L&Co
CONSULTANCY
ARBORICULTURE
PLANT PATHOLOGY

ARBORICULTURAL IMPACT ASSESSMENT

&

TREE PROTECTION SPECIFICATION

REF: L&Co22009 | 19 July 2022 | v2.1
SITE ADDRESS | 41 Ethan Avenue, Darling Point
PREPARED FOR | Weir Phillips Architects
PREPARED BY |

Dr Matthew Laurence
BSc. (Hons)
PhD (Plant Pathology)
Grad Cert (Arboriculture)

Ms Allison Mertin
BSc. (Hons)

info@laurenceco.com.au
0404 282 825
ABN: 61 625 300 530

www.laurenceco.com.au

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

1.0 EXECUTIVE SUMMARY |

1.1 The proposal, outlined in the supplied plans, shows the partial demolition and extension of existing garage and cabana and a new pool with associated paving and garden landscaping at 41 Etham Avenue, Darling Point.

1.2 A total of sixteen (16) trees were assessed that were a mix of Australian native and exotic species.

1.3 The supplied plans show no works are proposed within the TPZs of Trees 12, 13, 14 & 15.

1.4 The proposed works are within the SRZs and/or TPZs of Trees 1, 8, 9, 11 & 16 and represents a *Major Encroachment* (as defined by AS4970). However, due to the presence of existing structures and the potential for the proposed works to be at or above the existing grade, Trees 1, 8, 9, 11 & 16 can be retained, and negative impacts can be avoided if the tree sensitive construction methods and protection measures outlined in this report are strictly implemented. The works are therefore considered acceptable under the Australian Standard AS4970, Clause 3.3.4.

1.5 The proposed works are also within the SRZs and or TPZs of Trees 4, 5, 6 & 10 and represents a *Major Encroachment* (as defined by AS4970). However, these trees will need to be removed as the TPZ encroachment is too large for their long-term viability, based on a consideration of their health, structure and the size of the encroachment. These trees were all assigned Low Landscape Significance Values.

1.6 Trees 2, 3 & 7 are within the proposed building footprint and will need to be removed. These trees were assigned Low to Insignificant Landscape Significance Values.

1.7 The location of the underground services was not detailed in the supplied plans. The installation of underground services should be located outside of the TPZs detailed in this report. Where this is not possible, they should be installed around or below roots (>25mm∅) using either hydrovac or hand excavation and supervised by the Project Arborist.

2.0 INTRODUCTION |

2.1 Background

2.1.1 This Arboricultural Impact Assessment and Tree Protection Specification Report was prepared for Weir Phillips Architects in relation to the proposed development of 41 Etham Avenue, Darling Point. This report has determined the impact of the proposed works on the trees at 41 Etham Avenue, Darling Point and neighbouring properties and where appropriate, has provided tree sensitive construction methods to minimise negative impacts to the trees.

2.1.2 In preparing this report, the author is aware of and has considered the objectives of the Woollahra Municipal Council's *Woollahra Development Control Plan Chapter E3: Tree Management (2015), Woollahra Local Environmental Plan (2014), Australian Standard 4970 Protection of Trees on Development Sites (2009), Australian Standard 4373 Pruning of Amenity Trees (2007) and Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016).*

2.1.3 Further methodology used in the preparation of this report is detailed in Appendix 1.

2.1.4 This Arboricultural Impact Assessment was based on an assessment of the following supplied documentation/plans only (Appendix 4):

- Site Survey Showing Selected Levels and Details Issue A (Ref. No. 62210). Prepared by Hill & Blume Consulting Surveyors. Dated 09.06.20.
- Proposed Site and Roof Plan Issue. C. (DA01). Prepared by Weir Phillips Architects. Dated 22.06.2022.
- Proposed Ground Floor Plan Issue. C. (DA02). Prepared by Weir Phillips Architects. Dated 22.06.2022.
- Proposed First Floor Plan Issue. C. (DA03). Prepared by Weir Phillips Architects. Dated 22.06.2022.
- Proposed West Elevation Issue. B. (DA07). Prepared by Weir Phillips Architects. Dated 22.06.2022.
- Proposed Floor Plate Calculations Issue. B. (DA14). Prepared by Weir Phillips Architects. Dated 22.06.2022.

2.2 The Proposal

2.2.1 The supplied plans show the shows the partial demolition and extension of existing garage and cabana and a new pool with associated paving and garden landscaping.

3.0 RESULTS |

3.1 The Site

3.1.1 The site is a corner block with a total area stated in the plans as 639.7m^2. The site is generally level.

3.1.2 The site is bounded by residential properties to the north and west with Eltham Avenue to the east and south.

3.2 The Trees

3.2.1 A Visual Tree Assessment (VTA) (Mattheck & Breloer, 2003) has been undertaken on trees growing within the site to determine their health and structural condition (Appendix 2). A full VTA of trees located outside of the site boundaries was not undertaken due to limited access. The species and trunk diameter were recorded for the purposes of determining Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) calculations only. The distance of each tree from the site boundary is an approximation due to limited access.

3.2.2 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) Clause 2.3.2, requires the allocation of a Tree Retention Value. This value is based on the Useful Life Expectancy (ULE) and Landscape Significance, which considers the tree's health, structural condition and site suitability. The Retention Value does not consider any proposed development works and is not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

3.2.3 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) also requires the calculation of the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) for each tree (Appendix 1).

3.2.4 A total of sixteen (16) trees were assessed which were a mix of Australian native and exotic species.

3.2.5 A search of the BioNet Atlas of NSW Wildlife Database was undertaken in July 2022. No individual threatened tree species that were listed within this database for the area were identified during the current field investigations of the site. *The* ecological significance and habitat value of the trees has not been assessed and is beyond the scope of this report.

3.2.6 Trees 1, 4, 5, 6, 10, 11, 12, 13 & 14 were within the site boundary and are covered by the Council's tree management controls.

3.2.7 Trees 2, 3 & 7 are exempt from the Council's tree management controls.

3.2.8 Tree 15 is a street tree and is managed by the Council.

3.2.9 Trees 8, 9 & 16 were located on adjacent properties. All trees on adjacent properties were allocated a Retention Value of *Priority for Retention*.

4.0 ARBORICULTURAL IMPACT ASSESSMENT |

4.1 Tree 1

4.1.1 Tree 1 was identified as *Eucalyptus saligna* (Sydney Blue Gum) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.

4.1.2 Tree 1 was in fair physiological condition as indicated by the reduced crown density. The crown density was estimated to be 50-75% of an idealised example of this species. However, the reduced crown density may have resulted from previous reduction pruning or branch failures rather than an indicator of physiological decline.

4.1.3 The supplied plans show the proposed garage extension, swimming pool, pool fence, landscaping and garage extension are within the TPZ of Tree 1. The proposed landscaping and paved walkway are also within the SRZ of Tree 1. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The estimated nominal TPZ encroachment was estimated to be 55% and also represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts and/or the presence of existing or past structures are likely to have been obstacles to root growth into the area of encroachment.

4.1.4 Approximately 95m^2 of the proposed total 248m^2 encroachment is within the footprint of the existing dwelling or garage slab, which is likely to have created an inhospitable environment for root growth, and consequently, is likely to have reduced root growth in the area of the proposed works. The TPZ encroachment, adjusted for existing structures (Clause 3.3.4 of AS-4970), is 33% and still represents a *Major Encroachment*.

4.1.5 Approximately 109m^2 of the total proposed encroachment is from landscaping and paving works, both of which can be installed using tree sensitive design and construction methods to minimise negative impacts.

4.1.6 The TPZ encroachment from the pool, garage extension and surrounding paving/decking works was estimated to be 45m^2 or 10% of the total TPZ area (452m^2). Given that the majority of the proposed encroachment is within the footprint of existing structures or can be installed using tree sensitive methods that minimise both root disturbance and/or changes to water infiltration, Tree 1 can be retained under the current design scheme if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.1.7 However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.1.8 The tree sensitive construction methods and protection measures will require a strict staged approach, with the two arborist hold points critically important (Appendix 10).

4.1.9 **Stage 1: Demolition & Construction**

4.1.10 Stage 1 includes the proposed partial demolition of garage and construction of the swimming pool but excludes the proposed paving around the pool and outdoor dining area.

4.1.11 Tree protection fencing, mulch and irrigation must be installed prior to the start of demolition and be inspected by the Project Arborist prior to the start of works.

4.1.12 Refer to Appendix 6: TPP Stage 1 for details on the location of fencing, mulch & irrigation.

4.1.13 Mulch should be applied within the TPZ fencing with a non-toxic product (i.e. woodchips with no fines) to a depth of 75mm. It is important to avoid burying the stem and root flare with mulch.

4.1.14 Irrigation should be applied at the volume and frequency required to maintain adequate soil moisture levels for the species and to avoid waterlogging.

4.1.15 An automatic dripline irrigation system should be installed to maintain adequate soil moisture levels for the duration of the construction period and ideally beyond to offset loss of water infiltration to the area. The irrigation should be installed by a licensed contractor and soil moisture levels measured regularly to avoid waterlogging or drying out.

4.1.16 The existing garage should be demolished first, and the slab left in place and reused for the proposed new garage extension. If a new slab is required, then it should be demolished using the following tree sensitive methods. When removing slab sections within the TPZ, machinery must work from the tree outwards to ensure the machinery always remains on the un-demolished section of slab. Wherever possible, footings or elements below grade should be retained to minimise disturbance to the tree's roots.

4.1.17 Structures must be shattered with hand-operated pneumatic/electric breaker before removal when considered necessary by the Project Arborist.

4.1.18 If roots (>25mm∅) are encountered during excavation, demolition and construction works these roots must be retained undamaged and advice sought from the Project Arborist. Exposed roots must be protected from direct sunlight, drying out and extremes of temperature by using 10mm thick jute geotextile fabric. This fabric should be kept moist at all times.

4.1.19 The existing garage slab and crossover should be used for building access for both the demolition and construction of the extension and new swimming pool. The TPZ fencing must not be moved during Stage 1 without permission from the Project Arborist.

4.1.20 **Stage 2: Paving and Landscaping**

4.1.21 Stage 2 begins at the completion of the demolition and construction works and involves the proposed paving around the pool and adjoining the new dwelling and the landscaping works.

4.1.22 The TPZ fencing, mulch and irrigation can be moved to allow construction of the paving. The fencing must remain in place for paving works and prior to the soft landscaping works. This is to prevent indirect impacts, specifically soil compaction in the TPZ.

4.1.23 Installation of pavement and sub-base materials within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain tree roots.

4.1.24 If roots (>25mm∅) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅, where deemed necessary by the Project Arborist.

4.1.25 Compaction of the ground prior to the installation of fill is not permitted.

4.1.26 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates must not be used to avoid raising soil pH levels.

4.1.27 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. The pavement material should be permeable, where possible.

4.1.28 Refer to Appendices 6, 7 & 8 for further detail.

4.1.29 On completion of the paving works the TPZ fencing, and mulch can be removed for the soft landscaping works.

4.1.30 Tree sensitive methods should be used for the removal of existing grass within the TPZ areas. The grass should be removed by hand to prevent root damage. New turf (including sub-soil materials) should be installed above or at the existing grade.

4.1.31 The supplied plans show that a new tree planting is proposed within the SRZ of Tree 1. The planting hole should be hand excavated under the supervision of the Project Arborist and the new tree root ball placed between existing roots (>25mmØ) of Tree 1.

4.1.32 If roots (>25mmØ) are encountered during the excavation, these roots must be retained undamaged, and advice sought from the Project Arborist if root pruning is required.

4.1.33 The supplied plans show new plantings within the SRZ of Tree 1. These plants should ideally be planted as tube stock or small volume to reduce root disturbance to Tree 1.

4.1.34 All existing hard landscaping (retaining walls etc) must be incorporated into the proposed landscape design to prevent root disturbance.

4.1.35 On completion of the landscaping works, irrigation should be maintained to help offset any root loss from the construction works.

4.2 **Trees 2 & 3**

4.2.1 Tree 2 was identified as *Fraxinus excelsior* (European Ash) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*. Tree 3 was identified as *Camellia sasanqua* (Camellia) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*. Trees 2 & 3 are exempt from the Council's Tree Management based on dimensions and can be removed without council consent.

4.2.2 The supplied plans show that Trees 2 & 3 are within the footprint of the proposed landscaping works and will need to be removed to accommodate the proposal.

4.2.3 Refer to Appendix 5 for further details.

4.3 **Trees 4, 5, 6 & 7**

4.3.1 Trees 4, 5 & 6 were identified as *Archontophoenix cunninghamiana* (Bangalow Palm) and were allocated Low Landscape Significance Values and Retention Values of *Consider for Removal*. Tree 7 was identified as *Syagrus romanzoffianum* (Cocos Palm) and was allocated an Insignificant Landscape Significance Value and a Retention Value of *Priority for Removal*. This tree is exempt from the Council's Tree Management controls based on species and can be removed without council consent.

4.3.2 The supplied plans show the proposed pool and paved pavilion area are within the TPZs of Trees 4, 5, 6 & 7. The TPZ encroachment is approximately 10%, 54.7% & 38.7% for Trees 4, 5 & 6, respectively, and represents a *Major Encroachment* as defined by AS-4970. Tree 7 is within the development footprint.

4.3.3 Given the size of the encroachment and the difficulty in retaining Trees 4, 5, 6 & 7 without affecting their long term structural and physiological viability, removal and replacement is recommended.

