TWEED SHIRE COUNCIL

Mayor: **Cr Warren Polglase**

Councillors: **P Youngblutt (Deputy Mayor)**
D Holdom
B Longland
K Milne
K Skinner
J van Lieshout

Agenda

Extraordinary Council Meeting
Tuesday 14 September 2010

held at Murwillumbah Cultural & Civic Centre
commencing at 6.30pm

COUNCIL'S CHARTER

Tweed Shire Council's charter comprises a set of principles that are to guide Council in the carrying out of its functions, in accordance with Section 8 of the Local Government Act, 1993.

Tweed Shire Council has the following charter:

- to provide directly or on behalf of other levels of government, after due consultation, adequate, equitable and appropriate services and facilities for the community and to ensure that those services and facilities are managed efficiently and effectively;
- to exercise community leadership;
- to exercise its functions in a manner that is consistent with and actively promotes the principles of multiculturalism;
- to promote and to provide and plan for the needs of children;
- to properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible, in a manner that is consistent with and promotes the principles of ecologically sustainable development;
- to have regard to the long term and cumulative effects of its decisions;
- to bear in mind that it is the custodian and trustee of public assets and to effectively account for and manage the assets for which it is responsible;
- to facilitate the involvement of councillors, members of the public, users of facilities and services and council staff in the development, improvement and co-ordination of local government;
- to raise funds for local purposes by the fair imposition of rates, charges and fees, by income earned from investments and, when appropriate, by borrowings and grants;
- to keep the local community and the State government (and through it, the wider community) informed about its activities;
- to ensure that, in the exercise of its regulatory functions, it acts consistently and without bias, particularly where an activity of the council is affected;
- to be a responsible employer.

Items for Consideration of Council:

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ORDINARY ITEMS FOR CONSIDERATION

REPORTS THROUGH THE GENERAL MANAGER

REPORTS FROM THE GENERAL MANAGER

1 [GM-ECM] Arborist Report - White Fig Tree located in the carpark of the Chinderah Tavern known as Lot 2 DP 781464, Nos. 156-160 Chinderah Bay Drive, Chinderah

ORIGIN:

General Manager

SUMMARY OF REPORT:

Council, at the Extraordinary Council Meeting of 30 August 2010, resolved as follows:-

that Council:

1. *As a matter of urgency, obtains an independent risk assessment from a fully qualified arborist on the White Fig Tree located at Lot 2 DP 781464, known as Nos. 156-160 Chinderah Bay Drive, Chinderah.*

2. *Makes an assessment at a future Council meeting after receipt of the arborist report in relation to any future action.*

3. *Requests the owner to provide a copy of his arborist report.*

A copy of the independent Risk Assessment from Terra ARK and the Arboricultural Report commissioned by the Chinderah Tavern on the subject tree have been received and are reproduced in the body of this report to assist Council in assessing any future actions required.

RECOMMENDATION:

That Council makes an assessment of the actions required in relation to the White Fig Tree located at Lot 2 DP 781464, known as Nos. 156-160 Chinderah Bay Drive, Chinderah.

REPORT:

Council, at the Extraordinary Council Meeting of 30 August 2010, resolved as follows:-

that Council:

2. As a matter of urgency, obtains an independent risk assessment from a fully qualified arborist on the White Fig Tree located at Lot 2 DP 781464, known as Nos. 156-160 Chinderah Bay Drive, Chinderah.

2. Makes an assessment at a future Council meeting after receipt of the arborist report in relation to any future action.

3. Requests the owner to provide a copy of his arborist report.

A copy of the independent Risk Assessment from Terra ARK and the Arboricultural Report commissioned by the Chinderah Tavern on the subject tree have been received and are reproduced in the body of this report to assist Council in assessing any future actions required.

QTRA Licensed User

terra ARK

Our reference: 7010

7th September 2010

Senior Arborist
Tweed Shire Council
PO Box 816
Murwillumbah
NSW, 2484

Via email: pfahy@tweed.nsw.gov.au

Attention: Paul Fahy

Dear Paul,

RE: Tree Risk Assessment; White Fig, Chinderah Tavern

Terra ARK was requested by Tweed Shire Council to inspect a large White Fig (*Ficus virens*), located at 66 Chinderah Bay Drive within the car park of the Chinderah Tavern, approximately 7m northeast of the commercial building. Following the recent failure of a large limb onto the car park area directly adjacent to the tavern, serious concerns have been raised as to the current state of health and structural integrity of the tree. The tree has historical association with the original tavern owner and the fate of the tree is the subject of community concern.

An additional consideration in the long term management of this tree is the intention of the property owner to undertake a development of the site. The management of the tree within any proposed development is not within the scope of this report.
Terra ARK was asked to provide a risk assessment of the tree and an opinion of the current tree condition as well as management options. Tree risk

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assessment methodology as prescribed by the Quantified Tree Risk Assessment® (QTRA) system was applied. We have previously provided to you a synopsis of both the methodology and application of QTRA, however we have included a brief overview of the system here for the benefit of other recipients of this report. Please call to discuss if you have any questions regarding the methodology or the assessment outcome.

This report contains:

1. A statement of limitations*.
2. A brief overview of the QTRA methodology.
3. A copy of our Record of Tree Risk Assessment Inspection containing site observations, a summary of our findings.
4. Management Recommendations.
5. A copy of the Individual Tree Risk Survey Schedule

*Note that our statement of limitations constitutes an integral part of this assessment report.

If you have further enquiries or require further detail regarding this reporting, please do not hesitate to contact our office directly.

