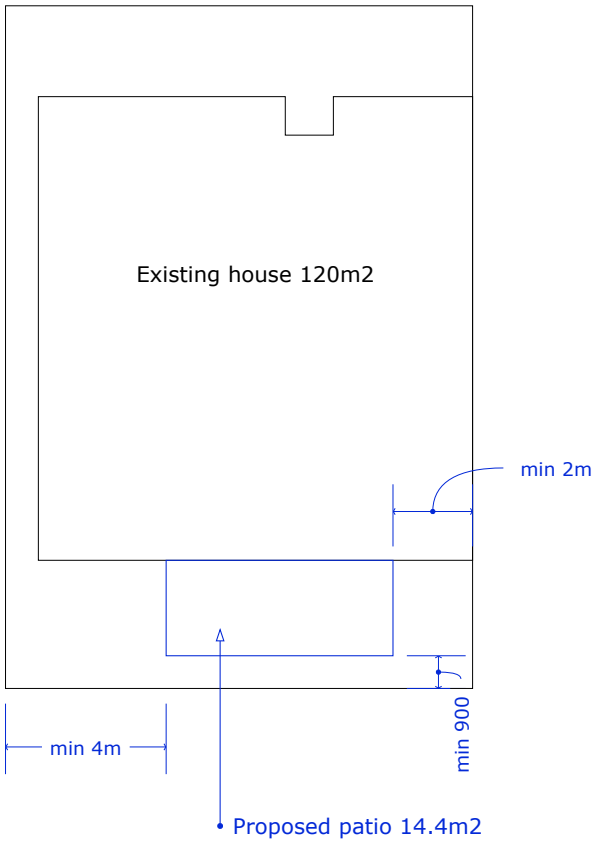
Steve Poots - 0412 205 677

Site Plan

Scale 1mm:200mm

Gawler Street



PLANS AND DOCUMENTS referred to in the DEVELOPMENT APPROVAL

Issued: 11/04/2006

Minor change: 04/06/2026

BCC DS

RECEIVED

12-MAR-2026

APPLICATION REF

A006981957

AMENDED IN RED

4/06/2026

Fire Ant Movement Controls

To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures, mining or quarry products.

Penalties apply for non-compliance with the movement controls. If you are unsure of your obligations under the Biosecurity Act 2014 contact the relevant Queensland State Government Department.

Neighbouring Property Consent

This approval does not authorise or give permission to enter onto, under or over any neighbouring private properties to survey or carryout any works without any prior consultation or without the prior consent of the relevant land or property owner(s).

This includes for any works for: built to boundary walls; any construction (retaining walls) within neighbouring buildings structural zones, boundary fences; temporary rock anchoring; or crane oversail.

SK04

35 Gawler Crescent (35/27)
Bracken Ridge Qld 4017 Lot 35 SP 191 882

126m2

Area Sizes	M2	%
Land	126	-
House	120	-
Shed	-	-
Other	-	-
Other	-	-
-	-	-

Additional Notes

patios | carports | decks

1300 417 950
ABN 70 118 015 875
QBCC No. 1090378

www.Lifestylepatios.com
enquiry@lifestylepatios.com

Steve Poots - 0412 205 677

Material Specifications

Structure — Rear patio

Attachment — Rafter brackets

Roofing — 75mm Insulated
Insulated Roof Profile — Trimdeck
Top Colour — Paperbark
Ceiling Colour — Surfmist White

Beams — 140x50mm
Colour — Surfmist White or Dover White

Posts — 90x90mm Aluminium
Colour — Woodland Grey
Connection — Bolt to slab

Gutter — Square Profile
Colour — Woodland Grey

Barges — Yes
Colour — Woodland Grey

D/Pipe — 90mm UPVC
Colour — Unpainted
S/W Connect — Dig and connect to stormwater

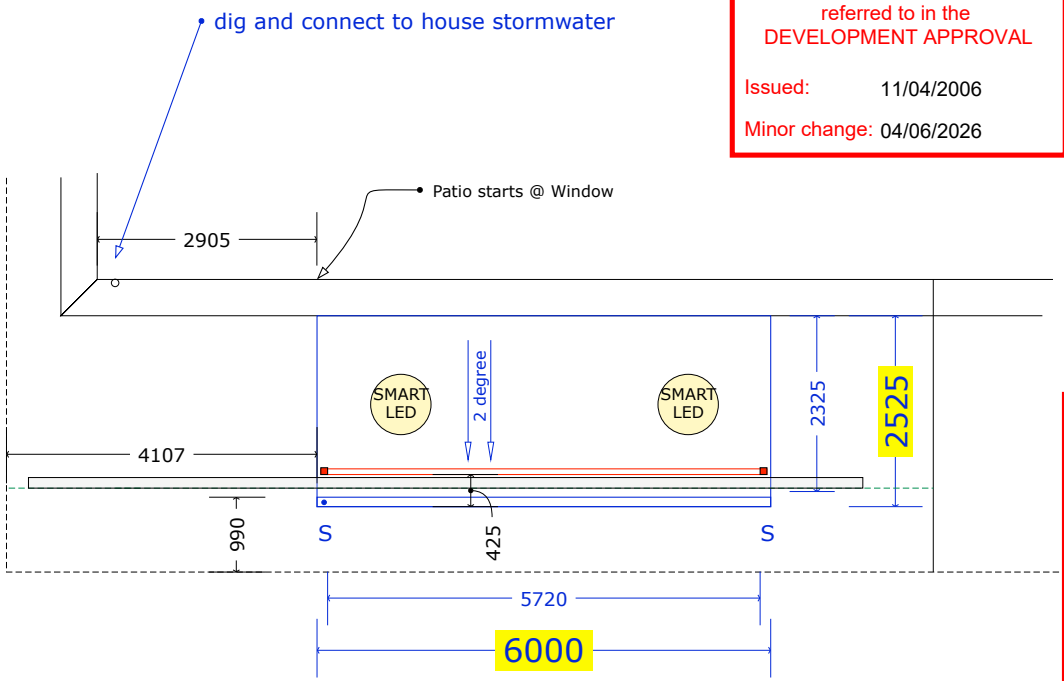
LED Lights — x2 SMART LED downlights pre fitted into roof, but not connected to a switch. You will need to employ an electrician to connect this for you.

Site Access — OK

Jock will have concrete done before we start. Shags, just check with Jock if he wants the smart lights, maybe the standard LED lights are better for them.

Plan View

Scale 1mm:100mm



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AMENDED IN RED
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SK05

I have read and understand this document in it's entirety

Due to increasing prices this year this quote is valid for 2 months only.

Quote does **NOT** include Council Certification, Relaxation, Build Over Sewer, GIA, Town Planning fees etc. Unless stated in the Inclusions.

35 Gawler Crescent (35/27)
Bracken Ridge Qld 4017 Lot 35 SP 191 882

126m2

Design Agreement

Sign Here

.....

All dimensions are subject to final check measure

Total Investment

$.....
$.....
$.....
$.....
$.....

Inclusions

Council Certification Fee	Yes
Council Relaxation Fee	Yes
Council Other Fees	
QBCC Insurance	Yes
Installation	Yes
G.S.T.	Yes

1300 417 950
ABN 70 118 015 875
QBCC No. 1090378
patios | carports | decks
www.Lifestylepatios.com
enquiry@lifestylepatios.com

Due to Council fire ant regulations, we are not allowed to move soil off site from our post footings or stormwater trenches. Owner will take responsibility of any soil left on their property

Steve Poots - 0412 205 677

Elevation

Scale 1mm:100mm

AMENDED IN RED
04/06/2026

PLANS AND DOCUMENTS
referred to in the
DEVELOPMENT APPROVAL

Issued: 11/04/2006

Minor change: 04/06/2026

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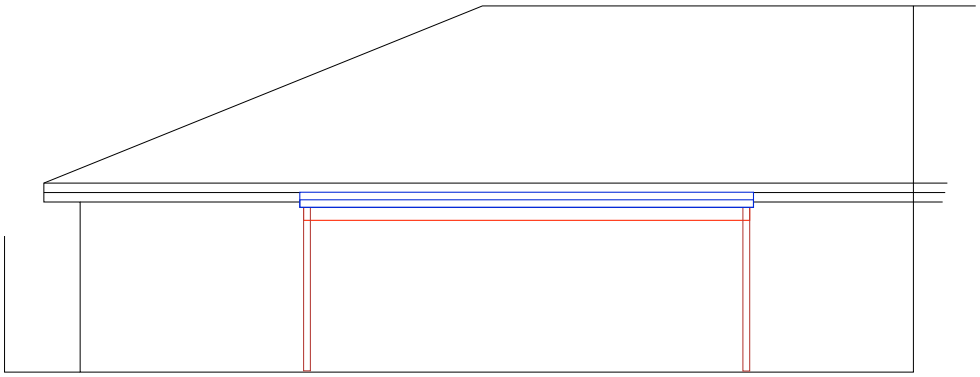
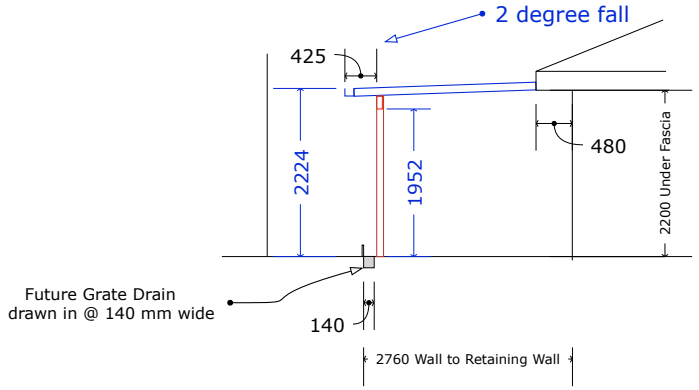




SK06

35 Gawler Crescent (35/27)
Bracken Ridge Qld 4017 Lot
35 SP 191 882

126m2

Design Agreement

Sign Here

.....

All dimensions are subject to final check measure

Additional Notes

1300 417 950
ABN 70 118 015 875
QBCC No. 1090378

patios | carports | decks

www.Lifestylepatios.com
enquiry@lifestylepatios.com

Due to Council fire ant regulations, we are not allowed to move soil off site from our post footings or stormwater trenches. Owner will take responsibility of any soil let on their property

BCC DS
LODGED
27/09/2022
APPLICATION REF
A006115391

PLANS AND DOCUMENTS
referred to in the
DEVELOPMENT APPROVAL

Issued: 11/04/2006

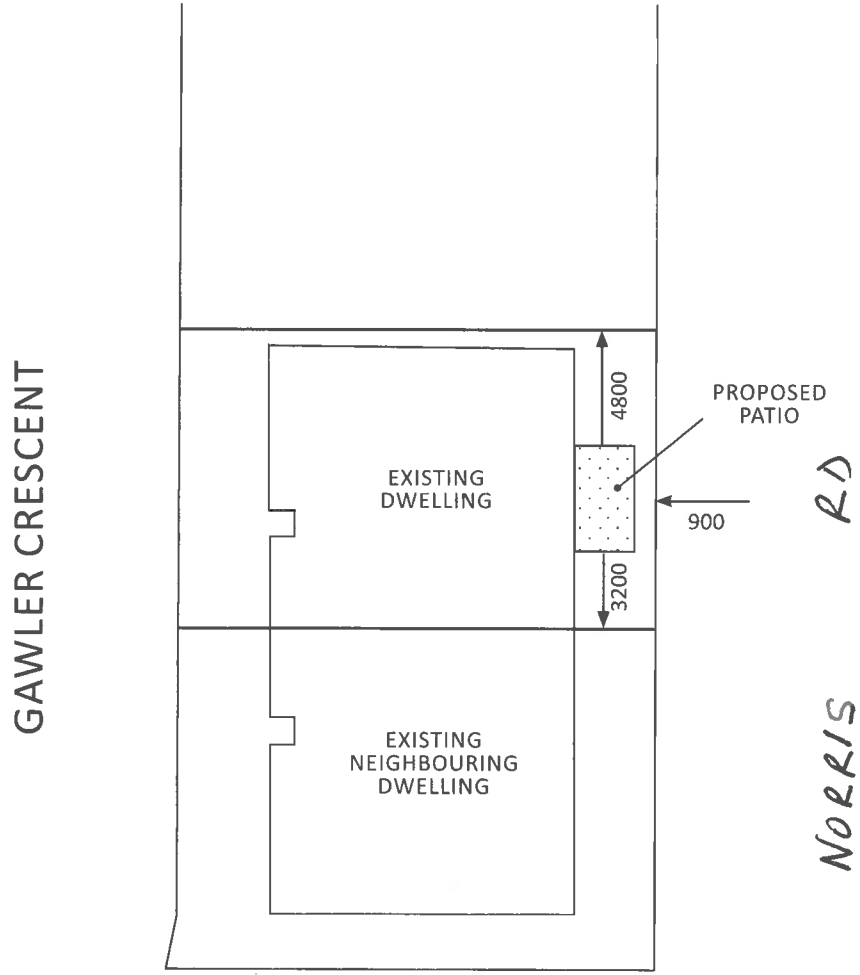
Minor change: 29/11/2022

THIS APPROVAL SHOULD NOT BE TAKEN TO CONSTITUTE PERMISSION TO ENTER NEIGHBOURING PROPERTIES TO CONSTRUCT (INCLUDING ASSOCIATED WORKS SUCH AS DRAINAGE AND EXCAVATION) ANY BUILT TO BOUNDARY WALL OR FENCES. PERMISSION MUST BE OBTAINED FROM RELEVANT PROPERTY OWNERS.

