

**ARBORICULTURAL IMPACT ASSESSMENT for  
DEVELOPMENT AT 336-344 EDWARDS STREET WAGGA WAGGA NSW – 2020.**

**1. INTRODUCTION.**

Daryl Jackson Alastair Swayn Pty Ltd, Architects of Canberra have lodged a development application for 336-344 Edwards Street Wagga Wagga with the Wagga Wagga City Council (WWCC) – reference DA/2020/0476. WWCC have advised the applicant;

*A qualified person is required to prepare an arborist report for an existing tree on 55 Gormly Avenue to advise what impacts (if any), the proposed development is likely to have on the tree.*

An assessment of the tree and the potential impacts by the proposed development are provided with recommendations.

**2. SCOPE AND PURPOSE.**

Mr Evan Williamson of Daryl Jackson Alastair Swayn Pty Ltd has commissioned this report – he can be contacted on 0414 432 212.

The tree and grounds of 55 Gormly Avenue were inspected on 16 October 2020.

The report is designed to provide;

- accurate identification of tree vegetation,
- tree condition, including any hazards present
- evaluation of the tree relative to its contribution to the environment, amenity and any other identified values
- evaluation of potential development impacts
- recommendations for management of the issues identified.

Interpretation of impacts and recommendations are based on the author's interpretation of *Australian Standard 4970-2009 Protection of trees on development sites.*

Diagram one below provides identification of the site and tree locations on site.

A number of development plans were provided to aid in the assessment. The following site plan was used to aid in the evaluation of the development impacts to the tree – specifically calculation of distances.

*The Riverina Clinic – 336-344 Edwards Street Wagga Wagga – Proposed Floor Plan, Ground Level. Job number 19 257 Drawing DA\_YTC\_A-100 Rev. A September 2020. DJAS Canberra.*

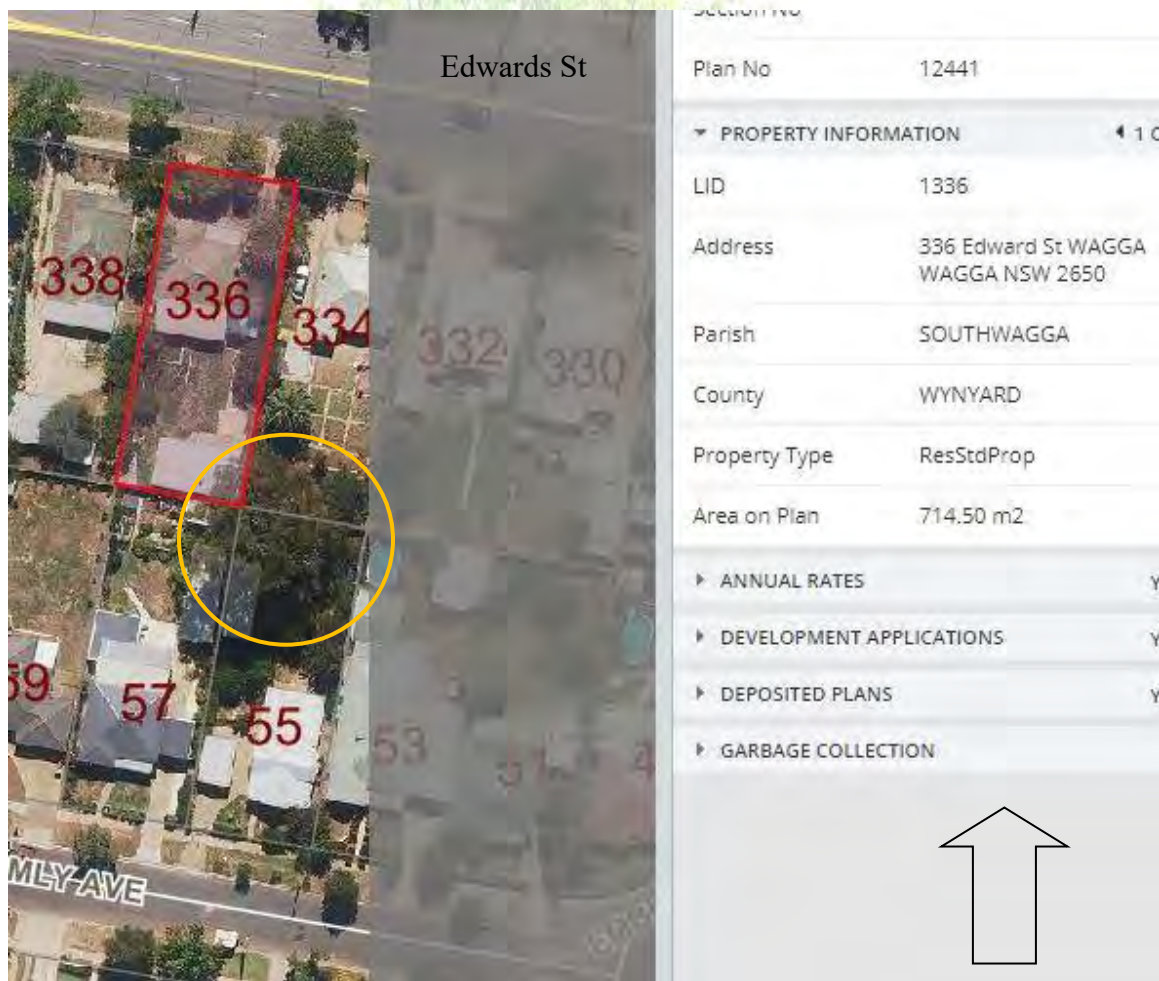
**NOTE:** A second independent development has been lodged for 334 Edwards Street which is taken into consideration relative to this development assessment – reference DA20/0427.