Yours Faithfully,

Sean Freeman *Jan Allen*

Sean Freeman
BA Hons MISA MAA QAA
Dip Hort (Arb) Dip Hort
ISA Certified Arborist AU-0045A
Consulting Arborist

QTRA Lic No. 762

Jan Allen
MISA MAA MAIH QAA
Dip Hort (Arb)
Director
Consulting Arborist

QTRA Lic No. 765

1.0 LIMITATIONS

The tree assessment was based on non-invasive, ground based and climbing inspection utilising internationally accepted techniques and methods of visual tree assessment[1] and sounding with a nylon hammer. Only certified licence holders having received training from Quantified Tree Risk Assessment Limited are permitted to use the Quantified Tree Risk Assessment system.

Recommendations contained within reporting are based on the observations made at the times of inspection. Changes in the trees brought about by storm, adverse weather events, accidental or deliberate damage, mismanagement, or by changes to the growing conditions through broader changes in the local area, may impact on the validity of the conclusions and further assessment may be required prior to implementation of the management recommendations.

NB: The assessment provided is valid for twelve months only.

Any tree works recommended do not imply that the trees will withstand adverse natural conditions (e.g. cyclone or drought) or other works carried out on or near them, including damage from construction, development, or maintenance activities. The report is not a guarantee, but a professional opinion of the current condition of the trees, the potential risk of harm posed by them and appropriate management options.

Whilst all care is taken in the preparation of this report, no responsibility can be taken for the continued vitality of the trees mentioned or for any damage that they may cause in the future.

[1] Ellison, M. 2005 *Quantified Tree Risk Assessment Used in the Management of Amenity Trees*. Journal of Arboriculture, March 2005
Helliwell, D. R. 1990. *Acceptable Level of Risk Associated with Trees*. Arboric. Jour. Vol. 14 No. 2:159-162.
Mattheck, C. and Breloer, H. 2005 *Body Language of Trees: a Handbook for Failure Analysis* The Stationary Office Books Great Britain
Lonsdale, D. 1999. *Principles of Tree Hazard Assessment*. Her Majesty's Stationary Office, London
Shigo, A. L. 1989 *A New Tree Biology* Second Edition Shigo and Trees, Associates

2.0 THE QUANTIFIED TREE RISK ASSESSMENT METHODOLOGY[2]

Terra ARK conducted an inspection and a detailed Quantified Tree Risk Assessment of the single tree located within the car park of the Chinderah Tavern, 66 Chinderah Bay Road. The location of the assessed tree is indicated in the satellite photograph attached below (Photo 1).

Quantified Tree Risk Assessment determines the risk of significant harm from tree-failure by quantifying the independent probabilities of three components of the tree hazard – 1) target, 2) impact potential and 3) probability of failure – enabling the product of the component risks (risk of significant harm) to be compared with a generally accepted level of risk.

An overall probability of 1/10,000 or less is generally considered to be the range of acceptable risk of significant harm from tree failure to the public at large[3]. Using the 1/10,000 range, where the risk of harm probability exceeds that threshold (is calculated to be greater than 1/10,000) remedial action to reduce the risk to or below the acceptable level is appropriate, unless the risk is limited to a selective individual or group – such as a tree owner – who make an informed decision to accept a greater or lesser risk. Additionally, the tree might confer benefits that could be set against the risk of harm.

The management options provided in this report, focus on reducing the risk of harm to acceptable levels. However, where appropriate, options to improve tree health and stability, to reduce tree conflicts with infrastructure and limit other nuisance related issues have also been included.

* * *

[2] Adapted from Quantified Tree Risk Assessment Limited (undated) *Quantified Tree Risk Assessment Practice Note V05-05*

[3] Helliwell, D.R. 1990 *Acceptable Level of Risk Associated with Trees Arboric.* Journ. Vol. 14 No. 2: Health and Safety Executive 1996 *Use of Risk Assessment Within Government Departments Report* prepared by Interdepartmental Liason Group on Risk Assessment HSE Books, Sudbury, Suffolk 48pp

3.0 RECORD OF TREE RISK ASSESSMENT INSPECTION

Job Ref: 7010 **Site:** 66 Chinderah Bay Road, Chinderah

Surveyors: Sean Freeman, Jan Allen, **License Numbers:** 762; 765

Date: 6th Sept 2010 **Arrival Time:** 9.30am **Departure Time**: 1pm

On-site contacts: Paul Fahy

Relationship to tree asset: Parks Supervisor, Tweed Council

Assessment type: Detailed Individual survey **Approx number of trees**: 1

Details of tree species (refer to survey attachment for expanded details):

White Fig ~ *Ficus virens*

Age Class: Mature (approx 120 years)

Height: 18m approx; Radial canopy spread: 15m; DBH: 3.6m

General Site Observations and Location:

The assessed tree was a native White fig located within the car park of the Chinderah tavern, 55 metres southeast of the current edge of the Tweed River, and 7 metres northeast of the tavern keg room. The tree represents a relatively isolated, dominant canopy in the immediate area of Chinderah Bay Road.

This tree is recorded as being planted in 1894 by the then publican to celebrate the birth of his son, since that time the ground area surrounding the tree has been converted into a car park with a bitumen seal. Normal stem taper and root buttresses were visible within a narrow ring garden extending approximately 2 metres around the base of the tree. It appeared and would be expected that as part of the construction of the sealed car park minor grading of the upper soil profile has occurred immediately beyond the narrow ring garden.

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Exposed site soils adjacent to the car park reflect a mixture of sandy alluvial sediments; such sandy profiles are free draining, permit gaseous exchange and are normally considered conducive to healthy tree growth.