PLANS AND DOCUMENTS
referred to in the
DEVELOPMENT APPROVAL

Issued: 11/04/2006

Minor change: 04/06/2026



SITE PLAN

ASSET OUTDOOR ADDITIONS
PH: 1300 727 124
E: admin@assetoutdoor.com.au
PO BOX 555, REDBANK PLAINS QLD 4301
QBCC: 15120544 ASHCAM PTY LTD T/A

NORTH POINT

N

PROPOSED PATIO
36/27 GAWLER CRESCENT
BRACKEN RIDGE, QLD 4017
FOR J PIPER

SCALE	1:300
LOT	37
SP	191882
AREA	127M2

SK1

BCC DS
LODGED
27/09/2022
APPLICATION REF
A006115391

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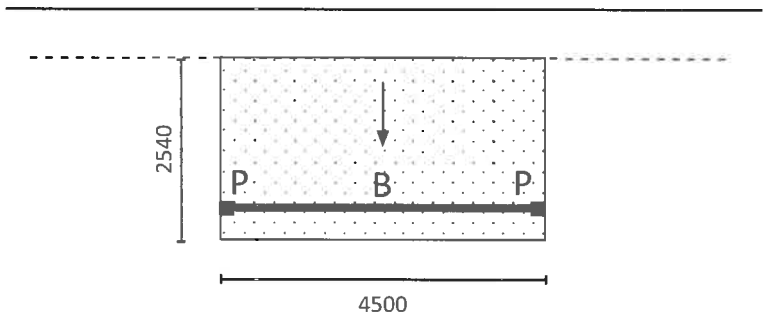

SPECIFICATIONS	
N2 WIND RATING	
ROOFING:	AUSDECK 50MM INSULATED PANEL
BEAM: B	AUSDECK 150X65 SHURELOCK
POSTS: P	65X65 ALUMINIUM SHS
	CONNECTED TO SLAB
	MAX SPACING: 6700M (B)
GUTTER:	SQUARELINE
FALL:	MIN 2 DEG

CONSTRUCTION PLAN

ASSET OUTDOOR ADDITIONS
PH: 1300 727 124
E: admin@assetoutdoor.com.au
PO BOX 555, REDBANK PLAINS QLD 4301
QBCC: 15120544 ASHCAM PTY LTD T/A

ASSET
OUTDOOR ADDITIONS

PROPOSED PATIO
36/27 GAWLER CRESCENT
BRACKEN RIDGE, QLD 4017
FOR J PIPER

SCALE	1:100
LOT	36
SP	191882
AREA	127M2

SK 2

BCC DS
LODGED
27/09/2022
APPLICATION REF
A006115391

PLANS AND DOCUMENTS
referred to in the
DEVELOPMENT APPROVAL
Issued: 11/04/2006
Minor change: 04/06/2026

AMENDED IN RED
25/11/2022

PLANS AND DOCUMENTS
referred to in the
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Issued: 11/04/2006
Minor change: 29/11/2022

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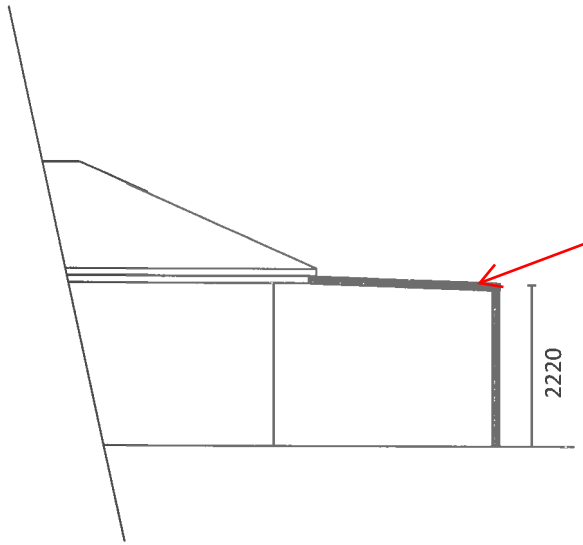


Patio roof structure to remain open on all sides

SIDE ELEVATION

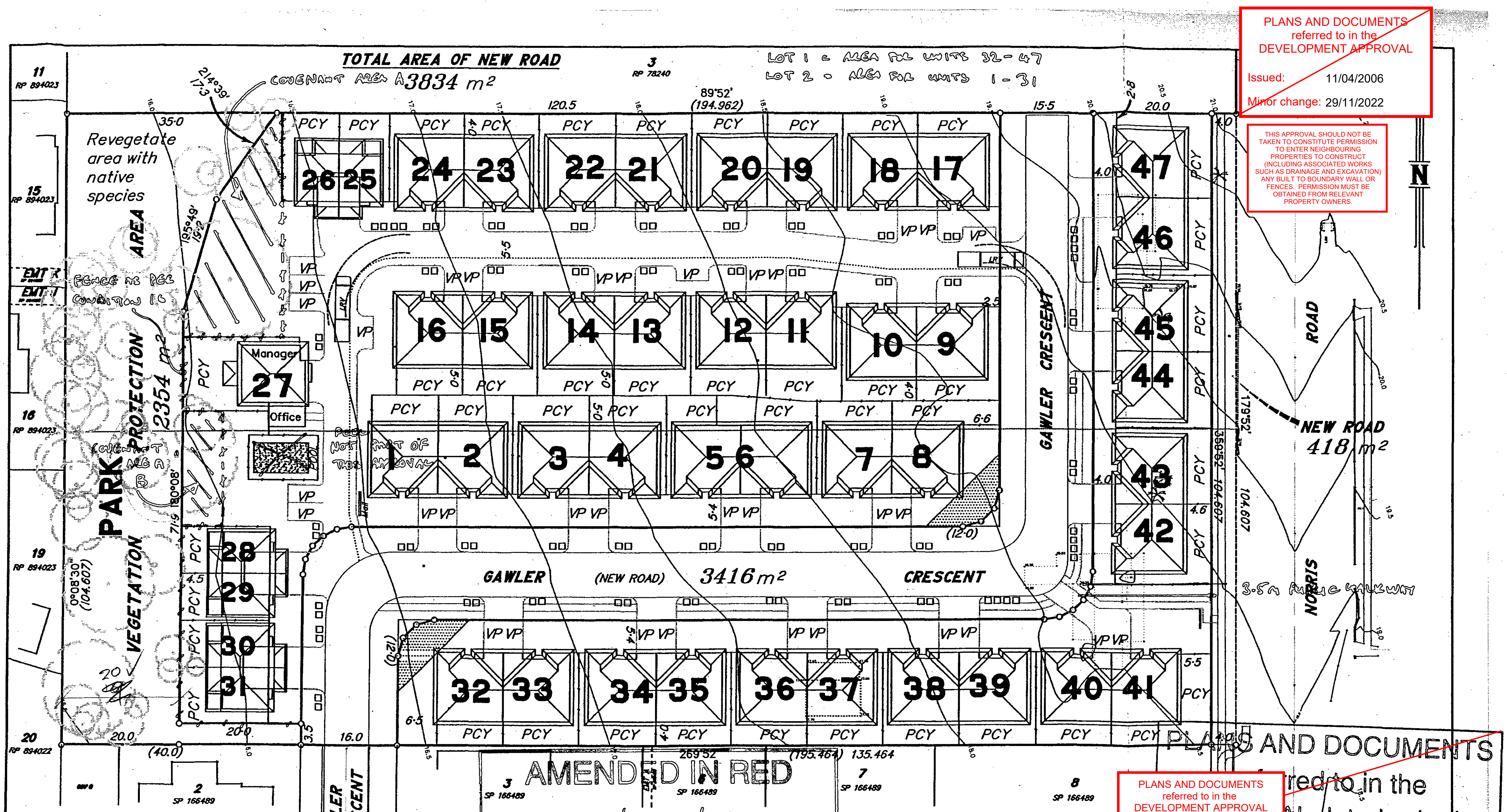
ASSET OUTDOOR ADDITIONS
PH: 1300 727 124
E: admin@assetoutdoor.com.au
PO BOX 555, REDBANK PLAINS QLD 4301
QBCC: 15120544 ASHCAM PTY LTD T/A

ASSET
OUTDOOR ADDITIONS

PROPOSED PATIO
36/27 GAWLER CRESCENT
BRACKEN RIDGE, QLD 4017
FOR J PIPER

SCALE	1:100
LOT	36
SP	191882
AREA	127M2

SK 3



DEVELOPMENT DATA

Total Site Area 2.042 hectares
GFA 4765 m2 = 23.3%
Site cover 6578 m2 = 32.2%
Buildings 23 x Connondale Duplex – Units 1–24 & 32–47
1 x Arcadia 2 Storey – Unit ~~25~~ 27
6 x Torrington 2 Storey – Units 25, 26, 28–31
VP Number of Visitor Car Parks 34
PCY Private Court Yard

Vegetation to be retained in buffer

Harvey Property Consultants Pty Ltd
Urban & Regional Planners
Level 7, 400 Queen Street, Brisbane Q 4000
Ph: (07) 3229 9622 Fax: (07) 3229 1622

This plan has been prepared by Harvey Property Consultants Pty Ltd for attachment to a development application and the dimensions and areas shown are approximate only and should not be used for any other purpose. The plan has been prepared to provide an indicative design to Council and Harvey Property Consultants Pty Ltd takes no responsibility for any other use of the information

Propsed Multi Units 1 – 47
Cancelling Lots 4 & 5 on RP78240

BCC DS RECEIVED 12-MAR-2026
APPLICATION REF A006981957

PARISH NUNDAH
COUNTY Stanley
LOCAL GOVERNMENT Brisbane City Council

REVIEW: 14/12/2005 12/02/06 22/02/06

CLIENT: Habitare Developments Pty Ltd

DATE	SCALE	SURVEYOR	DRAWN
29/11/05	1:600		EH

PLAN REFERENCE: HABITARE_291105/1

WITHOUT WRITTEN AUTHORITY

KITCHEN PLAN

authorised use of these
on System's plans constitutes
reach of the Copyright Act and
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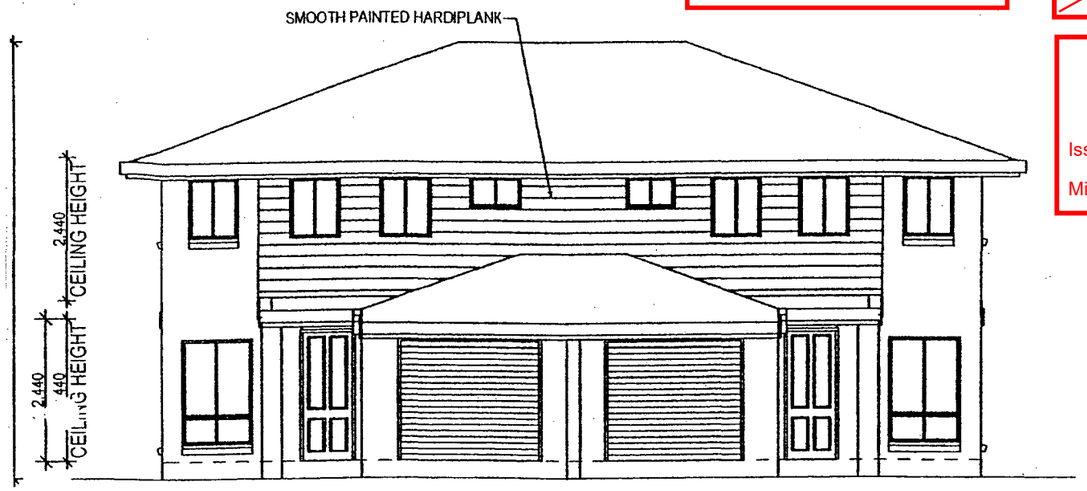
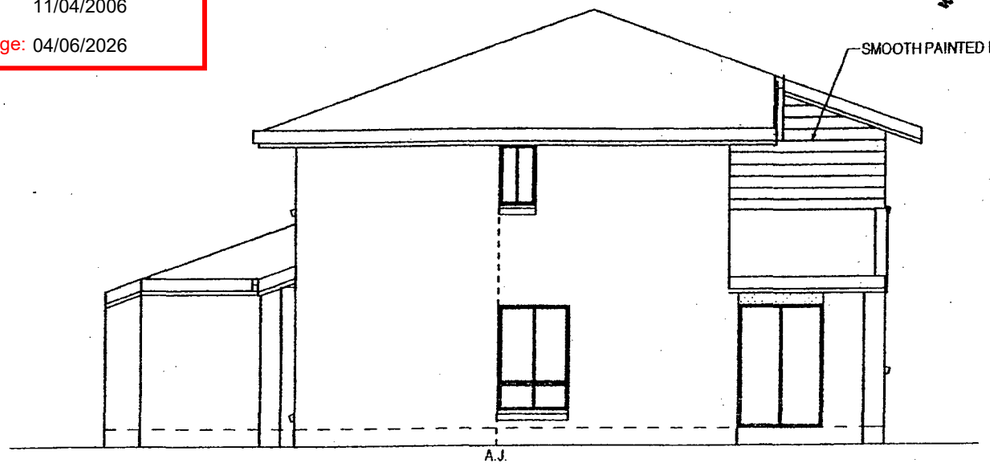
APPLICATION REF
A006981957

PLANS AND DOCUMENTS referred to in the APPROVAL dated 1/3/06

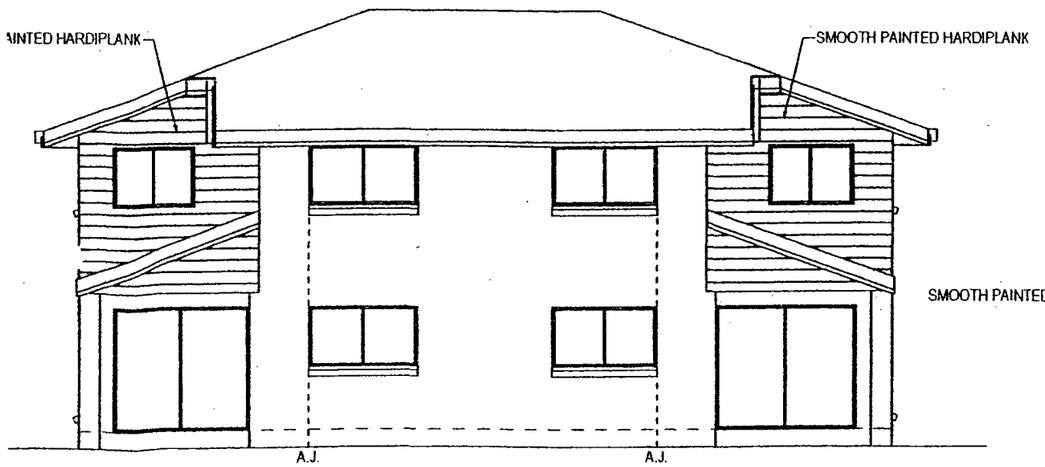
NOTE: WINDOWS AND DOORS SHOWN ARE STANDARD BLOCKS (
FOR DETAIL ON PANEL SIZE & POSITION SEE CODES ON THE FL(



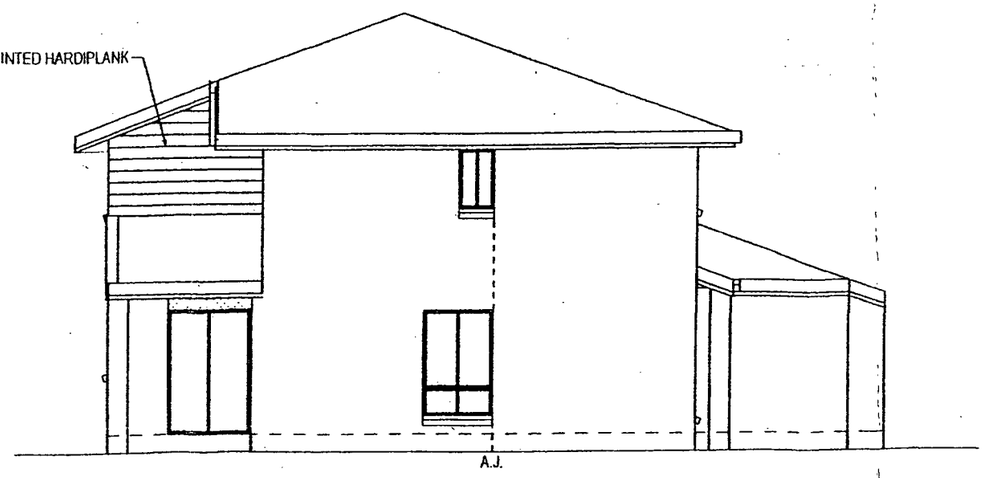
ELEVATION 1



ELEVATION 2



LEVATION 3



ELEVATION 4

ENT:.....
ENT:.....
E:.....
LDER:.....
E:.....
NOT TO BE MODIFIED
ITHOUT WRITTEN AUTHORITY

NO SETDOWN TO GARAGE
DUE TO SAFETY REASONS

Tamawood Homes

DRAWN FOR	Tamawood, Brisbane
DRAWN BY	tmb 23/09/2005
TAMAWOOD LTD. LIC.	25373 (QLD) 74336 (NSW)
SCALE	1:100
LOWER FLOOR AREA	142.57 M2
UPPER FLOOR AREA	120.74 M2
PORCH/CARPORT AREA	16.98 M2
BALCONY AREA	0.00 M2
ROOF	Conc Tile 20.1°
EXT WALL	70F/50/110B
LOWER CEILING HT	2440
UPPER CEILING HT	2440
WIND RATING	N2