Detailed descriptors and terms are contained at the conclusion.

### 3. Site Conditions and Background.

336 Edwards Street is the portion of the development that may impact the tree at 55 Gormly. The site is a 714 square meter block and fronts Edwards Street, or Sturt Highway, and the south east corner of this property joins the north-west corner of 55 Gormly to the rear.

The site currently comprises a single story dwelling and shed in the south east corner; the shed is effectively under the canopy of the subject tree. The large subject tree is located in the north-west corner of 55 Gormly Avenue – Diagram one.



**Diagram 1 – Site location – subject allotment highlighted. Subject tree is circled.**

*Tree canopy can be seen encroaching the existing shed.*

*Adapted from WWCC IntraMaps 2020.*

#### **4. Tree Inspection Details.**

##### General Description.

The subject tree is a large *Eucalyptus cladocalyx* (Sugar Gum). The stem diameter is 1.4m and height estimated about 25-26 meters. The canopy spread is not evenly distributed, but extends some 12 meters to the north towards the development and joining property of 336 Edwards Street.

Due to constraints of fences and other sheds the exact canopy spread could not be accurately measured onsite – satellite imagery indicates a total canopy spread of 20 meters. The primary stem and branching structure of the tree is described as good to excellent, and the tree is exhibiting good vigour.

The tree underwent recent pruning event 1-2 years ago where much of the lower canopy over 55 Gormly Avenue property was reduced or removed. The height of the tree was not reduced and the overhang over 336 Edwards Street property was not addressed. That pruning event could have been better conducted.

The tree is now exhibiting strong epicormic growth over much of the lower stem- branch system – the growth is about 500mm to 1 meter long. This is a direct result of the tree being ‘over pruned’. A small amount of dead wood is evident in the upper portion of the canopy. No structural defects were noted in the tree. The tree presented as stable in the ground, and can be expected under current conditions to have an expected remaining useful life in excess of 40 years.

##### Environmental Values.

The species is indigenous to South Australia (Brooker and Kleinig 1999), although it has been widely planted in large numbers across the greater Riverina as a fast growing and hardy tree that is well suited to the local environmental conditions.

It has similar or good substitute environmental values to indigenous eucalyptus species such as *E. camaldulensis* (River Red Gum) and *E. melliodora* (Yellow Box) - providing shelter and foraging sites for native birds and other fauna. At this point the tree has no nesting hollows.

