PUNCHBOWL CHILDCARE

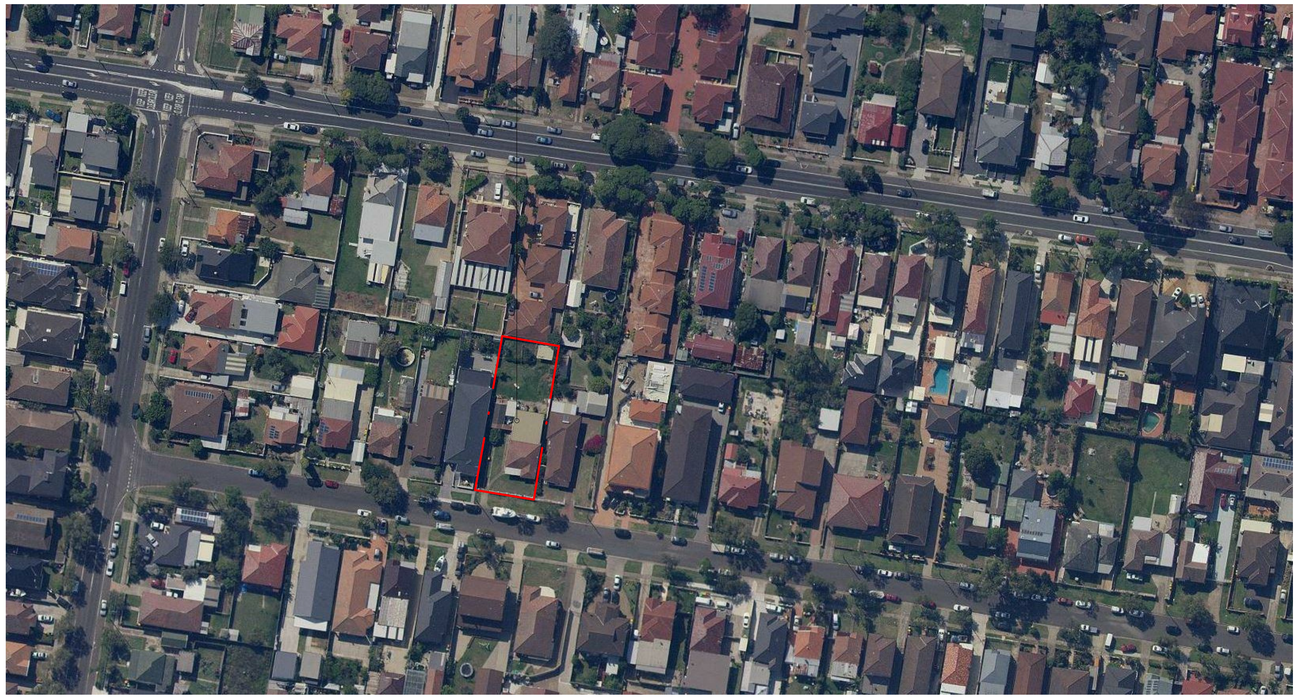
31 Telopea St, Punchbowl

ARCHITECTURAL

SHEET	SHEET NAME	REV	DATE
0000	COVER SHEET	E	10.02.22
0300	GFA PLANS	E	10.02.22
0301	AREA PLANS	E	10.02.22
0400	PHOTO MONTAGE	C	22.11.21
1001	GA_BASEMENT 01	E	10.02.22
2001	GA_GROUND LEVEL	E	10.02.22
2002	GA_ LEVEL 01	E	10.02.22
2003	GA_ROOF PLAN	E	10.02.22
3001	SECTION 01 & 02	E	10.02.22
3002	SECTION 03	D	10.02.22
3003	DRIVEWAY SECTION	D	10.02.22
4001	NORTH & SOUTH ELEVATION	E	10.02.22
4002	WEST & EAST ELEVATION	E	10.02.22
15001	KITCHEN & LAUNDRY DETAILS	B	10.02.22
15002	JOINERY DETAILS	B	10.02.22

SITE LOCATION

SUBJECT SITE:
31 TELOPEA ST, PUNCHBOWL
LOT 2 / DP552588



NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

10/02/2022 4:45:34 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

0 4m
1:100

SCALE: @ A1

PROJECT:
#2021013
PUNCHBOWL CHILDCARE
31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:
COVER SHEET

SHEET NUMBER: **0000**
REV: **E**
DATE: 10.02.22

ARCHITECT:
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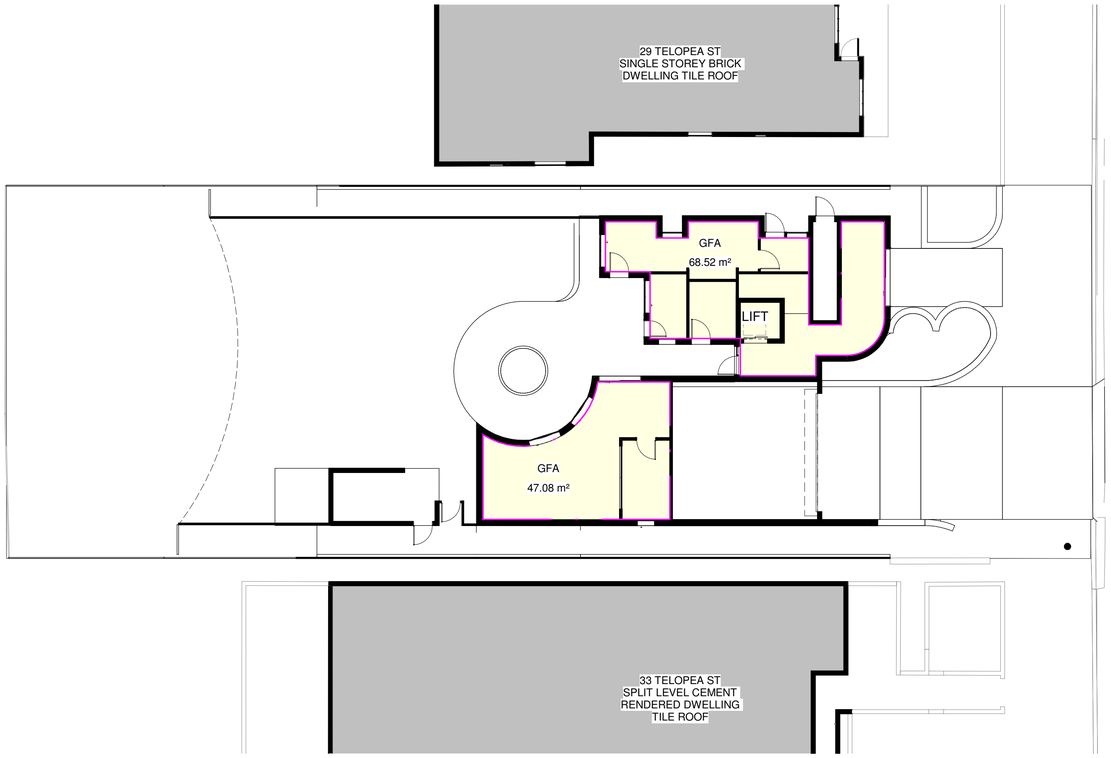
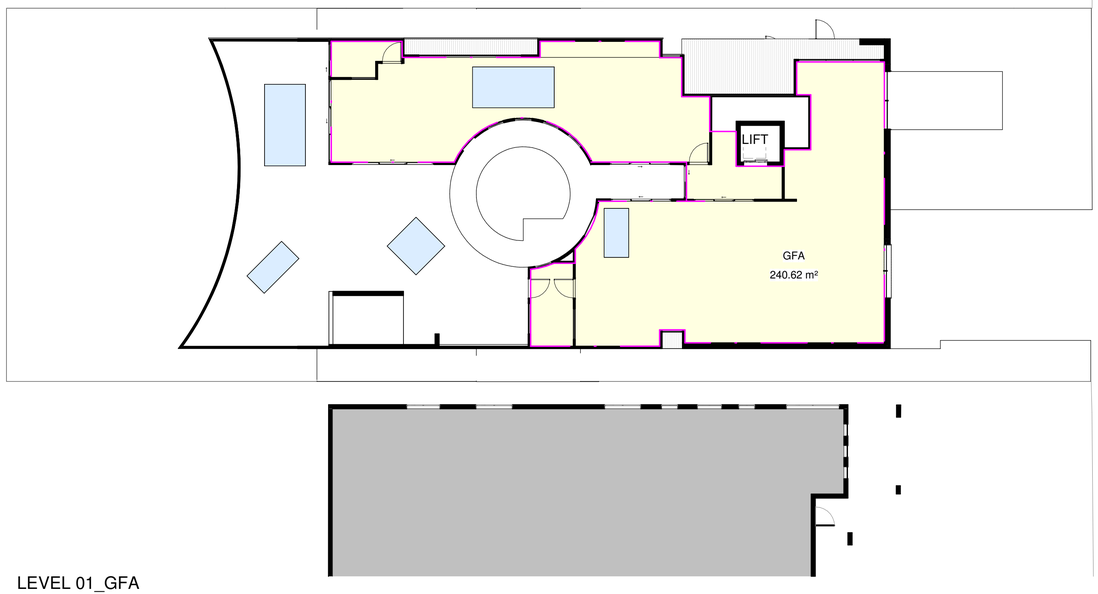


GROUND FLOOR_GFA

1 : 150



LEVEL 01_GFA

1 : 150

GFA CALCULATION

Site Area:	891.2 m² (Refer to site survey by Ramsay Surveyors Pty Limited)
FSR Control:	0.4 : 1 (Non Residential use in R2 Residential Zone)
Allowed GFA:	356.48 m²
	Proposed
Ground Floor:	115.60 m²
First Floor:	240.62 m²
Total:	356.22 m²
FSR:	0.4 : 1

GROSS FLOOR AREA

NAME	LEVEL	AREA
GFA	GROUND FLOOR	47.08 m²
GFA	GROUND FLOOR	68.52 m²
GFA	LEVEL 01	240.62 m²
Grand total: 3		356.22 m²

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DEVELOPMENT APPLICATION

10/02/2022 4:45:36 PM

REVISION:

REV	DATE	DESCRIPTION	APP
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B	09.09.21	DA ADDITIONAL INFORMATION	WC
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LEGEND:

N

0 4m

1:100

SCALE: 1 : 150 @ A1

PROJECT:
#2021013
PUNCHBOWL CHILDCARE
31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:
GFA PLANS

SHEET NUMBER: **0300**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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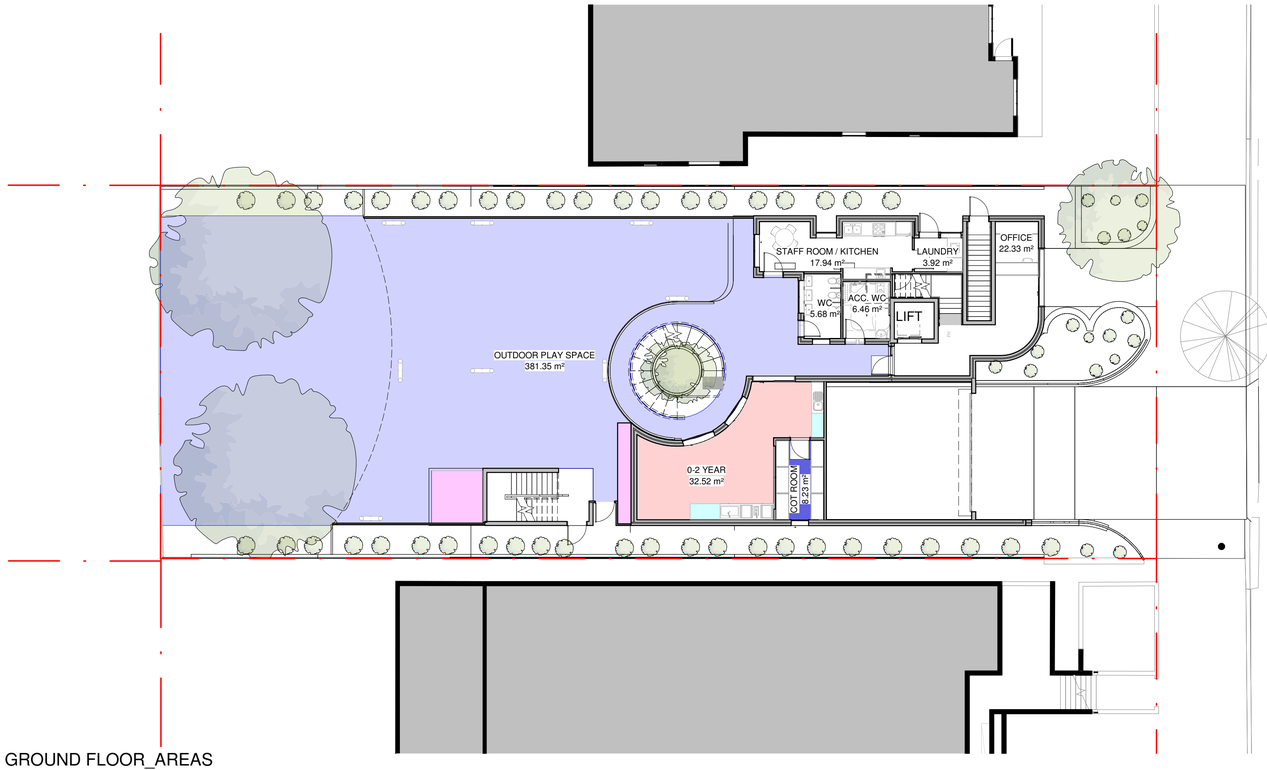


