

Application for Planning Permit

If you need help to complete this form, read [How to complete the Application for Planning Permit form](#).

⚠ Any material submitted with this application, including plans and personal information, will be made available for public viewing, including electronically, and copies may be made for interested parties for the purpose of enabling consideration and review as part of a planning process under the *Planning and Environment Act 1987*. If you have any concerns, please contact Council's planning department.

⚠ Questions marked with an asterisk (*) are mandatory and must be completed.

⚠ If the space provided on the form is insufficient, attach a separate sheet.

Planning Enquiries
Phone: 03 9205 2200
Web: <http://www.hume.vic.gov.au>

Clear Form

The Land **i** ① Address of the land. Complete the Street Address and one of the Formal Land Descriptions.

Street Address *

Unit No.:	St. No.: 45	St. Name: CUTHBERT STREET
-----------	--------------------	----------------------------------

Suburb/Locality: BROAD MEADOWS	Postcode: 3047
---------------------------------------	-----------------------

Formal Land Description *
Complete either A or B.

⚠ This information can be found on the certificate of title.

A Lot No.: **462** Lodged Plan Title Plan Plan of Subdivision No.: **059115**

OR

B Crown Allotment No.: Section No.:

Parish/Township Name:

If this application relates to more than one address, please click this button and enter relevant details.

Add Address

The Proposal **⚠** You must give full details of your proposal and attach the information required to assess the application. Insufficient or unclear information will delay your application.

i ② For what use, development or other matter do you require a permit? *

If you need help about the proposal, read:

How to Complete the Application for Planning Permit Form

Select the focus of this application and describe below:

**CONSTRUCTION OF TWO (2) DWELLINGS AND
2 LOT SUBDIVISION**

📎 Provide additional information on the proposal, including: plans and elevations; any information required by the planning scheme, requested by Council or outlined in a Council planning permit checklist; and if required, a description of the likely effect of the proposal.

i ③ Estimated cost of development for which the permit is required *

Cost \$ **650,000 - 00**

⚠ You may be required to verify this estimate. Insert '0' if no development is proposed.

If the application is for land within metropolitan Melbourne (as defined in section 3 of the *Planning and Environment Act 1987*) and the estimated cost of the development exceeds \$1 million (adjusted annually by CPI) the Metropolitan Planning Levy must be paid to the State Revenue Office and a current levy certificate must be submitted with the application. Visit www.sro.vic.gov.au for information.

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Existing Conditions **1**

4 Describe how the land is used and developed now *

eg. vacant, three dwellings, medical centre with two practitioners, licensed restaurant with 80 seats, grazing.

SINGLE DWELLING

Provide a plan of the existing conditions. Photos are also helpful.

Title Information **1**

5 Encumbrances on title *

If you need help about the title, read: [How to complete the Application for Planning Permit form](#)

Does the proposal breach, in any way, an encumbrance on title such as a restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope?

- Yes. (If 'yes' contact Council for advice on how to proceed before continuing with this application.)
 No
 Not applicable (no such encumbrance applies).

Provide a full, current copy of the title for each individual parcel of land forming the subject site. (The title includes: the covering 'register search statement', the title diagram and the associated title documents, known as 'instruments', eg. restrictive covenants.)

Applicant and Owner Details **1**

6 Provide details of the applicant and the owner of the land.

Applicant *

The person who wants the permit.

Name: [REDACTED]

Where the preferred contact person for the application is different from the applicant, provide the details of that person.

Contact person's details *

Same as applicant (if so, go to 'contact information')

Name:
Title: MR First Name: TASMAN Surname: JONES

Organisation (if applicable): SONGBOWDEN PLANNING PTY LTD

Postal Address: If it is a P.O. Box, enter the details here:
Unit No.: L2 St. No.: 700 St. Name: HIGH STREET

Suburb/Locality: KEW EAST State: VIC Postcode: 3102

Please provide at least one contact phone number *

Contact information
Business Phone: 03 9077 6115 Email: admin@songbowden.com.au
Mobile Phone: Fax:

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Need help with the Application?

If you need help to complete this form, read [How to complete the Application for Planning Permit form](#)
General information about the planning process is available at www.delwp.vic.gov.au/planning

Contact Council's planning department to discuss the specific requirements for this application and obtain a planning permit checklist. Insufficient or unclear information may delay your application.

8 Has there been a pre-application meeting with a Council planning officer?

No Yes

If 'yes', with whom?:

Date:


day / month / year

Checklist

9 Have you:

Filled in the form completely?

Paid or included the application fee?

 Most applications require a fee to be paid. Contact Council to determine the appropriate fee.

 Provided all necessary supporting information and documents?

A full, current copy of title information for each individual parcel of land forming the subject site

A plan of existing conditions.

Plans showing the layout and details of the proposal

Any information required by the planning scheme, requested by council or outlined in a council planning permit checklist.

If required, a description of the likely effect of the proposal (eg traffic, noise, environmental impacts).

If applicable, a current Metropolitan Planning Levy certificate (a levy certificate expires 90 days after the day on which it is issued by the State Revenue Office and then cannot be used). Failure to comply means the application is void.

Completed the relevant Council planning permit checklist?

Signed the declaration (section 7)?

Lodgement

Lodge the completed and signed form, the fee payment and all documents with:

Hume City Council
PO Box 119 Dallas VIC 3047
Pascoe Vale Road Broadmeadows VIC 3047

Contact information:

Telephone: 61 03 9205 2200

Email: email@hume.vic.gov.au

DX: 94718

Translation: 03 9205 2200 for connection to Hume Link's multilingual telephone information service

Deliver application in person, by fax, or by post:



Make sure you deliver any required supporting information and necessary payment when you deliver this form to the above mentioned address. This is usually your local council but can sometimes be the Minister for Planning or another body.

Save Form:



You can save this application form to your computer to complete or review later or email it to others to complete relevant sections.

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Owner *

The person or organisation who owns the land

Where the owner is different from the applicant, provide the details of that person or organisation.

Name: Same as applicant

Title: First Name: Surname:

Organisation (if applicable):

Postal Address: If it is a P.O. Box, enter the details here:

Unit No.: St. No.: St. Name:

Suburb/Locality: State: Postcode:

Owner's Signature (Optional): Date:

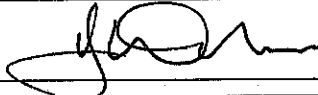
day / month / year

Declaration 

⑦ This form must be signed by the applicant *

▲ Remember it is against the law to provide false or misleading information, which could result in a heavy fine and cancellation of the permit.

I declare that I am the applicant; and that all the information in this application is true and correct; and the owner (if not myself) has been notified of the permit application.

Signature: 

Date: 8/07/2022
day / month / year

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**REGISTER SEARCH STATEMENT (Title Search) Transfer of
Land Act 1958**

Page 1 of 1

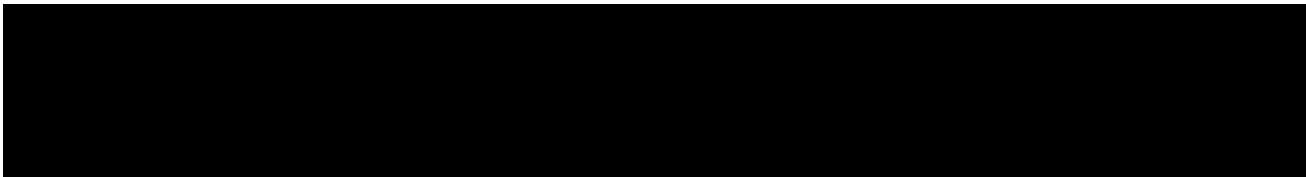
VOLUME 08728 FOLIO 691

Security no : 124098857457V
Produced 08/07/2022 11:57 AM

LAND DESCRIPTION

Lot 462 on Plan of Subdivision 059115.
PARENT TITLE Volume 08644 Folio 850
Created by instrument A866766 26/06/1968

REGISTERED PROPRIETOR



ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AT436232K 17/07/2020
CREDIT UNION AUSTRALIA LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE LP059115 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 45 CUTHBERT STREET BROADMEADOWS VIC 3047

ADMINISTRATIVE NOTICES

NIL

eCT Control 17759N GREAT SOUTHERN BANK
Effective from 17/07/2020

DOCUMENT END

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Document Identification	LP059115
Number of Pages (excluding this cover sheet)	5
Document Assembled	08/07/2022 12:02

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HOUSING COMMISSION VICTORIA
BROADMEADOWS ESTATE
PLAN OF SUBDIVISION OF
PART OF CROWN ALLOTMENT A SECTION II
PARISH OF WILL WILL ROOK
COUNTY OF BOURKE

LP59115
EDITION 5

APPROVED 22/4/168

COLOUR CONVERSION
E-1 = BLUE
E-2 = GREEN

VOL. 8644 FOL. 850

Measurements are in Feet & Inches

Conversion Factor

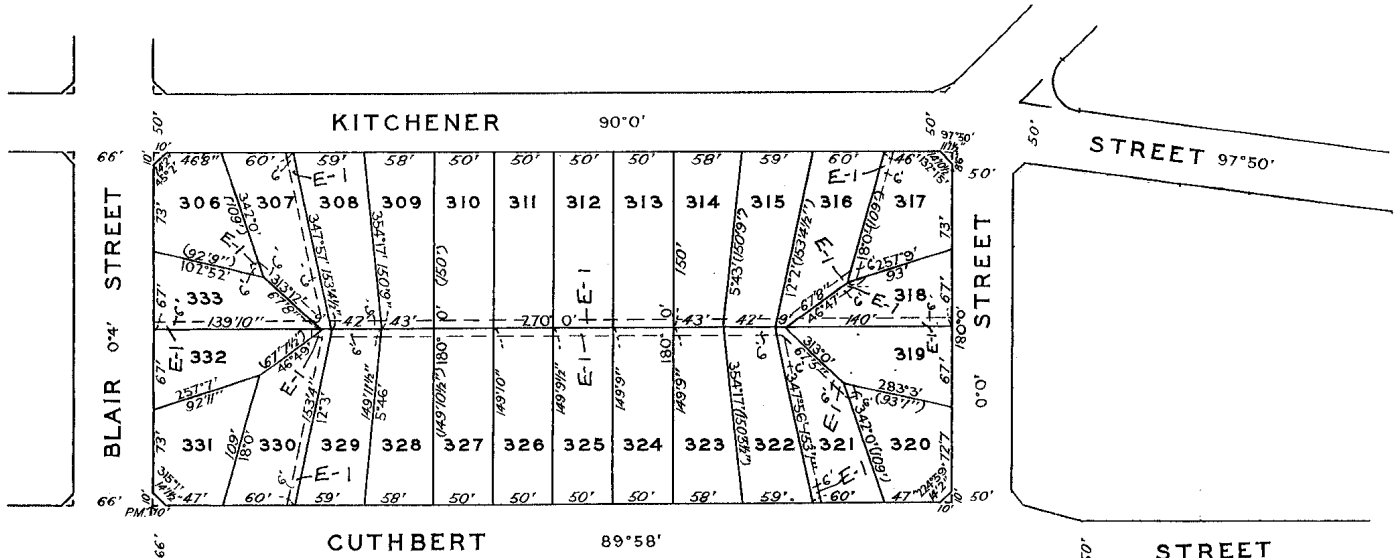
FEET X 0.3048 = METRES

APPROPRIATIONS

The land coloured Blue is set apart for Drainage, Sewerage and Gas supply purposes and is 6 feet wide except where otherwise shown.

NOTATIONS

LOTS 528 TO 578, BOTH INCLUSIVE, IN THE NAMES — OF REGISTERED PROPRIETORS OTHER THAN THE HOUSING COMMISSION ARE INCLUDED IN THIS PLAN PURSUANT TO SECTION 23 OF ACT 6275



ENCUMBRANCES

- THE LAND MARKED E-2 IS ENCUMBERED FOR DRAINAGE & SEWERAGE PURPOSES VIDE L.P.10178
- AS TO THE LAND MARKED E-3, THE EASEMENT TO THE M.M.B.W. CREATED BY A 859811
- AS TO THE LAND MARKED E-4, THE EASEMENT TO THE M.M.B.W. CREATED BY A 743693
- AS TO THE LAND MARKED E-5, THE EASEMENT TO THE M.M.B.W. CREATED BY A 821422
- AS TO THE LAND MARKED E-6, THE EASEMENT TO THE M.M.B.W. CREATED BY B 282147
- THE LAND MARKED E-7, IS ENCUMBERED VIDE THE RELATIVE CERTIFICATES OF TITLE
- AS TO THE LAND MARKED E-8 THE EASEMENT TO M.M.B.W. CREATED BY A743695
- AS TO THE LAND MARKED E-9 THE EASEMENT TO M.M.B.W. CREATED BY A776403
- AS TO THE LAND MARKED E-10 THE EASEMENT TO M.M.B.W. CREATED BY A776396
- AS TO THE LAND MARKED E-11 THE EASEMENT TO M.M.B.W. CREATED BY A757055
- AS TO THE LAND MARKED E-12 THE EASEMENT TO M.M.B.W. CREATED BY A787336

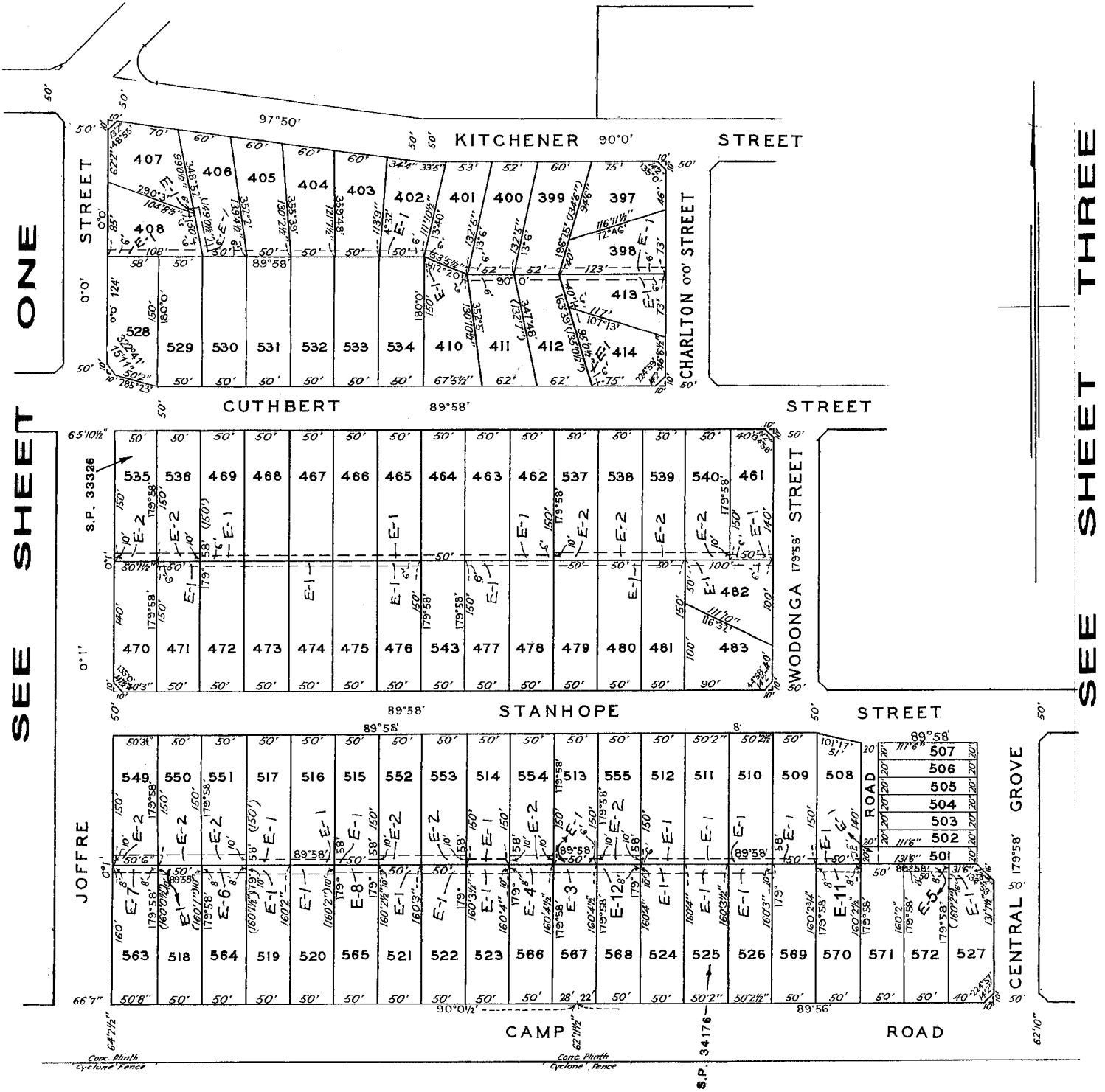
SEE SHEET TWO

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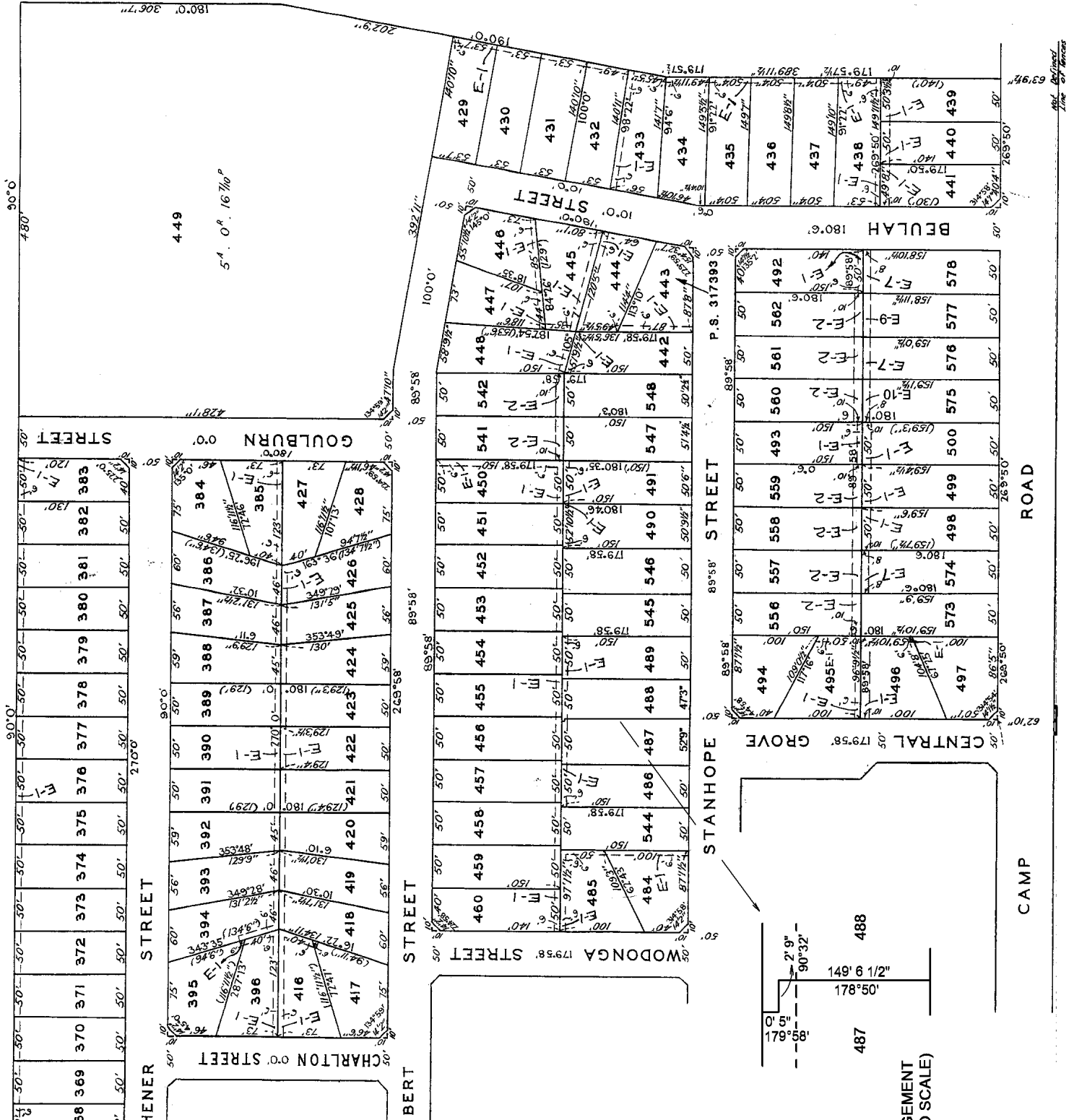
FOUR SHEETS
SHEET ONE

LP59115

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FOUR SHEETS SHEET... TWO...



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SEE SHEET TWO

ENLARGEMENT (NOT TO SCALE)

Ref. Document Line of Address

MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

WARNING: THE IMAGE OF THIS PLAN/DOCUMENT HAS BEEN DIGITALLY AMENDED.
NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL PLAN/DOCUMENT.

PLAN NUMBER

LP 59115

AFFECTED LAND/PARCEL	LAND/PARCEL IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
LOT 567	E-3	CREATION OF EASEMENT	A 859811			2	AD.
LOT 566	E-4	CREATION OF EASEMENT	A 743693			3	AD.
LOT 572	E-5	CREATION OF EASEMENT	A 821422			3	AD.
LOT 564	E-6	CREATION OF EASEMENT	B 282147			3	AD.
VARIOUS LOTS	E-2	EASEMENTS ENHANCED				3	AD.
LOT 565	E-8	CREATION OF EASEMENT	A743695			4	AD
LOT 577	E-9	CREATION OF EASEMENT	A776403			4	AD
LOT 575	E-10	CREATION OF EASEMENT	A776396			4	AD
LOT 570	E-11	CREATION OF EASEMENT	A757055			4	AD
LOT 568	E-12	CREATION OF EASEMENT	A787336			4	AD

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8 July 2022

Statutory Planning
Hume City Council
PO Box 119
Dallas 3047

Dear Mychelle,

**CONSTRUCTION OF TWO (2) DWELLINGS AND 2 LOT SUBDIVISION AT 45 CUTHBERT STREET,
BROADMEADOWS**

We act on behalf of [REDACTED] the permit applicant in relation to the above matter.

We hereby enclose on behalf of our client, a planning permit application for the construction of two (2) dwellings and 2 Lot subdivision at 45 Cuthbert Street, Broadmeadows

We enclose the following documents in support of our client's application:

- A completed planning permit application form;
- A recent copy of the Certificate of Title;
- Architectural plans prepared by *Architecture by Semu* dated 2 February 2022;
- Plan of Subdivision PS910935S;
- A town planning report providing a written description of the existing site conditions, details of the proposed development and an assessment of the proposal against the relevant controls and policies in the Hume Planning Scheme prepared by our office.

We request that the payment made for the S72 Application submitted to council on the 9 March 2022 and withdrawn for this property be transferred to the application for a Planning permit attached and that any additional fees be invoiced for payment.

We trust the enclosed information is satisfactory to the Council. We look forward to your favourable consideration of our client's application. If you require any further information, please do not hesitate to contact the undersigned.

Please do not hesitate to contact the undersigned should you have any queries regarding this request.

Yours faithfully,
SongBowdenPlanning



Tasman Jones
Senior Planner

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SongBowdenPlanning

12 October 2022

Anita Zmak
Statutory Planning
PO BOX 119
DALLAS 3047 VIC

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Dear Anita,

**PLANNING PERMIT APPLICATION P24635
45 CUTHBERT ST BROADMEADOWS VIC 3047
DEVELOPMENT OF TWO DWELLINGS AND A TWO LOT SUBDIVISION - REQUEST FOR FURTHER INFORMATION**

We act on behalf of [REDACTED], the permit applicant, for the above application.

We hereby enclose on behalf of our client a response to Council's Request for Further Information letter dated 11th August 2022.

We enclose the following documents in support of our client's application:

- SDA Report prepared by *Urbanleaf*
- WSUD Report prepared by *Urbanleaf*
- Arborist report prepared by *Climbing High Services*
- Revised town planning drawings prepared by *Architecture by Semu*
- Amended Plan of Subdivision prepared by *B.R.Smith Surveyors*.
- Amended Planning Reports prepared by *Songbowden Planning*.

Required Information:

1. *Subdivision plan amended to delete the outline of the proposed dwellings.*
 - Plan has been updated accordingly.
2. *Development layout and location of all windows for dwellings being currently constructed at 47 Cuthbert Street to be shown on site plan.*
 - Details shown.
3. *Revised site plan / ground floor plan, drawn to scale and fully dimensioned, to include:*
 - a) *Dimensions of the proposed/existing driveways and crossovers for both dwellings.*
 - Shown.
 - b) *Dimensioned tandem spaces.*
 - Not required.
 - c) *Widths of the proposed garage openings/roller doors.*
 - Shown.
 - d) *Corner splays for both driveways, as per Clause 52.06 of the Hume Planning Scheme. Please note the fence will have to be tapered down in those areas and it must be notated on the plan.*
 - Shown.
 - e) *Distance between the existing tree within the road reserve and the proposed crossover. The proposed crossover must have a minimum clearance of 2.5m to any tree or consultation with parks department is required.*
 - Shown to be less than 2.5m. Town Planning report amended to note proposed removal.
 - f) *Notation to mailboxes amended to only state dwelling 1 and 2.*
 - Shown.
 - g) *Shading devices to the north, east and west facing habitable room windows.*
 - Added.
 - h) *Double glazed windows for all habitable rooms facing south.*

- Shown.
- 4. *Amended Elevations Plan, drawn to scale and fully dimensioned, to show:*
 - a) *Maximum and average height of all walls proposed on the boundary lines. Please ensure all walls on the boundary meet the requirements under Clause 55.04-2 of Hume Planning Scheme.*
 - Details added. All walls on boundary comply with Clause 55.04-2.
 - b) *Distance between the windowsills and the finished floor levels for ground and first floors.*
 - Shown.
 - c) *Clarification/notations to all windows proposed on the first floor for both dwellings. If the windows shown on the elevation plans are not proposed to be obscured (and fixed) or have permanently fixed external screens to at least 1.7m above floor level please provide diagrams showing compliance with the overlooking objective – Clause 55.04-6 of Hume Planning Scheme.*
 - Shown.
 - d) *Distance between the NGL and FFL of the first floor. Additional screening might be required to prevent overlooking. Please show diagrams showing that the development complies with Cl. 55.04-6.*
 - Shown.
 - e) *Height of the proposed decking from the NGL. If it exceeds 0.8m in height, additional screening must be proposed to prevent internal and external overlooking from those areas.*
 - Shown.
 - f) *Please include a diagram showing that no internal overlooking will occur from the ground floor and first floor windows/doors.*
 - Shown.
 - g) *Shading devices to the north, east and west facing habitable room windows.*
 - Added.
 - h) *Double glazed windows for all habitable rooms facing south.*
 - Added.
- 5. *A report prepared by a suitably qualified arborist, assessing the existing tree within the road reserve at the front of the property.*
 - Refer to accompanying report prepared by Climbing High Tree Services
- 6. *Revised Shadow Diagram, drawn to scale and fully dimensioned, to include projection from the proposed fences.*
 - Shown.
- 7. *Plan amended to comply with comments provided by Traffic Department:*
 - a) *Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport. The garages of both dwelling 1 and Dwelling 2 do not meet the required dimensions for a double space garage. A more appropriate arrangement would be a single garage with a single carspace in tandem with a 500mm offset.*
 - The Planning Scheme does not specify that the proposed arrangement is not permitted nor unacceptable, therefore, the arrangement to adopt 2 x single spaces in a tandem arrangement is very acceptable and has been part and parcel of typical car parking arrangements for over 50 years.
 - It is quite acceptable to have a single garage with an external tandem space in exactly the same arrangement, why would it be unacceptable to enclose both spaces?
 - The proposal results in a better outcome with less visibility of vehicles parked in the streetscape/front setbacks.
 - b) *Garage access width should be a minimum of 5.2 metres for a double garage and 2.8 metres for a single garage.*
 - Access proposed is 3.0m wide for a single width garage.
 - c) *The proposed crossover for Dwelling 1 must have a minimum clearance of 2.5m to any tree or consultation with parks department is required.*
 - As noted above, its proposed to remove the street tree to allow for the proposed crossover.
- 8. *Stormwater Management Report (Water Sensitive Urban Design) in accordance with Clause 53.18 of the Hume Planning Scheme. Please ensure that all required measures within the Storm Management Plan are also shown on the proposed site plan.*
 - Refer to reports prepared by Urbanleaf.
- 9. *Provide stormwater treatment details which incorporate Water Sensitive Urban Design (WSUD) features to maximise stormwater retention, infiltration and reuse on site; and manage and improve the quality of stormwater leaving the site, in accordance with the requirements of Clause 55.03-4 Permeability and Stormwater Management Objectives. At a minimum, you must provide:*

- a) A STORM report that achieves a STORM rating of 100%; and,
- b) Site layout plan that shows roof Catchment areas (pervious and impervious), flow directions with areas (m²), and Location and size of WSUD feature (can be shown on the site layout plan or as a separate roof layout plan).
- c) Sustainable Design Assessment (SDA) in accordance with Clause 22.21 (Environmentally Sustainable Development) of the Hume Planning Scheme.
 - o Refer to reports prepared by Urbanleaf.

10. Written submission identifying how each point of the request for further information letter has been satisfied.
- o This letter, coupled with the amended town planning report forms the written submission requested.

Concerns noted:

The proposed developed appears to be visual bulky. It is strongly recommended to propose additional materials and colours, greater separation between the ground and first floor at the front of the development in order to reduce the visual bulk of the proposal.

Councils request to seek changes above and beyond what's been acceptable and recently approved in the local area will result in an inconsistent outcome. With reference to relevant photos of the town planning report, the below provides an analysis of facades on recent infill developments. It will be found that the proposal is very reasonable and will be a comfortable fit for the streetscape.

- o The proposed façade comprises of:
 - o Render in 2 tones, brick in another.
 - o 2 materials, render and brick.
 - o Upper floor setback from ground of 1.01m
 - o Garages are recessed 0.97m from the façade.
- o The façade at 43 Cuthbert Street comprises of:
 - o Render in 1 tone
 - o 2 materials, render and brick.
 - o Double fronted sheer double storey with garage flush with the majority of the façade.
- o The façade at 17 Cuthbert Street comprises of:
 - o Render in 2 tones
 - o 1 material, render.
 - o Sheer double storey façade with box frame to upper floor.

In addition, infill development at 54 and 56 Cuthbert Street provide a similar design response as 43 Cuthbert Street. The notable difference from the majority of examples discussed is that the proposed upper floor is centred within the site, from side boundaries, in a similar fashion to 17 and 110 Cuthbert Street.

Below, figures 1 and 2 shows 110 Cuthbert Street, its façade is generally a sheer double storey wall with minimal recession of its garage, also with 2 material finishes and 2 colours. The width of its upper floor is greater than that proposed and sits forward of its neighbours.

The proposal is of a high Architectural standard, a design typically found in Melbourne's more affluent suburbs. Although Council has no generalised or specialised neighbourhood character policy that applies to the subject site, it should be taken as an opportunity to diversify design detailing but also to allow for high end contemporary residential design, in a location that encourages a diversity of housing types. Seeking to apply traditional design sensibilities to address visual bulk isn't always the correct path. The proposed design sits outside of the 'cookie cutter' typology typically found in the area. The design, although exemplary from the trend of infill development, complies with B6 and B17. It provides material and colour variation between the two dwellings and provides upper floor setback articulation greater than the majority of recent infill developments.

Setback articulation cannot be substantiated as setbacks between the ground and first floor is greater than its neighbours. The selection of colour and materials proposed is greater than its neighbours.

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Figure 1 Facade of 110 Cuthbert Street

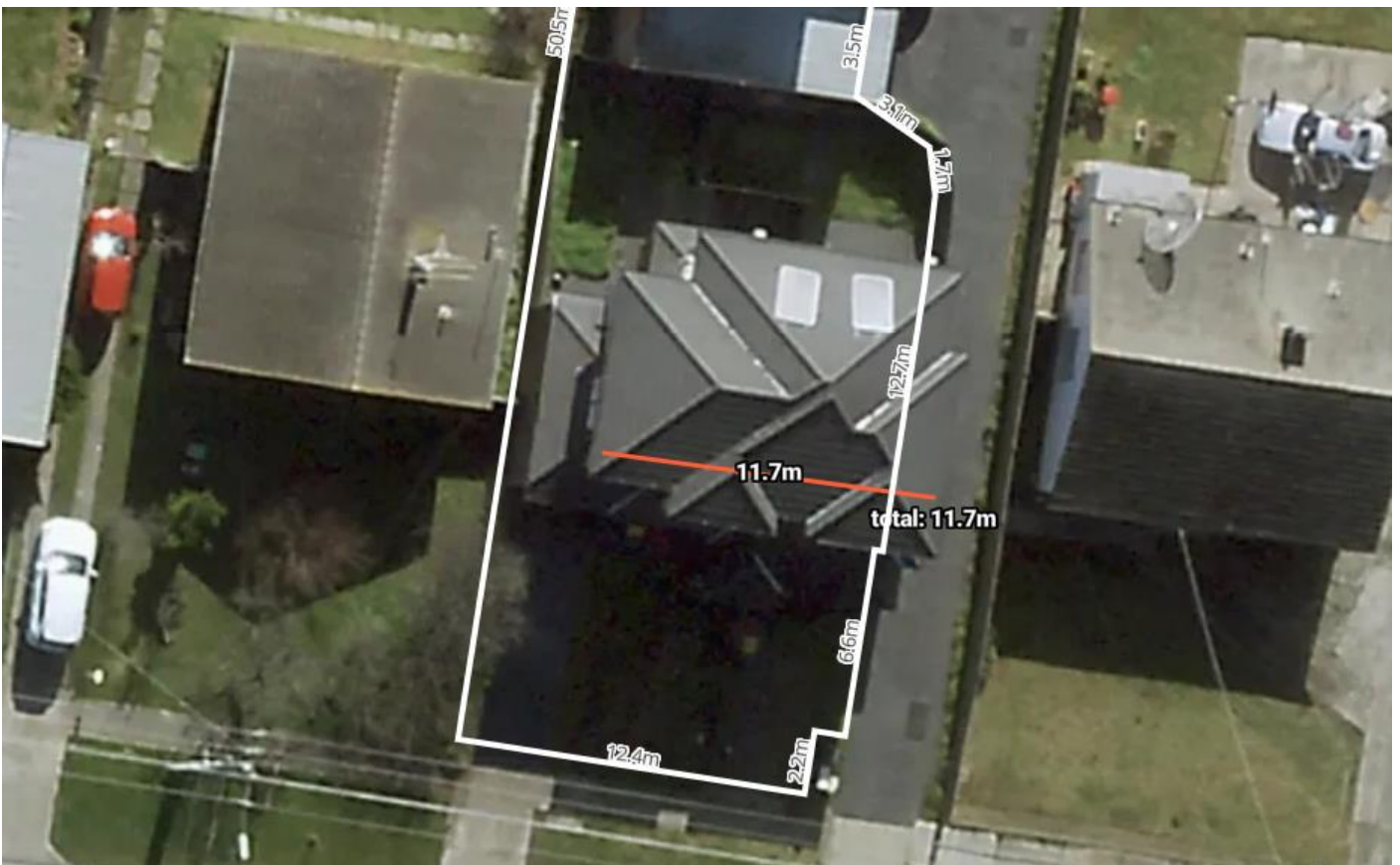


Figure 2 Upper floor width of 110 Cuthbert Street

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Any changes to the application have been made to address the issues raised in Council's request for further information letter. The applicant considers that these changes do not constitute a formal s.50 or s.50A amendment to the application and no request is made, or permission granted for such an amendment.

We are hopeful the above and attached information, along with that previously supplied, is sufficient for Council to now determine the application. Should, for whatever reason, Council conclude that the provided information is not sufficient we request; pursuant to Section 54(1) of the *Planning and Environment Act 1987*, a 30-day extension to the application's existing lapse date, for any such matters to be resolved.

We trust the enclosed information is satisfactory to the Council. We look forward to your favourable consideration of our client's application. If you require any further information, please do not hesitate to contact the undersigned.

Yours faithfully,

SongBowdenPlanning



Tasman Jones
Senior Planner

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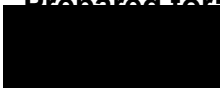
Town Planning Report

Proposal for two (2) double storey dwellings and
two (2) lot subdivision

45 Cuthbert Street, Broadmeadows

October 2022 – Rev A

Prepared for:



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1 Introduction

This report has been prepared on behalf of John Rojas (the permit applicant), in support of an application for the development of two (2) double storey dwellings and a two (2) lot subdivision on land at 45 Cuthbert Street, Broadmeadows. Full details of the proposal are provided at Section 3 of this report.

The purpose of this report is to provide:

- A written neighbourhood and site description and design response pursuant to Clause 55.01 of the Hume Planning Scheme.
- An assessment of the proposal against relevant planning policies and controls contained within the Hume Planning Scheme.
- An assessment of the proposal against the requirements and decision guidelines of Clause 55 (ResCode) Clause 56.

This report should be read in conjunction with the:

- Architectural plans prepared by *Architecture by Semu*
- SDA Report prepared by *Urbanleaf*
- WSUD Report prepared by *Urbanleaf*
- Arborist report prepared by *Climbing High Services*
- Amended Plan of Subdivision prepared by *B.R.Smith Surveyors*

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2 Site and Surrounds

2.1 The Subject Site

The subject site is located on the southern side of Cuthbert Street. (Refer Figure 2 – Locality Plan). The lot is of a regular shape. The sites northern boundary and access fronts to Cuthbert Street. The site is generally flat in topography.

The site is occupied by a single storey dwelling, constructed circa 1960's of exposed brick with terracotta tiled pitch roof with eaves. The site has a single width driveway connecting to a detached outbuilding to the rear along the northern boundary. The site has no front fence. Site contains a 1.83m wide easement to the rear.

The dwelling has a setback consistent with adjoining properties and has its secluded private open space to the rear, east of the dwelling. Vegetation coverage on site is minimal with 1 medium tree in the front setback and 2 small trees in the rear.

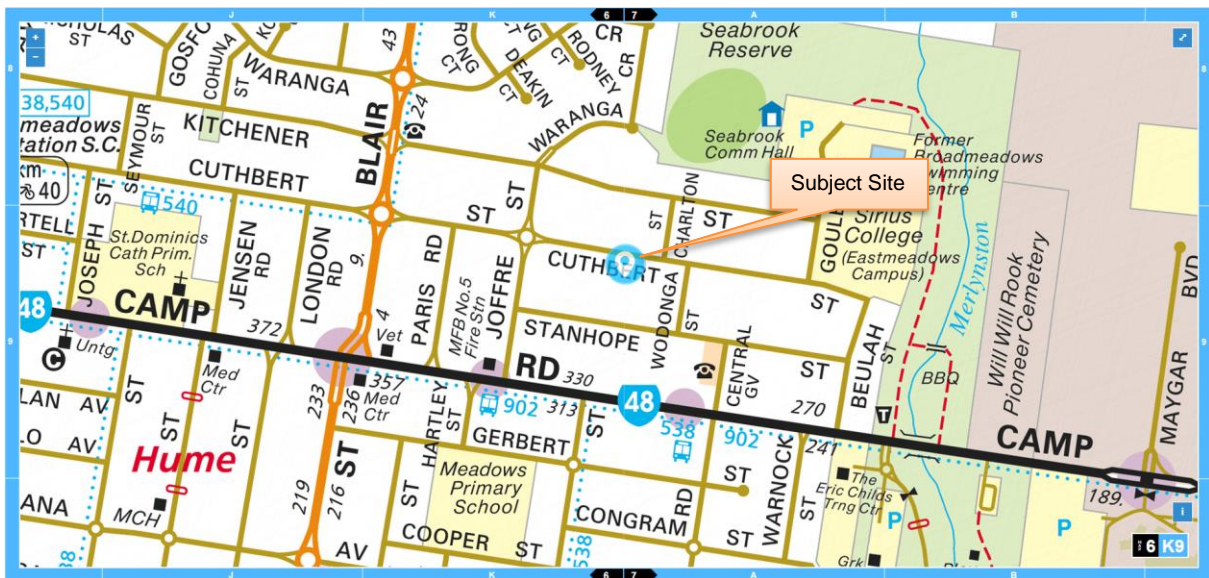


Figure 1 Locality Plan

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Figure 2 – Aerial of subject site and neighbourhood character



Figure 3 – Aerial of subject site and immediate abutments (aerial 24th Dec 2021)

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Figure 4 Subject site and surrounds Sept 2017 (nearmap)



Figure 5 – Southern interface with 38 Stanhope Street

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Figure 6 – Western interface with 47 Cuthbert Street view to rear of 40 Stanhope St



Figure 7 – Eastern interface with 43 Cuthbert Street

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Figure 8 – View of existing dwelling looking north from the backyard



Figure 9 – Adjacent subject site 42 and 44 Cuthbert Street

2.2 The Surrounds

The area is typified by a well-established low-density one dwelling and subdivision pattern of the surrounding locality consisting largely of single and double storey dwellings.

The materiality and design detail of original housing stock is generally brick with terracotta pitched tiled roofs with eaves. These dwellings have undergone renovations and extensions along with replacement of garages and additions of outbuildings.



Figure 9 Eastern neighbour, abutting, 43 Cuthbert Street, north west elevation.



Figure 10 Eastern neighbour, abutting, 43 Cuthbert Street, north east elevation.

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Figure 11 Western neighbour, vacant site at 47 Cuthbert Street



Figure 12 Local infill development at 17 Cuthbert Street, continuous built form across the length of site

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Figure 13 Local infill development at 17 Cuthbert Street, continuous built form across the length of site



Figure 14 Local infill development at 17 Cuthbert Street, continuous built form across the length of site (aerial nearmaps 19th Feb 2022)

The area has access to several open spaces from the subject site, Seabrook Reserve 100 metres to the northeast, Jack Roper Reserve 400 metres to the southeast, Rupert Wallace Reserve 1000 metres to the south, and Anderson Reserve 1200 metres to the southwest.

Shops and services are conveniently in walking distance 1000 metres west along Pascoe Vale Road that contains:

- Broadmeadows train station
- Broadmeadows Central which has Woolworths, Coles, Kmart, and JB Hi-Fi along with a variety of small fresh food and take away shops.
- Centrelink and Medicare
- Town Hall Broadmeadows
- Commonwealth Bank
- Anytime Fitness

Closest bus services to the site run along Camp Road, Cuthbert Street, and Blair Street all within 300 metres.

2.3 Opportunities and Constraints

The subject site presents an excellent opportunity for the development of three double storey dwellings in a well-established residential area encouraging moderate growth in accessible areas.

The key opportunities for redevelopment of the land are identified as follows:

- The site is well located in an established residential area with convenient access to a wide range of services and facilities, as well as public transport.
- The site has no physical constraints, in that it is relatively flat in topography and does not contain any significant vegetation that would warrant retention as part of a redevelopment.

2.4 Design response

In response to the site analysis assessment and identification of opportunities and constraints, the following set of criteria have guided the design response:

- Promote design excellence through the construction of high-quality architectural form that contributes positively to the existing and preferred character of the area.
- Provide an appropriately massed and articulated development of two double storey dwellings, including recessive and expressive elements designed to reduce building bulk.
- Ensure that the primary pedestrian entry point to the development is designed to maximise the visual connection to the streetscape, providing a sense of shelter and transitional space, and an easily identifiable street address.
- Provide an appropriate number of car parking spaces for the dwelling to meet the requirements of the Hume Planning Scheme.
- The site layout will allow for adequate site landscaping, including new canopy trees, to enhance the SPOS and POS within the development.
- Maximise the amenity for future occupants of the dwelling through the provision of functional internal spaces, access to natural light and solar access, and well dimensioned SPOS.
- Minimise offsite amenity impacts in terms of overlooking, overshadowing, visual bulk and massing to the adjoining properties.

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3 The Proposal

The proposal involves the demolition of the existing dwelling and buildings on the land and the construction of two (2) double storey dwellings and a two (2) lot subdivision. The dwellings are to be constructed in side by side each with access provided via a new single width crossover and retaining the existing on the north of the site. It's proposed to remove the existing street tree on the verge to allow for the new crossover to Dwelling 1.

Key features of the proposal include:

- All dwellings are designed with a traditional living arrangement with ground floor open plan kitchen/living/dining with a ground floor study.
- The first floor contains 4 bedrooms, one with ensuite and shared bathroom for the remainder.
- Each dwelling is provided with SPOS accessed from ground floor adjoining their main living. Each is 76.20 square metres, each with space for external storage.
- Each dwelling is provided a garage capable to storing 2 vehicles in tandem.
- The development proposes a minimum front setback on both dwellings of 4.57m.
- The maximum building height is 7.99m metres.
- 59.5% of site coverage and 27.9% permeable surfaces. The 676m² provides a compliant 35% Garden Area.
- Building materials and finishes are contemporary and monochromatic in design and comprises of brick and render. The dwellings are completed with a composition of pitched roof to the northern end and a flat roof to the rear end.

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4 Planning Framework

4.1 Planning Policy Framework

The Planning Policy Framework (PPF) contains general guiding principles in relation to policies and appropriate practices in Victoria. The PPF contains a number of policies which are relevant to the consideration of the application in an overarching sense.

The key elements of the PPF relevant to this proposal include:

- Clause 11 Settlement
- Clause 15 Built Environment and Heritage
- Clause 16 Housing
- Clause 18 Transport

Clause 11 Settlement

Clause 11 relates to settlement and requires planning to contribute to, amongst other matters, “*diversity of choice*”, and “*a high standard of urban design and amenity*” and “*accessibility*”.

Clause 11 also seeks “*to facilitate sustainable development that takes full advantage of existing settlement patterns, and investment in transport and communication, water and sewerage and social facilities.*”

Clause 15 Built Environment and Heritage

- Clause 15 broadly seeks to ensure land use and development is responsive to the landscape and character, built form and cultural context and protects sites with heritage, architectural, aesthetic, scientific and cultural value; that it supports the establishment and maintenance of communities; that it promotes environmentally sustainable design; and that it promotes excellence in the built environment and creation of places that:
 - *“Are enjoyable, engaging and comfortable to be in.*
 - *Accommodate people of all abilities, ages and cultures.*
 - *Contribute positively to local character and sense of place.*
 - *Reflect the particular characteristics and cultural identity of the community.*
 - *Enhance the function, amenity and safety of the public realm.”*
- Clause 15.01 (Built environment) seeks “*To create urban environments that are safe, healthy, functional and enjoyable and that contribute to a sense of place and cultural identity.*”
- Clause 15.01-1S (Urban design) seeks “*To create urban environments that are safe, healthy, functional and enjoyable and that contribute to a sense of place and cultural identity.*”
- Clause 15.01-1R (Urban design – Metropolitan Melbourne) includes an objective “*To create a distinctive and liveable city with quality design and amenity.*”
- Clause 15.01-2S (Building design) includes an objective “*To achieve building design outcomes that contribute positively to the local context and enhance the public realm.*”
- Clause 15.01-4S (Healthy neighbourhoods) seeks “*To achieve neighbourhoods that foster healthy and active living and community wellbeing*
- Clause 15.01-4R (Healthy neighbourhoods – Metropolitan Melbourne) includes a strategy to “*Create a city of 20-minute neighbourhoods, that give people the ability to meet most of their everyday needs within a 20-minute walk, cycle or local public transport trip from their home.*”
- Clause 15.01-5S (Neighbourhood character) includes an objective “*To recognise, support and protect neighbourhood character, cultural identity, and sense of place*” through strategies which seek to “*Ensure development responds to cultural identity and contributes to existing*

or preferred neighbourhood character”, and “Ensure development responds to its context and reinforces a sense of place and the valued features and characteristics of the local environment and place by emphasising the:

- Pattern of local urban structure and subdivision.
 - Underlying natural landscape character and significant vegetation.
 - Heritage values and built form that reflect community identity.”
- Clause 15.02-1S (Energy and resource efficiency) includes an objective “To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.”