Taking into account the size of the tree, its dominance in the local landscape and elevated environmental values the tree should be considered a significant tree – it has high retention values. Typical replacement time frame would be 75-100 years.





**Photo 1 – Subject tree in location** – View from yard of 55 Gormly, development site 334 Edwards located to rear right of tree (arrow) and shed of 336 Edwards Street circled.

*Note the heavy under pruning of the lower canopy in recent times and the flush of epicormic (sucker) growth in the lower canopy – yellow circle. Ideally the canopy should have been reduced – not removed.*



***Photo 2 – Close up of tree location in the north-west corner of 55 Gormly - relative to joining properties of 334 and 336 Edwards Street and 57 Gormly to rear of tree.***

Tree Location.

The centre of the tree stem is located as follows.

- 3.2 meters from the fence of 334 Edwards Street.
- 2.85 meters from the fence of 57 Gormly
- 4.28 meters from the south east fence corner of 336 Edwards Street.

The tree has a calculated Structural Root Zone (SRZ) of 3.8 meters and;

Calculated Tree protection Zone (TPZ) of 15 meters – (Australian Standard 4970).

The subject tree will almost certainly have a significant root footprint well into the property of 334 Edwards Street, and well into the properties of 336 Edwards Street and 57 Gormly. Although root growth is opportunistic and does not automatically follow any specific direction or pattern, root extensions from the stem of the tree is often approximated as equal to the height of the tree or twice (or more) the canopy spread of the tree if physical impediments to root growth are not present (Perry 1982).

I would be confident that the subject tree roots will extend well into all 3 joining properties.



**5. Review of Planned Development and Potential Impacts.**

Taking into account the size and potential root extension distance the development impacts of both 334 and 336 Edwards Street should be considered.

Summary of 334 Edwards Street Development.

The development proposes a 3 unit two story development. The rear unit – unit 3 footing system will be located 3.8 meters from the fence or property boundary joining 55 Gormly. This equates to a total distance of 7 meters from the stem centre. The area between the footing system and fence is indicated as intended low water use lawn. It is also noted that a sewer easement runs east west in 334 – 336 Edwards Street parallel with the properties of 55 & 57 Gormly in this space between the intended footings and south boundary fences.

The west building footing is located about 1m from the fence joining 336 Edwards Street.

Summary of 336 Edwards Street Development.

Site plans provided by Daryl Jackson Alastair Swayn Pty Ltd, Architects of Canberra that indicate that the following building footprint relative to the subject tree as follows.