JOB

TORRINGTON 1

WINDOW SIZE AND STYLE ARE INDICATIVE ONLY AND MAY VARY DEPENDING ON SUPPLIER

PLANS AND DOCUMENTS referred to in the DEVELOPMENT APPROVAL

Issued: 11/04/2006

Minor change: 04/06/2026

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Issued: 11/04/2006

Minor change: 29/11/2022

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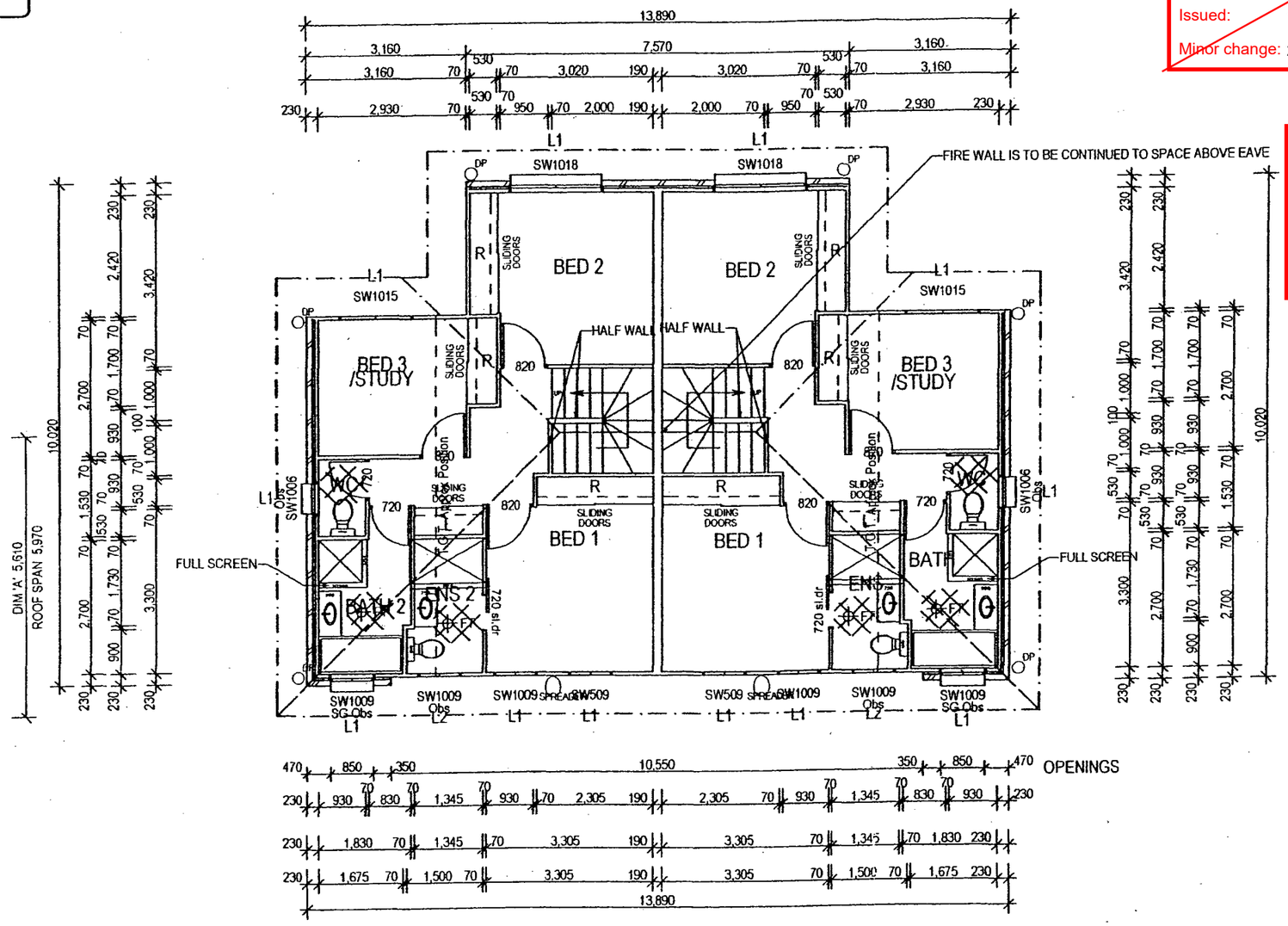

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12-MAR-2026
APPLICATION REF
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* WINDOWS:
PV-Permanent Vent X-Movable Panel
O-Fixed Panel SG-Safety Glass Obs-Obscure
CB-Colonial Bars

Windows with F.C. Cladding to have finless frames.

FT-Fixture Trap.
It Is Not Intended To Drain Floor.

Additional items may be required at extra cost due to covenant requirements if applicable.

LINTELS

L1 190x35 M12 KD L12 330x65 TAS 18C R
L2 190x70 M12 KD L13 390x65 TAS 18C
L3 240x70 M12 KD L14 240x65 TAS 18C
L6 240x35 F27 KD L15 260x65 TAS 17C
L7 190x70 F27 KD L16 270x65 TAS 18C R
L9 240x70 F27 KD L21 90x70 F17
L10 270x65 TAS 18C
L11 330x65 TAS 18C

L17 85 x 8 FLAT BAR
MIN. 90mm END SUPPORT
L18 100 x 100 x 6 ANGLE
L19 150 x 100 x 8 ANGLE
MIN. 150mm END SUPPORT
L20 100 x 100 x 10 EQUAL ANGLE
WITH 200 x 6 MS PLATE
STITCH WELDED TO BACK
MIN 150 END SUPPORT

DRAWN FOR	Tamawood, Brisbane
DRAWN BY	tmb 23/09/2005
TAMAWOOD LTD. LIC.	25373 (QLD) 74036 (NSW)
SCALE	1:100
LOWER FLOOR AREA	142.57 M2
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LOWER CEILING HT	2440
UPPER CEILING HT	2440
WIND RATING	N2

JOB

TORRINGTON 3

3
2
1
ATIONS

ENT:-.....
ENT:-.....
TE:-.....
LDER:-.....
TE:-.....

NOT TO BE MODIFIED
/ITHOUT WRITTEN AUTHORITY

NO SETDOWN TO GARAGE
DUE TO SAFETY REASONS

UPPER FLOOR PLAN

THESE PLANS DO NOT COMPLY WITH ANY REQUIREMENTS FOR WHEELCHAIR OR DISABILITY ACC

WINDOW SIZE AND STYLE ARE INDICATIVE ONLY AND MAY VARY DEPENDING ON SUPPLIER

PLANS AND DOCUMENTS referred to in the DEVELOPMENT APPROVAL
Issued: 11/04/2006
Minor change: 29/11/2022

PLANS AND DOCUMENTS referred to in the APPROVAL dated 1/3/26

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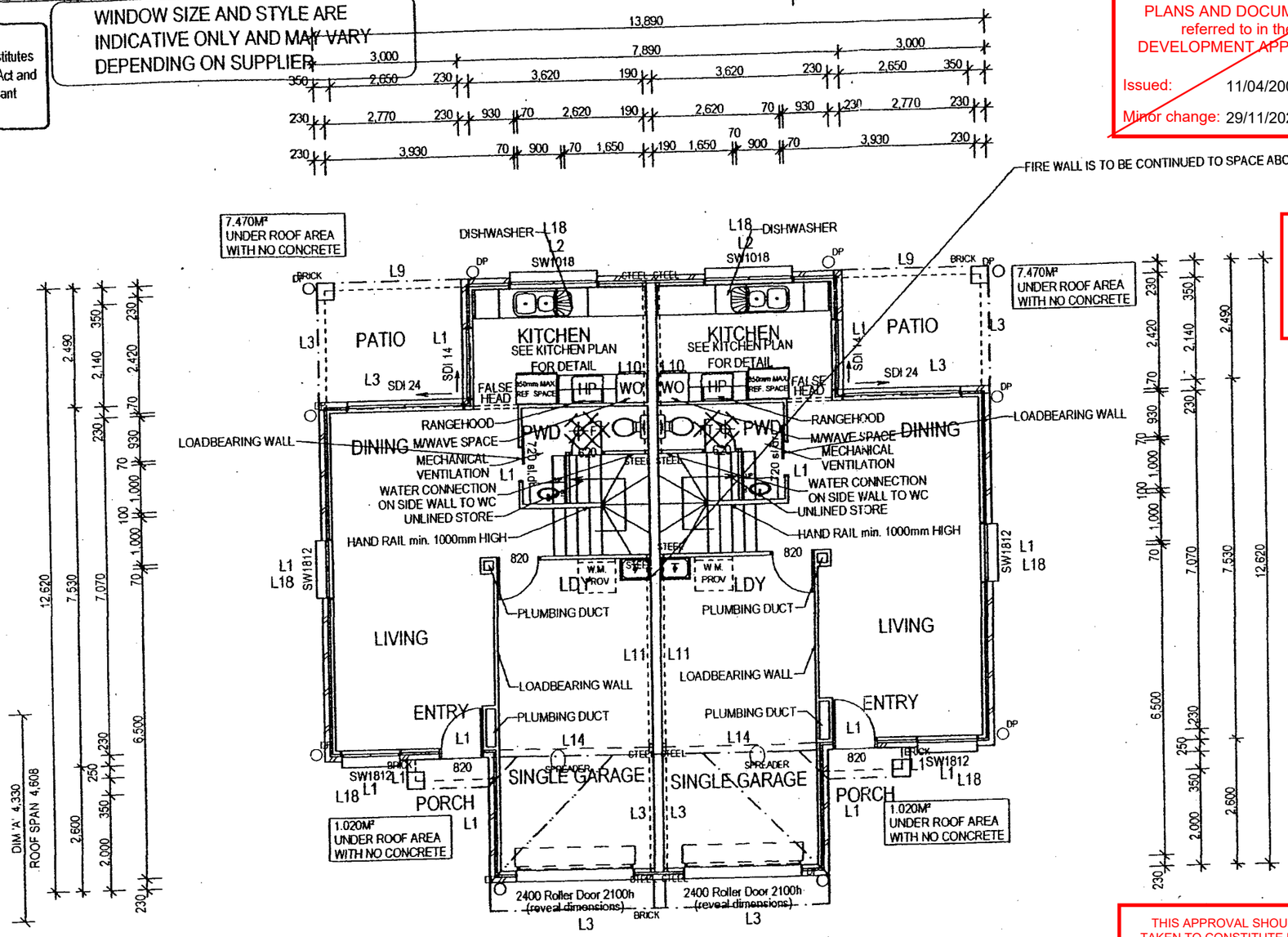
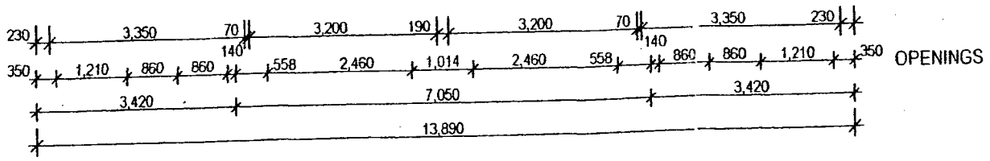
Minor change: 04/06/2026





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L11 330x65 TAS 18C

L17 85 x 8 FLAT BAR
MIN. 90mm END SUPPORT
L18 100 x 100 x 6 ANGLE
L19 150 x 100 x 8 ANGLE
MIN. 150mm END SUPPORT
L20 100 x 100 x 10 EQUAL ANGLE
WITH 200 x 6 MS PLATE
STITCH WELDED TO BACK
MIN 150 END SUPPORT

DRAWN FOR	Tamewood, Brisbane
DRAWN BY	tmb 23/09/2005
TAMAWOOD LTD. LIC.	25373 (QLD) 74336 (NSW)
SCALE	1:100
LOWER FLOOR AREA	142.57 M2
UPPER FLOOR AREA	120.74 M2
PORCH/CARPORT AREA	16.98 M2
BALCONY AREA	0.00 M2
ROOF	Conc Tile 20.1°
EXT WALL	70F/50/110B
LOWER CEILING HT	2440
UPPER CEILING HT	2440
WIND RATING	N2

JOB

TORRINGTON 2

3
2
1
VATIONS

IENT:.....
IENT:.....
TE:.....
ILDER:.....
TE:.....