4.3.4 Replacement with healthy advanced size specimens, as detailed in the provided landscape plans, would replace the loss of amenity within a short to medium timeframe.

4.3.5 Translocation of Trees 4, 5 & 6 to another location within the site should also be considered as these species are not sensitive to translocation disturbance.

4.3.6 Refer to Appendix 5 for further details.

4.4 **Tree 8**

4.4.1 Tree 8 was identified as *Archontophoenix cunninghamiana* (Bangalow Palm) and was allocated an adjusted Retention Value of *Priority for Retention* given it was located outside of the site.

4.4.2 The supplied plans show the proposed pool paving and turfed area are within the TPZ of Tree 8. The overall TPZ encroachment was estimated to be 21.4% and also represents a Major Encroachment as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.

4.4.3 Almost all of the proposed TPZ encroachment (approximately 2.5m^2 of the total 3.8m^2 encroachment) is turfed area, if installed above grade will improve water infiltration to the area. The encroachment, adjusted for the turfed area, was estimated to be 7.6% which is a *Minor Encroachment.*

4.4.4 Refer to Appendix 5 for further detail.

4.4.5 Given the good physiological condition of Tree 8, the proposed development can be accommodated**.** However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.4.6 Proposed pool paving should be installed above grade using tree sensitive measures. Installation of pavement and sub-base within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain roots (unless prior root mapping has determined that there are no roots within the area of construction).

4.4.7 If roots (>25mm∅) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅ where deemed necessary by the Project Arborist.

4.4.8 Compaction of the ground prior to the installation of fill is not permitted.

4.4.9 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates should not be used to avoid raising soil pH levels.

4.4.10 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. If possible, pavement material should be permeable.

4.4.11 All landscaping treatments should be installed at or above the existing grade.

4.4.12 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.4.13 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.4.14 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.5 **Tree 9**

4.5.1 Tree 9 was identified as *Persea americana* (Avocado) and was allocated an adjusted Retention Value of *Priority for Retention* given it was located outside of the site.

4.6 The supplied plans show the proposed turfed area is within the TPZ of Tree 9. The overall TPZ encroachment was estimated to be 16.5% which represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts and the proposed landscaping works can be installed at or above the existing grade.

4.7 Refer to Appendix 5 for further detail.

4.7.1 The existing side paving should be left in place for the duration of the demolition and construction to provide ground protection from soil compaction.

4.7.2 On completion of the demolition and construction works, the existing path can be removed for the installation of the landscaping works as per provided plans.

4.7.3 Refer to Appendix 6: TPP Stage 1 for further detail.

4.7.4 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.7.5 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.7.6 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.8 **Tree 10**

4.8.1 Tree 10 was identified as *Cupressus sempervirens* (Italian Cypress) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.

4.8.2 The supplied plans show that the proposed landscaping works are within the SRZ of Tree 10. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree.

4.8.3 Given the size of the encroachment, the small size and low amenity value of Tree 10 and the difficulty in retention without affecting the long term structural and physiological viability of the tree, removal and replacement is recommended.

4.8.4 Replacement with a healthy advanced size specimen, as detailed in the provided landscape plans, would replace the loss of amenity within a short to medium timeframe.

4.8.5 Refer to Appendix 5 for further detail.

4.9 **Tree 11**

4.9.1 Tree 11 was identified as *Eucalyptus microcorys* (Tallowwood) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.

4.9.2 The tree was in good physiological condition as indicated by the full crown density, normal leaf colour and low volumes of dead wood and epicormic growth. However, a metal possum guard was starting to girdle the stem and should be immediately removed (Refer to Appendix 9 Plate e.).

4.9.3 The supplied plans show the proposed garage extension, adjacent paving and landscaping works are within the SRZ of Tree 11. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The estimated nominal TPZ encroachment was estimated to be 53.9% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are

used to minimise negative impacts and/or the presence of existing or past structures are likely to have been obstacles to root growth into the area of encroachment.

4.9.4 The entire proposed TPZ encroachment is either within the footprint of the existing residence or is proposed landscaping. The existing residential dwelling is likely to have created an inhospitable environment for root growth, and consequently, is likely to have reduced root growth in the area of the proposed works. The encroachment, adjusted for existing structures and proposed landscaping, was estimated to be 5.8%, which represents a *Minor Encroachment.*

4.9.5 Given the good physiological condition of the tree, the proposed development can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.9.6 The tree protection measures detailed for Tree 1 will also provide protection for Tree 11.

4.9.7 The supplied plans show new plantings within the SRZ of Tree 11. These plants should ideally be planted as tube stock or small volume to reduce root disturbance to Tree 11.

4.9.8 On completion of the landscaping works, irrigation should be maintained to help offset any root loss from the construction works.

4.9.9 Refer to Appendices 5, 6 & 7 for further details.

4.10 **Trees 12, 13, 14**

4.10.1 Tree 12 was identified as *Magnolia denudata* (Yulan Magnolia) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*. Tree 13 was identified as a *Camellia sasanqua* (Camellia) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*. Tree 14 was identified as *Acer* sp*.* (Maple) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.

4.10.2 Trees 12, 13, 14 were located at the front of the site (Etham Avenue) where no works are proposed.

4.10.3 Refer to Appendices 5, 6 & 7 for further details.

4.11 **Tree 15**

4.11.1 Tree 15 was identified as *Lophostemon confertus* (Brush Box) and was allocated an adjusted Landscape Significance Value and a Retention Value of *Priority for Retention* given it was located outside of the site and a street tree.

4.11.2 The supplied plans show no works are proposed within the TPZ of Tree 15. However, ground and trunk protection must be installed if the area is used for demolition & construction access.

4.11.3 Refer to the Tree Protection Specification for specific details (Appendices 6, 7 & 8).

4.12 **Tree 16**

4.12.1 Tree 16 was identified as *Cinnamomum camphora* (Camphor Laurel) and was allocated an adjusted Retention Value of *Priority for Retention* given it was located outside of the site. The tree was setback from the boundary by approximately 6m as measured by laser.

4.12.2 The supplied plans show the proposed new dwelling, swimming pool and garage demolition are within the TPZ of Tree 16. The estimated nominal TPZ encroachment was estimated to be 16.6% and also represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts and/or the presence of existing or past structures are likely to have been obstacles to root growth into the area of encroachment.

4.12.3 Approximately 42m^2 of the total 118m^2 proposed encroachment is within the footprint of the existing dwelling slab or is proposed turfed area. The existing dwelling slab is likely to have created an inhospitable environment for root growth, and consequently, is likely to have reduced root growth in the area of the proposed works.

4.12.4 The TPZ encroachment, adjusted for existing structures and turfed areas (Clause 3.3.4 of AS-4970), was 10.7% and still represents a *Major Encroachment*. However, the tree sensitive construction methods, outlined in this report, can further reduce the negative impacts from the proposed development and Tree 16 can be retained if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.12.5 The tree sensitive construction methods and protection measures will require a strict staged approach, with the two arborist hold points critically important (Appendix 10).

4.12.6 **Stage 1: Demolition & Construction**

4.12.7 Stage 1 includes the proposed garage demolition and construction of the swimming pool but excludes the proposed paving around the pool.

4.12.8 Tree protection fencing, mulch and irrigation must be installed prior to the start of demolition and be inspected by the Project Arborist prior to the start of works.

4.12.9 Refer to Appendix 6: TPP Stage 1 for details on the location of fencing, mulch & irrigation.

4.12.10 Mulch should be applied within the TPZ fencing with a non-toxic product (i.e. woodchips with no fines) to a depth of 75mm. It is important to avoid burying the stem and root flare with mulch.

4.12.11 Irrigation should be applied at the volume and frequency required to maintain adequate soil moisture levels for the species and to avoid waterlogging.

4.12.12 An automatic dripline irrigation system should be installed to maintain adequate soil moisture levels for the duration of the construction period and ideally beyond to offset loss of water infiltration to the area. The irrigation should be installed by a licensed contractor and soil moisture levels measured regularly to avoid waterlogging or drying out.

4.12.13 **Stage 2: Paving and Landscaping**

4.12.14 Stage 2 begins at the completion of the demolition and construction works and involves the proposed paving around the pool and the landscaping works.

4.12.15 The TPZ fencing, mulch and irrigation can be moved to allow construction of the paving. The fencing must remain in place for paving works and prior to the soft landscaping works. This is to prevent indirect impacts, specifically soil compaction in the TPZ.

4.12.16 Installation of pavement and sub-base materials within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain tree roots.

4.12.17 If roots (>25mm∅) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅, where deemed necessary by the Project Arborist.

4.12.18 Compaction of the ground prior to the installation of fill is not permitted.

4.12.19 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates must not be used to avoid raising soil pH levels.

4.12.20 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. The pavement material should be permeable, where possible.

4.12.21 Refer to Appendices 6, 7 & 8 for further detail.

4.12.22 On completion of the paving works the TPZ fencing, and mulch can be removed for the soft landscaping works.

4.12.23 Tree sensitive methods should be used for the removal of existing grass within the TPZ areas. The grass should be removed by hand to prevent root damage. New turf (including sub-soil materials) should be installed above or at the existing grade.

4.12.24 On completion of the landscaping works, irrigation should be maintained to help offset any root loss from the construction works.

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

4.13 **Removal & Replacement Planting**

4.13.1 Removal works should be carried out by a practising arborist. The practising arborist should hold a minimum qualification equivalent (using Australian Qualifications Framework) of Level 3 or above in arboriculture or its recognised equivalent. The practising arborist should have a minimum of 3 years of practical experience. Removal works should be undertaken in accordance with the Australian Standard 4373: *Pruning of Amenity Trees* (2007), *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work* (2016) and other applicable legislation and codes.

4.13.2 Replacement tree planting should be provided when trees are removed. Replacement trees should be supplied as advanced size stock to help offset the loss of amenity resultant from the tree removals.

4.13.3 Replacement planting should be supplied in accordance with Australian Standard 2303: *Tree Stock for Landscape Use* (2015).

Dr Matthew Laurence

Director
BSc. (Hons), PhD (Plant Pathology), GradCert (Arboriculture)
Institute of Australian Consulting Arboriculturists (Accredited Member – ACM0502016)
Australasian Plant Pathology Society
ResearchGate Profile - https://www.researchgate.net/profile/Matthew_Laurence

5.0 REFERENCES |

Mattheck & Breloer (2003), *The Body Language of Trees – A Handbook for Failure Analysis*.

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), *BioNet Atlas of NSW Wildlife*.

Standards Australia (2009) Protection of Trees on Development Sites AS4970.

Standards Australia (2007) Pruning of Amenity Trees AS4373.

Standards Australia (2015) Tree Stock for Landscape Use AS2303.

6.0 APPENDIX 1 | METHODOLOGY

6.1 This report was based on data from a site inspection conducted on the 21.8.21 & 8.7.22. The recommendations in this report are based on and limited to observations from these site inspections.

6.2 The subject tree(s) was assessed using the Visual Tree Assessment methodology described in *The Body Language of Trees – A Handbook for Failure Analysis* (Mattheck et al., 2003). Subject trees were assessed from the ground only to provide an Arboricultural Impact Assessment and Tree Protection Specification report. No internal diagnostic testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.

6.3 The dimensions of the subject tree(s) are an approximation only.

6.4 The location of the subject tree(s) was determined from the location plan provided. Trees not shown on this plan have been plotted in their approximate location only.

6.5 Tree Protection Zones & Structural Root Zones for the subject tree(s) was based on methods outlined in Australian Standard 4970: *Protection of Trees on Development Sites* (2009).

6.6 The health of the subject tree(s) was determined by assessing:

- Foliage size and colour
- Pest and disease infestation
- Extension growth
- Crown density
- Deadwood size and volume
- Presence of epicormic growth

6.7 The structural condition of the subject tree(s) was assessed by:

- Visible evidence of structural defects or instability
- Evidence of previous pruning or physical damage

6.8 The Useful Life Expectancy (ULE) is used to estimate a tree's longevity in its growing environment. The ULE is based on a tree's species, health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (modified from Barrell, 2001):

- 40 years +
- 15-40 years
- 5-15 years
- Less than 5 years

6.9 The Landscape Significance is based on a qualitative assessment of a tree's cultural, environmental and aesthetic value. This provides a relative measure of a tree's Landscape Significance and can be used to determine its Retention Value. Trees are rated under the following categories:

- Very High
- High
- Moderate
- Low
- Insignificant

LANDSCAPE SIGNIFICANCE	DESCRIPTION
VERY HIGH	The subject tree is listed as a Heritage Item under the Local Environmental Plan with a local or state level of significance.
	The subject tree is listed on Council's Significant Tree Register.
	The subject tree is a remnant tree.
HIGH	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of local, cultural or historical importance or is widely known.
	The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species or forms part of an Endangered Ecological Community associated with the subject site, as defined under the provisions of the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999.
	The subject tree is known to provide habitat to a threatened species.
	The subject tree is an excellent representative of the species in terms of aesthetic value.
	The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.
	The subject tree forms part of the curtilage of a heritage item with a known or documented association with that item.
MODERATE	The subject tree makes a positive contribution to the visual character or amenity of the area.
	The subject tree provides a specific function such as screening or minimising the scale of a building.
	The subject tree has a known habitat value.
	The subject tree is a good representative of the species in terms of aesthetic value.
LOW	The subject tree is an environmental pest species or is exempt under the provisions of the local Council's Tree Management Controls.
	The subject tree makes little or no contribution to the amenity of the locality.
	The subject tree is a poor representative of the species in terms of aesthetic value.
INSIGNIFICANT	The subject tree is declared a Noxious Weed under the Noxious Weeds Act.