Clause 16 Housing

Under Clause 16.01-3S Housing Diversity, the objective is to “To provide for a range of housing types to meet diverse needs.”. The main thrust of the strategies included under this policy is to provide a range of dwellings able to adapt to changing market needs whilst in consideration of existing local amenity and environmental sustainability.

The objective of Clause 16.01-2R Housing opportunity areas - Metropolitan Melbourne is “To locate medium and high-density housing near employment and transport in Metropolitan Melbourne”.

Strategies identified under this Clause are to:

Manage the supply of new housing to meet population growth and create a sustainable city by developing housing and mixed-use development opportunities in locations that are:

- *In and around the Central City. Urban-renewal precincts and sites.*
- *Areas for residential growth. Areas for greyfield renewal, particularly through opportunities for land consolidation.*
- *Areas designated as National Employment and Innovation Clusters.*
- *Metropolitan activity centres and major activity centres.*
- *Neighbourhood activity centres - especially those with good public transport connections.*
- *Areas near existing and proposed railway stations that can support transit-oriented development*

Facilitate increased housing in established areas to create a city of 20-minute neighbourhoods close to existing services, jobs and public transport.

Direct new housing to areas with appropriate infrastructure.

The objective of Clause 16.01-2S Location of residential development is to “To locate new housing in designated locations that offer good access to jobs, services and transport.”. Strategies under this clause aim to:

Increase the proportion of new housing in designated locations within established urban areas and reduce the share of new dwellings in greenfield and dispersed development areas.

Encourage higher density housing development on sites that are well located in relation to jobs, services and public transport.

Ensure an adequate supply of redevelopment opportunities within established urban areas to reduce the pressure for fringe development.

Facilitate residential development that is cost effective in infrastructure provision and use, energy efficient, water efficient and encourages public transport use.

Identify opportunities for increased residential densities to help consolidate urban areas.

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Clause 18 Transport

Clause 18 seeks to integrate land use and transport, promote sustainable forms of transport and to manage the road network by, amongst other strategies, encouraging “*higher land use densities and mixed use developments near railway stations, major bus terminals, transport interchanges, tramways and principal bus routes. Pedestrian and cyclists’ access to public transport should be facilitated and safeguarded.*”

4.2 Local Planning Policy Framework

The Local Planning Policy Framework (LPPF) is comprised of the Municipal Strategic Statement (MSS) and Local Planning Policies (LPP). These policies are as follows:

- Clause 21.01 Municipal Profile
- Clause 21.02 Urban Structure and Settlement
- Clause 21.03 Liveable Neighbourhoods and Housing
- Clause 21.04 Built Environment and Heritage

An analysis of the proposal against the relevant MSS policies is provided below.

Clause 21.01 Municipal Profile

The Municipal Profile recognises Hume City as one of Melbourne’s seven growth area municipalities. Hume’s population is predicted to grow rapidly from 198,500 in 2016 to 345,500 by 2041. The Municipal Profile recognises that the changing demographics as a result of this growth will require more diverse and affordable forms of housing. Reduced allotment sizes have seen a trend towards a more consolidated subdivision pattern in developed areas.

Clause 21.02 Urban Structure and Settlement

Key issues identified in Clause 21.02 include managing significant population growth and delivering higher density residential outcomes for the municipality.

Clause 21.03 Liveable Neighbourhoods and Housing

Clause 21.03-3 outlines issues and objectives relating to housing. The municipality is facing a mismatch between housing supply and demand for housing diversity and choice. Clause 21.03-3 outlines that further consolidation and adaptable infill development is required for the growing population, with further medium density housing encouraged to facilitate a range of housing products.

Clause 21.04 Built Environment and Heritage

Key issues identified in Clause 21.04 include the improving the design quality of infill development and improving the diversity and character of new residential area. It contains objectives relating to improved development outcomes and encourages well designed medium density residential developments that protect the amenity of existing residential neighbourhoods while responding to neighbourhood character.

Clause 21.04-2 outlines objectives pertaining to environmentally sustainable design and development, encouraging sustainable development that considers passive design techniques as well as the Urban Heat Island Effect.

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4.3 Zoning and Overlay Controls

4.3.1 Zoning

The subject site is located within the General Residential Zone (Schedule 1).

The purpose of the GRZ is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To encourage development that respects the neighbourhood character of the area.
- To encourage a diversity of housing types and housing growth particularly in locations offering good access to services and transport.
- To allow educational, recreational, religious, community and a limited range of other non-residential uses to serve local community needs in appropriate locations.



Figure 15 Zoning

A permit is required to construct two or more dwellings on a lot under the zone provisions.

Pursuant to Clause 32.08, this development must:

- meet the requirements of Clause 55 (ResCode);
- provide a minimum of 35% of the site as 'garden area'; and not exceed a height of 11 metres / 3 storeys.
- If subdividing a lot in to two (2) lots, the application must meet the objectives and should meet all the Standards of Clauses 56.03-5, 56.04-2, 56.04-3, 56.04-5, 56.06-8 to 56.09-2.

The proposal is accompanied with a Clause 55 assessment, proposes a Garden Area of 35% and has a maximum of 2 storeys at 7.99m.

4.3.2 Overlays

The subject site has one overlay, Melbourne Airport Environs Overlay (Schedule 2).

The purpose of the Melbourne Airport Environs Overlay is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.

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- To ensure that land use and development are compatible with the operation of Melbourne Airport in accordance with the relevant airport strategy or master plan and with safe air navigation for aircraft approaching and departing the airfield.
- To assist in shielding people from the impact of aircraft noise by requiring appropriate noise attenuation measures in dwellings and other noise sensitive buildings.
- To provide for appropriate levels of noise attenuation depending on the level of forecasted noise exposure.



Figure 10 Melbourne Airport Environs Overlay

A permit is required to use land for a Dwelling under Clause 1.0, and to construct a building or carry out works for a use under Clause 1.0.

A permit is required to subdivide land, for Accommodation, each lot must be at least 300sqm. Each proposed lot is a minimum of 348sqm.

4.4 Particular Provisions

- Clause 52.06 Car Parking
- Clause 55 Two or More Dwellings on a Lot and Residential Buildings
- Clause 65 Decision Guidelines

4.4.1 Clause 52.06 Car Parking

Pursuant to Clause 52.06-2, prior to a new use commencing or a new building being occupied, the car parking spaces required under Clause 52.06-5 must be provided on the land or as approved under Clause 52.06-3 to the satisfaction of the Responsible Authority.

Specifically, Clause 52.06 requires:

- To each one or two bedroom dwelling

The proposal generates a statutory requirement of 5 spaces. 5 spaces are proposed to be supplied on site.

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4.4.3 Clause 55 Two or More Dwellings on a Lot and Residential Buildings

An assessment against the objectives and standards of Clause 55 has been undertaken and is included as part of this report. The assessment generally demonstrates a high level of compliance with the objectives and standards of Clause 55.

4.4.4 Clause 56 Residential Subdivision

Pursuant to Clause 32.08-3; an application for a two (2) subdivision must meet the objectives and should meet all the Standards of Clauses 56.03-5, 56.04-2, 56.04-3, 56.04-5, 56.06-8 to 56.09-2. Refer to appendix 2 for an assessment against the relevant requirements of Clause 56.

4.4.5 Clause 65 Decision Guidelines

Clause 65 sets out decision guidelines that must be considered by the Responsible Authority before deciding on an application or approval of a plan.

5 Planning Considerations

5.1 Overview

In preparing this design response, careful consideration has been given to the PPF and Council's MSS with particular regard given to urban context, built form/design outcomes, potential off-site amenity impacts, and the level of internal amenity within the development itself.

The subject site is located within an established residential area with a low grain-built character trending towards infill development, increasing densities in accordance with the purpose of the zone. The site is underutilised with only one dwelling and can comfortably accommodate an additional dwelling.

The proposal represents a well-considered and creative architectural response to the particular features of the site and the surrounding area and will make a positive contribution to Cuthbert Street.

The project architect, Architecture by Semu, has carefully conceived a well-mannered design outcome for the site which provides for diversity of housing stock in an area well served by existing social and physical infrastructure, and a high level of internal amenity for future occupants of the dwelling without compromising the reasonable amenity expectations of its neighbours.

The appropriateness of the proposed development is demonstrated through an assessment of the application with respect to the following key considerations:

- Compliance with planning policy and built form objectives
- Traffic and car parking
- Potential for impacts on adjoining residential properties
- Internal amenity for future residents

The following sections of this report will examine these issues in further detail.

5.2 Planning Policy and Built Form

The proposal demonstrates a high level of compliance with the planning policies contained within the PPF and Local Planning Policy Frameworks, in particular Clauses 21.01 - 21.04, and is appropriate in this context for the following reasons:

- The proposal provides an infill residential development in an area dominated by single and double storey detached, semi-detached and attached dwellings. The dwellings respond to the existing double-storey character and that of its immediate neighbour at 17 and 43 Cuthbert Street by way of scale as well as 39 Stanhope Street and 2 Deakin Court on site layout.
- The development will improve housing choice amongst the community and achieve wider urban consolidation objectives. It will also ensure that policy initiatives encouraging consolidation of residential activities within existing urban areas are met.
- The proposal is responsive to the existing neighbourhood character of the area through the architectural design approach, where the development provides a suitable transition in height to adjoining residential interfaces.
- The development will make a positive contribution to the public realm by being of a quality architectural standard and employing good urban design techniques such as improving street integration and surveillance and limiting the potential for impacts on the adjoining properties.
- Material variation and built-form articulation will respond to the existing dwelling on site and provide interest to the public realm.
- The dwellings have been designed to harness the solar benefits provided to the site. Habitable room windows are oriented north where practicable, and the SPOS areas have direct northern solar access.
- The consolidation of the existing site has been designed to ensure adequate open space areas are provided for the provision of vegetation plantings.

Overall, the development adopts the principles espoused by the PPF and local policies and provides a tasteful and attractive infill development which appropriately responds to its context.

5.3 Traffic and Car Parking

The particular Planning Scheme clauses of relevance in terms of traffic and car parking are Clauses 18.01 and 52.06. It is submitted that the proposed development responds appropriately to these Clauses, and is acceptable given:

- The proposal will not materially affect the amenity of adjoining properties or the surrounding area through traffic generation or traffic congestion.
- The traffic movements to and from the site will be minimal and will not cause traffic issues within Cuthbert Street or the surrounding street network.
- The proposed vehicle access and the location of the car spaces will be accessed via an existing driveway and new proposed driveway for both dwellings.
- Consistent with the PPF, the proposal promotes the use of sustainable transport such as walking, cycling and public transport as alternative modes of travel to reduce reliance on private motor vehicles.
- Public transport is readily available within the immediate area, with the 538, 540 and 902 Bus Routes within walking distance of the property.
- The subject site is conveniently accessible to pedestrians and cyclists.
- The site is located within the PPTN and therefore has good access to public transport options, see figure 16 below.

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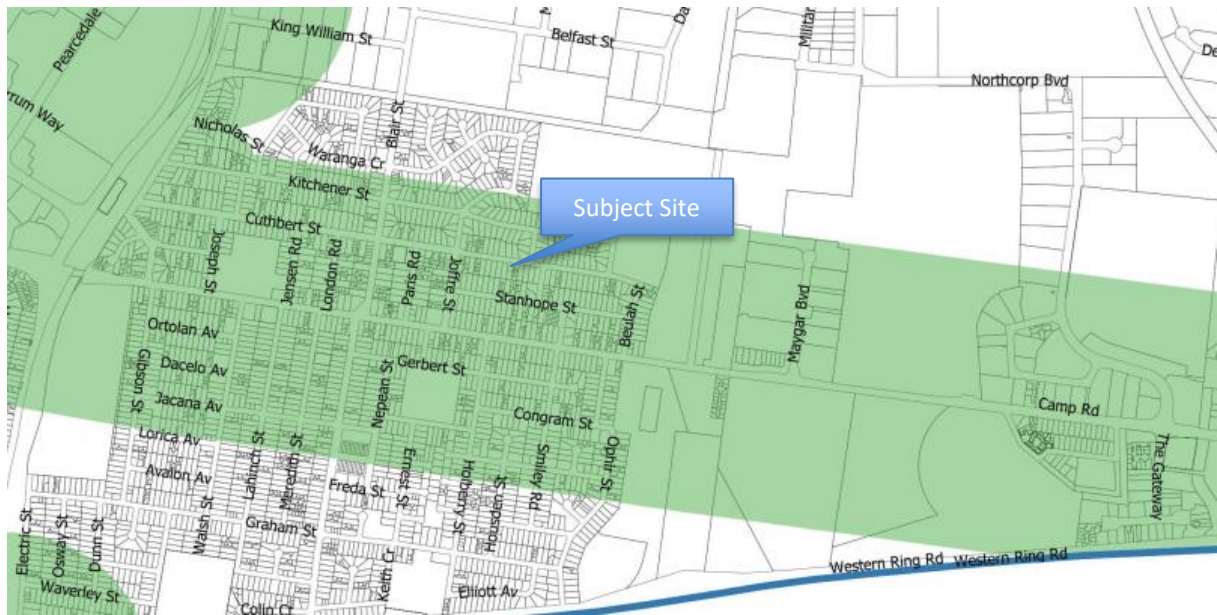


Figure 16 Hume PPTN

5.4 Potential Off-Site Amenity Impacts

This section of the report considers the potential impact of the development on the immediately adjoining properties.

It is submitted that the amended proposal is appropriate to ensure the amenity of adjoining properties will not be unreasonably affected by the following:

- Building Mass and Visual Bulk
- Overshadowing
- Overlooking

These matters are discussed in detail below.

5.4.1 Building Mass and Visual Bulk

The new development has been designed to respond appropriately to its adjoining interfaces. The design response developed for the site ensures there will be no unreasonable visual bulk imposed upon adjoining properties. This has been achieved through:

- Generous side setbacks, appropriately responding to the nature and layout of adjoining dwellings.
- The visual mass of the development is reduced through the quality of the architectural detailing which incorporates a range of materials and finishes and recessive elements. This provides for a well-articulated and visually pleasing built form overall.
- The development provides generous spaces for landscaping within the front, side, and rear S.P.O.S' and P.O.S'.
- Locating equipment and services to ensure that they will not be obtrusive when viewed from the public realm.

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5.4.2 Overshadowing

The development has been sited and designed to have limited overshadowing impacts on adjacent properties. The shadow diagrams prepared demonstrates the adjoining site to the west (No.47 Cuthbert Street) will receive some overshadowing, however the land is currently unoccupied. 43 Cuthbert Street to the east will receive some overshadowing at 3pm however this is over their common accessway. The overshadowing is not considered to be unreasonable and meets the tests of ResCode.

5.4.3 Overlooking

Given the surrounding context, the potential for unreasonably overlooking from the development is considered to be limited. The dwelling has been designed to address the potential for overlooking to adjoining properties, noting:

- All boundary fencing is of adequate height to limit views into adjoining sites from the ground floor.
- All habitable room windows with potential for views into sensitive areas have been screened in accordance with Standard B22.

Overall, the proposed dwelling has suitably responded to the amenity considerations of the existing dwelling and the neighbouring properties and would not unreasonably affect the current levels of amenity enjoyed by residents.

5.5 Internal Amenity

Future occupants of the site will be provided with a high level of internal amenity noting the following positive features of the development:

- The proposed dwelling is architecturally designed with high quality external materials and internal spaces.
- The development is provided with a clear sense of residential address from Cuthbert Street.
- The proposal has been designed to ensure that the orientation and layout of the dwelling reduces fossil fuel energy use and makes appropriate use of daylight and solar energy. The use of skylights assist with further solar capture.
- The SPOS areas are commensurate with the size of dwellings, and oriented to ensure it receives northern solar access.
- Storage space is provided to dwellings meeting the requirements.

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6 Conclusion

The development represents an appropriate response to the site and surrounding area, providing a quality in-fill housing option in a highly sought-after location which has excellent access to existing services and infrastructure.

The proposal provides an appropriate response to the outcomes sought by the Hume Planning Scheme for the following reasons:

- It will contribute to the diversity of housing available in Broadmeadows.
- It achieves key objectives and strategies contained in the LPPF of the Hume Planning Scheme in terms of housing, neighbourhood character and amenity, and urban design.
- It maintains the amenity of the adjoining and adjacent properties through the careful treatment of building facades.
- It provides a high level of amenity for future occupants of the development.

The design response reflects a sound understanding of the site and its context.

Accordingly, the proposed development is considered to be entirely appropriate and worthy of support.

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Appendix 1 – Clause 55 Assessment

ResCode Assessment Table - Two or More Dwellings on a Lot (Clause 55)

Refer to Clause 55 of the Planning Scheme for objectives, decision guidelines and a full description of standards.

Neighbourhood Character

Clause 55.02

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B1 Neighbourhood Character Design respects existing neighbourhood character or contributes to a preferred neighbourhood character. Development responds to features of the site and surrounding area.	Appropriate design response to the neighbourhood and site.	Complies Refer to planning report.
	Design respects the existing or preferred neighbourhood character & responds to site features.	Complies Refer to planning report.
B2 Residential Policy Residential development is consistent with housing policies in the SPPF, LPPF including the MSS and local planning policies. Support medium densities in areas to take advantage of public transport and community infrastructure and services.	Application to be accompanied by written statement that explains consistency with relevant housing policy in SPPF, LPPF, MSS and local planning policies.	Complies Refer to planning report.
B3 Dwelling Diversity Encourages a range of dwelling sizes and types in developments of ten or more dwellings.	Developments of ten or more dwellings to provide for: <ul style="list-style-type: none"> ■ Dwellings with a different number of bedrooms. ■ At least one dwelling containing a kitchen, bath or shower, and a toilet and wash basin at ground floor level. 	Complies Development contains less than 10 dwellings.
B4 Infrastructure Provide appropriate utility services and infrastructure without overloading the capacity.	Connection to reticulated sewerage, electricity, gas and drainage services.	Complies The subject site is located within an established urban area, connected to reticulated services including sewerage, electricity, gas and drainage.
	Capacity of infrastructure and utility services should not be exceeded unreasonably.	Complies The proposed dwellings will not unreasonably impact upon the capacity of the existing services and infrastructure.
	Provision should be made for upgrading and mitigation of the impact of services or infrastructure where little or no spare capacity exists.	Complies As above.

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B5 Integration with the Street Integrate the layout of development with the street.	Development orientated to front existing and proposed streets.	Complies Pedestrian and vehicle access are proposed directly from Cuthbert Street. Dwelling 1 and 2 front the street and have identifiable entries.
	Vehicle and pedestrian links that maintain and enhance local accessibility.	Complies As above.
	High fences in front of dwellings should be avoided if practicable.	Complies 1.2m high picket fence.
	Development next to public open space should be laid out to complement the open space.	N/A

Site Layout and Building Massing

Clause 55.03

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B6 Street Setback The setbacks of buildings from a street respect the existing or preferred neighbourhood character and make efficient use of the site.	The average distance of the setbacks of the front walls of the existing buildings on the abutting allotments facing the front street or 9 metres, whichever is the lesser. <i>Porches, pergolas and verandas less than 3.6m high and eaves may encroach not more than 2.5m into the setbacks of this standard.</i>	Complies Street setback is 4.57m, greater than the abutting allotment.
B7 Building Height Building height should respect the existing or preferred neighbourhood character.	The maximum building height should not exceed that specified in the zone, schedule to the zone or any overlay that applies to the land. Where no maximum height is specified, the max height should not exceed 9m, unless the slope of the natural ground level at any cross section wider than 8m of the site is 2.5 degrees or more, in which case the max height should not exceed 10m.	Complies The maximum building height is 7.99 metres
	Changes of building height between new and existing should be graduated.	Complies The proposal's height and form are graduated with the neighbouring property to the east and is entirely appropriate having regard to the site context.

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>B8 Site Coverage Site coverage should respect the existing or preferred neighbourhood character and respond to the features of the site.</p>	<p>The site area covered by buildings should not exceed:</p> <ul style="list-style-type: none"> ■ The max site coverage specified in the schedule to the zone, or ■ If no max site coverage is specified 60% 	<p>Complies</p> <p>Proposed site coverage is 59.5%.</p>
<p>B9 Permeability and Stormwater Management objectives</p> <p>To reduce the impact of increased stormwater run-off on the drainage system. To facilitate on-site stormwater infiltration. To encourage stormwater management that maximises the retention and reuse of stormwater</p>	<p>The site area covered by the pervious surfaces should be at least:</p> <ul style="list-style-type: none"> ■ The minimum area specified in a schedule to the zone, or ■ If no minimum is specified in a schedule to the zone, 20 percent of the site. <p>The stormwater management system should be designed to:</p> <ul style="list-style-type: none"> ■ Meet the current best practice performance objectives for stormwater quality as contained in the Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999). <p>Contribute to cooling, improving local habitat and providing attractive and enjoyable spaces</p>	<p>Complies</p> <p>On site permeability is 27.9%, which significantly exceeds the 20% requirement.</p>
<p>B10 Energy Efficiency objectives Achieve and protect energy efficient dwellings and residential buildings. Ensure orientation and layout reduces fossil fuel energy use and makes appropriate use of daylight and solar energy.</p>	<p>Orientation of buildings should make appropriate use of solar energy.</p>	<p>Complies</p> <p>Living areas and open spaces are oriented with a northern aspect where practical to make appropriate use of solar energy and are situated to maximise solar energy.</p>
	<p>Siting and design of buildings should not reduce the energy efficiency of buildings on adjoining lots.</p>	<p>Complies</p> <p>The siting and design of dwellings will not unreasonably reduce the energy efficiency of buildings on adjoining lots.</p>
	<p>Sited and designed to ensure that the performance of existing rooftop solar energy facilities on dwellings on adjoining lots in a General Residential Zone, Neighbourhood Residential Zone or Township Zone are not unreasonably reduced. The existing rooftop solar energy facility must exist at the date the application is lodged.</p>	<p>N/A</p> <p>No rooftop facilities on adjoining lots.</p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
	<p>If practicable the living areas and private open space are to be located on the north side.</p> <p>Solar access for north-facing windows should be maximised.</p>	<p>Complies</p> <p>Solar access is maximised throughout the development.</p> <p>All habitable rooms and private open spaces will receive adequate solar access.</p>
<p>B11 Open Space Integrate layout of development with any public and communal open space provided in or adjacent to the development.</p>	<p>Public open spaces should:</p> <ul style="list-style-type: none"> ■ Be substantially fronted by dwellings. ■ Provide outlook for dwellings. ■ Be designed to protect natural features. ■ Be accessible and usable. 	<p>Complies</p> <p>N/A</p>
<p>B12 Safety Layout to provide safety and security for residents and property.</p>	<p>Entrances to dwellings and residential buildings should not be isolated or obscured from the street and internal accessways.</p>	<p>Complies</p> <p>The dwelling has a distinct entry point that is directly viewable from the street front.</p>
	<p>Planting should not create unsafe spaces along streets and accessways</p>	<p>Complies</p> <p>Landscaping does not obscure the building entrance.</p>
	<p>Good lighting, visibility and surveillance of car parks and internal accessways.</p>	<p>Complies</p> <p>The development has been designed to provide good visibility and surveillance to onsite parking.</p>
	<p>Protection of private spaces from inappropriate use as public thoroughfares.</p>	<p>Complies</p> <p>Private spaces within the development are secure.</p>
<p>B13 Landscaping To provide appropriate landscaping To encourage:</p> <ul style="list-style-type: none"> ■ Development that respects the landscape character of the neighbourhood. ■ Development that maintains and enhances habitat for plants and animals in locations of habitat importance. ■ The retention of mature vegetation on the site. 	<p>Landscape layout and design should:</p> <ul style="list-style-type: none"> ■ Protect predominant landscape features of the neighbourhood ■ Take into account the soil type and drainage patterns of the site ■ Allow for intended veg. growth and structural protection of buildings ■ In locations of habitat importance, maintain existing habitat and provide for new habitat for plants and animals. ■ Provide a safe, attractive and functional environment for residents. 	<p>Complies</p> <p>The proposal will clearly make a valuable contribution to the landscape character of the area.</p> <p>Concept planting is shown on the development plans and can be further detailed with a landscape plan if Council requires this.</p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
	Development should: <ul style="list-style-type: none"> ■ Provide for the retention or planting of trees, where these are part of the character of the neighbourhood. ■ Provide for the replacement of any significant trees that have been removed in the 12 months prior to the application being made. 	Complies Adequate provision is made for the planting of new trees around the development.
	Landscape design should specify landscape themes, vegetation location & species, paving & lighting.	Complies A landscape plan can be prepared at the request of Council.
B14 Access Ensure the safe, manageable and convenient vehicle access to and from the development. Ensure the number and design of vehicle crossovers respects neighbourhood character.	Accessways should provide: <ul style="list-style-type: none"> ■ Safe, convenient and efficient vehicle movements and connections to the street network. ■ Designed to ensure that vehicles can exit in a forward direction if the accessway serves more than 5 car spaces, 3 or more dwellings or connects to a road in a Road Zone. ■ A width of at least 3m. ■ An internal radius of at least 4m at changes of direction. ■ A passing area at the entrance that is at least 5m wide and 7m long if the accessway serves 10 or more car spaces and connects to a road in a Road Zone. 	Complies All access to the site is a minimum of 3.0m wide to ensure safe and efficient vehicle movements to and from Cuthbert Street.
	The width of the accessways or car spaces should not exceed: <ul style="list-style-type: none"> ■ 33% of the street frontage; or ■ 40% if the width of the street frontage is less than 20m. For each dwelling fronting a street, only one single width crossover should be provided. The location of crossovers will maximise the retention of on-street carparking spaces.	Complies The two crossovers occupy 6.0m of the 15.24m wide site frontage, equates to 39.37%. 43, 56 Cuthbert Street, 39 Stanhope Street and 48 and 60 Kitchener Street have 2 crossovers to a single lot.
	Access points to a road in Road Zones to be minimised.	N/A
	Access for service, emergency and delivery vehicles must be provided.	Complies Service, emergency and delivery vehicles will have access to the site from the street frontage.

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>B15 Parking Location Provide resident and visitor vehicles with convenient parking. Avoid parking and traffic difficulties in the development and the neighbourhood. Protect residents from vehicular noise within developments.</p>	<p>Car parking facilities should be:</p> <ul style="list-style-type: none"> ■ Close and convenient to dwellings. ■ Secure. ■ Designed to allow safe and efficient movements. ■ Well ventilated if enclosed. ■ Broken up with trees and buildings or different surface treatments (applicable to Large Parking Areas.) 	<p>Complies</p> <p>Car parking facilities are conveniently located and designed to allow efficient movements.</p>
	<p>Shared accessways, car parks of other dwellings/ residential buildings should be at least 1.5m from the windows of habitable rooms. This setback may be reduced to 1m, where there is a fence at least 1.5m high or windowsills are at least 1.4m above the accessway.</p>	<p>Complies</p> <p>All habitable room windows interfacing the common accessway have 1.7m high sill heights.</p>

Amenity Impacts

Clause 55.04

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>B17 Side and Rear Setbacks Ensure the height and setback respects the existing or preferred neighbourhood character and limits the amenity impacts on existing dwellings</p>	<p>A new building not on or within 200mm of a boundary should be setback from side or rear boundaries:</p> <ul style="list-style-type: none"> ■ At least the distance specified in the schedule to the zone, or ■ 1m+ 0.3m for every metre of height over 3.6 metres up to 6.9 metres, plus 1 metre for every metre of height over 6.9 metres. 	<p>Complies</p> <p>All side and rear setbacks comply with the numerical standard.</p> <p>Please refer to town planning drawings for further detail.</p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>B18 Walls on Boundaries Ensure the location, length and height of a wall on a boundary respects the existing or preferred neighbourhood character and limits the amenity impacts on existing dwellings.</p>	<p>A new wall constructed on or within 200mm of a side or rear boundary of a lot or a carport constructed on or within 1m of a side or rear boundary of a lot should not abut the boundary for a length of more than:</p> <ul style="list-style-type: none"> ■ 10m plus 25% of the remaining length of the boundary of an adjoining lot, or ■ Where there are existing or simultaneously constructed walls or carports abutting the boundary of an abutting lot, the length of the existing or simultaneously constructed walls or carports - whichever is the greater. ■ A new wall or carport may fully abut a side or rear boundary where slope and retaining walls or fences would result in effective height of the wall or carport being less than 2m on the abutting property boundary. ■ A height of a new wall constructed on or within 200mm of a side or rear boundary or a carport constructed on or within 1m of a side or rear boundary should not exceed an average of 3.2m with no part higher than 3.6m unless abutting a higher existing or simultaneously constructed wall. 	<p>Complies</p> <p>The proposal comprises of 2 walls on boundary.</p> <p>Dwelling 1 garage wall on the western boundary is 11.70m in length at a maximum average height of 3.2m.</p> <p>Dwelling 2 garage wall on the eastern boundary is 11.70m in length at a maximum average height of 3.2m.</p>
<p>B19 Daylight to Existing Windows Allow adequate daylight into existing habitable room windows.</p>	<p>Buildings opposite an existing habitable room window should provide a light court of at least 3sqm and a minimum dimension of 1m clear to the sky (this can include land on the adjoining lot).</p> <p>Walls or carports more than 3m in height opposite existing windows should be setback from the window at least 50% of the height of the new wall if the wall is within a 55-degree arc from the centre of the existing window. The arc may be swung to within 35 degrees of the plane of the wall containing the existing window.</p>	<p>Complies</p> <p>Light courts are easily achieved for existing habitable room windows on neighbouring properties and the subject site.</p>
<p>B20 North Facing Windows Allow adequate solar access to existing north-facing habitable room windows.</p>	<p>Buildings should be setback 1m if an existing north-facing habitable window is within 3m of the abutting lot boundary. (Add 0.6m to this setback for every metre of height over 3.6m and add 1m for every metre over 6.9m.)</p>	<p>N/A</p> <p>No north-facing habitable window is within 3m of an abutting lot boundary.</p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>B21 Overshadowing Open Space Ensure buildings do not significantly overshadow existing secluded private open space.</p>	<p>Where sunlight to a private open space of an existing dwelling is reduced, at least 75%, or 40sqm with min. 3m, whichever is the lesser area, of the open space should receive a min. of 5 hours of sunlight between 9 am and 3pm on 22 Sept.</p> <p>If the existing sunlight to the private open space of an existing dwelling is less than these requirements, the amount of sunlight should not be reduced further.</p>	<p>Complies</p> <p>Refer to town planning report and shadow diagrams.</p> <p>The proposal will not unreasonably overshadow any adjoining residential properties.</p>
<p>B22 Overlooking Limit views into existing secluded private open space and habitable room windows.</p>	<p>A habitable room window, balcony, terrace, deck or patio should be designed to avoid direct views into the secluded private open space of an existing dwelling within 9m (see clause for details) should have either:</p> <ul style="list-style-type: none"> ■ A minimum offset of 1.5m from the edge of one window to the other. ■ Sill heights of at least 1.7m above floor level. ■ Fixed obscure glazing in any part of the window below 1.7m above floor level. ■ Permanently fixed external screens to at least 1.7m above floor level and be no more than 25 % transparent. 	<p>Complies</p> <p>The proposal has potential for overlooking to the east, west, north and south, all upper floor habitable room windows have been screened in accordance with the Standard.</p>
	<p>Obscure glazing below 1.7m above floor level may be openable if there are no direct views as specified in this standard.</p>	<p>Complies</p> <p>All screening measures are satisfactory.</p>
	<p>Screens to obscure view should be:</p> <ul style="list-style-type: none"> ■ Perforated panels or trellis with solid translucent panels or a maximum 25% openings. ■ Permanent, fixed and durable. ■ Blended into the development. <p>See Clause 55.04-6 for instances where this standard does not apply.</p>	<p>Complies</p> <p>See above.</p>
<p>B23 Internal Views Limit views into existing secluded private open space and habitable room windows of dwellings and residential buildings within the same development.</p>	<p>Windows and balconies should be designed to prevent overlooking of more than 50% of the secluded private open space of a lower level dwelling or residential building within the same development.</p>	<p>Complies</p> <p>Upper floors are screening preventing internal views.</p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B24 Noise Impacts Protect residents from external noise and contain noise sources in developments that may affect existing dwellings.	Noise sources should not be located near bedrooms of immediately adjacent existing dwellings.	Complies The proposed dwelling will not generate any significant noise beyond what is typical for a dwelling.
	Noise sensitive rooms and private open space should consider noise sources on immediately adjacent properties.	Complies The adjoining interfaces are residential sites. No significant sources.
	Dwellings and residential buildings should be designed to limit noise levels in habitable rooms close to busy roads, railway lines or industry.	N/A

On-Site Amenity and Facilities

Clause 55.05

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B25 Accessibility Consider people with limited mobility in the design of developments.	Dwelling entries of the ground floor of buildings should be accessible or able to be easily made accessible to people with limited mobility.	Complies The dwelling entry is accessible to those with limited mobility.
B26 Dwelling Entry Provide a sense of identity to each dwelling/residential building.	Entries are to be visible and easily identifiable from streets and other public areas.	Complies The building entry will be clearly visible and identifiable from the street frontage.
	The entries should provide shelter, a sense of personal address and a transitional space.	Complies A verandah and internal entry space provide a transitional space and an individual sense of address for the proposed dwellings.
B27 Daylight to New Windows Allow adequate daylight into new habitable room windows.	Habitable room windows to face: <ul style="list-style-type: none"> ■ Outdoor space open to the sky or light court with minimum area of 3sqm and a min. dimension of 1m clear to the sky or; ■ Verandah, provided it is open for at least one third of its perimeter or; ■ A carport provided it has two or more open sides and is open for at least one third of its perimeter. 	Complies All habitable room windows have unobstructed daylight access, and solar access where practicable.

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B28 Private Open Space Provide reasonable recreation and service needs of residents by adequate private open space	Unless specified in the schedule to the zone, a dwelling should have private open space consisting of: <ul style="list-style-type: none"> ■ 40sqm with one part at the side or rear of the dwelling/residential building with a minimum dimension of 3m, a minimum area of 25sqm and convenient access from a living room or; ■ Balcony - minimum 8sqm, minimum width 1.6m and accessed from living room or; ■ Roof-top – minimum 10sqm, minimum width 2m and convenient access from living room. 	Complies The proposal comfortably complies with this standard for P.O.S. Dwelling 1 and 2 have 76.2sqm of SPOS.
B29 Solar Access to Open Space Allow solar access into the secluded private open space of new dwellings/buildings.	The private open space should be located on the north side of the dwelling if appropriate.	Complies The SPOS of all dwellings have some northern aspect.
	Southern boundary of open space should be setback from any wall on the north of the space at least $(2+0.9h)$ h= height of wall.	Satisfies objective Southern ground floor wall height of both dwellings is no higher than 4.0m. Southern boundary setback required is 5.6m. Upper floor southern walls for both dwellings are no higher than 7.3m. Southern boundary setback required is 8.57m. Proposed setbacks comply.
B30 Storage Provide adequate storage facilities for each dwelling.	Each dwelling should have access to a minimum 6m ³ of externally accessible, secure storage space.	Satisfies objective Each SPOS has sufficient space to accommodate external storage.

Detailed Design

Clause 55.06

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
B31 Design Detail Encourage design detail that respects the existing or preferred neighbourhood character.	Design of buildings should respect the existing or preferred neighbourhood character and address: <ul style="list-style-type: none"> ■ Façade articulation & detailing. ■ Window and door proportions. ■ Roof form. ■ Verandas, eaves and parapets. 	Complies Refer to planning report and plans.

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
	Garages and carports should be visually compatible with the development and neighbourhood character.	Complies The location and design of garages are subservient to the design of dwellings and accords with the existing garage character of dwellings within the area.
B32 Front Fences Encourage front fence design that respects the existing or preferred neighbourhood character	The front fence should complement the design of the dwelling or any front fences on adjoining properties.	Complies
	A front fence within 3m of the street should not exceed the maximum height specified in the schedule to the zone or if no max. specified, the front fence should not exceed: <ul style="list-style-type: none"> ■ 2m if abutting a Road Zone, Category 1. ■ 1.5m in any other streets. 	Complies Front fence is 1.2m high picket fence.
B33 Common Property Ensure car parking, access areas and other communal open space is practical, attractive and easily maintained. Avoid future management difficulties in common ownership areas.	Should be functional and capable of efficient management.	Complies Common areas are well designed to be both practical and attractive.
	Public, communal and private areas should be clearly delineated. Common property should be functional and capable of efficient management.	Complies Common areas are capable of being efficiently managed.
B34 Site Services Ensure site services and facilities can be installed and easily maintained and are accessible, adequate and attractive.	Dwelling layout and design should provide for sufficient space and facilities for services to be installed and maintained.	Complies The design provides sufficient space for facilities and services to be installed and maintained, within the side and rear setbacks of the property.
	Bin and recycling enclosures, mailboxes and other site facilities should be adequate in size, durable, waterproof and should blend in with the development.	Complies Bins to be located within the P.O.S and S.P.O.S of the dwellings. Mailbox to be located at the entrance to the site.
	The site facilities including mailboxes should be located for convenient access. Bin and recycling enclosures located for convenient access. Mailboxes provided and located for convenient access as required by Aust. Post.	Complies Site facilities and waste receptacles are conveniently located. Mailboxes will be located adjacent to the entrance to the site.

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Appendix 2 – Clause 56 Assessment

Residential Subdivision Assessment Table - Two Lot Subdivision (Clause 56)

Refer to Clause 56 of the Planning Scheme for objectives, decision guidelines and a full description of standards.

Neighbourhood Character

Clause 56.03

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>C6 Neighbourhood Character To design subdivisions that respond to neighbourhood character.</p>	<p>Subdivision should:</p> <ul style="list-style-type: none"> ■ Respect the existing neighbourhood character or achieve a preferred neighbourhood character consistent with any relevant neighbourhood character objective, policy or statement set out in this scheme. ■ Respond to and integrate with the surrounding urban environment. ■ Protect significant vegetation and site features. 	<p>Complies</p> <p>The proposed boundary dimensions and layout are consistent with recent subdivisions found locally at <u>39 Stanhope Street and 2 Deakin Court.</u></p> <p>Proposed lots retain the original street interface.</p> <p>Site is void of significant vegetation.</p>

Lot Design

Clause 56.04

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>C8 Lot area and building envelopes objective To provide lots with areas and dimensions that enable the appropriate siting and construction of a dwelling, solar access, private open space, vehicle access and parking, water management, easements and the retention of significant vegetation and site features.</p>	<p>Subdivision should:</p> <ul style="list-style-type: none"> ■ Respect the existing neighbourhood character or achieve a preferred neighbourhood character consistent with any relevant neighbourhood character objective, policy or statement set out in this scheme. ■ Respond to and integrate with the surrounding urban environment. ■ Protect significant vegetation and site features. 	<p>Complies</p> <p>As noted above, existing lot interface to the street will be retained, proposed subdivision pattern same as <u>39 Stanhope Street and 2 Deakin Court.</u></p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
	<p>Lots of between 300 square metres and 500 square metres should:</p> <ul style="list-style-type: none"> ■ Contain a building envelope that is consistent with a development of the lot approved under this scheme, or ■ If no development of the lot has been approved under this scheme, contain a building envelope and be able to contain a rectangle measuring 10 metres by 15 metres, or 9 metres by 15 metres if a boundary wall is nominated as part of the building envelope. 	<p>Complies</p> <p>Proposed building envelope same as <u>39 Stanhope Street and 2 Deakin Court.</u></p> <p>Proposed subdivision application is concurrent with development application to demonstrate walls on boundary are acceptable.</p>
	<p>If lots of between 300 square metres and 500 square metres are proposed to contain dwellings that are built to the boundary, the long axis of the lots should be within 30 degrees east and 20 degrees west of north unless there are significant physical constraints that make this difficult to achieve.</p>	<p>Complies</p> <p>The subdivision is constraint by the existing lot boundary layout and orientation however, the development application ensures new dwellings are satisfy relevant Clause 55 requirements.</p>
	<p>A building envelope may specify or incorporate any relevant siting and design requirement. Any requirement should meet the relevant standards of Clause 54, unless:</p> <ul style="list-style-type: none"> ■ The objectives of the relevant standards are met 	<p>Complies</p> <p>Proposed subdivision coincides with a proposal for the development of 2 dwellings, assessed under Clause 55. Clause 55 requirements are reasonably met.</p>
	<p>Where a lot with a building envelope adjoins a lot that is not on the same plan of subdivision or is not subject to the same agreement relating to the relevant building envelope:</p> <ul style="list-style-type: none"> ■ The building envelope must meet Standards A10 and A11 of Clause 54 in relation to the adjoining lot, and ■ The building envelope must not regulate siting matters covered by Standards A12 to A15 (inclusive) of Clause 54 in relation to the adjoining lot. This should be specified in the relevant plan of subdivision or agreement. 	<p>Complies</p> <p>Refer to Clause 55 assessment for compliance.</p>

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Title & Objective	Standard	Complies / Does Not Comply / Variation Required
	<p>Lot dimensions and building envelopes should protect:</p> <ul style="list-style-type: none"> ■ Solar access for future dwellings and support the siting and design of dwellings that achieve the energy rating requirements of the Building Regulations. ■ Existing or proposed easements on lots. ■ Significant vegetation and site features. 	<p>Complies</p> <p>Refer to shadow diagrams as part of the development application.</p>
<p>C9 Solar orientation of lots objective To provide good solar orientation of lots and solar access for future dwellings.</p>	<p>Unless the site is constrained by topography or other site conditions, at least 70 percent of lots should have appropriate solar orientation.</p> <p>Lots have appropriate solar orientation when:</p> <ul style="list-style-type: none"> ■ The long axis of lots are within the range north 20 degrees west to north 30 degrees east, or east 20 degrees north to east 30 degrees south. ■ Lots between 300 square metres and 500 square metres are proposed to contain dwellings that are built to the boundary, the long axis of the lots should be within 30 degrees east and 20 degrees west of north. ■ Dimensions of lots are adequate to protect solar access to the lot, taking into account likely dwelling size and the relationship of each lot to the street. 	<p>Complies</p> <p>Refer to shadow diagrams as part of the development application.</p>
<p>C11 Common area objectives To identify common areas and the purpose for which the area is commonly held.</p> <p>To ensure the provision of common area is appropriate and that necessary management arrangements are in place.</p> <p>To maintain direct public access throughout the neighbourhood street network.</p>	<p>An application to subdivide land that creates common land must be accompanied by a plan and a report identifying:</p> <ul style="list-style-type: none"> ■ The common area to be owned by the body corporate, including any streets and open space. ■ The reasons why the area should be commonly held. ■ Lots participating in the body corporate. ■ The proposed management arrangements including maintenance standards for streets and open spaces to be commonly held. 	<p>Complies</p> <p>No common areas proposed.</p>

Access and mobility management

Clause 56.06

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
C21 Lot access objective To provide for safe vehicle access between roads and lots.	Vehicle access to lots abutting arterial roads should be provided from service roads, side or rear access lanes, access places or access streets where appropriate and in accordance with the access management requirements of the relevant roads authority. Vehicle access to lots of 300 square metres or less in area and lots with a frontage of 7.5 metres or less should be provided via rear or side access lanes, places or streets. The design and construction of a crossover should meet the requirements of the relevant road authority.	Complies Refer to development application.

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Utilities

Clause 56.09

Title & Objective	Standard	Complies / Does Not Comply / Variation Required
<p>C28 Electricity, telecommunications and gas objectives To provide public utilities to each lot in a timely, efficient and cost effective manner.</p> <p>To reduce greenhouse gas emissions by supporting generation and use of electricity from renewable sources.</p>	<p>The electricity supply system must be designed in accordance with the requirements of the relevant electricity supply agency and be provided to the boundary of all lots in the subdivision to the satisfaction of the relevant electricity authority.</p> <p>Arrangements that support the generation or use of renewable energy at a lot or neighbourhood level are encouraged.</p> <p>The telecommunication system must be designed in accordance with the requirements of the relevant telecommunications servicing agency and should be consistent with any approved strategy, policy or plan for the provision of advanced telecommunications infrastructure, including fibre optic technology. The telecommunications system must be provided to the boundary of all lots in the subdivision to the satisfaction of the relevant telecommunications servicing authority.</p> <p>Where available, the reticulated gas supply system must be designed in accordance with the requirements of the relevant gas supply agency and be provided to the boundary of all lots in the subdivision to the satisfaction of the relevant gas supply agency.</p>	<p>Complies</p> <p>Subdivision is proposed on a lot in a well established residential area with reticulated services.</p>

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Sustainable Design Assessment

45 Cuthbert Street, Broadmeadows

Revision A

7/10/2022

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Company Profile – The Urban Leaf Pty Ltd

Mission Statement

We are a team of professionals, dedicated to encouraging sustainable design within the building industry and its related businesses.

We provide clients with reports that comprehensively outline, describe and recommend ecological solutions for different stages of the construction process.

Our team's professional and personal growth is fostered within a positive working environment. Our innovative, original thinking works diligently towards ensuring the social, economic and environmental needs of our community are met and enjoyed by future generations.

Company Philosophy

Our philosophy and motivation is simple. We believe everyone has a responsibility to protect the Earth's eco-systems.

By preserving natural resources, we can guarantee that communities will continue to benefit from an uncompromised quality of life.

In addition, conserving natural resources within our lifetime ensures the legacy we leave for future generations is one that advocates respect for our environment as well as for each other.

Our role in assessing and encouraging sustainable design within the building industry is an important one because it supports ecologically-sound practises.

Our work enables us to promote more efficient use of ecological resources and reduce unnecessary environmental impact.

Services

All of our services are connected to our company's philosophy and contribute to supporting a sustainable environment. We pride ourselves on delivering professional, independent, objective appraisals and reports. Any recommendations we make are underpinned by legislative and regulatory compliance.

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1. Project Summary

The Urban Leaf Pty Ltd has been engaged by [REDACTED] to undertake a Sustainable Design Assessment (SDA) for the proposed development.

Municipality:	Hume City Council
Town Planning Application Number:	P24635
Site Address:	45 Cuthbert Street, Broadmeadows
Total Site Area:	697 m²
Site Coverage:	414.4 m²
Project Description:	Residential development of 2 townhouses
TUL Reference Number:	L04
Assessment Completed by:	Thea Aganon (B. Arch, M. Sus) Febria Margaretha (M. Arch, BESS Trained Professional)



Figure 1: Zoning Map (source: planning.vic.gov.au)

All results generated by this report are based on Town Planning Drawings prepared by **Architecture by Semu, Rev. A, Dated 18.05.2022.**

Note: ESD initiatives must be shown on the endorsed plan or be included in a schedule to the plan. Additionally, the drawings shall be read in conjunction with the endorsed SDA report.

Disclaimer- This report contains guidelines and recommendations to assist the specified project meet ESD requirements. It is the responsibility of the Owner/Builder to apply said specifications in the later stages of the development to ensure compliance. It is not the responsibility of The Urban Leaf Pty Ltd

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2. Built Environment Sustainability Scorecard (BESS)

Sustainable design is a critical intervention in today's-built environment to protect the environment and living standards, as well as future proofing the coming generations. The Sustainable Design Assessment contains a summary of environmental initiatives integrated into the design of the subject development, whilst providing information ensuring the following:

- New buildings to meet acceptable environmental performance standards
- Outline environmental objectives and standards required by Council
- Consistent and fair approach to the associated environmental impact
- Flexible methods of meeting environmental standards
- Promote the benefit of sustainability within the development

All information and calculations necessary to produce the report are provided by using version 1.6.2 of the Built Environment Sustainability Scorecard (BESS). The BESS tool (**Appendix A**) assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of new buildings or alterations.

There are four mandatory categories with minimum score: Indoor Environment Quality (IEQ), Energy, Water, and Stormwater. The final BESS overall score is determined by the individual category scores:

- 'Best Practice' is defined within BESS as an overall score of 50% or above.
- 'Excellence' is defined within BESS as an overall score of 70%.