Although site hydrology would almost certainly have been affected by the extent of development surrounding the tree, it is unlikely that underlying seasonal influences on soil moisture have changed significantly given the close proximity of the Tweed River.

Picture 1: Location of the assessed tree

Details of tree condition and relevant Visual Tree Assessment indicators:

A large diameter limb (>450mm) on the northwest of the canopy very heavily laden with a large volume of the climbing cactus *Hylocereus sp* had recently failed, tearing out two smaller branches beneath it as it fell.

Picture 2: Failed limb northwest side of the fig tree

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In failing the large limb pivoted over another scaffold limb directly beneath it, this has exposed the torn cross-section through the base of the failed limb and revealed wood decay (white pocket rot) through what was the tension side of the limb

Area of wood decay indicated by discolouration

Picture 3: Failed limb pivoted on limb below wood decay

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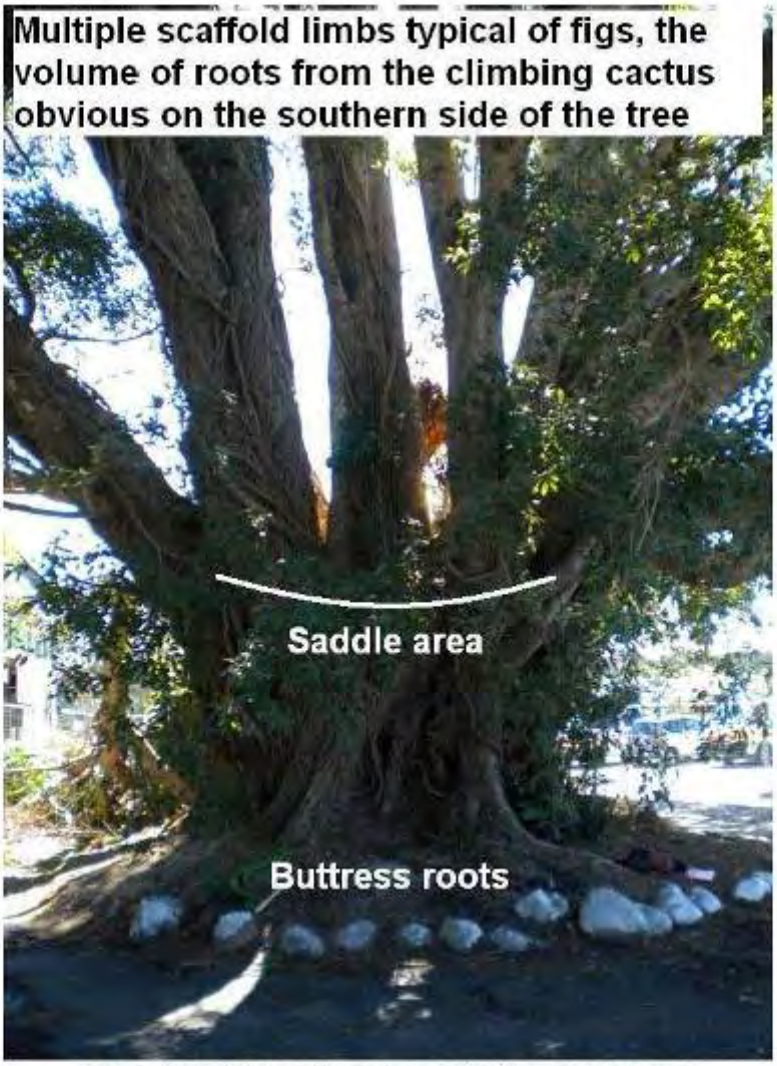
Typical of figs of this age the main stem of the tree is comprised of the union of numerous coalesced scaffold limbs, the saddle where these limbs originate has over time been filled with detritus made up of decaying leaves, bark and small diameter deadwood. The proliferation of climbing cactus roots in this rich growing medium have formed a very dense matt through the saddle area.



Picture 4. Form of the main stem and scaffolds typical of fig trees

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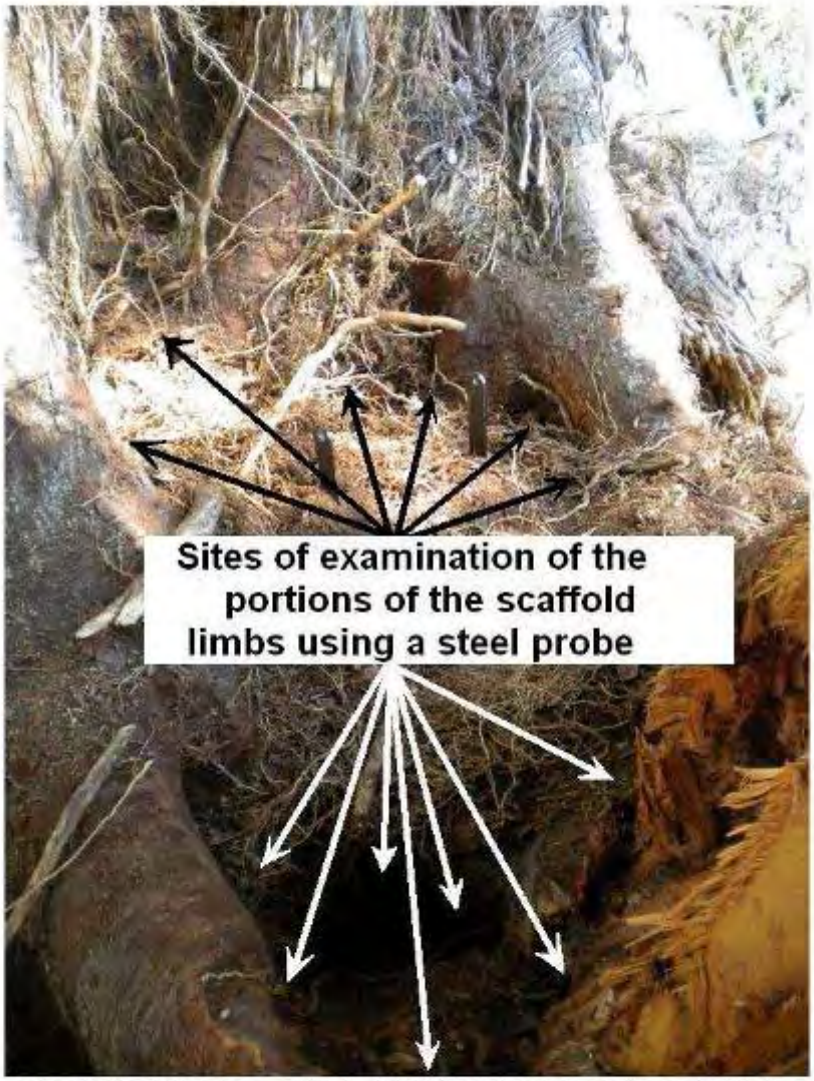
Manual removal of cactus roots and excavation of detritus matter from the saddle area permitted an inspection and the physical probing of the bark surfaces of the scaffold limbs forming the saddle area.