GROUND FLOOR_AREAS

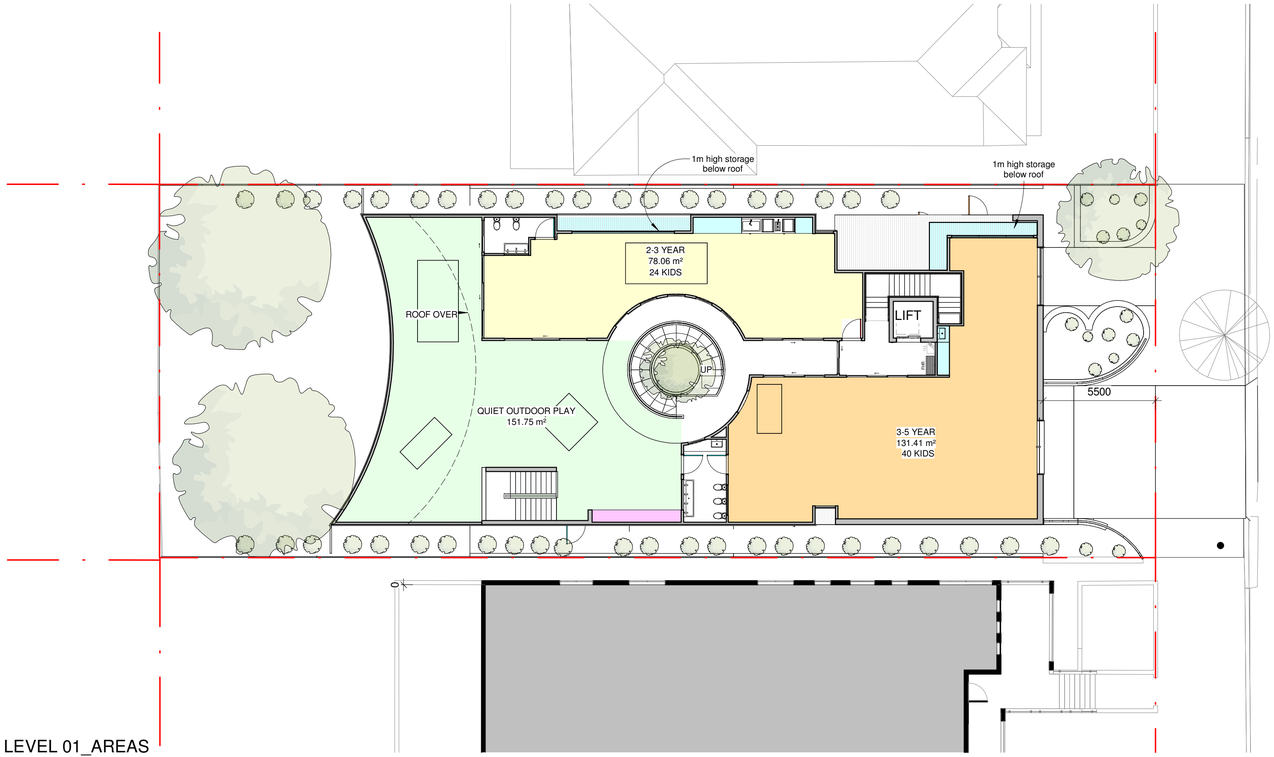
1 : 150

GROUND FLOOR LEARNING SPACE

- 0-2 YEAR
- COT ROOM
- OUTDOOR PLAY SPACE
- OUTDOOR STORAGE

INDOOR AREA CALCULATIONS	NO. CHILDREN	SPACE PER CHILD	REQUIRED	PROVIDED
0-2 Years Indoor Play:	10	3.25m²	32.50m²	32.52 m²
2-3 Years Indoor Play:	24	3.25m²	78.00m²	78.06 m²
3-5 Years Indoor Play:	40	3.25m²	130.00m²	131.41 m²
				241.99 m²
Storage:	74	0.20m³	14.80m³	21.81 m³

OUTDOOR AREA CALCULATIONS	NO. CHILDREN	SPACE PER CHILD	REQUIRED	PROVIDED
Outdoor Play:	74	7.00m²	518.00m²	533.29 m²
Storage:	74	0.30m³	22.20m³	25.2 m³



LEVEL 01_AREAS

1 : 150

LEVEL 01 LEARNING SPACE

- 2-3 YEAR
- 3-5 YEAR
- QUIET OUTDOOR PLAY

- INDOOR STORAGE
- OUTDOOR STORAGE

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DEVELOPMENT APPLICATION

10/02/2022 4:46:35 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
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E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

0 4m

1:100

SCALE: 1 : 150 @ A1

PROJECT:
#2021013
PUNCHBOWL CHILDCARE
31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:
AREA PLANS

SHEET NUMBER: **0301**
DATE: 10.02.22

REV: **E**

ARCHITECT:
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TELOPEA ST PHOTO MONTAGE - IMPRESSION ONLY

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DEVELOPMENT APPLICATION

Document Notes

Verify all dimensions on site before commencing work. Report all discrepancies to the architect prior to construction. Place Studio shall not be held responsible for any variations to specifications or drawings due to any discrepancies without consultation. Use figured dimensions in preference to scaled dimensions. Drawings made to larger scales and those showing particular parts of the works take precedence over drawings made to smaller scales or for general purposes. All work is to conform to relevant Australian Standards and Codes together with all Authorities' requirements and Regulations.

10/02/2022 4:46:35 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC

LEGEND:

0 4m
1:100

SCALE: @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

PHOTO MONTAGE

SHEET NUMBER: **0400**

REV: **C**

DATE: 22.11.21

ARCHITECT:

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GLAZING SCHEDULE

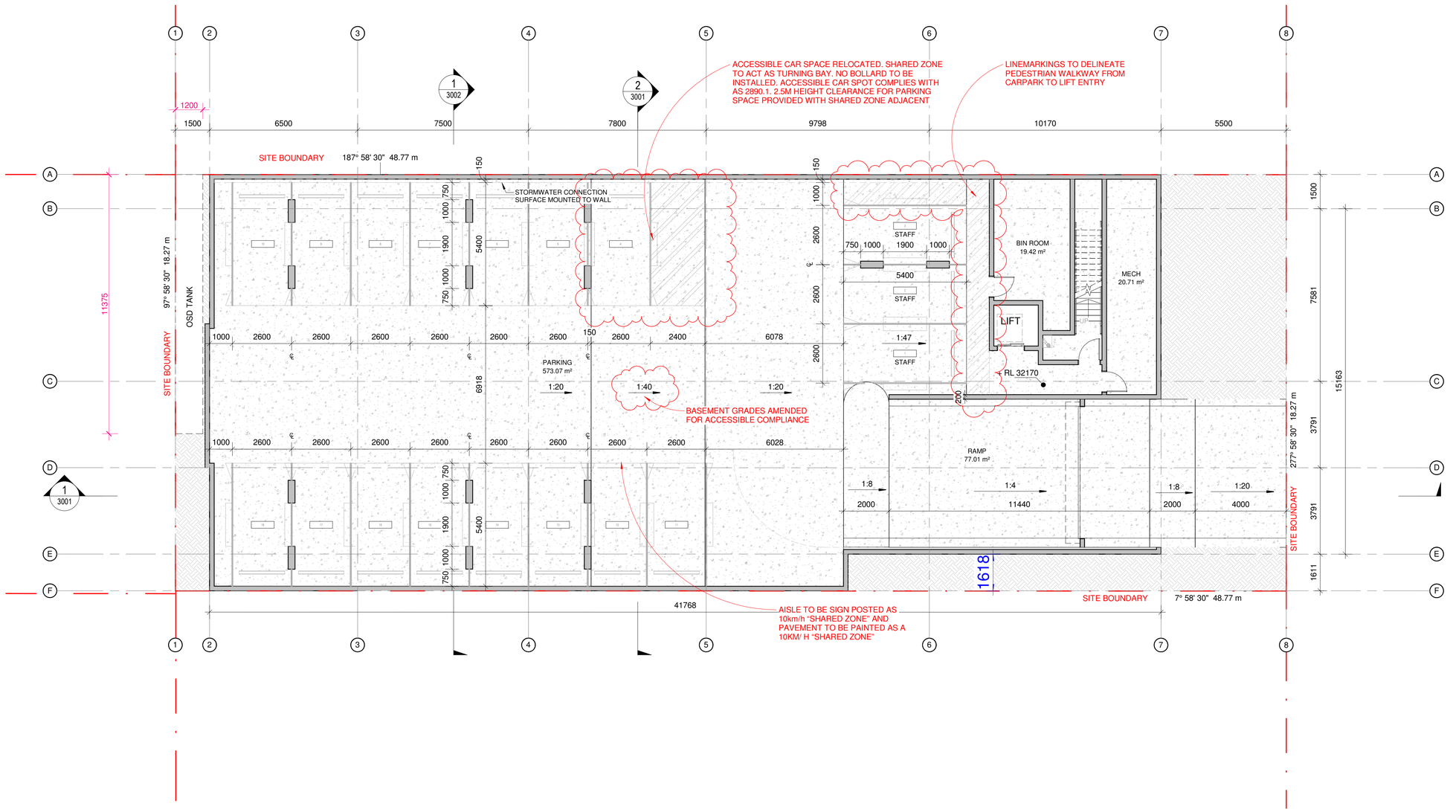
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



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DEVELOPMENT APPLICATION

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16/02/2022 3:04:37 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
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E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

SCALE: 1 : 100 @ A1

PROJECT:
#2021013
PUNCHBOWL CHILDCARE
31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:
GA_BASEMENT 01

SHEET NUMBER: **1001**
REV: **E**
DATE: 10.02.22

ARCHITECT:
PLACE STUDIO
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GLAZING SCHEDULE

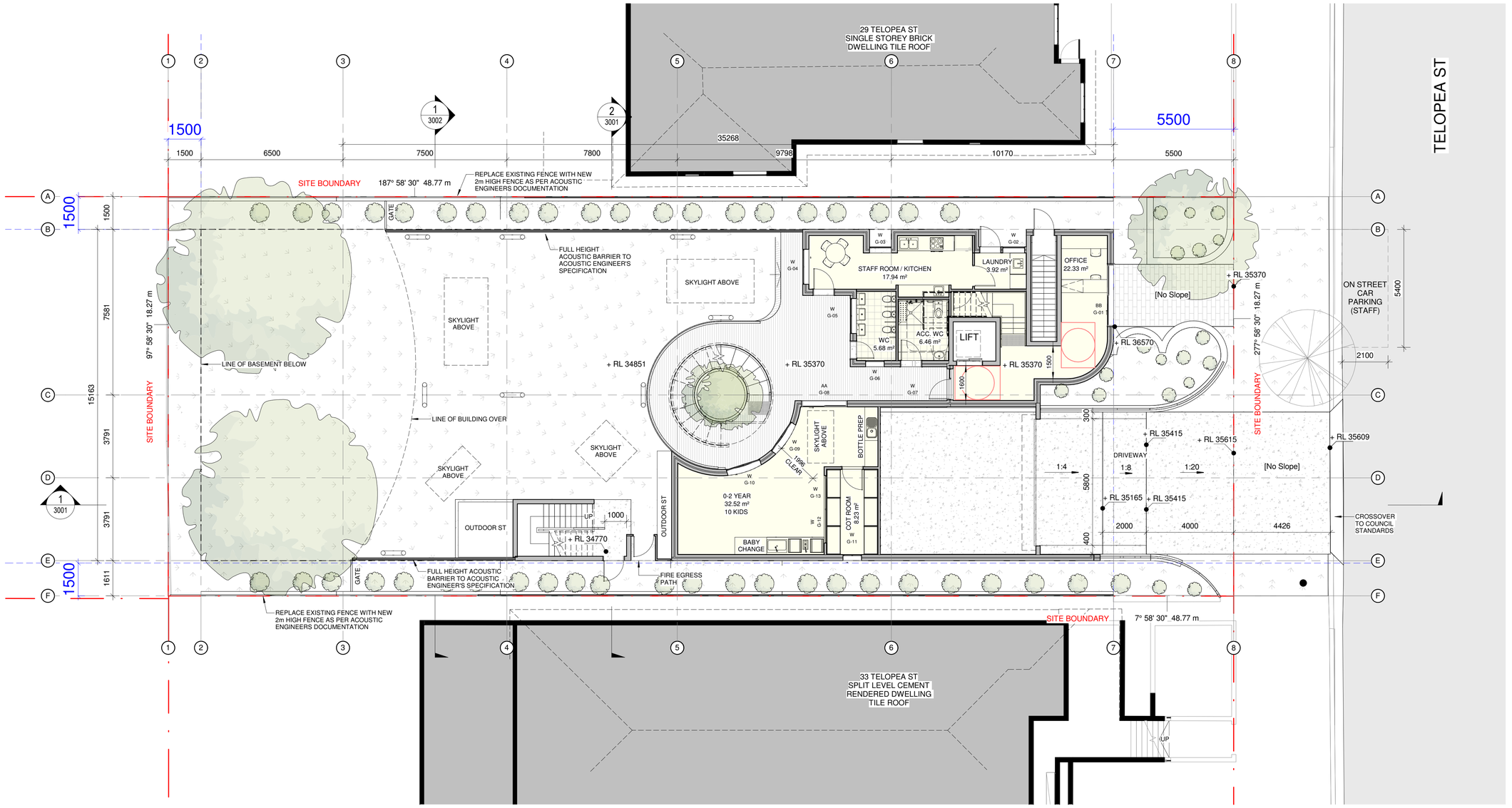
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