The development has achieved the following BESS scores:

BESS Category	Required Score	Project Score	Compliance
Management	0%	0%	Achieved compliance
Water	50%	50%	Achieved compliance
Energy	50%	50%	Achieved compliance
Stormwater	100%	100%	Achieved compliance
IEQ	50%	60%	Achieved compliance
Transport	0%	50%	Achieved compliance
Waste	0%	50%	Achieved compliance
Urban Ecology	0%	37%	Achieved compliance
Innovation	0%	0%	Achieved compliance
Total Score		50%	Best Practice

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3. Construction and Building Management

Environmentally Sustainable Design (ESD) Principle – Construction and Building Management should be integrated into the design of the proposed development. These principles will inspire a holistic and integrated design and construction process. It also encourages ongoing high performance.

Key elements may include:

- Environmental Management Plan; Construction and Operation
- Metering

ISSUES	DESIGN RESPONSES
Environmental Management Plan; Construction and Operation	<ul style="list-style-type: none"> • <i>A project specific Environmental Management Plan will be implemented during the operation phase.</i>
Metering	<ul style="list-style-type: none"> • <i>Each dwelling shall have individual utility meters.</i> • <i>This will allow residents to effectively monitor and reduce their water and energy consumption.</i>

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4. Water Resources

Environmentally Sustainable Design (ESD) Principle - Water resources and its key elements should be integrated into the design of the proposed development. These principles contribute to efficient water usage by reducing total operating potable water use, promoting the collection and re-use of rainwater and stormwater, consequently helping to conserve precious water resources and minimising associated water costs.

Key elements include:

- Fixtures, fittings and appliances
- Rainwater
- Water Efficient Landscaping

The following table summarises the approach taken to reduce potable (drinkable) water use by residential and/or non-residential areas within the development. Information below is supported by the following resources: **BESS report (Appendix A)**.

ISSUES	DESIGN RESPONSES
Efficient Showerheads	<ul style="list-style-type: none"> • 4 Star WELS (>6.0 but <=7.5)
Efficient Taps and Basins	<ul style="list-style-type: none"> • 5 Star WELS
Efficient Dishwashers	<ul style="list-style-type: none"> • 5 Star WELS
Efficient Toilets Cisterns	<ul style="list-style-type: none"> • 4 Star WELS
Efficient Appliances	<ul style="list-style-type: none"> • All other appliances if provided by the developer will be within one WELS star of the best available.
Efficient Landscaping	<ul style="list-style-type: none"> • Water efficient landscaping shall be installed within the proposed development. • Native and drought tolerant plants are recommended. • A water efficient garden should not require any irrigation system and watering once plants are established.

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5. Energy Efficiency

Environmentally Sustainable Design (ESD) Principle - Energy and its main elements contribute to reducing greenhouse emissions by utilising energy efficient appliances, energy conservation measures and renewable energy. In addition to maintaining and improving comfort levels, efficient energy use is vitally important to reduce energy costs and the associated environmental impacts.

- Heating
- Cooling
- Lighting
- Appliances
- Hot water services

The following table summarises energy efficient approach of residential and/or non-residential areas within the development. Information below is supported by the following resources: the **BESS report (Appendix A)**.

ISSUES	DESIGN RESPONSES
Energy Rating	<ul style="list-style-type: none"> • Energy rating will be completed at the building approval stage. • A commitment has been made for the dwelling to have a minimum of 6 Star energy rating. • Minimum compliance levels have been used as an input to the BESS assessment at this stage.
Efficient Heating System	<ul style="list-style-type: none"> • Gas central duct heating system (minimum 5 Stars) will be provided in the proposed development.
Efficient Cooling System	<ul style="list-style-type: none"> • Refrigerative space cooling system (minimum 5 Stars) will be provided in the proposed development.
Hot Water System	<ul style="list-style-type: none"> • Gas instantaneous system (minimum 5 Stars) will be provided in the proposed development.
Efficient Lighting	<ul style="list-style-type: none"> • LED luminaires shall be implemented throughout the development. • The development shall achieve a maximum illumination power density of 4W/m² or less.
Efficient Lighting Design	<ul style="list-style-type: none"> • Two-way switching- hallways, stairwells. • Motion sensors – common areas, garages. • Dimmers – bedroom, living areas.
Fixed Clothes Lines/Racks	<ul style="list-style-type: none"> • Private outdoor clothesline has been allocated in each dwelling's private open space.

Efficient Appliances	<ul style="list-style-type: none"> All appliances if provided by the developer will be within one energy star of the best available
-----------------------------	--

6. Stormwater Management

Environmentally Sustainable Design (ESD) Principle - Melbourne’s rapid urbanisation in recent times has resulted in a significant increase in hard and impervious areas. Efficient Water Sensitive Urban Design (WSUD) ensures natural systems are protected and enhanced whilst promoting on-site detention. Key elements may include:

- Porous paving
- Rainwater storage tanks

The following table summarises the approach taken to improve stormwater quality and to reduce peak and total stormwater run-off produced by the residential and/or non-residential areas within the development. Information below is supported by the following resources: **STORM report (Appendix B)** and/or **BESS report (Appendix A)**.

ISSUES	DESIGN RESPONSES
STORM Rating	<ul style="list-style-type: none"> The STORM assessment achieves a score of 104%, which exceeds the required minimum.
Stormwater Treatment	<ul style="list-style-type: none"> Approximately 192.2m² of D1’s roof areas are to be connected to a minimum of 3500L rainwater tank for toilet flushing purposes and laundry connection. Approximately 192.2m² of D2’s roof areas are to be connected to a minimum of 3500L rainwater tank for toilet flushing purposes and laundry connection. All Pathways are to be Permeable. A separate Water Sensitive Urban Design (WSUD) report has been prepared to address the Council’s stormwater clause requirements. Please refer to the report for further treatment details.
Maintenance	<ul style="list-style-type: none"> The stormwater management assets are to be maintained periodically as according to the manufacturer’s guidelines or the generic maintenance schedule provided within the separate WSUD Report OR Appendix C. It will be the responsibility of the Owner to organise the required maintenance and upgrades when required. This includes engaging an appropriate, qualified contractor to conduct the necessary tasks.

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7. Indoor Environment Quality

Environmentally Sustainable Design (ESD) Principle – The key elements of Indoor Environment Quality play a significant role in the health, wellbeing and satisfaction of the development’s occupants. Ensuring a naturally comfortable indoor environment means less dependence on building services such as artificial lighting, mechanical ventilation and heating and cooling devices.

Key elements may include:

- Daylight
- Ventilation
- Thermal Comfort
- Effective Shading
- External View

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ISSUES	DESIGN RESPONSES
Daylight	<ul style="list-style-type: none"> • <i>Each habitable room will meet the minimum light requirement of 10%, as per NCC Part 3.8.4.</i> • <i>Habitable rooms receive sufficient sunlight through windows & doors as shown in elevation drawings.</i> • <i>No borrowed light to bedrooms.</i> • <i>Clear glazing will be used as indicated in elevations.</i>
Ventilation	<ul style="list-style-type: none"> • <i>The design of all habitable areas permits cross flow ventilation, providing fresh air and passive cooling opportunities. Refer to Appendix D.</i> • <i>All rooms are sufficiently ventilated through operable windows specified in elevation drawings.</i> • <i>All kitchens are ventilated with dedicated and separated extract fans.</i> • <i>Energy efficient mechanical heating and cooling system provided for days with extreme temperatures.</i>
Effective Shading	<ul style="list-style-type: none"> • <i>External shading devices are passive design interventions which can help to protect the building envelope and reduce heat transfer through the building fabric, consequently supporting a comfortable building environment and reduce associated operational costs.</i> • <i>Fixed horizontal shading devices over windows such as eaves can regulate solar access throughout the year.</i> • <i>Internal blinds / curtains will also enhance the effectiveness of shading.</i>
Thermal Comfort	<ul style="list-style-type: none"> • <i>Glazing to comply with energy report specifications at the building approval stage.</i> • <i>A commitment has been made to specify double glazed clear windows to all habitable areas. This will provide passive heat gains and reduce energy consumptions.</i>

ISSUES	DESIGN RESPONSES
	<ul style="list-style-type: none"> • <i>Good insulation levels will maintain comfortable temperature within the proposed development.</i> • <i>Effective shadings and efficient cross ventilation of the proposed design reduces cooling demand in summer.</i>
External View	<ul style="list-style-type: none"> • <i>Sliding doors are proposed for access to private open spaces, hence providing a visual connection for the building users with the outdoor.</i>

8. Materials

Environmentally Sustainable Design (ESD) Principle - Materials selection should be integrated into the design of the proposed development. The criteria for appropriate materials used are based on economic and environmental cost.

These key elements include:

- Concrete
- Low VOC Materials
- Sustainable Timber
- Light-Coloured Roof

An analysis of material selection and its impact on the comfort, cost effectiveness and energy efficiency should be assessed. Its aim is to ensure materials selected, and their associated environmental impact are minimised. In addition, consideration for lifecycle of a material, their associated processes and air pollution amounts.

ISSUES	DESIGN RESPONSES
Concrete	<ul style="list-style-type: none"> • <i>A minimum of 20% of the cement mixture must be replaced with supplementary cementitious material (SCM), 50% aggregate and 50% recycled water.</i>
Low Volatile Organic Compounds (VOC) Materials	<ul style="list-style-type: none"> • <i>Low VOC paints and flooring.</i> • <i>Low VOC wall and ceiling coverings.</i> • <i>Low VOC adhesives and sealants.</i>
Sustainable Timber	<ul style="list-style-type: none"> • <i>E1 or E0-grade engineered wood products shall be used within the development. This may include MDF, plywood, engineered-wood flooring.</i>
Light-Coloured Roof	<ul style="list-style-type: none"> • <i>The proposed roof shall be specified in light, reflective colours to reduce heat gain to the building as well as to prevent the urban heat island effect.</i>

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9. Transport

Environmentally Sustainable Design (ESD) Principle – Green, or “eco-friendly” buildings encourage people to use modes of transport other than cars to reduce urban air pollution and the generation of greenhouse gas emissions. Alternative transportation can be facilitated by incorporating cyclist facilities and access to public transport networks into the building’s design.

Key elements may include:

- Minimise car dependency
- Promote alternative transportation
- Electric Vehicle Infrastructure

ISSUES	DESIGN RESPONSES
Minimising the Provision of Car Parks for Conventional Vehicles	<ul style="list-style-type: none"> • <i>Onsite resident parking space is available and is limited to two car spaces per unit.</i>
Public Transport	<ul style="list-style-type: none"> • <i>Approximately 400m to Joffre Street/Camp Road bus stop.</i> • <i>Refer to site plan below.</i>
Electric Vehicle Infrastructure	<ul style="list-style-type: none"> • <i>Electrical vehicle charging facilities will be provided.</i> • <i>Refer to architectural drawings for locations.</i>

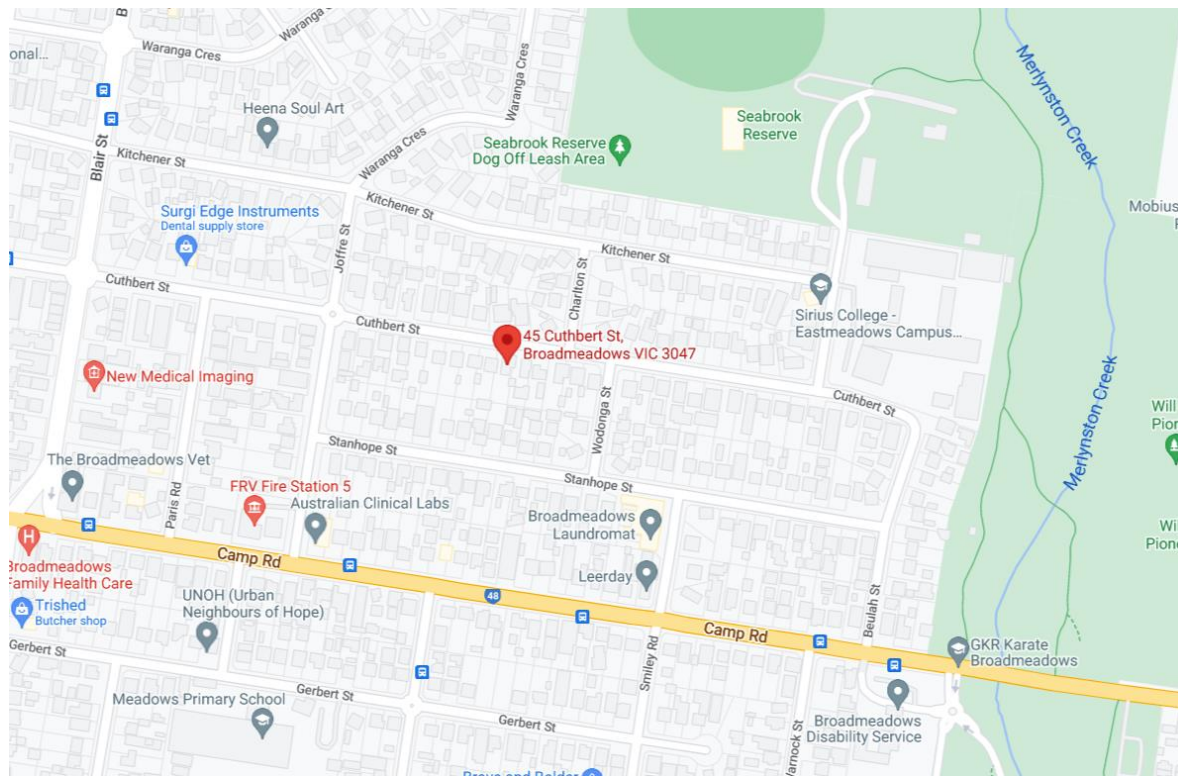


Figure 2: Site Location (image sourced from Google Maps)

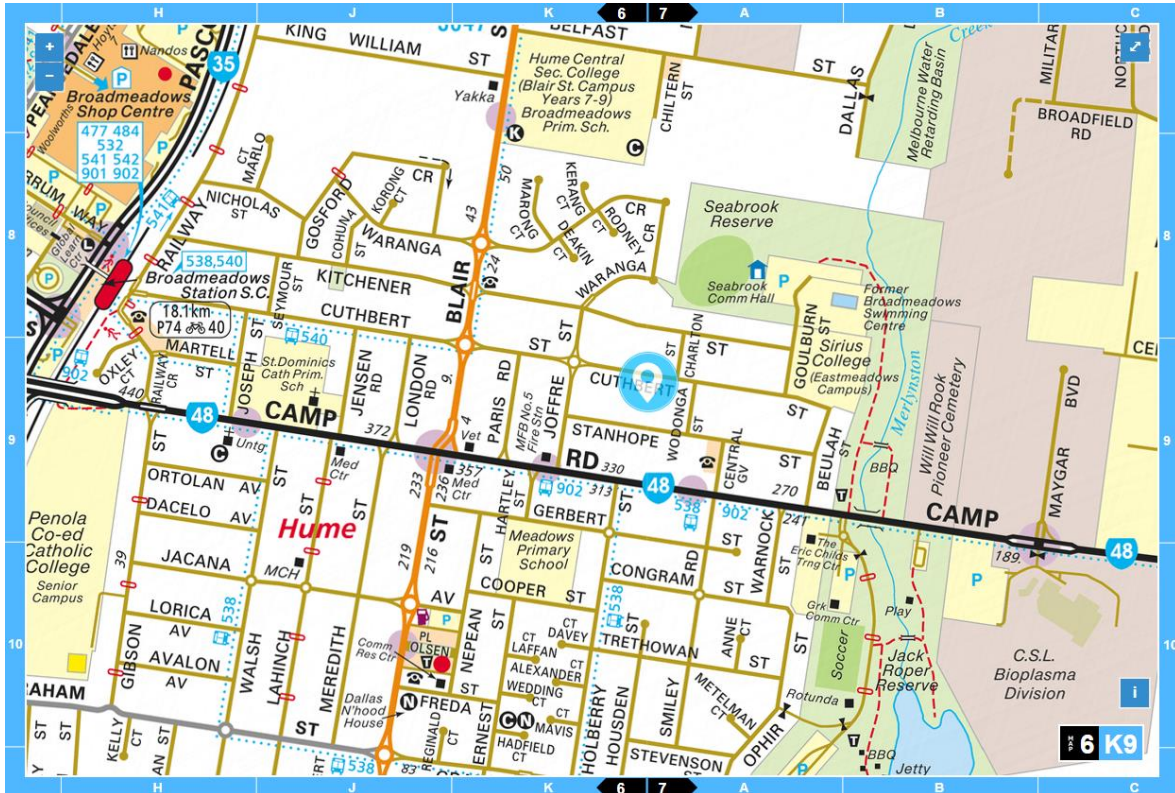


Figure 3: Site Location (image sourced from Melway Online)

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10. Waste Management

Environmentally Sustainable Design (ESD) Principle – A waste management plan should be incorporated into the design of the proposed development to ensure minimal waste is transported to landfill by means of disposal, recycling and on-site waste storage and/or collection methods.

Key elements may include:

- Construction Waste Minimisation
- Storage of Waste, Recycling and Green Waste

ISSUES	DESIGN RESPONSES
Construction Waste Management	<ul style="list-style-type: none"> • <i>The construction contract will include the requirement to reuse or to recycle 70% of all demolition and construction waste.</i>
Allocated Spaces for General Waste, Recycle Waste and Green Waste	<ul style="list-style-type: none"> • <i>Waste bins shall be stored within the proposed garages.</i> • <i>The recycling facilities should be as convenient for the occupants as facilities for general waste.</i>
Food and Garden Waste	<ul style="list-style-type: none"> • <i>Occupants have access to a food and garden waste collection system via Hume City Council's FOGO collection.</i>

11. Urban Ecology

Environmentally Sustainable Design (ESD) Principle – Urban Ecology and its fundamental principles aim to promote and protect ecosystems and biodiversity. Urban and agricultural developments should aim to enhance Urban Ecology by decreasing hard or impervious areas and at the same time increasing vegetation and landscaping opportunities.

Key elements may include:

- Vegetation
- Reuse of developed Land

ISSUES	DESIGN RESPONSES
Vegetation	<ul style="list-style-type: none"> • <i>Approximately 26% of the site is covered with vegetation.</i>
Re-use of Land	<ul style="list-style-type: none"> • <i>The development is a redevelopment of an existing established site, therefore increased density in an established urban area will reduce urban sprawl.</i>

Reference

Appendix A – BESS Summary Report

Appendix B – STORM Report

Appendix C – Stormwater Asset Maintenance Schedule

Appendix D – BESS IEQ 2.2 Cross Flow Ventilation

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A L2, 433-435 South Road, Bentleigh VIC 3204
T 03 8899 6149
F 03 9555 4576
E energy@tul.net.au

Appendix A – BESS Summary Report

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URBANLEAF

BESS Report

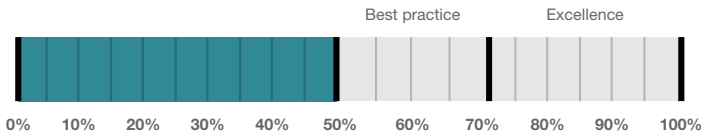
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 45 Cuthbert St Broadmeadows VIC 3047. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Hume City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

Your BESS Score



50%

Project details

Address 45 Cuthbert St Broadmeadows VIC 3047
Project no F139FF73-R2
BESS Version BESS-6

Site type Multi dwelling (dual occupancy, townhouse, villa unit etc)
Account energy@tul.net.au
Application no. P24635
Site area 697.00 m²
Building floor area 576.40 m²
Date 07 October 2022
Software version 1.7.0-B.388



Performance by category

● Your development ● Maximum available

Category	Weight	Score	Pass
Management	5%	0%	*
Water	9%	50%	✓
Energy	28%	50%	✓
Stormwater	14%	100%	✓
IEQ	17%	60%	✓
Transport	9%	50%	*
Waste	6%	50%	*
Urban Ecology	6%	37%	*
Innovation	9%	0%	*

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Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	% of total area
Townhouse			
Dwelling 2	1	288 m ²	50%
Dwelling 1	1	288 m ²	50%
Total	2	576 m²	100%

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Water 3.1	Water efficient garden annotated	To be printed Refer to submitted documents.	✓
Energy 3.3	External lighting sensors annotated	To be printed Refer to submitted documents.	✓
Energy 3.4	Clothes line annotated (if proposed)	To be printed Refer to submitted documents.	✓
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	To be printed Refer to submitted documents.	✓
IEQ 2.2	Dwellings meeting the requirements for having 'natural cross flow ventilation'	To be printed Refer to submitted documents.	✓
IEQ 3.1	Glazing specification to be annotated	To be printed Refer to submitted documents.	✓
Transport 2.1	Location of electric vehicle charging infrastructure	To be printed Refer to submitted documents.	✓
Waste 2.1	Location of food and garden waste facilities	To be printed The proposed development will have access to a FOGO collection. Refer to submitted documents.	✓
Urban Ecology 2.1	Vegetated areas	To be printed Refer to submitted documents.	✓

Supporting evidence

Credit	Requirement	Response	Status
Energy 3.5	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.	To be printed Architectural Plans Refer to submitted documents	✓
Stormwater 1.1	STORM report or MUSIC model	To be printed WSUD Report Refer to submitted documents	✓
IEQ 2.2	A list of dwellings with natural cross flow ventilation	To be printed SDA Report Appendix D	✓
IEQ 3.1	Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)	To be printed Architectural Plans Refer to submitted documents	✓

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Credit summary

Management Overall contribution 4.5%

		0%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		0%
4.1 Building Users Guide		0%

Water Overall contribution 9.0%

		Minimum required 50%	50%	✓ Pass
1.1 Potable water use reduction			40%	
3.1 Water Efficient Landscaping			100%	

Energy Overall contribution 27.5%

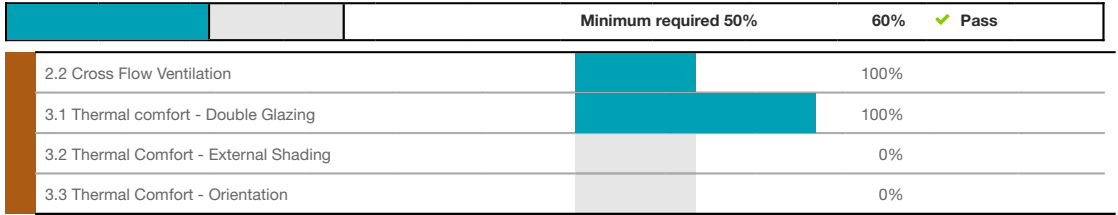
		Minimum required 50%	50%	✓ Pass
1.2 Thermal Performance Rating - Residential			0%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			0%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			100%	
2.5 Wood Consumption			N/A	✦ Scoped Out
No wood heating system present				
3.2 Hot Water			100%	
3.3 External Lighting			100%	
3.4 Clothes Drying			100%	
3.5 Internal Lighting - Residential Single Dwelling			100%	
4.4 Renewable Energy Systems - Other			N/A	⊘ Disabled
No other (non-solar PV) renewable energy is in use.				
4.5 Solar PV - Houses and Townhouses			N/A	⊘ Disabled
No solar PV renewable energy is in use.				

Stormwater Overall contribution 13.5%

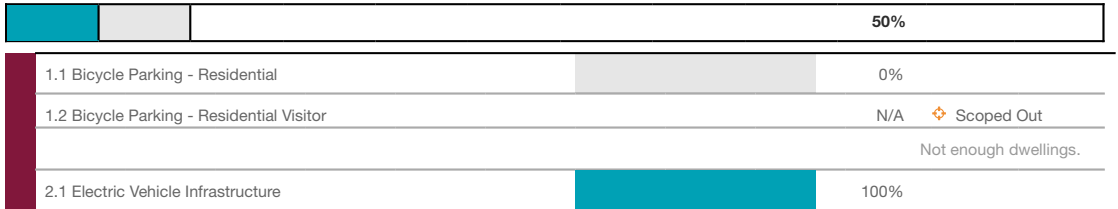
		Minimum required 100%	100%	✓ Pass
1.1 Stormwater Treatment			100%	

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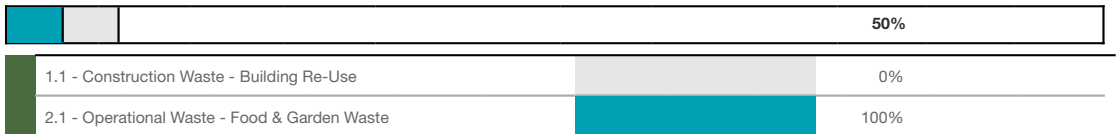
IEQ Overall contribution 16.5%



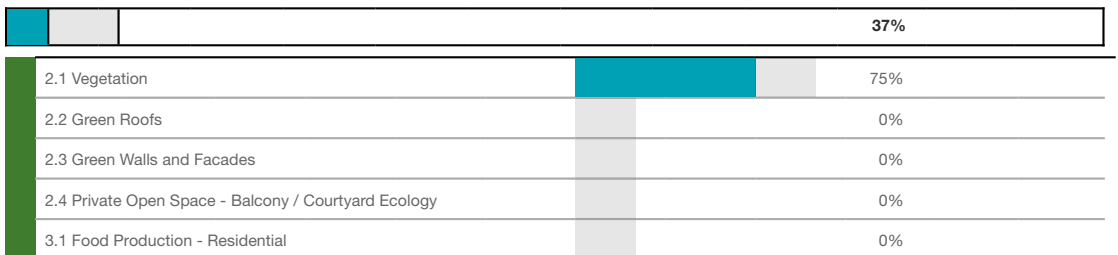
Transport Overall contribution 9.0%



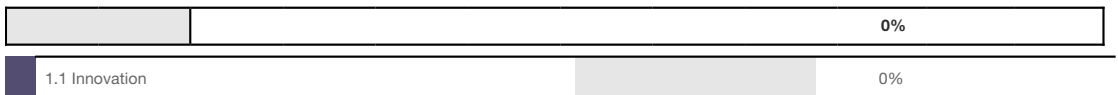
Waste Overall contribution 5.5%



Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%



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Credit breakdown

Management Overall contribution 0%

1.1 Pre-Application Meeting	0%
Score Contribution	This credit contributes 50.0% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	No
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	0%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?
Question	Criteria Achieved ?
Townhouse	No
4.1 Building Users Guide	0%
Score Contribution	This credit contributes 16.7% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	No

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Water Overall contribution 4% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath: All	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 5 Star WELS rating
Dishwashers: All	>= 5 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Occupant to Install
Which non-potable water source is the dwelling/space connected to?:	
Dwelling 1	D1 RWT
Dwelling 2	D2 RWT
Non-potable water source connected to Toilets: All	Yes
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No
Rainwater Tanks	
What is the total roof area connected to the rainwater tank?:	
D1 RWT	192 m ²
D2 RWT	192 m ²
Tank Size:	
D1 RWT	3,500 Litres
D2 RWT	3,500 Litres
Irrigation area connected to tank:	
D1 RWT	-
D2 RWT	-
Is connected irrigation area a water efficient garden?:	
D1 RWT	No
D2 RWT	No
Other external water demand connected to tank?:	
D1 RWT	-
D2 RWT	-

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1.1 Potable water use reduction		40%
Score Contribution	This credit contributes 83.3% towards the category score.	
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.	
Output	Reference	
Project	476 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	381 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	333 kL	
Output	% Reduction in Potable Water Consumption	
Project	29 %	
Output	% of connected demand met by rainwater	
Project	100 %	
Output	How often does the tank overflow?	
Project	Very Often	
Output	Opportunity for additional rainwater connection	
Project	180 kL	
3.1 Water Efficient Landscaping		100%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will water efficient landscaping be installed?	
Question	Criteria Achieved ?	
Project	Yes	

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Energy Overall contribution 14% Minimum required 50%

Dwellings Energy Approach

What approach do you want to use for Energy?: Use the built in calculation tools

Project Energy Profile Question

Are you installing any solar photovoltaic (PV) system(s)?: No

Are you installing any other renewable energy system(s)?: No

Gas supplied into building: Natural Gas

Dwelling Energy Profiles

Below the floor is: All Ground or Carpark

Above the ceiling is: All Outside

Exposed sides: All 3

NatHERS Annual Energy Loads - Heat: All 110 MJ/sqm

NatHERS Annual Energy Loads - Cool: All 27.6 MJ/sqm

NatHERS star rating: All 6.0

Type of Heating System: All B Gas central ducts

Heating System Efficiency: All 5 Star

Type of Cooling System: All Refrigerative space

Cooling System Efficiency: All 5 Stars

Type of Hot Water System: All I Gas Instantaneous 5 star

% Contribution from solar hot water system: All 0 %

Is the hot water system shared by multiple dwellings?: All No

Clothes Line: All D Private outdoor clothesline

Clothes Dryer: All Occupant to Install

1.2 Thermal Performance Rating - Residential

0%

Score Contribution This credit contributes 30.0% towards the category score.

Criteria What is the average NatHERS rating?

Output Average NATHERS Rating (Weighted)

Townhouse 6.0 Stars

2.1 Greenhouse Gas Emissions

100%

Score Contribution This credit contributes 10.0% towards the category score.

Criteria What is the % reduction in annual greenhouse gas emissions against the benchmark?

Output Reference Building with Reference Services (BCA only)

Townhouse 14,448 kg CO2

Output Proposed Building with Proposed Services (Actual Building)

Townhouse 9,088 kg CO2

Output % Reduction in GHG Emissions

Townhouse 37 %

2.2 Peak Demand

0%

Score Contribution This credit contributes 5.0% towards the category score.

Criteria

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2.3 Electricity Consumption		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Townhouse	6,350 kWh	
Output	Proposed	
Townhouse	3,288 kWh	
Output	Improvement	
Townhouse	48 %	
2.4 Gas Consumption		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	What is the % reduction in annual gas consumption against the benchmark?	
Output	Reference	
Townhouse	155,072 MJ	
Output	Proposed	
Townhouse	111,552 MJ	
Output	Improvement	
Townhouse	28 %	
2.5 Wood Consumption		N/A  Scoped Out
This credit was scoped out	No wood heating system present	
3.2 Hot Water		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Townhouse	11,144 kWh	
Output	Proposed	
Townhouse	9,346 kWh	
Output	Improvement	
Townhouse	16 %	
3.3 External Lighting		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	Is the external lighting controlled by a motion detector?	
Question	Criteria Achieved ?	
Townhouse	Yes	

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3.4 Clothes Drying		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?	
Output	Reference	
Townhouse	1,728 kWh	
Output	Proposed	
Townhouse	346 kWh	
Output	Improvement	
Townhouse	80 %	
3.5 Internal Lighting - Residential Single Dwelling		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	Does the development achieve a maximum illumination power density of 4W/sqm or less?	
Question	Criteria Achieved?	
Townhouse	Yes	
4.4 Renewable Energy Systems - Other		N/A <input type="checkbox"/> Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.	
4.5 Solar PV - Houses and Townhouses		N/A <input type="checkbox"/> Disabled
This credit is disabled	No solar PV renewable energy is in use.	

Stormwater Overall contribution 14% Minimum required 100%


Which stormwater modelling are you using?:		Melbourne Water STORM tool
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	STORM score achieved	
Project	104	
Output	Min STORM Score	
Project	100	

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IEQ Overall contribution 10% Minimum required 50%

2.2 Cross Flow Ventilation	100%
Score Contribution	This credit contributes 20.0% towards the category score.
Criteria	Are all habitable rooms designed to achieve natural cross flow ventilation?
Question	Criteria Achieved ?
Townhouse	Yes
3.1 Thermal comfort - Double Glazing	100%
Score Contribution	This credit contributes 40.0% towards the category score.
Criteria	Is double glazing (or better) used to all habitable areas?
Question	Criteria Achieved ?
Townhouse	Yes
3.2 Thermal Comfort - External Shading	0%
Score Contribution	This credit contributes 20.0% towards the category score.
Criteria	Is appropriate external shading provided to east, west and north facing glazing?
Question	Criteria Achieved ?
Townhouse	No
3.3 Thermal Comfort - Orientation	0%
Score Contribution	This credit contributes 20.0% towards the category score.
Criteria	Are at least 50% of living areas orientated to the north?
Question	Criteria Achieved ?
Townhouse	No

Transport Overall contribution 4%

1.1 Bicycle Parking - Residential	0%
Score Contribution	This credit contributes 50.0% towards the category score.
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?
Question	Bicycle Spaces Provided ?
Townhouse	0
1.2 Bicycle Parking - Residential Visitor	N/A  Scoped Out
This credit was scoped out	Not enough dwellings.
2.1 Electric Vehicle Infrastructure	100%
Score Contribution	This credit contributes 50.0% towards the category score.
Criteria	Are facilities provided for the charging of electric vehicles?
Question	Criteria Achieved ?
Project	Yes

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Waste Overall contribution 3%

1.1 - Construction Waste - Building Re-Use		0%
Score Contribution	This credit contributes 50.0% towards the category score.	
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?	
Question	Criteria Achieved ?	
Project	No	
2.1 - Operational Waste - Food & Garden Waste		100%
Score Contribution	This credit contributes 50.0% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	Yes	

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Urban Ecology Overall contribution 2%

2.1 Vegetation	75%
Score Contribution	This credit contributes 50.0% towards the category score.
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?
Question	Percentage Achieved ?
Project	26 %
2.2 Green Roofs	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Does the development incorporate a green roof?
Question	Criteria Achieved ?
Project	No
2.3 Green Walls and Facades	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Does the development incorporate a green wall or green façade?
Question	Criteria Achieved ?
Project	No
2.4 Private Open Space - Balcony / Courtyard Ecology	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?
Question	Criteria Achieved ?
Townhouse	No
3.1 Food Production - Residential	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Townhouse	0.0 m ²
Output	Min Food Production Area
Townhouse	2 m ²

Innovation Overall contribution 0%

1.1 Innovation	0%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

Disclaimer

The Built Environment Sustainability Scorecard (BESS) has been provided for the purpose of information and communication. While we make every effort to ensure that material is accurate and up to date (except where denoted as 'archival'), this material does in no way constitute the provision of professional or specific advice. You should seek professional advice for all other purposes.

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Appendix B – STORM Report



STORM Rating Report

TransactionID: 1463041
 Municipality: HUME
 Rainfall Station: HUME
 Address: 45 Cuthbert Street

Broadmeadows
 VIC 3047

Assessor: The Urban Leaf
 Development Type: Residential - Subdivision
 Allotment Site (m2): 697.00
 STORM Rating %: 104

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
D1 Roof to RWT	192.20	Rainwater Tank	3,500.00	5	121.20	91.00
D2 Roof to RWT	192.20	Rainwater Tank	3,500.00	5	121.20	91.00
D1 Roof - untreated	15.40	None	0.00	0	0.00	0.00
D2 Roof - untreated	15.40	None	0.00	0	0.00	0.00
Driveway 100% - untreated	34.50	None	0.00	0	0.00	0.00

Date Generated: 06-Oct-2022

Program Version: 1.0.0

Disclaimer: A separate Water Sensitive Urban Design (WSUD) report has been prepared to address the Council's stormwater clause requirements. Please refer to the report for further details.

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Appendix C – Stormwater Treatment Maintenance Schedule

Once endorsed, it is the responsibility of the Owner/Owner’s Corporation to ensure that the stormwater treatment assets are maintained as according to the maintenance schedule provided by the manufacturer’s guidelines or the schedule proposed below:

Rainwater Tank

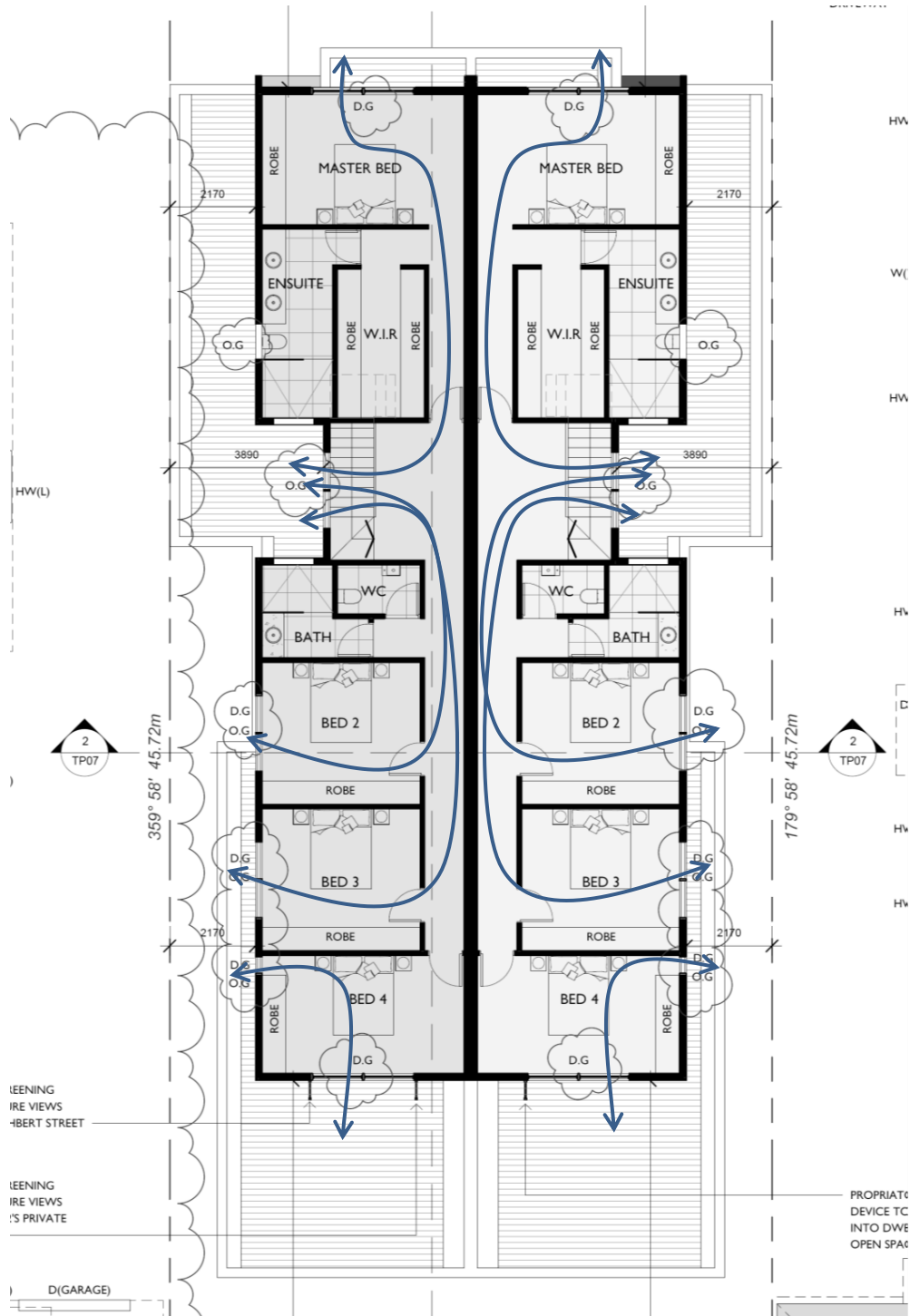
Description	Action	Maintenance Frequency
Gutter guards	<ul style="list-style-type: none"> Inspection & cleaning 	Every 6 months
Leaf diverters	<ul style="list-style-type: none"> Inspection & cleaning 	Every 6 months
First flush diverters	<ul style="list-style-type: none"> Inspection & cleaning 	Every 6 months
Water tank	<ul style="list-style-type: none"> Prune overhanging tree branches and foliage Inspection for defects and repair or replace as required. 	Every 6 months
Water tank	<ul style="list-style-type: none"> Monitoring sediment build-up & cleaning 	1 – 2 years

Permeable Pavement

Description	Action	Maintenance Frequency
Inflow to porous joints and/or permeable pavers	<ul style="list-style-type: none"> Re-profile the surface with hand tools and top up joint and drainage layer material Remove rubbish, leaf litter or sediment 	Every 3 months
Blocked pavement	<ul style="list-style-type: none"> Remove sediment build up by vacuum sweeping or manually sweeping. Once removed, dispose of sediment in nearby grassed areas or garden beds. 	Every 3 months
Soggy and boggy soils	<ul style="list-style-type: none"> Ensure that bedding and drainage layer contain appropriate material and haven’t become blocked by fines. Replace the material as needed. 	Every 3 months
Underdrainage	<ul style="list-style-type: none"> Ensure that the water is flowing in the underdrain following rainfall by lifting pavers and inspect for blockages 	Every 3 months

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Appendix D – BESS IEQ 2.2 Cross Flow Ventilation



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Water Sensitive Urban Design Report

45 Cuthbert Street, Broadmeadows

Revision A

7/10/2022

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Company Profile – The Urban Leaf Pty Ltd

Mission Statement

We are a team of professionals, dedicated to encouraging sustainable design within the building industry and its related businesses.

We provide clients with reports that comprehensively outline, describe and recommend ecological solutions for different stages of the construction process.

Our team's professional and personal growth is fostered within a positive working environment. Our innovative, original thinking works diligently towards ensuring the social, economic and environmental needs of our community are met and enjoyed by future generations.

Company Philosophy

Our philosophy and motivation is simple. We believe everyone has a responsibility to protect the Earth's eco-systems.

By preserving natural resources, we can guarantee that communities will continue to benefit from an uncompromised quality of life.

In addition, conserving natural resources within our lifetime ensures the legacy we leave for future generations is one that advocates respect for our environment as well as for each other.

Our role in assessing and encouraging sustainable design within the building industry is an important one because it supports ecologically-sound practises.

Our work enables us to promote more efficient use of ecological resources and reduce unnecessary environmental impact.

Services

All of our services are connected to our company's philosophy and contribute to supporting a sustainable environment. We pride ourselves on delivering professional, independent, objective appraisals and reports. Any recommendations we make are underpinned by legislative and regulatory compliance.

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1. Project Summary

Introduction:

The Urban Leaf Pty Ltd has been engaged by [REDACTED] to undertake a Water Sensitive Urban Design (WSUD) Report for the proposed development.

Municipality:	Hume City Council
Town Planning Applicant Number:	P24635
Project:	Residential development of 2 townhouses
At:	45 Cuthbert Street, Broadmeadows
Total Site Area:	697m²
Building Class:	1a
Job Reference:	L04

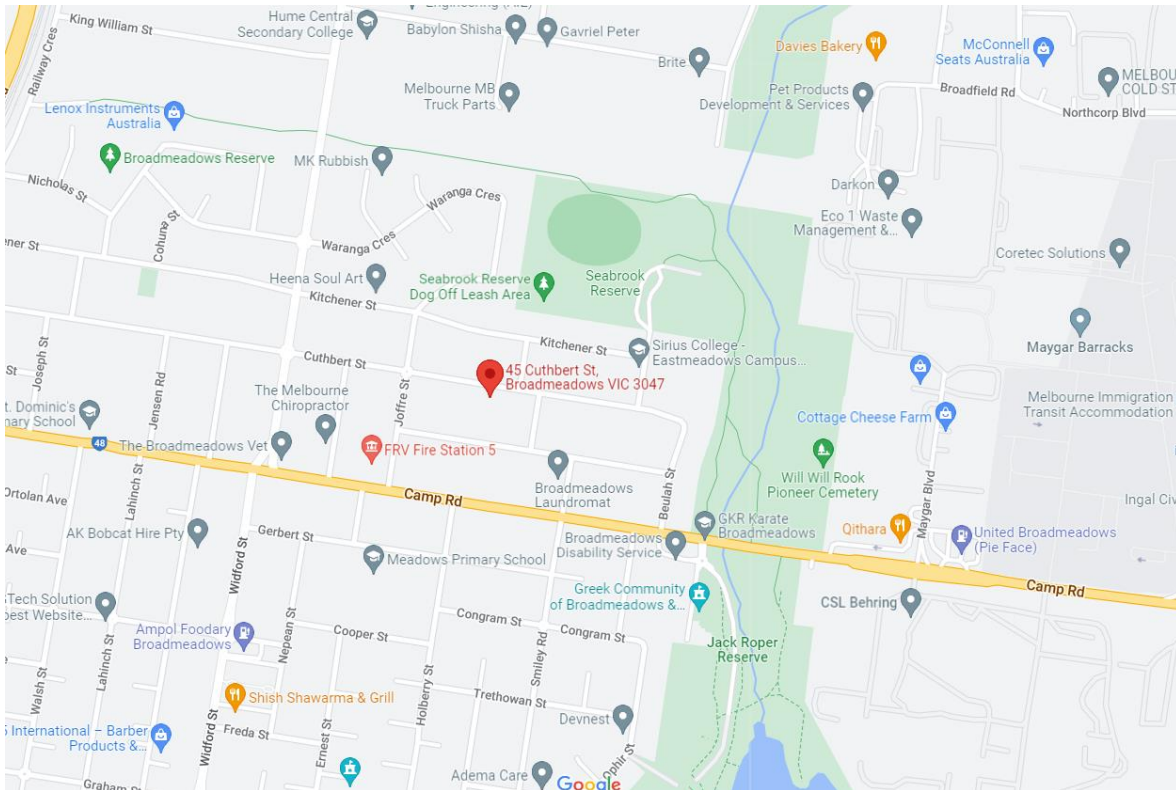


Figure 1: Site Location (source: Google Images)

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Results:

With the proposed stormwater treatment measures incorporated into the development at 45 Cuthbert Street, Broadmeadows; the design will achieve a score of 104% which exceeds the minimum performance standards of the Hume City Council. The proposed development will incorporate an integrated stormwater management system with components listed in Table 1 below.

Table 1: WSUD Asset and design details proposed within the aforementioned development.

<i>WSUD Asset</i>	<i>Size / Area</i>
<i>Rainwater Tank</i>	<i>3500 Litres (D1) 3500 Litres (D2)</i>
<i>Pervious Pavement</i>	<i>Approx. 9.15 m²</i>

All results generated by this report are based on Town Planning Drawings prepared by:

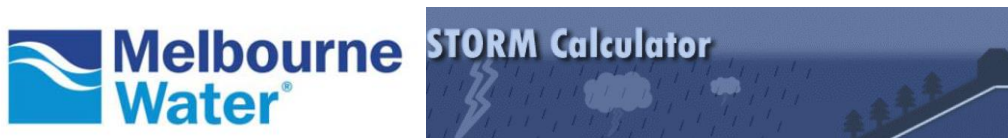
Architecture By Semu, Rev. A, Dated 18.05.2022

Assessment Tool:

All modelling calculations are performed with the STORM calculator.

Melbourne Water has developed the STORM (Stormwater Treatment Objective – Relative Measure) Calculator to analyse the impacts of stormwater quality based on various treatment methods applied to a development.

The STORM Calculator simplifies the analysis of stormwater treatment methods and is designed for the general public to be able to assess simple Water Sensitive Urban Design (WSUD) measures on their property and has been developed specifically for small developments. The STORM Calculator can display the amount of treatment that typical WSUD measures will provide in relation to best practice targets.



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2. Stormwater Management Objectives

The Hume City Council has recognised the importance of stormwater management and the effects on the surrounding environment. As a result, the Council expects all new developments to meet the stormwater management objectives set out for subdivision, building and works and the site management objectives, as outlined by Clause 53.18 within the Hume Planning Scheme.

To meet the stormwater management objectives for subdivision, the stormwater management system should be:

- Designed and managed in accordance with the requirements and to the satisfaction of the relevant drainage authority.
- Designed and managed in accordance with the requirements and to the satisfaction of the water authority where reuse of stormwater is proposed.
- Designed to ensure that flows downstream of the subdivision site are restricted to pre-development levels unless increased flows are approved by the relevant drainage authority and there are no detrimental downstream impacts.
- Design to contribute to cooling, improving local habitat and providing attractive and enjoyable spaces.

The stormwater management system should be integrated with the overall development plan including the street and public open space networks and landscape design.

For all storm events up to and including the 20% Average Exceedance Probability (AEP) standard:

- Stormwater flows should be contained within the drainage system to the requirements of the relevant authority.
- Ponding on roads should not occur for longer than 1 hour after the cessation of rainfall.