Picture 5: External surfaces of the scaffold limbs physically examined using a steel probe

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Results of the physical examination using the steel probe indicated that the decay column exposed by the recent overloading of the large limb extends into the lower limb on which it pivoted during the failure event. All other areas tested on the other scaffold limbs did not permit the steel probe to penetrate further than the bark cambium.

Scaffold limb with significant volume of decay on the tension side indicated by the penetration of the steel probe

Picture 6: Lower scaffold limb (under the recent failed limb) with decay on the tension side of the limb

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During an aerial inspection (using EWP) very large volumes of climbing cactus *Hylocereus sp* were observed on two scaffold limbs growing on the southern side of the tree, above the keg room of the tavern. The density of cactus growth had suppressed normal foliage growth in these affected portions of the fig tree.

Picture 7: Two masses of climbing cactus above the keg room

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The majority of the lower scaffold limbs have been lopped in the past presumably in an attempt to manage the low and spreading habit typical of figs. These older cuts were located along the edge of the tavern building to the southwest of the tree, and above the bitumen car park at a height of approximately 4 metres.

Overall the tree displayed visual indicators of average health and reduced vigor; both the density and volume of the live canopy were below levels that would be considered optimal for a tree of this age class. The observed condition of the tree has been directly impacted by the following;

- Decades of neglect
- Negative impacts of previous building and car park construction to the soil and root environment.
- Poor pruning practices.
- Enormous additional weight from large volumes of climbing cactus at the end of scaffold limbs.
- Suppression of foliage growth and competition for light resources by the epiphytic cactus.
- Compromised integrity of wood tissues through the activity of wood decay fungi.

It is important to state that despite the recent large limb failure and the cumulative negative impacts on the tree (listed above) since the reconstruction of the tavern in the late 1970's, we do not consider the tree to be in terminal decline.

The volume of visible tip die back, stem cankers and necrotic lesions are well within the expected range for a deciduous fig tree of this age. This professional opinion is supported by our ongoing survey and documentation of veteran fig trees through Southeast Queensland and Northern New South Wales over the last two years.

The presence of wood decay fungi within parts of the limbs and branches is perfectly normal and to be expected within a tree of this age. Our inspection and assessment identified an area of physical decay within the scaffold limb

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below the failed limb. No other areas of decay were identified in the critical unions that form the saddle area of the tree.

Only a small volume of deadwood was identified within the canopy of the tree.

The parts observed within the tree with the highest probability of failure that might result in significant harm or damage were:

- The two vertical limbs greater than 450mm in diameter currently supporting large volumes of heavy climbing cactus
- The lower scaffold limb (below the failed limb) greater than 450mm in diameter extending over the pedestrian entrance to the bottle shop.

Details of observed infrastructure – tree conflicts:

As previously noted, low spreading limbs of the tree have been lopped in the past, both at the building edge and above the car park. Surface roots growing through the bitumen beyond the narrow ring garden were being damaged through contact with traffic. Terra ARK observed no evidence of other infrastructure conflicts and has no knowledge of any past occurrence. No history was provided in relation to any trenching works inside the drip line of the tree that may have been associated with in ground services installation or their repair.

Details of any deleterious site conditions:

The tree species is a locally occurring native and suited to the natural site soils and climatic conditions. Evidence from observed excavation on the adjacent allotment indicates that the sub grade is formed from ancient sandy alluvial deposits.

Existing site conditions consist of a bitumen sealed car park surrounding the tree except for a narrow 2 metre ring garden at the tree base. It is probable that surface root material was removed to construct the carpark. Bitumen seal significantly reduces surface water infiltration, gaseous exchange and the establishment of a healthy soil ecosystem in the root zone. While this is not ideal for continued healthy and stable tree growth, a soil profile comprised largely of sand enables rapid water percolation and gaseous exchange at depths not possible in clay or shale profiles. This is likely to have been advantageous to this tree, potentially resulting in deeper root growth.

