Arborist's Report

Arboricultural Impact Assessment

Forster Civic Precinct
Cnr Lake, West and Middle Street
Forster

By
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1. Introduction

This report has been commissioned by Gavin Maberly-Smith (Coastplan Group), on behalf of Enyoc Pty Ltd. It relates to the proposed redevelopment of the Forster Civic Precinct at the corners of Lake, West and Middle Street, Forster (Formerly Old Forster Primary School).

This report is an arboricultural impact assessment as per the guidelines of AS 4970 -2009, The Australian Standard for Protection of Trees on Development Sites, and is intended to accompany a Development Application for the site.

This report follows a preliminary tree assessment report provided to the planning team (TLC Tree Solutions Oct 2005). The most recent site inspection was carried out on 15th February 2017.

2. Scope of the Report

This report provides information relating to existing trees, each of which have been nominated for retention as part of as part of the proposed development of the site. The report does not detail each of the planning discussions or amendments to design proposals which have preceded the final design nor the necessary compromises that have been made as part of this process.

Final plans reviewed for this report, and which are the plans upon which tree retention and protection assumptions are based include;

- Preliminary Plans Sheets 22-32, 34-35, 40-41, 50-53, 60-61 and 90-92. by TVS Architects. Ref 5490, dated 17- 02-17.

A copy of the relevant portion of the Lower ground / Basement plan has been used in Section 6 of this report to indicate tree numbers and required locations for tree protection fencing.

3. Method of Assessment

Advice contained in this report is based on observations relating to standard development site assessment criteria applied by TLC Tree Solutions, including a combination of assessments relating to current tree health, tree structure and likely future condition, tolerance to development impacts, possible future hazard potential, and general amenity value.

TLC Tree Solutions' assessment methodology incorporates all pertinent principles of AS 4970 - 2009 The Australian Standard for Protection of Trees on Development Sites.

4. Observations

The following notes provide information regarding the terms used in the Summary Table of Trees to be Retained (Section 5).

4.1 Tree Name

Common and scientific names are given.

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4.2 Dimensions

DBH - Diameter at Breast Height. Trunk diameter measurement at 1.4m from ground level. This measurement provides a guide to tree size and may also be used to assist in determining required root area protection zones for retained trees. Where multiple trunks occur, then either the size of the largest trunk(s) is indicated or the description 'Multi' trunked is given.

Canopy Spread - the indicative spread of the canopy in metres. This measurement allows likely conflict with proposed building lines to be recognised. Where trees are asymmetrical, canopy measurements may be made in cardinal directions to provide further assessment detail.

Height – An estimate of tree height is provided in metres.

4.3 Tree Health / Condition

Health is measure of tree vitality or vigour. Condition refers to structural condition. Categories used in the tabulated data are Good, Fair, and Poor.

4.4 Tree Protection Zone

A guideline as to the optimum distance recommended to protect tree roots and soil around the base of each retained tree. Where radial distances have been reduced due to development impacts on one side of a tree protection zone, distances may be extended in other directions in order to provide a compensatory area for root protection.

Actual Tree Protection Zones nominated for this site are not symmetrical and are illustrated on the plan in section 6 of this report.

4.5 Notes

Comments have been supplied to summarise relevant features of the trees assessed.

5. Summary Table of Trees to be Retained

Tree No.	Name	Dimensions		Health	Condition	Recommended Tree Preservation Zone (Radius m)	Notes
		DBH (cm)	Canopy Radius				
38	*Araucaria cunninghamii* Hoop Pine	90	10	Good	Good	8	Lower limbs have lost bark on the underside – possible due to a past fire under the canopy. Significant pruning (>15% of canopy) may be required to clear the proposed building line. However since these limbs will be lower limbs, and are less significant from a tree health perspective, the tree is able to be retained
44	*Araucaria heterophylla* Norfolk Island Pine	100	9	Good	Good	8	Care must be taken, as set out in the Tree Protection Plan at appendix one to this report, when the existing bitumen surface within the root area is removed.
65	*Eucalyptus punctata* Grey Gum	80	7	Good	Fair	8	Substantial tree. Leans to East. Has been previously pruned away from power line
66	*Eucalyptus pilularis* Blackbutt	95	9	Poor	Poor	-	Located on the council reserve / footpath outside the site. Hollow trunk with suckering stems dominated by a well-established fig. Fig has grown in significance since the last assessment in 2005. Tree stability has not been specifically assessed. Tree will be protected from development impacts by trees located closer to the line of excavation.
67	*Polyscias elegans* Celery wood	20	6	Good	Poor	3	Not identified in original report. Tree has substantial lean outside site as a result of canopy competition.