For storm events greater than 20% AEP and up to and including 1% AEP standard:

- Provision must be made for the safe and effective passage of stormwater flows.
- All new lots should be free from inundation or to a lesser standard of flood protection where agreed by the relevant floodplain management authority.
- Ensure that streets, footpaths and cycle paths that are subject to flooding meet the safety criteria $v < 0.35 \text{ m}^2/\text{s}$

The design of the local drainage network should:

- Ensure stormwater is retarded to a standard required by the responsible drainage authority.
- Ensure every lot is provided with drainage to a standard acceptable to the relevant drainage authority. Where possible, stormwater should be directed to the front of the lot and discharged into the street drainage system or legal point of discharge.

- Ensure that inlet and outlet structures take into account the effects of obstructions and debris build up. Any surcharge drainage pit should discharge into an overland flow in a safe and predetermined manner.
- Include water sensitive urban design features to manage stormwater in streets and public open space. Where such features are provided, an application must describe maintenance responsibilities, requirements and costs.

Any flood mitigation works must be designed and constructed in accordance with the requirements of the relevant floodplain management authority.

To achieve the objectives set out for buildings and works, the stormwater management system of the development should be designed to:

- To achieve the best practice water quality performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999 (or as amended). Currently, these water quality performance objectives are:
 - Suspended Solids - 80% retention of typical urban annual load
 - Total Nitrogen - 45% retention of typical urban annual load
 - Total Phosphorus - 45% retention of typical urban annual load
 - Litter - 70% reduction of typical urban annual load.
- Minimise the impact of chemical pollutants and other toxicants including by, but not limited to, bunding and covering or roofing of storage, loading and work areas
- Contribute to cooling, improving local habitat and providing attractive and enjoyable spaces.

In order to assess these initiatives, the STORM tool, which is an industry accepted tool, has been used to demonstrate compliance with these initiatives. The results are presented in this report.

Lastly, the development site shall be managed prior to and during the construction period to the requirements contained within Standard W3 which lists the following items to be managed:

- Erosion and sediment.
- Stormwater.
- Litter, concrete and other construction wastes.
- Chemical contamination.

The subsequent sections of the WSUD Report demonstrate the initiatives and measures incorporated to meet the stormwater management objectives set out in the standards.

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3. Stormwater Management Design Response

The following section presents the stormwater management initiatives which will be incorporated within the proposed development.

Please note: The stormwater initiatives presented within this Section are subject to the final drainage design to be prepared by the appointed civil/hydraulic consultants at Working Drawings stage.

Rainwater Tanks (2 x 3,500L Rainwater tank for toilet flushing and laundry connection)

Rainwater tank will capture the stormwater that runs off a portion of the new roofs and store it for re-use within the dwelling primarily for toilet flushing. This shall effectively reduce the actual volume of water leaving the site.

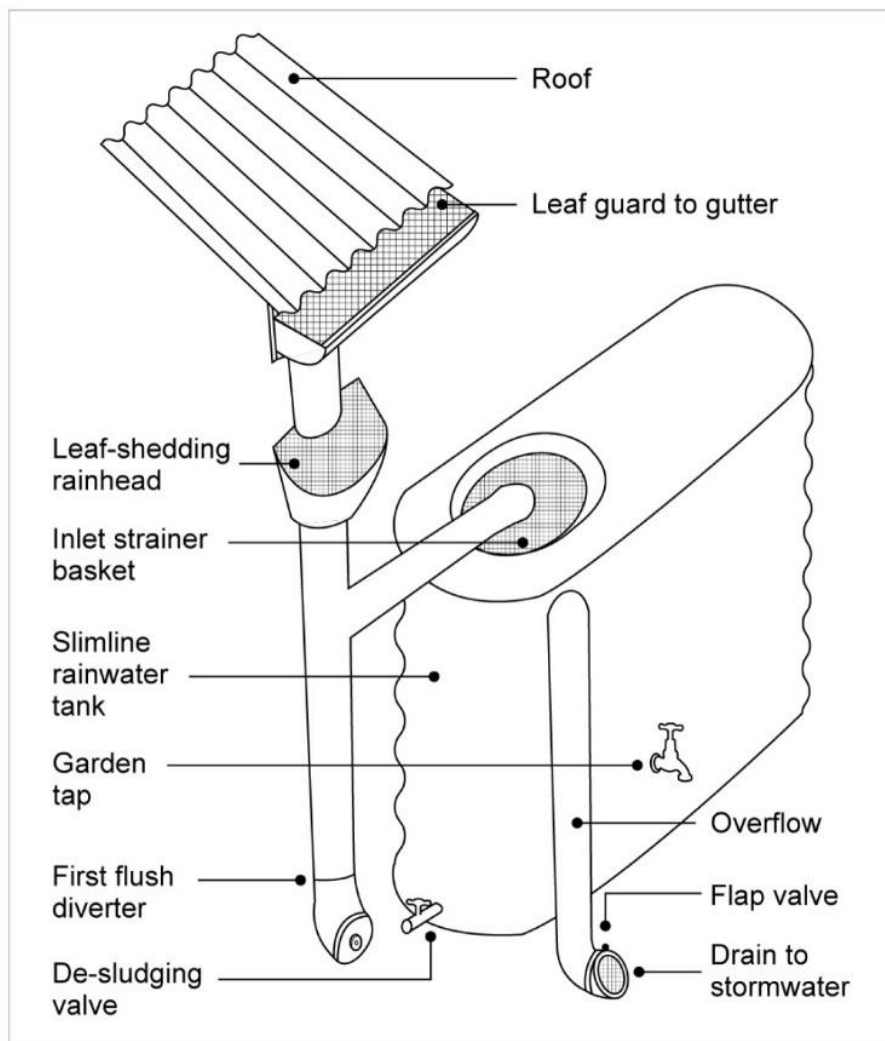


Figure 2: Typical detail of a rainwater tank (Source: yourhome.gov.au)

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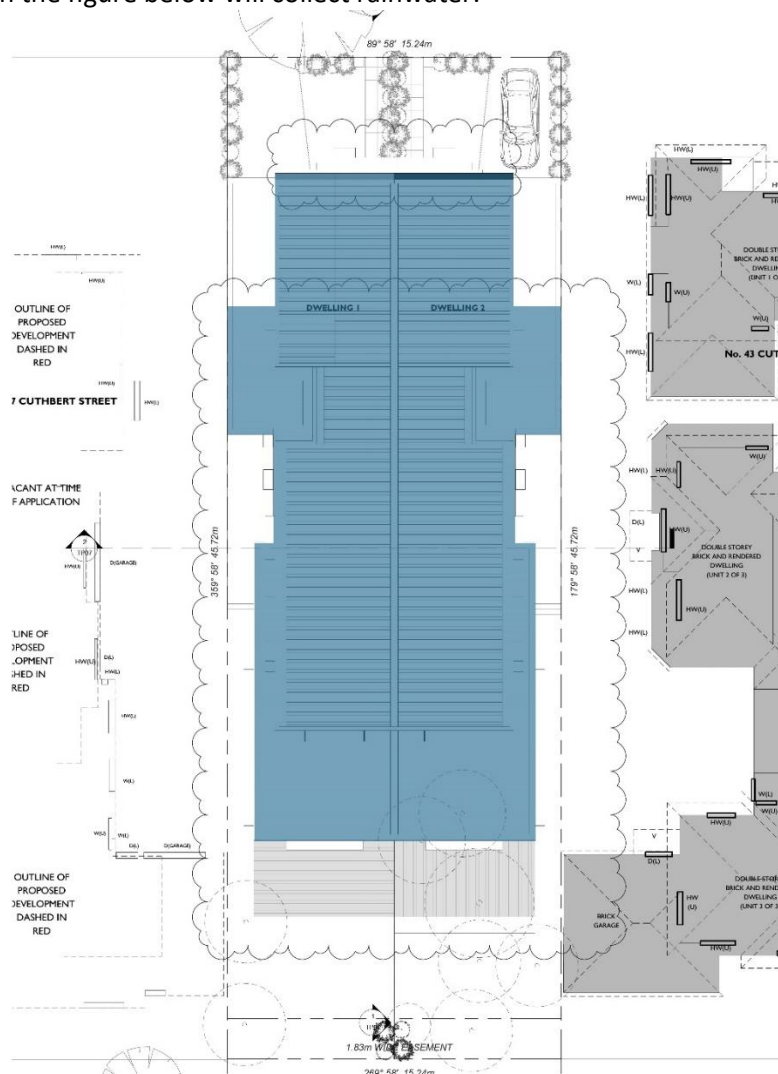
Approximately 384.4m² of D1 and D2 roof areas will be used to collect rainwater. It will be diverted to 2 x 3,500L rainwater tank located within each dwelling's private open space, respectively.

- Approximately 192.2m² of D1's roof areas are to be connected to a minimum of 3500L rainwater tank for toilet flushing purposes and laundry connection.
- Approximately 192.2m² of D2's roof areas are to be connected to a minimum of 3500L rainwater tank for toilet flushing purposes and laundry connection.

The total storage capacity of the site will be 7000L. **The rainwater tank shall be connected to all new toilets and the laundry.**

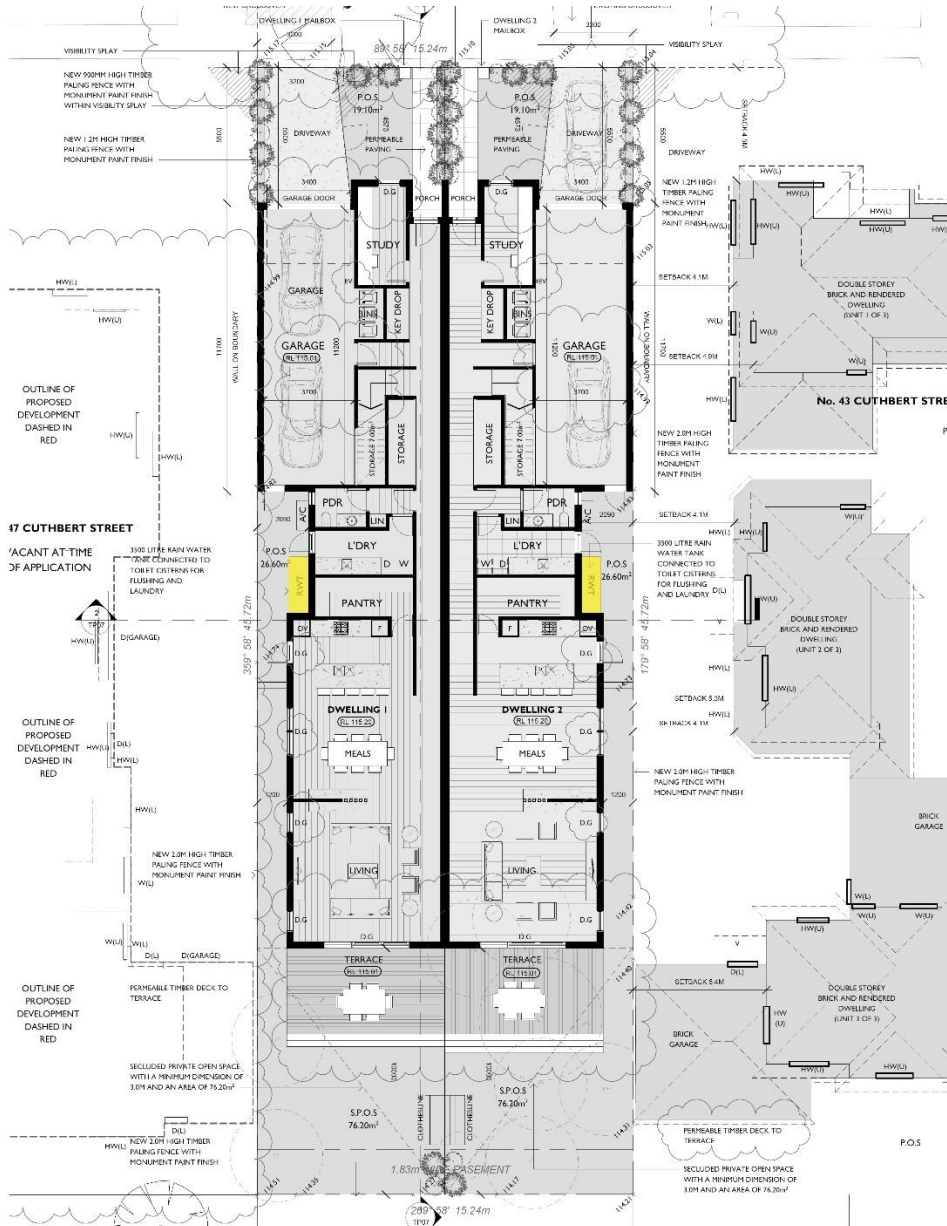
It must be further clarified that the specified capacity of the rainwater tank is exclusive for reuse within the development – any detention requirement is additional. No charged piping system shall travel underneath dwellings' footings or slabs.

The blue areas in the figure below will collect rainwater:



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The proposed location of 2 x 3,500L rainwater tanks is highlighted yellow in the figure below:



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Permeable Pavements

Permeable paving can be used to replace conventional impermeable surfaces to help reducing surface run-off by allowing water to percolate through a sub-surface course where it infiltrates into the ground or is filtered back to the drainage system.

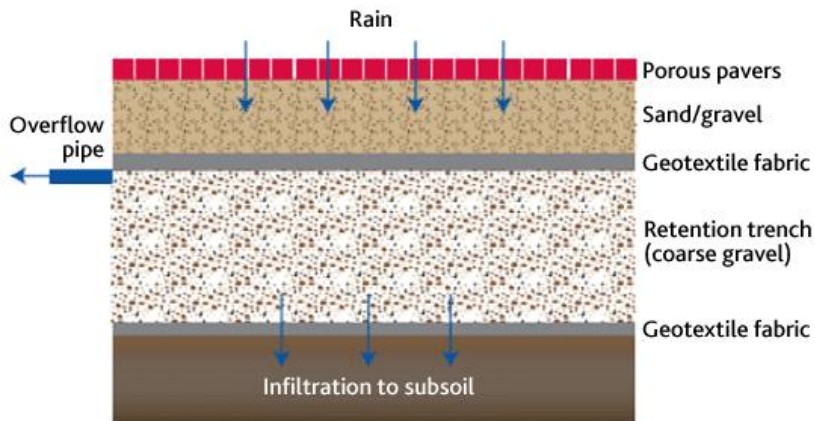
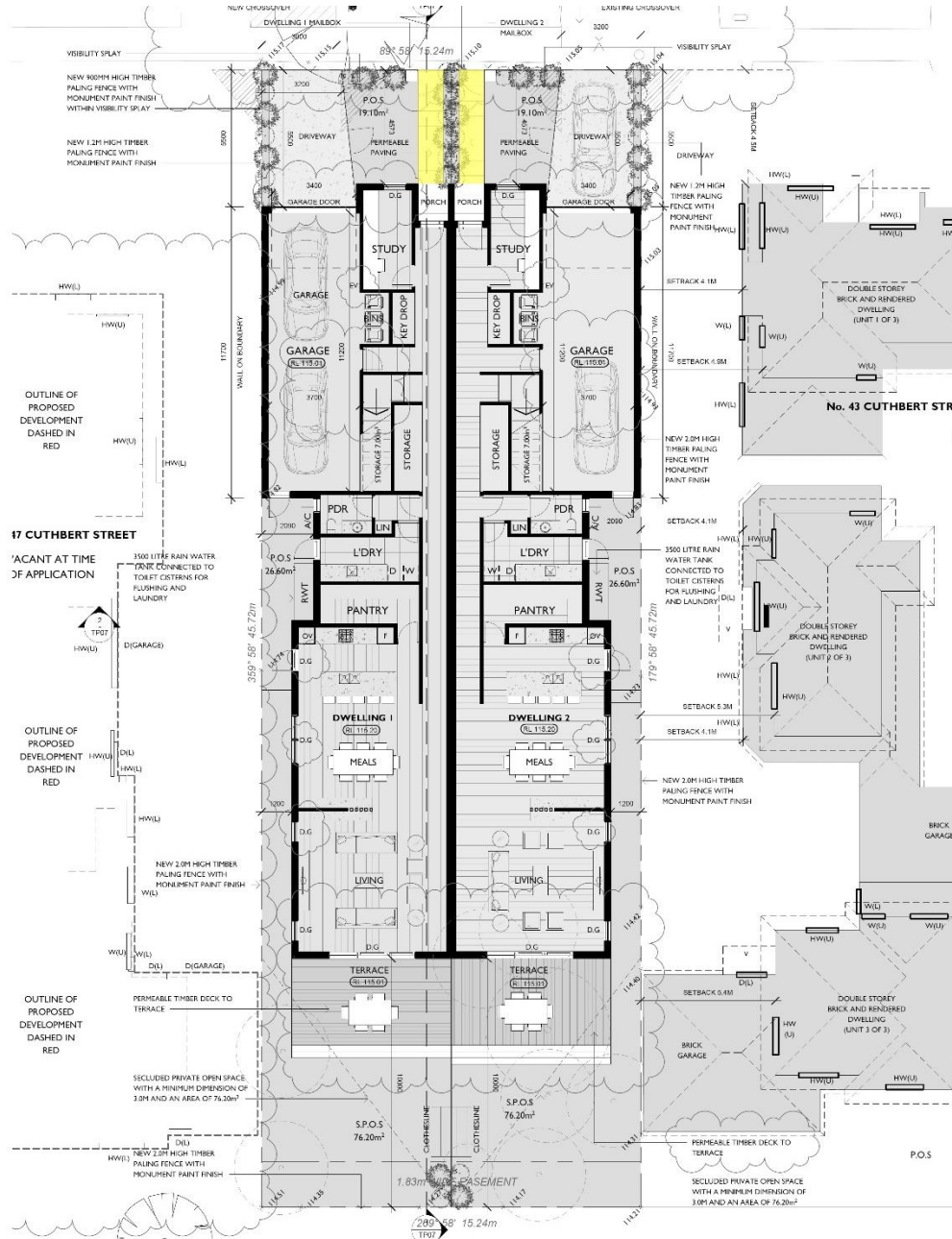


Figure 3: Typical cross-section of a permeable paver system

The stormwater management benefits of permeable paving include reducing peak stormwater discharges, increase groundwater recharge, improve stormwater quality and reduce the area of land dedicated to stormwater management.

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The proposed permeable paving is highlighted in yellow below:



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4. Melbourne Water STORM Assessment

The STORM calculator requires every impervious surface including treated and untreated surfaces and the respective treatments to be applied in the calculation to determine the performance of treatment measures relative to the percentage of the best practice targets achieved by the proposed measures. The figure below illustrates the breakdown of the collection areas and its proposed treatment method.

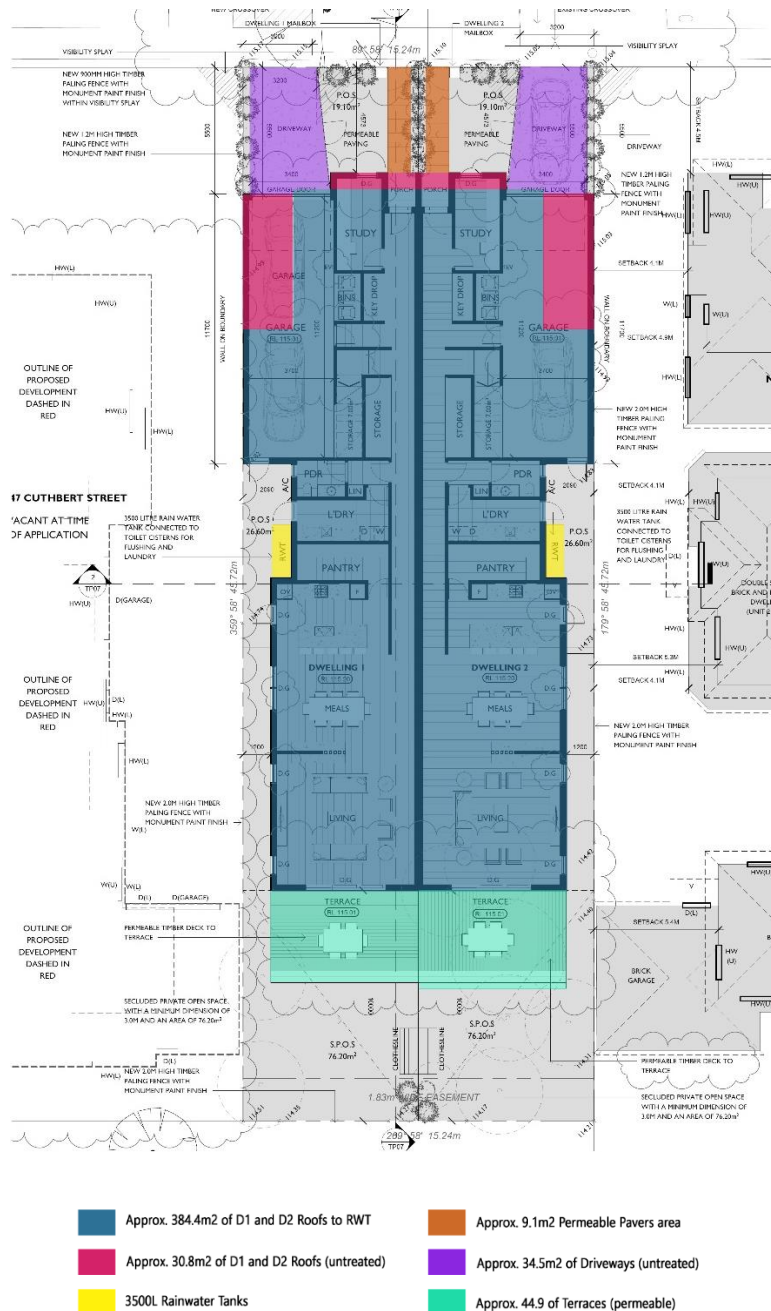



Figure 3: Stormwater Diagram

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As a result, the development has achieved a score of 104%, which means the development has exceeded the best practice objectives. The result of STORM assessment is copied below.


STORM Rating Report

TransactionID: 1463041
 Municipality: HUME
 Rainfall Station: HUME
 Address: 45 Cuthbert Street

 Broadmeadows
 VIC 3047
 Assessor: The Urban Leaf
 Development Type: Residential - Subdivision
 Allotment Site (m2): 697.00
 STORM Rating %: 104

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
D1 Roof to RWT	192.20	Rainwater Tank	3,500.00	5	121.20	91.00
D2 Roof to RWT	192.20	Rainwater Tank	3,500.00	5	121.20	91.00
D1 Roof - untreated	15.40	None	0.00	0	0.00	0.00
D2 Roof - untreated	15.40	None	0.00	0	0.00	0.00
Driveway 100% - untreated	34.50	None	0.00	0	0.00	0.00

Date Generated: 06-Oct-2022

Program Version: 1.0.0

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5. Stormwater Treatment Maintenance Schedule

Once endorsed, it is the responsibility of the homeowners to ensure that the stormwater treatment assets are maintained as according to the maintenance schedule provided by the manufacturer’s guidelines or the schedule proposed below:

Rainwater Tank

Description	Action	Maintenance Frequency
Gutter guards	<ul style="list-style-type: none"> • Inspection & cleaning 	Every 6 months
Leaf diverters	<ul style="list-style-type: none"> • Inspection & cleaning 	Every 6 months
First flush diverters	<ul style="list-style-type: none"> • Inspection & cleaning 	Every 6 months
Water tank	<ul style="list-style-type: none"> • Prune overhanging tree branches and foliage • Inspection for defects and repair or replace as required. 	Every 6 months
Water tank	<ul style="list-style-type: none"> • Monitoring sediment build-up & cleaning 	1 – 2 years

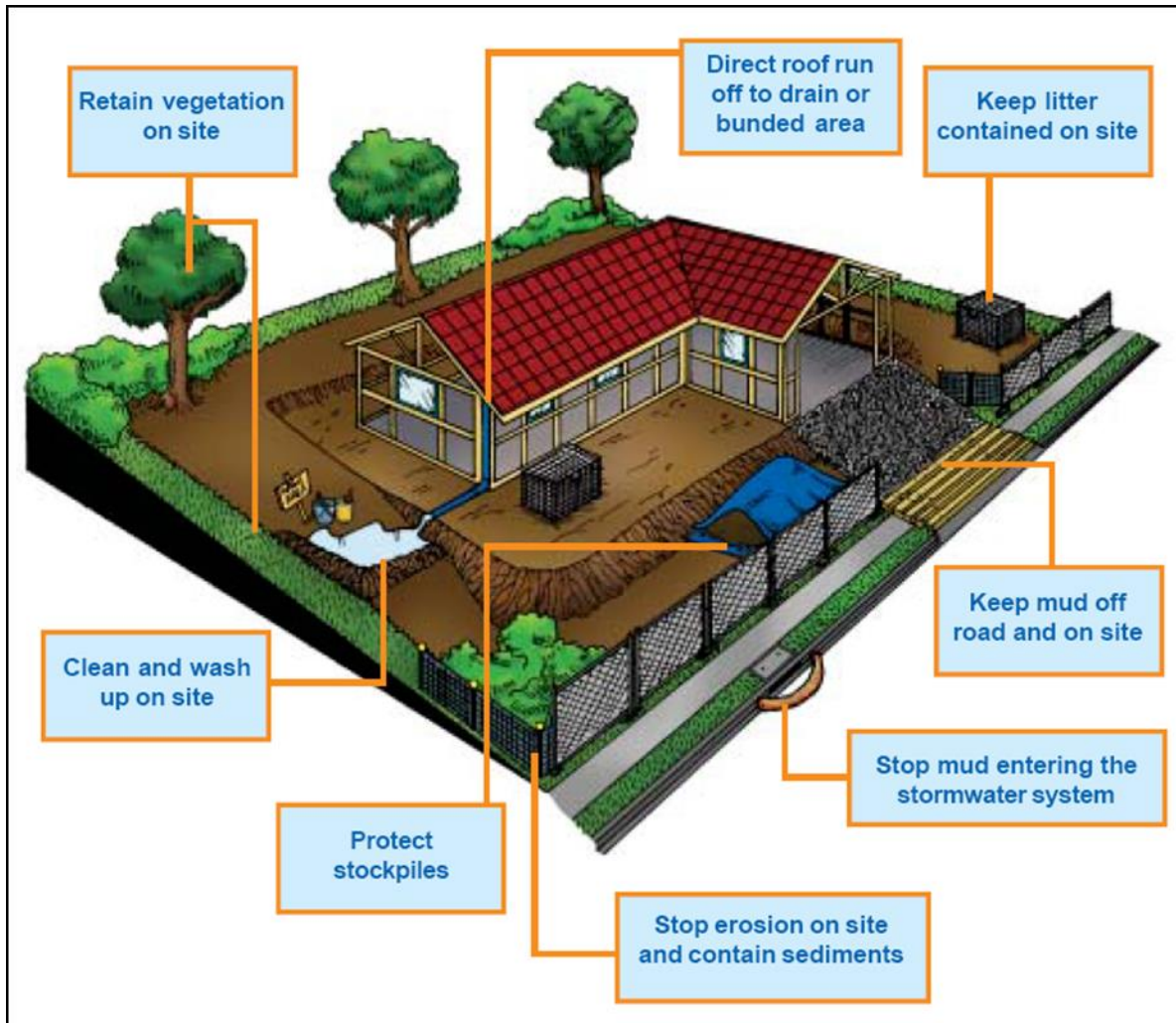
Permeable Pavement

Description	Action	Maintenance Frequency
Inflow to porous joints and/or permeable pavers	<ul style="list-style-type: none"> • Re-profile the surface with hand tools and top up joint and drainage layer material • Remove rubbish, leaf litter or sediment 	Every 3 months
Blocked pavement	<ul style="list-style-type: none"> • Remove sediment build up by vacuum sweeping or manually sweeping. Once removed, dispose of sediment in nearby grassed areas or garden beds. 	Every 3 months
Soggy and boggy soils	<ul style="list-style-type: none"> • Ensure that bedding and drainage layer contain appropriate material and haven’t become blocked by fines. Replace the material as needed. 	Every 3 months
Underdrainage	<ul style="list-style-type: none"> • Ensure that the water is flowing in the underdrain following rainfall by lifting pavers and inspect for blockages 	Every 3 months

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6. Stormwater Management at Construction Site

To manage stormwater management during the construction stage, measures will be put in place to minimise the likelihood of contaminating stormwater. This will mean ensuring buffer strips are in place, sediment traps are installed, and the site will be kept clean from any loose rubbish. The builder will follow the process outlined in “Keeping Our Stormwater Clean – A Builder’s Guide” by Melbourne Water.



Copies of “Keeping Our Stormwater Clean – A Builder’s Guide” booklet can be obtained from Melbourne Water by ringing on 131 722 or can be downloaded from the following website.

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7. Conclusion

With the proposed stormwater treatment measures incorporated into the development at 45 Cuthbert Street, Broadmeadows; the design will achieve a score of 104% which exceeds the minimum performance standards of the Hume City Council. The proposed development will incorporate 2 x 3500L rainwater tanks connected to toilets and laundry as well as permeable pavements to act as the recognised Water Sensitive Urban Design initiative which is used to calculate the STORM score.

The builder will also be required to adhere to Melbourne Water's stormwater management guidelines during the construction stage.

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Note: ESD initiatives involving major design features must be shown on the endorsed plan or included in a schedule to the plan.

Disclaimer: This report contains guidelines and recommendations to assist the specified project meet ESD requirements. It is the responsibility of the owner/builder to follow up on our assessments in order to meet these requirements. It is not the responsibility of The Urban Leaf Pty Ltd.

A L2, 433-435 South Road, Bentleigh VIC 3204
T 03 8899 6149
F 03 9555 4576
E energy@tul.net.au

Appendix 1: WSUD Detailed Design

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Rainwater Tanks



Stormwater Sensitive Homes

How does a rainwater tank help protect our local streams?

Most people install a rainwater tank primarily to harvest stormwater from their roof and conserve their mains water use. In addition to conserving water, a rainwater tank also helps treat stormwater and protect local streams from high storm flows by reducing the volume of stormwater and quantity of pollutants coming from a house block that would otherwise be delivered to the local stream.

What do I use my tank water for?

Garden irrigation, laundry and toilet flushing consume much of our home water use. In most cases these uses do not require the water to be of drinking quality standard that is provided by mains water. By plumbing your rainwater tank to your toilet or laundry and substituting these mains water needs with the rainwater harvested from your roof, you can conserve mains water whilst reducing the amount of stormwater that enters our streams.



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A typical home uses approximately 250,000 litres of water each year.



Polyethylene tanks

- above & below ground
- many shapes & colours

Fibreglass tanks

- above & below ground
- many shapes & colours

Metal tanks

- above & below ground
- selected colours
- traditional corrugated/straight rolled.

Bladder tanks

- many shapes and sizes
- can be concealed under a house, garage or deck with limited space

Why can't I use my rainwater tank for my garden alone?

So that your tank is not too full to collect rainwater when it rains, you need to be consistently using your tank water all year round.

If tank water is used for your garden alone, your tank will remain full and unused during the winter months when your garden does not require watering. With a full tank, your capacity to capture and store the regular winter rainfall and thus benefit the local waterway is significantly reduced.

By plumbing your rainwater tank to your toilet or laundry, your tank water is used consistently all year round allowing rainfall to refill the tank more often especially in winter. This ultimately reduces the volume of stormwater that is delivered to the stream and the quantity of pollutants that are washed with it.

The Victorian Government has recognised the importance of plumbing your tank to your toilet and offers a cash rebate for the installation of connected rainwater tanks (www.dse.vic.gov.au). In addition, a 5 star energy standard has been introduced that requires a connected 2000Lt rainwater tank or solar hot water service to be installed in all new houses and apartments (class 1 and 2 buildings). (www.buildingcommission.com.au).

How do I choose a rainwater tank?

The most important thing to consider when choosing a rainwater tank is to first identify what you want from your rainwater tank. The size and type of rainwater tank you choose will vary depending on your homes water needs and the reliability you seek from your rainwater tank supply. There are a number of factors that may influence this and the following questions should be considered when planning your tank installation:

- what is the water demand of your home?
- how many people are living in your home?
- what is your intended use of rainwater?
- what reliability do you want from your tank?
- what is the total area of roof draining into your tank?
- what is average rainfall of your area?
- do you need extras like a pressure pump, the ability to top up your tank with drinking water, a backflow prevention device or a first flush device?
- are the materials used on your roof suitable to collect rainwater?
- are there physical constraints of your property that may influence the type of rainwater tank you need?

Once you know how much water you can collect and how much water you are going to use then a tank size can be selected to provide the reliability of water supply that you need.

Types of rainwater tanks

Rainwater tanks come in a variety of materials, shapes and sizes and can be incorporated into building design so they don't impact on the aesthetics of the development. They can be located above ground, underground, under the house or can even be incorporated into fences or walls.

There are three main tank systems to consider and a variety of materials to choose from. Features of these are outlined below and in the pictures above:

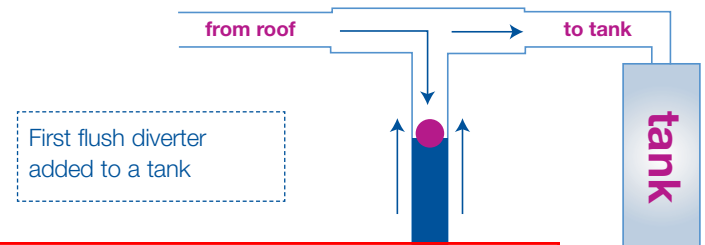
Tank systems:

Gravity Systems - rely on gravity to supply rainwater to the household and the garden by placing the tank on a stand at height.

Dual Supply Systems - top your rainwater tank with mains water when tank level is low ensuring reliable water supply.

Pressure Systems - use a pump to deliver rainwater to household and garden fixtures.

To reduce the amount of sediment and debris entering a tank, mesh screens and 'first flush diverters' can be fitted. A screen will filter large debris such as leaves and sticks while 'first flush diverters' store the 'first flush' of the rainfall that carries the sediment and other pollutants initially washed from your roof (see figure below).



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Costs & rebates
Costs of installing a tank vary however a standard 2000Lt tank or bladder will cost around \$1000. Additional plumbing and excavation costs vary on intended use, pipe layout, materials and site accessibility.

- Above ground tanks cost approximately \$250 for a 500 litre tank.
- Below ground tanks cost between \$300-\$600 per 1000 litres of storage
- The costs of pumps start from \$200.

Additional plumbing and/or excavation costs vary on intended use, pipe layout, materials and site accessibility.

The Victorian Government offers a total rebate of \$300 for the installation of a rainwater tank that is plumbed to toilet and connected by a licensed plumber. For further details refer to the Department of Sustainability and Environment website www.dse.vic.gov.au.

For more information:

Melbourne Water's Water Sensitive Urban Design Website: www.wsud.melbournewater.com.au

Municipal Association of Victoria Clearwater Program: www.clearwater.asn.au

Water Sensitive Urban Design in the Sydney Region: www.wsud.org

Urban Stormwater Best Practice Environmental Management Guidelines, Victorian Stormwater Committee, CSIRO publishing, 1999.

WSUD Engineering Procedures: Stormwater, Melbourne Water, 2005.

Delivering Water Sensitive Urban Design: Final Report of Clean Stormwater – a planning framework, ABM, 2004.

Porous paving

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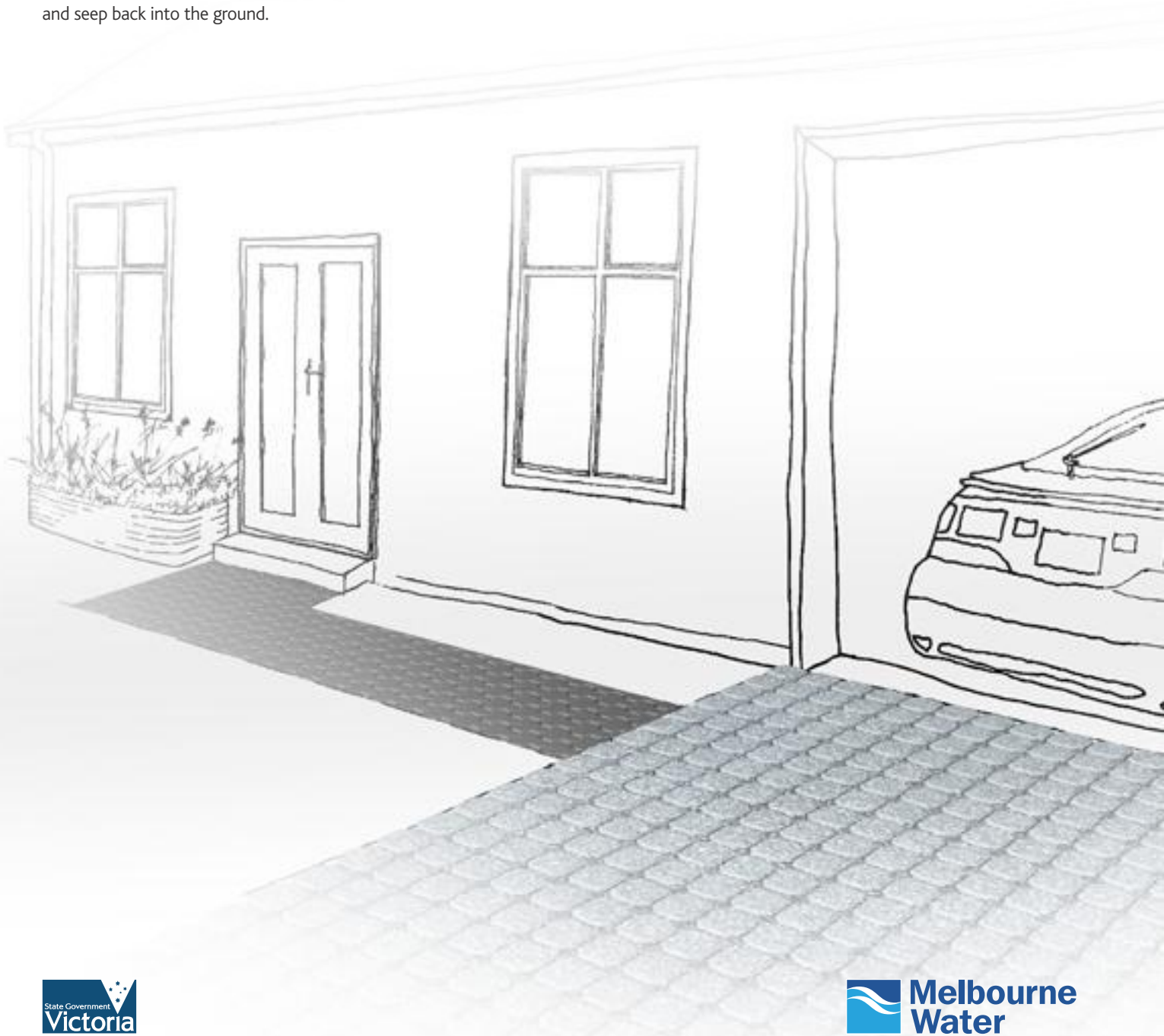
What is porous paving?

Installing porous paving instead of concrete or standard paving is a simple way to help the environment and the health of our local waterways.

Porous paving is designed to allow water to soak through the paving and seep back into the ground.

This not only reduces the volume of stormwater run off and pollutants entering our rivers and creeks, but also benefits nearby plants and trees by allowing both air and water to reach the root zone underneath the paved area.

Did you know you can build different types of raingardens? For more information visit melbournewater.com.au/raingardens



Different types of porous paving

Before installing porous paving in a driveway, path or patio area, you need to decide which type to install – **loose gravel, structural gravel or grass, masonry pavers or engineered pavers.**

Things to consider when selecting a paving system include traffic type (vehicle or pedestrian) and frequency, existing soil type, location, aesthetic preference and cost.

Note: A number of porous paving systems are available from different manufacturers and installation methods will vary. While this instruction sheet provides a general overview of the installation process, it is important to follow the manufacturer's specifications.

Location

If the paved area slopes towards the house, a pit or strip drain connected to existing stormwater may be required to remove excess water during heavy rainfall. However, paths and driveways with a gradient greater than 5% (1:20) may not be suitable for porous paving.

Traffic type

The table below provides an overview of the suitability of the various porous paving options in terms of traffic type and frequency.

Soil type

Porous paving is most effective when installed in sandy areas where rainwater can easily drain away from the soil.

If you are planning to install porous paving in an area with heavy clay soil or poor drainage, additional sub surface drainage may be needed.

Underground services

Be aware of any underground services (gas, electricity, water) before excavating the pavement area. Porous paving should not be built over or in close proximity to a septic system.

What's the difference between masonry and engineered pavers?

Masonry pavers allow water to pass through porous sand or gravel filled joints between each paver, while an engineered paver is designed to let water pass through the paver itself.

Handy hint – Impervious surfaces such as pavements, driveways and footpaths are a major source of stormwater runoff. Replacing these hard surfaces with permeable paving helps the environment by reducing the amount stormwater that flows into our rivers and creeks.

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LOOSE GRAVEL

* Note on timber edging

Timber edging is commonly used to contain surfaces that might be subject to movement. When the porous paving surface adjoins an existing hard surface (i.e. concrete or asphalt), no timber edge is required. However, if the porous paving surface is next to an existing lawn or garden, it may be beneficial to install timber edging to keep the material in place.



STRUCTURAL GRAVEL



STRUCTURAL GRASS

POROUS PAVING TYPE	VEHICLE		PEDESTRIAN	
	HIGH USE	LOW USE	HIGH USE	LOW USE
GRAVEL PAVING	×	□	□	□□
STRUCTURAL PAVING (GRAVEL)	□	□□	□□	□□
STRUCTURAL PAVING (GRASS)	×	□	□	□□
MASONRY PAVER	×	□	□□	□□
ENGINEERED PAVER	×	□	□□	□□

□□ = most suitable □ = suitable × = not recommended



MASONRY PAVERS



ENGINEERED PAVERS

Loose gravel

A pavement or path constructed of loose gravel is the cheapest and easiest way to create porous paving. Traditional gravel paving is designed to drain water away from the surface and direct it to a stormwater pit. However, loose gravel "porous" paving is built to allow rainfall to permeate through the gravel and infiltrate back into the ground.

Note: Loose gravel paving is not suitable for wheelchair use or high frequency / heavy vehicle traffic. It is also not recommended for steep sites or areas prone to flooding.

Constructing porous paving using loose gravel

- › Mark out the area to be paved and determine the quantity of materials required. Refer to Materials List (right).
- › Excavate the area to a depth of 250mm.
- › If any section of the excavated area seems softer than other areas, dig out the "soft" section and fill it with 5-7mm screenings (a type of gravel rock).
- › Where required, use timber edging to stabilise the sides of the excavated area and keep the top gravel layer in place.
- › Place free draining 5-7mm screenings across the base of the excavated area to a minimum depth of 150mm, and lightly compact the screenings to create a stable base.
- › Add your chosen gravel or pebble mix on top of the screenings layer to a depth of 100mm. Ensure that the mix is clean and free of fines. Rake the gravel/pebble mix to ensure an even surface and lightly compact to complete the installation process.

Materials List – what you need for loose gravel paving

The following table details the materials required per m² of paving. While item cost prices will vary depending on the materials selected, loose gravel paving is likely to cost around \$10-15 per m².

MATERIAL	QUANTITY FOR 1M ² PAVED AREA
5 - 7mm SCREENINGS	0.15m ³
LOOSE GRAVEL OR PEBBLE MIX	0.1m ³
TIMBER EDGING*	4 X 1m

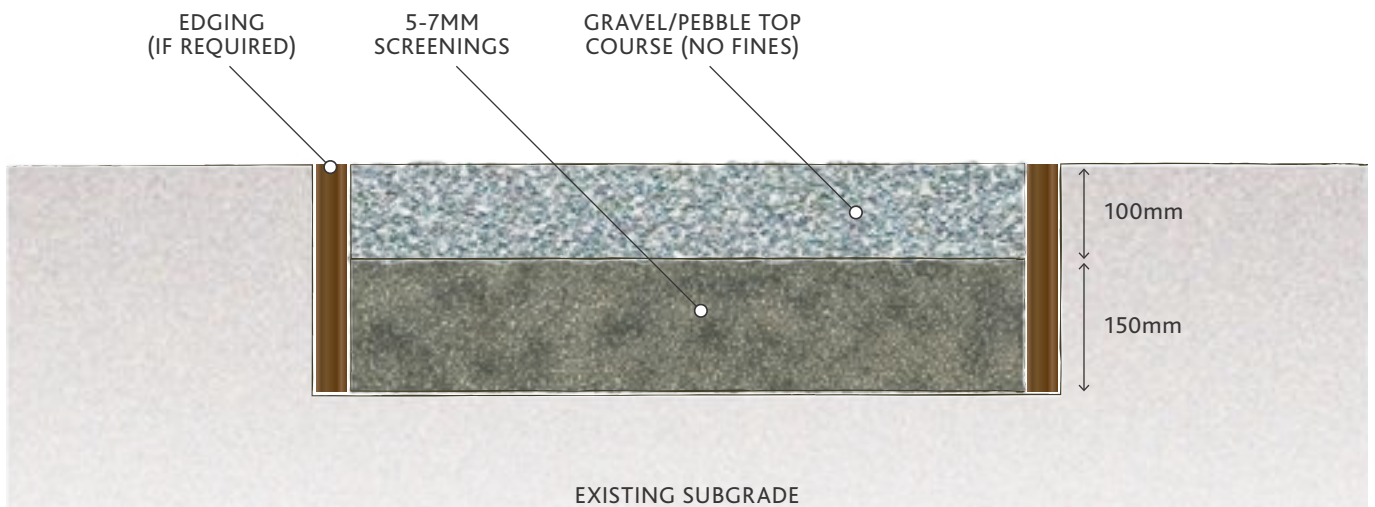
mm = millimetres
m² = square metres
m³ = cubic metres

**Refer to note on timber edging – page 2*

Note: Products such as granitic gravel are not suitable in this instance as it has the capacity to compact to a hard surface and is not free draining.

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CROSS SECTION OF LOOSE GRAVEL POROUS PAVING



Structural gravel or grass

A number of systems can be used to add structural strength to porous gravel or grass surfaces which allow them to take a heavier traffic load, while retaining the ability to soak up rainwater. Some systems are even robust enough to cope with heavy vehicle traffic. When maintained correctly, lawn covered porous surfaces are indistinguishable from a regular lawn. However, because the surface is free draining, it may require some water to maintain the grass quality in drier months.

Note: If vehicles are left parked on a structural grass surface for an extended period, the grass may die off.



GRASS PAVING

Constructing porous paving using structural gravel or grass

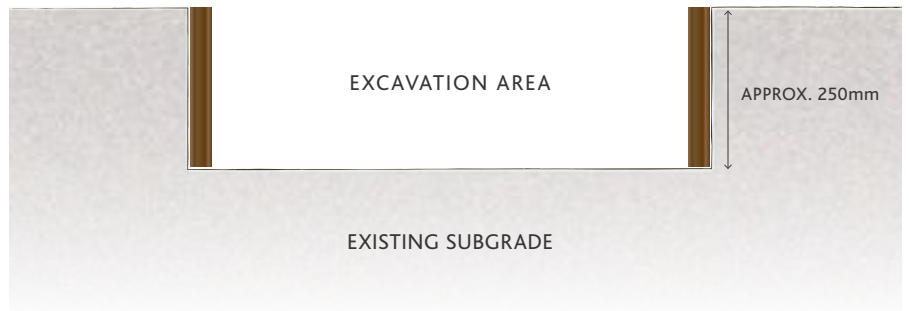
Step 1

- › Mark out the area to be paved and determine the quantity of materials required. Refer to Materials List (next page).
- › Excavate the area to a depth of 250mm.
- › If any section of the excavated area seems softer than other areas, dig out the “soft” section and fill it with 5-7mm screenings.
- › Where required, use timber edging to stabilise the sides of the excavated area and keep the top gravel layer in place.