The above table was provided by Anna Hopwood of TreeIQ™ and was modified from the Earthscape Criteria for Assessment of Landscape Significance.

6.10 The Retention Value is based on a tree's ULE and Landscape Significance. The subject tree(s) has been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

<table>
<tr><th rowspan="2">ULE</th><th colspan="5">LANDSCAPE SIGNIFICANCE</th></tr>
<tr><th>VERY HIGH</th><th>HIGH</th><th>MODERATE</th><th>LOW</th><th>INSIGNIFICANT</th></tr>
<tr><td>40 years +</td><td rowspan="2">Priority for Retention</td><td colspan="2">Priority for Retention</td><td rowspan="3">Consider for Removal</td><td rowspan="3">Priority for Removal</td></tr>
<tr><td>15-40 years</td><td>Priority for Retention</td><td>Consider for Retention</td></tr>
<tr><td>5-15 years</td><td colspan="3">Consider for Retention</td></tr>
<tr><td>Less than 5 years</td><td>Consider for Removal</td><td colspan="4">Priority for Removal</td></tr>
</table>

The above table was provided by Anna Hopwood of TreeIQ™

6.11 The Tree Protection Zone (TPZ) is the area above and below ground required to preserve the vigour and long-term viability of the tree. The TPZ is based on scientific research and is generally considered by the arboricultural industry as the area required to provide adequate tree protection during construction. The TPZ is the primary means of protecting trees on development sites (Australian Standard 4970:*Protection of Trees on Development Sites*, 2009).

6.12 Works within the TPZ should be avoided. However, *Minor Encroachments,* defined in AS4970 as less than 10% of the TPZ area, are considered acceptable when it is compensated for elsewhere and contiguous within the TPZ. A *Major Encroachment*, defined in AS4970 as greater than 10% of the TPZ area or within the Structural Root Zone (SRZ), may require root investigations by non-destructive methods and tree sensitive construction methods.

6.13 The TPZ is the area within a circle that is centred on the trunk. The radius of the TPZ is calculated by the following formula:

TPZ= DBH x 12

where

DBH= Diameter at Breast Height (1.4m)

6.14 The SRZ is the minimum area around the base of the tree required for the tree's stability. The SRZ only relates to tree stability and not the vigour and long-term viability of the tree.

6.15 The SRZ is the area within a circle that is centred on the trunk. The radius of the SRZ is calculated by the following formula:

$$SRZ = (Dx50)^{0.42} \times 0.64$$

where

D= Trunk diameter (m) above the root buttress

6.16 Encroachment into SRZ (i.e. severance of structural roots >25mmØ) may lead to the destabilisation of the tree and the long-term viability must be demonstrated in such cases. This may require root investigations by non-destructive methods.

6.17 For further details on the TPZ and SRZ please refer to Australian Standard 4970: *Protection of Trees on Development Sites* (2009).

7.0 APPENDIX 2 | TREE ASSESSMENT SCHEDULE

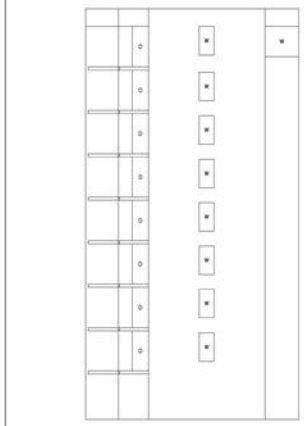
Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
1	*Eucalyptus saligna* (Sydney Blue Gum)	25	10	1000	12	452	3.4	Fair	Good	Mature	15-40	High	*Priority for Retention*	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Small (<25mmø), medium (25-75mmø) & large (>75mmø) epicormic growth in moderate volumes. Previously crown lifted. Trunk cavity(s), major.	55.0% (Within SRZ)
2	*Fraxinus excelsior* (European Ash)	3	2	50	2	13	1.5	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*		Within Development Footprint
3	*Camellia sasanqua* (Camellia)	3	1	50	2	13	1.5	Good	Good	Young	5-15	Low	*Consider for Removal*		Within Development Footprint
4	*Archontophoenix cunninghamiana* (Bangalow Palm)	8	4	200	2	18	1.8	Good	Good	Mature	5-15	Low	*Consider for Removal*		10.0% (Within SRZ)
5	*Archontophoenix cunninghamiana* (Bangalow Palm)	8	4	100	2	13	1.5	Good	Good	Mature	5-15	Low	*Consider for Removal*		54.7% (Within SRZ)
6	*Archontophoenix cunninghamiana* (Bangalow Palm)	8	4	200	2	18	1.8	Good	Good	Mature	5-15	Low	*Consider for Removal*		38.7% (Within SRZ)
7	*Syagrus romanzoffianum* (Cocos Palm)	7	4	200	2	18	1.8	Good	Good	Mature	5-15	Insignificant	*Priority for Removal*		Within Development Footprint
8	*Archontophoenix cunninghamiana* (Bangalow Palm)	8	4	200	2	18	1.8								21.4%

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
9	*Persea americana* (Avocado)	5	4	200	2	18	1.8								16.5%
10	*Cupressus sempervirens* (Italian Cypress)	8	2	75	2	13	1.5	Good	Good	Semi-mature	-15	Low	*Consider for Removal*	Congested branches Structures within SRZ.	40.7% (Within SRZ)
11	*Eucalyptus microcorys* (Tallowwood)	19	8	525	6	125	2.6	Good	Good	Mature'	15-40	High	*Priority for Retention*	Possum guard remove. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes. Limited crown clearance. Structures within SRZ.	53.9% (Within SRZ)
12	*Magnolia denudata* (Yulan Magnolia)	5	3	75	2	13	1.5	Dormant. No rating.	Good	Young	5-15	Low	*Consider for Removal*	Crossing branches. Limited crown clearance.	No Encroachment
13	*Camellia sasanqua* (Camellia)	4	1	50	2	13	1.5	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Limited crown clearance. Structures within SRZ.	No Encroachment
14	*Acer sp.* (Maple)	4	4	200	2	18	1.8	Dormant. No rating.	Fair	Late Mature	5-15	Low	*Consider for Removal*	Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Wound(s), advanced stages of decay. Structures within SRZ.	No Encroachment
15	*Lophostemon confertus* (Brush Box)	10	6	625	8	177	2.8								No Encroachment
16	*Cinnamomum camphora* (Camphor Laurel)	25	10	2000	15	707	4.6							Set back 6.2m from boundary. Crown over garage at 12m.	16.6%

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

8.0 APPENDIX 3 | TREE LOCATION PLAN

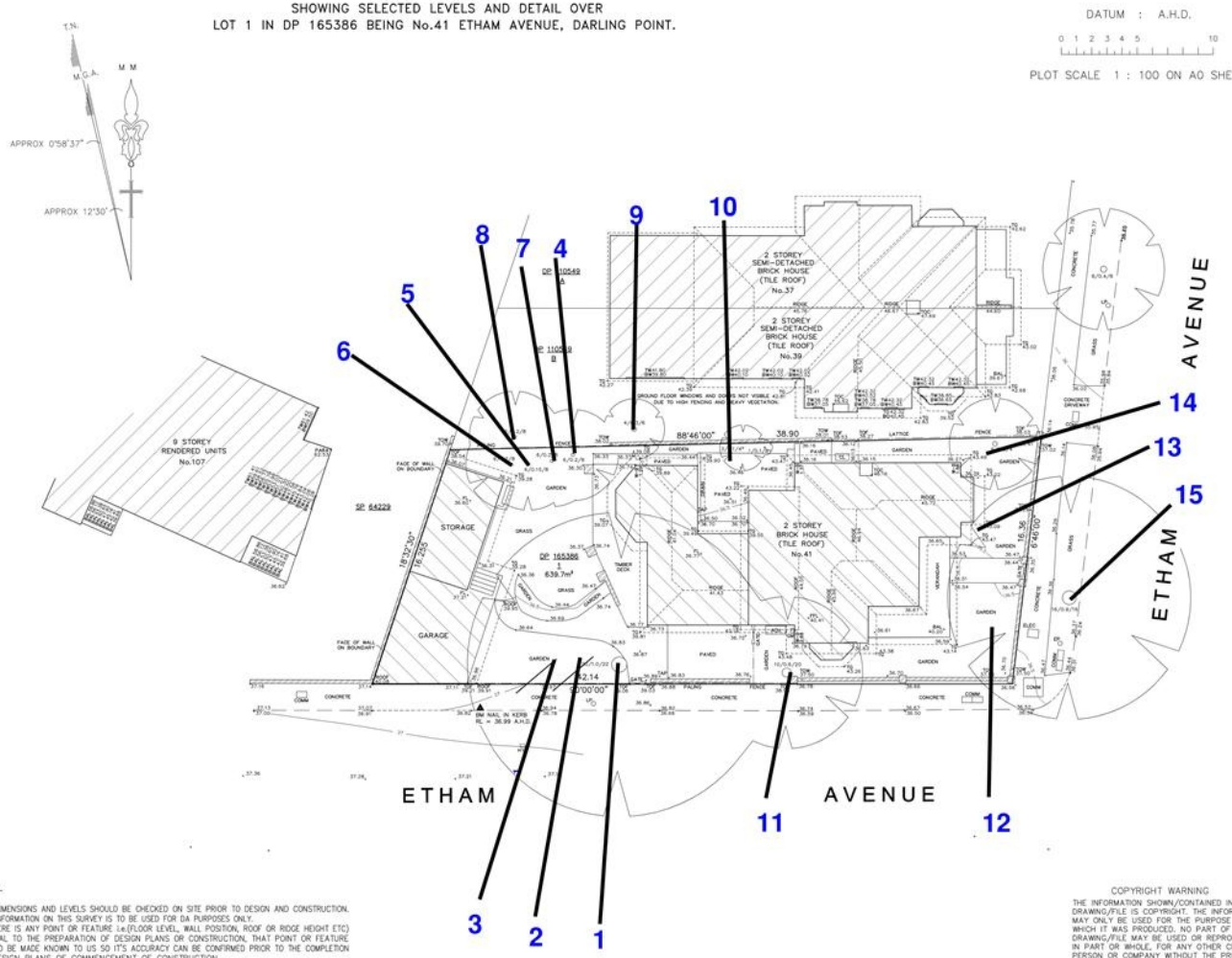


DATUM 30.00 EASTERN ELEVATION

SOUTH–EASTERN ELEVATION OF
No.107 DARLING POINT ROAD

SITE SURVEY
SHOWING SELECTED LEVELS AND DETAIL OVER
LOT 1 IN DP 165386 BEING No.41 ETHAM AVENUE, DARLING POINT.

L.G.A. WOOLLAHRA
DATUM : A.H.D.
0 1 2 3 4 5 10
PLOT SCALE 1 : 100 ON A0 SHEET



LEGEND

ACU	AIR CONDITIONING UNIT
BAL	BALCONY
BM	BENCHMARK
BO	BOTTOM OF OPENING
BW	BOTTOM OF WINDOW
CL	CONCRETE LID
COMM	COMMUNICATIONS PIT
ELEC	ELECTRICAL PIT
EP	ELECTRICAL PILLAR
FFL	FIRST FLOOR LEVEL
FL	GROUND FLOOR LEVEL
GM	GAS METER
HYD	HYDRANT
IC	INSPECTION COVER
LP	LIGHT POLE
PARA	PARAPET
TEL	TELSTRA
TG	TOP OF GUTTER
TO	TOP OF OPENING
TOF	TOP OF CHIMNEY
TOF	TOP OF FENCE
TOW	TOP OF WALL
TW	TOP OF WINDOW
WM	WATER METER
W–B	WALL TO BOUNDARY
12/0.4/9	TREE WITH APPROX. – 12m SPREAD – 0.4m DIAMETER

NOTES:

1) ALL DIMENSIONS AND LEVELS SHOULD BE CHECKED ON SITE PRIOR TO DESIGN AND CONSTRUCTION.
2) THE INFORMATION ON THIS SURVEY IS TO BE USED FOR DA PURPOSES ONLY.
3) IF THERE IS ANY POINT OR FEATURE i.e.(FLOOR LEVEL, WALL POSITION, ROOF OR RIDGE HEIGHT ETC) CRITICAL TO THE PREPARATION OF DESIGN PLANS OR CONSTRUCTION, THAT POINT OR FEATURE SHOULD BE MADE KNOWN TO US SO IT'S ACCURACY CAN BE CONFIRMED PRIOR TO THE COMPLETION OF DESIGN PLANS OF COMMENCEMENT OF CONSTRUCTION.
4) SOME STRUCTURES AND FEATURES ARE APPROXIMATE ONLY. IF USED FOR DESIGN CONFIRMATION OF ACCURACY SHOULD BE CONFIRMED.
5) FENCES ARE APPROXIMATE ONLY UNLESS SPECIFICALLY DIMENSIONED TO BOUNDARY.
6) SURVEY MARKS MUST BE PLACED PRIOR TO CONSTRUCTION OR ERECTION OF FENCES.
7) TREE INFORMATION HAS BEEN SURVEYED FROM GROUND LEVEL AND THEREFORE SHOULD BE TREATED AS APPROXIMATE ONLY. THE EXTENT OF THE CANOPY IS APPROXIMATE AND DIAGRAMMATIC ONLY.
8) STAIR RISES, STEPS AND LANDINGS HAVE NOT BEEN INDIVIDUALLY LOCATED AND ARE DIAGRAMMATIC ONLY.
9) THE RECORDS OF THE SERVICE PROVIDERS HAVE NOT BEEN INVESTIGATED, ONLY THOSE SERVICES THAT ARE VISIBLE AND ACCESSIBLE AT THE DATE OF SURVEY HAVE BEEN SHOWN.
10) SERVICES SHOWN ARE INDICATIVE ONLY, OTHER SERVICES MAY EXIST THAT ARE NOT SHOWN. THEREFORE FIELD CONFIRMATION SERVICE LOCATORS SHOULD BE OBTAINED TO CONFIRM EXACT POSITION AND DEPTH.
11) SITE AREA SHOWN HAS BEEN CALCULATED BY SURVEY.
12) A SITE AND BOUNDARY SURVEY HAS BEEN CARRIED OUT.
13) ORIGIN OF LEVELS IS SSM 15349, RL = 36.498 A.H.D.