Tree No.	Name	Dimensions		Health	Condition	Recommended Tree Preservation Zone (Radius m)	Notes
		DBH (cm)	Canopy Radius				
68	*Glochidion ferdinandi* Cheese Tree	40	4	Good	Fair	4	Tree now identified as a Cheese Tree (*Glochidion ferdinandi*). Nominated for retention as part of a “rainforest” group in the corner of the site.
69	*Acmena smithii* or *Syzygium paniculata* Lilly Pilly	55	6	Fair	Poor	6	Basal cavity originally identified appears stable but should examined in detail if tree shows future signs of decline or instability. Additional tree *Elaeocarpus reticulatus* (Blueberry Ash) is growing nearby. Height 8m, DBH 15 cm, Crown radius 4m. Will be protected as part of the retained group of trees.
70	*Glochidion ferdinandi* Cheese Tree	50, 40	8	Fair	Fair	8	Tree has been nominated for retention due to its ecological significance. Substantial canopy pruning will be required and will be specified and supervised by the nominated Project Arborist in accordance with the conditions of the Tree Protection Plan. (see Appendix One).
72	*Ficus microcarpa* Small-fruited Fig	160	12	Good	Good	10	Large street tree. Pruning of broad spreading canopy will be required. Pruning works will be specified and supervised by the nominated Project Arborist in accordance with the conditions of the Tree Protection Plan. (see Appendix One).

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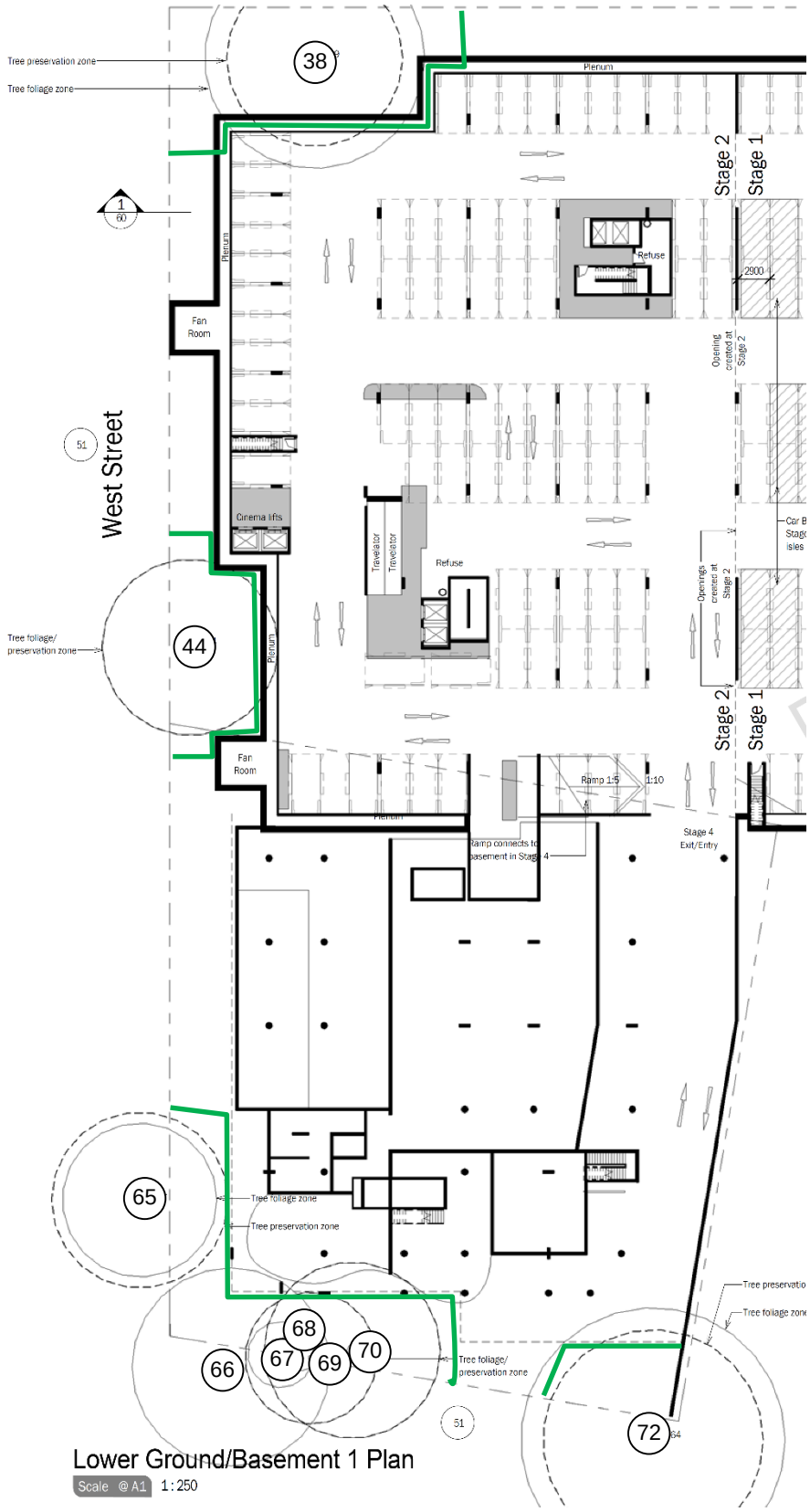
6. Site Plan - Showing Approximate line of Tree Protection Fencing