Step 2

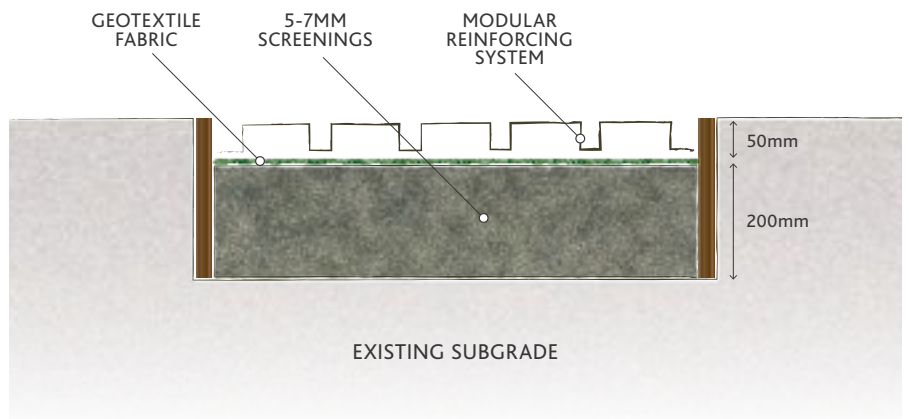
- › Place free draining 5-7mm screenings across the base of the excavated area to a minimum depth of 200mm, and lightly compact the screenings to create a stable base.
- › Roll out geotextile fabric to cover the base of the excavated area.
- › Install the modular reinforcing system (a type of plastic cell to hold structure) following the manufacturer’s instructions.
- › To complete the construction process, follow the instructions on the next page for either gravel or grass paving.

STEP 1



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STEP 2



For gravel paving

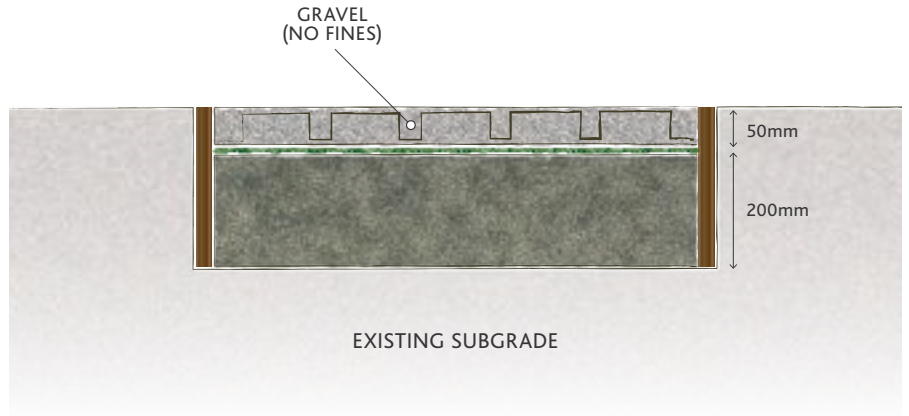
Fill and cover the modular system with 3-5mm gravel. Ensure that the gravel is clean and free of fines. Rake the gravel layer to create an even cover and lightly compact to complete the installation process.

For grass paving

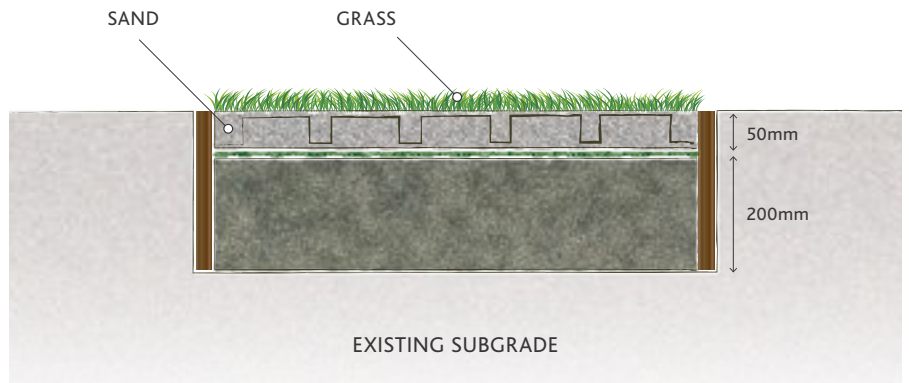
Fill and cover the modular system with course sand and rake to create an even surface. Lay the grass (turf) on top of the sand and flatten it to eliminate air pockets, ensuring good grass root contact with the course sand. Keep the lawn watered and traffic free until established. To avoid any damage to the modular system – never aerate the lawn.

Note: Hydro-mulching/direct seeding may be suitable for some systems and provide a cheaper alternative to turfing. This process requires a higher level of maintenance during the establishment period and needs to be protected from traffic during this time.

GRAVEL PAVING (step 3)



GRASS PAVING (step 3)



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Materials List – what you need for structural gravel & structural grass paving

The following tables detail the materials required per m² of paving. While item cost prices will vary depending on the materials selected, reinforced gravel paving is likely to cost around \$40- 50 per m² while reinforced grass may cost around \$50-60 per m².

GRAVEL

MATERIAL	QUANTITY FOR 1M ² PAVED AREA
5- 7mm SCREENINGS	0.2m ³
GEOTEXTILE FABRIC	1m ²
MODULAR REINFORCING UNIT (PLASTIC CELLS)	1m ²
3-5MM GRAVEL	0.1m ³
TIMBER EDGING*	4 x 1m

mm = millimetres
 m² = square metres
 m³ = cubic metres

GRASS

MATERIAL	QUANTITY FOR 1M ² PAVED AREA
5- 7mm SCREENINGS	0.2m ³
GEOTEXTILE FABRIC	1m ²
MODULAR REINFORCING UNIT (PLASTIC CELLS)	1m ²
COURSE SAND (WHITE WASHED)	0.1m ³
INSTANT TURF	1m ²
TIMBER EDGING*	4 x 1m

*Refer to note on timber edging – page 2

Masonry pavers

Special masonry pavers can be used to create porous paving. The pavers allow water to pass through highly pervious gravel or sand filled joints between the pavers and infiltrate back into the ground below the paved area. Several products are available which all vary slightly in design and function. Speak to your local garden specialist for more information.

Constructing porous paving using masonry pavers

Step 1

- › Mark out the area to be paved and determine the quantity of materials required. Refer to Materials List (below).
- › Excavate the area to a depth of 300mm.
- › If any section of the excavated area seems softer than other areas, dig out the "soft" section and fill it with 5-7mm screenings.
- › Where required, use timber edging to stabilise the sides of the excavated area and keep the top gravel layer in place.
- › Place 5-7mm screenings across the base of the excavated area to a minimum depth of 200mm, and compact the screenings to create a stable base.
- › Roll out geotextile fabric to cover the base of the excavated area.

Step 2

- › Place a layer of course sand over the geotextile fabric to a depth of 50mm and compact to ensure an even bed for the pavers.
- › Lay the masonry pavers following the manufacturer's instructions.
- › Sweep 3-5mm screenings over the pavers to fill the voids and complete the installation process.

Materials List – what you need for masonry paving

The following table details the materials required per m² of paving. While item cost prices will vary depending on the materials selected, porous masonry paving is likely to cost around \$60-80 per m².

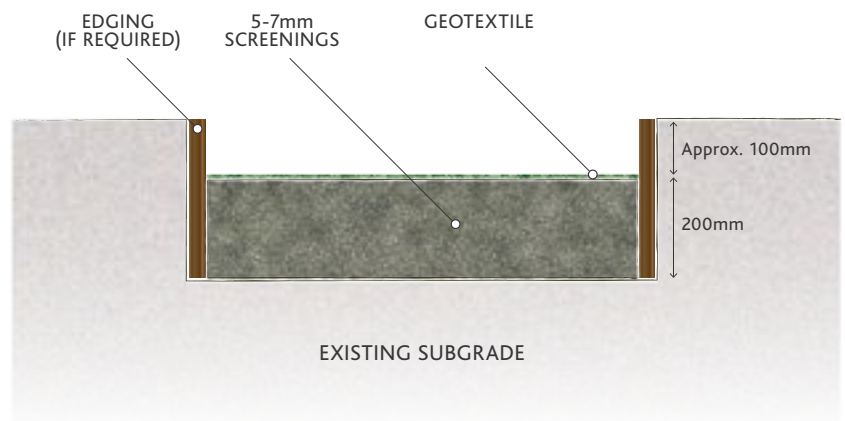
MATERIAL	QUANTITY FOR 1M ² PAVED AREA
5-7mm SCREENINGS	0.2m ³
GEOTEXTILE FABRIC	1m ²
MASONRY PAVERS	1m ²
COURSE SAND (WHITE WASHED)	0.05m ³
3-5MM SCREENINGS	0.02m ³

(NOTE – SCREENINGS TYPE AND SIZE MAY VARY DEPENDING ON THE PAVING SYSTEM SELECTED.)

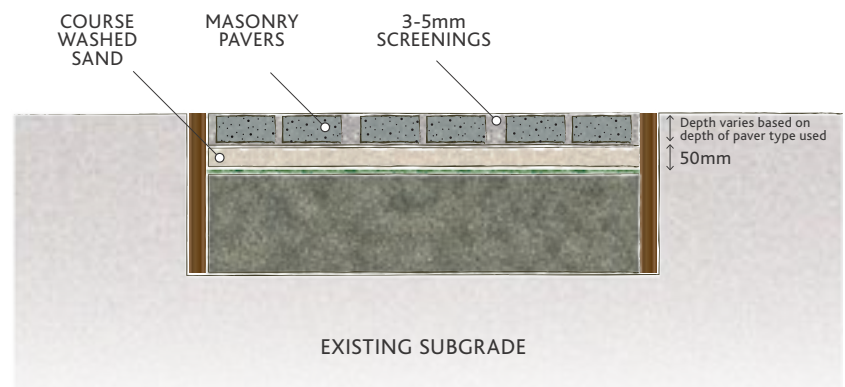


MASONRY PAVERS

STEP 1



STEP 2



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Engineered pavers

Engineered paving stones are designed to allow water to pass through the paver itself. With a range of products on the market, price, design and how porous the paver is should all be considered when selecting the paver type.

Constructing porous paving using engineered paver

Step 1

- › Mark out the area to be paved and determine the quantity of materials required. Refer to Materials List (below).
- › Excavate the paving area to a depth of 300mm.
- › If any section of the excavated area seems softer than other areas, dig out the "soft" section and fill it with 5-7mm screenings.
- › Where required, use timber edging to stabilise the sides of the excavated area and keep the top gravel layer in place.
- › Place 5-7mm screenings across the base of the excavated area to a minimum depth of 200mm, and compact the screenings to create a stable base.
- › Roll out geotextile fabric to cover the base of the excavated area.

Step 2

- › Place a layer of 3-5mm screenings to a depth of 50mm over the geotextile fabric and compact.
- › Lay the engineered pavers following the manufacturer's instructions.

Materials List – what you need for engineered pavers

The following table details the materials required per m² of paving. While item cost prices will vary depending on the materials selected, porous engineered paving is likely to cost around \$100-120 per m².

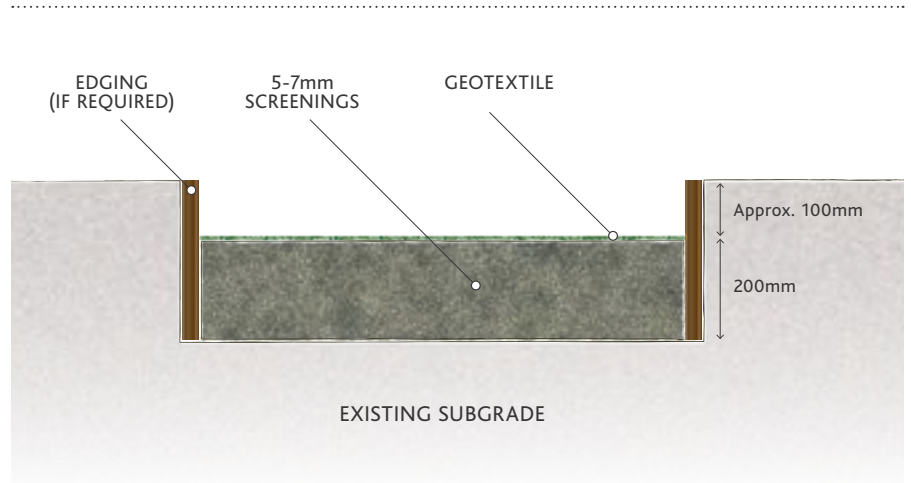
MATERIAL	QUANTITY FOR 1M ² PAVED AREA
5-7mm SCREENINGS	0.2m ³
GEOTEXTILE FABRIC	1m ²
3-5MM SCREENINGS	0.05m ³
ENGINEERED PAVERS	1m ²

mm = millimetres
 m² = square metres
 m³ = cubic metres

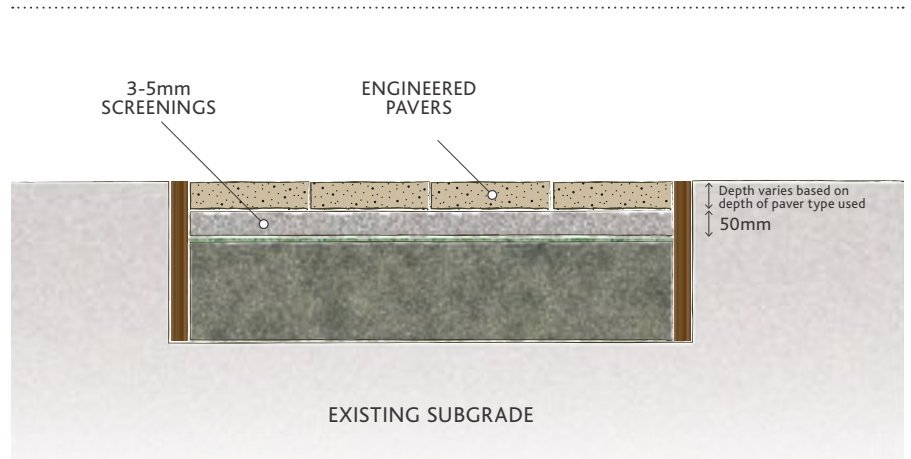


ENGINEERED PAVERS

STEP 1



STEP 2



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Looking after your porous paving

Once installed, porous paving needs no more maintenance than traditional paving. However, following a few simple tips will ensure that your paving works as it should.

- › Keep the surface free of leaves, mud and other litter that could limit infiltration.
- › Remove weeds by hand.
- › Avoid mixing concrete, storing soil or any other activities on the pavement surface that may limit it's ability to absorb water.
- › Do not allow surrounding surfaces, particularly garden beds, to drain onto the surface of the paving. Porous paving is designed to capture rainfall only, and excess runoff may flood or clog the paving.
- › If the surface of the porous paving becomes blocked, it can be cleaned using a small vacuum, road sweeper or a pressure washer.

Need help?

If you have any questions about porous paving, your local landscape gardener may be able to help.

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ISBN 978-1-921911-59-0 (print)
ISBN 978-1-921911-60-6 (web)

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Appendix 2:

Keeping Our Stormwater Clean – A Builder’s Guide

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KEEPING OUR STORMWATER CLEAN



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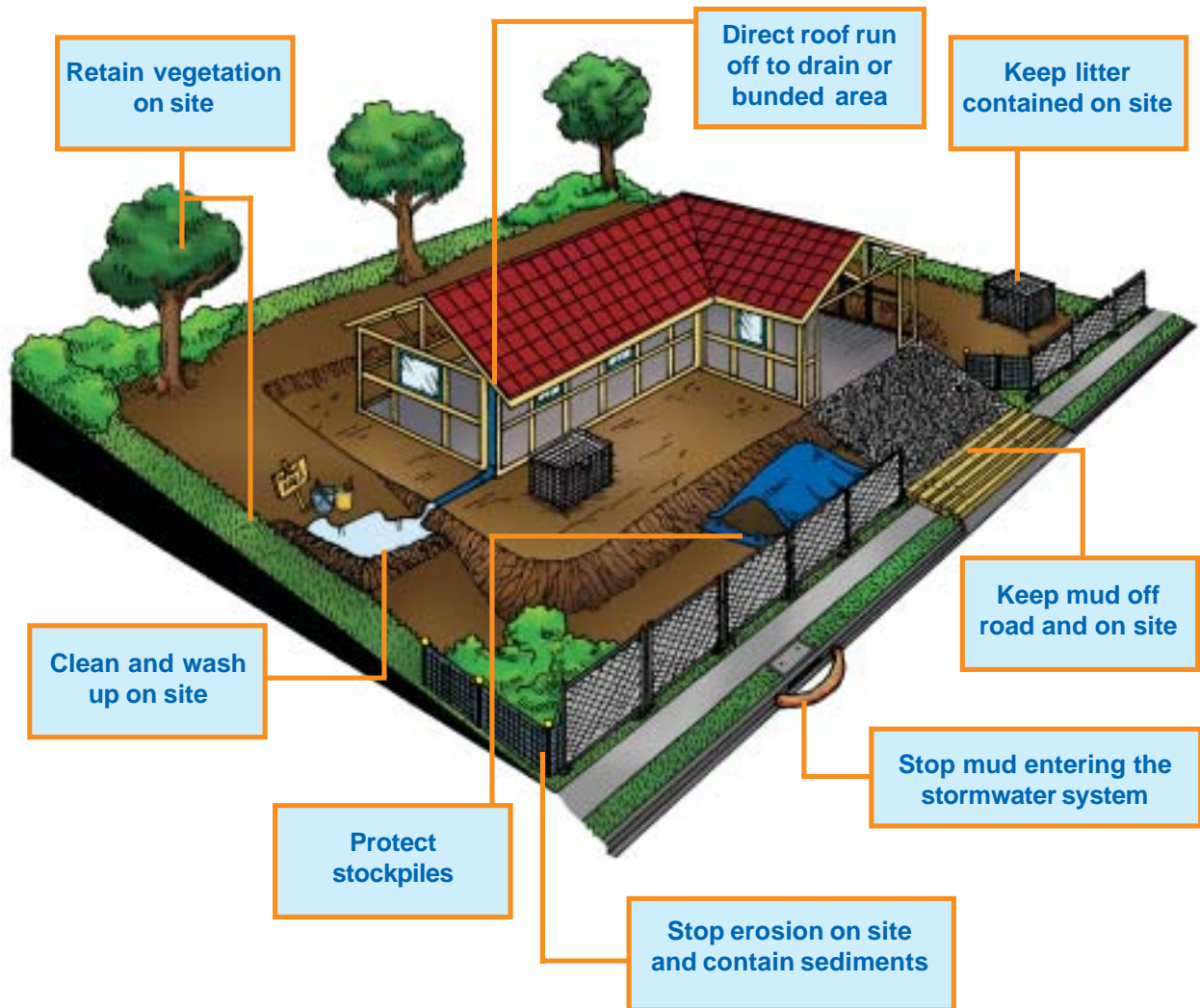
A BUILDER'S GUIDE

Information to help you control sediment and litter from your building site and comply with Council and State regulations

ACKNOWLEDGEMENTS

This revised booklet was originally produced with the support of the Victorian EPA, Melbourne Water, Cities of Kingston, Casey, Hume, Melbourne, Moreland and Moonee Valley.

Check Council requirements and plan before you start work on site



Supplier information for sediment & erosion control on page 3

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SITE RULE 1

Check Council requirements and plan before you start work on site.

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SITE RULE 2

Stop erosion onsite and contain sediments.

..... Page 6



SITE RULE 3

Protect stockpiles.

..... Page 12



SITE RULE 4

Keep mud off road and on site.

..... Page 16



SITE RULE 5

Keep litter contained on site.

..... Page 18



SITE RULE 6

Clean and wash up on site.

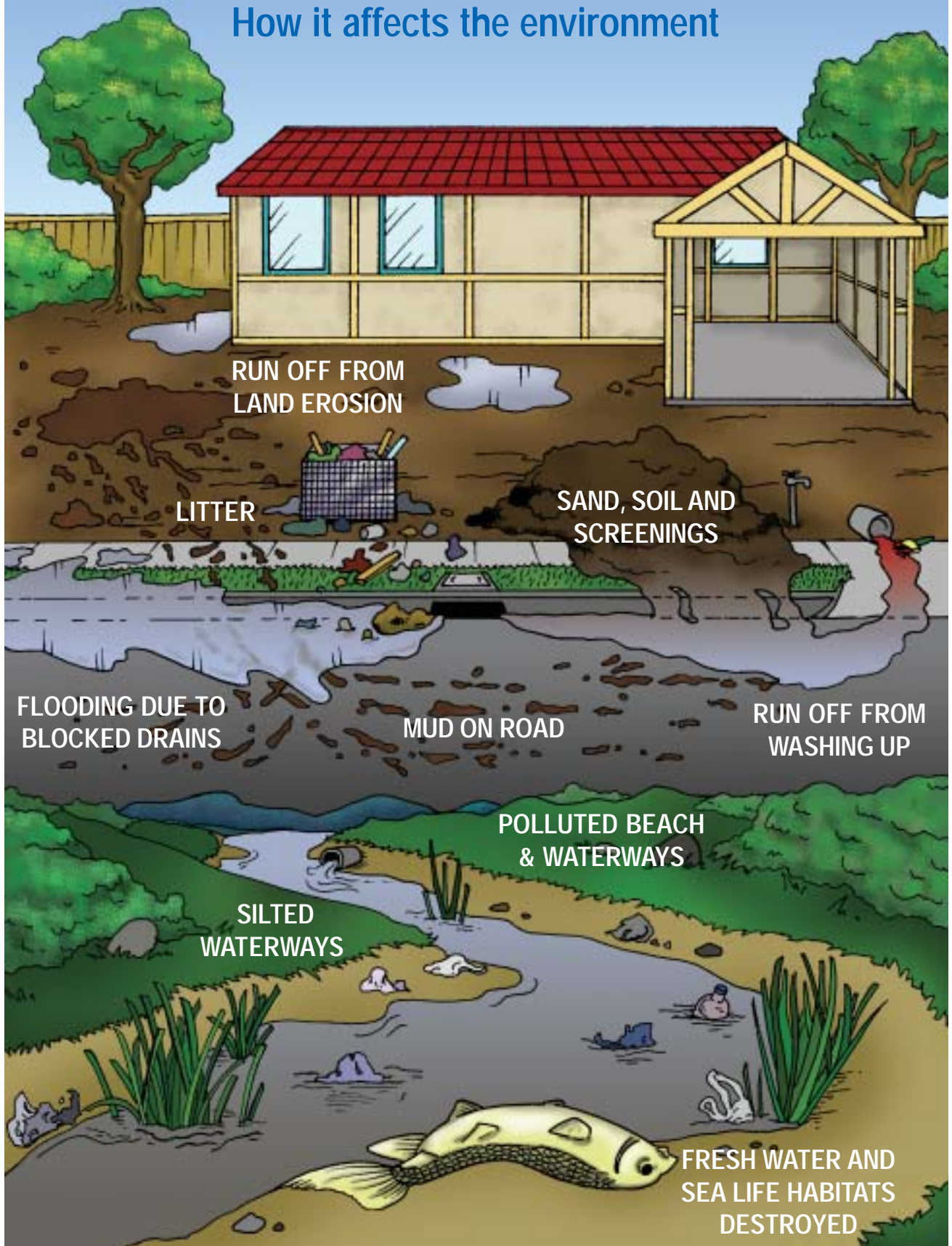
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PROBLEMS ON OUR BUILDING SITES

How it affects the environment



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WHY DO I NEED TO PROTECT OUR ENVIRONMENT?

It's the law!

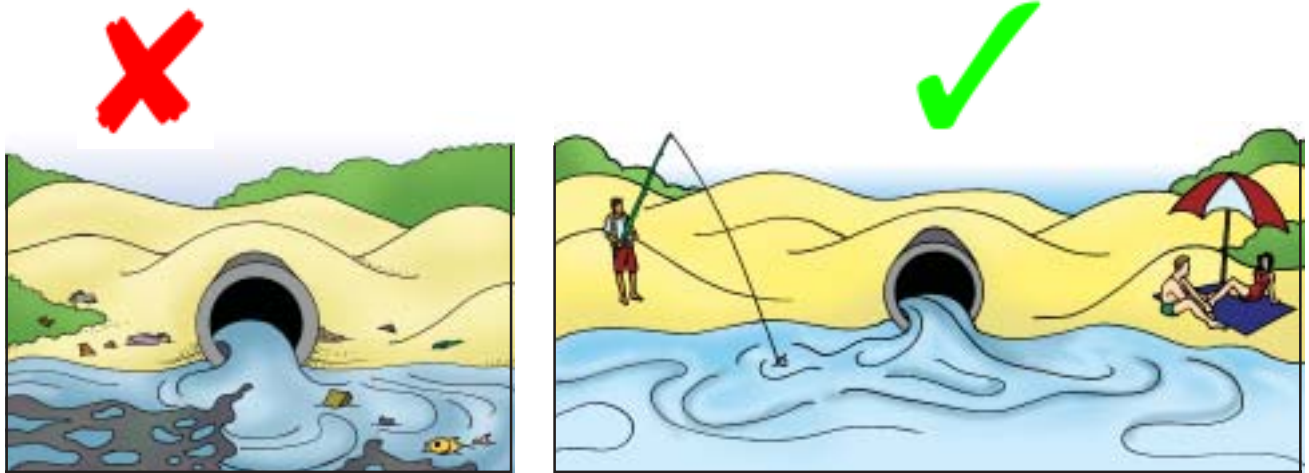
Sediment from building sites can pollute stormwater. There are State and local council laws which make this an offence.

The developer or person managing the building site has the responsibility of making sure that the stormwater is not polluted.

Penalties apply for polluting stormwater.



To enjoy using our environment - now and in the future



Stormwater is not treated and carries pollution to local waterways and bays. Pollution in our stormwater can lead to short and long term damage to our environment.

To benefit builders

The site looks good (which is good for attracting new customers) **and you'll be helping to protect our environment.**

The site has fewer hazards. A well organised site has less loose material lying around causing a hazard. This reduces health and safety issues on a building site.

Downtime is reduced. A well managed and organised site is more efficient. This saves time and money.



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USEFUL SUPPLIER INFORMATION



This information is provided for helpful contact details only. The companies are not listed in any particular order and are not necessarily recommended over others that may provide similar services.

SEDIMENT CONTROL

Approximate Price:
Geofabric fencing
100 m roll from \$55 to \$130
stakes \$12 for 10
Filter socks unfilled: 2 m \$4.50 filled \$8 - \$25

Geofabrics Australasia
03 8586 9111 www.geofabrics.com.au
Products: silt fencing

Southern Geosynthetics Supplies
0419 478 238 www.geosynthetics.com.au
Products: Silt fences, Silt Sausages

Statewide River & Stream Management
03 9702 9757 www.stateplanthire.com
Products: silt fence, stakes, silt logs
Installation service and site kits
Approx cost: \$220 for 20 m frontage installed, \$88 self installation

Treemax
03 98787 4111 www.treemax.com.au
Products: filter fence, silt worm, silt sock

Zerosion
0408 351 566 www.zerosion.com.au
Products: silt fence installation
Approx cost: \$215 for up to 20 m frontage

STABILISED DRIVEWAYS

For aggregate look under sand, soil and gravel in the Yellow Pages
Recycled aggregate available from major suppliers.

TEMPORARY DOWNPIPE

Available from major plumbing suppliers
Art Plastic 25 m rolls of temporary plastic downpipe
approx: \$25

Temporary Flexible Downpipe
03 9786 3711 www.tfd.com.au
\$135 per kit - does 2-3 16 sq houses

OTHER EQUIPMENT

Coates Shorco Sykes 131994
Supply: silt fence \$125 100 m
Hire: Rumble Grids \$180 p/week for 2 panels
Hire: Environmental settlement tanks 4 m tank \$542 p/week

PORTABLE TOILETS

See Toilets – Portable in the Yellow Pages

TEMPORARY FENCING

See Fencing Contractors in the Yellow Pages
Australian Temporary Fencing 131716
Victorian Temporary Fencing 03 9484 4000

BRICK AND TILE CUTTING

Slop Mop Recycling Products
www.slopmop.com.au 0418 825 301 **Brikasaurus**:
capture and recycle waste water for brick and tile cutting operations.
Slopmop: water delivery & waste clean up system for use behind concrete saws and grinders.

Useful information is available from:

Master Builders Green Living Builders
www.mbav.com.au
HIA GreenSmart Program
www.greensmart.com.au
Keep Australia Beautiful Victoria – CleanSites Program
<http://www.kabv.org.au>
Victorian Litter Action Alliance
<http://www.litter.vic.gov.au>
Environment Protection Agency Victoria
www.epa.vic.gov.au
See Publication 981 – Reducing stormwater pollution from construction sites
Melbourne Water
www.melbournewater.com.au



SITE RULE 1

Check Council requirements and plan before you start work on site.



Questions to ask BEFORE you start

Planning, BEFORE you start a job, will make a big difference to how well you manage your site. Check Council requirements for site management. Complete a site management plan (one can be found at the back of this booklet).

Where is the lowest point on the site?

Water always runs to the lowest point. It is important to know where this point is when planning your site. It will affect where you put your crossover, stockpile materials and sediment fence. Leave a buffer of vegetation along the lowest boundary.

Where will I put the crossover?

Try to put the crossover as far away from the lowest point as possible. As water runs to the lowest point it is more likely to be wet and muddy. [See Page 16.]

Where will I keep my stockpile?

Stockpiles are best kept on site, as far away from the lowest point as practical. [See Page 12.]

Where will I build my sediment control fence?

Sediment control fences should be built on the lowest side/s of a site prior to erecting a temporary fence. A flat site may not need sediment control fences. [See Page 9.] These are a primary management measure to keep sediment on site.

Which trees and vegetation will be kept on site?

Rope or fence off the areas you are going to keep. Keeping vegetation such as grassed areas will help to prevent damage to the surface of the site later on and may trap sediment. [See Page 7.]

Why fence my site?

Many councils require sites to be fenced. Site fencing helps to keep building activities to the site, helps stop movement of litter, and helps to keep a site safe by stopping members of the public wandering on site. [See Page 20.]

SITE READY TO START JOB

SITE MANAGEMENT PLAN

Building Company: _____ Date: ____/____/____
 Site Address: _____
 Client Name: _____ Contact Number: () _____

Site Management Plan 23

CLEAN SITE CHECKLIST

Please photocopy to use on site

SITE DETAILS:
 Building Company: _____
 Site Supervisor: _____
 Date: ____/____/____
 Site Address: _____
 Client Name: _____
 Contact Number: () _____

SITE RULE	TASK	CHECK
SITE RULE 1 - Check Council requirements and plan before you start work on site.	Crossover away from lowest point	<input type="checkbox"/>
	Sediment control fence on lowest site	<input type="checkbox"/>
	Stockpiles away from lowest point	<input type="checkbox"/>
SITE RULE 2 - Stop erosion on site and contain sediments.	Marked trees and vegetation to keep on site	<input type="checkbox"/>
	Sediment control fence in place	<input type="checkbox"/>
	Catch drains on high side of site	<input type="checkbox"/>
SITE RULE 3 - Protect stockpiles.	Vegetation areas kept at boundary	<input type="checkbox"/>
	Downpipes set up as early as possible	<input type="checkbox"/>
SITE RULE 4 - Keep mud off road and on site.	Base and cover for stockpiles	<input type="checkbox"/>
	Gravel savings at stormwater pit	<input type="checkbox"/>
SITE RULE 5 - Keep litter contained on site.	Crushed rock access point	<input type="checkbox"/>
	Vehicles keep to crushed rock areas	<input type="checkbox"/>
	Mud removed from tyres before leaving site	<input type="checkbox"/>
SITE RULE 6 - Clean and wash up on site.	Clean road if muddy	<input type="checkbox"/>
	Litter bins in place with lid closed	<input type="checkbox"/>
	Site fencing in place	<input type="checkbox"/>
SITE RULE 7 - Contain all washings on site.	Cutting and stain up area on site	<input type="checkbox"/>
	Clean equipment off before washing	<input type="checkbox"/>
	Sediment filters downslope	<input type="checkbox"/>
	Contain all washings on site	<input type="checkbox"/>

Site Management Plan 24

For copy of plan & checklist photocopy pages 23 & 24.



Site Rule 1 - Plan before you start work on site.

5

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SITE RULE 2

Stop erosion and keep sediment on site

Why is erosion a problem?

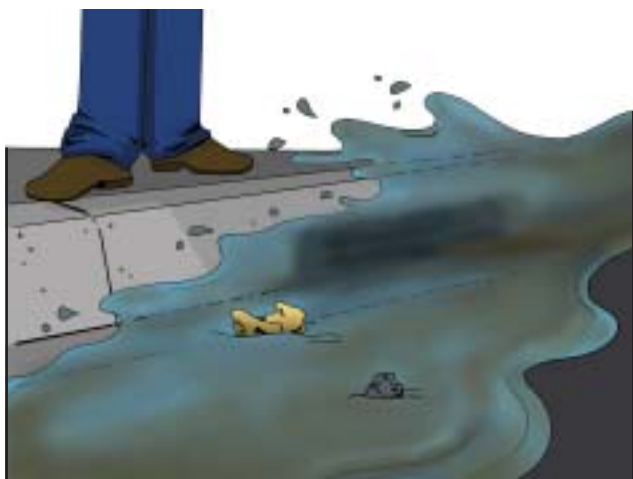
Sediment escaping from building sites can:



1. Make roads and footpaths slippery for vehicles and pedestrians, increasing public liability risk.



2. Enter the stormwater system and make stream and river water cloudy which can kill plants and animals in creeks and the bay.



3. Cause blockages to the stormwater system including the side entry pit and pipes, increasing the chance of flooding and requiring regular cleaning.

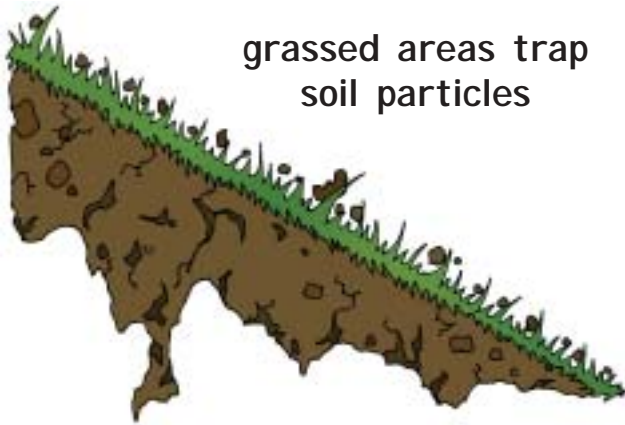


4. Overload and clog local stormwater filtration systems such as rain gardens and swales.

METHODS TO CONTROL EROSION

Control Method 1 - Keep areas of vegetation as a buffer strip at the site boundary.

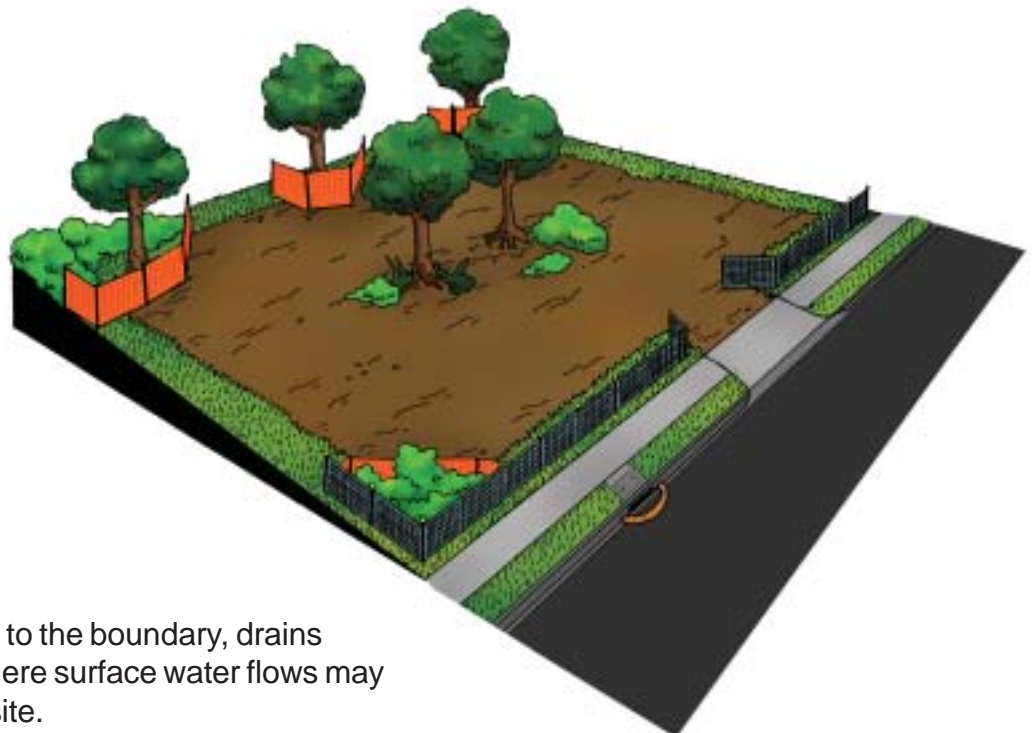
To prevent sediment leaving site use existing grassed areas and a sediment control fence.



Vegetation helps protect the soil from the effects of rain and surface water by:

- Slowing the flow of water across the ground. Fast water is able to carry more soil particles off site
- Holding the soil together and minimising erosion
- Acting as a filter to trap soil particles.

Decide what areas of vegetation you are going to keep on site. Mark and protect trees, shrubs and grassed areas that you are keeping. Then apply for the relevant permits to remove vegetation.



Protect areas close to the boundary, drains and gutters, and where surface water flows may carry sediment off site.

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Control Method 2 - Early downpipe connection



Connecting downpipes to the stormwater or onsite detention system has a number of benefits:

- Less drainage problems on site
- Less mud on site after rain
- A safer site
- Reduce damage to building foundations
- Less downtime after storms
- Projects get finished sooner.

Aim to have the downpipes connected as soon as the roof is installed (temporary or permanent).

Control Method 3 - Pipe roof water onto a grassed or banded area.

If you cannot connect to the stormwater system, pipe the water away from the building onto a vegetated area where there is good ground cover or to a banded area.

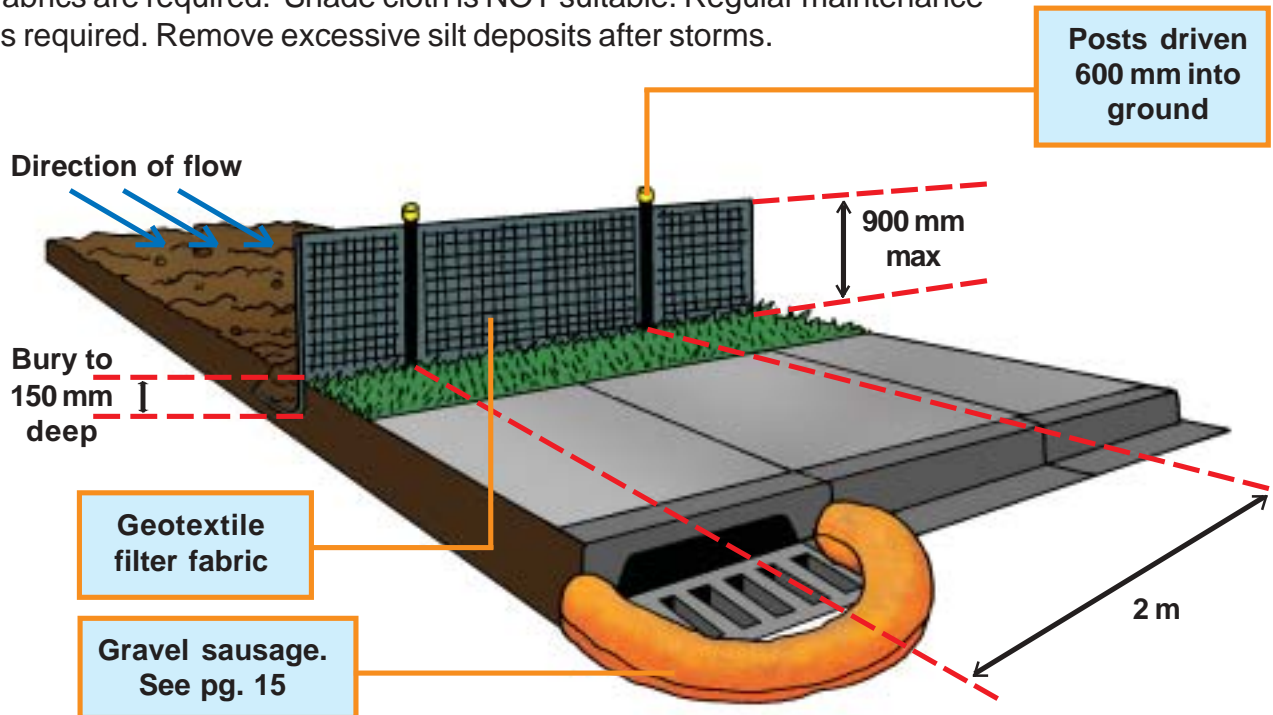


This lets water seep into the ground with less damage to the surface of the soil.

METHODS TO CONTAIN SEDIMENT ON SITE

Method 1 - Sediment Control Fences

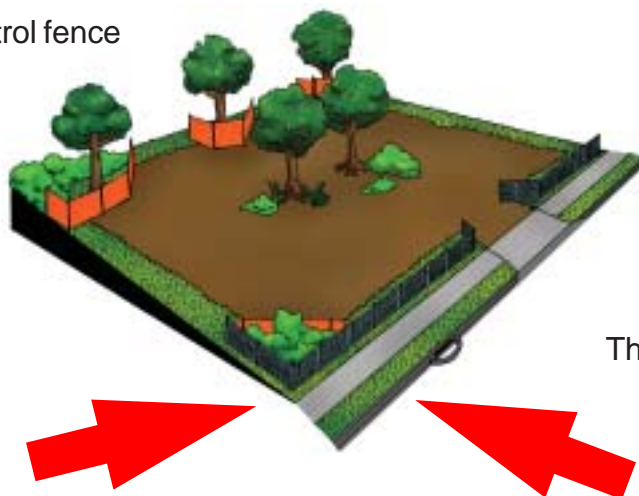
Sediment control fences stop sediment from being washed off site. The fence allows muddy water to pond behind it and for sediment to settle as the water slowly filters through. Geotextile fabrics are required. Shade cloth is NOT suitable. Regular maintenance is required. Remove excessive silt deposits after storms.



TO BUILD A SEDIMENT CONTROL FENCE:

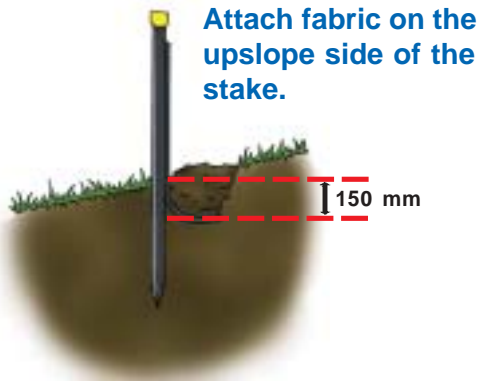
a) Identify the low point of site.

Place sediment control fence along boundaries where the low point is.



This is the point where the land will allow water to carry sediment off the building site.

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b) Dig a trench along the fence line before temporary site fencing is installed.

The trench will be used to bury the base of the sediment control fabric.

The trench should be 150 mm deep.



c) Put in 1500 mm wooden posts (38 mm) or star pickets.

Put 1.5 m star pickets at a maximum of 2 m apart and 600 mm deep.

Put 1.5 m wooden posts (38 mm) at 1.2 m intervals (max 2 m) and 600 mm deep.



d) Fix geotextile to posts

Geotextile material allows water to pass through but traps sediments.

Use cable ties or staples to attach the geotextile to the upslope side of the fence posts.

Only join fabric at the pickets with a 150 mm overlap (wrap around post).



e) Spread volume of water.

Put a star picket 1.5 m upslope of the others every 20 m (if the fence is longer than 20 m). This spreads the volume of water that flows through each section of fence.

Turn ends up slope to allow for ponding.

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Method 2 - Control dust and slurry from cutting

A large amount of dust can be made from cutting materials such as concrete, bricks and tiles. When mixed with water this material can be turned into slurry and washed into waterways. Cement changes the acidity of water which may then kill water plants and animals. The following methods will help keep this waste on site and out of the waterways:



a) Cut materials on site

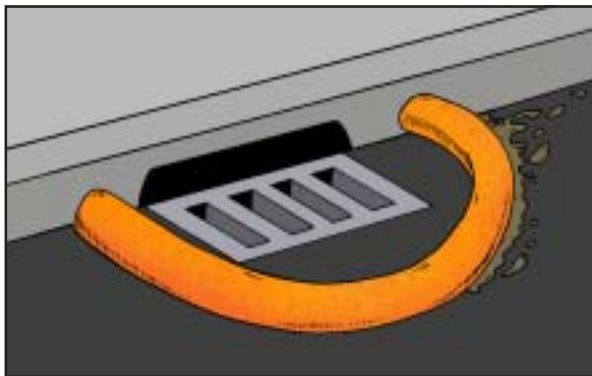
Choose a set area to do all your cutting. This area should be on the building site and away from all stormwater drains.

Equipment is available that captures water used in the cutting process (see page 3).



b) Put sediment control filters downslope

Sediment logs should be placed downslope to catch cutting slurry. A back-up sediment fence may also be used.



c) Use a gravel sausage or sediment log

When cutting must take place near stormwater drains, use gravel sausages or sediment logs.

Alternatively, you can buy sleeves from geotextile companies and fill these with sand.

Always clean up and correctly dispose of captured sediment.



d) Clean up when finished

When you have finished cutting, clean up your equipment in the cutting area.

Use a broom to clean up and get rid of the slurry where it can't get into the stormwater system. Dispose of in waste container

DO NOT HOSE THE SLURRY AWAY



SITE RULE 3

Contain stockpiles on site

Why are sand, soil and screenings a problem?

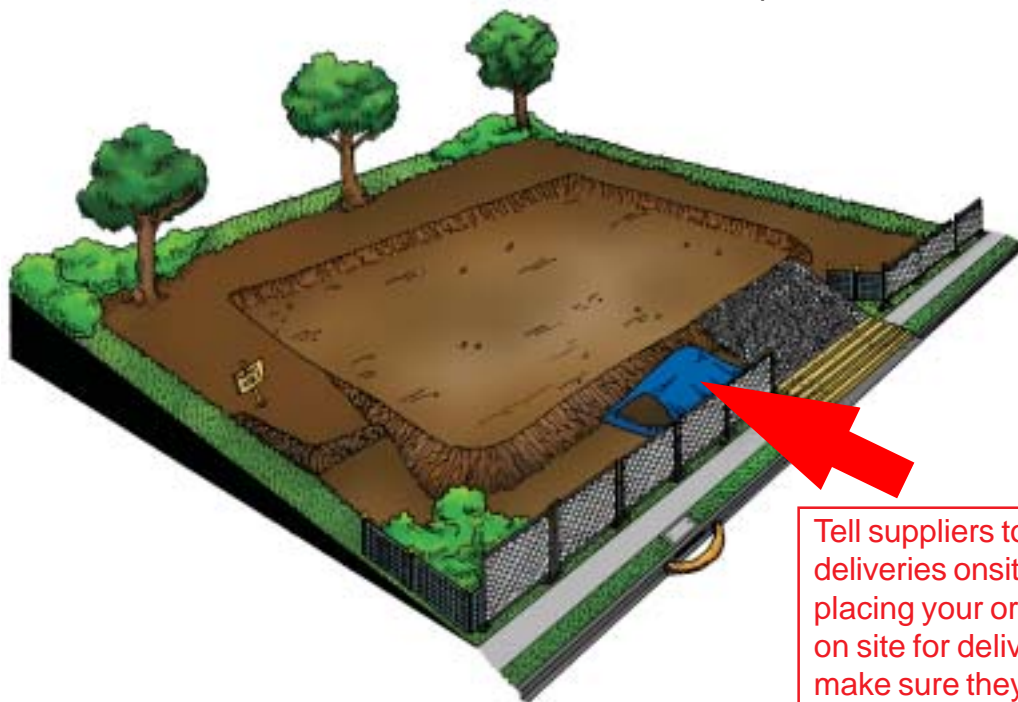


Sand, soil, screenings, dust or sludge from concrete and brick cutting, and other materials escaping from building sites can cause many problems.