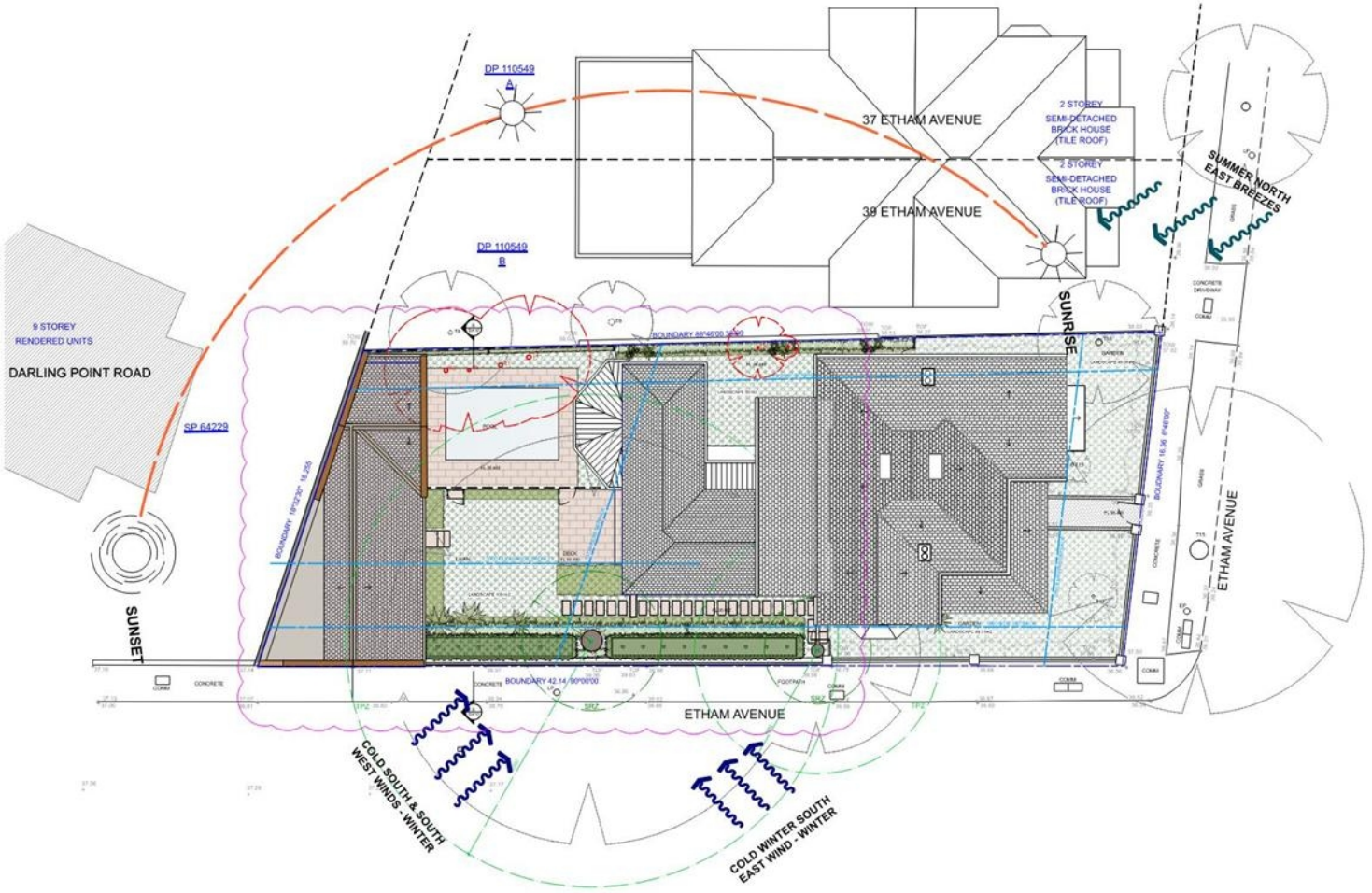
DIAL1100 BEFORE YOU DIG

Hill & Blume
CONSULTING SURVEYORS
ACN 000 721 004
Hill & Blume Pty Ltd
102 Crown Street
Woolloomooloo
NSW 2011
Tel (02) 9332 4888
Fax (02) 9331 6422
surveyors@hillandblume.com.au

DATE OF SURVEY: 09/06/20 REF No. 62210

L&Co
CONSULTANCY
ARBORICULTURE
PLANT PATHOLOGY
www.laurenceco.com.au
PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

9.0 APPENDIX 4 | PROPOSED DEVELOPMENT PLANS



KEY

- Existing
- Proposed
- Demolished
- Site Boundary

0 10 20M

DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.
COPYRIGHT FOR THIS DESIGN RESIDES WITH THE ARCHITECTS.

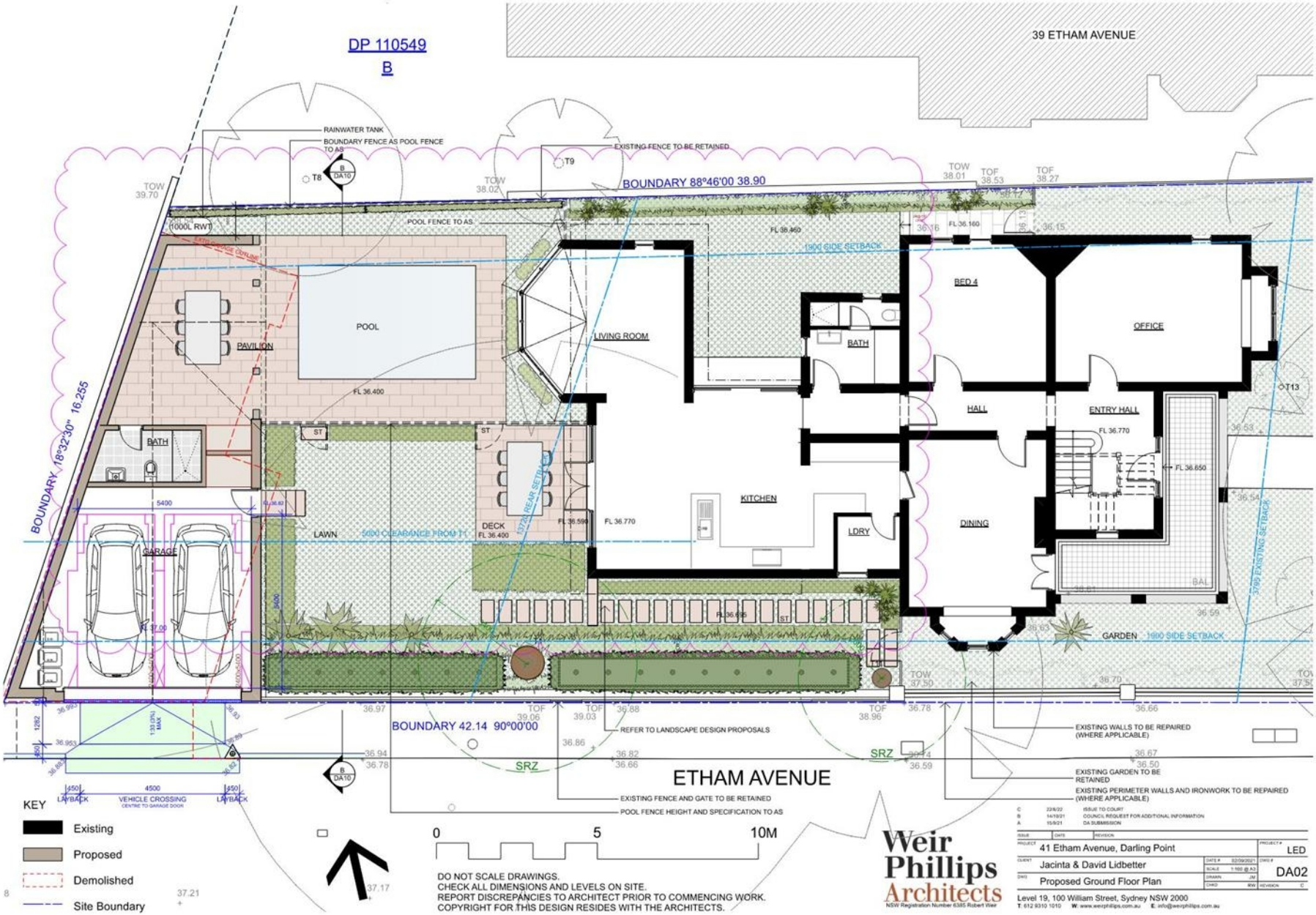
Weir Phillips Architects
NSW Registration Number 6385 Robert Weir

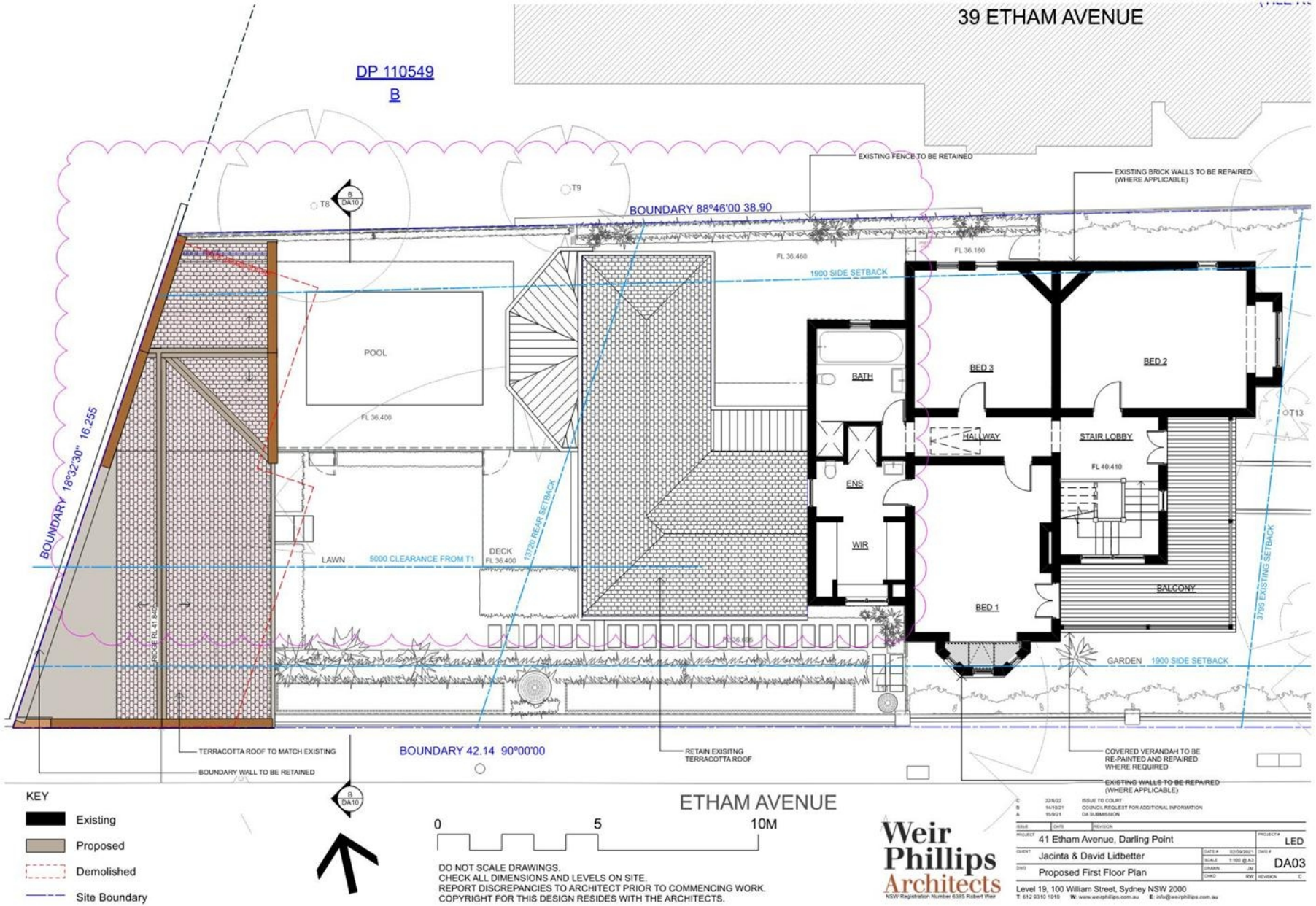
ISSUE	DATE	REVISION
C	22/6/22	ISSUE TO COURT
B	14/10/21	COUNCIL REQUEST FOR ADDITIONAL INFORMATION
A	15/9/21	DA SUBMISSION