NOT TO BE MODIFIED WITHOUT WRITTEN AUTHORITY

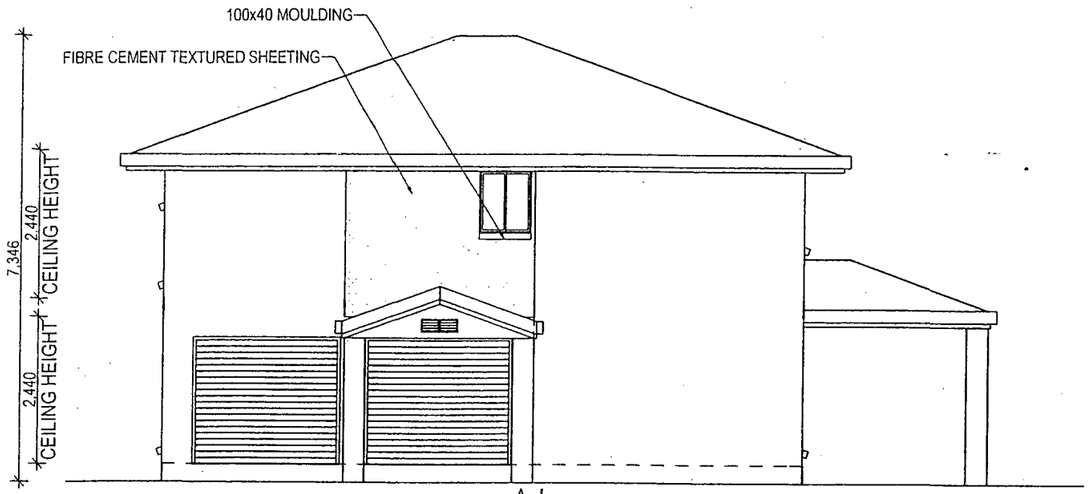
NO SETDOWN TO GARAGE DUE TO SAFETY REASONS

LOWER FLOOR PLAN

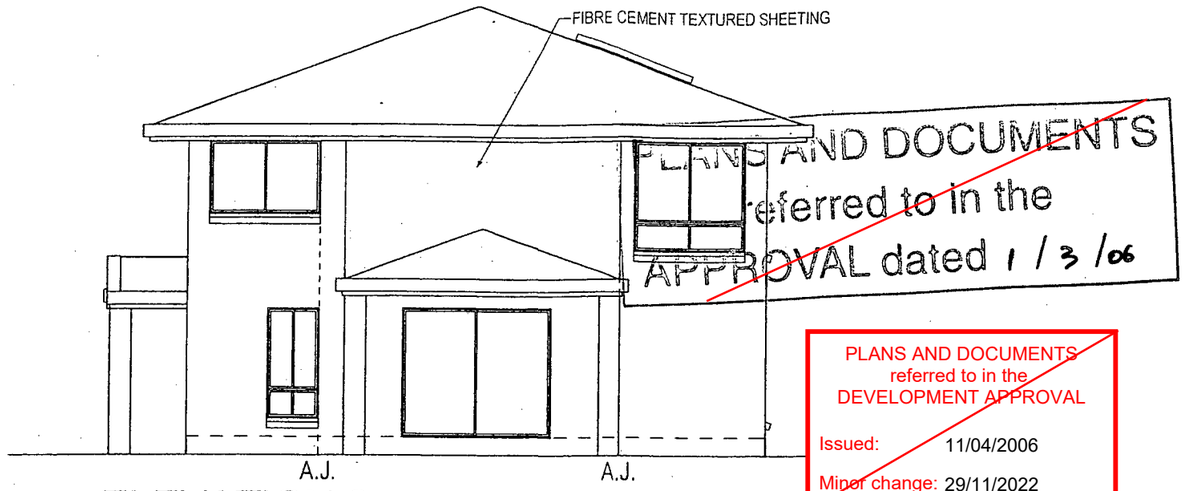
THESE PLANS DO NOT COMPLY WITH ANY REQUIREMENTS FOR WHEELCHAIR OR DISABILITY ACCCESS OR ACCESABLE LIVING

FIGURE 3(c)

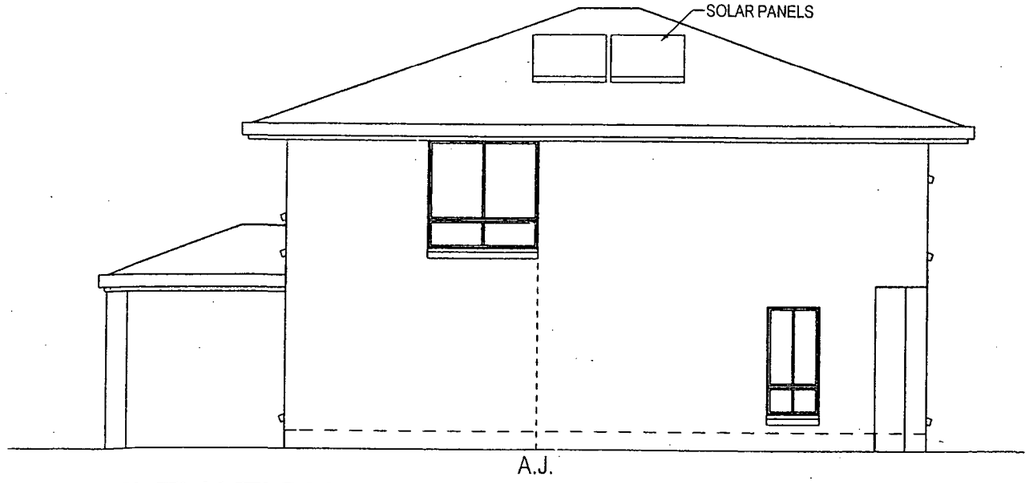
26220



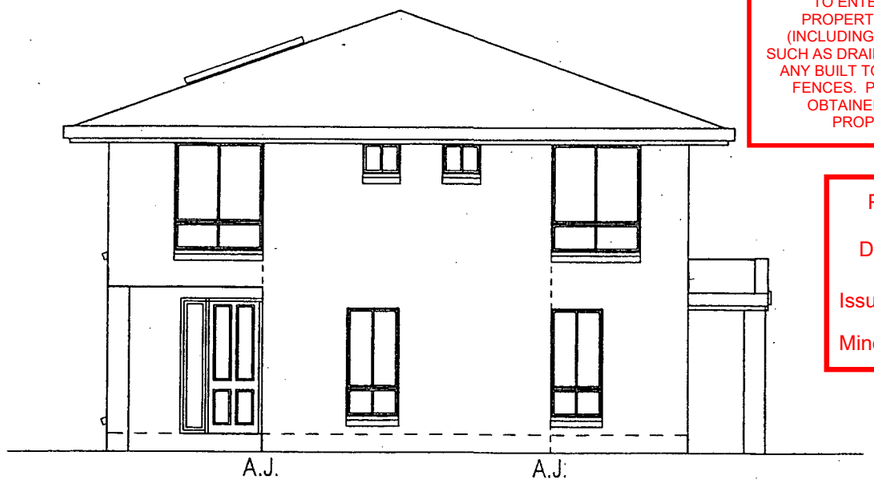
ELEVATION 1



ELEVATION 2



ELEVATION 3



ELEVATION 4

PLANS AND DOCUMENTS referred to in the APPROVAL dated 1/3/06

PLANS AND DOCUMENTS referred to in the DEVELOPMENT APPROVAL
Issued: 11/04/2006
Minor change: 29/11/2022

THIS APPROVAL SHOULD NOT BE TAKEN TO CONSTITUTE PERMISSION TO ENTER NEIGHBOURING PROPERTIES TO CONSTRUCT (INCLUDING ASSOCIATED WORKS SUCH AS DRAINAGE AND EXCAVATION) ANY BUILT TO BOUNDARY WALL OR FENCES. PERMISSION MUST BE OBTAINED FROM RELEVANT PROPERTY OWNERS.

PLANS AND DOCUMENTS referred to in the DEVELOPMENT APPROVAL
Issued: 11/04/2006
Minor change: 04/06/2026

BCC DS
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12-MAR-2026
APPLICATION REF
A006981957

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CLIENT:-.....
DATE:-.....
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Cutprice Homes
26220

DRAWN FOR	Cutprice, Brisbane	SCALE	1:100
DRAWN BY	eej 17/10/2005	ROOF Conc Tile	20.1°
TAMAWOOD LTD. LIC. 25373 (QLD) 74336 (NSW)		EXT WALL	70F/50/110B
LOWER FLOOR AREA	96.83 M2	LOWER CEILING HT	2440
UPPER FLOOR AREA	97.73 M2	UPPER CEILING HT	2440
PORCH/CARPORT AREA	19.54 M2	WIND RATING	N2
BALCONY AREA	0.00 M2		
JOB 26220		ARCADIA	

NOTE: WINDOWS AND DOORS SHOWN ARE STANDARD BLOCKS ONLY.
FOR DETAIL ON PANEL SIZE & POSITION SEE CODES ON THE FLOOR PLAN

HEC DEVELOPMENTS PTY LTD
& GATTA DEVELOPMENTS PTY LTD
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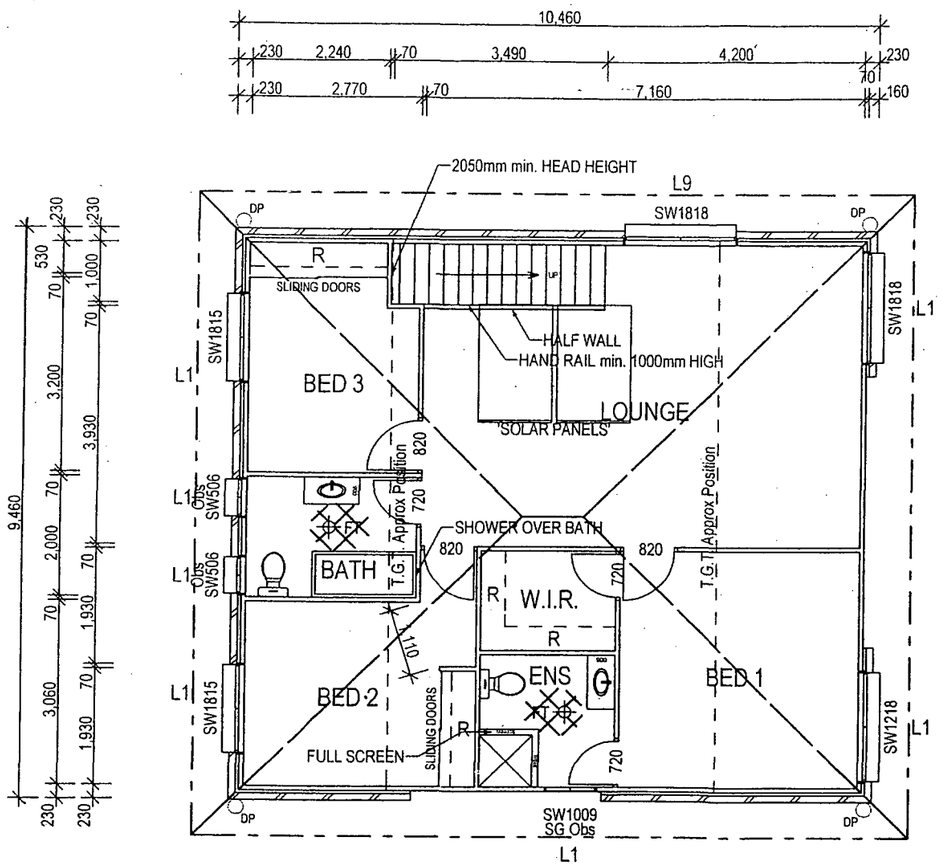
GOODNA **FIRE ANT** QLD,
4300 RP. 77285
MAP REF URD BNE 216/H9

FIGURE 3 (d)

26220

CAVITY TO SUIT BRICK WITH CORRESPONDING ADJUSTMENTS TO OUTSIDE DIMENSIONS

WINDOW SIZE AND STYLE ARE INDICATIVE ONLY AND MAY VARY DEPENDING ON SUPPLIER



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DATE:-.....

BUILDER:-.....

DATE:-.....

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3 4 2 1 ELEVATIONS

UPPER FLOOR PLAN

DRAWN FOR	Cutprice, Brisbane	SCALE	1:100
DRAWN BY	eej 17/10/2005	ROOF	Conc Tile 20.1°
TAMAWOOD LTD. LIC. 25373 (QLD)	74336 (NSW)	EXT WALL	70F/50/110B
LOWER FLOOR AREA	96.83 M2	LOWER CEILING HT	2440
UPPER FLOOR AREA	97.73 M2	UPPER CEILING HT	2440
PORCH/CARPORT AREA	19.54 M2	WIND RATING	N2
BALCONY AREA	0.00 M2		
JOB 26220	ARCADIA		

LINTELS

L1 190 x 35 M12 KD
L2 190 x 70 M12 KD
L3 240 x 70 M12 KD
L6 240 x 35 F27 KD
L7 190 x 70 F27 KD
L9 240 x 70 F27 KD
L10 270 x 65 TAS 18C
L11 330 x 65 TAS 18C
L12 330 x 65 TAS 18C R
L13 390 x 65 TAS 18C
L14 240 x 65 TAS 17C
L15 260 x 65 TAS 17C
L16 270 x 65 TAS 18C R
L21 90 x 70 F17
L17 85 x 8 FLAT BAR MIN. 90mm END SUPPORT
L18 100 x 100x 6 ANGLE
L19 150 x 100 x 8 ANGLE MIN. 150mm END SUPPORT
L20 100 x 100 x 10 EQUAL ANGLE WITH 200 x 6 MS PLATE STITCH WELDED TO BACK MIN 150 END SUPPORT

FT-Fixture Trap. It is not intended to drain floor

Windows within a wall with F.C. cladding to have finless frames

Additional items may be required at extra cost due to covenant requirements if applicable

* WINDOWS:
PV-Permanent Vent
Obs-Obscure
SG-Safety Glass
X-Movable Panel
O-Fixed Panel
CB-Colonial Bars

THESE PLANS DO NOT COMPLY WITH ANY REQUIREMENTS FOR WHEELCHAIR OR DISABILITY ACCCESS OR ACCESABLE LIVING

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GOODNA **FIRE ANT** QLD, 4300
RP. 77285
MAP REF LRD RNE 216/H9

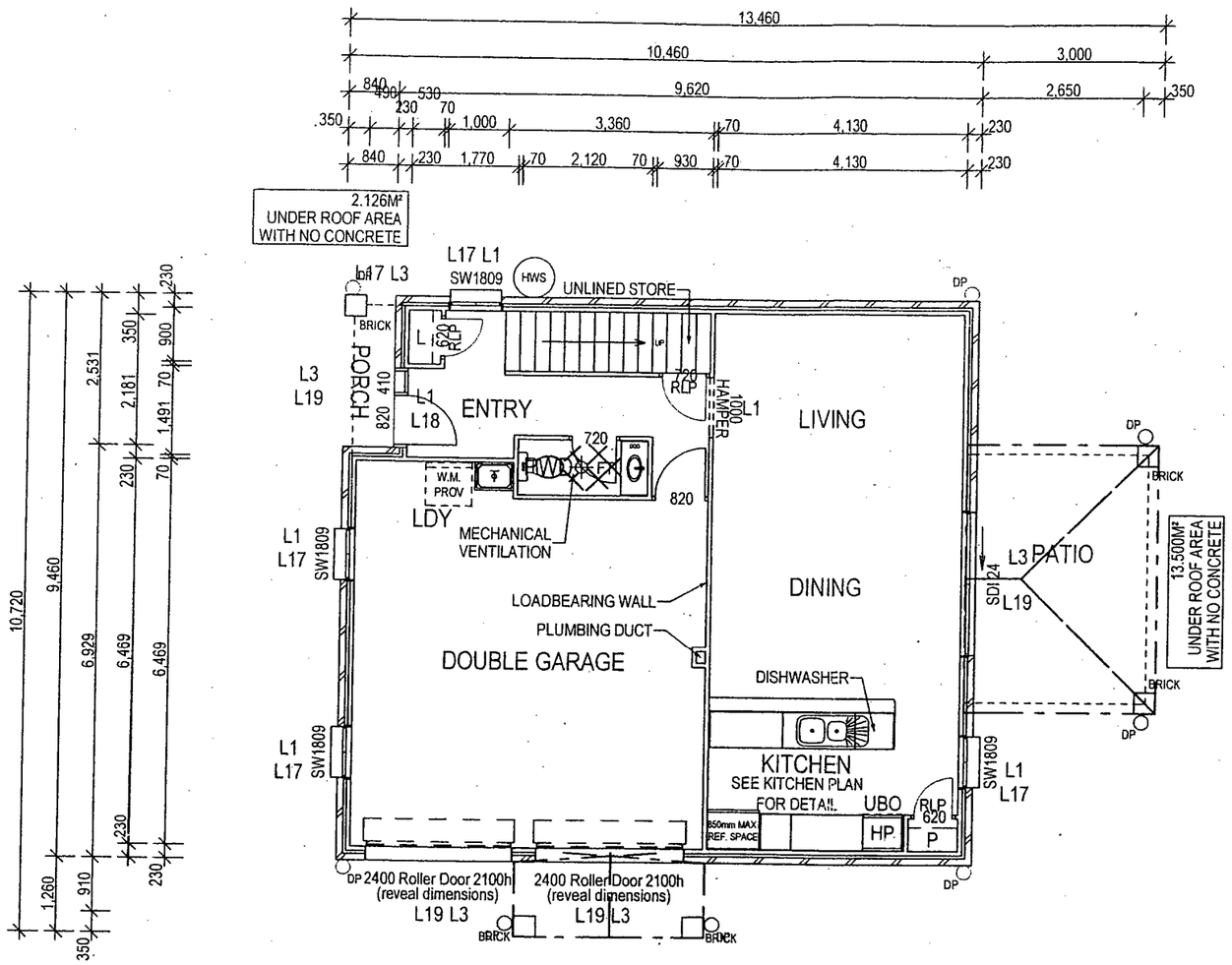
26220

FIGURE 3(e).