Putting stockpiles such as sand, gravel, topsoil and mulch across footpaths and roads will cause a hazard to both vehicles and pedestrians.

Sediment can smother stormwater filtering systems including swales and raingardens.

Stockpiles should be stored on site, not on footpaths or roads.



Tell suppliers to place deliveries onsite when placing your order or be on site for deliveries to make sure they are put in the right place.

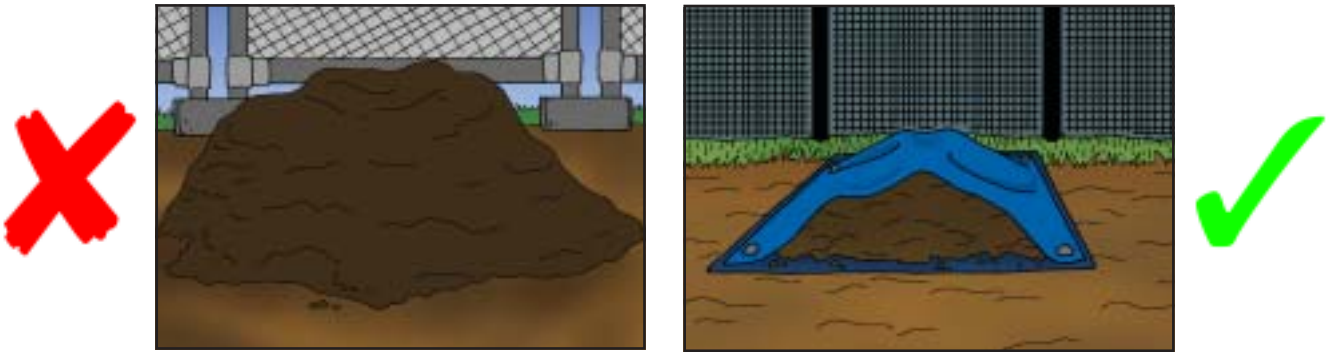
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Stockpiles not stored properly can get washed or blown away and pollute the stormwater.

This is particularly true of stockpiles that:

- Are high
- Have steep sides
- Are put on hard surfaces where they can be blown or washed away.



KEEPING STOCKPILES ON SITE

Place the stockpile in a designated area on site, and upslope of the sediment control fence.

If exposed for some time, stockpiles should be covered with a tarp.



In some cases it may be impossible to store stockpiles on site. In this case, a different set of control methods will be used.

WHEN UNABLE TO STORE STOCKPILES ON SITE

You may have to store a stockpile off site (although never on the footpath, gutter or road). Contact the council to make sure that you have the appropriate council permits.

The council will tell you how stockpiles stored off site are to be managed. Materials may be stored on tarps or on pallets. Containers such as rubbish skips with opening sides that you can get into easily are a good idea.



Material must not get into drains, gutters or the stormwater system

The following control methods can be used when storing materials or working off site.

Method 1 - Cover Stockpile

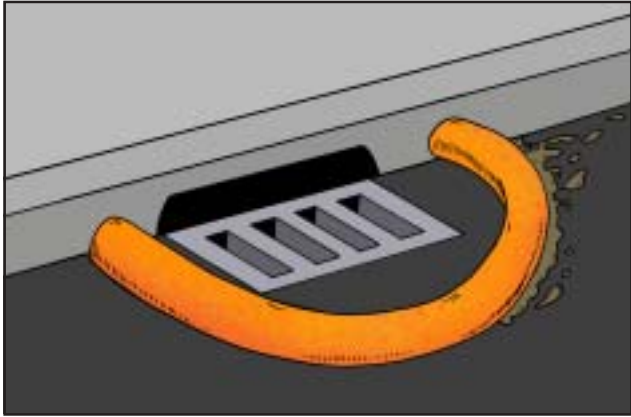
- a) Place a tarp, plastic or banded pallet under the area where the stockpile will be placed.
- b) Place a secured covering over the stockpile.
- c) Then place sediment control logs around the downslope base of the stockpile.



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Method 2 - Protect Downstream Stormwater Pit with a Gravel Sausage or Sediment Log

A gravel sausage or sediment log is a temporary collection device that can be used when stockpiles are stored or cutting is done off site. It is also a useful precautionary measure at all sites.

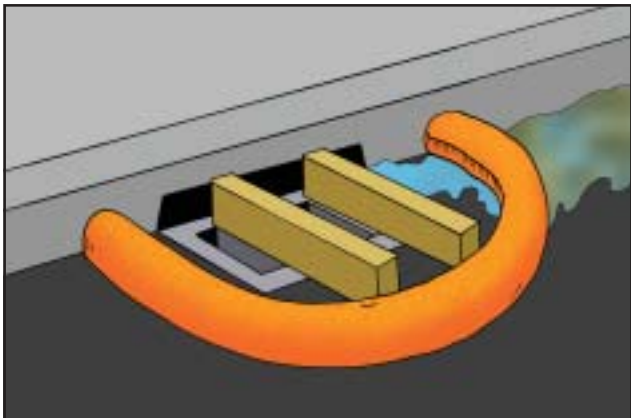


TO BUILD A GRAVEL SAUSAGE:

a) Make the sausage sleeve

A gravel sausage is made from a geotextile sleeve filled with 25 - 50 mm gravel.

The gravel sausage should be 150 mm high.



b) Put the gravel sausage across the opening of the inlet pit

Make sure that the sausage is tight with the kerbing on the upslope side of the inlet pit and extends beyond the grate.

There should be a 100 mm gap between the front of the pit and sausage. Use wooden blocks to keep the 100 mm gap.



c) Clean out gravel sausage regularly

When soil and sand builds up around the gravel sausage, this should be collected and disposed of on site.

Regular maintenance is required.

DO NOT HOSE SEDIMENT DOWN THE GUTTER



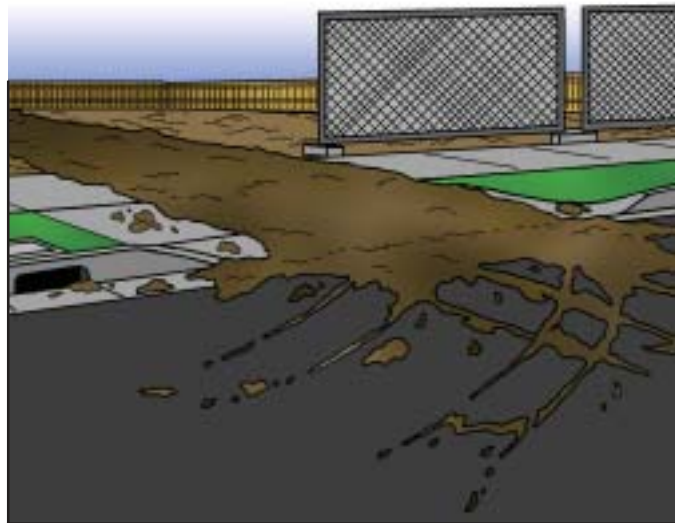
SITE RULE 4

Keep mud off road and on site

Why is mud a problem?

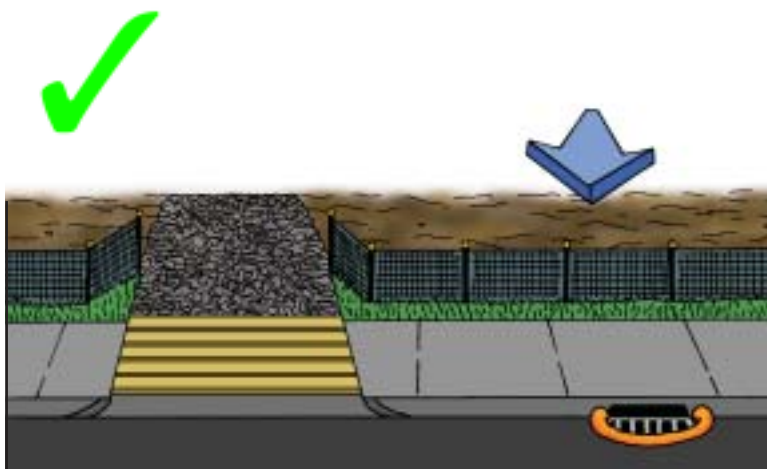
Two things happen when vehicles go on and off the site:

1. The surface area of the site is damaged making it dangerous.
2. Mud is carried back onto the roads and footpaths, and washes into the stormwater system.



METHODS TO CONTROL MUD

The following simple methods will help you to protect the surface of your site and help stop vehicles from dropping mud on the road from their wheels. The best way to do this is to put crushed rock on the crossover or access point of your building site.



Putting crushed rock on the access point of your site is a good way to prevent damage and provide a dry access point for vehicles. Where possible park vehicles off site.

Make sure gravel does not collect in the gutter or on the footpath.

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Control Method 1: Build a crushed rock crossover



Remove a 3m or greater strip of soil from road (or where concrete crossover ends) to nearest building point or a minimum of 5 m.

Use road base or 40 mm aggregate or crushed rock to a depth of 200 mm.

Restrict vehicle access to this point.

Control Method 2: Keep to crushed rock path



Only drive where you need to. Keep to a set path (preferably on crushed rock).

Control Method 3: Remove mud from tyres



Use a shovel to remove mud from truck tyres before leaving site.

Control Method 4: Clean road



If mud goes on road, remove as much as possible and put it back on site.

Use a broom or a shovel.
DO NOT USE A HOSE.



SITE RULE 5

Keep litter contained on site

Why is litter a problem?

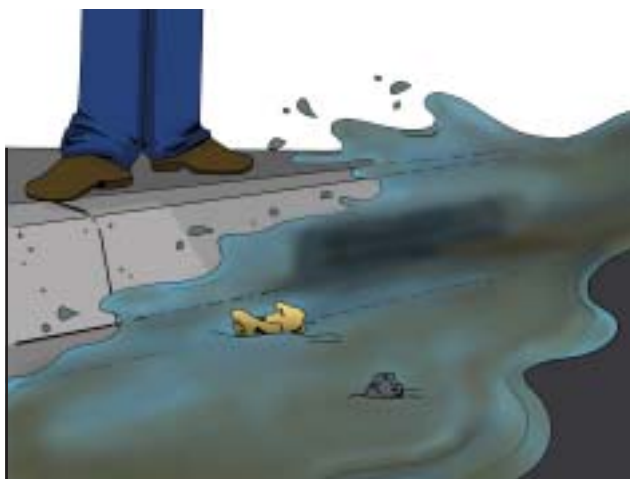


Many building sites have both building rubble and other rubbish spread across them.



This causes many problems:

You may now have an **UNSAFE WORK ENVIRONMENT!**
This could increase the chance of legal and public liability problems



Litter blowing off site can block stormwater drains.



Litter may spoil local creeks and eventually find its way to the coast.

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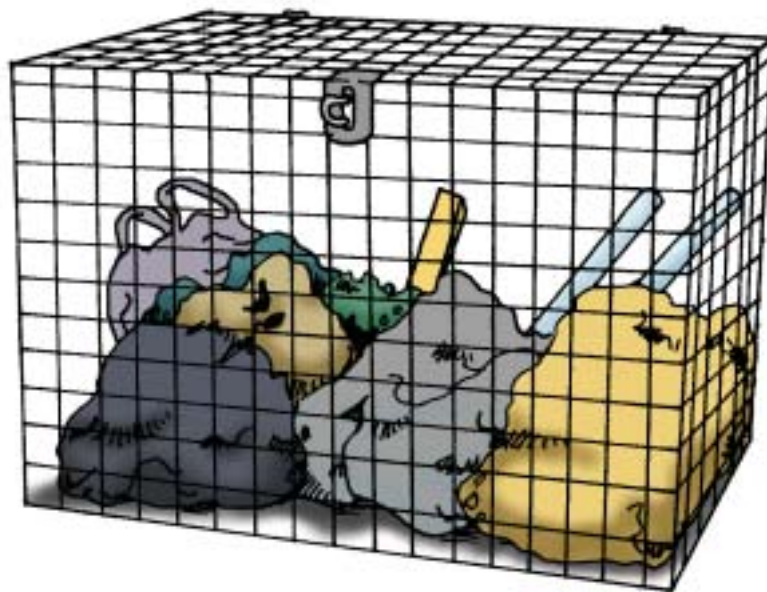
METHODS TO CONTROL LITTER

The following simple methods will help you to stop litter leaving your site or being a hazard on site.

Control Method 1: Litter bins or covered skips

A mesh bin with a closeable lid is suitable for larger items like cardboard boxes, plastic wrapping and polystyrene.

Mesh to be 50 mm or smaller



A smaller bin is okay for smaller rubbish like paper, food wrapping and drink containers that may be blown off site. Council bins may be restricted from building sites.



Empty the litter bin regularly. Don't allow overflow. Where possible, collect the materials from the litter bin for recycling and /or keep different materials in separate bins.

CONSIDER A RECYCLING BIN

Control Method 2: Site fencing

Site fencing will help to keep litter from being carried off site by wind or water and provide security.

A FENCE DOES NOT NEGATE THE NEED FOR A BIN.



Check council requirements for temporary fencing and avoid trip hazards on footpath.



Remember to install a sediment control fence prior to installation of the temporary fence.



SITE RULE 6

Clean and wash up on site

Why is washing up a problem?



When cleaning up after painting, plastering or concreting it's most important to keep the wash water out of the stormwater system.

Problems to the environment include:

1. Oil based paints form a thin film over the surface of the water. This starves water plants and animals of oxygen
2. Paints and petrol chemicals can contain toxic compounds
3. Concrete changes the acidity of waterways which can kill water plants and animals. Concrete washings can harden and block drains
4. Roads around a building site can become dirty, slippery and dangerous.



METHODS TO CONTROL WASHING UP

The following simple methods will help you to stop the contamination of stormwater from paint, plaster or concrete washings.



Control Method 1: Have a set washing up area

Choose a set area to do all your washing up. This area should be on the building site and away from all stormwater drains. It should be bunded and contain wash out barrels.

You could use the same area you have chosen for tile and brick cutting.

Contain chemicals and slurry onsite.

Put sediment control fences downslope.

NOTE: SEDIMENT CONTROL FENCES WILL NOT STOP CHEMICALS

Control Method 2: Get rid of concrete slurry on site

Collect wash water from concrete mixers and pumps in a wheel barrow and get rid of it in your wash area. You can also safely get rid of

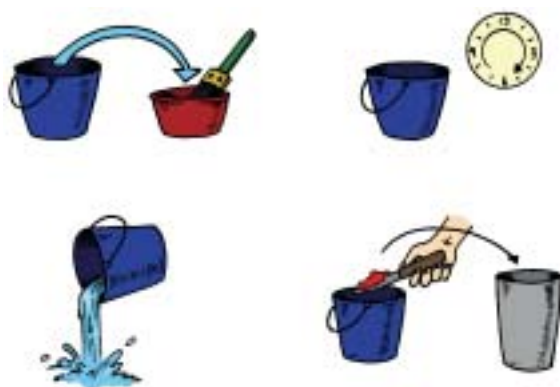
concrete slurry by tipping small amounts in a ditch lined with plastic or geotextile liners. When the water evaporates or soaks into the surface the solids can then be put into a skip bin or recycled in construction or as road base.



Control Method 3: Clean equipment off before washing

Brush dirt and mud off equipment before you wash it. Spin rollers and brushes to remove paint before you wash them in a wash out bin.

You will then need less water to clean this equipment.



Control Method 4: Clean painting tools carefully

Use one container to wash the brush and another to rinse it. Let the first container stand overnight to let solids settle. Then pour out the water on to the ground if it is not too dirty and put settled solids in a bin.

Wash oil based paints in solvent baths until clean. **DO NOT PUT THE SOLVENT ON THE GROUND.** Contact a waste disposal company for removal.

SITE MANAGEMENT PLAN













Building Company: _____ Date: ____ / ____ / ____

Site Address: _____

Client Name: _____ Contact Number: () _____

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LEGEND:

 - Bin	 - Rumble grid	 - Stabilised access point	 - Vegetation to be retained
Scale: _____ = 1 m	 - Grass filter strip	 - Silt fence	 - Stockpile
 - Nth	 - Gravel sausage	 - Skip	 - Wash up area
		 - Temporary Fencing	

CLEAN SITE CHECKLIST

Please photocopy to use on site

SITE DETAILS:

Building Company: _____ Date: ____ / ____ / ____

Site Supervisor: _____

Site Address: _____

Client Name: _____ Contact Number: () _____

SITE RULE	TASK	CHECK
SITE RULE 1 - Check Council requirements and plan before you start work on site.	Crossover away from lowest point	<input type="checkbox"/>
	Sediment control fence on lowest side	<input type="checkbox"/>
	Stockpiles away from lowest point	<input type="checkbox"/>
	Marked trees and vegetation to keep on site	<input type="checkbox"/>
SITE RULE 2 - Stop erosion on site and contain sediments.	Sediment control fence in place	<input type="checkbox"/>
	Catch drains on high side of site	<input type="checkbox"/>
	Vegetation areas kept at boundary	<input type="checkbox"/>
	Gravel sausage at storm water pit	<input type="checkbox"/>
	Downpipes set up as early as possible	<input type="checkbox"/>
SITE RULE 3 - Protect stockpiles.	Base and cover for stockpiles	<input type="checkbox"/>
	Gravel sausage at stormwater pit	<input type="checkbox"/>
SITE RULE 4 - Keep mud off road and on site.	Crushed rock access point	<input type="checkbox"/>
	Vehicles keep to crushed rock areas	<input type="checkbox"/>
	Mud removed from tyres before leaving site	<input type="checkbox"/>
	Clean road if muddy	<input type="checkbox"/>
SITE RULE 5 - Keep litter contained on site.	Clean stormwater pit and maintain gravel sausage	<input type="checkbox"/>
	Litter bins in place with lid closed	<input type="checkbox"/>
SITE RULE 6 - Clean and wash up on site.	Site fencing in place	<input type="checkbox"/>
	Cutting and clean up area on site	<input type="checkbox"/>
	Clean equipment off before washing	<input type="checkbox"/>
	Sediment filters downslope	<input type="checkbox"/>
	Contain all washings on site	<input type="checkbox"/>

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6 RULES FOR A CLEAN WORKSITE

SITE RULE 1 -

Check Council requirements and plan before you start work on site.

SITE RULE 2 -

Stop erosion on site and contain sediments.

SITE RULE 3 -

Protect stockpiles.

SITE RULE 4 -

Keep mud off road and on site.

SITE RULE 5 -

Keep litter contained on site.

SITE RULE 6 -

Clean and wash up on site.

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Desktop publishing and editing was done by:

First published in 2002
Second edition, revised, published 2002
Third edition, revised, published September 2003
Forth edition, revised, published October 2006



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Arboricultural Tree Assessment Report

Development Impact

At

45 Cuthbert Street, Broadmeadows, Vic, 3047.

Prepared by:

Climbing High Tree Service
Consulting Arborist

Chris Walshe

Graduate Certificate of Arboriculture (University Melbourne)
Diploma of Horticulture (Arboriculture)
AQF Level 5 & 8

Report Commissioned by:

[REDACTED]
c/o Semu Architecture

Thursday 1st September, 2022.

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1. INTRODUCTION.

Climbing High Tree Service has been engaged to provide an Arboricultural Assessment and a Development Impact Assessment Report, for the one (1) existing tree located within the road reserve of the subject site that may be impacted upon by the proposed development.

2. OBJECTIVES.

- Provide the trees location, species, dimensions, age, health, structural condition and their suitability for retention.
- Calculate the size of the area around the trees suitable for retention that require tree protection (TPZ).
- Provide comments on the planning schemes, and to assess the impact that the proposal may have upon the existing vegetation.
- Explain the preferred design methods if required, to minimise the impact on retained trees where there is encroachment into the calculated Tree Protection Zones area.
- The report is in accordance to Australian Standards AS4970-2009 “Protection of Trees on Development Sites” (Appendix 2).

3. METHOD.

A site and tree inspection was conducted on Wednesday 31st August, 2022 by Chris Walshe.

Visual Tree Assessment (VTA) methods were undertaken from ground level as described by Mattheck & Breloer (1994) with regard to current arboricultural principles and practices. International Society of Arboriculture Tree Risk Assessment procedures were followed for evaluating the tree for risk. The following tree data was collected on site:

- | | |
|----------------------------------|--------------------------------|
| ▪ Botanical Name | ▪ Health |
| ▪ Common Name | ▪ Structure |
| ▪ Origin | ▪ Form |
| ▪ Age Class | ▪ Useful Life Expectancy (ULE) |
| ▪ Dimensions | ▪ Retention Value. |
| ▪ Diameter at Breast Height(DBH) | |

For descriptors of the data collected on site refer to Appendix 4.

A (yamayo) diameter tape measure was used for determining the DBH, a digital camera for images, the height was estimated, and the canopy spread was stepped out.

No invasive tests were conducted, nor tree or soil samples taken.

The trees have been numbered and plotted on the Aerial Site Map and the Development Tree Impact Plan. The tree numbers correspond with those numbers provided in the Tree Data Table (Appendix 1).

4. LIMITATIONS.

There were no restrictions to the tree or site.

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5. DOCUMENTS VIEWED.

- Semu Architecture, Ground & First Floor Plan and Elevations.
- Hume City Council RFI, Application # P24635, Anita Zmak, dated 11th August.

6. AERIAL SITE MAP

Figure 1: Shows an aerial view of the site, and tree location at 45 Cuthbert Street, Broadmeadows. Property boundary is indicative only and is dotted in orange.



7. PLANNING OVERLAY CONTROLS.

The site is zoned General Residential Zone Schedule 1 (RGZ1) and is located in Broadmeadows, a suburb in the Hume City Council.

There are no local vegetation planning schemes controls on the subject site.

Street trees are protected under the Hume City Council, Parks Department, Street Tree Policy.

8. PROPOSED DEVELOPMENT.

The proposal is to demolish the existing dwelling, and to construct two (2) new dwellings (side by side) with associated works. The existing crossover is to remain, and a new crossover is to be installed towards the west boundary. The impact upon the health of the street tree will need to be assessed to current industry standards.

9. OBSERVATIONS.

The site is currently used for residential purposes. It holds an existing single storey dwelling with a concrete driveway.

One (1) tree was assessed in this report, a 7 metre high *Callistemon salignus* (Willow Bottlebrush). It is located within the council owned road reserve in the front of the 45 Cuthbert Street.

The tree appears to be in good health, it has poor structure, and a short (6-10 year) Useful Life Expectancy (ULE).

No subject site vegetation was assessed in this report.



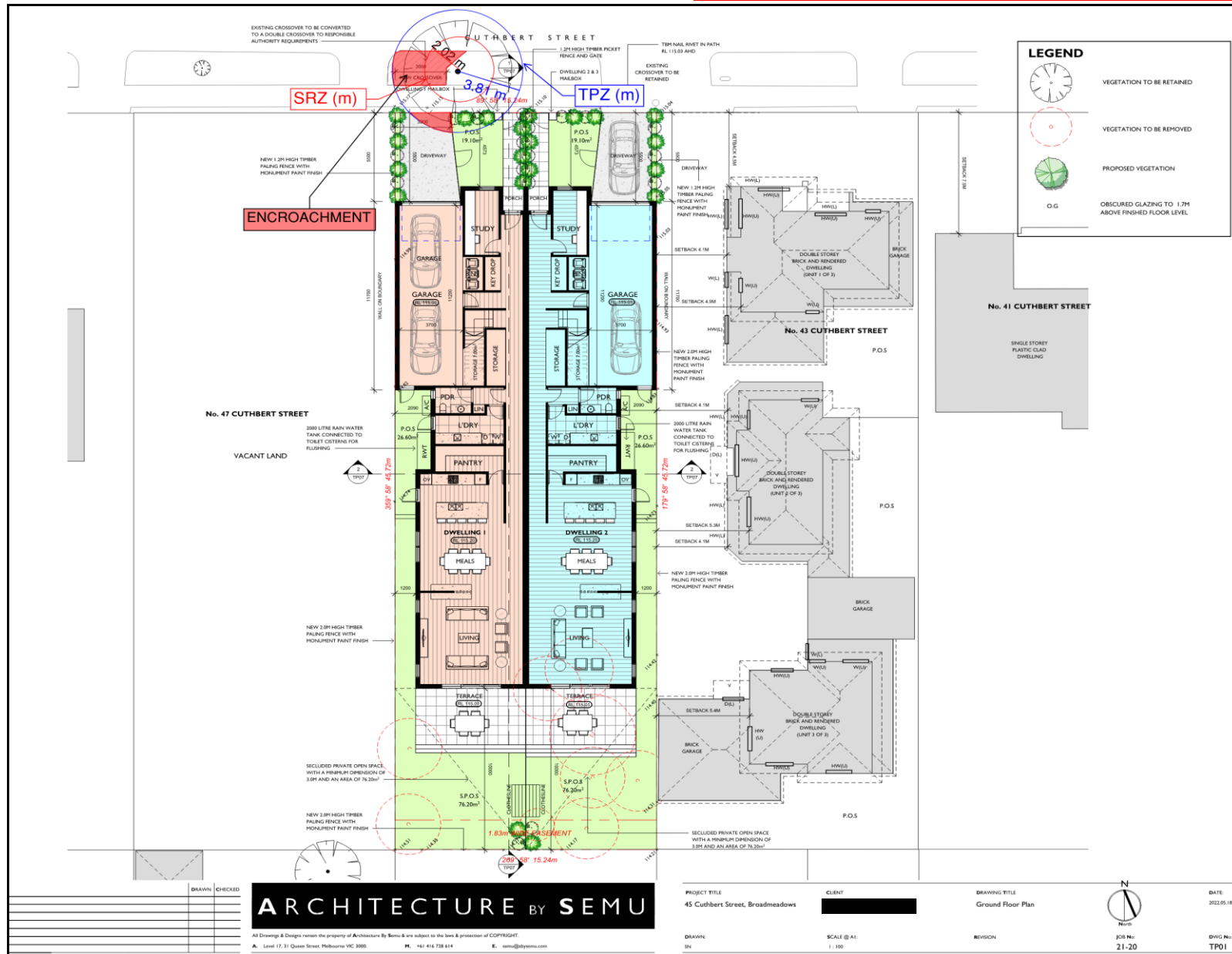
Figure 2: Tree 1 located in the road reserve.

The detail of each individual tree assessment is provided in the Tree Data Table in Appendix 1. These tree numbers correspond with the trees numbered on the Aerial Site Map and the Proposed Development Plan.

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10. PROPOSED DEVELOPMENT TREE IMPACT PLAN.



11. TREE RETENTION SUMMARY.

When assessing a site the arborist must exercise their experience and expertise with respect to the types of trees that are deemed suitable for retention. Trees that are to be preserved should continue to enhance the character of the area while being an asset to the site in the long term.

- Low retention value trees are generally unsuitable for retention.
- Medium retention value trees can be retained if the site constraints can accommodate their retention.
- High retention value trees are recommended for retention.
- Third party trees must be retained.

The following tree was assessed for its health, structure, condition and ULE. It has been given the following retention value:

- **Tree 1** is located in the council road reserve. It *must be* retained and protected (not damaged) as it is Third Party Property, unless the owners of the property give written approval to remove the trees, subject to council approval.

The trees that are to be retained throughout the development will require tree protection during construction. The best practice is to protect the trees by applying the apportioned Tree Protection Zones (TPZ) stated in Appendix 3 (Tree Protection Measures).

12. PROPOSED DEVELOPMENT TREE IMPACT ASSESSMENT.

12.1 MAJOR ENCROACHMENT (>10%).

Tree 1 (Willow Bottlebrush) is a mature tree, and is located within the council owned road reserve. It will incur an encroachment of 20.2% into the TPZ/SRZ areas, from the proposed crossover and driveway for dwelling 1. This encroachment is greater than 10%, and will adversely affect tree health and anchorage through root loss.

As the tree displays good health, and poor structure caused by several acute fork structures displaying included bark and weak unions, further reducing **tree 1's** already short Useful Life Expectancy (ULE). Its removal and replacement is supported from an arboricultural perspective.

13. PERMIT REQUIREMENTS.

Tree 1 requires planning permission from the Hume City Council Parks Department to be removed.

14. CONCLUSIONS & RECOMMENDATIONS.

One (1) tree was assessed in this report, and it is a 7 metre high *Callistemon salignus* (Willow Bottlebrush). It is located within the council owned road reserve in the front of the subject site.

Tree 1 (Willow Bottlebrush) cannot be retained under the proposed design, as its impact will be too severe. Its removal will require consent from the Hume City Council's Parks Department, along with any associated fees. There is plenty of scope within the nature strip to the east of the trees current position, to allow for a new tree planting once the development is completed.

Chris Walshe

Managing Director & Consulting Arborist
(AQF Level 5 & 8)

I have twenty nine (29) years' experience in the field of Arboriculture, both as a practicing and consulting arborist.

Qualifications:

Graduate Certificate of Arboriculture (Melbourne University)

Diploma of Horticulture (Arboriculture).

Certified Arborist International Society of Arboriculture Member (ISA) Member # 210036 & Arboriculture Australia.

Tree Risk Assessment Qualification (TRAQ) International Society of Arboriculture (ISA) (2019-2024)

Victorian Tree Industry Organization (VTIO) Member.

15. REFERENCES.

AS4970-2009 'Protection of Trees on Development Sites'. Australian Standards. Sydney, Australia.

AS4373-2007 'Pruning of Amenity Trees'. Australian Standards. Sydney, Australia.

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APPENDIX 1 ... TREE DATA TABLE.

ID#	Botanical Name	Common Name	Origin	Age Class	Height X Width (m)	Health	Structure	Form	ULE	DBH (cm)	SRZ (m)	TPZ (m)	Retention Value	Comments
1	<i>Callistemon salignus</i>	Willow Bottlebrush	Australian	Mature	7x5	Good	Poor	Fair	Short	32	2.0	3.8	Third Party	Street Tree. Acute stems with included bark

*= tree with multi stem measurements.
 SRZ= Structural Root Zone, radius.

DBH= Diameter of trunk at 1.4 metres from grade.
 TPZ= Tree Protection Zone, radius.

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APPENDIX...2 PROTECTION OF TREES AS PER AUSTRALIAN STANDARDS 4970-2009.

The Australian Standard AS 4970-2009 'Protection of Trees on Development Sites' is the preferred method of tree protection. This method places Tree Protection Zones (TPZ) that set the required area above and below ground for a tree to remain viable, and without damage to their delicate crown or root systems.

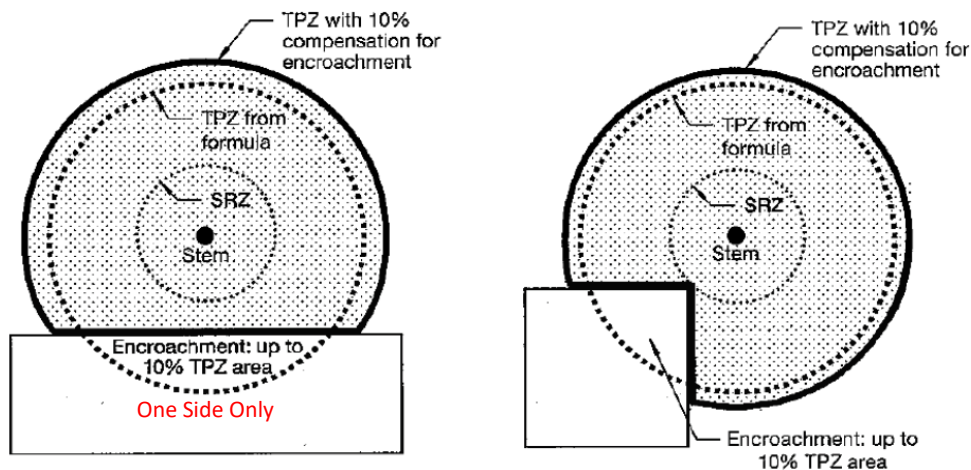
The TPZ is expressed as a radius in meters measured from the centre of the stem at ground level. When several protected trees are located close to one another, TPZ fencing may encompass several trees as a group rather than individually where possible.

Tree Protection Zones are areas set aside surrounding the tree, which are kept free from all construction disturbances. Some of the primary causes of tree decline or damage on construction sites are impact to the trunk and crown of the tree, and root damage or destruction from digging, trenching, compaction, changes to soil levels and dumping of waste.

Encroachment of less than 10% of the TPZ and outside the SRZ is deemed to be minor encroachment and acceptable according to AS 4970-2009. Variations must be made by the project arborist considering relevant factors including tree health, vigour, stability, species tolerance to construction and soil characteristics.

Encroachment of more than 10% of the TPZ, or into the SRZ is major encroachment. The project arborist must demonstrate that the trees would remain viable. Root investigation by non-destructive methods and consideration of relevant factors including tree health, vigour, stability, species, lean, existing conditions, tolerance to construction and soil characteristics.

SRZ encroachment must be avoided at all costs as this area is needed for the trees stability and is not related to tree health.



Example of TPZ encroachment and compensatory offset (image from AS 4970-2009)

Direct damage includes mechanical injury to the trunk, severing the roots through trenching and site cuts which remove or sever absorption roots allowing the onset of decay. Indirect damage to trees could be through soil compaction and by adding fill around trees which limits the amount of oxygen and moisture that will reach the roots. Without this moisture roots cannot function and this will lead to drought stress and eventually the tree will enter a mortality spiral eventually leading to its death.

Indirect effects of construction are usually related to soil hydrology. This includes alterations to soil moisture content, changes in the level of the water table and drainage patterns (Coder, 1995)

This may take several years to become evident in the tree canopy.

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APPENDIX...3 TREE PROTECTION MEASURES.

- Tree Protection Measures must comply with Australian Standards Protection of Trees on Development Sites (AS4970-2009)
- The Tree Protection Zone (TPZ) is fenced and clearly marked at all times. This fence should prevent the placement of building materials, entry of heavy equipment and vehicles and also the entry of workers and/or the public into the TPZ. Existing perimeter fencing can be incorporated into protective fencing.
- Fencing should be minimum 1.8 m wire mesh and must remain in place at all times. Signs labelled “Tree Protection Zone”- Keep Out, or similar wording, must be place on the fence and visible from all sides.
The sign should be similar to the following and should be no smaller than 600mm x 400mm.

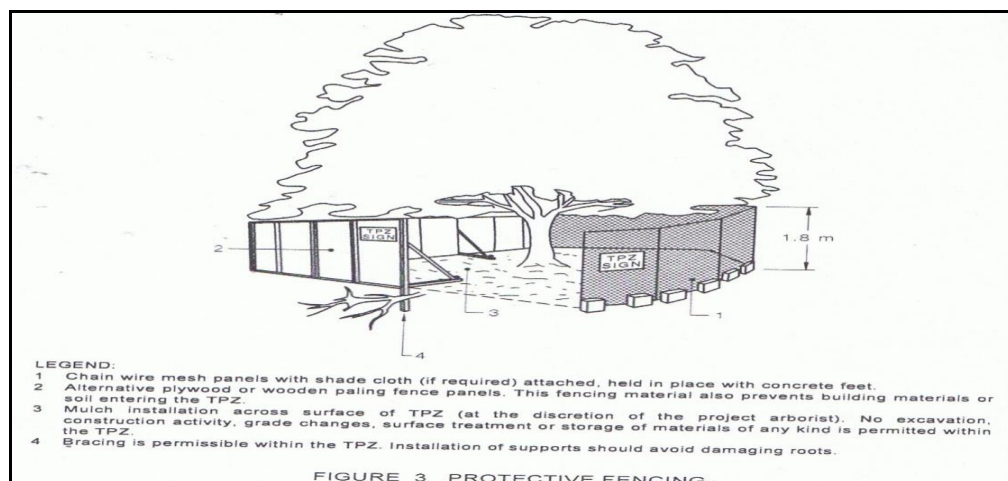


Figure 3: Example of Protective Fencing. (Extract Image from AS4970-2009)

- Contractors and site workers should receive written and verbal instruction as the importance of tree protection and preservation within the site. Successful tree preservation occurs when there is a commitment from all relevant parties involved in designing, constructing and managing a development site. Members of the project team need to interact with each other to minimize the impacts to the trees, either through design decisions or construction practices.
- No fuel, oil dumps or chemicals shall be allowed in or stored on the TPZ and servicing and refueling of equipment and vehicles should be carried out away from the root zones.

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- No storage of material, equipment or temporary building should take place over the root zone. No residual herbicides are to be used within the Tree Protection Zones.
- Nothing whatsoever should be attached to the tree including temporary services wires, nails, screws or any other fixing device.
- Tree Protection Zone mulching should be with a 100mm layer of organic material such as composted woodchips (Ideally Bush tree mulch), this will retain moisture and reduce compaction effects when constant vehicle traffic is involved.
- If the area within the TPZ is to be accessed during construction phase then the area will need ground protection. Boarding made out of Hardwood at least 5cm thick should be strapped together. Measures may include a permeable membrane, such as a geotextile, to cover the TPZ area and ideally placed over a layer of mulch or like at 100mm thick to prevent soil compaction.

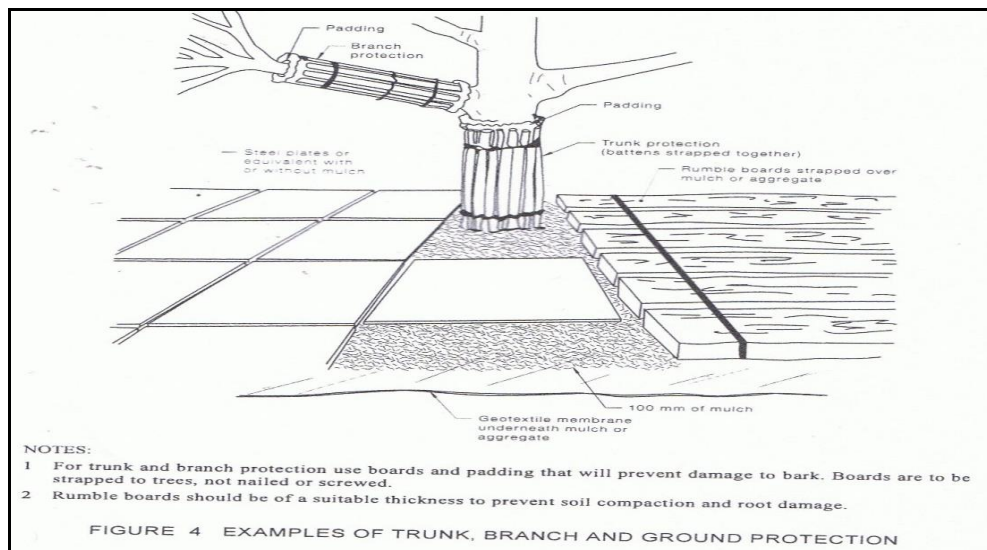


Figure 4: Example of Trunk, Branch & Ground Protection Measures (Extract Images from AS4970-2009.)

- If irrigation is needed a sprinkler system must be used to water the root zones of trees during dry spells, as advised by project arborist. Watering once a fortnight when there is no rain, to provide 30mm of water, will meet the needs of most trees.
- The project arborist is on-site to supervise excavation works around the existing trees where the TPZ will be encroached. Any roots encountered when excavating must be cleanly cut with a saw. If roots encountered greater than >40 mm. The project arborist will ascertain impact and decide appropriate course of action.
- No persons, vehicles or machinery to enter the TPZ without the consent of the project arborist or responsible authority.
- Any underground service installations within the allocated TPZ should be bored and utility authorities should common trench where possible.
- Any pruning that is required must be carried out by trained and competent arborist who has a thorough knowledge of tree physiology and pruning methods and carry out pruning to Australian Standard AS 4373-2007 Pruning of Amenity Trees.
- All root excavation should be carried out by hand digging or with the use of 'Air excavation' techniques, and roots should be severed by saw cutting or with a sharp axe and not with a backhoe or any machinery or blunt instrument.
- All landscaping within the Tree Protection Zone radii must be on the existing soil grade and with minimal impervious surfaces.

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APPENDIX 4... TREE DESCRIPTORS.

Status	Description:
Exotic	Tree species originates in a country other than Australia.
Australian Native	Tree species originates within Australia.
Victorian Native	Tree species originates within Victoria, but not within local environment. Could be planted and not indigenous a (component of EVC benchmark)
Indigenous	Tree species originates within the local environment, could be remnant. (component of EVC benchmark)
Palm	A woody Monocotyledon not a woody structure.

Age	Description:
Young	Juvenile or recently planted approximately 1-7 years.
Semi Mature	Tree actively growing.
Maturing	Tree has reached expected size in situation.
Senescent	Tree is over mature and has started to decline.
Dead	Tree is dead

Health	Description:
Good	Foliage of tree is entire, with good colour, very little sign of pathogens and of good density. Growth indicators are good i.e. extension growth of twigs and wound wood development. Minimal or no canopy die back (deadwood).
Fair	Tree is showing one or more of the following symptoms; < 25% dead wood, minor canopy die back, foliage generally with good colour though some imperfections may be present. Minor pathogen damage present, with growth indicators such as leaf size, canopy density and twig extension growth typical for the species in this location.
Poor	Tree is showing one or more of the following symptoms of tree decline; > 25% deadwood, canopy die back is observable, discoloured or distorted leaves. Pathogens present, stress symptoms are observable as reduced leaf size, extension growth and canopy density. Woundwood development is not apparent.
Dead/Dying	Tree is in severe decline; > 55% deadwood, very little foliage, mostly epicormic shoots, minimal to no extension growth.

Structure	Description:
Good	Trunk and scaffold branches show good taper and attachments with no defects evident in trunk or branches. Primary limbs are well defined with balanced crown. Tree is a good example of the species with a well-developed form. Unlikely to suffer trunk or branch failure under normal conditions.
Fair	Tree shows some minor structural flaws in the structure of the crown. The crown may be slightly Asymmetrical with some branch unions exhibiting minor structural flaws. If one stem may be on a slight lean from tree aspect or exhibiting minor structural flaws. Typical for its specie.
Poor	Is a poorly structured crown, with major structural defects, damage to trunk, large cavities and decay. Co-dominant stems could be present, with included bark or poor structure with likely points of failure. Branch unions may be poorly attached or with major faults at attachment. Possible root damage may occur.
Hazardous	Tree is an immediate hazard with poor crown, active cracks in unions, root plate heaving/lifting or damaged with potential to fail, this should be rectified ' <i>as soon as possible</i> ' or fenced off immediately.

Form	Description:
Good	Canopy full and symmetrical canopy spread and trunk form. Pruning has be done in accordance to AS4373-2007. Typical for its specie
Fair	Minor asymmetry or slightly overextended and/or weighted limbs with evidence of pruning undertaken to accordance of AS4373-2007. Considered typical for species in situation.
Poor	Major asymmetry and/or misshapen not typical for species, Could be storm damaged or had significant structural failures that has compromised structural integrity. Could also be stump re-growth from cut tree.

Useful Life Expectancy (ULE)	Description:
Long (25+ years)	Generally a young to semi mature tree or a moderate to long lived specie. Trees that are in fair-good condition and is structurally sound with a low hazard potential and well suited to its growing environment and future growth requirements. Trees could be of special significance for historical, culturally, or rarity reasons that would warrant extra efforts to secure its long term retention
Medium (11-25 y)	Tree is displaying normal growth characteristics and/ or growing in a modified environment that will likely provide useful Amenity for 11-25 years. It may be in fair condition with a moderate lifespan combined with appropriate management can remain an asset in the landscape for the next 11-25 years.
Short (6-10 years)	Trees is exhibiting fair to poor health with low levels of canopy density typical for specie. It's not expected to maintain current density levels or improve health levels. It provides limited amenity for no more than 10 years due to environmental stresses, pest or diseases, poor site conditions or indirect damage. Could be a short lived species or storm damaged or defective trees that can be made suitable for retention by practicable pruning practices or to remain as a habitat tree.
Remove(1-5 years)	Trees that appear to be an increased risk level that would need to be removed within the next for 5 years. Chronic decline in canopy with >50% typical canopy density, could be mostly epicormics growth related to environmental stresses, pest or diseases, poor site conditions or indirect damage. Structural defects of branch unions that may have poor attachments or faulty and may predispose to failure.
Dead (<1 year)	Tree is dead or mostly dead and should be generally removed as it cannot be managed in short term. Tree has no amenity value and is considered a hazard in its location. Remove and Replace.

Retention Value	Description:
High	Trees with the potential to positively contribute to the site due to their botanical, horticultural, historical or local significance in combination with good characteristics of structure, health and future development. Every effort should be made to retain tree.
Medium	Trees with some beneficial attributes that may benefit the site in relation to botanical, horticultural, historical or local significance but may be limited to some degree by their future growth potential at the site by maintenance requirements now or in the future. These trees should be considered for retention if possible within the development design or removed depending on design preference.
Low	Trees that offer little in terms of contributing to the future landscape for the reasons of poor health or structural condition, species suitability in relation to unacceptable growth habit, noxious, poisonous or weed species or Short-Remove ULE or a combination of these characteristics. Recommend for removal.
Third Party	Third Party Trees must be retained and protected as they are not located on the subject site. Ownership maybe classified as residential or council owned. Despite where ownership lies, these trees must be retained and protected including the roots beneath the surface even if they extend into the subject site.

Diameter at Breast Height (DBH)	The trunk diameter of the tree measured with a (yamano) diameter tape at 1.4 metres above grade.
Structural Root Zone (SRZ)	The SRZ is calculated from the diameter of above the root flare or tree base at grade. It is the volume of soil and tree roots required for the tree stability. Excavation or damage to this area may cause severe decline, death or lead to catastrophic tree failure from wind throw. It is not related to tree health. The measurement is given in meters in a radius from the centre of tree.
Tree Protection Zone (TPZ)	The TPZ is an area that is required for the tree to remain viable (healthy). It is referenced in AS 4970-2009 and is an area fenced off from construction or works around the tree in order for it to survive and thrive in its ground environment. It is calculated as 12 times the trunk diameter, taken at 1.4 metres above grade (DBH). The measurement is given in meters in a radius from the centre of tree.

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ASSUMPTIONS AND LIMITING CONDITIONS

Any legal description provided to **CHTS** is assumed to be correct. **CHTS** assumes any title and ownership to any property are correct. No responsibility is taken for matters outside the control of **CHTS**.

Climbing High Tree Services assume that any property or project is not in violation of any applicable codes, standards or Responsible Authority regulations.

Climbing High Tree Services has taken care in obtaining all information from reliable sources. All data has been verified in so far as possible, however **CHTS** can neither guarantee nor be responsible for the accuracy of the information provided by others not directly under the control of Climbing High Tree Services.

No **Climbing High Tree Service employee** shall be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of additional fee for such services.

Alteration of any part of this report not undertaken by **CHTS** invalidates the entire report.

The report is to be read as a complete document. Loss of any part of this report invalidates the entire report.

The report or contents of this report shall not be used, or published, by any party except the person/s to whom it is addressed, without written approval from **Climbing High Tree Services**.

This report and any values expressed herein represent the opinion of **CHTS** consultant and any fee charged by **CHTS** is in no way conditional on the reporting of a specified value, a stipulated result, the occurrence of a subsequent event or upon any finding report.

Sketches, Diagrams, Graphs and photographs in this report, being intended as visual aids, are not necessary to scale and should not be construed as engineering or architectural drawings, reports or surveys.

CHTS denotes= Climbing High Tree Service.