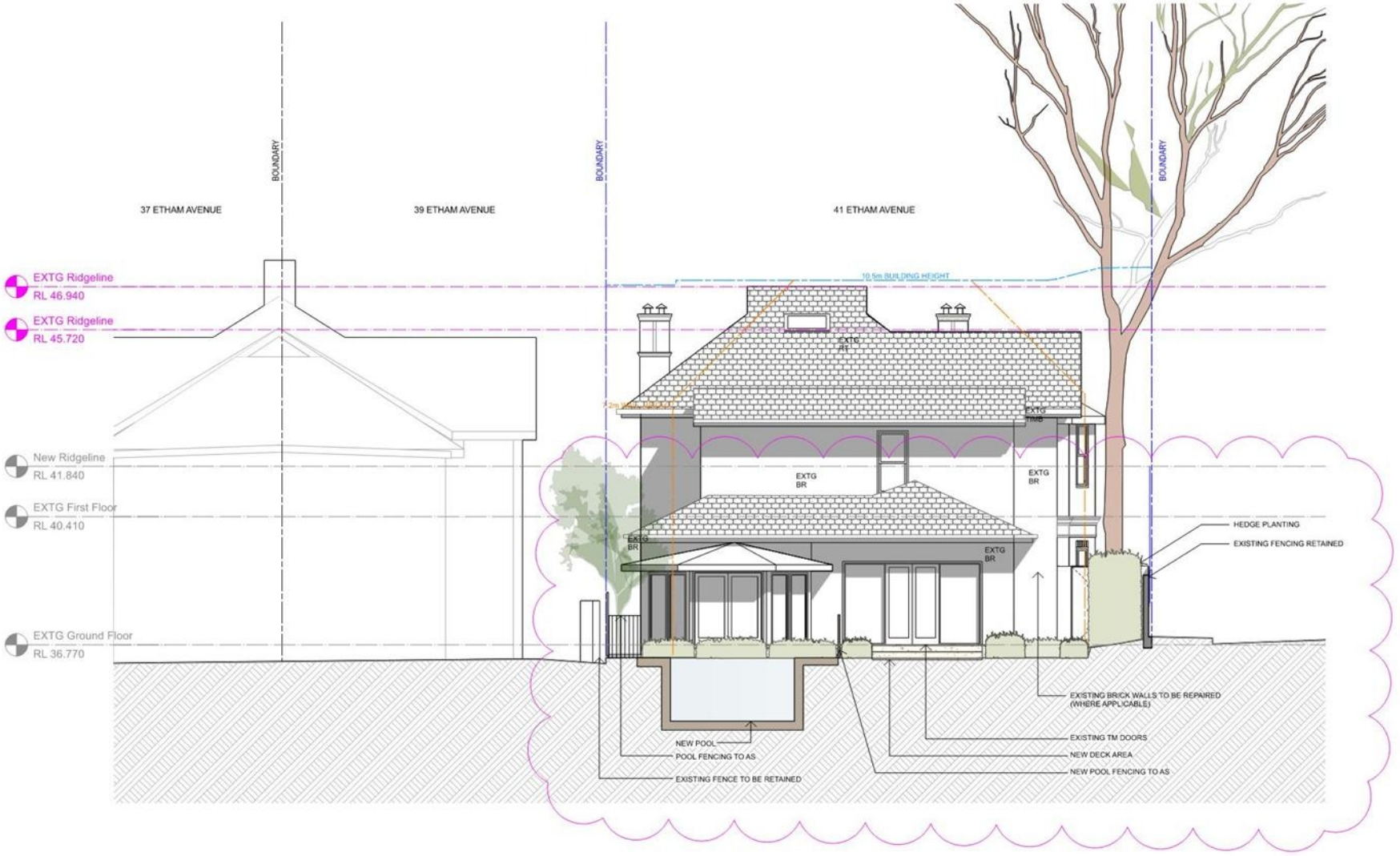
PROJECT	41 Etham Avenue, Darling Point	PROJECT #	LED
CLIENT	Jacinta & David Lidbetter	DATE # 02/09/2021	DWG # DA01
DWG	Proposed Site & Roof Plan	SCALE 1:200 @ A3	
		DRAWN JM	
		CHKD RW	REVISION C

Level 19, 100 William Street, Sydney NSW 2000
T: 612 9310 1010 W: www.weirphillips.com.au E: info@weirphillips.com.au

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530


DP 110549
B
39 ETHAM AVENUE
RAINWATER TANK
BOUNDARY FENCE AS POOL FENCE TO AS
EXISTING FENCE TO BE RETAINED
BOUNDARY 88°46'00 38.90
1000L RWT
POOL FENCE TO AS
1900 SIDE SETBACK
PAVILION
POOL
LIVING ROOM
BED 4
OFFICE
BATH
HALL
ENTRY HALL
BOUNDARY 18°32'30" 16.255
KITCHEN
DINING
LDRY
GARAGE
LAWN
5000 CLEARANCE FROM T1
DECK
3770 REAR SETBACK
3700 EXISTING SETBACK
GARDEN
BOUNDARY 42.14 90°00'00
REFER TO LANDSCAPE DESIGN PROPOSALS
EXISTING WALLS TO BE REPAIRED (WHERE APPLICABLE)
EXISTING GARDEN TO BE RETAINED
EXISTING PERIMETER WALLS AND IRONWORK TO BE REPAIRED (WHERE APPLICABLE)
SRZ
ETHAM AVENUE
EXISTING FENCE AND GATE TO BE RETAINED
POOL FENCE HEIGHT AND SPECIFICATION TO AS
VEHICLE CROSSING
KEY
Existing
Proposed
Demolished
Site Boundary
0
5
10M
DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.
COPYRIGHT FOR THIS DESIGN RESIDES WITH THE ARCHITECTS.
Weir Phillips Architects
NSW Registration Number 6385 Robert Weir
Level 19, 100 William Street, Sydney NSW 2000
T: 612 9310 1010 W: www.weirphillips.com.au E: info@weirphillips.com.au
C 22/6/22 ISSUE TO COURT
B 14/10/21 COUNCIL REQUEST FOR ADDITIONAL INFORMATION
A 15/9/21 DA SUBMISSION
41 Etham Avenue, Darling Point
LED
Jacinta & David Lidbetter
DA02
Proposed Ground Floor Plan


39 ETHAM AVENUE
DP 110549
B
EXISTING FENCE TO BE RETAINED
EXISTING BRICK WALLS TO BE REPAIRED (WHERE APPLICABLE)
T8
T9
T13
B DA10
BOUNDARY 88°46'00 38.90
FL 36.460
FL 36.160
1900 SIDE SETBACK
POOL
FL 36.400
BATH
BED 3
BED 2
HALLWAY
STAIR LOBBY
FL 40.410
ENS
WIR
BED 1
BALCONY
BOUNDARY 16°32'30" 16.255
LAWN
5000 CLEARANCE FROM T1
DECK
FL 36.400
13720 REAL SETBACK
3795 EXISTING SETBACK
GARDEN
1900 SIDE SETBACK
RIDGE RL 41.840
TERRACOTTA ROOF TO MATCH EXISTING
BOUNDARY WALL TO BE RETAINED
BOUNDARY 42.14 90°00'00
RETAIN EXISITNG TERRACOTTA ROOF
COVERED VERANDAH TO BE RE-PAINTED AND REPAIRED WHERE REQUIRED
EXISTING WALLS TO BE REPAIRED (WHERE APPLICABLE)
KEY
Existing
Proposed
Demolished
Site Boundary
ETHAM AVENUE
0
5
10M
DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.
COPYRIGHT FOR THIS DESIGN RESIDES WITH THE ARCHITECTS.
Weir Phillips Architects
NSW Registration Number 6385 Robert Weir
C 22/6/22 ISSUE TO COURT
B 14/10/21 COUNCIL REQUEST FOR ADDITIONAL INFORMATION
A 15/9/21 DA SUBMISSION
41 Etham Avenue, Darling Point
LED
Jacinta & David Lidbetter
DA03
Proposed First Floor Plan
Level 19, 100 William Street, Sydney NSW 2000
T. 612 9310 1010 W. www.weirphillips.com.au E. info@weirphillips.com.au



0 5 10M

DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.

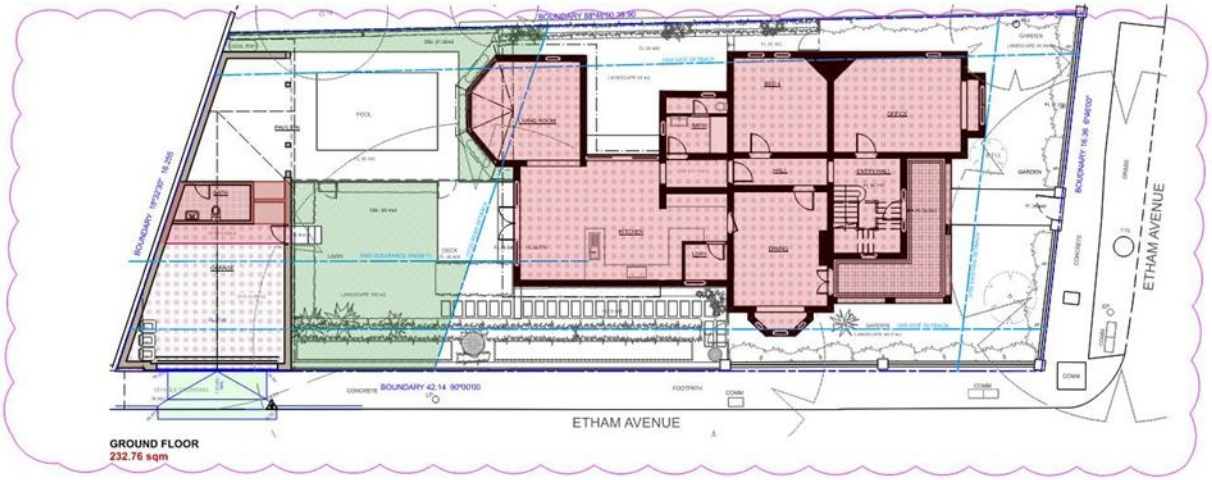
Weir Phillips Architects
NSW Registration Number 6385 Robert Weir

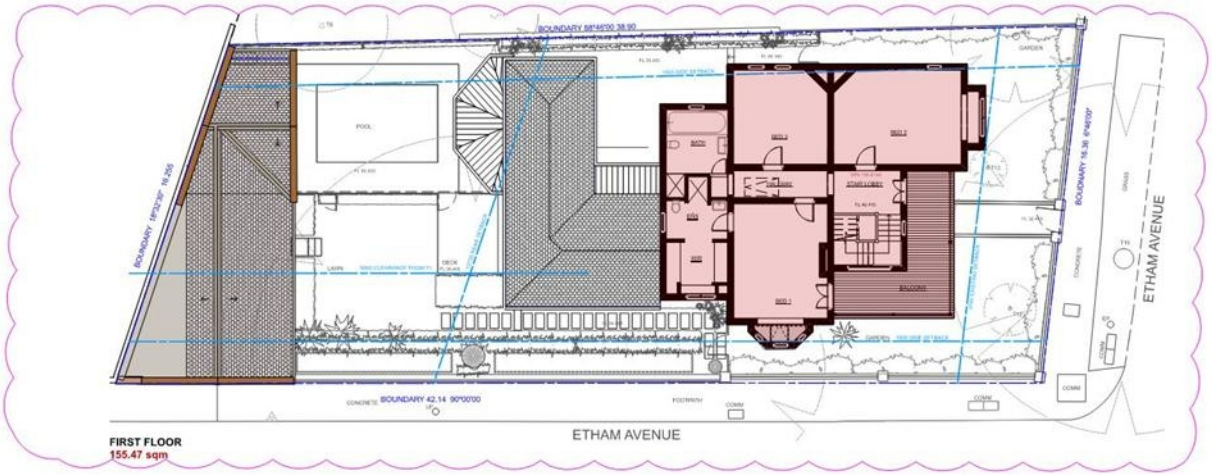
ISSUE	DATE	REVISION
B	23/6/22	ISSUE TO COURT
A	10/5/21	DA SUBMISSION

PROJECT	Etham Avenue Residence	PROJECT # LED
CLIENT	Jacinta & David Lidbetter	DATE # 02/09/2021 · SCALE 1:100 @ A3 · DWG # DA07
DWG	Proposed West Elevation	DRAWN JM · CHKD RW · REVISION B

Level 19, 100 William Street, Sydney NSW 2000
T: 612 9310 1010 W: www.weirphillips.com.au E: info@weirphillips.com.au

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530





LEGEND

Site Area:	639.7sqm Lot 1 / D.P.165386	
Zone:	R3 Medium Density Residential	
	Council Controls	Proposed
Buildable Area:	269.70sqm	
Floorplate Control:	445.00sqm	388.23sqm Ground Floor 232.76sqm First Floor 155.47sqm Garage 40.00sqm (not inc)
Building Height:	10.5m	6.53m (existing)
Landscape:	185sqm (DSL)	245.27sqm (DSL)