Site fencing is expected to complete the outer edge of tree protection fenced areas.

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7. Observations.

A total of ten trees have been nominated for retention and protection. These include Trees 65, 66 and 72 which are located outside the site boundary, a 'rainforest' group comprised of trees 67, 68, 69 and 70, as well as a younger Blueberry Ash (not numbered), and two separate Araucarias, which are numbered 38 (Hoop Pine) and 44 (Norfolk Island Pine).

Details for each of these trees have been provided in the table in section 5.

In the case of both Tree 38 (Hoop Pine) and Tree 70 (Cheese Tree) a significant extent of canopy pruning will be required to avoid direct conflict with the proposed building line. In order to ensure their retention this pruning must be kept to the minimum possible, and any works which might further reduce the trees chance of survival, such as installation of scaffolding, should also be also modified or reduced from 'normal' levels by making efforts to install around existing limbs rather than cutting them further back.

Significant pruning of Tree 69 (Lilly Pilly) and 72 (Small-leaved Fig) will also be required, but considering the age and condition of these two trees is seen as less problematic, and is unlikely to lead to tree decline.

Detailed specifications for required pruning work will be prepared by the nominated Project Arborist during the construction phase

8. Requirements for Tree Protection

In order to give the retained trees the best chance of survival to provide future amenity, they will need to be managed in accordance with the Tree Protection Plan included at Appendix One to this report. The Tree Protection Plan (TPP) has been written so that it can be adopted as a condition of consent, however, in the event that any standard Council Conditions either overlap or offer an alternative to the recommended tree protection methodology, the TPP can be modified to provide a complementary set of tree protection guidelines.

Section 5 of the TPP details a protocol for pruning of roots where that may be required. A better methodology proposed for this site is to use sheet piles along lines of excavation.

If any part of this report is not clear to the reader, or if further information is required, please contact the arborist by email or phone at the office of TLC Tree Solutions.

Yours faithfully,

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Appendix One

Tree Protection Plan

Preface

The following Tree Protection Plan (TPP) provides advice regarding tree protection measures required to retain and protect nominated trees likely to be impacted by development works at Forster Civic Precinct.

The TPP explains the reasons for those measures, and details stages of construction that may require expert assistance such as the conduct of excavation, and provides a mechanism for advice regarding any necessary ongoing tree care. It also sets out details of proposed compliance certification required in relation to trees or tree management procedures.

1. Chronology and Implementation

1.1 The **Tree Protection Plan** must be applied and enforced **PRIOR** to commencement of any site works. “Site works” includes the formally approved commencement of demolition or excavation as well as any informal commencement, for example the entrance onto site of any machinery for landscaping works or vegetation removal. The following highlighted tasks are identified in their proposed sequence

Reason - To establish priorities for site management and to prevent accidental but avoidable damage to retained trees, whilst providing clear sequential guidelines to promote efficient workplace planning.

1.2 **Tree Protection Fencing** - must be erected and be certified by the Project Arborist before commencement of any further site works. See further specifications in section 3 of this Tree Management Plan.

Reason – Fencing acts as a physical and visual reminder of protected areas.

1.3 **Hold Point - Site Managers Meeting** - In conjunction with the establishment of Tree Protection Zones a site meeting should be held between the nominated Project Arborist and the site managers to clarify details of an agreed Site Management Plan; including provision for site access, materials storage, onsite parking, any proposal for excavation with nominated TPZs, and any proposal(s) for tree pruning.