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Occupancy Rates/Targets:

Data sources: ■ Site observation ■ Client advice ■ Other (Richard Adams – Taphouse Hotel Group)

Various targets were considered, including vehicles, pedestrians and structures. The most significant targets in relation to the assessed tree were determined to be twofold:

- Patrons of the tavern (predominantly visiting the bottle shop) passing on foot beneath the elongated scaffold limb identified as having significant decay.
- The eastern edge of the tavern (the keg room) which is located under the portions of the fig most seriously affected by the large volume and mass of climbing cactus.

Patronage figures from the past 24 months were provided by the management of Chinderah tavern. Although the elongated limb identified as being structurally compromised principally threatens pedestrian access to the bottle shop, figures for patronage of the entire tavern were applied in our calculation: 350 – 450 people visit the tavern daily. This falls within target range 2 (240 – 864 pedestrians per day) from the QTRA target evaluation table.

The repair/replacement value for the keg room and its contents was derived from estimates provided by Chinderah tavern management. The suggested maximum of $75,000 fits within target range 2 ($24,943 – $89,800) from the QTRA table of replacement costs.

- **Target value** for the worst case scenario was calculated as **1/20**

NB: The target range 2 from the QTRA table represents the highest value in the target range i.e. 864 pedestrians per day passing under the tree, and a replacement cost of $89,800 for the keg room. As such it represents an extremely conservative calculation for the target value.

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Details of Impact Potential:

The worst case scenario identified was the potential failure of three identified limbs greater than 450mm in diameter, two above the tavern's keg room very heavily over loaded with climbing cactus, and one elongated lower scaffold limb above the pedestrian entrance to the bottle shop.

- The **impact potential of identified branches greater than 450mm in diameter was calculated as 1/1** based on the biomass weight estimate table.

Details of Failure Probability:

The **probability of failure (in normal weather conditions) of the identified limbs** observed on site as being severely over loaded by climbing cactus or structurally compromised by wood decay was conservatively **assessed as being 1/100** within the next 12 months

Summary of QTRA findings:

- **The current Risk of Harm (ROH)** from the failure of identified scaffold limbs greater than 450mm in diameter above the tavern's keg room and entrance to the bottle shop was **calculated at 1/2,000 within the next year**,.

This Risk of harm is greater than the generally acceptable range of 1/10,000.

Management intervention on the basis of risk is required as soon as practicable for the White fig assessed in this report.

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4.0 MANAGEMENT RECOMMENDATIONS

Given the historic significance attributed to this prominent veteran tree, the importance of its role in the ecology of the Chinderah area and its potential longevity, we advise that works should be undertaken to mitigate the risk rather than remove the tree. The tree works carried out on this tree should aim to balance risk management with maintaining the cultural and ecological values.

We do not believe that the complete removal of the tree is warranted in this circumstance based on the assessable risk of significant harm.

Very careful and serious consideration was given to all possible management options in order to reduce the risk of significant harm to an acceptable level while still retaining as much of the current structure of the tree as possible. The options were narrowed according to practicability resulting in the following recommended works:

Immediate Management

1. Removal of the climbing cactus in the upper canopy.

Removal of the cactus will require the use of an EWP at least 24m in height

- Physical removal of the cactus, the swollen stems of which are imposing enormous loads on the ends of two large scaffold limbs over the tavern's keg house.
- Removal of as much as possible of the aerial parts of the cactus wrapping the fig tree limbs.
- The affected limbs are to be visually assessed once they have been cleaned of cactus, and cactus roots.
- Careful manual cutting of the remaining aerial parts (stems/roots) of the cactus, removing a section from each stem/root and painting of the cut surface with Glyphosate taking great care not to contaminate fig tree tissues.
- Any regrowth will require similar management.

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2 Entire removal of the elongated lower scaffold limb identified as being structurally compromised

Pruning requires the direct supervision by an experienced and qualified Arborist (minimum AQF Level 3).

- The lower scaffold limb on which the failed limb has pivoted and is currently resting was found to have extensive wood decay through the upper tension side of the limb
- Due to the pronounced elongated and sparse form of this limb we do not consider reduction pruning an effective option in this instance.

3 Removal of a portion of the bitumen seal to enlarge the narrow ring garden

- Carefully supervised lifting of the bitumen seal around the existing narrow ring garden out as far as the visible surface roots currently growing through the bitumen.
- The road base beneath the bitumen seal is to be left in place to avoid additional damage to large structural fig roots close to the tree stem.
- Carry out basic soil chemistry tests (Albrecht/Reams, micronutrients)
- Application of well composted forest mulch above the exposed road base and surface roots.
- Application of soil treatments/drenches – if required based on the soil chemistry test results
- Placement of a formal garden edge using boulders (additional rocks to match the existing edge treatment) or timber logs to retain the additional mulch. Use of an edge with a strip footing or requiring a trench is not appropriate.

Long Term Management

Retrenchment of the elongated limbs in the upper canopy.

Retrenchment pruning requires the direct supervision by an experienced and qualified Arborist (minimum AQF Level 5).

- Selective reduction pruning of the elongated branches and limbs in the upper canopy structure (ie. The upper third of the tree canopy)

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- The volume of live canopy to be removed (pruning dose) is to be based on the minimum required to formatively contain future growth and reduce the strain placed on the major branch unions during wind loading.
- Retrenchment pruning is a long term management technique, epicormic sprouting may be stimulated by the removal of live foliage, and this sprouting regrowth may need to be subsequently managed.

Monitoring and Review

- Annual inspections of the fig tree to additionally inform ongoing management of the health and stability of the upper canopy.
- A review of this QTRA following completion of initial management works.

Terra ARK additionally recommends that a long term management plan be prepared and implemented for the tree. Any such plan should be reviewed according to any change in tree condition, development works within 15 metres of the tree stem and any change in site usage/occupation.