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DEVELOPMENT APPLICATION

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10/02/2022 4:47:14 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
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E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

0 4m

1:100

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

GA_GROUND LEVEL

SHEET NUMBER: **2001**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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GLAZING SCHEDULE

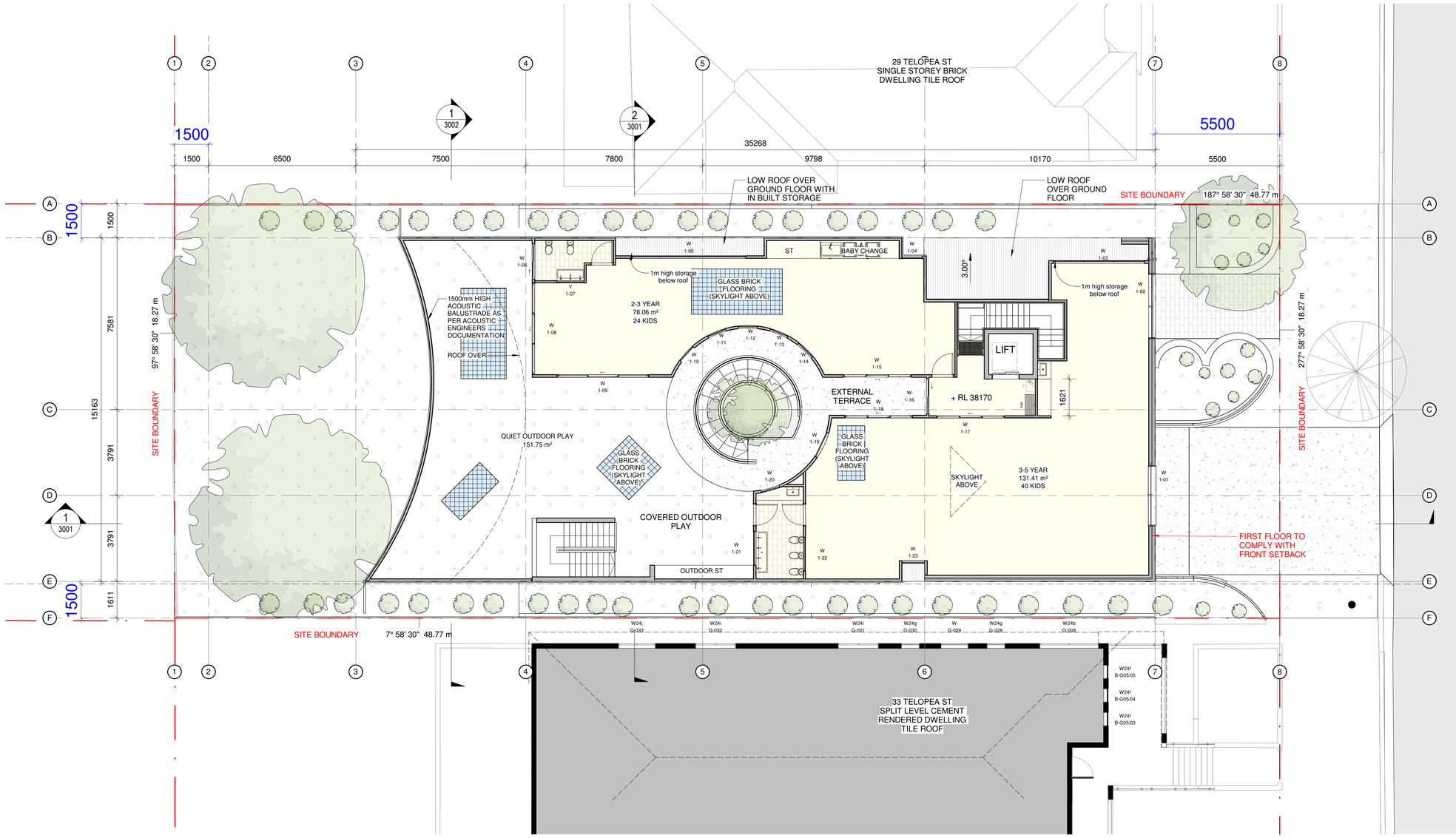
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

10/02/2022 4:47:47 PM

REVISION:

REV	DATE	DESCRIPTION	APP
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E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

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1:100

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

GA_ LEVEL 01

SHEET NUMBER: **2002**

REV: **E**

DATE: 10.02.22

ARCHITECT:

PLACE STUDIO

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GLAZING SCHEDULE

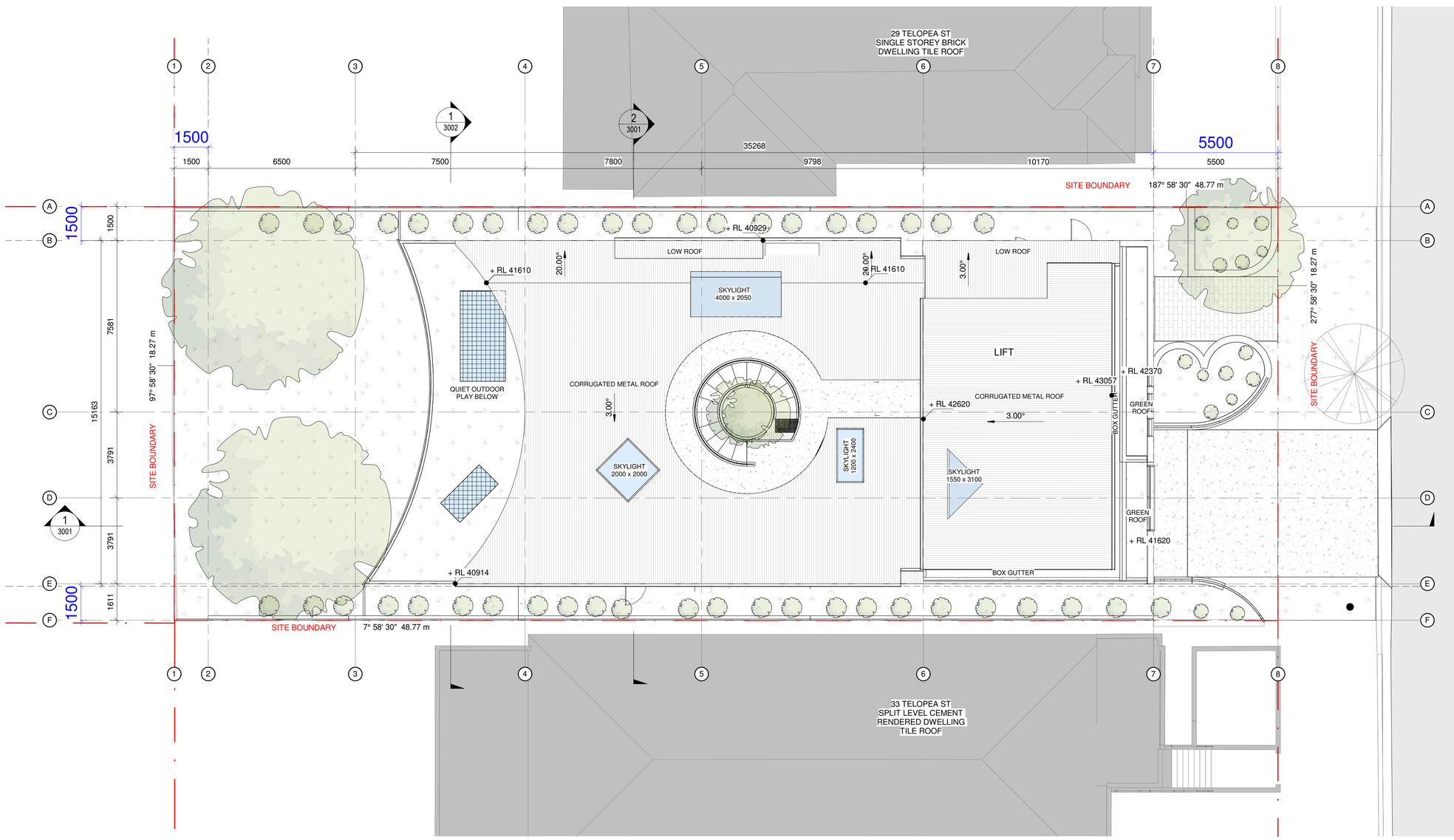
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

Verify all dimensions on site before commencing work. Report all discrepancies to the architect prior to construction. Place Studio shall not be held responsible for any variations to specifications or drawings due to any discrepancies without consultation. Use figured dimensions in preference to scaled dimensions. Drawings made to larger scales and those showing particular parts of the works take precedence over drawings made to smaller scales or for general purposes. All work is to conform to relevant Australian Standards and Codes together with all Authorities' requirements and Regulations.

10/02/2022 4:48:23 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

0 4m

1:100

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

GA_ROOF PLAN

SHEET NUMBER: **2003**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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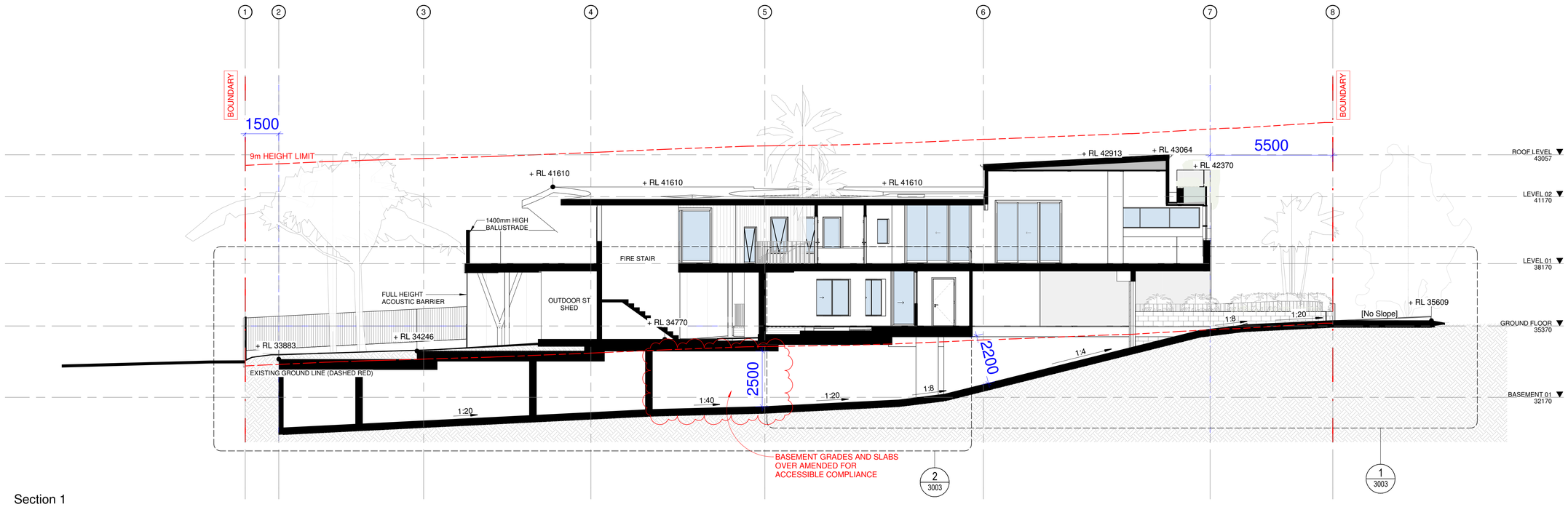