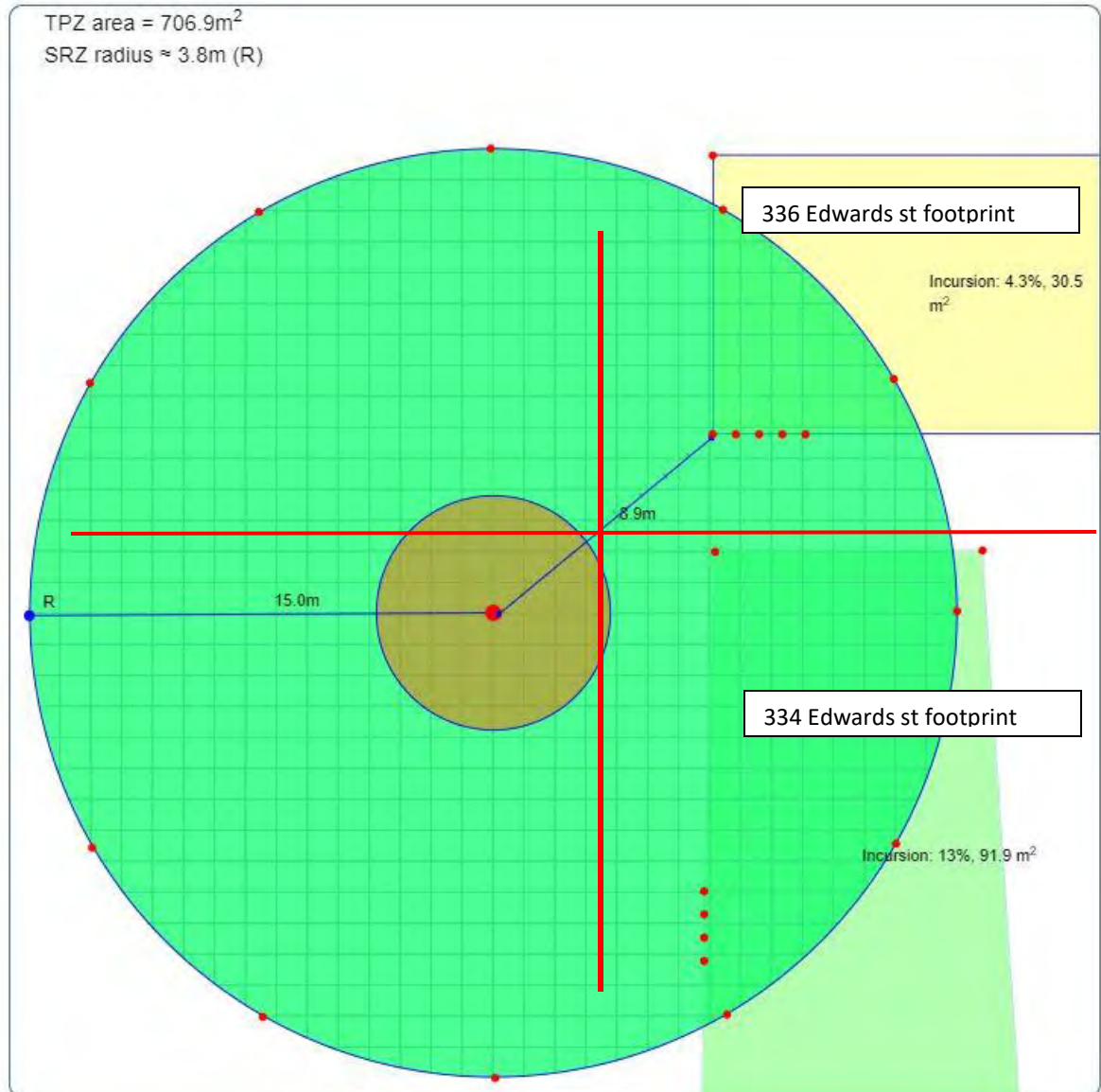
- The south boundary of the building is located 3.8 meters from the south fence line (also noting that the sewer easement is on the south boundary fence)
- The east building alignment (footing system) joining 334 Edwards Street is located 3.2 meters west of 334 Edwards Street.
- The area between the south boundary of the building and south boundary is indicated as access pathway over the sewer easement area.
- The south west corner of the intended building footprint is calculated at 9.25 meters to the centre of the tree stem.

Impacts on Root System.

Trenching for footing construction will sever the root systems at the indicated points. Whilst some root systems may be found at depth – 80% of tree root systems will be located in the top 300mm of the soil profile (Perry 1982), which will mean that effectively the footing constructions of both developments will sever the root systems at this point.

I would indicate that there is every likelihood that the tree has extensive root systems in and round the sewer easement area as typically these original trenches provide good environments for root growth and often there is access to some of the moisture from leaks in the pipes, and condensation moisture in the soil environment that can form on pipe surfaces. The tree is effectively a large tree and the presence of this sewer easement has likely contributed to the tree's strong growth over many years.

Diagram two below provides a schematic view of the development impacts on root system.



**Diagram 2 – Depiction of the Structural Root Zone (SRZ) of the tree (Brown area) and the Tree Protection Zone (TPZ) in green.**

*(Adapted from Proofsafe 2020)*

- The impact of the development of 334 Edwards Street is shown in light green at approximately 13% incursion of the TPZ
- The impact of the development of 336 Edwards Street is shown in light yellow at approximately 4.3%.
- The approximate location of the 4 property fence lines has been added in red.
- There is a total incursion of the TPZ of 17-18%
- There is an area between the two developments that potentially root systems will be retained if present.
- There is no incursion of the SRZ.

Potential Canopy Impacts.

