001 - SERIES 700 : PARKS

STANDARD DRAWING No. 05-101

ISSUE 2015 EDITION

APPENDIX 4

VEGETATION MANAGEMENT CODE

(Adapted From: GCCC)

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.14 Vegetation management code

9.4.14.1 Application

This code applies to assessing material change of use, reconfiguring a lot or operational work for development where indicated within **Part 5 Tables of assessment**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3,** in **Part 5**.

The requirements for accepted development in Part A of this code provide guidance on what is considered acceptable damage to assessable vegetation before it becomes assessable development. Each required outcome in Part A will apply to a particular circumstance. The table below outlines the applicable provision relating to the type of damage.

Damage type	Provision(s)
Vegetation close to property boundaries	RO1 – RO2
Vegetation close to buildings	RO3
Vegetation close to pool fencing	RO4
Pest species vegetation	RO5
Threatening vegetation	RO6
Damage to vegetation for fire safety	RO7
Damage on agricultural land	RO8
Vegetation maintenance	RO9

Damage type	Provision(s)
All damage not described in the required outcomes	PO1

Note: The required outcomes in Part A of this code will not apply to vegetation that is identified under a vegetation protection order or planted as an approved landscape plan or condition of approval.

Note: For general guidance on pruning and managing the growth of vegetation refer to Australian Standards *AS4373 – 2007 Pruning of Amenity Trees*.

Note: Vegetation clearing must not result in harm to native wildlife. Where native wildlife is present it is recommended that a licensed wildlife spotter catcher be employed to oversee works.

9.4.14.2 Purpose

(1) The purpose of the Vegetation management code is to provide for the protection and management of assessable vegetation.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) Vegetation of environmental, historical, cultural, visual and character significance is retained.

(b) Vegetation is retained to provide habitats for threatened flora and fauna, prevent erosion and ensure slope stabilisation.

(c) Damage to assessable vegetation is only undertaken if it directly obstructs approved development or is a threat to persons or property.

(d) Vegetation management plans are prepared for development which has the potential to cause damage to vegetation.

(e) Any potential damage caused to vegetation by development is extensively investigated and mitigated.

9.4.14.3 Specific benchmarks for assessment

Table 9.4.14-2: Vegetation management code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
Vegetation management plan			
PO1 Damage to assessable vegetation does not occur where the vegetation: (a) provides habitats for threatened flora and fauna; (b) is of historical, cultural or visual significance; (c) provides erosion prevention and slope stabilisation; (d) is necessary to maintain the	**AO1** A Vegetation Management Plan, prepared by a suitably qualified person, is submitted as part of an Operational Work (Vegetation Clearing) application to show compliance with the Performance outcome. This plan includes, but is not limited to: (a) the location of the existing or approved dwellings, building or structures;	**COMPLIES. A VEGETATION MANAGEMENT PLAN HAS BEEN PREPARED FOR THE SITE AND IS SUBMITTED AS PART OF AN OPERATIONAL WORKS (VEGETATION CLEARING) APPLICATION.**	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? **If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome**	Internal use
character of the local area; or (e) assists in the conservation of the city's biodiversity. **Note: A Vegetation Management Plan is the Council's preferred method of addressing the above outcome.**	(b) the location of waterways, ridge tops and steep slopes (greater than 25%) on and adjacent to the site; (c) the location of the assessable vegetation to which the damage is proposed, and reasonable particulars of its vegetation type, including species, height and girth and whether it is: • habitat for threatened flora and fauna; • of historical, cultural, character or visual significance; • essential for erosion prevention and slope stabilisation, including within waterway buffers; • significant to the conservation of the city's biodiversity; • vegetation that contributes to waterway and wetland health. (d) a statement of the reasons for the damage and any relevant factors associated with the purpose of the proposed damage; (e) particulars of how vegetation to be retained will be protected during works in accordance with Australian Standard *AS4970-2009 – Protection of trees* on development sites; (f) particulars of how the vegetation is to be damaged and, if relevant, how the damaged material is to be removed or disposed of; (g) a plan indicating the location, size and species of replacement		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? **If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome**	Internal use
	vegetation to compensate for the loss of damaged vegetation; and (h) a staging plan for clearing greater than 4ha of vegetation. **Note: To remove a single tree on residential premises only a basic Vegetation Management Plan is required to be submitted to Council. The Vegetation Management Plan can be prepared by the property owner and may only require limited details about the above elements.**		