Section 1

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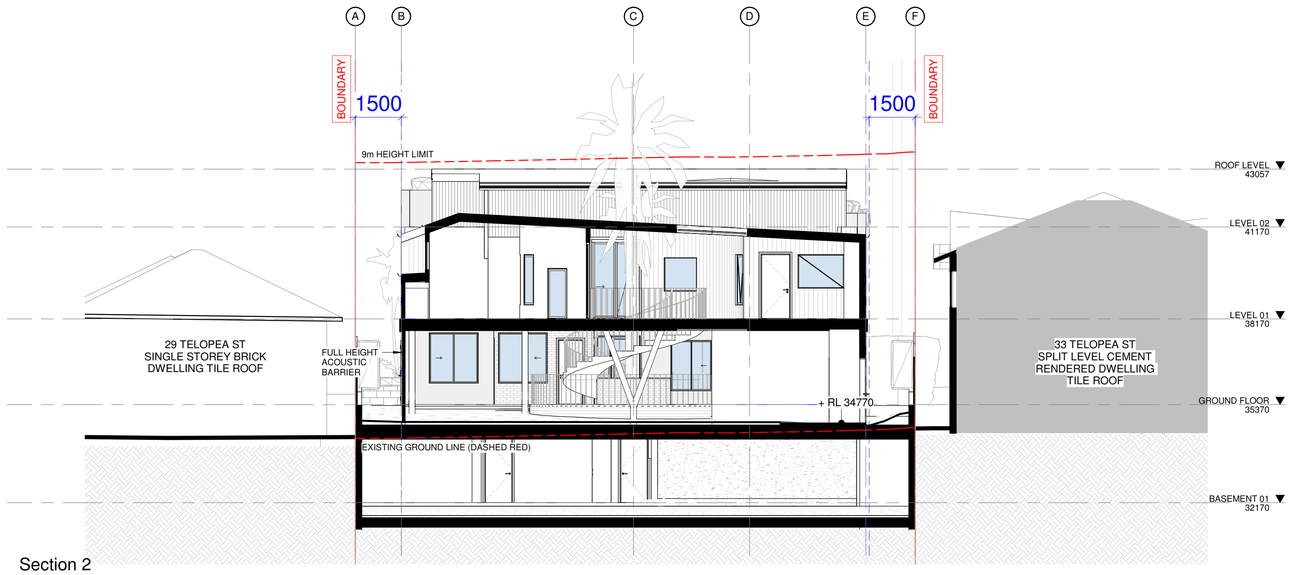

Section 2

1 : 100

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

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10/02/2022 4:48:33 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 4m
1:100

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

SECTION 01 & 02

SHEET NUMBER: **3001**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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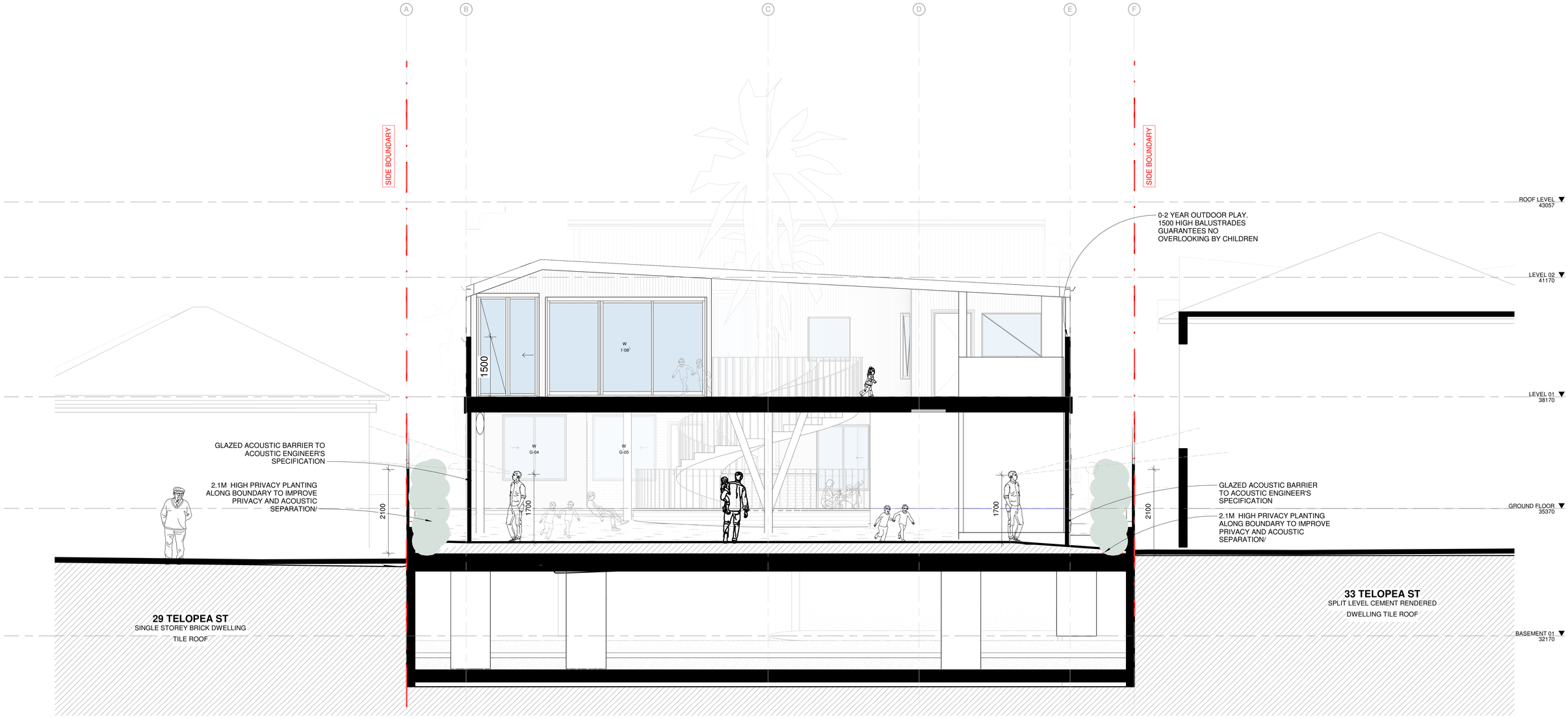

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

Verify all dimensions on site before commencing work. Report all discrepancies to the architect prior to construction. Place Studio shall not be held responsible for any variations to specifications or drawings due to any discrepancies without consultation. Use figured dimensions in preference to scaled dimensions. Drawings made to larger scales and those showing particular parts of the works take precedence over drawings made to smaller scales or for general purposes. All work is to conform to relevant Australian Standards and Codes together with all Authorities' requirements and Regulations.

10/02/2022 4:48:35 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	09.09.21	DA ADDITIONAL INFORMATION	WC
B	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
C	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 4m
1:100

SCALE: 1 : 50 @ A1

PROJECT:
#2021013
PUNCHBOWL CHILDCARE
31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:
SECTION 03

SHEET NUMBER:
3002

REV:
D

DATE: 10.02.22

ARCHITECT:

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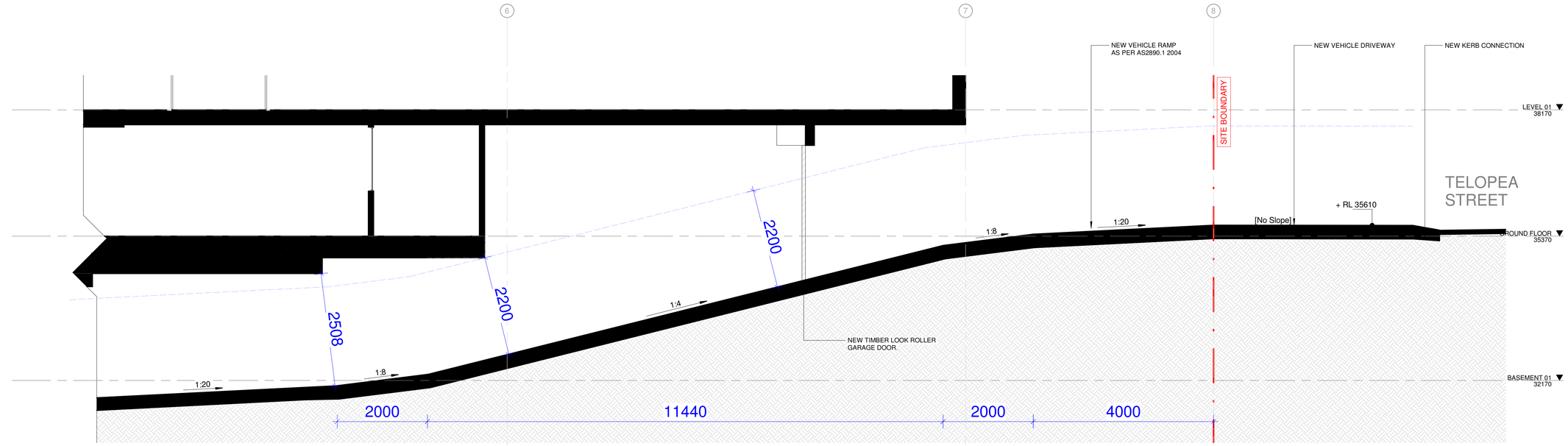

Section 1 - Callout 1

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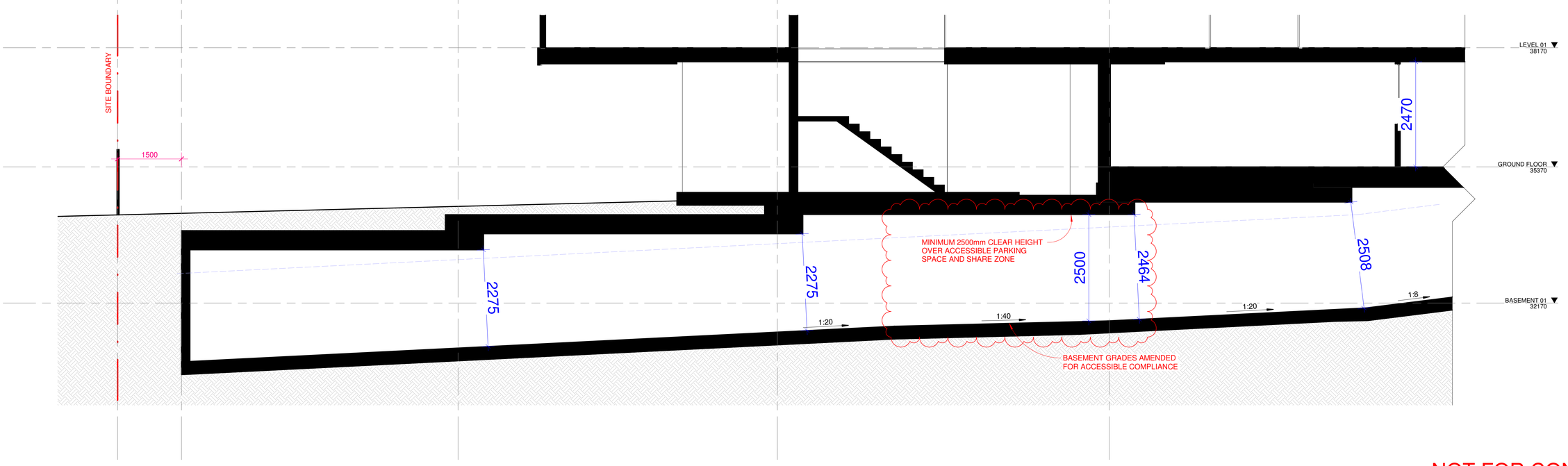

Section 1 - Callout 2

1 : 50

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

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10/02/2022 4:48:36 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	09.09.21	DA ADDITIONAL INFORMATION	WC
B	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
C	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 4m
1:100

SCALE: 1 : 50 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

DRIVEWAY SECTION

SHEET NUMBER: **3003**

REV: **D**

DATE: 10.02.22

ARCHITECT:

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GLAZING SCHEDULE

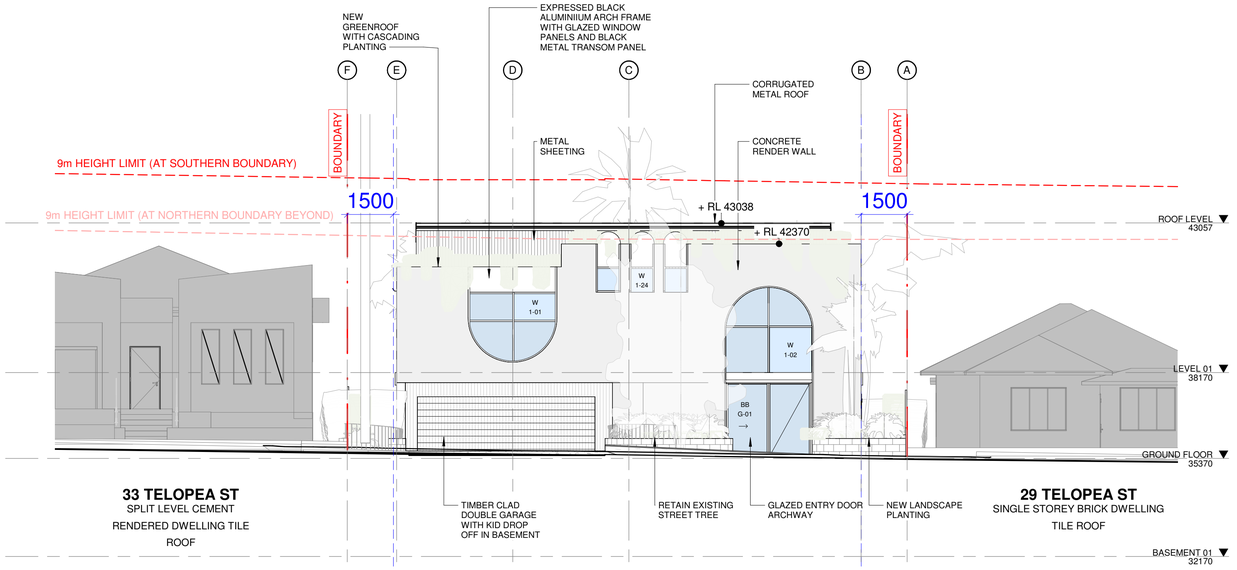
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