Reason - Early consideration of access requirements and site management issues will prevent conflict between later works schedules and tree protection requirements.

1.4 **General Demolition** - No general demolition, tree removal, or access onto site for machinery may commence within the property, unless under the direct supervision of the Site Arborist, until the installation of tree protection fencing has been certified by the Site Arborist.

Reason – Misidentification of trees and required Tree Protection Zones or use of machinery within TPZ areas is likely to damage soil structure or roots in ways not permitted under the guidelines of this Tree Protection Plan.

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1.5 **Root Pruning** – where pruning of roots greater than 30mm in diameter is necessary, any such pruning may be carried out only under the supervision of the nominated Project Arborist, either prior to, or during initial excavation in areas adjacent to protected trees. See further general specifications in section 5 of this TMP.

Reason - To minimise damage to the roots of retained trees.

1.6 **Removal of Tree Protection Fencing** - Tree protection fencing must not be removed, moved, or modified unless specifically authorised by the Site Arborist.

Reason - Tree Protection Fencing is not effective in safeguarding trees if moved to allow unsupervised access by construction workers to Tree Protection Zones.

2. Arboricultural Reporting Procedures - Appointment of Project Arborist

2.1 A Project Arborist shall be appointed to monitor and advise in regard to all issues affecting tree health for all phases of construction. This will include supervision of tree protection measures for the duration of construction and provision of compliance certification on completion of works or as required by the development consent.

Reason - Experience has shown that implementation of tree protection measures requires specialist attention.

2.2 Notification of any nominated successor to the approved Project Arborist must be provided in writing, to the Principal Certifying Authority with relevant details, including the date of transfer of responsibility.

Reason - To ensure continuity of advice throughout the project period and to clarify a legally binding chain of responsibility in the event of future tree decline or failure.

2.3 The Project Arborist is to carry out independent inspections as required or on a bi-monthly basis during the construction period to monitor ongoing tree health. Reports will be provided, as necessary, following each inspection to the Principle Certifying Authority and Site Manager in relation to all ongoing tree management issues.

Reason - To promote effective communication and allow timely remedial action to be taken if required.

3. Establishment of Areas for Tree Protection Zones

3.1 A Tree Protection Zone (TPZ) is to be established to protect each of the trees or groups of trees nominated for retention. The location of the TPZ(s) is as set out in Section 6 of the report to which this TPP is appended. Unless otherwise approved by the Project Arborist the TPZ for each nominated tree must extend to and incorporate at least the dripline area.

Reason - Specific guidance as to effective TPZ distances is required to adequately protect the nominated trees.

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4. Conduct of Tree Protection Zones

4.1 Tree protection fencing is to be installed at the boundary of each TPZ.

TPZ fencing must consist of posts set into the ground or supported by a freestanding base which itself is secured against sideways movement. This is particularly important in areas where site workers might be tempted to move posts for “temporary” access. Mesh or wire between posts must be durable, highly visible and at least one metre high. “Cyclone” type mesh 1.8m high is most appropriate for “high-pressure” areas.

Reason - To ensure that the boundaries of each TPZ are properly marked.

4.2 Unauthorised removal or disruption of the Tree Protection Zone fencing is to be considered a breach of the conditions of development consent.

Reason - To ensure that both site workers and the Principle Certifying Authority are informed of the serious nature of a breach.

4.3 Prohibited within the TPZ are;

- unauthorised access, including access for vehicles or pedestrian traffic.
- storage or stockpiling of materials
- excavation, leveling, soil removal, or work of any kind unless specifically approved or supervised by the Site Arborist,
- incursion of pollutants, solvents, excess water or other material harmful to the protected trees such as silt, concrete, paint, spray drift, or mortar mix
- location of site sheds, or other temporary structures unless specifically approved and supervised by the Site Arborist

Reason - To ensure that the most significant causes of tree damage and future decline or hazard formation are prevented.

4.4 The TPZ fence is to remain in place until the end of construction when its removal is to be approved by the Site Arborist.

Reason – To prevent ‘last minute’ damage to the tree or the tree’s root zone.

4.5 Any access within the TPZ for required site works must be authorised and supervised by the Site Arborist.

Reason – To ensure that any works required, including any future landscape works, are carried out as anticipated by the Project Arborist and that all tree protection measures are properly applied.