The canopy extension over 336 Edwards Street property is confined primarily to the south east corner of the block – over the existing shed. The current height of the canopy presents as well clear or above the single story building intended to be constructed. There will be some issue with leaf and other debris falling from the tree onto the roof of the new building. No structural defects were noted in the canopy that overhangs the existing shed at 336 Edwards Street.

**6. Recommendations.**

I recommend that the planned development at 336 Edwards Street should proceed as planned on the following basis with regard to the subject tree.

- a) The incursion of the TPZ for this development is 4.3% and a further 13% for the development at 334 Edwards Street – a total of 18% or so.
  - a. As per Australian Standard 4970 – this is considered a major incursion of the TPZ, however I am satisfied that the tree will maintain current vitality or vigour on the following basis;
    - i. All the root systems to the south of the tree stem in 55 and 57 Gormly will be maintained – including roots that will be well outside the designated TPZ. These roots will have some compensatory value for roots removed from 334 and 336 Edwards Street.
    - ii. The root systems that will likely be present in and around the existing sewer trench and sewer easement will primarily be maintained
- b) That the space between the south footing system of the building and the south fence boundary is protected as an important part of the TPZ – a no go zone - by a temporary fence or similar system so that the root zone of the tree over the sewer easement area is protected from heavy machinery, storage of waste, rubble or building materials.
  - a. The intention is to protect the 2-3 meters of soil profile at the south fence line so that the root zone and roots have minimal impacts from the primary construction processes for a distance of 12 meters west of the boundary line of 334 Edwards Street.
  - b. Any machinery works within 2m of the fence line should be considered prior to the works being conducted – specifically with respect to compaction of the soil and damage to roots. A project arborist should be engaged if such works are required in this area – noting that the corner of 336 Edwards street is at the edge of the structural root zone.
  - c. Any roots encountered that are 40mm or greater in diameter at the TPZ line of 2-3 meters from the rear fence should be clean cut with a saw on the tree side of the root when encountered.
- c) The landscaping at completion of the project over the TPZ area does not excavate the soil profile in this area, save for removal of the minimum amount of soil/grass such as the top 50-75mm for establishment of the footpath system at the rear of the building.
  - a. Ideally the area should be build up slightly not cut down.
  - b. Some form of permeable paving, such as pavers would be to the advantage of the tree root system opposed to concrete.
- d) Pruning of Canopy overhang.



- a. IF the canopy overhang onto 336 Edwards Street is not currently acceptable then the following recommendations are made.
- b. Any meaningful pruning of the canopy will require consent of WWCC – under *WWCC Development Control Plan - PART B Section 5 Natural Resource and Landscape Management – preservation of trees 5.2*. Live branches of 50mm or greater diameter require approval. (WWCC 2020).
- c. Taking into account that the tree has recently been heavily pruned, including some branches over 334 Edwards Street, the canopy should be pruned as follows.
  - i. Extended branches over 336 Edwards should not be cut back to the tree stem
  - ii. Extended branches should be reduced from the end by about 30% of their length. If the tree is heavily pruned then extensive epicormic growth can be expected which will cause greater longer term issues than presently exist for occupiers of 336 and 334 Edwards Street.
- d. Heavy pruning or lopping is not in the long term interests of tree vitality. It will induce decay into the cut branches and produce epicormic growth that over a 5 year growth period will become an elevated risk of failure that will require further management inputs such as pruning on a routine 5-7 year cycle.
  - i. If assistance or clarification of a pruning event is required then have the tree contractor contact the author for further clarification or advice.
- e) Tree Protection Measures.
  - a. Given the canopy of the tree is far higher than a single story building there is no requirement for canopy protection measures.
  - b. Given there are existing fences between the development and the tree stem there is no requirement for stem protection measures.
  - c. Given the excellent rainfall over most of 2020, current excellent soil moisture levels and strong tree vigour, I do not see any need to apply irrigation over the coming summer period.