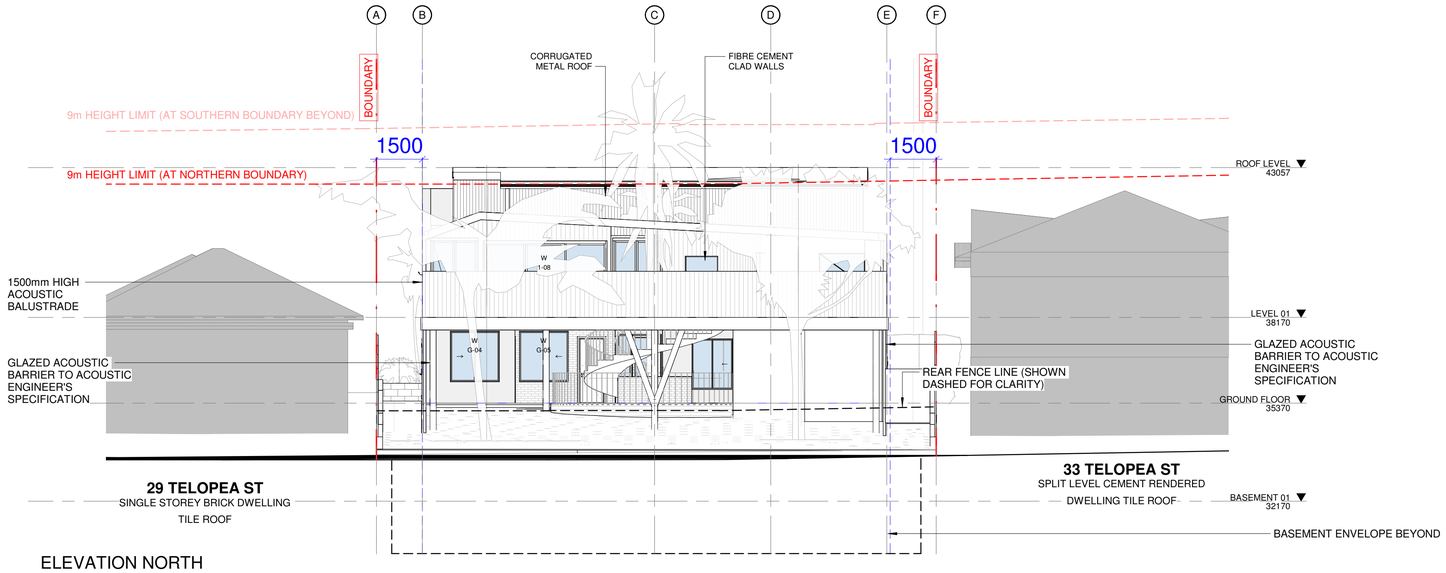
GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



ELEVATION SOUTH

1 : 100



ELEVATION NORTH

1 : 100

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

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10/02/2022 4:48:42 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 8m

1:200

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

NORTH & SOUTH ELEVATION

SHEET NUMBER: **4001**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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W | www.PlaceStudio.com.au E | Studio@PlaceStudio.com.au

GLAZING SCHEDULE

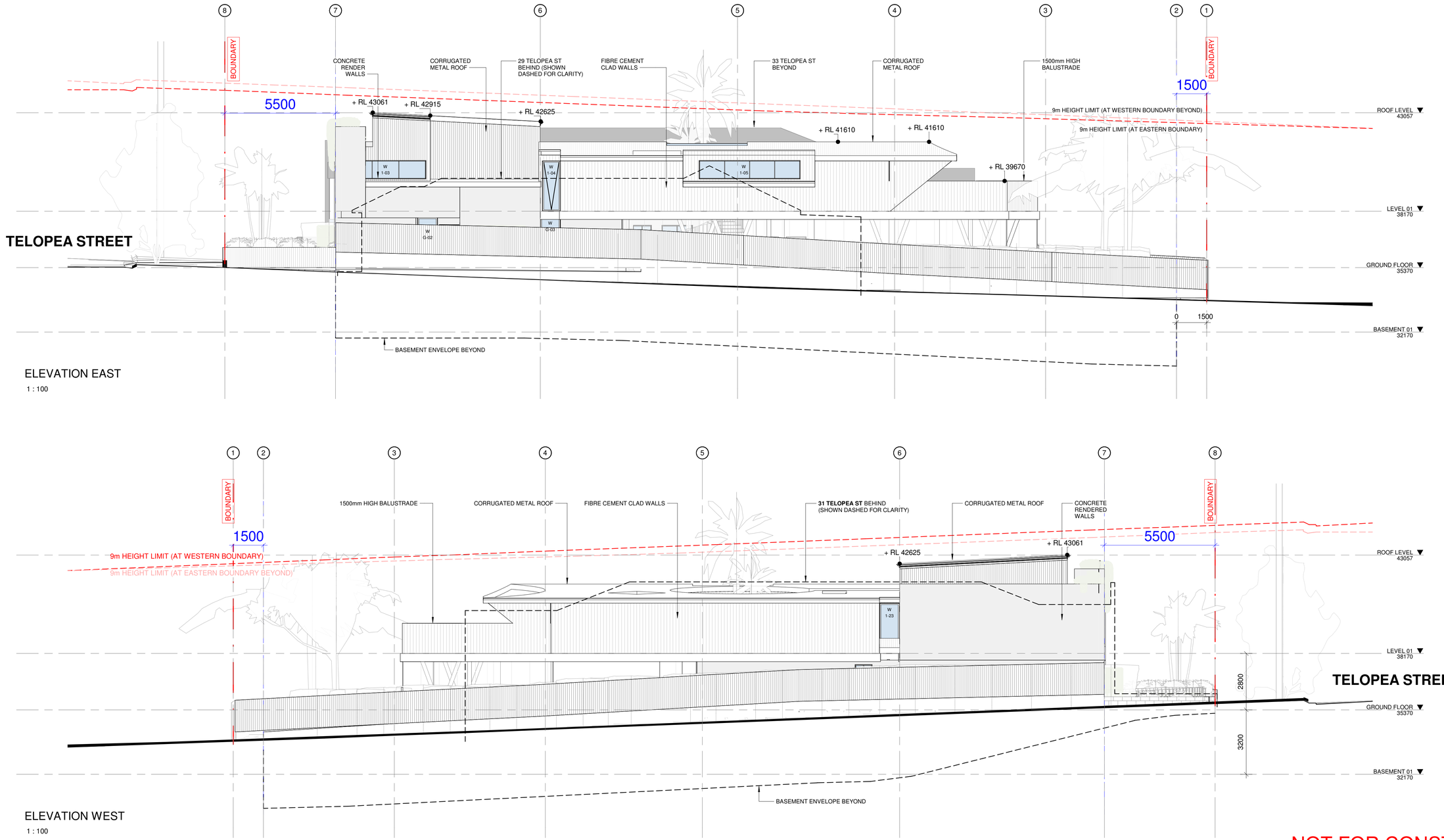
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



ELEVATION EAST

1 : 100

ELEVATION WEST

1 : 100

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

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10/02/2022 4:49:00 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 8m

1:200

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

WEST & EAST ELEVATION

SHEET NUMBER: **4002**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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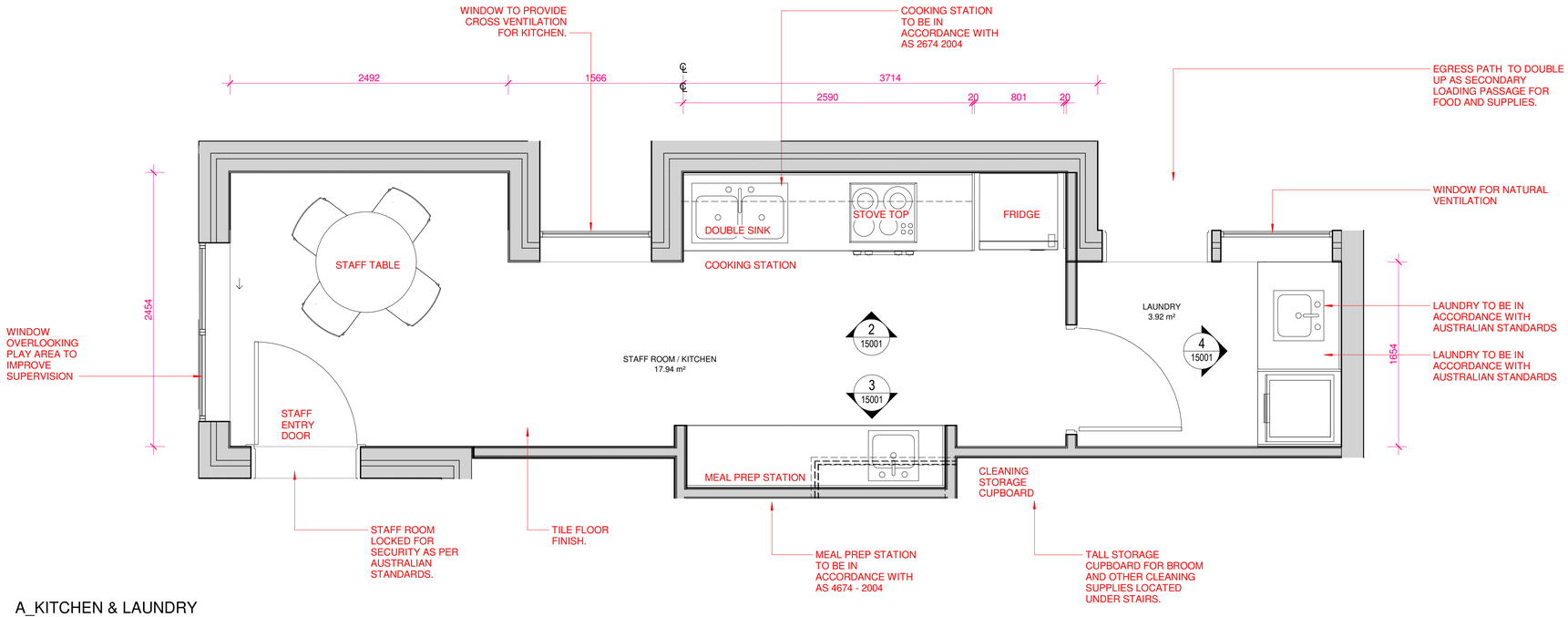
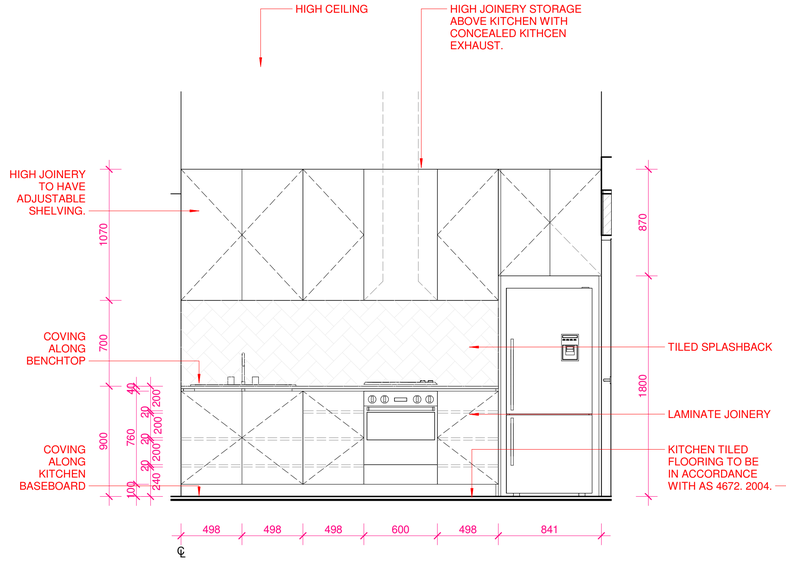