26220

CAVITY TO SUIT BRICK WITH CORRESPONDING ADJUSTMENTS TO OUTSIDE DIMENSIONS

WINDOW SIZE AND STYLE ARE INDICATIVE ONLY AND MAY VARY DEPENDING ON SUPPLIER



PLANS AND DOCUMENTS referred to in the APPROVAL dated 1/3/06

PLANS AND DOCUMENTS referred to in the DEVELOPMENT APPROVAL

Issued: 11/04/2006

Minor change: 29/11/2022

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Issued: 11/04/2006

Minor change: 04/06/2026

BCC DS
RECEIVED
12-MAR-2026
APPLICATION REF
A006981957

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4 3 2 1 ELEVATIONS

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CARRINGTON HOMES

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LOWER FLOOR PLAN

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TAMAWOOD LTD. LIC. 25373 (QLD) 74336 (NSW)	
LOWER FLOOR AREA	96.83 M2
UPPER FLOOR AREA	97.73 M2
PORCH/CARPORT AREA	19.54 M2
BALCONY AREA	0.00 M2
JOB	26220
	ARCADIA

SCALE	1:100
ROOF	Conc Tile 20.1°
EXT WALL	70F/50/110B
LOWER CEILING HT	2440
UPPER CEILING HT	2440
WIND RATING	N2

LINTELS

L1 190 x 35 M12 KD
L2 190 x 70 M12 KD
L3 240 x 70 M12 KD
L6 240 x 35 F27 KD
L7 190 x 70 F27 KD
L9 240 x 70 F27 KD
L10 270 x 65 TAS 18C
L11 330 x 65 TAS 13C
L12 330 x 65 TAS 18C R
L13 390 x 65 TAS 18C
L14 240 x 65 TAS 18C
L15 260 x 65 TAS 17C
L16 270 x 65 TAS 18C R
L21 90 x 70 F17
L17 85 x 8 FLAT BAR MIN. 90mm END SUPPORT
L18 100 x 100x 6 ANGLE
L19 150 x 100 x 8 ANGLE MIN. 150mm END SUPPORT
L20 100 x 100 x 10 EQUAL ANGLE WITH 200 x 6 MS PLATE STITCH WELDED TO BACK MIN 150 END SUPPORT

FT-Fixture Trap. It is not intended to drain floor

Windows within a wall with F.C. cladding to have finless frames

Additional items may be required at extra cost due to covenant requirements if applicable

* WINDOWS:
PV-Permanent Vent
Obs-Obscure
SG-Safety Glass
X-Movable Panel
O-Fixed Panel
CB-Colonial Bars

THESE PLANS DO NOT COMPLY WITH ANY REQUIREMENTS FOR WHEELCHAIR OR DISABILITY ACCCESS OR ACCESABLE LIVING

Ref. e|Date: 17/10/2005 26220

HEC DEVELOPMENTS PTY LTD
& GATTA DEVELOPMENTS PTY LTD
Lot 1 Stuart Street
GOODNA **FIRE ANT** QLD,
4300 RP. 77285
MAP REF. UBD BNE 216/H9

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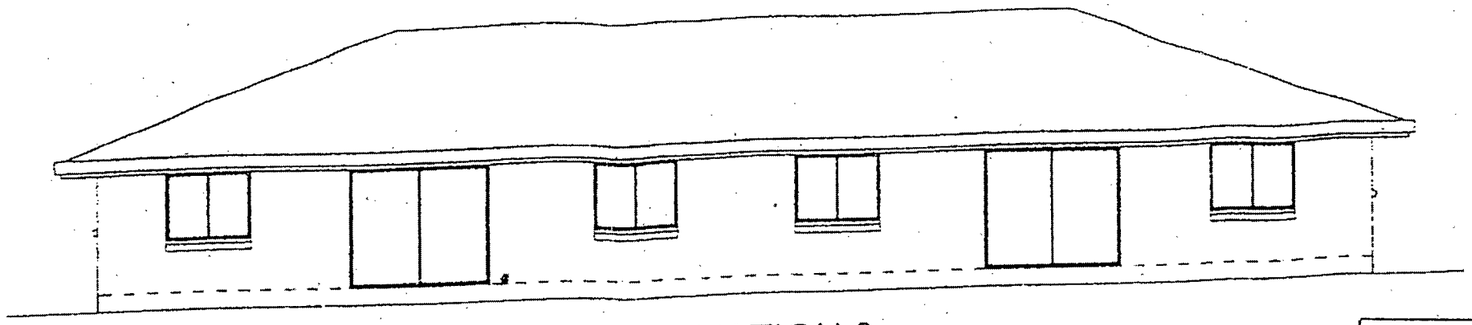
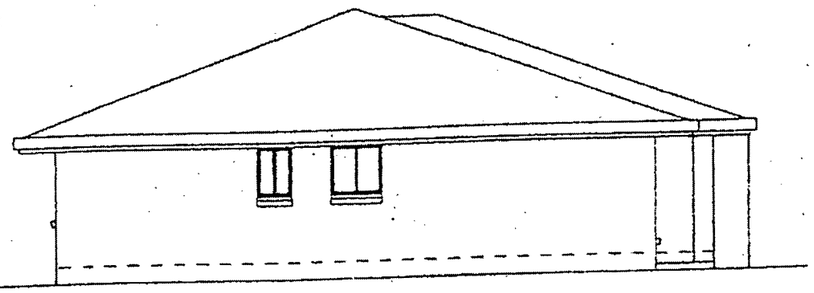


ELEVATION 3



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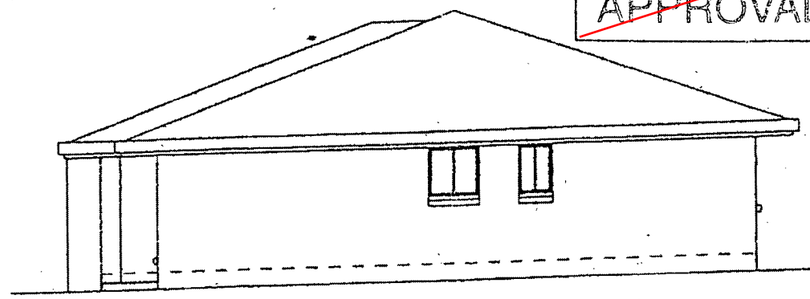
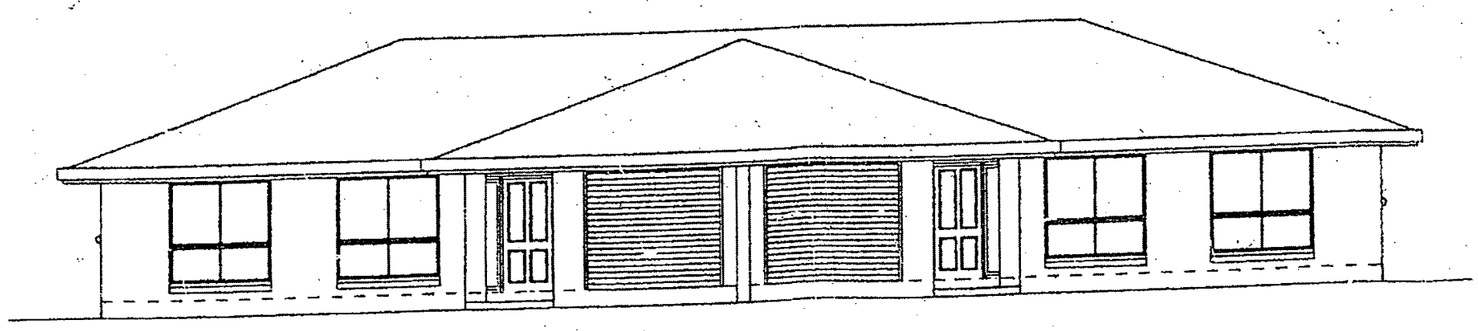


ELEVATION 2



ELEVATION 1

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Ref SG Date 5/8/2604 Conondale

NOTES

NOTE: WINDOWS AND DOORS SHOWN ARE STANDARD BLOCKS ONLY. FOR DETAIL ON PANEL SIZE & POSITION SEE CODES ON THE FLOOR PLAN

CUT PRICE HOMES
DIVISION OF TAMAWOOD LIMITED
A.B.N. 56 010 554 496
PH: 1300 30 20 84

DRAWN	SG 05/08/2004	ROOF	Conc Tile 20.1°
CHECKED		EXT WALL	70F/50/110B
AMN.	SCALE 1:100	CEILING HT	2440
FLOOR AREA	239.31 M2		
		WIND RATING	N2
PORCH/CARPORT AREA	3.00 M2		

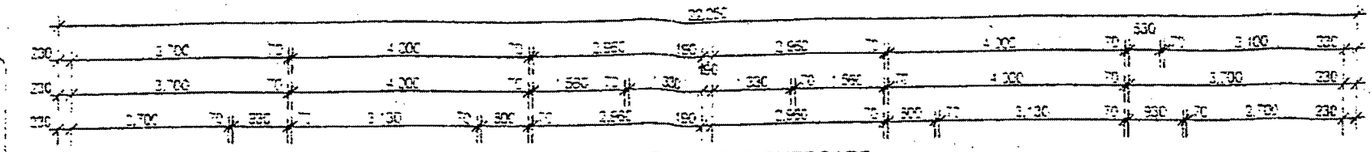
FRIDGE/FREEZER SPACE TO SUIT
870mm MAX. FRIDGE/FREEZER

FIGURE 3(b)

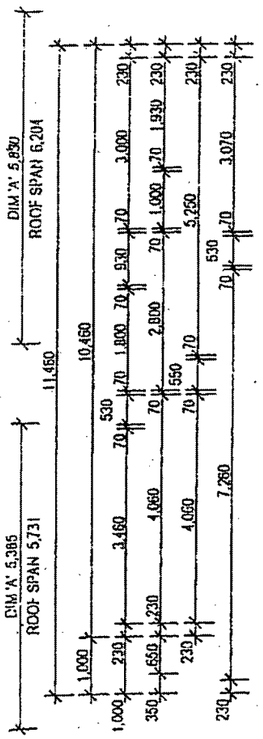
A new Energy Code became law in Queensland from 1st July 2003. Consequently by the execution of this document you undertake to accept all necessary price increases and modifications to the design of your home brought about by the introduction of the Code.

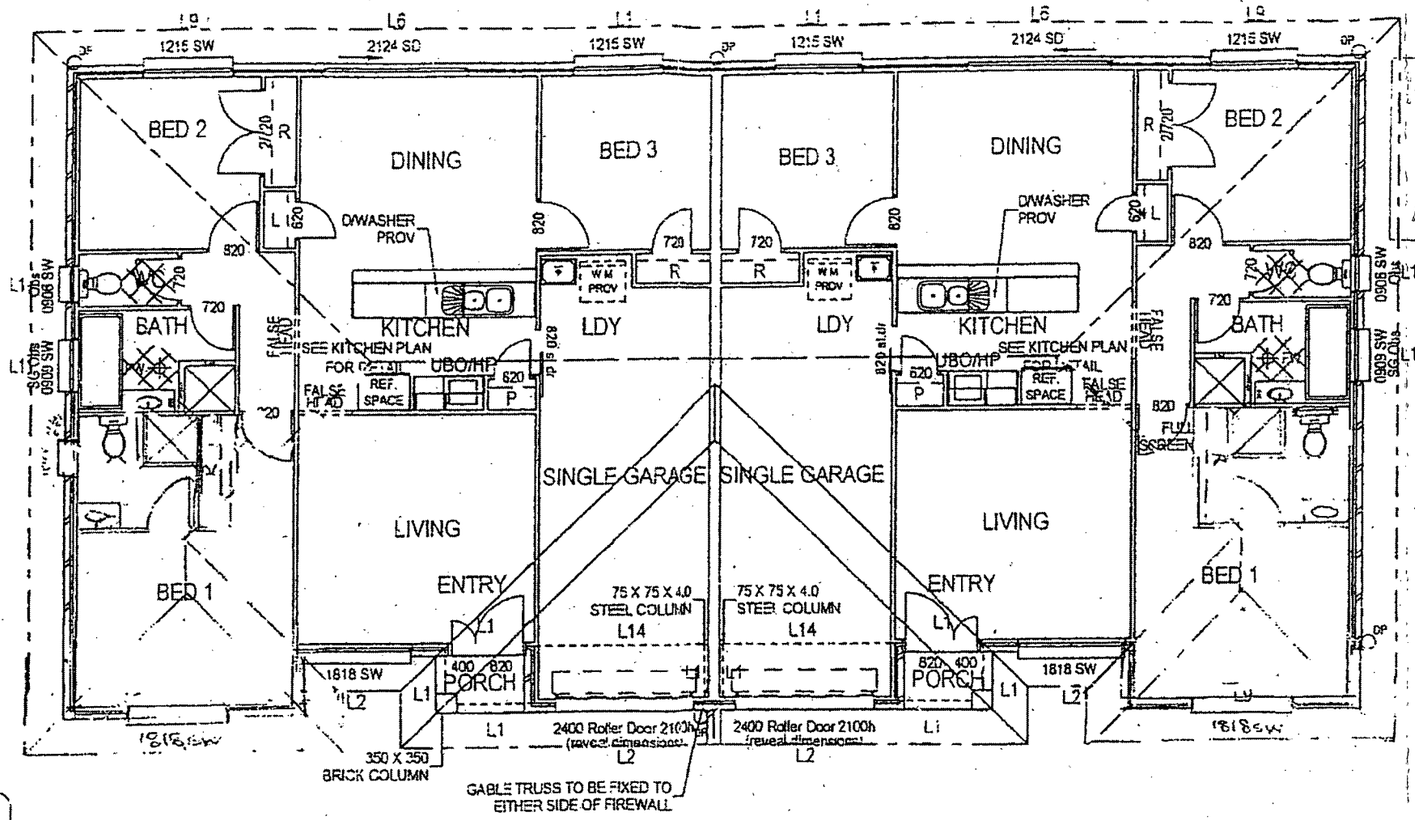
FIREWALL 186mm OVERALL THICKNESS WHEN FULLY LINED. 190mm CLEAR CAVITY REQUIRED FOR WALL