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5.0 INDIVIDUAL TREE RISK SURVEY SCHEDULE

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Individual tree risk Survey

SITE:	CAR PARK OF THE CHINDERAH TAVERN	**SURVEYOR:**	JA/SF
CLIENT:	TWEED SHIRE COUNCIL	**ASSESSMENT DATE:**	06/09/10
BRIEF:	DETAILED INDIVIDUAL TREE ASSESSMENT	**VIEWING CONDITIONS:**	CLEAR
		JOB REFERENCE:	7010

REPORT PAGE: 21 OF 21

SURVEY PAGES: 1

NO.	SPECIES	AGE RANGE	HEIGHT (M)	CROWN SPREAD (M)	DIA (MM)	BASAL DIA (M)	VITALITY	ASPECT	SOIL TYPE AND MOISTURE	LEAN DEGREE AND DIRECTION	MOST SIGNIFICANT PART	TARGET	TARGET RATIO	SIZE RATIO	PROB RATIO	WEATHER FACTOR	REDUCED MASS %	RISK INDEX	REVIEW YEARS
1	Ficus virens	M	18	15	3500	>4	M	Full solar access	Ancient alluvial, adequate moisture levels	Vertical	Upper canopy limbs 450mm	Existing building tavern patrons	1/20	1/1	1/100			1/2,000	1

COMMENTS:

- Target ratio was calculated based on the potential damage to the existing buildings and an average of the patronage of the tavern over the last 24 months
- The recent scaffold limb failure was precipitated by the significant over loading of the end weight of that limb by the large volume of climbing cactus; wood decay within the limb was a contributing factor.
- Two additional limbs are similarly over loaded with cactus, and one lower scaffold limb was identified as being significantly compromised by wood decay fungi

MANAGEMENT OPTIONS

1. ROH is above the threshold of 1/10,000 we recommend management intervention as soon as possible to reduce the level of risk to an acceptable level.
2. **Removal of the climbing cactus from the upper canopy, severing as many aerial cactus roots as possible and treating them with Glyphosate.**
3. **Removal of the structurally compromised scaffold limb extending above the pedestrian entry to the tavern bottle shop**
4. **Lifting of the bitumen around the tree stem, increasing the size of the ring garden to encompass the visible surface roots currently growing through the bitumen**

ALL TREES SHOULD BE RE-INSPECTED ANNUALLY TO ASSESS THEIR MECHANICAL INTEGRITY UNLESS OTHERWISE STATED IN THE SCHEDULE

HEADINGS & ABBREVIATIONS

COMP: COMPARTMENT
HEIGHT: ESTIMATED
AGE RANGE: Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE
DIA: MAXIMUM STEM DIAMETER FOR SPECIES, MEASURED AT A HEIGHT OF APPROXIMATELY 1.3 METRES
VITALITY: A MEASURE OF PHYSIOLOGICAL CONDITION. D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, G = GOOD
SIZE RANGE: SIZE CATEGORY OF MOST SIGNIFICANT PART CONSIDERED LIKELY TO FAIL. RANGES 1-5 1 = LARGE, 5 = SMALL
PROB RANGE: PROBABILITY OF FAILURE WITHIN 12 MONTHS. RANGES 1-5 1 = HIGH, 5 = LOW
TARGET RANGE: HIGHEST VALUE TARGET THAT THE MOST SIGNIFICANT PART LIKELY TO FAIL COULD STRIKE. RANGES 1-5 1 = HIGH, 5 = LOW VALUE/OCCUPANCY
TARGET RATIO ALLOWANCE FOR REDUCED ACCESS DURING HIGH WINDS WHEN IN SOME SITUATIONS TREE FAILURE IS MOST LIKELY, OR SITUATIONS WHERE THE PROBABILITY OF TREE FAILURE IS INCREASED BY HOT DRY WEATHER WHICH AT THE SAME TIME INCREASES PEDESTRIAN ACCESS. TO BE APPLIED BY MULTIPLYING THE RISK INDEX BY THE GIVEN FACTOR
REDUCED MASS % WHERE THE MASS OF A TREE OR BRANCH IS REDUCED BY DECAY/DEGRADATION THE RISK INDEX IS MULTIPLIED TO REFLECT THE PERCENTAGE OF MASS REMAINING
RISK INDEX: RISK OF SIGNIFICANT HARM = 1 IN X = RISK INDEX (E.G. RISK INDEX 20 = RISK OF SIGNIFICANT HARM 1 IN 20,000). AN ADDITIONAL FIGURE IN BRACKETS MAY BE SUPPLIED EITHER OR / REPRESENTING IF THE RATE OF FAILURES OVER THE YEAR, AND T THE RATE OF MULTIPLE OCCUPATION OVER THE YEAR. E.G. 1/1(1/10) WOULD REPRESENTS A RISK OF HARM 1/10,000 TO 10 OCCUPANTS OR AN EQUIVALENT MONETARY VALUE
SUFFIXES: (M) = FOR ARBORICULTURAL OR SILVICULTURAL MANAGEMENT, (S) TO REMOVE OR REDUCE THE RISK OF DIRECT DAMAGE TO A FIXED STRUCTURE BY MEANS OF CROWN/ROOT PRUNING, GROWTH
REVIEW: PERIOD (YEARS) TO NEXT INSPECTION
ITALIC TEXT: TEXT CHANGES MADE IN THE CURRENT YEAR

Arboricultural Report - Commissioned by Chinderah Tavern

marianhammond M.A.L.H.
horticultural consultant
MEMBER OF (G.A.L.I)

September 1, 2010

Attention Rick Adams,
C/- The Taphouse,
3 Griffith Street
COOLONGATTA, Q. 4225

ARBORICULTURAL REPORT
Ficus virens – Chinderah Tavern

Species: Ficus virens
Common Name: Strangler Fig
Location: Chinderah Tavern
Chinderah

Introduction
A site inspection was undertaken on 31/08/2010 at 2.25 pm. An on site visual assessment of the tree beside the Tavern was requested for a health and safety evaluation.
The tree was easily identifiable due to the very large broken branch and the safety barrier tape to cordon off a safety zone.