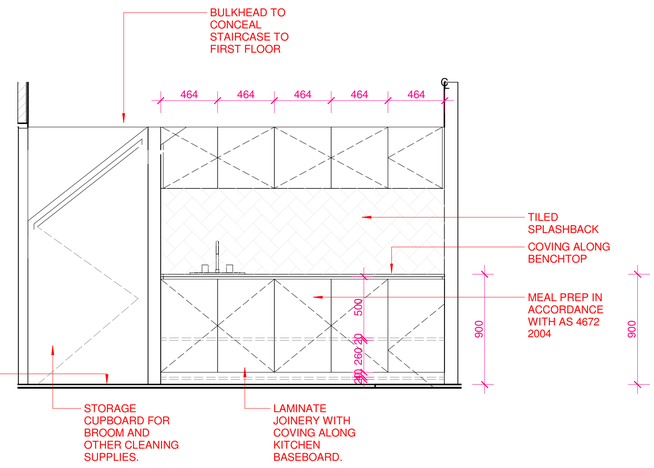
A_KITCHEN & LAUNDRY

1 : 25



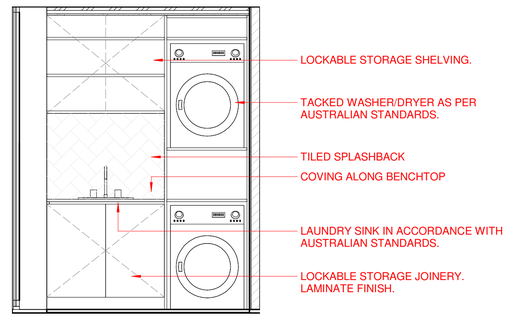
DA - JOINERY - KITCHEN - COOKING STATION

1 : 25



DA - JOINERY - KITCHEN - MEAL PREP

1 : 25



DA - JOINERY - LAUNDRY

1 : 25

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

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10/02/2022 4:49:01 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
B	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

0 1m

1:25

SCALE: 1 : 25 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

KITCHEN & LAUNDRY DETAILS

SHEET NUMBER: **15001**

REV: **B**

DATE: 10.02.22

ARCHITECT:

PLACE STUDIO

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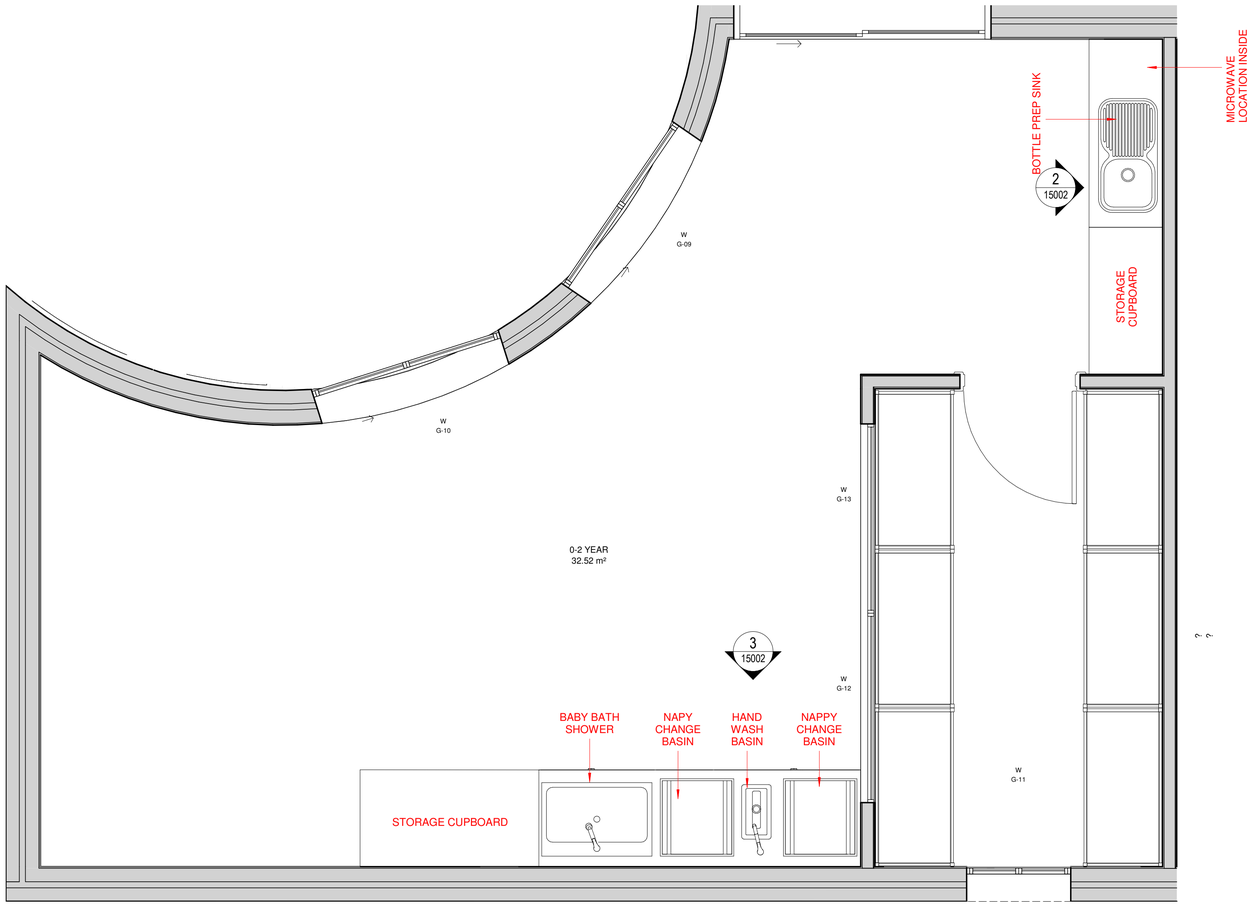
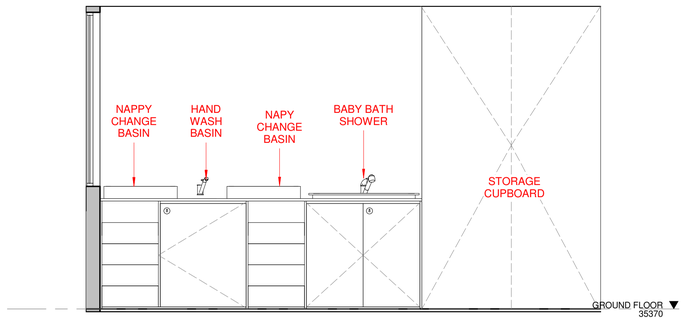


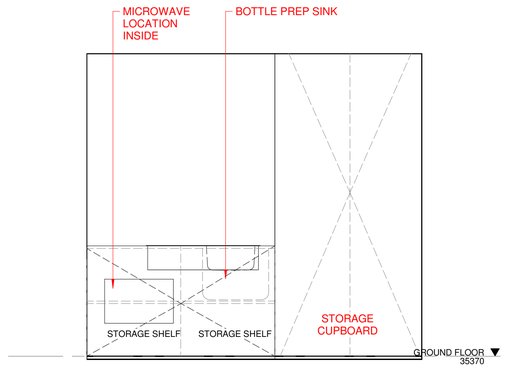
A_JOINERY

1 : 25



0-2 KID JOINERY

1 : 25



DA - Bottle Prep Joinery

1 : 25

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

10/02/2022 4:49:02 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
B	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

N

0 1m

1:25

SCALE: 1 : 25 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

JOINERY DETAILS

SHEET NUMBER: **15002**

REV: **B**

DATE: 10.02.22

ARCHITECT:

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31 Telopea St, Punchbowl

Childcare Centre

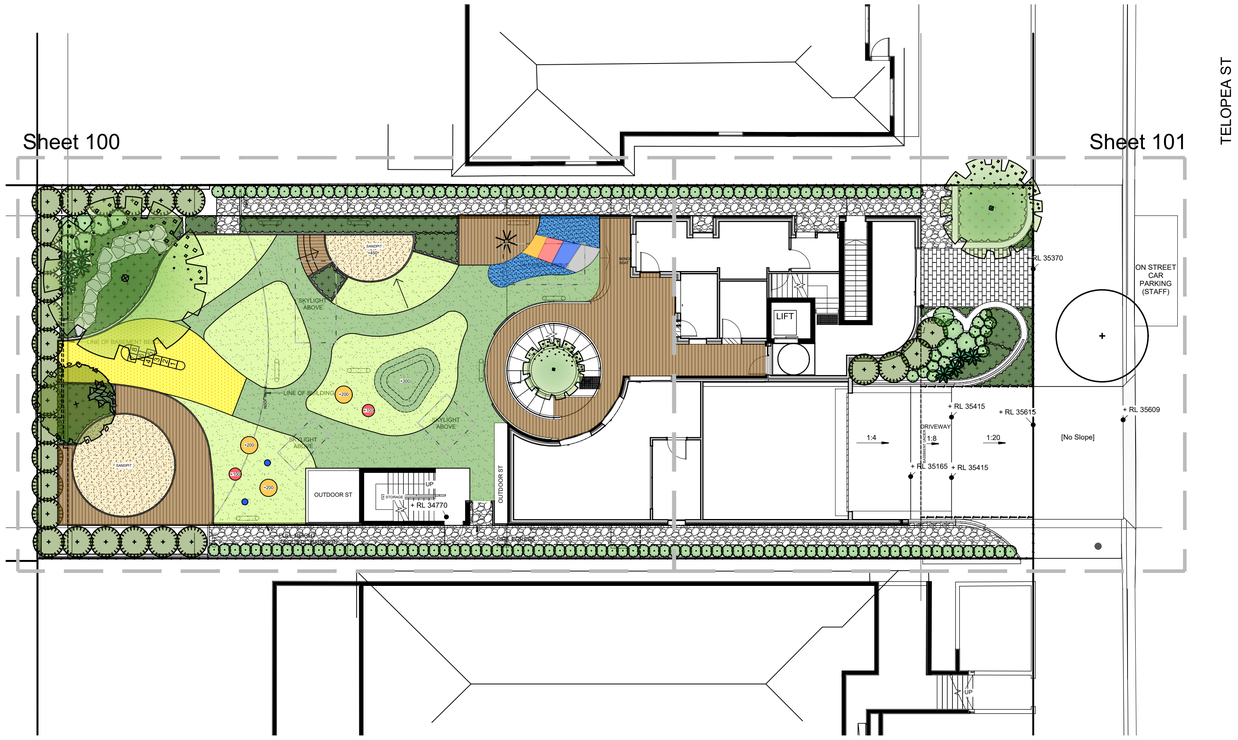
Landscape DA Submission

Drawing Schedule

Drawing Number	Drawing Title	Scale
000	Coversheet	1:100
201	Landscape plan - 1	1:50
202	Landscape plan - 2	1:50
203	Landscape plan - 3	1:50
501	Landscape details	As shown
502	Landscape specification notes	N/A

Indicative Plant Schedule

	Botanic Name	Common Name	Mature Size (h x w) (m)	Pot Size	Density	Quantity
Trees						
Ap	*Acer palmatum*	Japanese maple	4 x 4	75L	As shown	1
EL	*Eureka Lemon*	*Lemon*	4 X 3	75L	As shown	2
Er	*Elaeocarpus reticulatus*	*Blueberry Ash*	12 x 5	75L	As shown	1
Li	*Lagerstroemia indica*	Crepe Myrtle	6 x 3	75L	As shown	1
Tl	*Tristaniopsis laurina*	Watergum	8 x 5	75L	As shown	1
Shrubs & Feature Plants						
Ro	*Rosemarinus officinalis* 'Blue Lagoon'	Rosemary	1.5 x 2	200mm	As shown	141
Cs	*Cordyline spp.*	Cordyline	1 x 0.6	200mm	As shown	19
LsN	*Leptospermum scoparium 'Nanum'*	Dwarf Tea Tree	1 x 1	200mm	As shown	25
PRR	*Photinia Red Robin*	Photinia	3 x 2	200mm	As shown	29
Grasses & Ground Covers						
Ae	*Aspidistra elatior*	Cast Iron Plant	1.2 x 1.5	140mm	5/m2	20
BBC	*Banksia 'Birthday Candles'*	Banksia	0.5 x 1	140mm	5/m2	30
Cg	*Carpobrotus glaucascens*	Pig Face	0.2 x 1	140mm	5/m2	3
Hv	*Hardenbergia violaceae*	Happy Wanderer	0.3 x 1.5	140mm	5/m2	31
Ob	*Ocimum basilicum*	Basil	0.5 x 0.3	140mm	5/m2	42
Vh	*Viola hederacea*	Violet	0.2 x 1	140mm	6/m2	13
PIE	*Poa labillardieri 'Eskdale'*	Ornamental Grass	0.9 x 0.5	140mm	5/m2	18
Ps	*Peperomia spp.*	Peperomia	0.9 x 0.4	140mm	5/m2	13
So	*Salvia officinalis*	Common Sage	0.75 x 0.5	140mm	5/m2	18
Ts	*Thymus spp*	Thyme	0.3 x 0.3	140mm	5/m2	13



Ground Level Site Plan | 1: 150

NOT FOR CONSTRUCTION

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Legend

Issue	Revision Description	Drawn	Check	Date
B	Architectural Coordination	LW	NM	07.02.2022
A	Preliminary	MW	NM	20.07.2021

A1

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Client
Place Studio

Project
Punchbowl Childcare
31 Telopea St,
Punchbowl

Drawing Name
Coversheet

DA SUBMISSION

Scale

Job Number	Drawing Number	Issue
SS21-4729	000	B

NOTE:

For Outdoor Play room areas on slab - finishes allowance for Artificial Turf or composite timber flooring and softfall where required.