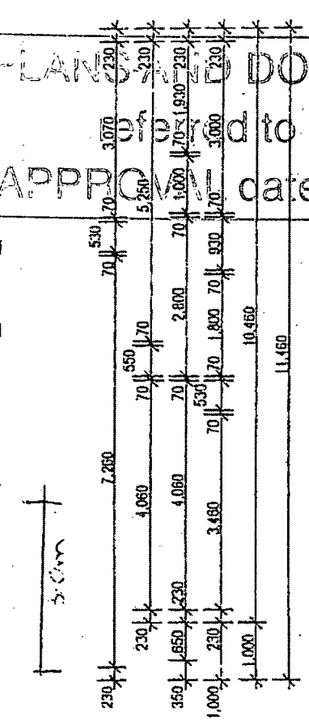
CAVITY TO SUIT BRICK WITH CORRESPONDING ADJUSTMENTS TO OUTSIDE DIMENSIONS

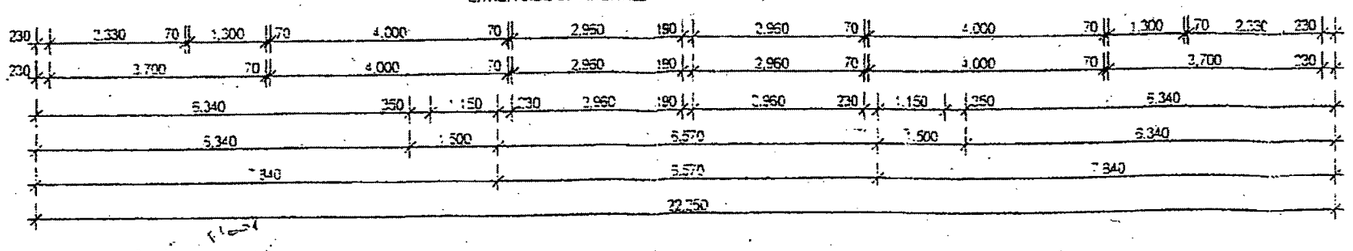


OPTIONAL OVERHEAD CUPBOARD AND RANGEHOOD









FIREWALL CONTINUES TO UNDERSIDE OF ROOF

NO PENETRATIONS TO FIREWALL FALSE WALLS TO BE PROVIDED WHEN PLUMBING OR ELECTRICAL INSTALLATION IS REQUIRED

NO SETDOWN TO GARAGE DUE TO SAFETY REASONS

CLIENT:-.....
CLIENT:-.....
DATE:-.....
BUILDER:-.....
DATE:-.....
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ELEVATIONS 3 4 2 1

FLOOR PLAN

LINTELS

L1 190 x 35 M12 KD	L9 240 x 70 F27 KD
L2 190 x 70 M12 KD	L10 270 x 65 TAS 18C
L3 240 x 70 M12 KD	L11 330 x 65 TAS 18C
L4 270 x 70 F27 KD	L12 420 x 65 TAS R
L5 220 x 35 F27 KD	L13 390 x 65 TAS 18C
L6 240 x 35 F27 KD	L14 240 x 65 TAS 18C
L7 190 x 70 F27 KD	L15 260 x 65 TAS 18C

WINDOWS: PV-Permanent Vent Obs-OBSCURE SG-Safety Glass X-Movable Panel O-Fixed Panel CS-Colonial Bars

CUT PRICE HOMES — DIVISION OF TAMAWOOD LIMITED A.B.N. 55 010 954 489 PH 1300 30 30 34

DRAWN	STG 25/08/2004	ROOF	Conc Tile 20.1°
CHECKED		EXT WALL	70F/50/110B
AMM	SCALE 1:100	CEILING HT	2440
FLOOR AREA	339.31 M2		
PORCH/CARPORT AREA	3.00 M2	WIND RATING	N2

DD

Habitare Pty Ltd

Rowland Lampard

211-219 Norris Road, Bracken Ridge

Road Traffic Noise Assessment

Document No. **746637_TRP_003851_00**
28 June 2005

ViPAC

EXECUTIVE SUMMARY

Vipac Engineers & Scientists Ltd (VIPAC) has been commissioned by Habitare Pty Ltd to prepare a Noise Impact Assessment for a proposed subdivision at 211 - 219 Norris Road, Bracken Ridge. The purpose of this report is to assess the noise impacts in accordance with noise criteria nominated by Brisbane City Council (BCC).

The principal noise source affecting the proposed residential units is road traffic on Norris Road. Future traffic noise levels are predicted to exceed BCC's outdoor recreation noise criteria of $L_{Aeq,1hr}$ 60 dB(A) and $L_{Aeq,24hr}$ 55 dB(A) at facades within the first row of dwellings facing towards Norris Road.

To meet the corresponding criteria, noise barriers of 2.0 m high would be required on the eastern boundary.

With the recommended noise barrier, the noise criteria will still be exceeded on the upper level of the dwellings within the first row adjacent to Norris Road. We recommend the internal noise level be reduced by façade treatment to meet the design levels in AS/NZ 2107-2000 on the upper floor.

Building facades facing away from these streets and other buildings within the proposed development are shielded by the intervening buildings and are expected to experience lower noise levels. They are predicted to comply with BCC's outdoor recreation noise criteria.

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1. INTRODUCTION

Vipac Engineers & Scientists Ltd (VIPAC) has been commissioned by Habitare Pty Ltd to assess potential impact that road traffic noise from Norris Road may have on the proposed subdivision at 211 - 219 Norris Road, Bracken Ridge.

This report presents an assessment of existing and future traffic noise impact on the proposed development, in accordance with Brisbane City Council (BCC) Noise Policy.

2. SITE LOCATION & PROPOSED DEVELOPMENT

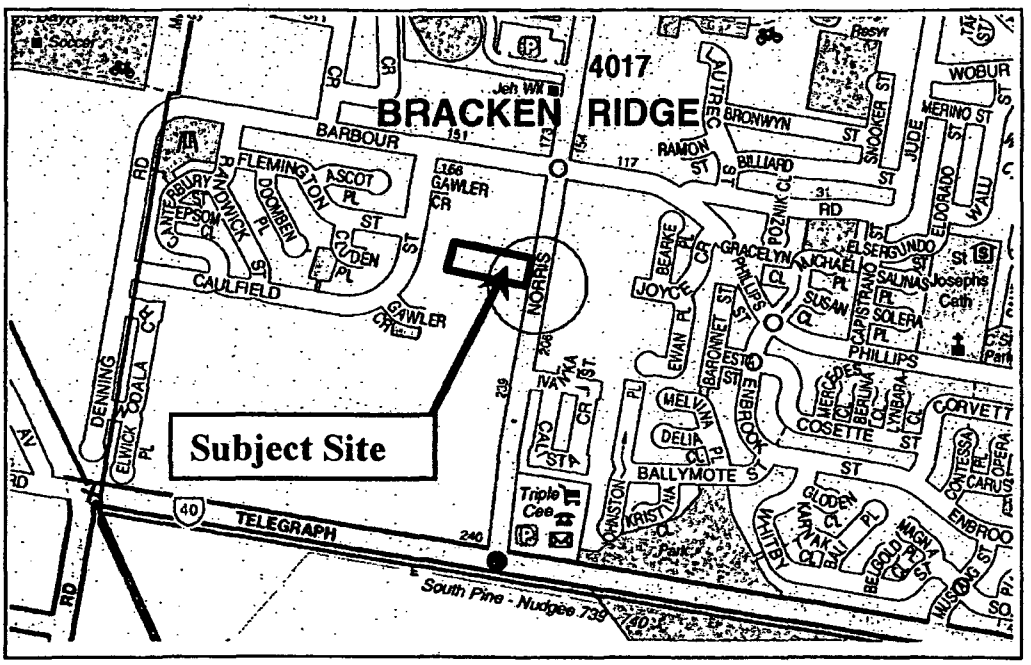

Figure 1: Subject Site Location

Site details:

Real property description of the site:	Lot 4 & 5 RP78240
Site boundary (north/east/south/west):	Neighbouring residential blocks on all sides except east. Norris Road to the east of the site.
Major source(s) of intrusive noise:	road traffic along Norris Road mechanical plant noise emissions from proposed development to the surrounding
Site frontage:	Norris Road

As part of the noise assessment, the current ambient noise levels at the eastern property boundary was measured at least for 24 hours on site, approximately 10.5 m from the existing kerb of Norris Road. Figures 1 and 2 show the site and noise logger locations.

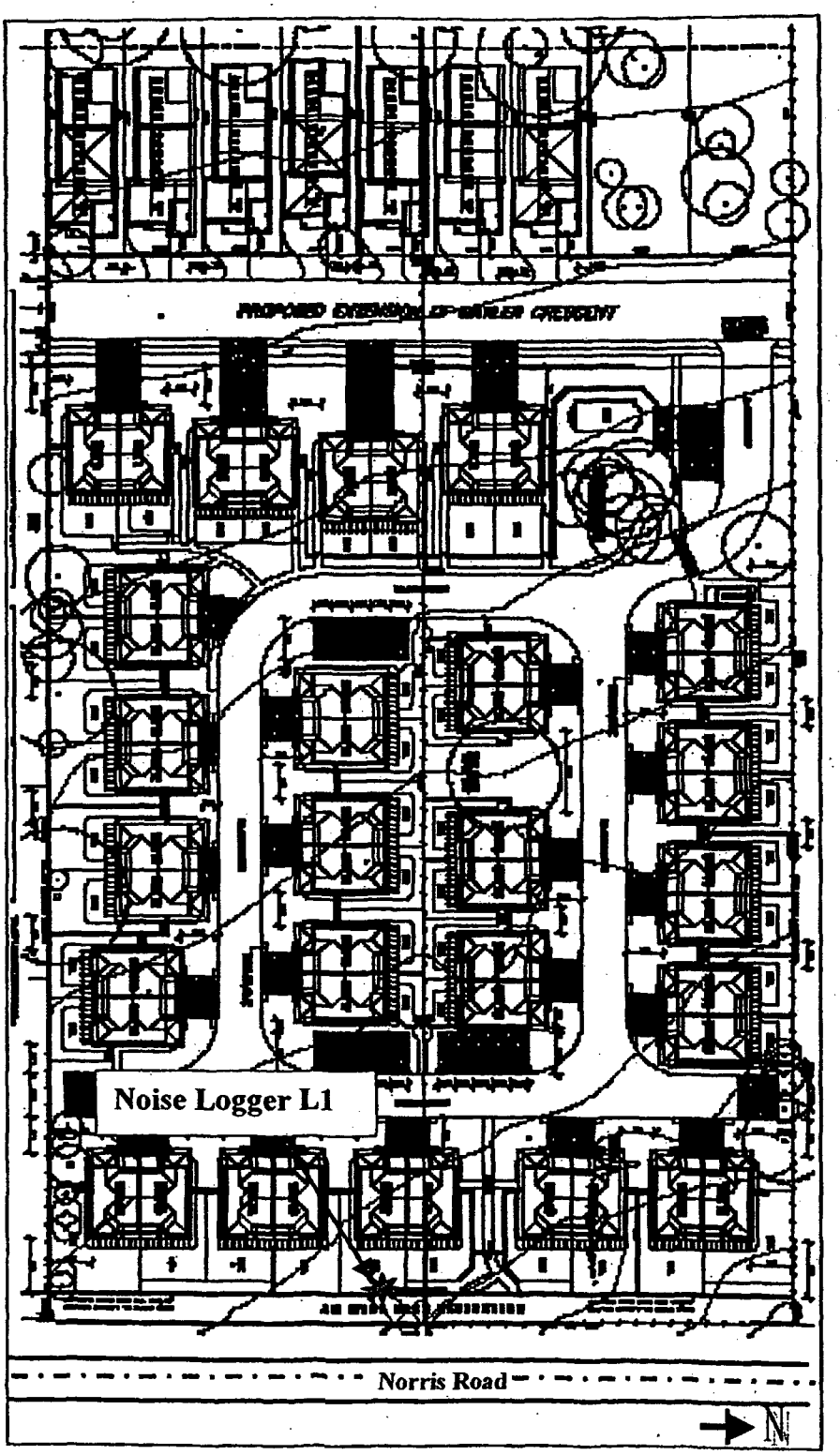

Figure 2: Site Layout and Logger Position

3. NOISE CRITERIA

For this project, we expect the major noise sources and their appropriate noise criteria are as summarised in Table 1.

Table 1: Noise Sources and Appropriate Noise Criteria

Noise Source	Appropriate Noise Criteria
Traffic Noise	BCC Cityplan and AS2107 levels
Air-conditioning Plant	BCC Cityplan and AS2107 levels, EPP (Noise)
Outdoor Recreation area	BCC Cityplan Outdoor Recreation Criteria
ALL	BCC Cityplan Background Creep

A detailed review of noise criteria is included in Appendix C.

4. EXISTING NOISE LEVELS

Noise monitoring was conducted to quantify the existing ambient noise environment surrounding the subject site. Appendix A presents a summary of the noise monitoring equipment and logger graph.

The average of the relevant noise parameters based on the measured data are tabulated below:

Table 2: Noise Monitoring Results (free field)
(rounded to the nearest 0.5 dB)

Noise Descriptor	Representative Noise Levels dB(A)
$L_{A10,18hrs}$ (6am to 12 midnight)	69
$L_{Aeq,24hrs}$	62.5
$L_{Aeq,1hr}$ (maximum 1 hour)	69.5
$L_{Aeq,1hr}$ (average night time - 10pm to 7am)	57.5
$L_{Aeq,1hr}$ (lowest night time - 10pm to 7am)	51.5
L_{Amax} (average night time - 10pm to 7am)	75.5
L_{A90} (average daytime - 7am to 6pm)	55.5
L_{A90} (average evening - 6pm to 10pm)	48
L_{A90} (average night time - 10pm to 7am)	38.5

5. NOISE ASSESSMENT AND RECOMMENDATIONS

A traffic model has been set up using the CoRTN algorithms. Appendix B presents a summary of input and output data provided by the traffic model.

5.1 Road Traffic Noise

5.1.1 Summary of Predicted Noise Levels

Table 3 below presents predicted traffic noise levels at the most exposed building facades (facing Norris Road) without noise barriers.