0 10 20M

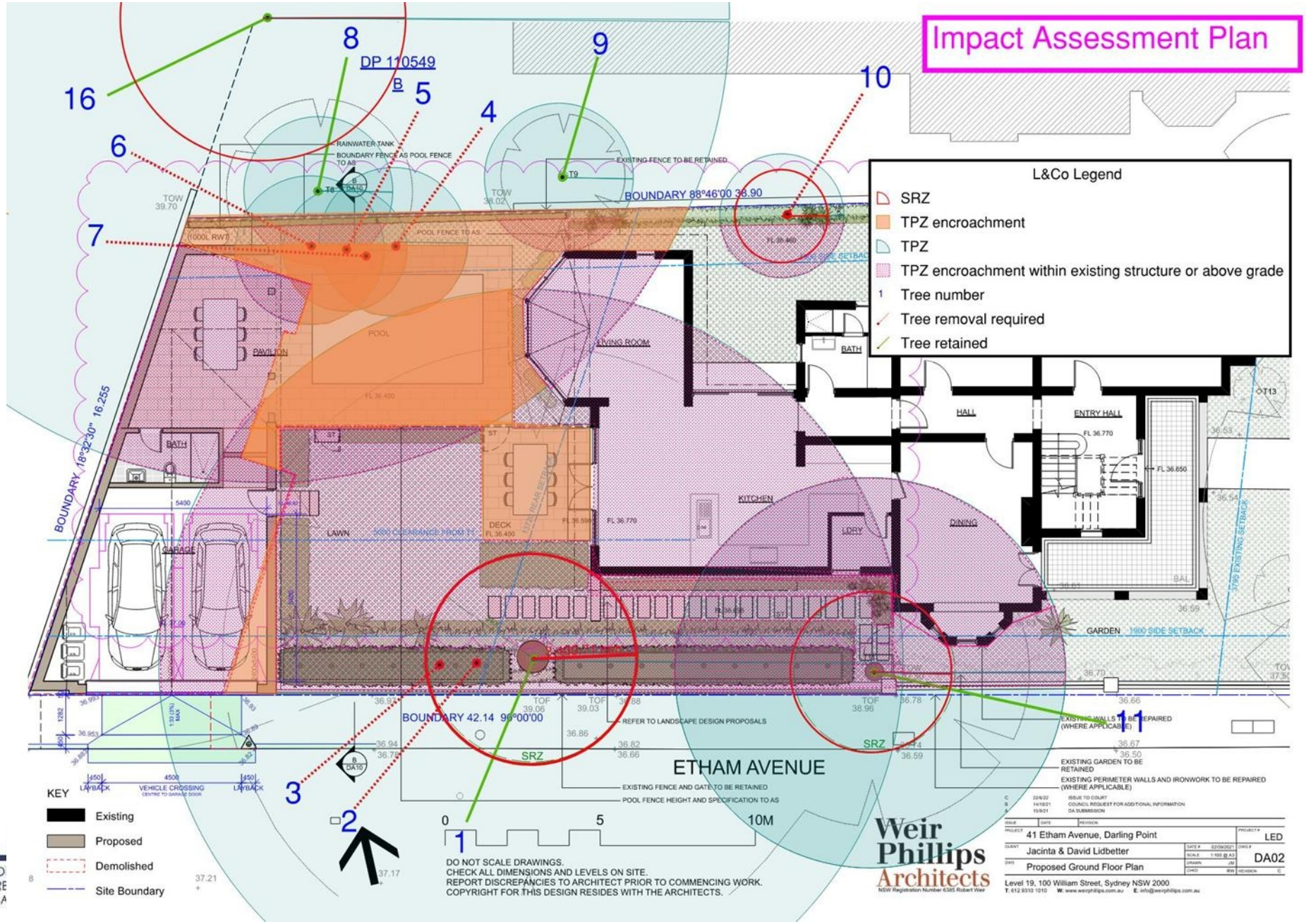
DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.

Weir Phillips Architects
NSW Registration Number 6385 Robert Weir

B	22/6/22	ISSUE TO COURT
A	15/9/21	DA SUBMISSION
ISSUE	DATE	REVISION
PROJECT	Etham Avenue Residence	PROJECT # LED
CLIENT	Mr & Mrs Lidbetter	DATE # Date / SCALE 1:200 @ A3 / DWG # DA14
DWG	Proposed Floor Plate Calculations	DRAWN JM / CHKD RW / REVISION B

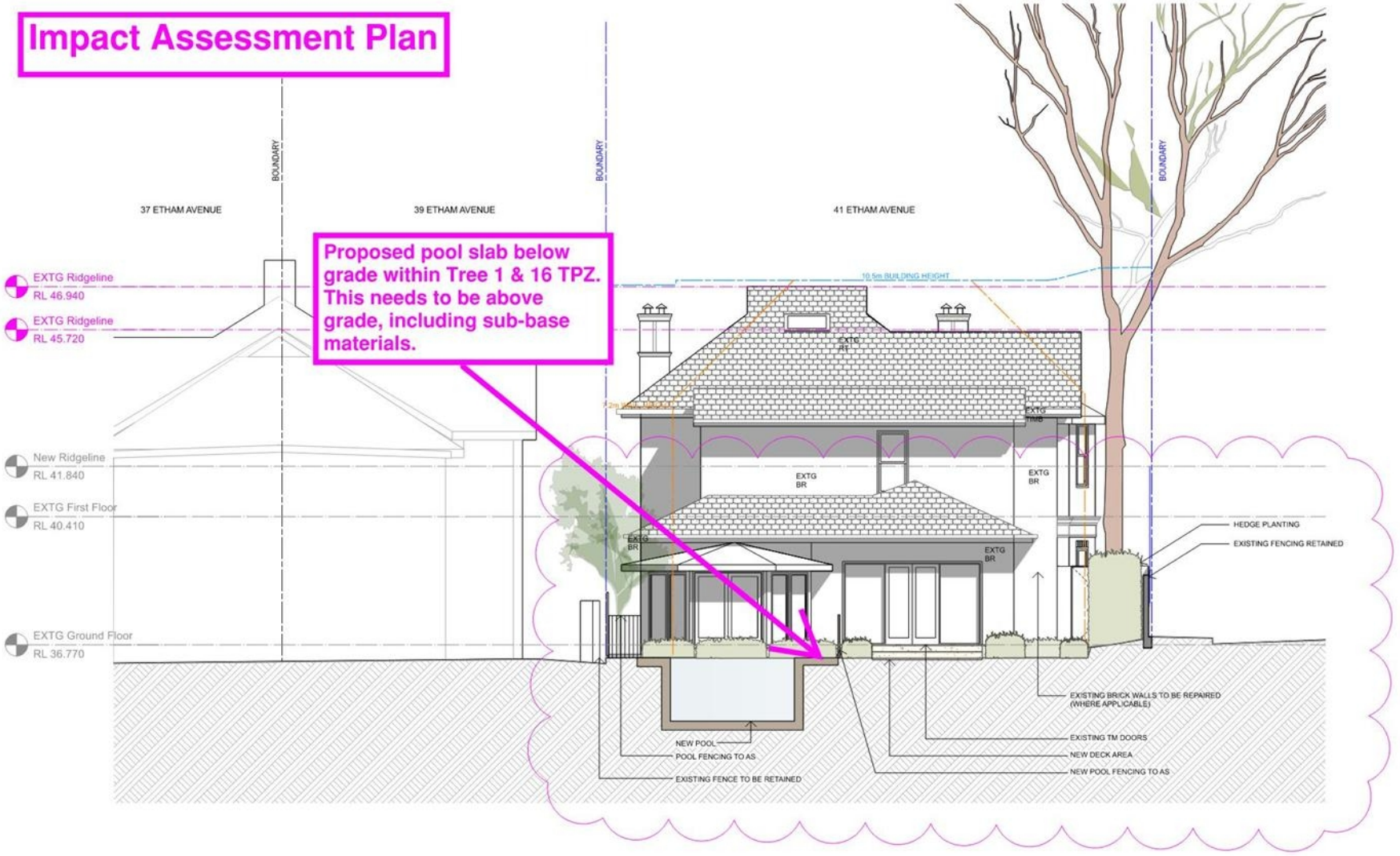
Level 19, 100 William Street, Sydney NSW 2000
T: 612 9310 1010 W: www.weirphillips.com.au E: info@weirphillips.com.au

10.0 APPENDIX 5 | ARBORICULTURAL IMPACT ASSESSMENT PLANS



PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

Impact Assessment Plan



0 5 10M

DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.
COPYRIGHT FOR THIS DESIGN RESIDES WITH THE ARCHITECTS.

Weir Phillips Architects
NSW Registration Number 6385 Robert Weir

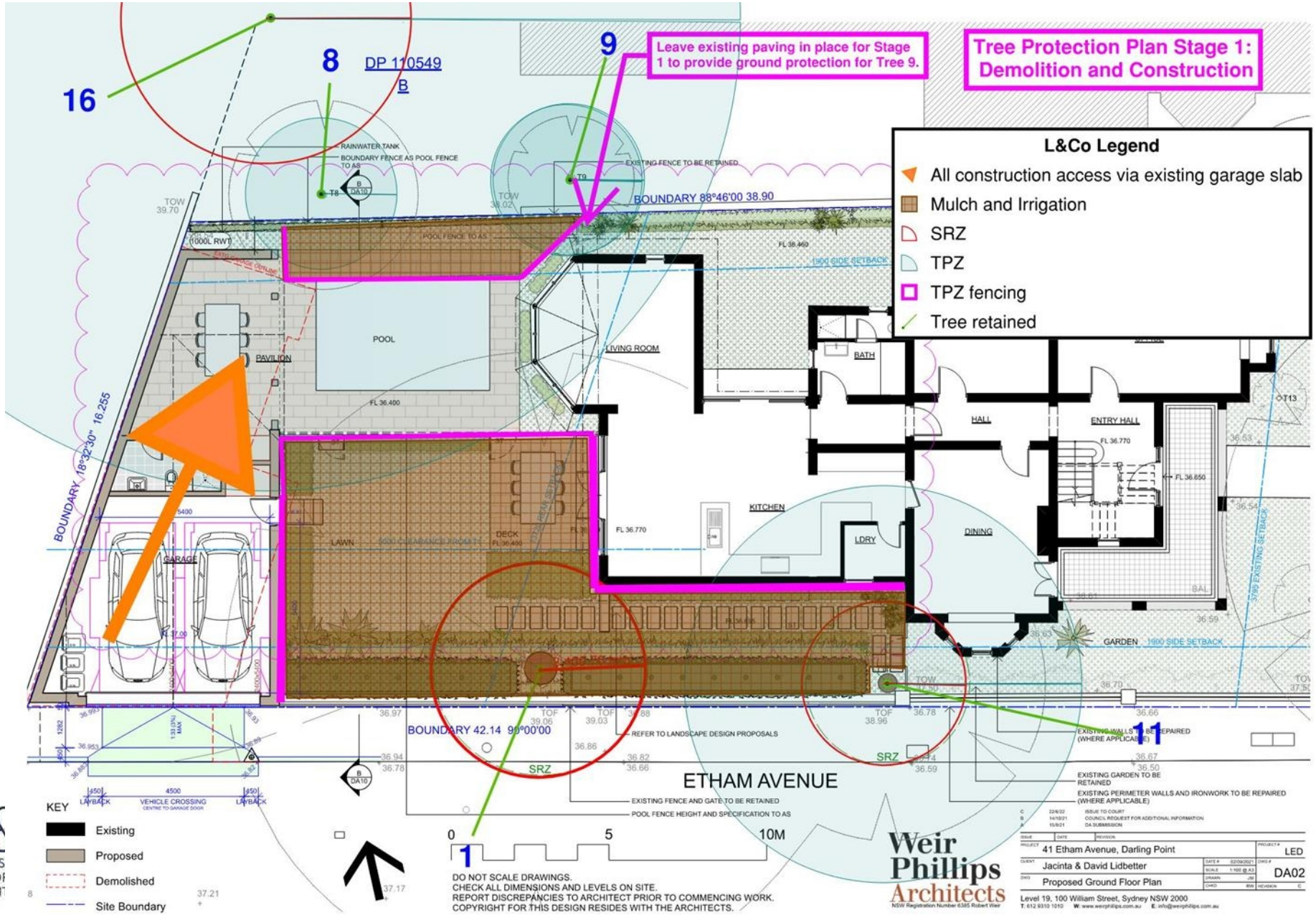
B 23/6/22 ISSUE TO COURT
A 10/5/21 DA SUBMISSION
ISSUE DATE REVISION

PROJECT: Etham Avenue Residence — PROJECT #: LED
CLIENT: Jacinta & David Lidbetter — DATE #: 02/09/2021 — SCALE: 1:100 @ A3 — DWG #: DA07
DWG: Proposed West Elevation — DRAWN: JM — CHKD: RW — REVISION: B

Level 19, 100 William Street, Sydney NSW 2000
T: 612 9310 1010 W: www.weirphillips.com.au E: info@weirphillips.com.au