Proposed tree planting (in natural ground) to provide shade.

Proposed screen hedge planting

Proposed Artificial turf slope for safe sandpit access

Proposed indoor plants with contrasting textures and foliage shapes/ heights for visual interest

Tepee on timber decking

Brightly coloured Artificial Turf

Proposed screen hedge planting

1800H boundary fence

OSD under

Proposed Hopskotch on softfall

Feature fruit tree

Proposed sensory domes for exploration / visual interest

Raised Planter

Raised Planter

Proposed screen hedge planting ’

Raised Planter

Artificial Turf ride-on bike path

Artificial turf mound

Contrasting shade of Artificial Turf

Proposed purpose built planters (eg Composite Timber)

Feature tree

For Continuation Refer Drawing 101

A: Artificial Turf mounds

B: Sensory panels/ blackboards (by future play provider)

C: Proposed composite timber decking

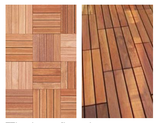
D: Proposed free areas for demountable equipment by future play provider

CONCEPT & LAYOUT :

- Concept layout provided with indicative areas capable of providing Active & Quiet play.

MATERIALS

Artificial truf

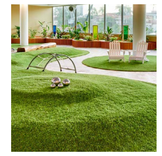


Timber flooring

CHARACTER IMAGES

Sandpit with timber deck

Sandpit with artificial turf mound access



Artificial turf mound

Softfall domes

Bike path

Planter box

Feature colour path

Tepee

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A1

Legend

- Existing Trees to be Retained
- Proposed Trees
- Shrubs & Accents
- Artificial Turf
- Grasses & Groundcovers
- Softfall
- Timber Flooring
- Sandpit
- Gravel

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31 Telopea St,
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Drawing Name
Landscape Plan - 1
Ground Level

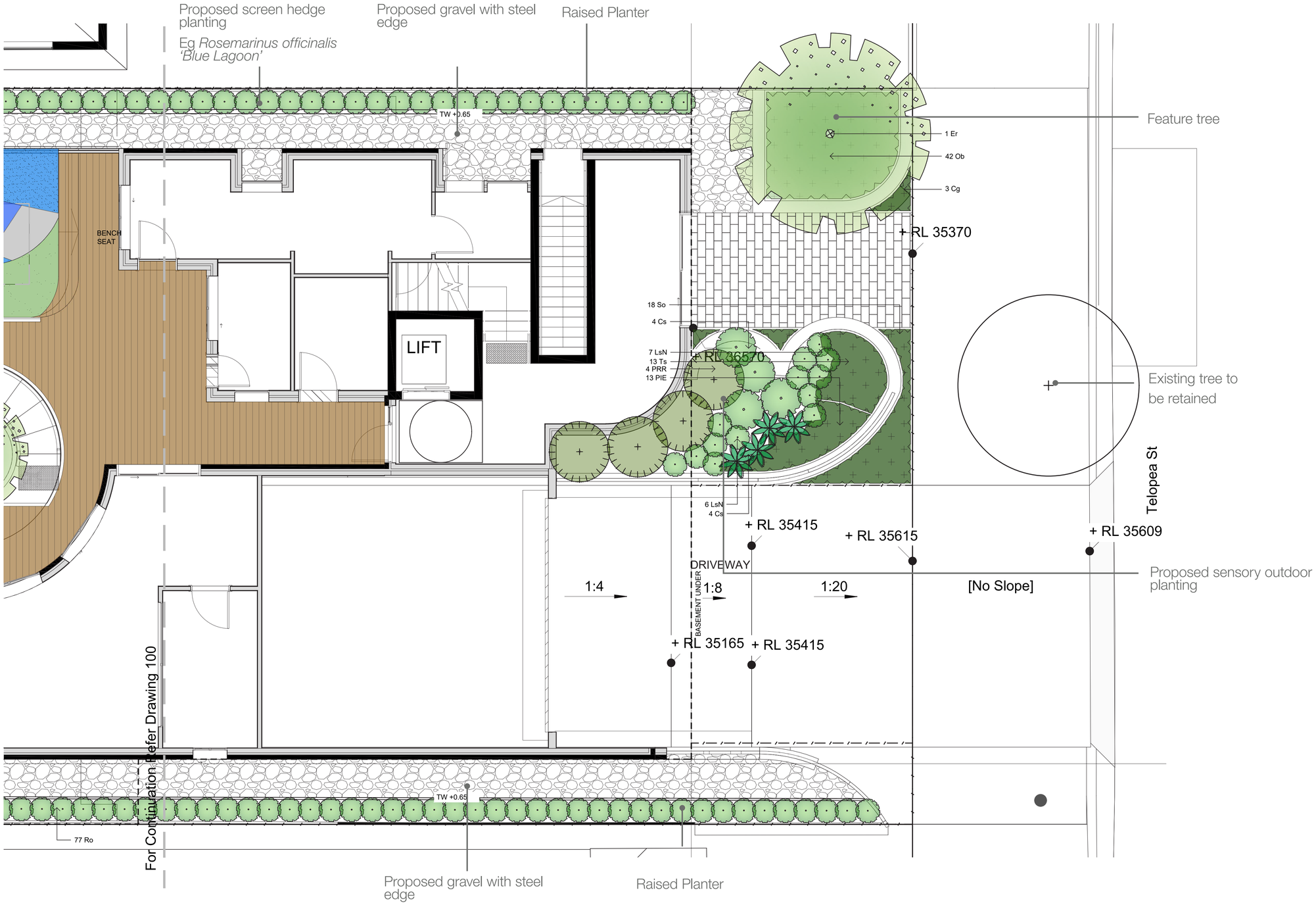
DA SUBMISSION

Scale 1:50 @ A1
0 0.5 1 1.5 2 2.5m

Job Number SS21-4729

Drawing Number 100

Issue B

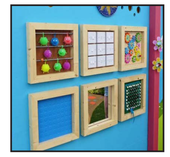


PLAY PROVIDER EQUIPMENT


Slide


Soft cubes


Blackboards


Sensory panels


Crawl tunnel


Musical panels

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Issue	Revision Description	Drawn	Check	Date
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Legend

- Existing Trees to be Retained
- Proposed Trees
- Shrubs & Accents
- Artificial Turf
- Grasses & Groundcovers
- Softfall
- Timber Flooring
- Sandpit
- Gravel

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Project
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Punchbowl

Drawing Name
Landscape Plan - 2
Ground Level

DA SUBMISSION

Scale 1:50 @ A1
0 0.5 1 1.5 2 2.5m
Job Number SS21-4729
Drawing Number 101
Issue B

A1

NOTE:

For Outdoor Play room areas on slab - finishes allowance for Artificial Turf or composite timber flooring and softfall where required.

CONCEPT & LAYOUT :

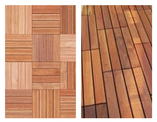
- Concept layout provided with indicative areas capable of providing Quiet play.

A: Timber steps & decking to Sandpit

B: Sensory panels/ blackboards mounted to wall (by future play provider).

MATERIALS

Artificial truf



Timber flooring

CHARACTER IMAGES

Sandpit with artificial turf mound access

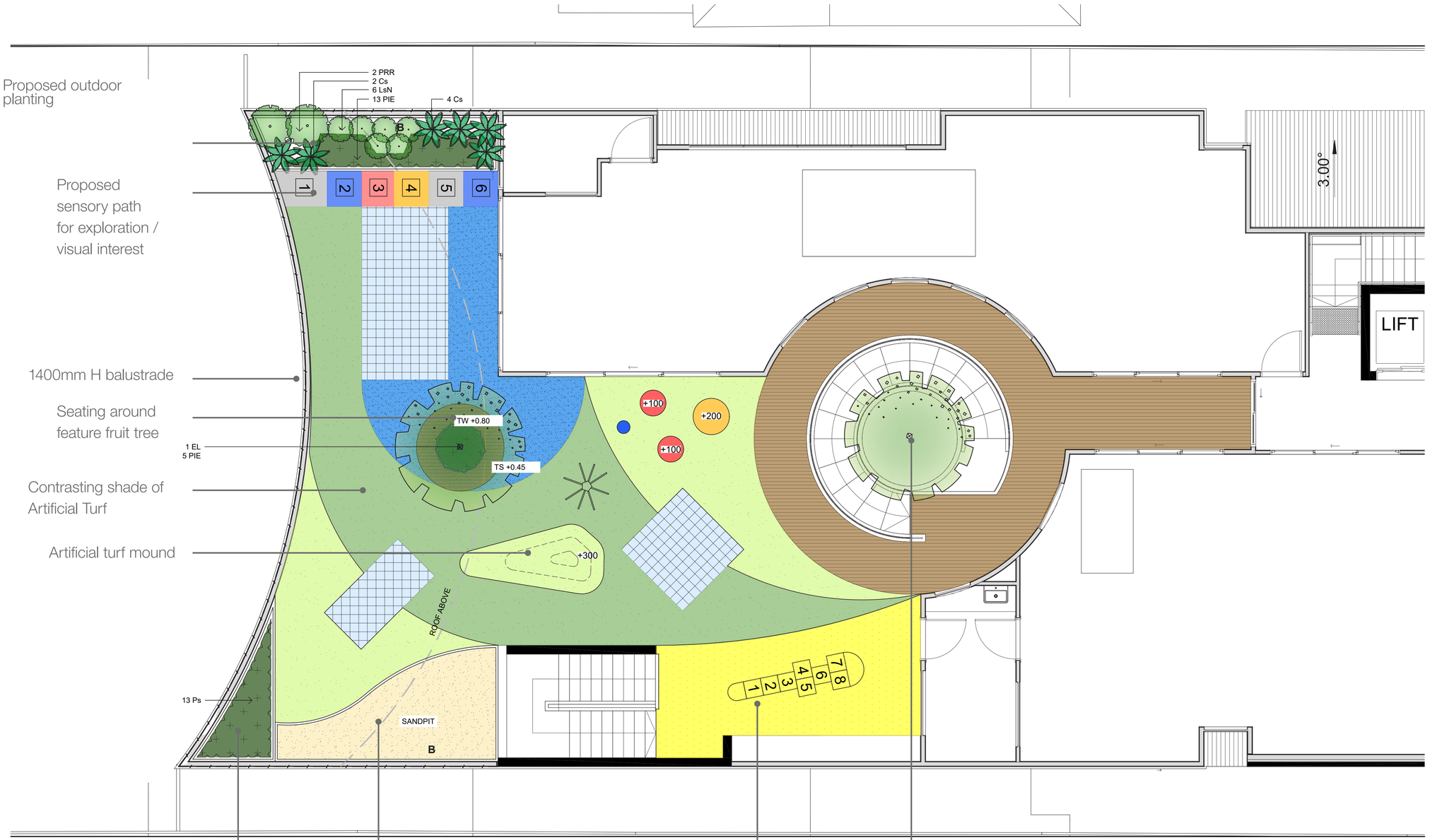
Planter box

Softfall domes

PLAY PROVIDER EQUIPMENT

Soft tunnel

Blackboards



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Issue	Revision Description
B	Architectural Coordination
A	Preliminary

Drawn	Check	Date
LW	NM	07.02.2022
MW	NM	20.07.2021

Legend

- Existing Trees to be Retained
- Proposed Trees
- Shrubs & Accents
- Artificial Turf
- Grasses & Groundcovers
- Softfall
- Timber Flooring
- Sandpit

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Drawing Name
Landscape Plan - 3
Level 1

DA SUBMISSION

Scale 1:50 @ A1
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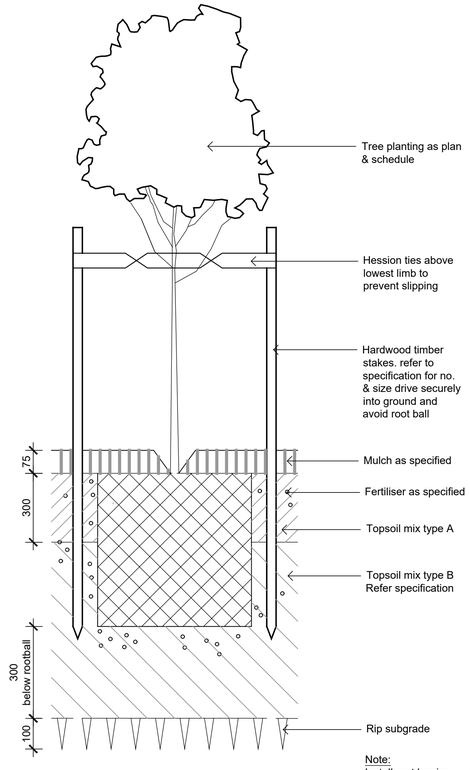
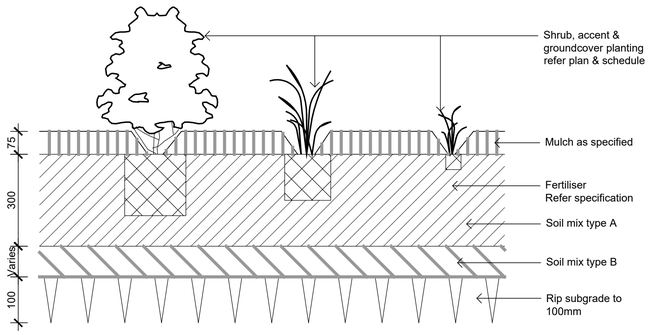
Job Number SS21-4729
Drawing Number 102
Issue B