The tree is identified as a very mature Ficus virens or "Strangler Fig" by newspaper reports and is said to be 114 years old. Ficus virens is endemic to the region. The tree was assessed as being in poor and declining health or in a state of chronic stress.

Assessment is based on:

1. Lack of plant vigour
2. Poor canopy density
3. Epicormal growth emerging in lower sections of tree indicating a further loss of vigour in the future
4. Dieback of growing tips at branch terminals
5. Poor quality built environment for the root system
6. Recent collapse of large branch
7. Poor quality bark in other large limbs and around collar and trunk of tree
8. Areas of necrotic bark tissue leading to branch dieback throughout the tree

Built environment
The bitumen car park contributes to a lack of organic matter developing in the root zone area which would assist with supporting plant growth. This in turn contributes to a lack of biological activity in the soil.

ph/fax [illegible] 3239 mobile 0412 558 368
address [illegible] Highgate Hill 4101
email [illegible]
web www.marianhammond.com.au

ARBORICULTURAL REPORT
Ficus virens – Chinderah Tavern

Soil lacks:

1. Fertility
2. Porosity
3. Aeration all essential for plant root growth and this situation is limited

NO soil tests have been undertaken in this visual assessment of the health and viability of the tree. Tree shows no symptoms of nutrient deficiencies or toxicities at the time of inspection.

Root system

There is a root compaction problem created by the built environment. This built environment (asphalt carpark) can cause problems with pH, chemical contamination, or soil compaction and create water movement barriers in the soil along with soil temperature fluctuations. All these factors hinder plant growth, shortening the life span of the tree.

Water penetration to the root system is impaired and along with a diminished nutrient supply which inhibits the new root growth. 50% of soil should be water and air, along with the remaining percentage being the mineral component and organic matter of the soil.

Obviously the soil structure profile is severely limited in this application. Soil compaction increases the bulk density of the soil due to the lack air spaces for root development and growth, water infiltration and availability. Add to these factors the limited movement of carbon dioxide, oxygen and micro-organisms through the root zone and it is obvious problems will arise with plant growth.

Canopy

Poor foliage retention is the most obvious factor with the canopy. Terminal shoots of the canopy are in decline or necrotic. This exhibits as progressive dieback in the upper canopy as the tree struggles to maintain growth and then fails. The growing tips are the most powerful section of the tree for continuing growth and are maintained at the expense of other parts of the canopy.
A number of branches are showing serious decline in the bark indicating a lack of translocation of nutrients from the roots to the canopy and visa versa.

Foliage growth patterns

1. In decline
2. Epicormal growth emerging

Trunk & Branches - Bark Crackling and segmenting.

During the inspection large sections of the bark could be easily lifted and detached from the branches. This is not healthy bark and there is no green live tissue (meristem tissue) below these sections from which new bark can develop.

Bark crackling and segmenting presents sporadically all through the trunk and branches making the tree a safety hazard due to the brittle nature of the wood. The cause of bark crackling and detachment indicates impairment of tree function to support growth.

The location where the branch has snapped shows the tissue of the heartwood still appears to be of a healthy colour, but it is the bark that is the problem. The heartwood will die without nutrients.

ARBORICULTURAL REPORT
Ficus virens – Chinderah Tavern

This tree has been previously damaged as shown by the high number of branches emerging from low in the trunk. There are a high number of entry points for insect and pathogen attack throughout the tree.

Pests

1. Evidence of borer activity in sample sections of old broken branches throughout the canopy
2. Possible wood moth or beetle attack to cause detachment of bark from sapwood. No physical investigation was undertaken for insects due to danger from tree
3. Epiphytic cacti growth weight a factor

Collar

There are deep cavities around the collar of the tree. These were not physically examined due to the dangerous structure of the tree.

1. Bark crackling and detachment around collar
2. Paint dumping also shown with white paint (Paint is toxic to trees as well as mineral turpentine which his often found in washes at sites of spills and dumping)

Loss of such a large limb also means change in wind load factors on a diminishing crown.

Risk Management and Hazard Assessment

Risk Assessment (Likelihood of part or full failure of the tree)
Purpose of Assessment – Public health and safety and public liability insurance cover for potential damages in the future.

Potential for failure

1. Old wood comprised by environmental constraints,
2. General health of the tree is declining
3. Age of the tree
4. Past history of branch losses
5. Epiphytic growth in canopy
6. Sapwood rot

Assessment factors

Further specific limb failure throughout this canopy is very high and obvious to the trained eye. The visual assessment located a number of limbs shedding bark or where bark is already shedding and in a stage of breakdown. This is a sign of tissue death as trees cannot function without bark.

1. Potential for failure is high due to outbreaks of tree moths and beetles that attack exposed wood hatching due to spring and looking for food sources and nesting sites which this specimen provides in abundance. These insect pests target sick and weakened trees.

2. Wind load dynamics will undergo changes due to the loss of a large part of the canopy. The loss of tension in the wood fibres of surrounding branches (some of which are already seriously comprised) will contribute to the risk hazard. This branch was part of a wind buffer zone the tree forms as it grows.