4.6 The Tree Protection Fence is to display clear signs indicating the reason for the fence and action to be taken if access is desired. An example of such a sign follows;

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NO ENTRY

TREE PROTECTION ZONE

No construction Access

For information regarding access or
tree protection measures please contact the
Project Arborist on (0412) 292 777

Reason - Site workers need to be made aware of the protection measures in place and the reasons those measures are required.

4.5 Modifications to tree protection fencing may be made under the supervision of the Project Arborist. For example, scaffolding walkways may be constructed to allow pedestrian access around T44.

Reason - To provide alternative forms of site access while maintaining required tree protection.

5. Action Regarding Roots at Boundaries of the Tree Protection Zone

5.1 In any areas where existing tree roots may extend beyond the TPZ towards a line of proposed cut, trial excavation and manual root pruning of any roots encountered that are larger than 30mm is to be carried out as directed by the Project Arborist. Such pruning may be carried out at the time of site establishment, or of excavation for footings or services at the Project Arborist's and Site Mangers discretion.

Reason - Poor root pruning or other root damage can cause long-term tree decline (and potential instability) due to incremental decay many years after project completion.

5.2 Cut roots shall be covered to prevent desiccation or otherwise treated as advised by the Project Arborist. Measures to prevent collapse or drying out of the soil profile may be required.

Reason – The health and stability of retained trees may be significantly impacted by poorly managed excavation.

6. Works within the Tree Protection Zone

6.1 Removal of any unwanted materials from within the TPZ including: rubbish, fill, or plant material, shall be carried out under the supervision of the Project Arborist. Such work is likely to require specialist equipment and/or be carried out by hand.

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Reason - The use of heavy machinery within the Critical Root Zones of retained trees may have a significant detrimental effect on their health and stability.

6.2 Landscaping works within the Tree Protection Zone shall be monitored by the Project Arborist to ensure that site/soil conditions required to promote the health of both the existing tree and any future plantings are maintained.

Reason - Common landscape specifications such as the ripping or cultivation of subgrades should be avoided around trees.

6.3 Consideration must be given to the location of any new underground services so that, unless detailed arrangements are made proposed services are located outside the TPZ.

Reason - Technical solutions such as under-boring to allow the installation of services within the TPZ should be considered a last resort.

6.4 No excavation for any drainage pipes, pits, culverts or similar shall be carried out within the nominated TPZ unless specifically authorised and supervised by the Project Arborist.

Reason - Further excavation may substantially impact on roots within the tree's Critical Root Zone

6.5 Work on trees to be pruned shall be carried out by qualified tree workers in accordance with the guidelines of the Workcover NSW Code of Practice for the Amenity Tree Industry, and in accordance with any other Workplace Health and Safety conditions required by the Site Managers.

Reason - To ensure worker safety and compliance with current WHS legislation.

7. Additional Treatments within Tree Protection Zones

7.1 A 75 - 100 mm layer of "no fines" tree mulch shall be applied within each TPZ as directed by the Site Arborist.

Reason - Mulch will assist in stabilising soil moisture and surface temperature conditions during a critical period of rhizosphere transition. Appropriate application of mulch is also beneficial for trees in the long term. Among other advantages it provides enhanced conditions for desirable soil organisms, may reduce compaction of surface soil layers, and acts as a slow release source of nutrients.

7.2 The Project Arborist shall monitor soil conditions and provide guidance to ensure adequate soil moisture for all retained trees. A watering regime shall be implemented or adjusted as part of the arboricultural reporting conditions. A drip irrigation system based on a dedicated water supply (ie not shared with other site users) is preferred.

Reason - Imposition of a new drainage and moisture regime on the root system of retained trees may cause significant stress, but may be moderated by supplementary irrigation.

7.3 Application of additional root or soil treatments such as root hormones, nutrients or fungal inoculants is to be carried out only as determined by the Site Arborist.

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Reason - Additional measures to maintain the health of the retained tree may be required, unapproved measures including excessive application of nutrients may lead to increased stress.

8. Final Compliance Report

7.1 The Project Arborist shall provide a final compliance report detailing any outstanding concerns or suggestions for ongoing tree management.

Reason - Despite all precautions and assumed adherence to the guidelines of this Tree Protection Plan, ongoing care and specialist assessment may be required to manage both public risk and the safe retention of significant trees.

If any part of the Tree Management Plan is not clear to the reader, or if any conflict arises between conditions outlined in this **Tree Protection Plan** and the proposed completion of any other site works, including approved works, then **immediate clarification** or additional advice must be sought from the **Project Arborist.**