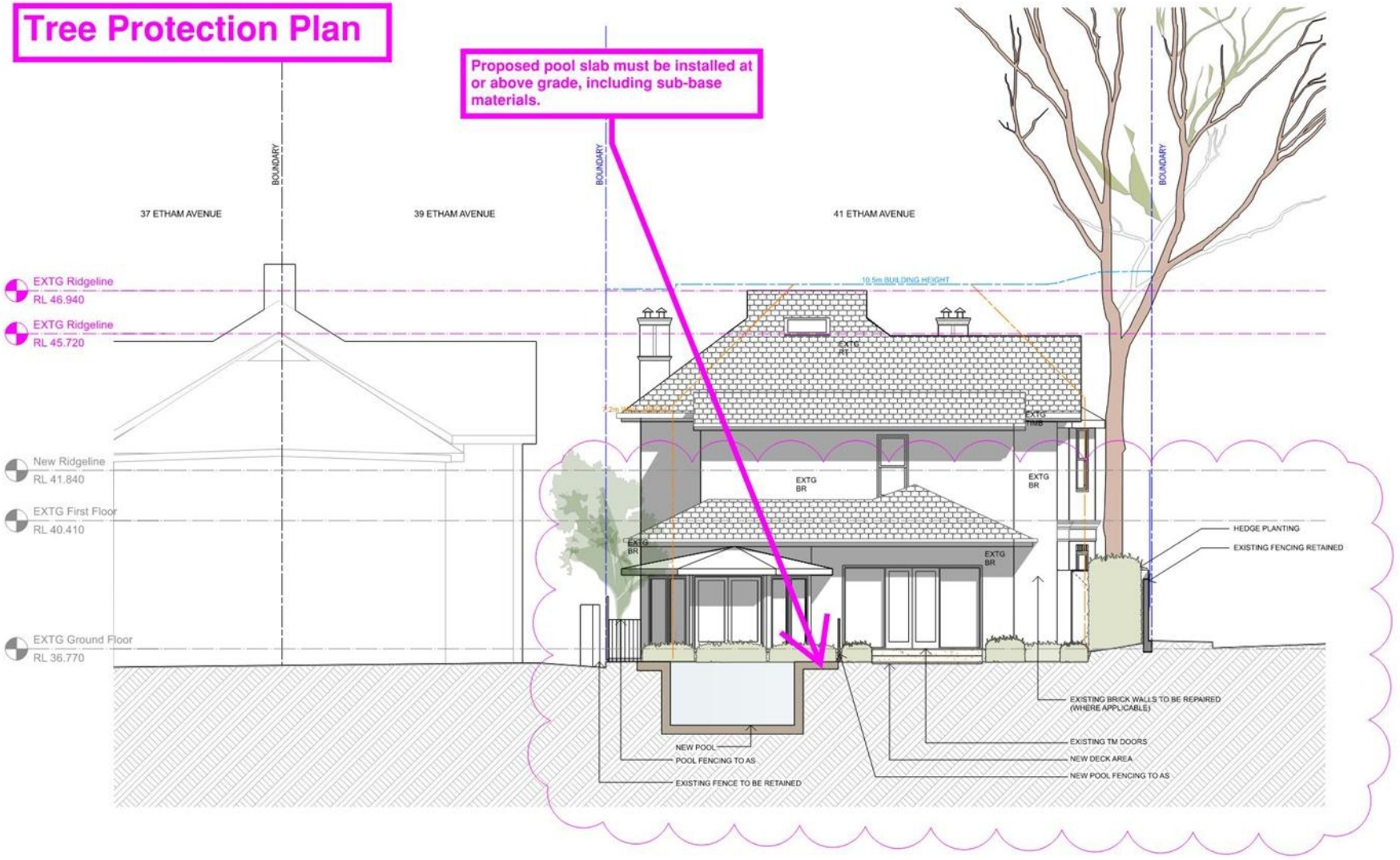
PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

11.0 APPENDIX 6 | TREE PROTECTION PLAN



PO Box 2169,
Clovelly, NSW 2031
nfo@laurenceco.com.au
0404 282 825
ACN: 625 300 530

Tree Protection Plan



0 5 10M

DO NOT SCALE DRAWINGS.
CHECK ALL DIMENSIONS AND LEVELS ON SITE.
REPORT DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.
COPYRIGHT FOR THIS DESIGN RESIDES WITH THE ARCHITECTS.

Weir Phillips Architects
NSW Registration Number 6385 Robert Weir

B 23/6/22 ISSUE TO COURT
A 10/9/21 DA SUBMISSION
ISSUE DATE REVISION

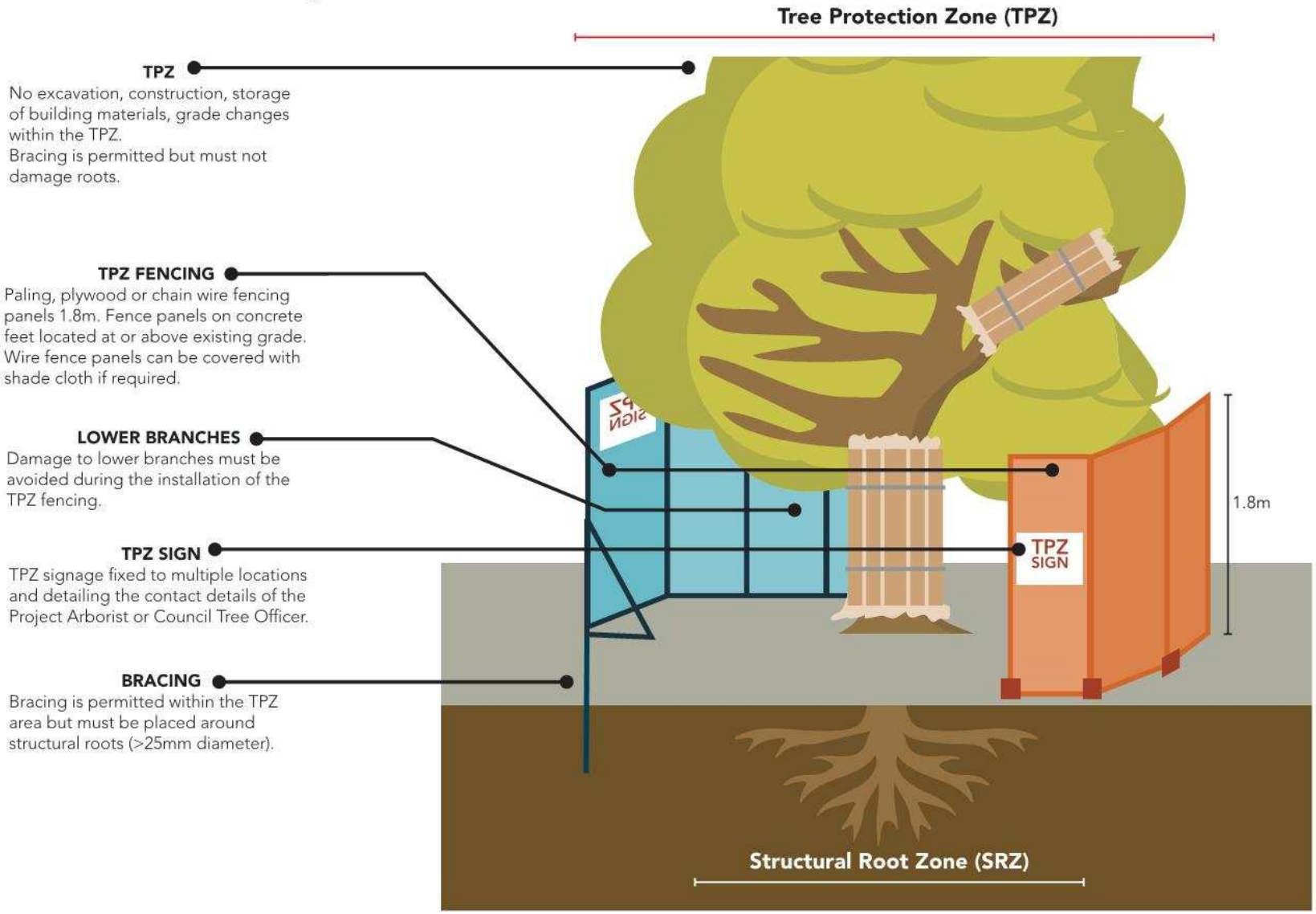
PROJECT: Etham Avenue Residence — PROJECT #: LED
CLIENT: Jacinta & David Lidbetter — DATE #: 02/09/2021
SCALE: 1:100 @ A3 — DWG #: DA07
DWG: Proposed West Elevation
DRAWN: JM
CHKD: RW — REVISION: B

Level 19, 100 William Street, Sydney NSW 2000
T: 612 9310 1010 W: www.weirphillips.com.au E: info@weirphillips.com.au