ARBORICULTURAL REPORT
Ficus virens – Chinderah Tavern

Targets

- People
- Vehicles
- Building structures

Severe damage of assets and death or serious injury to persons in the general car park will occur. Not all limbs or branches will fall so close to the tree. Winds or storms could throw sections a considerable distance from the tree.

No information has been provided about prevailing weather conditions at the time of the present limb failure with the exception of the information that the limb failure of the large branch occurred in the middle of the night.

Recommendations

I recommend removal of this tree for the general health and safety of the patrons of the hotel and the numerous pedestrians that walk through this area. The tree is clearly in a state of decline with a sudden serious failure possible that could have dire consequences for any persons unfortunate to be nearby.

I understand the community is highly emotive regarding the tree possible removal, but if damage or death occurs they will probably say something should have been done sooner.

Immediate removal of the tree is advisable as seasonal changes in climate can bring about strong winds as the winds move to the north and north east, changing the present wind loads on the tree now such a large part of the crown has collapsed.

Yours sincerely,

M. J. Hammond

Marian Hammond
Horticultural & Arboricultural Consultant
M.A.I.H./M.Q.A.L.I./MQ.A.A./MI.S.A.A.C.

M 0412 558 368
www.marianhammond.com.au
hammond.hort.@gmail.com
marianhammond@netspace.net.au

LEGAL/RESOURCE/FINANCIAL IMPLICATIONS:

Advice from Council's Public Liability Insurer, Legal Counsel - Friday 10 September 2010 regarding the Arborist's report commissioned by Council

We have reviewed the report provided by Terra ARK in relation to the subject tree.

Relevantly the report stated:

- *overall the tree displayed visual indicators of average health and reduced vigour*
- *both the density and volume of the live canopy were below levels that would be considered optimal for a tree of this age class;*
- *the assessors did not consider the complete removal of the tree warranted though various issues would need to be addressed if the tree was to remain in order to reduce the risk of significant harm posed by the tree to an acceptable level;*
- *immediate management issues required the removal of the climbing cactus in the upper canopy, entire removal of the elongated lower scaffold limb identified as being structurally compromised and removal of a portion of the bitumen seal to enlarge the narrow ring garden;*
- *long term management issues included retrenchment of the elongated limbs in the upper canopy and annual inspections and review.*

In short, the arborist has indicated, based on the inspection, the tree can remain as long as it is appropriately managed.

We confirm:

- *the property owner is responsible for it as it is located wholly within the property. In the ordinary course, the property owner would be entitled to remove the tree given the risks it poses;*
- *if Council imposes a heritage order on the tree which in turn prevents the property owner from removing the tree, Council is in fact placing itself in a position of accepting responsibility for the tree;*
- *in order for the tree to remain in place, immediate works are required as well as long term management issues;*

- *if Council places the heritage order, it also creates a responsibility on itself to ensure the necessary steps are taken to implement the short and long term management issues. The arborist assessment is only valid for 12 months. In addition to undertaking the immediate measures referred to in the report, Council will need to ensure appropriate steps are taken for further assessments in 12 months time;*

- *if Council places a heritage order and does not appropriately implement the recommendations in the report in a timely manner, it would have little (if any) defences to any claims for further damage caused by the tree.*

We do not consider a heritage order be placed on the tree by Council. We are of the opinion Council, in doing so, is placing complete responsibility for the tree upon itself in circumstances where it is conscious of its hazardous nature. In the event Council was unable to afford or did not implement the ongoing maintenance requirements, it would be liable for any damage sustained by the tree. Council may also face indemnity issues with its insurer should it place itself in such a position however, we have not discussed this aspect with the insurer and only raise this as a potential issue at this stage.

In the circumstances we recommend:

1. *Council refrain from placing a heritage order on the tree. Given the ongoing management requirements for the tree and the risk Council may not have the resources to address those issues in the future and the risk the necessary steps may be overlooked by Council, we do not consider Council should take on this responsibility.*

2. *Council meet with the property owner and discuss whether the property owner will agree to the tree remaining for the present time on the basis Council agrees to undertake the immediate management issues identified in the arborist's report at Council's cost.*

3. *If option 2 is adopted, Council advise the property owner that it will arrange for a further inspection of the tree in 12 months time and reassess the situation then. However, Council should also advise the property owner that if it notices any issues with the tree prior to that time to advise Council and it would be reassessed at that time.*

4. *Alternatively, Council allow the property owner to remove the tree at the property owner's cost.*

Advice from Council's Public Liability Insurer, Legal Counsel - Friday 10 September 2010 regarding the Arboricultural report commissioned by the Chinderah Tavern

We have briefly reviewed the contents of the attached report. The report's contents, particularly the conclusions reached, reinforces our opinion in this matter. The expert evidence concerning the risks associated with the tree is such that we do not consider it a liability Council should assume. We appreciate the significance of the tree to the community however, we consider the public liability risk imposed upon Council should it order the tree to remain outweigh any amenity value.

POLICY IMPLICATIONS:

Enterprise Risk Management Policy and Local Environment Plan (Heritage Provisions).

UNDER SEPARATE COVER/FURTHER INFORMATION:

*To view any **"non confidential"** attachments listed below, access the meetings link on Council's website www.tweed.nsw.gov.au (from 8.00pm Wednesday the week before the meeting) or visit Council's offices at Tweed Heads or Murwillumbah (from 8.00am Thursday the week before the meeting) or Council's libraries (from 10.00am Thursday the week of the meeting).*

Nil.