Wade Ryan  
30 October 2020  
BAppSc(EnvHort) & AdvDip OH&S  
Cert II – Horticulture/Arboriculture  
QTRA – (Quantified Tree Risk Assessment - Registered Advance User)  
Member – ISA (International Society of Arboriculture)  
Associate Member – IACA (Institute of Australian Consulting Arboriculturists)

**# Details of Descriptors & Evaluation Methods.**

**Dimensions** – D =Stem diameter measured at 1.4m above ground in m H=Height estimated in m.  
C=Canopy diameter in m.

**Condition** – Consideration of stem & canopy structure, root system, defects, form, canopy vigour, extent of any decay, pest or disease

**TPZ/SRZ** – Tree Protection Zone specified area above and below ground and at a given distance from the trunk set aside for the protection of the tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

Structural Root Zone – the area around the base of a tree required for the tree's stability in the ground - calculated in meters radially from stem centre. From *Australian Standard 4970-2009 Protection of Trees on development sites*

**TPZ Impact** -Percentage of encroachment into TPZ – impacts of more than 10% require review.

**Retention Value** - Very High, High, Medium, Low, Very low. **Considerations** – Significant Tree. Environmental and habitat values, condition, safety or hazard risks, heritage, amenity and scenic values, species performance and site condition, weed status or listed undesirable, potential for property damage.

**References.**

Brooker, M.I.H & Kleinig, D.A. (1996). *A field Guide to Eucalyptus Volume 1 South East Australia*. 2<sup>nd</sup> edition. pp 68. Blooming's Books, Hawthorn Vic.

Perry, Thomas O. (1982). *The ecology of tree roots and the practical significance thereof*. Journal of Arboriculture Vol 8 no8 pp 197 – 211.

Proofsafe (2020). *Tree Protection Zone (TPZ) Encroachment Calculator (BS5837 - Root Protection Area / RPA)*. Accessed online 21/10/20 at;  
[https://proofsafe.com.au/tpz\\_incursion\\_calculator.html](https://proofsafe.com.au/tpz_incursion_calculator.html)

Troy Raulston Homes (2020). *Proposed Multi-unit development at 334 Hammond Avenue. General Details plan no 20009-1 BCM Design Wagga Wagga, 24/5/2020*. (Note address used for plan should read Edwards St).

WWCC (2020). WWCC Development Control Plan – Part B Section 5 Landscape Management. Accessed online 30/10/20 at;  
[https://wagga.nsw.gov.au/\\_data/assets/pdf\\_file/0015/112254/9.-ECM\\_2509477\\_v22\\_Version-Control-Project-Wagga-Wagga-DCP-2010-as-amended-Section-5-Natural-Resource-and-Landscap.pdf](https://wagga.nsw.gov.au/_data/assets/pdf_file/0015/112254/9.-ECM_2509477_v22_Version-Control-Project-Wagga-Wagga-DCP-2010-as-amended-Section-5-Natural-Resource-and-Landscap.pdf)

**Terms, Conditions and Limitations that apply.**

This is a basic set of conditions and limitations that accompany a report or email (as an attachment). Obviously, visual tree assessment from the ground has some limitation as every single portion of the tree cannot be observed or inspected. Most or the large majority of defects and tree issues can be observed from the ground. Where aerial inspection or other investigative means should be considered the report or email will recommend or provide those as an additional consideration.

Trees are a valuable asset and necessary part of both the urban and natural environment. They are the cornerstone of our environment and provide numerous benefits to our social wellbeing, biodiversity and ecology of any area. They provide water balance stability, salinity and erosion control, amenity, cultural, public health and aesthetic benefits; efforts should be made to preserve and plant new trees where possible. As an asset they require appropriate management and resource inputs.

It should be noted that trees cannot be guaranteed 'risk free'. All trees represent some degree of risk. Arboriculture is not an exacting science; rather it is an educated interpretation of the interaction of biotic and environmental circumstances, which change over time. It is not possible to determine or predict all limb or tree failures. This report is such an interpretation at the time of inspection.

Unless Quantified Tree Risk Assessment (QTRA) has been specifically applied and reported, then this report or email does not constitute a risk assessment. The Author does not seek to determine what level of risk any individual or organisation is prepared to accept but serves to provide tree managers with tree condition, hazards and other salient issues associated with the tree or trees; and provide or recommend management options