Table 3: Summary of predicted free-field external noise levels $L_{A10(18hour)}$ in dB(A) without noise barrier
(rounded to the nearest 0.5 dB)

Assessed (representative) Receivers	Floor Level	Space	Traffic Noise Levels dB(A)		
			$L_{A10,18hr}$	$L_{Aeq,1hr}$	$L_{Aeq,24hr}$
1st row dwellings Units 37 – 46 *Duplex Concept A*	Ground	dining room	69	69.5	62.5
		Living room	66	66.5	59.5
	Level 1	Bedroom 1	66	66.5	59.5
		Bedroom 2	68.5	69	62
		Bedroom 3	68.5	69	62
2nd row dwellings Units 16/17/28/36 *Duplex Concept A*	Ground	dining room	61.5	62	55
		Living room	61.5	62	55
	Level 1	Bedroom 1	61.5	62	55
		Bedroom 2	60	60.5	53.5
		Bedroom 3	61.5	62	55
3rd row dwellings Units 14/34 *Duplex Concept A*	Ground	dining room	57	57.5	50.5
		Living room	57	57.5	50.5
	Level 1	Bedroom 1	57	57.5	50.5
		Bedroom 2	57	57.5	50.5
		Bedroom 3	57	57.5	50.5
4th row dwellings Units 12/32 *Duplex Concept A*	Ground	dining room	55	55.5	48.5
		Living room	55	55.5	48.5
	Level 1	Bedroom 1	55	55.5	48.5
		Bedroom 2	55	55.5	48.5
		Bedroom 3	55	55.5	48.5
5th row dwellings Units 10/30 *Duplex Concept A*	Ground	dining room	54.5	55	48
		Living room	54.5	55	48
	Level 1	Bedroom 1	54.5	55	48
		Bedroom 2	54.5	55	48
		Bedroom 3	54.5	55	48
6th row dwellings Units 3/4 *Duplex Concept A*	Ground	dining room	53.5	54	47
		Living room	53.5	54	47
	Level 1	Bedroom 1	53.5	54	47
		Bedroom 2	53.5	54	47
		Bedroom 3	53.5	54	47
Recreation Area 1	Ground	Open space	55	55.5	48.5
Recreation Area 2	Ground	Pool	53	53.5	46.5

Table 4: Summary of predicted free-field external noise levels $L_{A10(18hour)}$ in dB(A) with 2.0 m high noise barrier
(rounded to the nearest 0.5 dB)

Assessed (representative) Receivers	Floor Level	Space	Traffic Noise Levels dB(A)		
			$L_{A10,18hr}$	$L_{Aeq,1hr}$	$L_{Aeq,24hr}$
1st row dwellings Units 37 – 46 *Duplex Concept A*	Ground	dining room	60	60.5	53.5
		Living room	57	57.5	50.5
	Level 1	Bedroom 1	60.5	61	54
		Bedroom 2	65.5	66	59
		Bedroom 3	65.5	66	59
2nd row dwellings Units 16/17/28/36 *Duplex Concept A*	Ground	dining room	53	53.5	46.5
		Living room	53	53.5	46.5
	Level 1	Bedroom 1	55.5	56	49
		Bedroom 2	53.5	54	47
		Bedroom 3	55.5	56	49

Note: Noise levels at the remaining receivers were predicted to be below 55 dB(A) LA10,18hr, and thus not shown in the above table..

Residential units immediately adjacent to the eastern boundary are exposed to higher levels of traffic noise generated along Norris Road.

Without a noise barrier, Table 3 above shows that traffic noise levels at the closest building facades facing Norris Road are predicted to exceed the $L_{Aeq,1hr}$ 60 dB(A) noise criteria by approximately 2 – 9.5 dB(A). This is expected to occur during the highest peak hour traffic periods. Traffic noise levels at the closest building facades and balconies are predicted to exceed the $L_{Aeq,24hr}$ 55 dB(A) noise criteria by approximately 4.5 – 7.5 dB(A).

With the installation of a 2.0 m high noise barrier along the eastern boundary, noise reduction up to 9 dB can be expected at Ground level 1st row residences (most exposed facade of Units 37 – 46). Table 4 indicates that with the 2.0 m barrier, noise levels comply with the nominated criteria at most of the exposed façades and private courtyard/patio for Ground level of 1st row residences

Noise levels at other locations within the proposed development are predicted to comply with both the $L_{Aeq,1hr}$ and $L_{Aeq,24hr}$ noise criteria due to shielding provided by intervening building and distance separation.

Façade treatment is recommended to mitigate noise exceedances for bedrooms on upper level facing Norris Road.

5.1.2 Façade treatment General Recommendations

The proposed residential units affected by road traffic should be constructed to achieve maximum recommended design sound levels specified in Australian Standard AS/NZS 2107:2000 *"Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors"* (refer to Appendix C1.2).

The following indicative constructions are required for glazing, wall and roof elements:

- Sleeping and Living Areas - Glazing constructions are expressed in terms of a minimum weighted sound reduction index (R_W). Table 5 below presents recommended minimum glazing constructions for each building facade. This assumes a noise barrier of 2.0 m high will be built on the eastern boundary.

- Wall and roof construction has a minimum weighted sound reduction index of R_W 45. An R_W 45 for walls and roofing can be achieved using standard building construction materials.

Table 5: Glazing requirements for Building Facades

Assessed (representative) Receivers	Floor Level	Space	Glazing Requirements	
			Thickness & Type	Acoustic Rating
1st row dwellings Units 37 – 46 *Duplex Concept A*	Ground	dining room	4 mm float	Rw24
		Living room	4 mm float	Rw24
	Level 1	Bedroom 1	4 mm float	Rw24
		Bedroom 2	**6.38 mm lam**	**Rw 31**
		Bedroom 3	**6.38 mm lam**	**Rw 31**
2nd row dwellings Units 16/17/28/36 *Duplex Concept A*	Ground	dining room	4 mm float	Rw24
		Living room	4 mm float	Rw24
	Level 1	Bedroom 1	4 mm float	Rw24
		Bedroom 2	4 mm float	Rw24
		Bedroom 3	4 mm float	Rw24
3rd row dwellings Units 14/34 *Duplex Concept A*	Ground	dining room	4 mm float	Rw24
		Living room	4 mm float	Rw24
	Level 1	Bedroom 1	4 mm float	Rw24
		Bedroom 2	4 mm float	Rw24
		Bedroom 3	4 mm float	Rw24
4th row dwellings Units 12/32 *Duplex Concept A*	Ground	dining room	4 mm float	Rw24
		Living room	4 mm float	Rw24
	Level 1	Bedroom 1	4 mm float	Rw24
		Bedroom 2	4 mm float	Rw24
		Bedroom 3	4 mm float	Rw24
5th row dwellings Units 10/30 *Duplex Concept A*	Ground	dining room	4 mm float	Rw24
		Living room	4 mm float	Rw24
	Level 1	Bedroom 1	4 mm float	Rw24
		Bedroom 2	4 mm float	Rw24
		Bedroom 3	4 mm float	Rw24
6th row dwellings Units 3/4 *Duplex Concept A*	Ground	dining room	4 mm float	Rw24
		Living room	4 mm float	Rw24
	Level 1	Bedroom 1	4 mm float	Rw24
		Bedroom 2	4 mm float	Rw24
		Bedroom 3	4 mm float	Rw24
Recreation Area 1	Ground	Open space	n/a	n/a
Recreation Area 2	Ground	Pool	n/a	n/a

Note: The above glazing recommendations were calculated using methods set out in Australian Standard AS3671 *"Acoustics – Road Traffic Noise Intrusion Building Siting and Construction". Concept drawings "Duplex Concept A" (Dwg. No. 05-141) have been referred to.*

5.1.3 Noise Barrier General Recommendations

For ground floor receivers, a 2.0 m high acoustic barrier along Norris Road would be required to reduce the noise level to meet the outdoor recreation area criteria. The location, extent and height of the minimum barriers required for ground level are shown in

Figure 3 on the following page.

An acoustic fence (barrier) is one that is impervious from the ground to the recommended height and contains no significant gaps in the fence that would allow the passage of sound below the recommended height. To ensure optimum performance of the barrier, it should be constructed so that any short-term deterioration does not adversely affect its performance.

The barrier will need to comply with Main Roads Barrier Specification MRS 11.15.

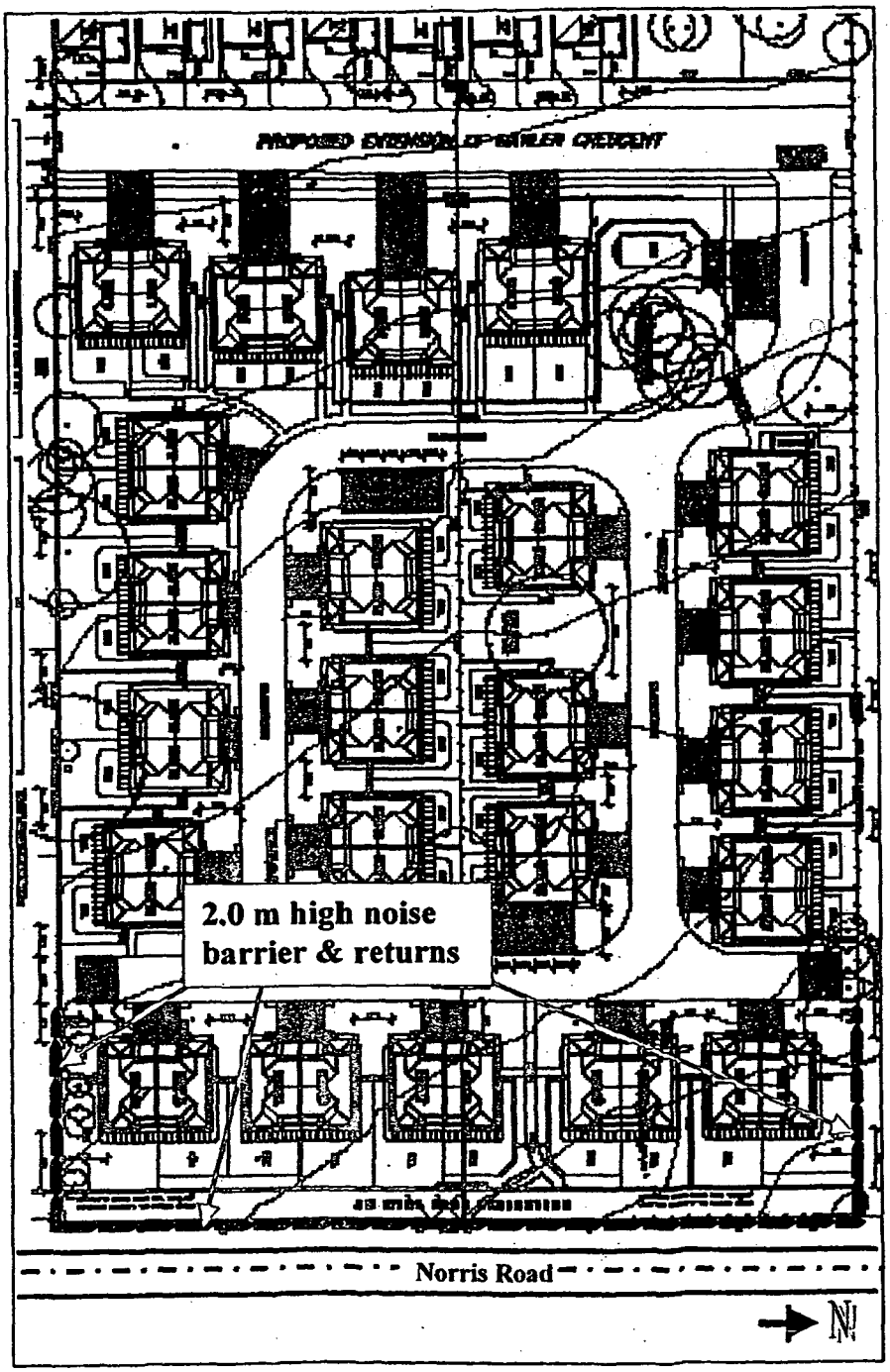

Figure 3: Extent of the recommended 2.0 m high noise barrier and barrier returns

6. CONCLUSIONS

VIPAC has conducted traffic noise measurements and predictions for the proposed residential subdivision at 211 - 219 Norris Road, Bracken Ridge. The site is affected by traffic from Norris Road. The predicted future traffic noise levels are up to $L_{A10(18hour)}$ 69 dB(A).

To meet the corresponding criteria, noise barriers would be required. The location, extent and height of the minimum barriers required for ground level are shown in Figure 3 of this report.

With the recommended noise barrier, the noise criteria will still be exceeded on the upper level of the dwellings within the first row adjacent to Norris Road. We recommend the internal noise level be reduced by façade treatment to meet the design levels in AS/NZ 2107-2000 on the upper floor.

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APPENDIX A: NOISE MONITORING EQUIPMENT AND LOGGER GRAPH

This section presents tables summarising the equipment/instrumentation used for the measurements, logger details and noise monitoring results:

Table A-1: Instrumentation

Logger ID	Instrument	Serial Number	Lab Calibration Due	Field Calibration
L1	Larson Davis LD812 Type 1 Sound Level Meter	0711	09/02/2007	93.8 dB(A) before 93.8 dB(A) after
N/A	Acoustic Calibrator SC-2120	35100925	09/03/2006	N/A

Table A-2: Measurement Details for Logger L1

Detail	Information
Microphone Height	1.5 m
Microphone Orientation	Pointing vertically upwards
SLM Time Weighting	Fast
SLM Frequency Weighting	A
Measurement Interval Period	15 minutes intervals
Logger location	On the eastern boundary, approximately 10.5 m from the existing edge of bitumen Norris Road
Date of measurement	between 14th and 17th June 2005

Figure A-1 below presents measured L_{Aeq}, L_{A10}, L_{A90} and L_{Amax} noise levels recorded during noise monitoring.

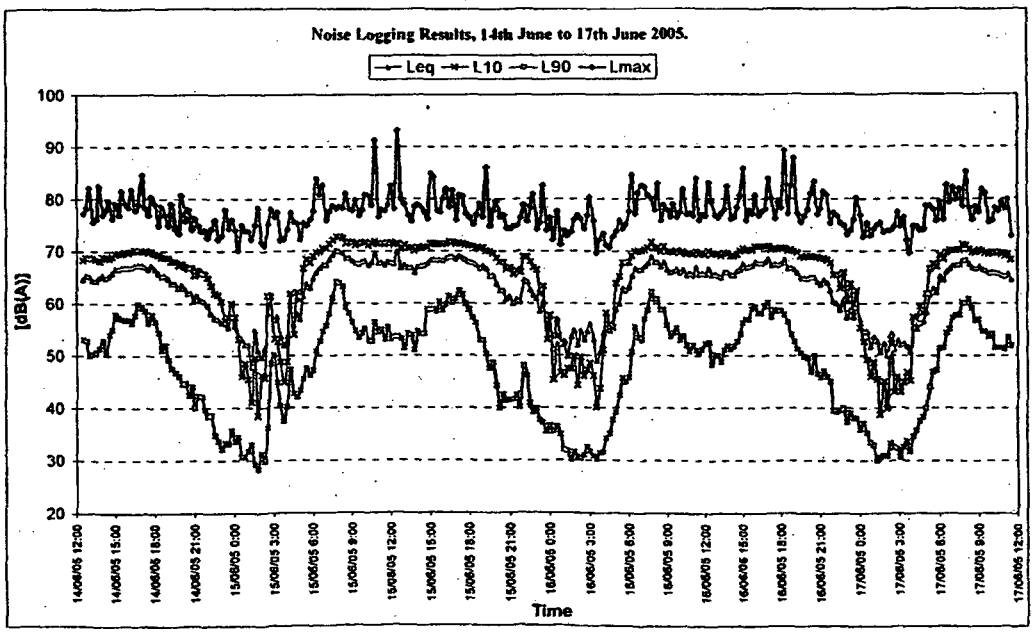

Figure A-1: Noise Monitoring Results for Logger L1

Note: L_{Aeq} is the time averaged A-weighted sound pressure level for the interval, as defined in AS1055.1. It is generally described as the equivalent continuous A-weighted sound pressure level that has the same mean square pressure level as a sound that varies over time. It can be considered as the average sound pressure level over the measurement period.