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DUAL TOWNHOUSE DEVELOPMENT AT 45 CUTHBERT STREET, BROADMEADOWS

PROJECT TEAM

ARCHITECT

Architecture By Semu

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Urban Leaf

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E: energy@tul.net.au, thea@tul.net.au



SITE ANALYSIS

AREA SCHEDULE

DWELLING	LEVEL L0			LEVEL L1	TOTAL DWELLING		S.P.O.S	P.O.S	Total P.O.S
	(m ²)			(m ²)	(m ²)	(SQ)	(m ²)	(m ²)	(m ²)
	LIVING AREA	GARAGE PLUS BIN STORAGE	TOTAL L0	LIVING			BACK YARD	FRONT AND SIDE	
1	157	48.2	205.2	131.2	336.4	36.2	76.2	45.7	121.9
2	157	48.2	205.2	131.2	336.4	36.2	76.2	45.7	121.9
TOTAL					672.8	72.4	152.4	91.4	243.8

SITE	697	
	m ²	%
GARDEN AREA	243.8	35
SITE COVERAGE	414.4	59.5
SITE PERMEABILITY	194.2	27.9

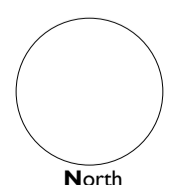
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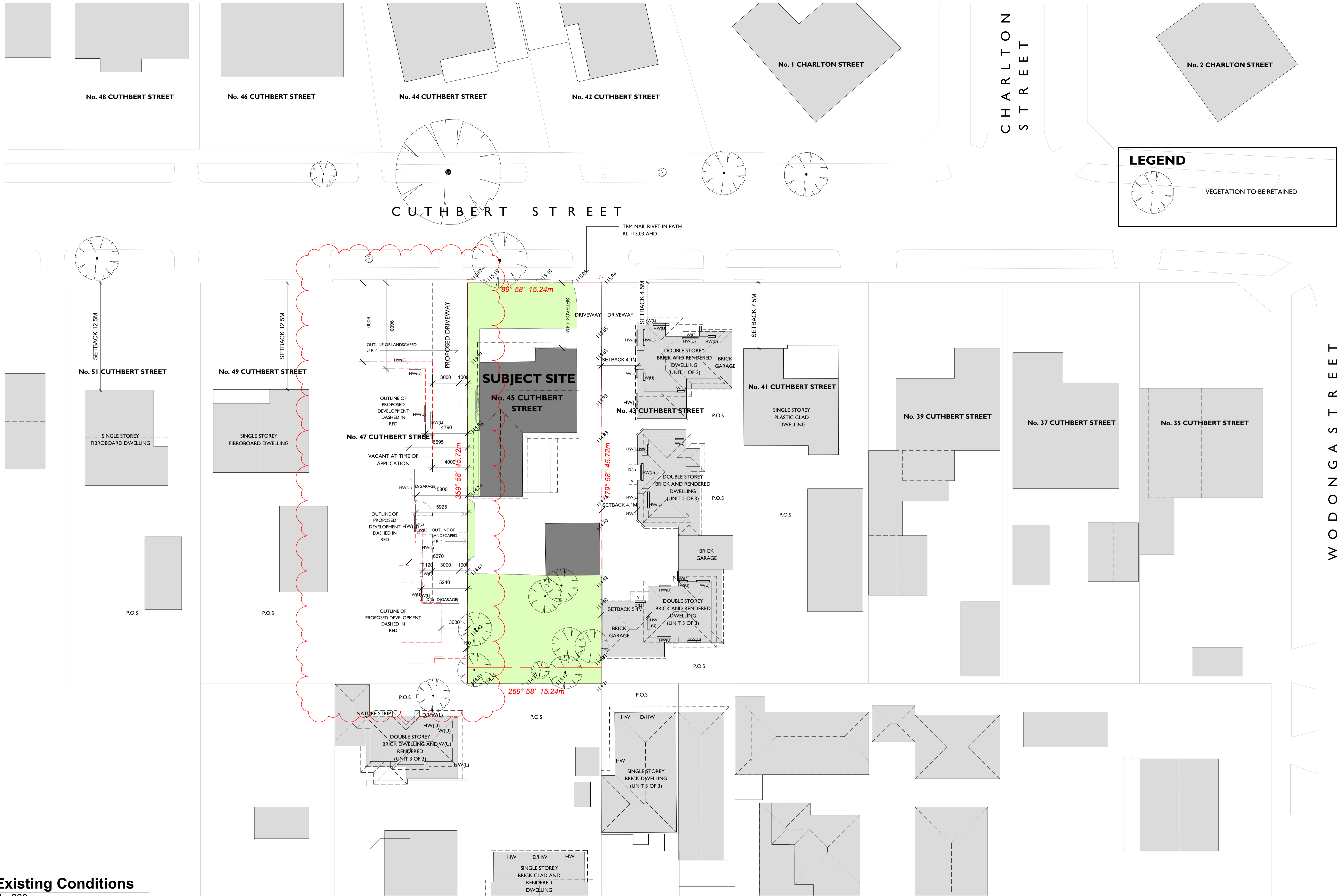
No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE	CLIENT	DRAWING TITLE	DATE:
45 Cuthbert Street, Broadmeadows	[REDACTED]	Cover Sheet	2022.05.18
DRAWN:	SCALE @ A1:	REVISION	JOB No:
SN		A	21-20
DWG No:	TP00		





1 Existing Conditions
1 : 200

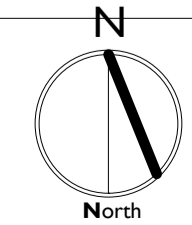
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No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN

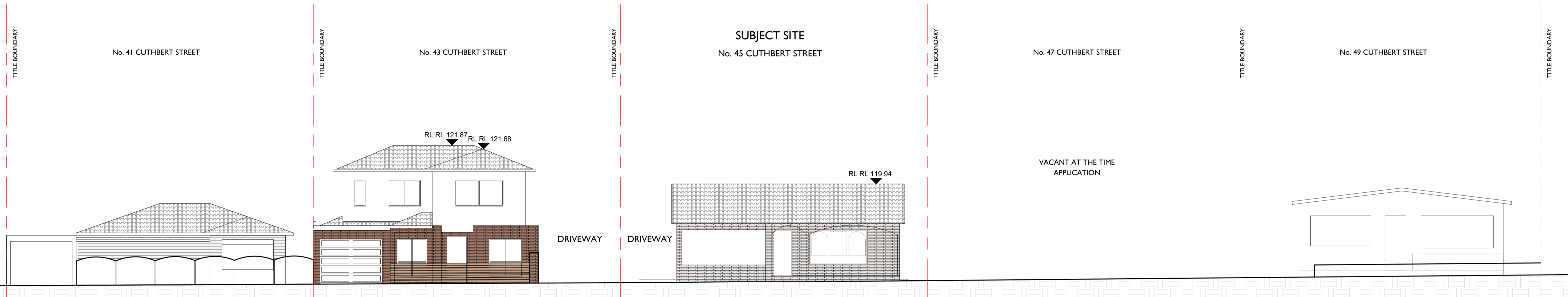


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PROJECT TITLE	CLIENT	DRAWING TITLE	DATE
45 Cuthbert Street, Broadmeadows	[REDACTED]	Existing Conditions Plan	02/16/22
DRAWN:	SCALE @ A1:	REVISION	JOB No:
Author	As indicated	A	21-20
			DWG No: EX01



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1 Existing Streetscape Elevation
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE
45 Cuthbert Street, Broadmeadows

CLIENT
[Redacted]

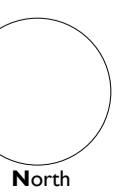
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Existing Streetscape Elevation

DATE:
2022.02.22

DRAWN:
SN

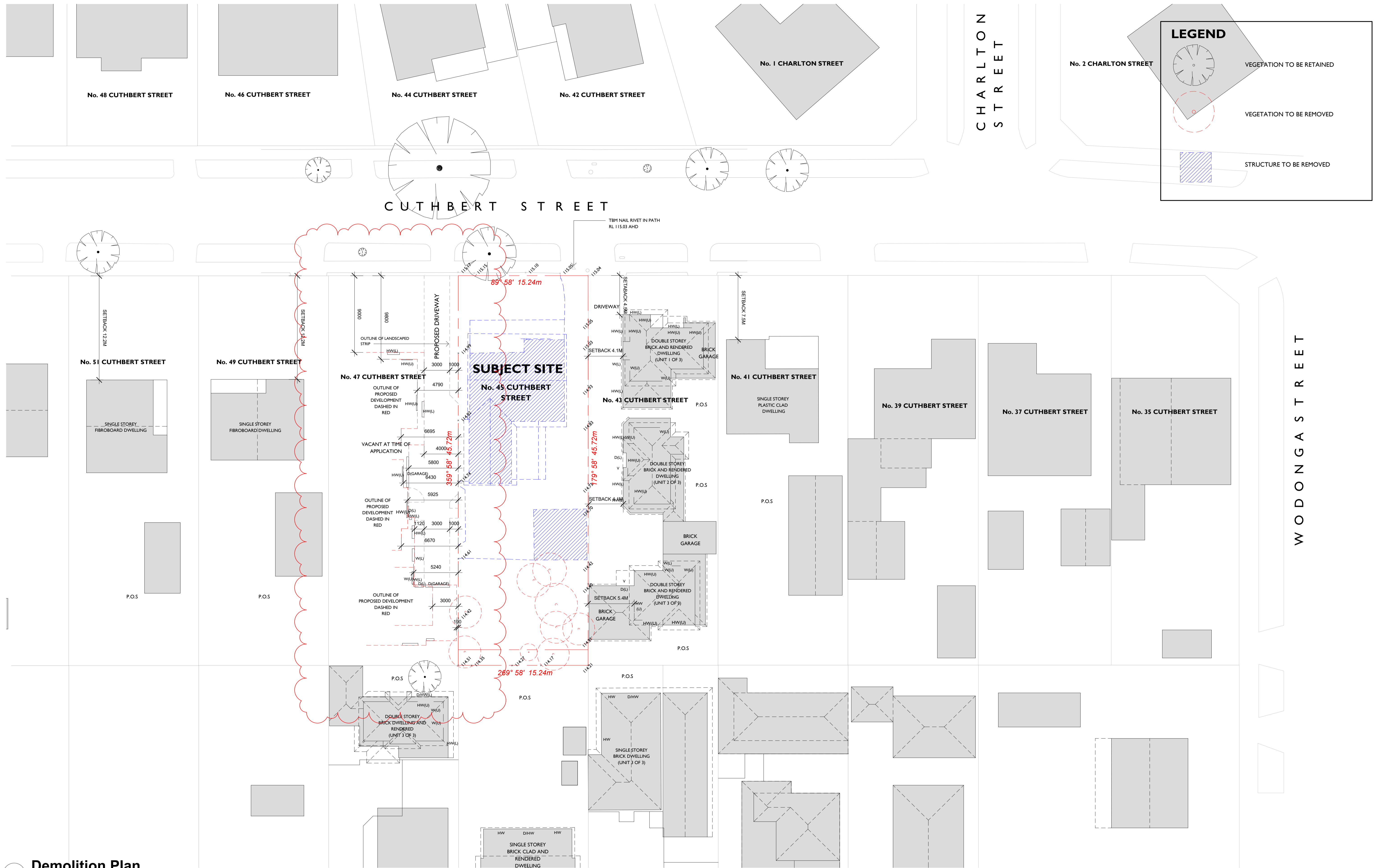
SCALE @ A1:
1 : 100

REVISION
A



JOB No:
21-20

DWG No:
EX02



LEGEND

- VEGETATION TO BE RETAINED
- VEGETATION TO BE REMOVED
- STRUCTURE TO BE REMOVED

1 Demolition Plan
1 : 200

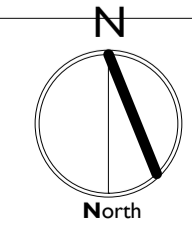
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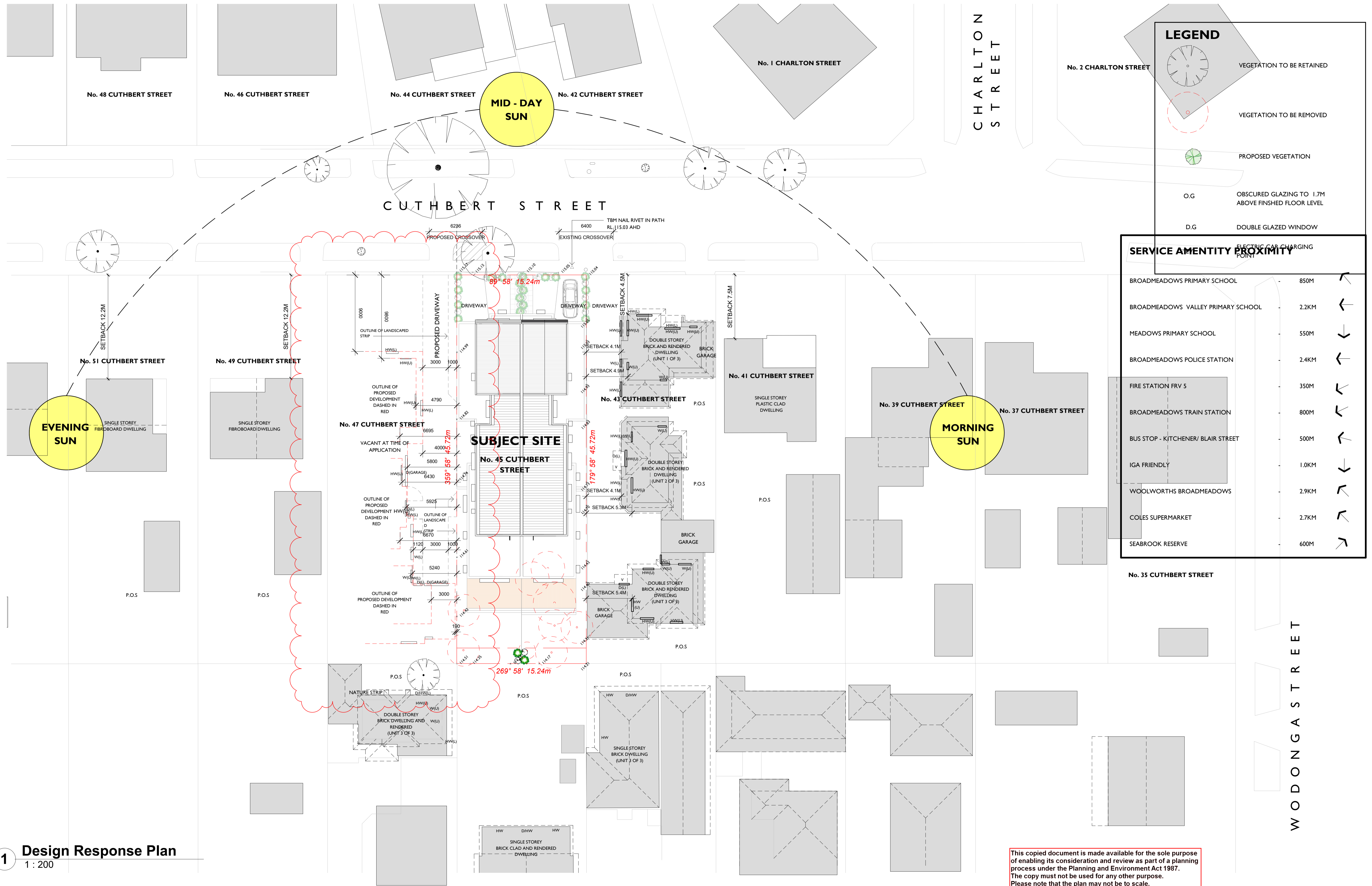
No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE	CLIENT	DRAWING TITLE	DATE
45 Cuthbert Street, Broadmeadows	[REDACTED]	Demolition Plan	2022.02.02
DRAWN:	SCALE @ A1:	REVISION	JOB No:
SN	As indicated	A	21-20
DWG No:	DM01		





SERVICE AMENITY PROXIMITY	
AMENITY	PROXIMITY
BROADMEADOWS PRIMARY SCHOOL	850M
BROADMEADOWS VALLEY PRIMARY SCHOOL	2.2KM
MEADOWS PRIMARY SCHOOL	550M
BROADMEADOWS POLICE STATION	2.4KM
FIRE STATION FRV 5	350M
BROADMEADOWS TRAIN STATION	800M
BUS STOP - KITCHENER/ BLAIR STREET	500M
IGA FRIENDLY	1.0KM
WOOLWORTHS BROADMEADOWS	2.9KM
COLES SUPERMARKET	2.7KM
SEABROOK RESERVE	600M

1 Design Response Plan
1 : 200

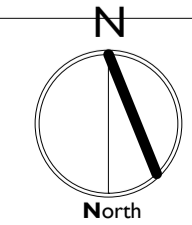
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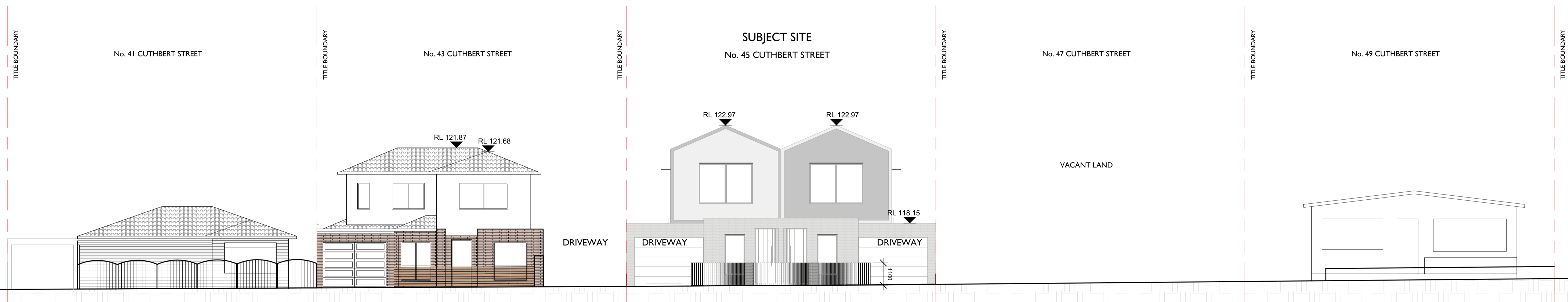


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PROJECT TITLE	CLIENT	DRAWING TITLE	DATE
45 Cuthbert Street, Broadmeadows	[REDACTED]	Design Response Plan	2022.02.02
DRAWN:	SCALE @ A1:	REVISION	JOB No:
SN	As indicated	A	21-20
			DWG No:
			DR01



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1 Proposed Streetscape Elevation
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE
45 Cuthbert Street, Broadmeadows

CLIENT
[Redacted]

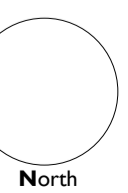
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Streetscape Elevation

DATE:
2022.02.02

DRAWN:
SN

SCALE @ A1:
1 : 100

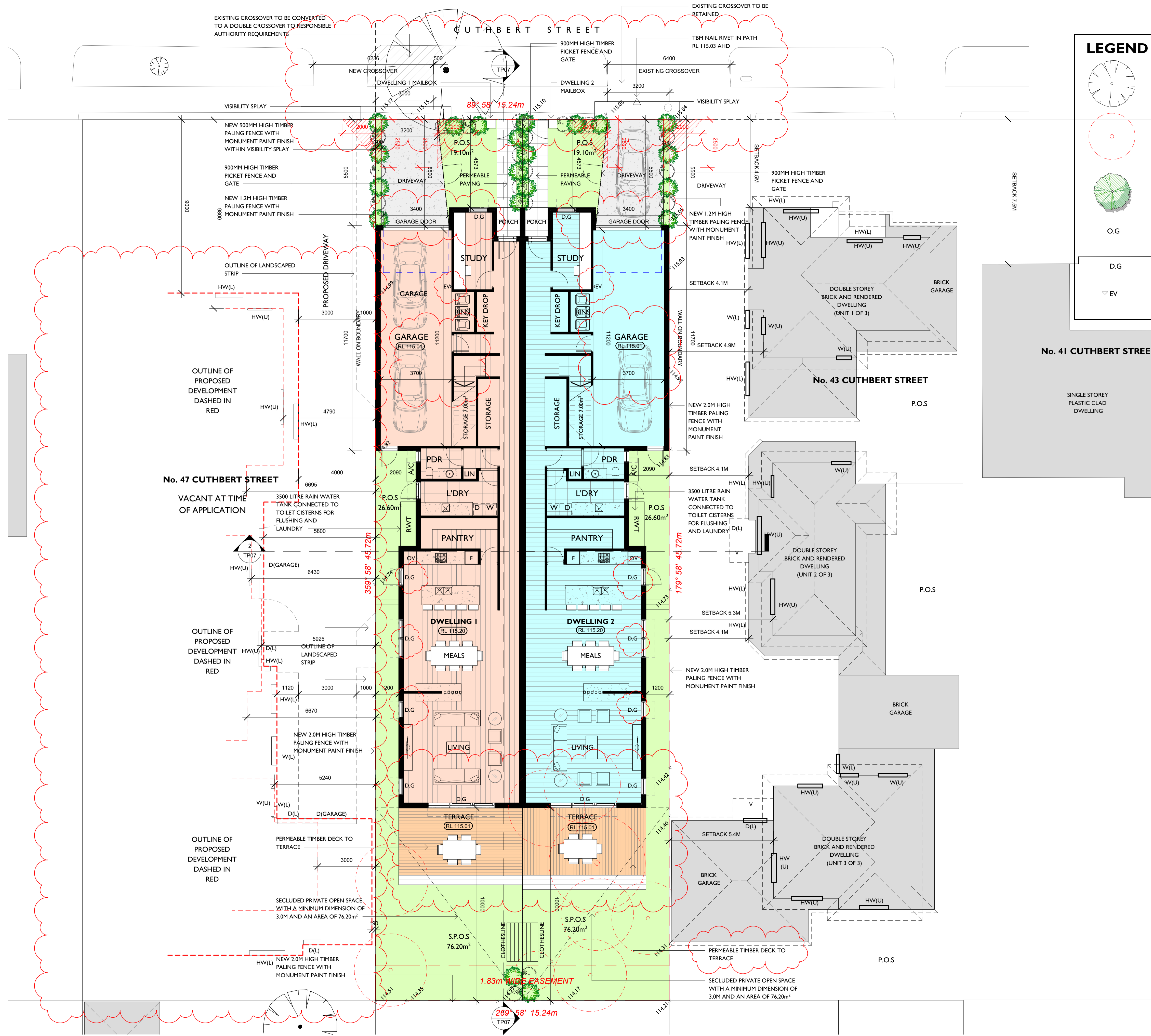
REVISION
A



JOB No:
21-20

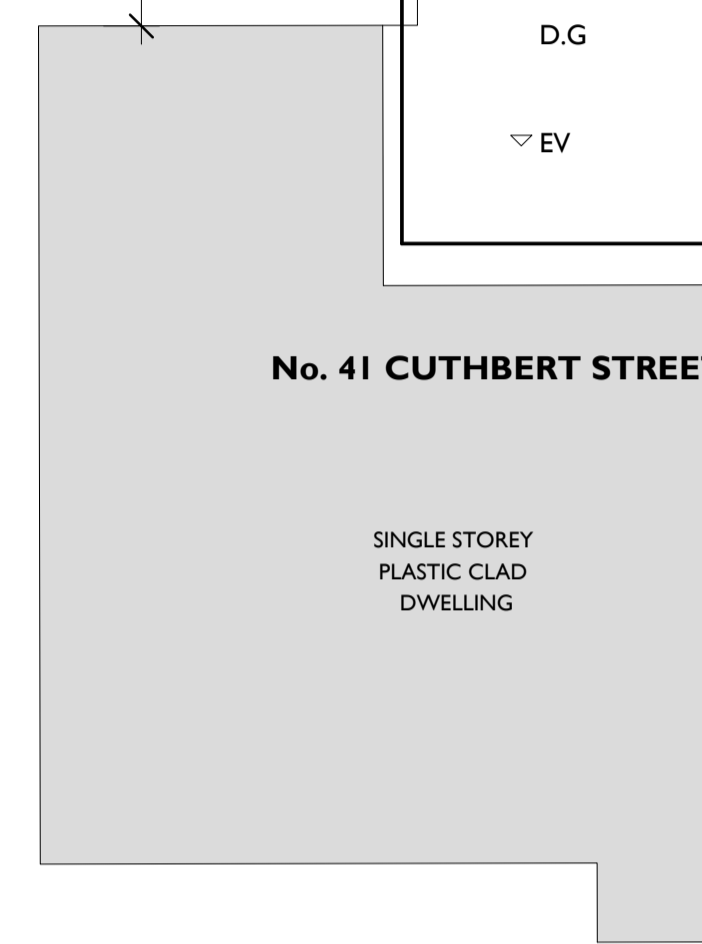
DWG No:
DR02

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LEGEND

- VEGETATION TO BE RETAINED
- VEGETATION TO BE REMOVED
- PROPOSED VEGETATION
- O.G. OBSCURED GLAZING TO 1.7M ABOVE FINISHED FLOOR LEVEL
- D.G. DOUBLE GLAZED WINDOW
- EV ELECTRIC CAR CHARGING POINT

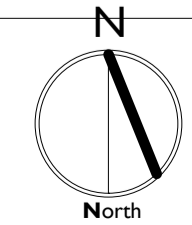


No.	DATE	AMENDMENTS	DRAWN	CHECKED
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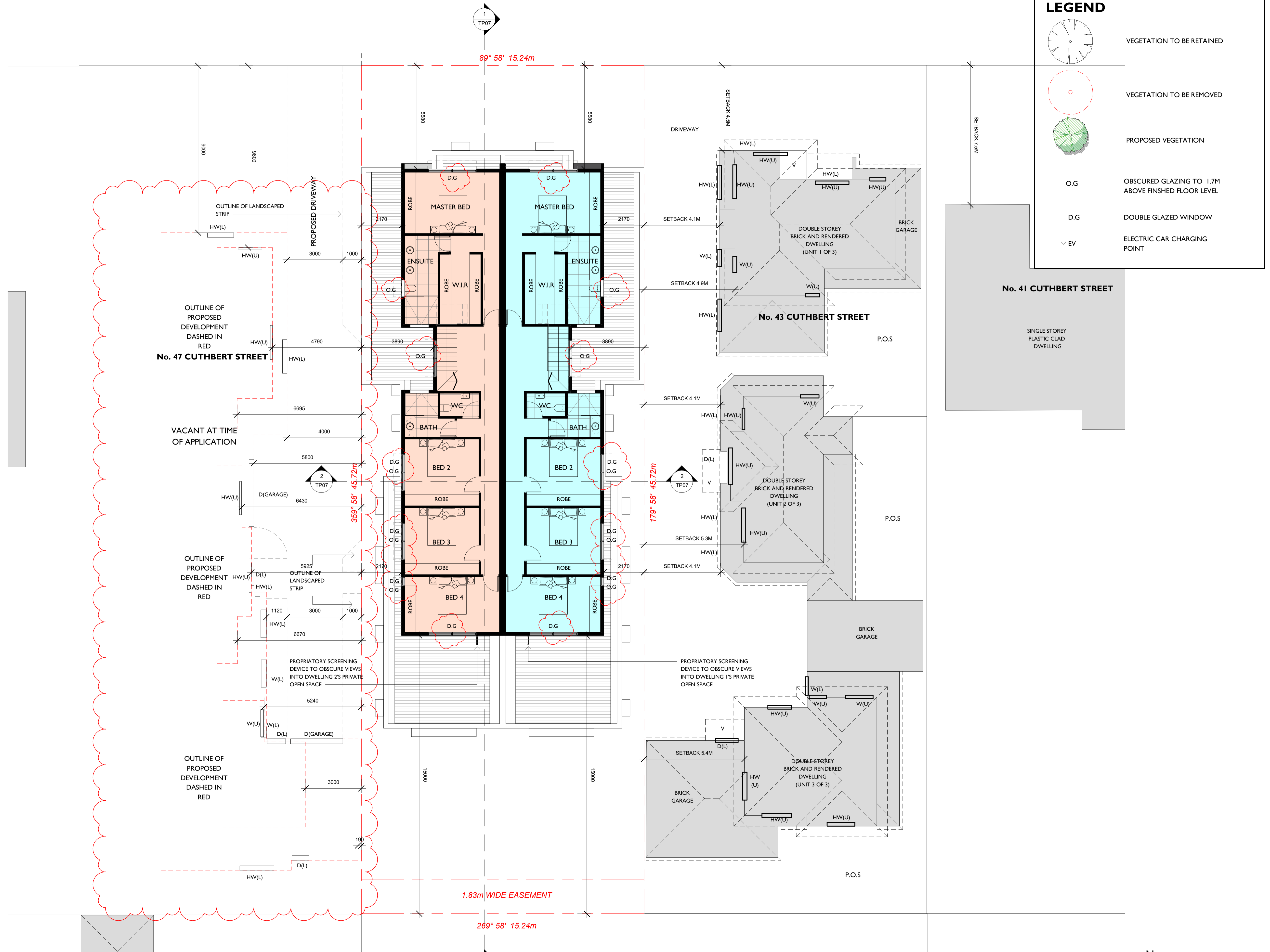


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PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT [REDACTED]	DRAWING TITLE Ground Floor Plan	DATE 2022.05.18
DRAWN: SN	SCALE @ A1: 1 : 100	REVISION A	JOB No: 21-20
		DWG No: TP01	



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LEGEND

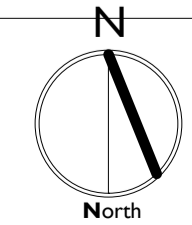
- VEGETATION TO BE RETAINED
- VEGETATION TO BE REMOVED
- PROPOSED VEGETATION
- O.G. OBSCURED GLAZING TO 1.7M ABOVE FINISHED FLOOR LEVEL
- D.G. DOUBLE GLAZED WINDOW
- EV ELECTRIC CAR CHARGING POINT

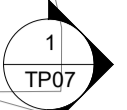
No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN

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PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT [REDACTED]	DRAWING TITLE First Floor Plan	DATE: 2022.02.02
DRAWN: SN	SCALE @ A1: 1 : 100	REVISION A	JOB No: 21-20
		DWG No: TP02	

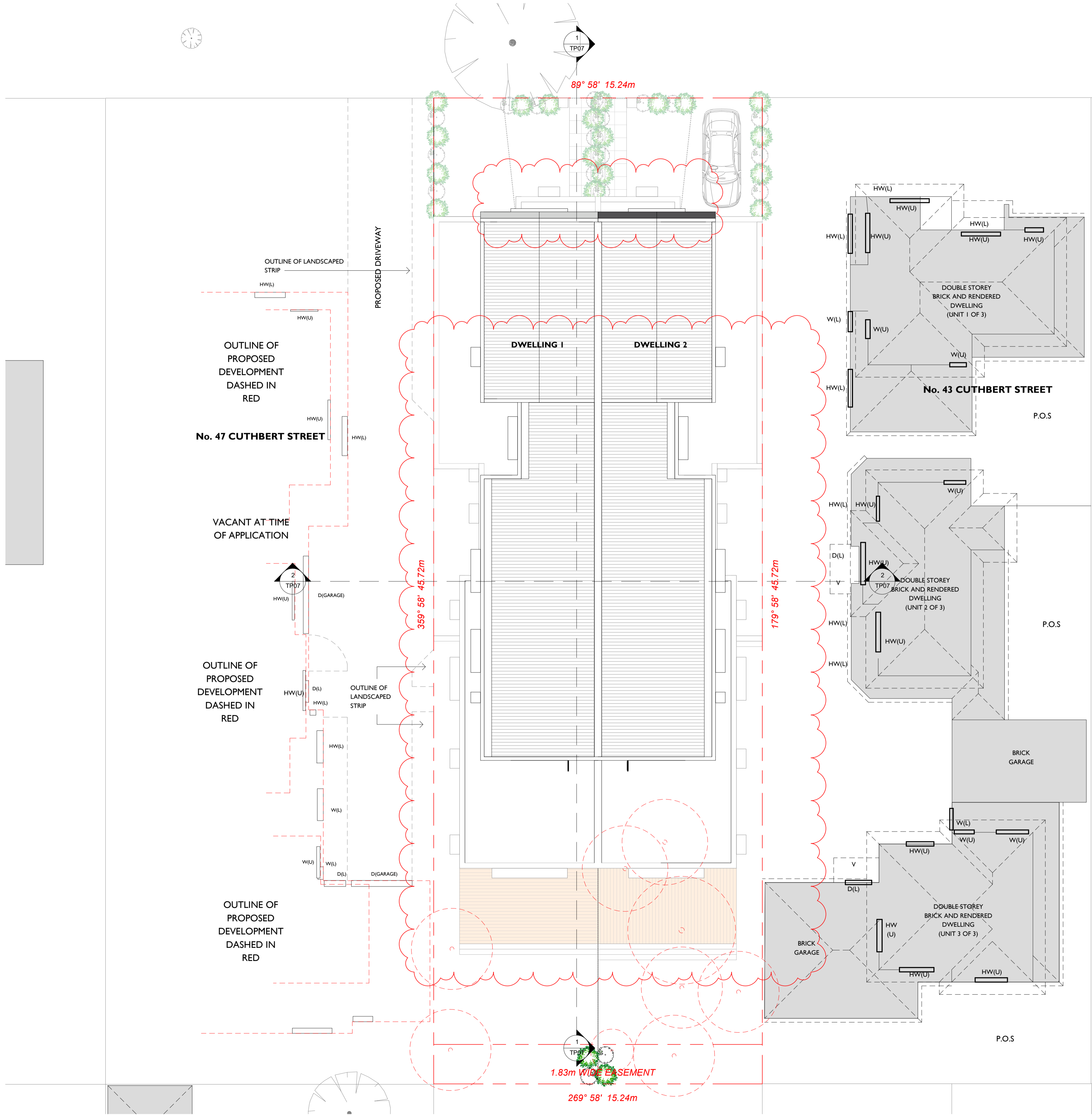




89° 58' 15.24m

LEGEND

- VEGETATION TO BE RETAINED
- VEGETATION TO BE REMOVED
- PROPOSED VEGETATION
- O.G. OBSCURED GLAZING TO 1.7M ABOVE FINISHED FLOOR LEVEL
- D.G. DOUBLE GLAZED WINDOW
- EV ELECTRIC CAR CHARGING POINT



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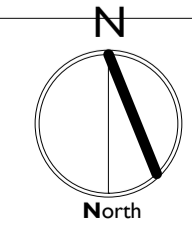
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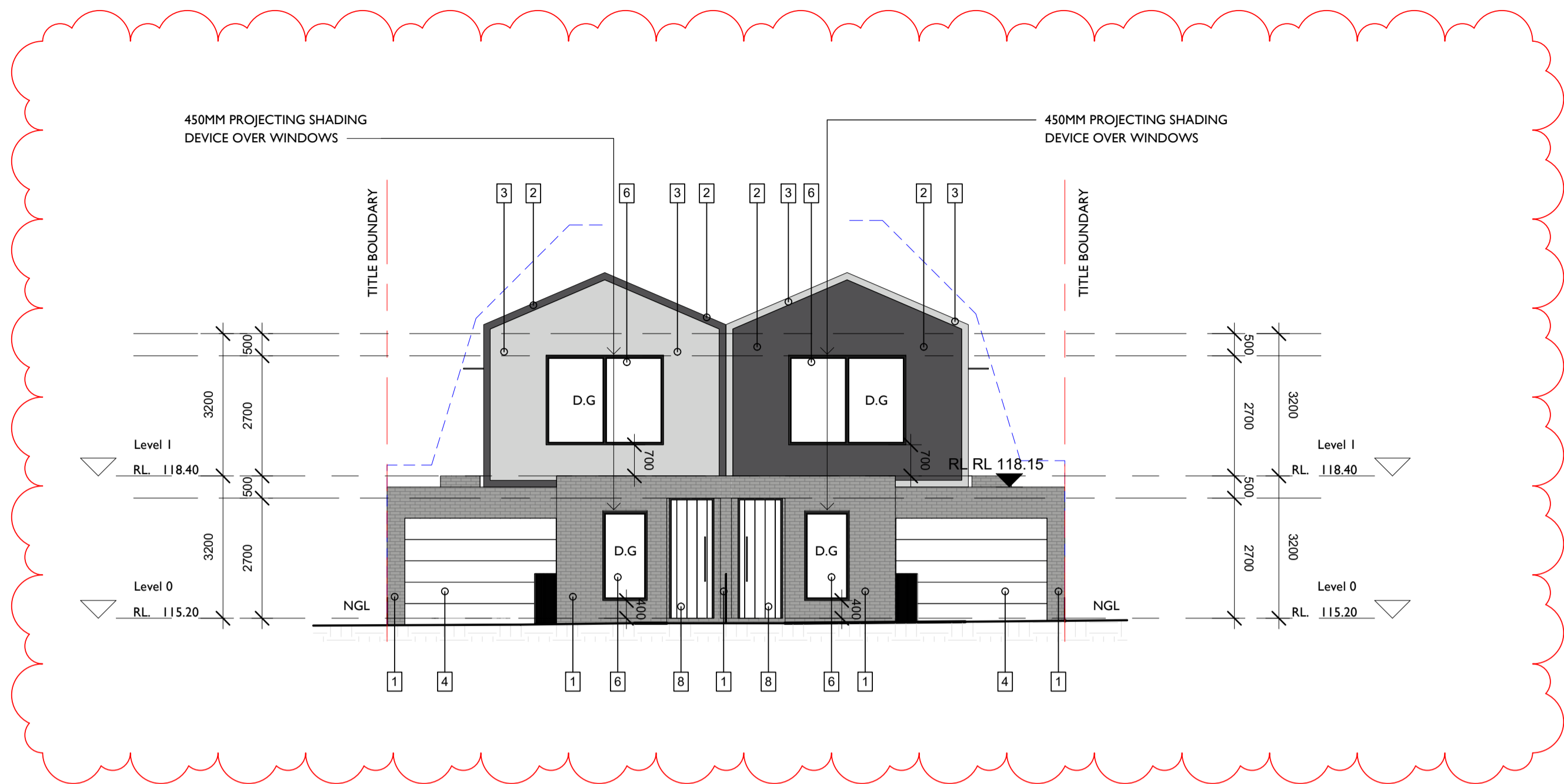


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PROJECT TITLE: 45 Cuthbert Street, Broadmeadows
 CLIENT: [Redacted]
 DRAWN: SN
 SCALE @ A1: 1 : 100

DRAWING TITLE: Roof Plan
 REVISION: A
 DATE: 2022.02.02
 JOB No: 21-20
 DWG No: TP03



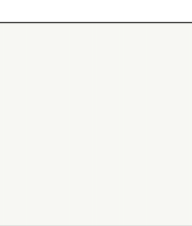




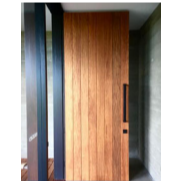


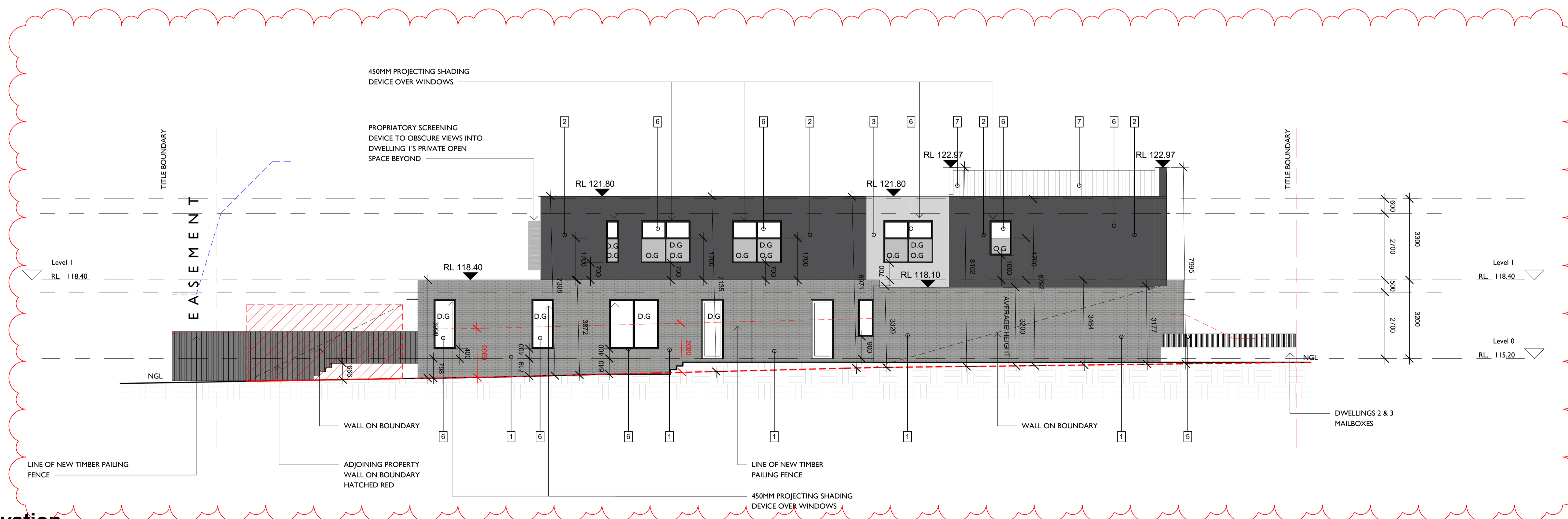


1 North Elevation
1 : 100

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MATERIALS SCHEDULE

- 1  FACE BRICK
COLOUR: GREY
- 2  RENDER FINISH
COLOUR: CHARCOAL
- 3  RENDER FINISH
COLOUR: WHITE
- 4  PAINT FINISH
COLOUR: WHITE
- 5  METAL SHROUD
COLOUR: WHITE
- 6  WINDOW AND DOOR FRAME
COLOUR: DULUX MONUMENT
- 7  ROOF SHEETING
COLOUR: GREY
- 8  TIMBER ENTRY DOOR
COLOUR: TIMBER FINISH



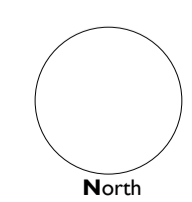
2 East Elevation
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN











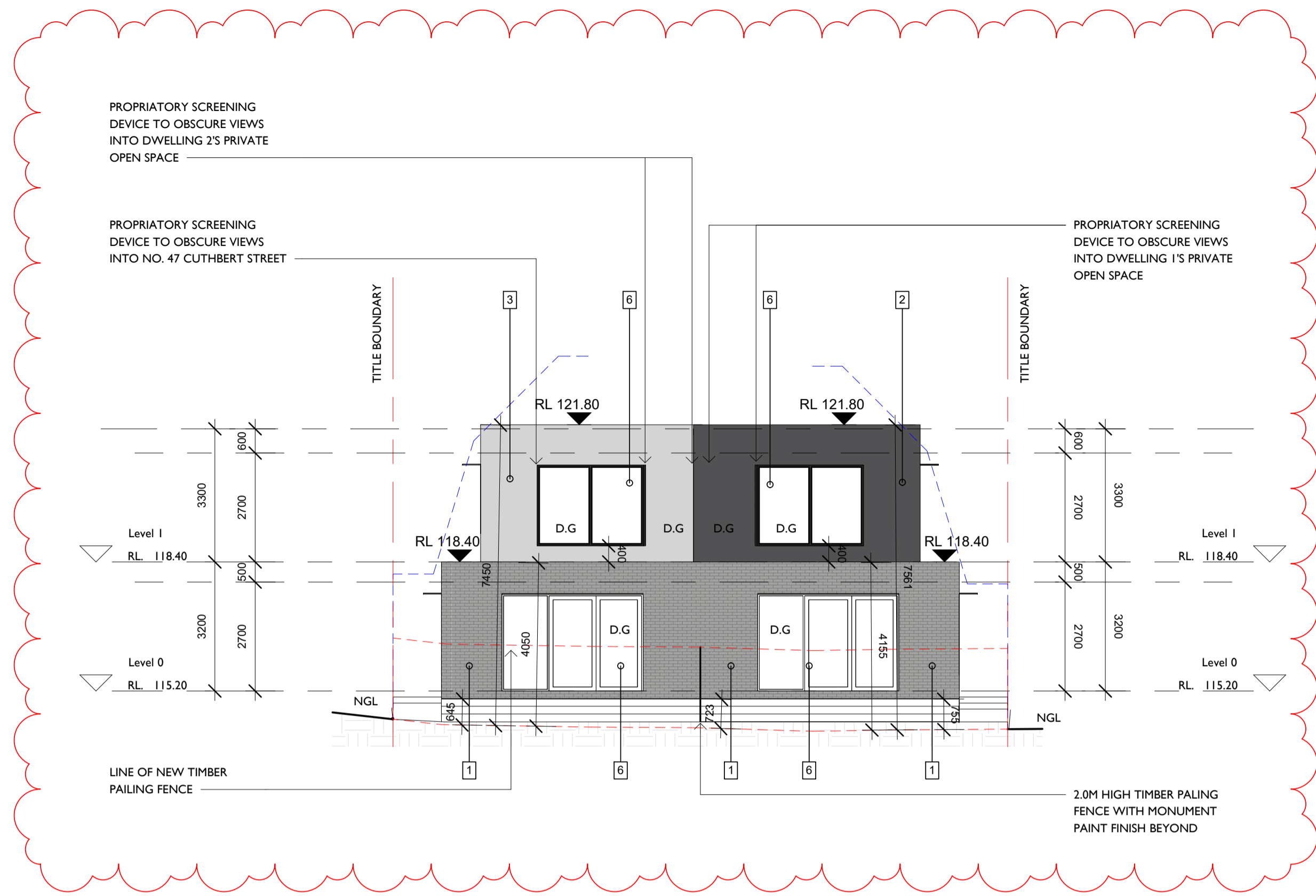
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PROJECT TITLE	CLIENT	DRAWING TITLE	DATE
45 Cuthbert Street, Broadmeadows	[REDACTED]	Elevations	2022.02.02
DRAWN:	SCALE @ A1:	REVISION	JOB No:
SN	1 : 100	A	21-20
			DWG No:
			TP04



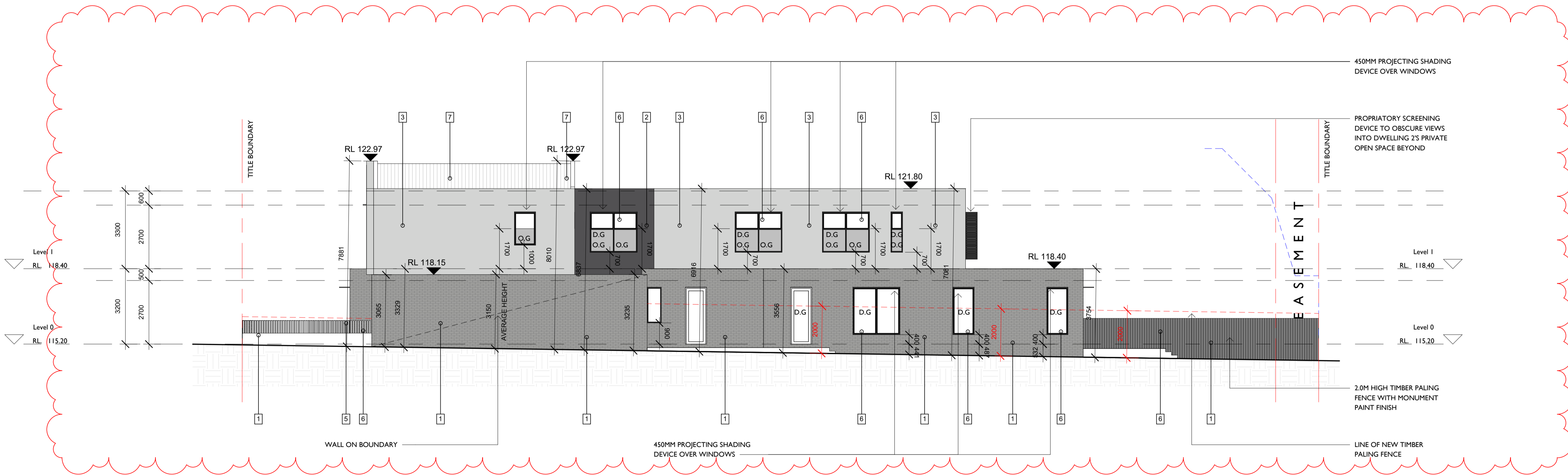
MATERIALS SCHEDULE

- 1  FACE BRICK
COLOUR: GREY
- 2  RENDER FINISH
COLOUR: CHARCOAL
- 3  RENDER FINISH
COLOUR: WHITE
- 4  PAINT FINISH
COLOUR: WHITE
- 5  METAL SHROUD
COLOUR: WHITE
- 6  WINDOW AND DOOR FRAME
COLOUR: DULUX MONUMENT
- 7  ROOF SHEETING
COLOUR: GREY
- 8  TIMBER ENTRY DOOR
COLOUR: TIMBER FINISH