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

12.0 APPENDIX 7 | TYPICAL TREE PROTECTION DETAIL

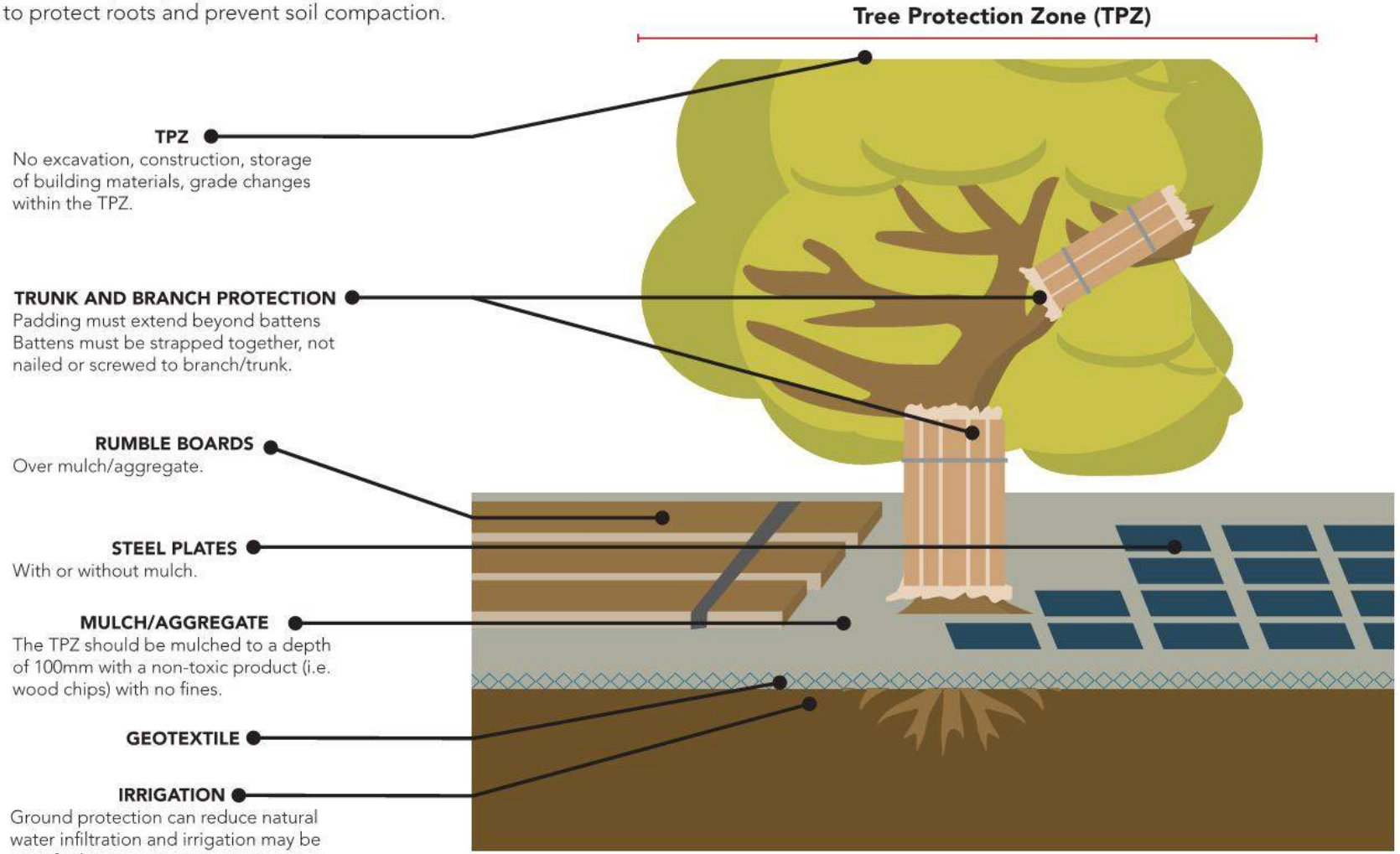
Tree Protection Detail - TPZ Fencing



PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

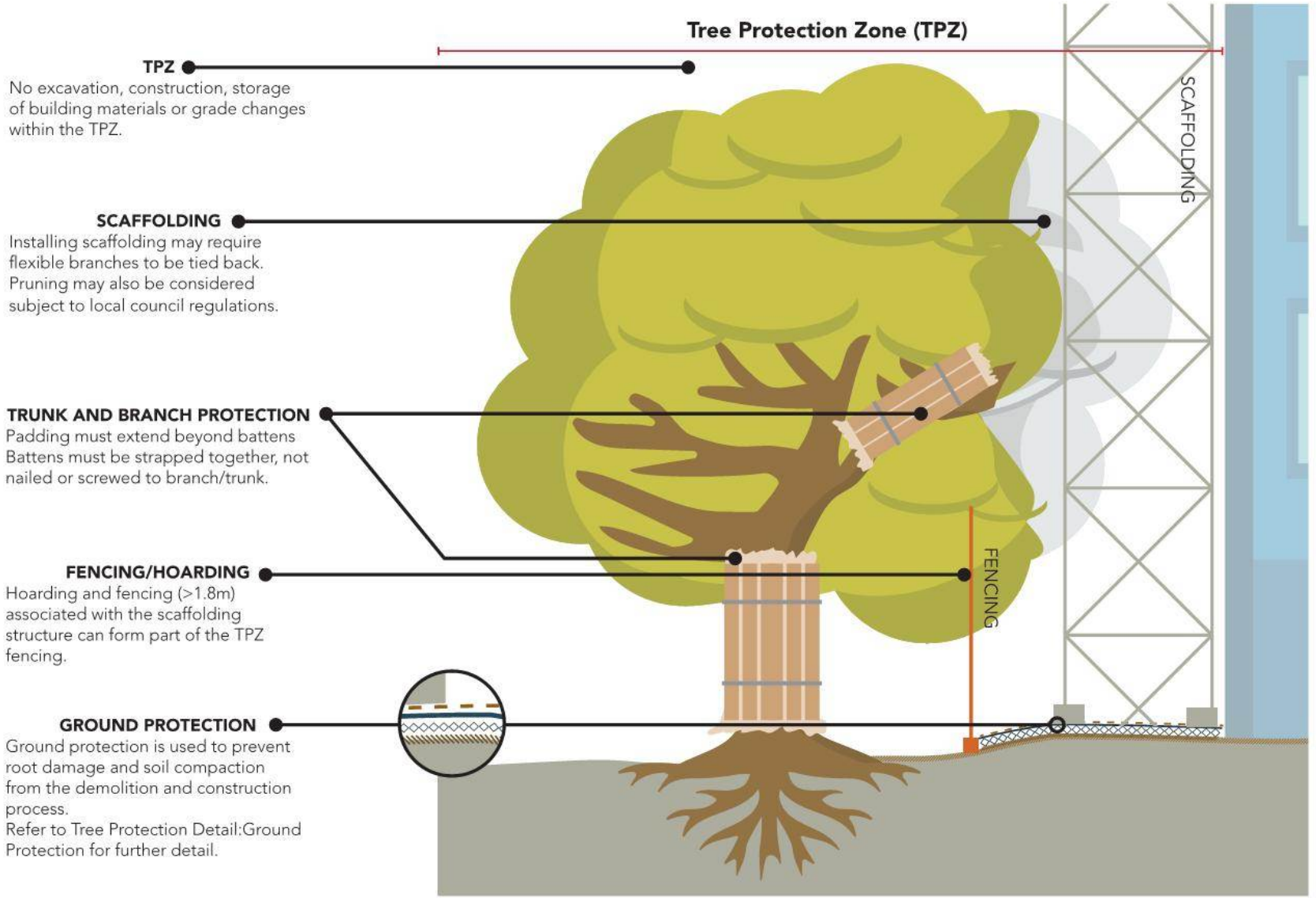
Tree Protection Detail - Ground Protection

Required if temporary access for machinery is required within the TPZ to protect roots and prevent soil compaction.



PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

Tree Protection Detail - Scaffolding within TPZ



PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

13.0 APPENDIX 8 | TREE PROTECTION SPECIFICATION

13.1 **Appointment of Project Arborist**

13.1.1 Prior to commencement of works a Project Arborist should be engaged to monitor compliance with the protection measures. The Project Arborist will inspect tree protection measures and prepare a compliance certification for the principal certifying authority prior to the release of compliance certification. Contractors and site workers are to receive these specifications at least 3 days prior to commencing works. Contractors and site workers working within the TPZ should sign the site log confirming they have read and understood these specifications prior to commencing works.

13.2 **Compliance**

13.2.1 The Project Arborist will conduct regular site visits to certify the works are compliant with this specification. A compliance document will be prepared by the Project Arborist following each site inspection. The compliance document will include evidence of compliance with the tree protection measures detailed in this specification.

13.3 **Tree & Vegetation Removal**

13.3.1 Tree and vegetation removal will be undertaken prior to installation of tree protection measures. Tree removal works should be undertaken in accordance with the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work* (2016).

13.3.2 Tree and vegetation removal must not damage trees to be retained.

13.4 **Tree Protection Zone**

13.4.1 Trees that are to be retained must be protected prior to and during construction from works that could negatively impact their health and structural integrity. The following works should not occur within the TPZ unless authorised by the Project Arborist:

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of naturally occurring rock
- Storage of materials, plant/equipment and building of sheds
- No signage or hoarding shall be fixed to the trees
- Preparation of building materials, refuelling or disposal of waste materials and chemicals
- No lighting of fires
- No pedestrian or vehicular traffic
- Temporary or permanent location of services, or works required for their installation
- Any other activities that may damage the tree

13.6 **Tree Protection Fencing**

13.6.1 The TPZ fencing must be positioned at the perimeter of the TPZ and may be combined to form a single area where the TPZs of multiple trees overlap. The approximate location of the TPZ fencing is outlined in the Arboricultural Impact Assessment with the exact location determined by consultation between the Principal Contractor/Project Manager and the Project Arborist prior to the commencement of works. Fencing may be setback to allow for demolition/construction access and for the installation of pavements only where appropriate ground protection is installed and approved by the Project Arborist. The TPZ fencing must be at least 1.8m above grade and made of wire mesh panels that are supported by concrete feet and fastened together to prevent sideways movement. Tree damage, including any low branches, must be avoided during the installation of the tree protection fencing. The TPZ fencing must include signage to identify the TPZ fencing and include the Project Arborist contact details.

13.7 **Site Management**

13.7.1 Materials, waste storage and temporary services should not be located within the TPZ.

13.8 **Works within the Tree Protection Zones**

13.8.1 In certain situations, works within the TPZ may be authorised by the determining authority. These works must be supervised by the Project Arborist. When working within the TPZ, special care should be taken to avoid damage to the tree's root system, trunks and lower branches.

13.8.2 If roots (>25mm∅) are encountered during excavation, demolition and construction works, these roots must be retained undamaged, and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅ where deemed necessary by the Project Arborist.

13.9 **Ground Protection**

13.9.1 The movement of machinery should be restricted to existing paved areas or in areas with temporary ground protection (i.e. steel road plates, ground mats) when deemed necessary by the Project Arborist.

13.9.2 Ground protection should be installed as per AS4970 and Appendix 7- *Typical Tree Protection Detail*.

13.9.3 If irrigation is considered necessary, it should be installed first and by a licensed irrigator under the supervision of the Project Arborist with no trenching.

13.9.4 The irrigation should be covered with a layer of geotextile and mulched to a depth of 100mm with a non-toxic product (i.e. woodchips) with no fines.

13.9.5 Once the irrigation, geotextile and mulch are in place then the ground protection boards (steel plates or rumble boards) can in be installed.

13.9.6 Boards should remain in place for the entire build.

13.10 **Trunk & Branch Protection**

13.10.1 If trunk protection is required it should be installed by wrapping the trunk and first order branching with padding (i.e. carpet underlay or 10mm thick geotextile) to a minimum height of 2m. Timber battens (90 x 45mm), spaced at 150mm centres should be strapped together and placed over the padding (Refer to AS4970 for further details).

13.10.2 Branch protection should be installed when considered necessary by the Project Arborist.

13.10.3 Branches should be wrapped with padding (i.e. Ableflex) to provide protection. Where possible, branches should be tied back and construction works to take place around branches (with appropriate branch protection installed as required). If pruning is unavoidable, it should be in accordance with AS4373 and supervised by the Project Arborist.

13.11 **Structure & Pavement Demolition**

13.11.1 The Project Arborist should supervise the demolition of existing structures/pavement within the TPZ. Machinery is to be excluded from the TPZ unless operating from existing slabs, pavements or areas of ground protection. Machinery should not contact the tree's roots, trunks, branches and crown.

13.11.2 Existing pavement should be hand lifted to minimise disturbance to the existing sub-base and to prevent damage to tree roots. Wherever possible, the existing sub-base material should remain in situ.

13.11.3 When removing slab sections within the TPZ, machinery must work from the tree outwards to ensure the machinery always remains on the un-demolished section of slab. Wherever possible, footings or elements below grade should be retained to minimise disturbance to the tree's roots.

13.11.4 Structures must be shattered with hand-operated pneumatic/electric breaker before removal when considered necessary by the Project Arborist.

13.11.5 If roots (>25mm∅) are encountered during excavation, demolition and construction works these roots must be retained undamaged and advice sought from the Project Arborist. Exposed roots must be protected from direct sunlight, drying out and extremes of temperature by using 10mm thick jute geotextile fabric. This fabric should be kept moist at all times.

13.11.6 Where the Project Arborist determines that the tree is using underground elements (i.e. footings, pipes, rocks etc.) for support, these elements should be left *in situ*.

13.12 **Pavement/Kerb Installation**

13.12.1 Installation of pavements and sub-base within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain roots (unless prior root mapping has determined that there are no roots within the area of construction).

13.12.2 If roots (>25mm∅) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅ where deemed necessary by the Project Arborist.

13.12.3 Compaction of the ground prior to the installation of fill is not permitted.

13.12.4 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates should not be used to avoid raising soil pH levels.

13.12.5 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. If possible, pavement material should be permeable.

13.12.6 Kerbs within the TPZ should be modified to bridge roots (>25mm∅) unless root pruning is approved and undertaken by the Project Arborist.

13.13 **Underground Services**

13.13.1 The installation of underground services should be located outside of the TPZ. Where this is not possible they should be installed around or below roots (>25mm∅) using either hydrovac or hand excavation and supervised by the Project Arborist.

13.13.2 Boring methods may be used for the installation of services 800mm below grade. Excavations for starting and receiving pits for the boring equipment should be located outside of the TPZ or located to avoid roots (>25mm∅, or determined by the Project Arborist).

13.13.3 Excavations, Root Protection & Root Pruning

13.13.4 Excavations and root pruning within the TPZ must be supervised by the Project Arborist and should be avoided where possible.

13.13.5 No over-excavation, battering, or benching should be undertaken beyond the footprint of any structure unless approved by the Project Arborist. Hand excavation and root pruning along the excavation line should be completed prior to the commencement of mechanical excavation to prevent tearing and shattering damage to the roots.

13.13.6 Roots >25mm∅ should be pruned by the Project Arborist only. Roots <25mm∅ may be pruned by the Principal Contractor. Root pruning should be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears.

13.13.7 Damaged roots should be pruned behind the damaged tissues with the final cut made to the undamaged part of the root.

14.0 APPENDIX 9 | PLATES

a) Showing Tree 1 and the site from Etham Avenue. b) Showing Trees 4, 5 & 7. c) Showing Tree 10. d-e) Showing Tree 11. e) Showing possum guard on Tree 11. f) Showing Trees 1, 2 & 3 and location of existing dwelling in foreground.

15.0 APPENDIX 10 | PROJECT ARBORIST HOLD POINTS

HOLD POINT NO.	NAME	DESCRIPTION
1	**Stage 1: Demolition & Construction**	Project Arborist inspection of the tree protection measures (detailed in this report) prior to the start of demolition.
2	**Stage 2: Paving and Landscaping**	Project Arborist inspection of the tree protection measures (detailed in this report) prior to the start of paving works.

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530

16.0 APPENDIX 11 | LIMITATIONS & DISCLAIMERS

16.1 Subject trees were assessed from the ground only and for providing an Arboricultural Impact Assessment and Tree Protection Specification.

16.2 All recommendations in this Arboricultural Impact Assessment and Tree Protection Specification report are based on the observations made on the day of inspection (21.8.21 & 8.7.22). There is no warranty, expressed or implied, that problems or deficiencies relating to the subject trees, or the subject site may not arise in the future.

16.3 Laurence & Co Consultancy takes care to obtain information from reliable sources. However, Laurence & Co Consultancy can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Impact Assessment and Tree Protection Specification report are visual aids only and are not necessarily to scale. This report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc. issues.

16.4 This report has been prepared for exclusive use by the client. This report should not be viewed by others or for any other reason outside its intended target or without the prior written consent of Laurence & Co Consultancy. Unauthorised alteration or separate use of any section of the report invalidates the report.

16.5 Many factors may contribute to tree failure and cannot always be predicted. Laurence & Co Consultancy takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators.

16.6 **Limitation of Liability**. Laurence & Co Consultancy shall be liable only for direct damages that result from negligence or wilful misconduct in the performance of its services. Under no circumstances shall Laurence & Co Consultancy be liable for indirect, consequential, special, or punitive damages, or for damages caused by the client's failure to perform its obligations under law or contract. Laurence & Co Consultancy shall not be liable for and Client shall indemnify Laurence & Co Consultancy from and against all claims, demands, liabilities and costs (including attorneys' and expert fees) arising out of or in any way related to our performance or non-performance of services, including all on-site activities except to the extent caused by Laurence & Co Consultancy's negligence or wilful misconduct. In no event shall Laurence & Co Consultancy's liability exceed the amount paid to Laurence & Co Consultancy by the Client for our professional services (net of reimbursable expenses) and Client specifically releases Laurence & Co Consultancy for any damages, claims, liabilities and costs in excess of that amount.

16.7 Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this report are subject to approval from the relevant Consent Authority.

PO Box 2169,
Clovelly, NSW 2031
info@laurenceco.com.au
0404 282 825
ACN: 625 300 530