L_{A10} and L_{A90} is the sound level, which, for a specified time interval, in relation to an investigation of a noise, means the A-weighted sound pressure level that is equalled or exceeded for 10% and 90% of the time interval, respectively. These are known as the 10th and 90th percentile. L_{Amax} is the maximum A-weighted sound pressure level measured over the period of interest.

APPENDIX B: TRAFFIC NOISE MODEL

B1.1 Traffic Data

Table B-1 below presents predicted traffic volumes based on BCC data:

Table B-1: Traffic Data AADT and % CV

Street Name	Traffic Volumes			% Commercial Vehicles		
	Existing 2003	Predicted 2005	Ultimate 2015	Existing 2003	Predicted 2005	Ultimate 2015
Norris Road	9,000	9,923	16,163	3%	3%	3%

Note: Assuming traffic growth of 5% p.a

B1.2 CoRTN Modelling Data

A traffic model has been set up using CoRTN algorithms based on the following parameters and assumptions:

Road alignment/gradient and site terrain description:	From site inspection, the road level and gradients were determined to be relatively flat (<1%). Site terrain is relatively flat.
Receivers height: Ground floor Upper floor(s)	 1.8 m above natural ground level 1.5 m above FFL
Set back distance for single point receivers	Approx. 12 m from eastern property boundary
Type of road surface	Dense graded asphalt (DGA)
CoRTN correction for road surface	0 dB
Number of lane(s) each way: Current: Future (after 10 years):	 1-lane each way traffic no change to the current lane
Traffic volume between 6 am and midnight: For the current year (2005): 10 years after (2015):	94% of the total daily volume 9,923 16,163
Posted traffic speed: Mean observed traffic speed (used in modelling):	60 km/hr for 2005 and 2015 60 km/hr for 2005 and 2015
Buffer distance from the property boundary to the source line:	10 m

B1.3 Model Calibration

The traffic model is calibrated by comparing predicted traffic noise levels against the noise monitoring results at the logger location. A difference up to 2 dB(A) is considered an acceptable variation for traffic noise modelling and therefore the CoRTN model is considered validated for this assessment.

Monitoring Location	Measured $L_{A10(18hour)}$ Levels dB(A)	Predicted $L_{A10(18hour)}$ Levels dB(A)	Difference
Location L1	69	68	1 dB

Note: Correction factor of +1 dB has been included in CoRTN calculations to account for the difference.

B1.4 Outdoor Recreation Areas

BCC's NIAPSP nominates the EPA's EPP(Noise) criteria to assess noise impact to outdoor recreation areas. The following noise outdoor criteria apply to private recreation areas such as private balconies and courtyards:

- $L_{Aeq,24hr}$ 55 dB(A)
- $L_{Aeq,1hr}$ 60 dB(A)

Where traffic noise levels are predicted to exceed these criteria for private balconies and courtyards, then the proposed development should incorporate a common recreation area such as BBQ or pool area that complies with the nominated noise criteria. If it is not possible to achieve the recommended noise levels in any recreation area then noise amelioration measures should be considered (e.g. noise barriers or absorptive panels) to reduce noise levels as far as practical.

The model is used to predicted traffic noise levels at the most exposed building facades in terms of the $L_{A10,18hr}$ noise descriptor. Conversion factors for the predicted $L_{Aeq\ (24\ hr)}$ and highest $L_{Aeq\ (1\ hr)}$ are determined from the monitoring results (i.e. differences). The following conversion factors apply:

- $L_{Aeq\ (24\ hr)}$ $= L_{A10,18hr} - 6.5$ dB(A)
- Highest $L_{Aeq\ (1\ hr)}$ $= L_{A10,18hr} + 0.5$ dB(A)

APPENDIX C: NOISE CRITERIA

C1 BRISBANE CITY COUNCIL (BCC)

Brisbane City Council have implemented the Noise Impact Assessment Planning Scheme Policy (NIAPSP) in Volume 2 of their Brisbane City Plan 2000 document.

The objectives of NIAPSP are to provide acoustic amenity for existing and future residents, provide industry with a level of certainty with respect to urban encroachment, and to facilitate development with a standard assessment process and criteria.

The policy utilises five assessment methodologies as follows:

- Comparison of like noise parameters for before and after development situations;
- Application of indoor noise levels specified in AS2107;
- Assessment of sleep awakening noise levels;
- Assessment of outdoor recreation areas; and
- Background noise creep.

The policy also contains criteria for the assessment of vibration impacts.

It is noted that irrespective of criteria developed by Council, the requirement of the EPA's EPP(Noise) must be complied with, that is, noise emission levels should be reduced to minimise the possibility of complaint.

To assist with the use of the policy, Council have released several draft NIAPSP Guidelines:-

- Noise Methodologies Guideline (dated October 2000)
- Noise Impact Assessment Report Guideline (dated January 2001)
- Guideline: Certification of Noise Compliance (dated October 2000)
- Noise Guideline: Structure Planning and Subdivision (dated October 2000)
- Guideline: Multi-unit Residential Design (Medium Density) (dated October 2000)

C1.1 Comparison of Like Parameters

The 'Comparison of Like Parameters' criteria from NIAPSP is typically used to evaluate industrial noise due to variation in noise types associated with industrial activities. Firstly, noise measurements are conducted on the receiving environment in the absence of the noise source. Secondly, the measurements are repeated (or predictions calculated) inclusive of the noise source. The maximum allowable difference between the two data sets is 3 dB(A) for the relevant parameter.

The relevant parameters may include:-

- L_{Amax} – for short duration events, such as car doors closing, hammering.
- L_{Aeq} – for steady state and variable noise, such as industrial and commercial activities with a range of noise sources, air-conditioning and plant noise
- L_{A1} – for short duration events, such as hammering, items being dropped, shooting
- L_{A10} – for relatively short duration events, such as industrial and commercial activities
- L_{A90} – for steady state or quasi-steady state noise levels, and describing the existing environment.

Any chosen parameter/s must be justified based on the character of the ambient noise and the character of noise emitted from the development.

C1.2 Indoor Noise Criteria (AS/NZS 2107:2000)

Australian / New Zealand Standard AS/NZS 2107:2000 '*Acoustics – Recommended design sound levels and reverberation times for building interiors*'.

For steady-state noise sources such as air-conditioning plant, the NIAPSP Guidelines recommends the most applicable assessment methodology would be the "application of indoor noise levels specified in AS/NZS 2107". The NIAPSP Noise Methodology Guideline states that AS/NZS 2107 methodology applies to emissions and imissions of steady-state or quasi-steady state sound such as noise from air conditioning systems & continuous road traffic.

The methodology is applicable to road traffic noise during the day, evening and night where traffic volumes on the subject road exceed 15,000 vehicles per day.

AS/NZS 2107:2000 lists recommended internal noise levels for various building and room types, including residential bedrooms and other areas. For apartments near major roads, the recommended design levels are listed in Table C-1 below.

Table C-1: Recommended Internal Noise Levels from AS/NZS 2107:2000

Type of Occupancy/Activity	Design Sound Level L_{Aeq}, dB(A)
Residential Buildings	
Living areas	35 to 45
Sleeping areas	30 to 40
Work areas	35 to 40

When considering the impact on premises outside the proposed development, it is more difficult to estimate the noise levels within those buildings as information on detailed building construction is often not known. In these cases the approximate attenuation provided by various building constructions is supplied in NIAPSP. The information covers three basic dwelling 'styles' and arrives at an Attenuation Correction 'C' value which is added to the recommended internal noise level in the above table to determine a recommended external noise level.

Table C-2: Attenuation Correction

Air Conditioned?	Sealed Windows or no Windows facing the Sound Source?	Attenuation Correction, C
Yes	Yes	Add 20 dB(A)
No	Yes	Add 15 dB(A)
No	No	Add 5 dB(A)

C1.3 Sleep Disturbance Criteria

Sleep awakening criteria may be used to assess the impact of noise sources operational during the night period (10pm – 7am) that are neither steady nor quasi-steady.

There are no formal sleep disturbance criteria in the Department of Environment's Environmental Protection (Noise) Policy (the EPP), however, the issue of sleep disturbance is addressed in the "Users Guide to Queensland's Environmental Protection(Noise) Policy". In this document it is stated that with a background noise level of L_{A90} 30 dB(A) to 35 dB(A), a maximum noise level for fluctuating noise of 45 dB(A) to 50 dB(A) is recommended to reduce the likelihood of sleep disturbance.

Research adopted by the World Health Organisation (WHO), concludes that for short duration variable noise sources the onset of sleep disturbance commences at internal L_{Amax} noise levels of between 45 dB(A) and 50 dB(A).

C1.4 Outdoor Recreation Criteria

The NIAPSP uses the Environmental Protection (Noise) Policy's acoustic quality objective as a criteria for outdoor recreation areas. The NIAPSP states that a:-

"planning decision should strive to ensure the outdoor recreation areas are not exposed to unreasonable noise from existing surrounding land use. If the existing land use is:

- *A beneficial asset such as a railway corridor, it is necessary to comply with recommended levels for those uses prescribed in the EPP Noise.*
- *A non-beneficial asset, compliance should be with the acoustic quality of 55 dB(A) $L_{eq24hrs}$."*

The recommended planning levels for beneficial assets such road, rail & aircraft are in the EPP (Noise) and are summarised as follows:-

- Airports – 20 ANEF, or 70 dB(A), assessed as per the EPP (Noise)
- Public Roads – 68 dB(A) $L_{A10,18hr}$ for a state controlled road or 63 dB(A) $L_{A10,18hr}$ for another public road, and 60dB(A) for a night-time $L_{Aeq,1hr}$, and 80 dB(A) L_{Amax}.
- Railways – 65 dB(A) $L_{Aeq,24hrs}$ and 87 dB(A) L_{Amax}.

VIPAC have been advised by Council that in situations where the recommended noise levels are not achievable in private recreation areas (e.g. balconies and courtyards), then the levels should be achieved in a common recreation area (e.g. common pool or BBQ area). If it is not possible to achieve the recommended noise levels in any recreation area then ameliorative measures should be considered (e.g. barriers, absorptive panels) to reduce noise levels as much as practicably possible.

C1.5 Background Creep

One of the aims of the policy is to prevent background creep, i.e. the progressive increase in background noise levels as new noise emitting activities are located in the area. Maximum background levels are set based on noise area categories provided in AS1055. Where background noise levels have been measured, the noise area categories should be chosen such that the AS1055 background levels match the measured levels, irrespective of area category description.

The combined noise level emissions from the development, measured as $L_{A90,T}$, should not exceed the levels specified in Table C-3.

Table C-3: Limits on Background Noise Levels in Different Noise Areas

Noise area category AS1055.2 Appendix A	Permissible level of exceedance of $L_{A90,T}$ for the appropriate time of day		
	Where there is residential development	Where there is no residential development	Where the background levels already exceed the stated levels in AS1055.2 (i.e. without the proposed development)
R1	By 5 dB(A)	N/A	The development's noise contribution must still comply with the stated levels in AS1055.2
R2	By 5 dB(A)	N/A	
R3	By 0 dB(A)	By 10 dB(A)	
R4			
R5			
R6			

The background creep noise limits will be the lower of:

- The category noise levels from Table C-3 above; or
- The area category noise levels that match the measured background levels.

C2 QUEENSLAND GOVERNMENT

C2.1 Queensland EPA EPP (Noise)

In respect of the acoustic environment, the object of the Act is achieved by the Environmental Protection (Noise) Policy 1997[1] (EPP (Noise)). This policy identifies environmental values to be protected, specifies an acoustic quality objective, and provides a framework for managing and assessing noise emissions.

The "acoustic quality objective" is the objective of achieving an ambient level of 55dB(A) $L_{Aeq,24hrs}$ or less for most of Queensland's population living in residential areas. This is to be progressively achieved over the long term. Aside from this objective and planning levels for airports, public roads and railways, there are no noise criteria in the EPP (Noise).

It is not intended that, in achieving the acoustic quality objective, any part of the existing acoustic environment be allowed to significantly deteriorate. Therefore any noise criteria should include consideration for the existing ambient (or background) noise levels.

The acoustic environmental values to be enhanced or protected are as follows:-

- the wellbeing of the community or a part of the community.
- the wellbeing of an individual, including the individual's opportunity to have sleep, relaxation and conversation without unreasonable interference from intrusive noise.

Noise emissions should be reduced to minimise the risk of complaint, and noise criteria should be developed with risk minimisation as the principle concern, irrespective of alternative noise criteria.

C2.2 Queensland EPA EPR

The Environmental Protection Regulation 1998[2] (EPR) is enforced under the Act, and its object is to help protect Queensland's environment from environmental nuisance by providing offences for specific types of noise and nuisance abatement notices. The noise criteria in this

[1] Refer to Reprint No. 1B, in force on 2nd December 1999
[2] Refer to Reprint No. 3C, in force on 28th June 2002

document are considered to specifically deal with resolution of complaints, rather than setting planning criteria.

C2.3 General

To reduce the likelihood of noise complaints, the Environmental Protection Agency (EPA) will issue an Environmental Noise License to Environmentally Relevant Activities (ERA's). The license makes use of noise criteria from a previous Queensland noise policy, as follows:-

Table C-4: Environmental Noise Limits for an Environmentally Relevant Activity

Noise Limits at a Noise Sensitive Place Measured as the Adjusted Maximum Sound Pressure Level	Period
Background noise level plus 5 dB(A)	7am - 6pm
Background noise level plus 5 dB(A)	6pm - 10pm
Background noise level plus 3 dB(A)	10pm - 7am
Noise Limits at a Commercial Place Measured as the Adjusted Maximum Sound Pressure Level	Period
Background noise level plus 10 dB(A)	7am - 6pm
Background noise level plus 10 dB(A)	6pm - 10pm
Background noise level plus 8 dB(A)	10pm - 7am

The noise limits in Table C-4, although not contained as part of the EPP (Noise), are still regularly used by the EPA and local councils when specifying noise criteria or assessing noise complaints. They are widely accepted as being appropriate noise limits for non-time-varying noises, such as mechanical plant, and for minimising the risk of noise complaint.

To determine appropriate noise criteria requires the use of the following:-

- EPA License Noise Criteria, i.e. Background +3/+5dB(A)
- EPR Noise Offence Criteria
- Local Government Noise Policies

plus any other criteria considered appropriate for minimising the risk of noise complaint.

Attachment 2
Report on Brisbane City Council Codes
(Swaan Consulting)