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1 South Elevation
1 : 100




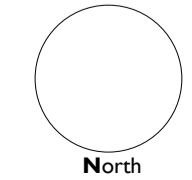
2 West Elevation
1 : 100

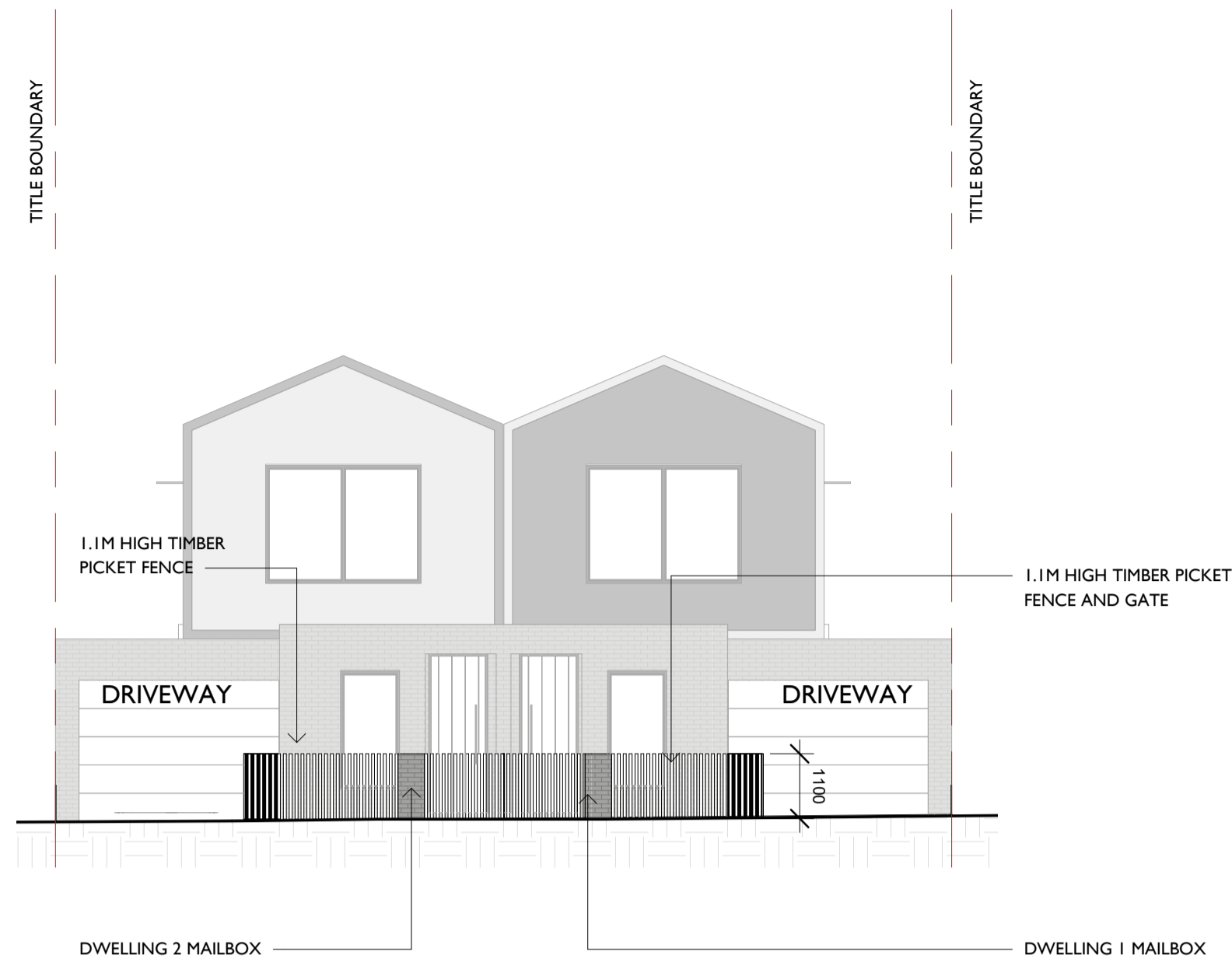
No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



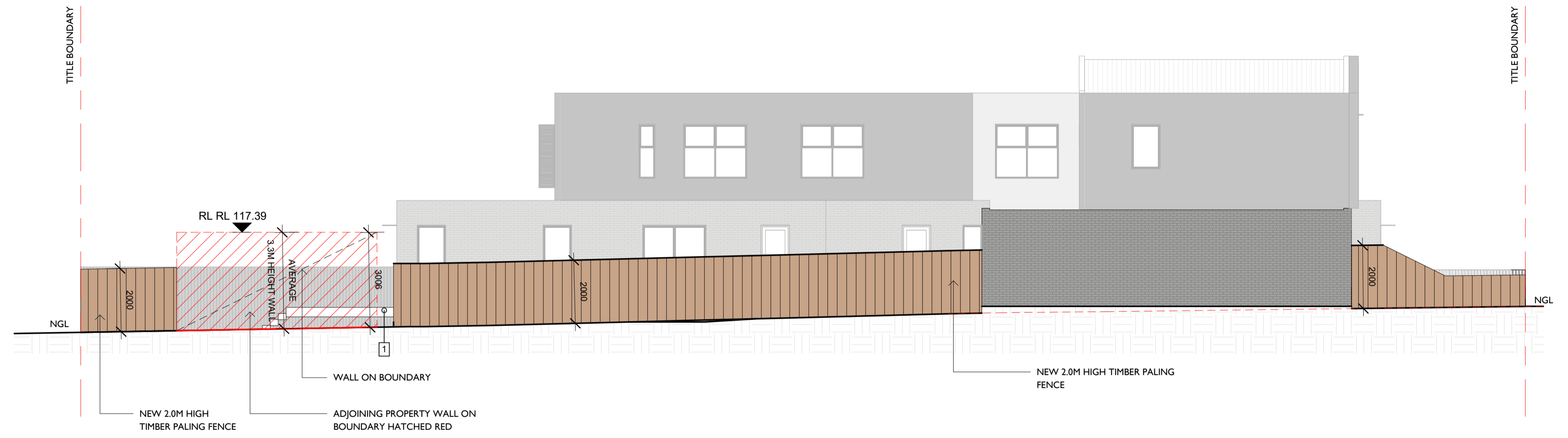
A. Level 17, 31 Queen Street, Melbourne VIC 3000. M. +61 416 728 614 E. semu@abysemu.com

PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT 	DRAWING TITLE Elevations	DATE 02/14/22
DRAWN: SN	SCALE @ A1: 1 : 100	REVISION A	JOB No: 21-20
		DWG No: TP05	



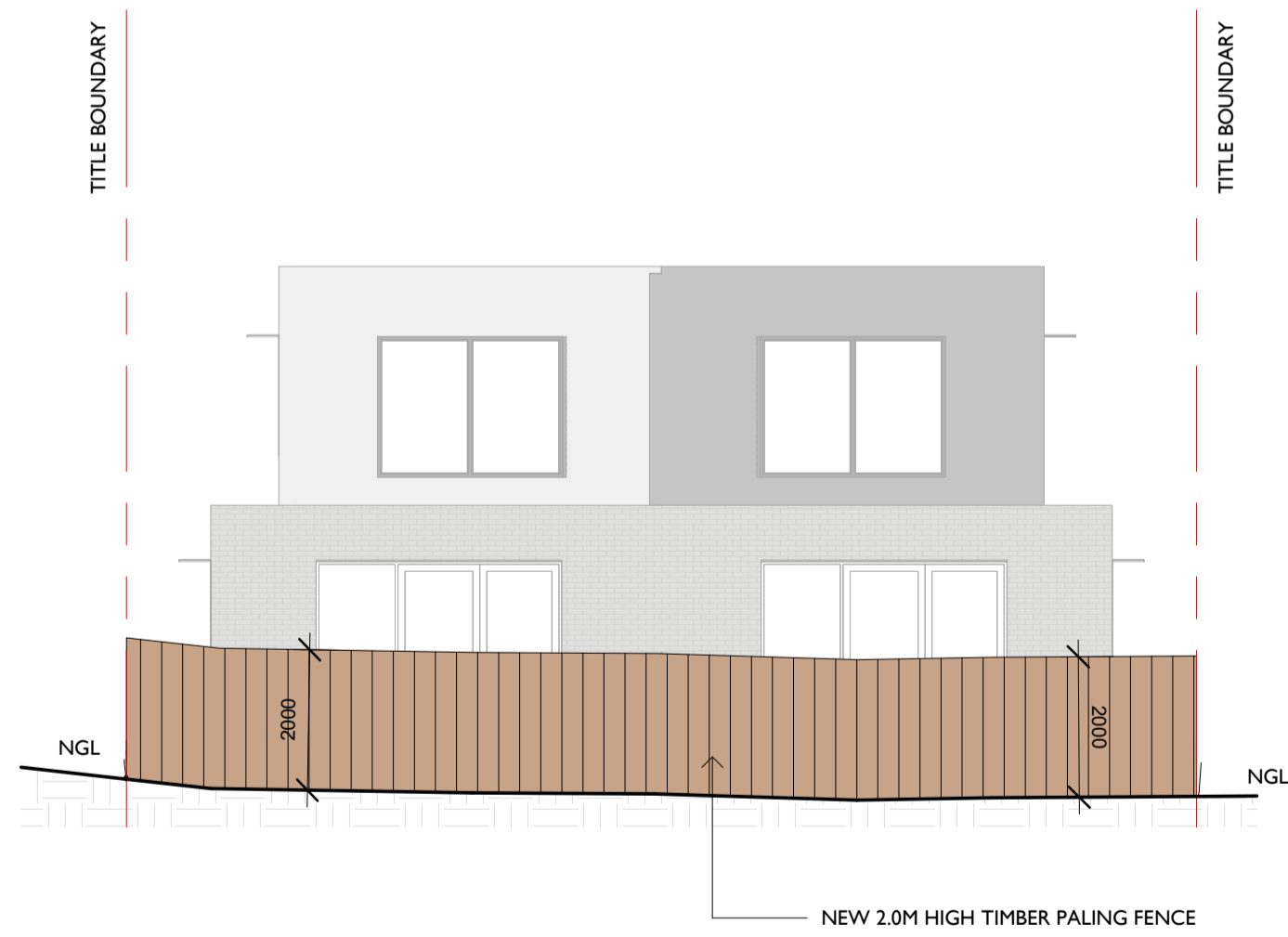


1 Front Fence Elevation
1 : 100

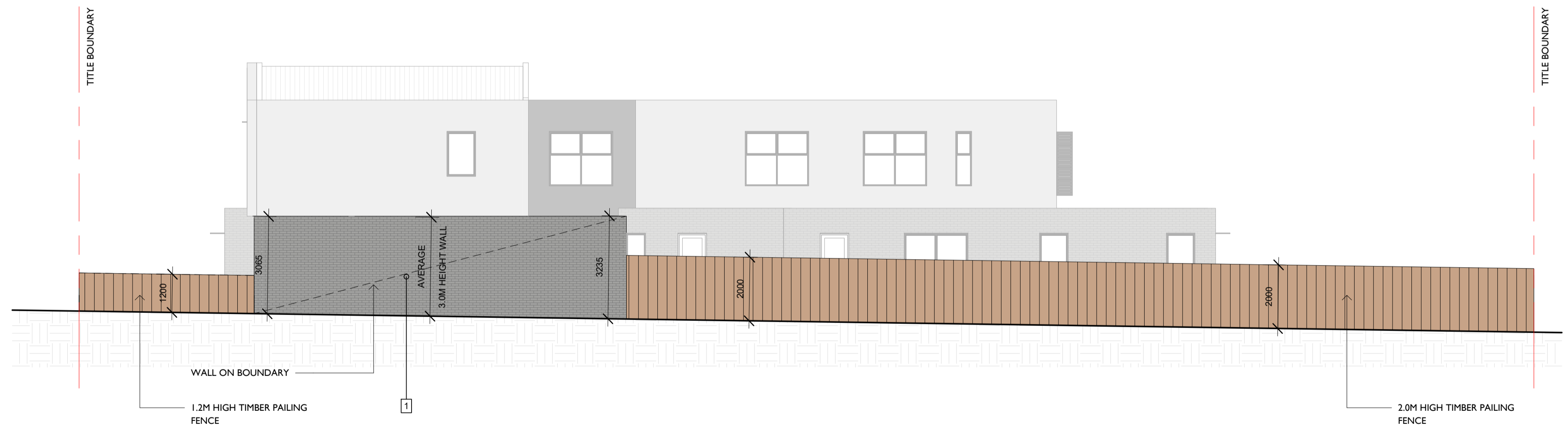


2 East Fence Elevation
1 : 100

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3 South Fence Elevation
1 : 100



4 West Fence Elevation
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE
45 Cuthbert Street, Broadmeadows



CLIENT

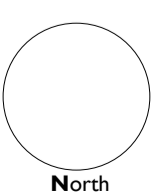
DRAWING TITLE
Fence Elevations

DATE:
2022.02.02

DRAWN:
Author

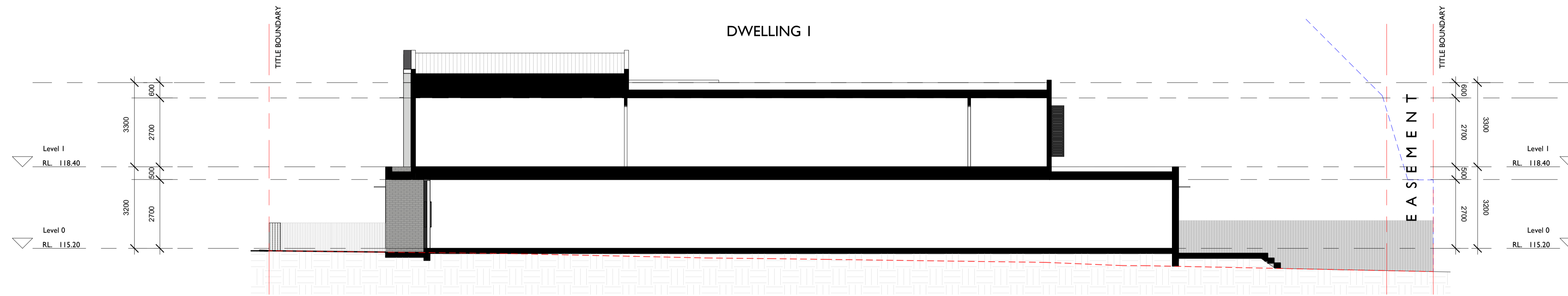
SCALE @ A1:
1 : 100

REVISION
A



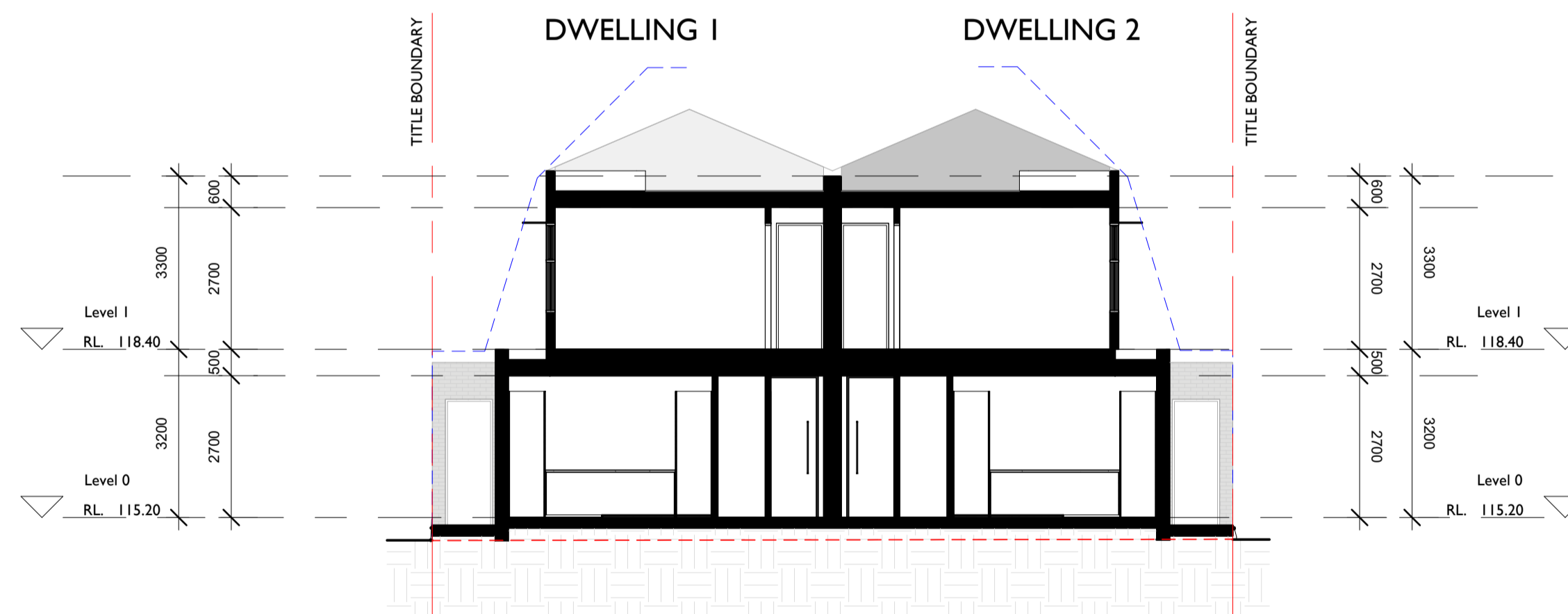
JOB No:
21-20

DWG No:
TP06



1 Section 1
1 : 100

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2 Section 2
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE
45 Cuthbert Street, Broadmeadows

CLIENT
[Redacted]

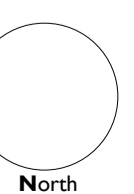
DRAWING TITLE
Sections

DATE:
2022.05.18

DRAWN:
SN

SCALE @ A1:
1 : 100

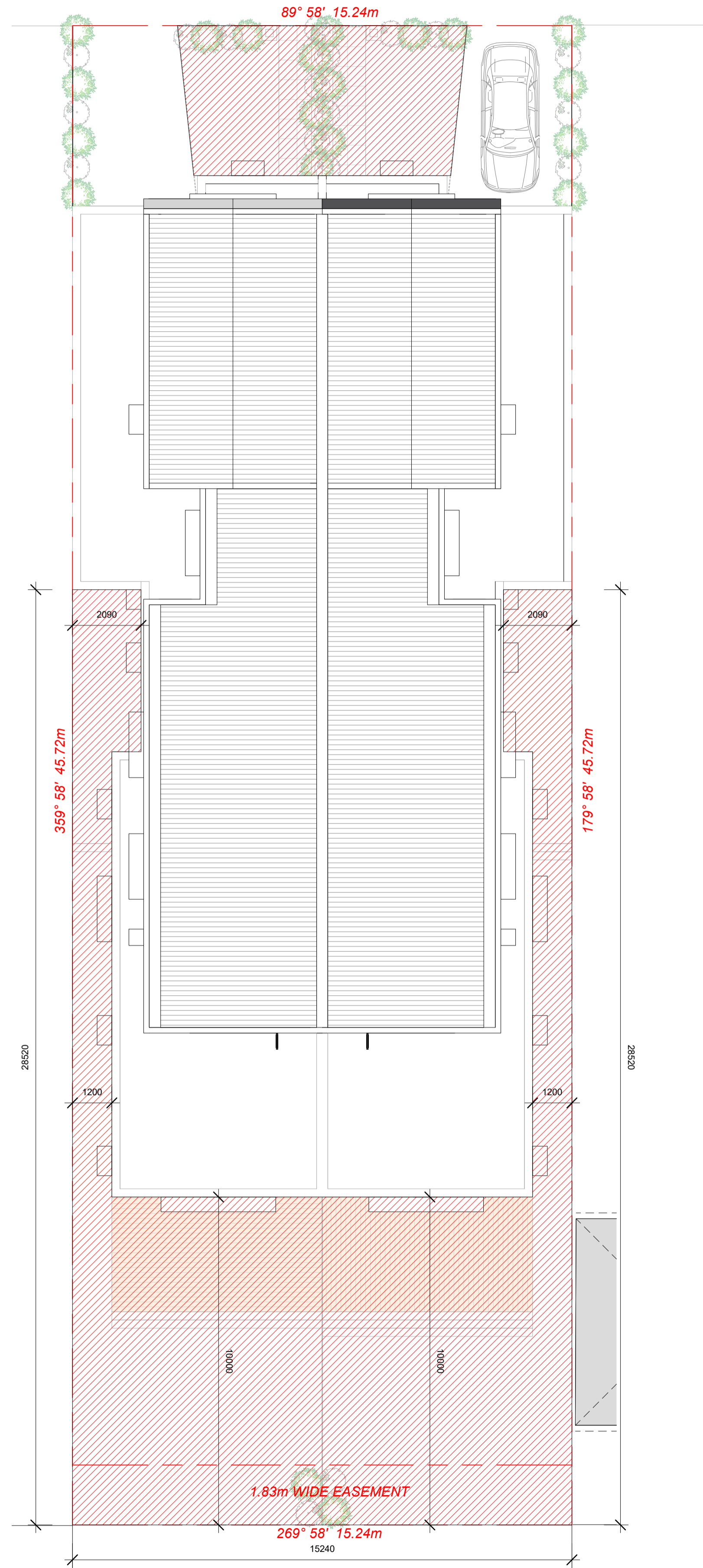
REVISION
A



JOB No:
21-20

DWG No:
TP07

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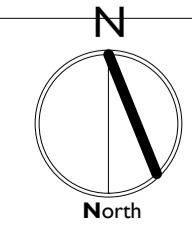


No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN

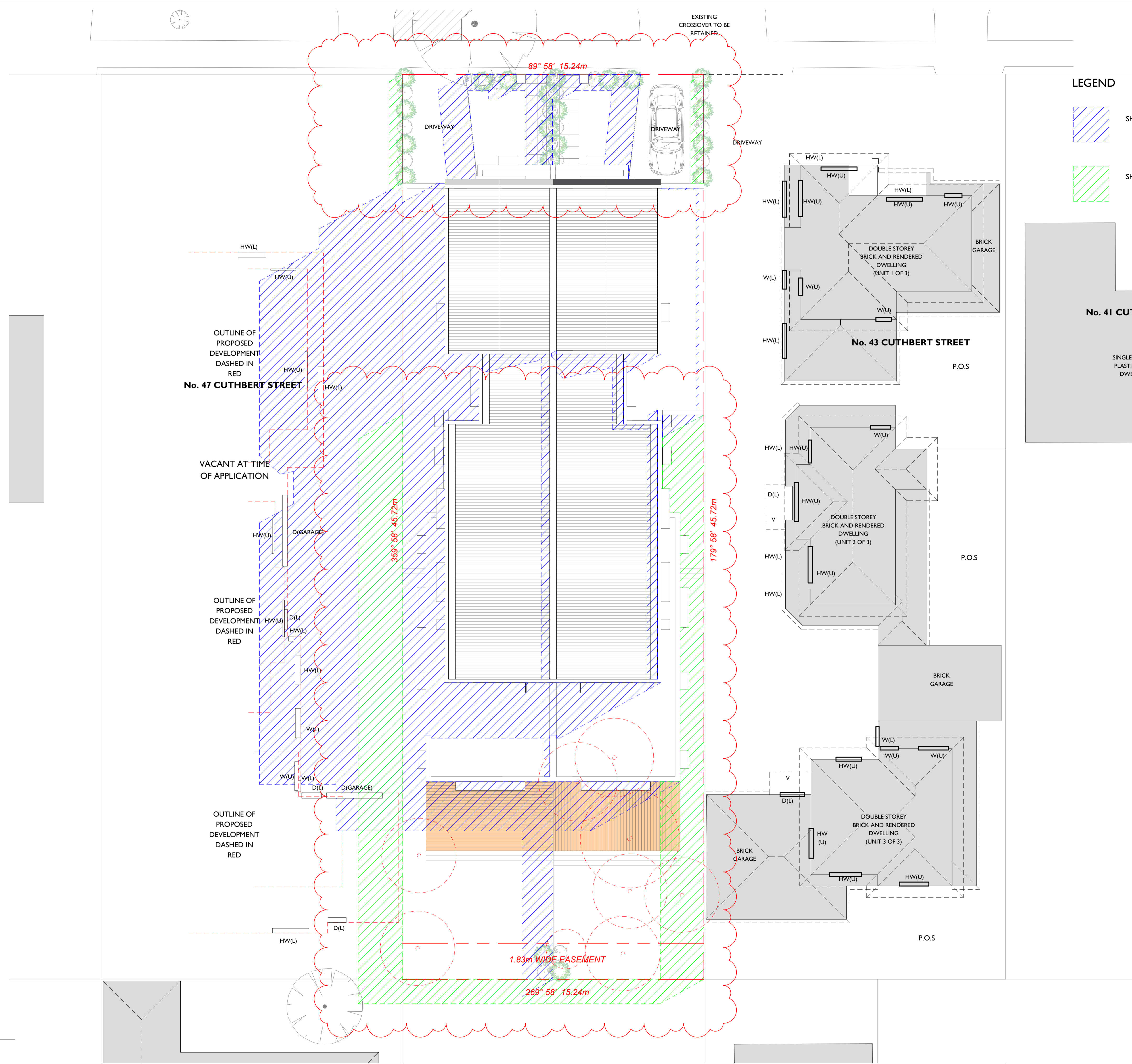


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PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT [REDACTED]	DRAWING TITLE Garden Area	DATE: 2022.05.18
DRAWN: SN	SCALE @ A1: 1 : 100	REVISION A	JOB No: 21-20
			DWG No: TP08



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1 9am Shadow Diagram
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN

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PROJECT TITLE
45 Cuthbert Street, Broadmeadows

CLIENT
[REDACTED]

DRAWING TITLE
9am Shadow Diagram

DATE
02/12/22

DRAWN:
Author

SCALE @ A1:
1 : 100

REVISION
A

JOB No:
21-20

DWG No:
TP09

North

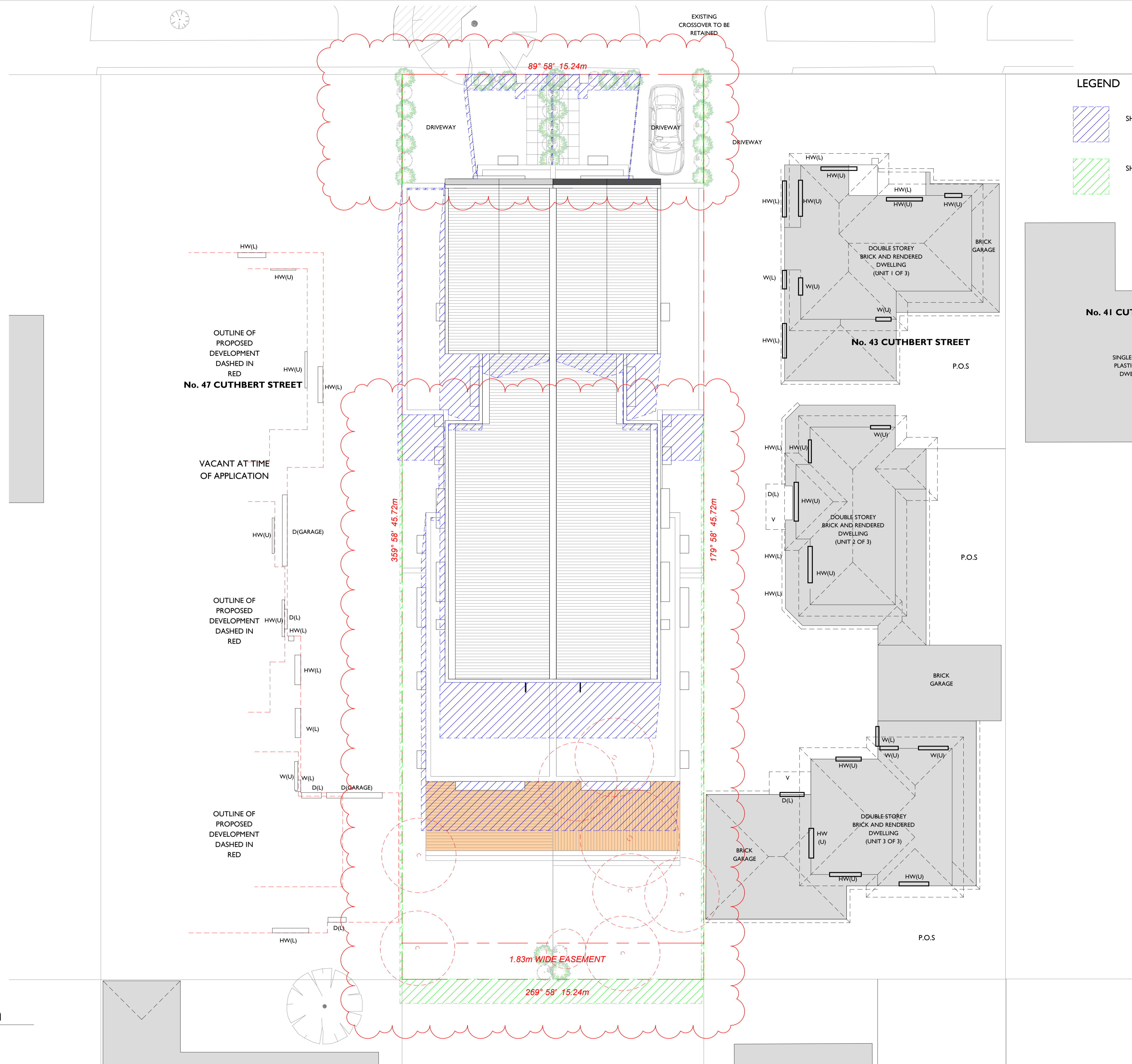
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1 12pm Shadow Diagram
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN

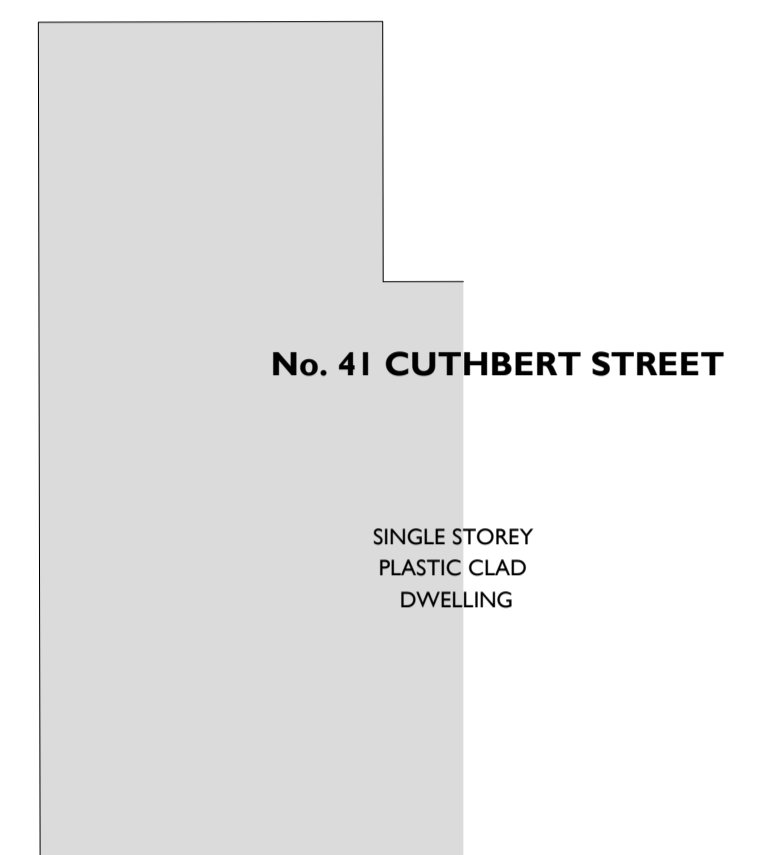
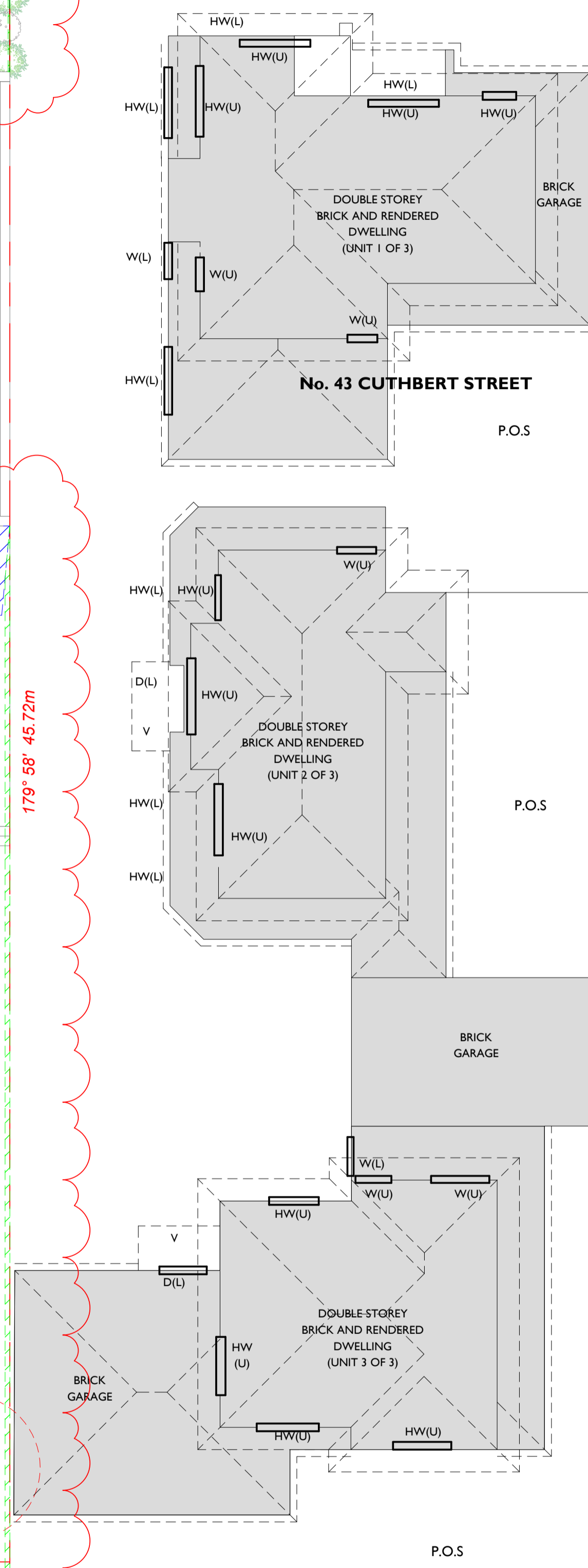


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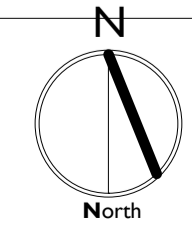


LEGEND

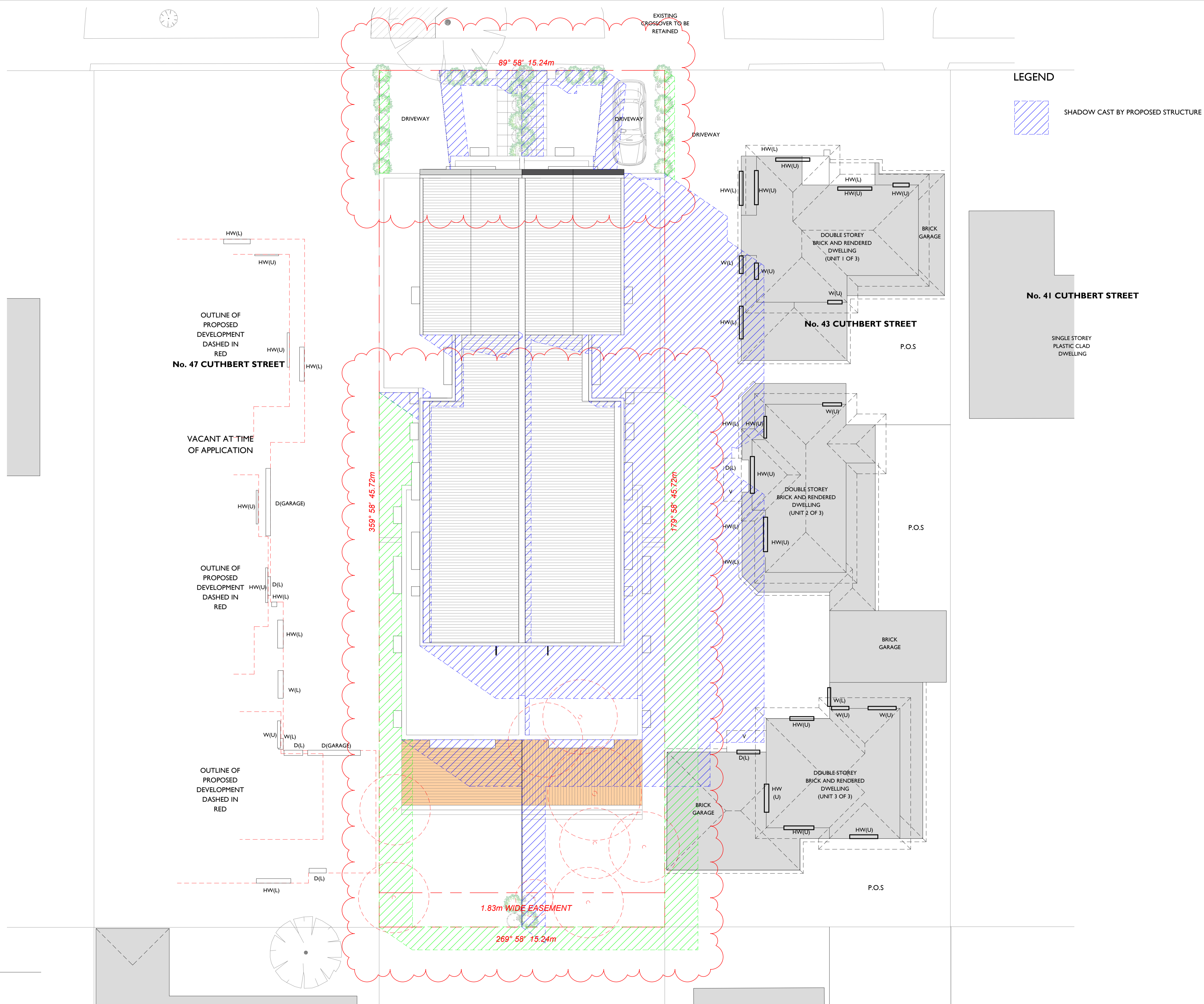
- SHADOW CAST BY PROPOSED STRUCTURE
- SHADOW CAST BY PROPOSED FENCE



PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT [REDACTED]	DRAWING TITLE 12pm Shadow Diagram	DATE 02/12/22
DRAWN: Author	SCALE @ A1: 1 : 100	REVISION A	JOB No: 21-20
		DWG No: TP10	



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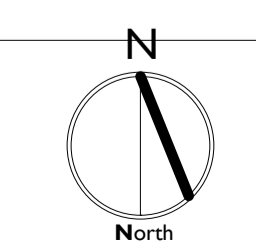
1 3pm Shadow Diagram
1 : 100

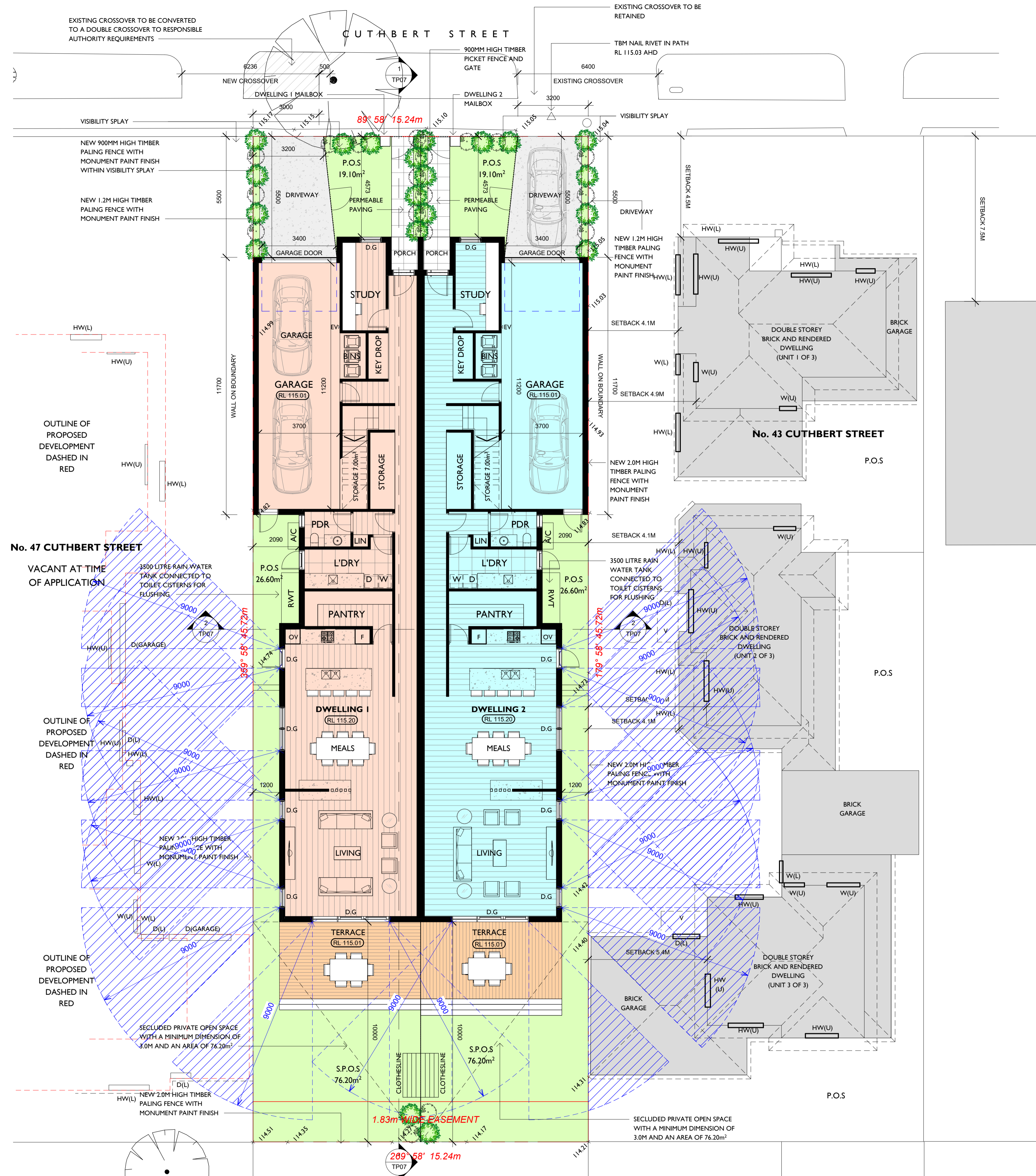
No.	DATE	AMENDMENTS	DRAWN	CHECKED
A	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT [REDACTED]	DRAWING TITLE 3pm Shadow Diagram	DATE 02/12/22
DRAWN: Author	SCALE @ A1: 1 : 100	REVISION A	JOB No: 21-20
		DWG No: TP11	





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1 Overlooking Diagram - Ground Floor
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
1	2022.10.06	RFI SUBMISSION	SN	SN



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PROJECT TITLE
45 Cuthbert Street, Broadmeadows

CLIENT
[REDACTED]

DRAWN:
SN

SCALE @ A1:
1 : 100

DRAWING TITLE
Overlooking Diagram - Ground Floor

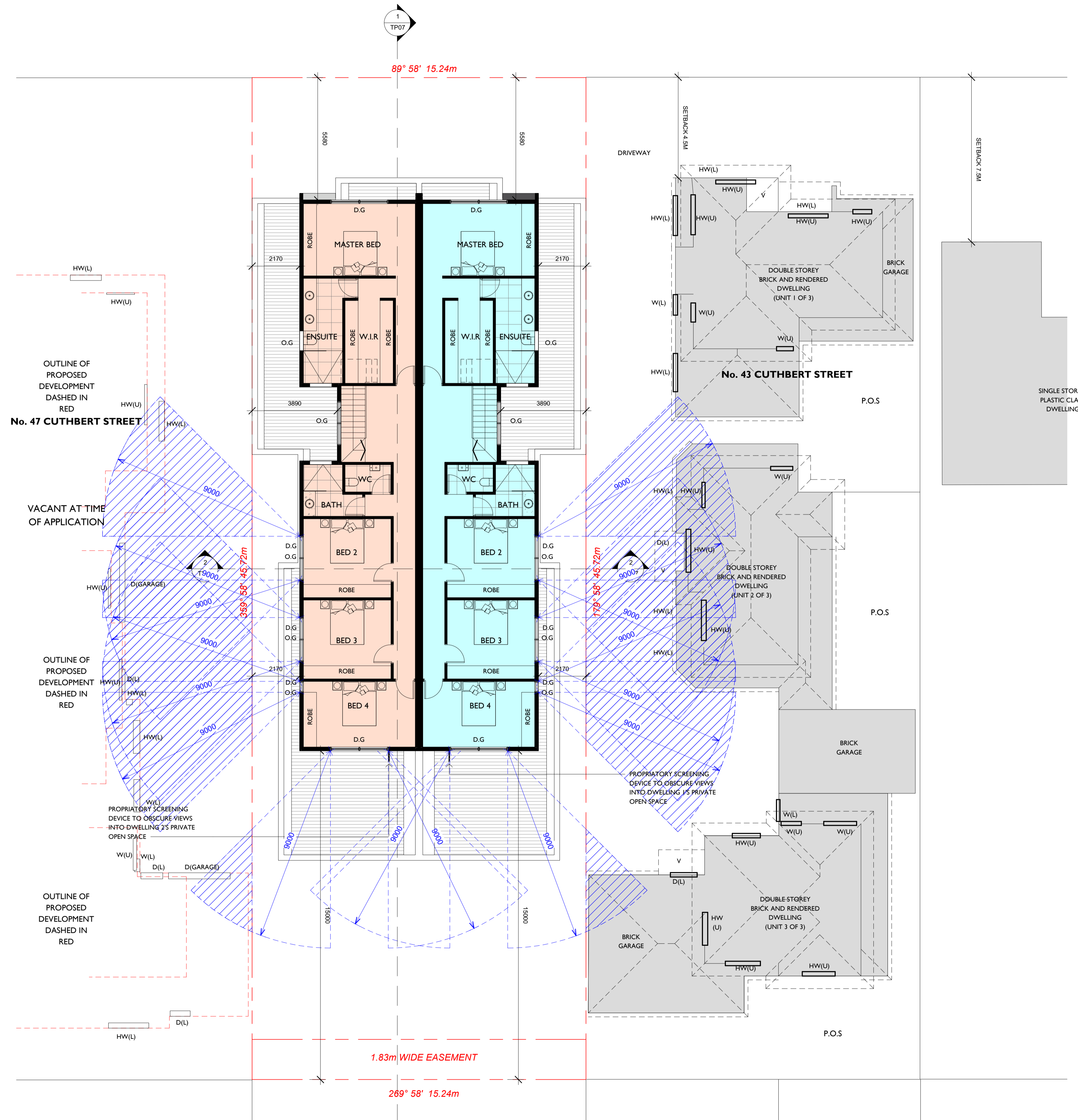
REVISION

DATE:
10/05/22

JOB No:
21-20

DWG No:
TP12

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1 Overlooking Diagram - First Floor
1 : 100

No.	DATE	AMENDMENTS	DRAWN	CHECKED
1	2022.10.06	RFI SUBMISSION	SN	SN

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PROJECT TITLE 45 Cuthbert Street, Broadmeadows	CLIENT [REDACTED]	DRAWING TITLE Overlooking Diagram - First Floor	DATE: 10/05/22
DRAWN: SN	SCALE @ A1: 1 : 100	REVISION	JOB No: 21-20
			DWG No: TP13