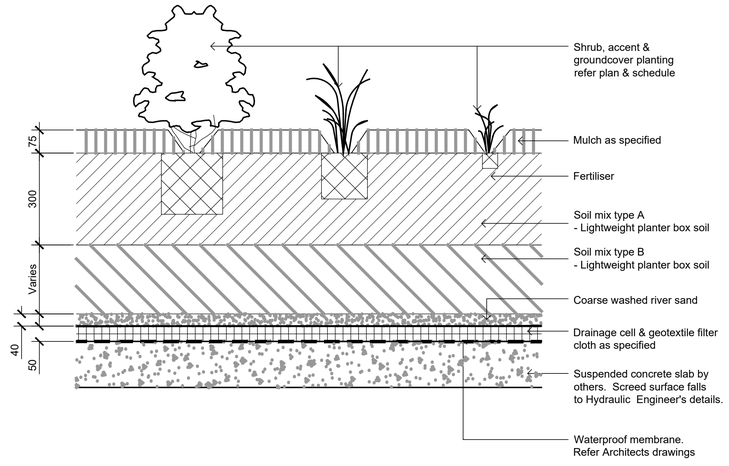
A1



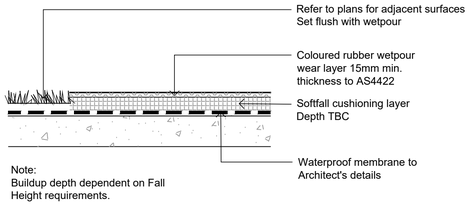
01 501 Detail 75-200L Tree Planting on Grade
1:10



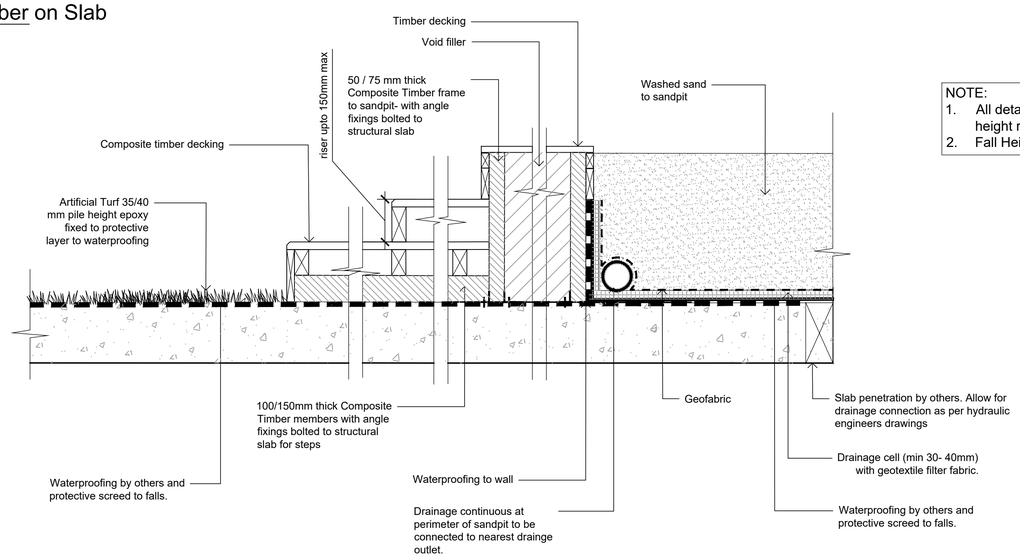
02 501 Detail Shrub Accent & Groundcover Planting on Grade
1:10



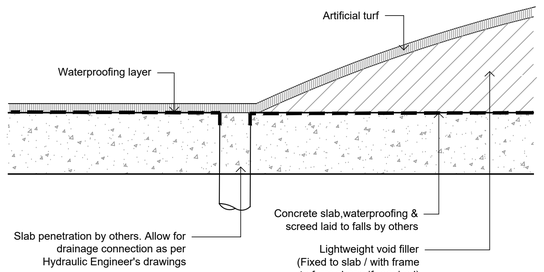
03 501 Detail Shrub Accent & Groundcover Planting on Structure
1:10



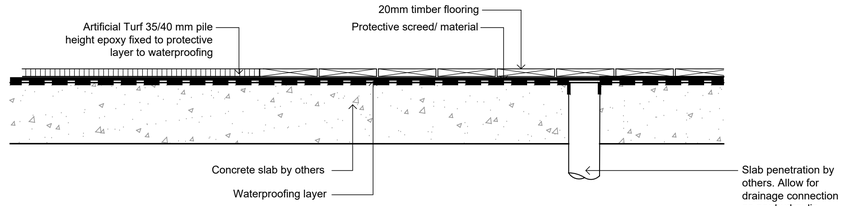
04 501 Wetpour Rubber on Slab
1:10



07 501 Typical Detail of Sand Pit on slab
1:10



05 501 Artificial Turf Mound
1:10



06 501 Typical Timber Flooring on Slab
1:10

NOTE:
1. All details are preliminary and subject to detailed design of final play area layouts & fall height requirements with final level & structural slab provisions coordination.
2. Fall Height requirements for soft fall to be as per AS/NZ 4422 1996.

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Legend

Key Plan

Issue	Revision Description	Drawn	Check	Date
A	Preliminary	MW	NM	20.07.2021

A1

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Place Studio

Project
Punchbowl Childcare
31 Telopea St,
Punchbowl

Drawing Name
Landscape Details

DA SUBMISSION

Scale 1:50 @ A1
0 0.5 1 1.5 2 2.5m
Job Number SS21-4729
Drawing Number 501
Issue A

SPECIFICATION

GENERAL NOTES FOR EXTERNAL AREAS

References
All plans and details included in the project documents shall be read in conjunction with this specification. All structural and civil works components of the landscape design shall be referenced to engineers' details and specifications. Read this specification in conjunction with the plant and materials schedules on the drawings. If in doubt about any detail or if conflicts are found in the documents, seek advice.

Workmanship and Materials
The whole of the landscape works shall be carried out by a competent, trained and qualified landscape contractor who is experienced in horticultural practices, landscape construction and planting techniques. The landscape contractor shall hold a current Building Contractors License and/or be a financial member of LNA Landscape Association NSW & ACT or equivalent organisations in other states.

EXISTING TREES AND SHRUBS

Trees and Shrubs to be Retained and Protected
Identify and mark trees and shrubs to be retained using a suitable non-injurious, easily visible and removable means of identification. Protect from damage the trees and shrubs to be retained, including those beyond the site area, both above and below the ground. If a tree becomes damaged during the works or it is proposed to perform work on a tree, give written notice immediately and obtain instructions.

Work Near Trees and Shrubs
Keep the area of the drip-line free from construction material and debris. Do not place bulk materials and harmful materials under foliage canopies or near trees. Do not place spoil from excavations against tree trunks. Prevent wind-blown building materials, such as cement, from covering trees and other plants. Do not remove topsoil from, or add topsoil to, the area within the drip-line of trees.

EARTHWORKS

Excavation, Trimming and Filling
Except as otherwise noted in the contract, bulk excavation is excluded from the landscape works. After the completion of bulk excavation by others, trim and fill the excavated ground surfaces to achieve design levels to accommodate finish materials as detailed. Prepare the sub-grade surface as required for the various finished ground treatments.

Site Drainage
Keep the excavated works drained and free of standing water. Allow to supply and install sub-soil drainage pipes as required for the new works to ensure that all gardens are well drained. Connect the sub-soil drainage pipes to the nearest downstream stormwater pits. Include pipe filter socks and course sharp aggregate backfilling of trenches.

HARDWORKS

Furniture, Handrails, Balustrades
Supply and install the scheduled items in accordance with the manufacturer's recommendations, as detailed and in the locations shown on plan. Provide all footings and fixings required for the items to be stable and in accordance with applicable codes and standards.
- Balustrades: Equal to Stainform ONYX 50 316 Satin SS
- Handrails: Equal to Stainform ONYX 50 316 Satin SS
- Bench Seats: Teak timber TBS

Garden Walls, Fences, Steps, TGSI and Edging
Construct garden walls, fences, steps, TGSI and edging as shown on plan, as detailed and of the material scheduled. Provide footings, step nosings, tactile surfaces to comply with Australian Standards and applicable legislation. Refer to engineer's details for structural retaining walls, concrete stairs, concrete strength, reinforcing and joint placement.

Continuous, Unit and Loose Pavement
Install the scheduled material pavement to the locations shown on plan. Ensure that all subgrade/subsurface works are complete prior to commencing paving. Confer with the engineer to ensure the structural integrity of the subgrade. Ensure that the base course under paved surfaces is a continuous plane offering a constant depth of bedding material not exceeding 50mm. If laying unit pavers in a cement mortar bed on a concrete sub-base ensure that joints in paving match the location of joints in the concrete. Refer to engineer's details for heavy duty slabs, concrete stairs, concrete strength, reinforcing, and joint type and placement.
- Insitu concrete paths: Wood float coved finish, tool edged.
- Path joints: Construction joints at 3000mm centres max.

Landscape Structures
All landscape structures shall have a common appearance in detail and material content while providing for the functional design requirements. The structure of all elements shall consist of a base frame of structural grade hardwood timber of sizes that sustain spans and maintain stability. Refer to drawn details for further information.

SOFTWORKS

Site Soil Testing
Where site soil is to be retrieved from site and stored on site for reuse, undertake at least two (2) soil tests in locations as advised by the Project Manager or as shown on the plans. Provide results and recommendations regarding soil additives for the benefit of healthy plant growth and to adjust the soil components to achieve an appropriate planting medium for successful plant development. Where topsoil is imported to site no testing of the imported soil is necessary but ensure that imported soil can b e supplied with test data to verify that it suits the design plants.

Subsoil
Excavate and/or fill all garden beds to bring the top of subsoil to at least 300mm below finished design soil levels. Excavate all turf areas to bring the subsoil to at least 100mm below finished design levels. In all areas shape the subsoil to fall to subsoil drains where applicable. Do not excavate within the drip line of trees and shrubs to be retained. Cultivate or rip the subsoil to a further depth of 100mm before placing top soil. Remove stones of size exceeding 25mm, clods of earth exceeding 50mm, and weeds, rubbish or other deleterious material brought to the surface during cultivation. Do not disturb services or existing tree roots. If necessary, cultivate these areas by hand. During cultivation, thoroughly mix in materials required to be incorporated into the subsoil, as recommended in the soil testing results and to manufacturer's recommendations. Trim the surface to design levels again after cultivation.

Subsoil Drainage
Provide and install subsoil drainage equal to Vinidex 65mm (min) Draincoil with filter sock at the base of slopes, on the high side of paths, at the base behind retaining walls and where water is likely to accumulate at depth in the soil. Connect all subsoil drainage to the nearest downstream stormwater pit to ensure that subsoil water is managed and channelled to a stormwater drainage system. On sites with cross fall of less than 1:50 install subsoil drains to remove excess water from the subsoil in areas where water is likely to accumulate and may not penetrate lower strata naturally. Rip the sub-base surface 150mm deep before placing any soil. Install drainage pipes in subsoil trenches backfilled with 10mm blue metal (basalt) equal to ANL Blue Metal.

Coordinate the connection of subsoil drains to stormwater pits with the Civil or Hydraulic contractor.

Topsoil
Import topsoil for the garden and turf areas, unless the topsoil can be provided from material recovered from the site, as recommended in the soil testing results. Spread the topsoil on the prepared subsoil and grade evenly, compact lightly and uniformly in 150mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics:
- Finished to design levels, allowing for mulch or turf, which is to finish flush with adjoining hard surfaces such as paths and edges;
- Smooth and free from inorganic matter, stones or clods of soil;
- Graded to drain freely, without ponding, to catchment and/or sub-soil drains;
- Graded evenly to adjoining surfaces; and
- Ready for planting.

Compost
Provide, in accordance with AS 4454, well rotted vegetative material or animal manure, free from harmful chemicals, inorganic matter, grass, weeds and the reproductive parts of unwanted plants.

Fertiliser
Provide proprietary fertilisers, delivered to the site in sealed containers marked to show manufacturer or vendor, weight, fertiliser type, N:P:K ratio, recommended uses, application rates and safety procedures. Apply appropriate fertiliser suited to the provenance of plants (indigenous or exotic) included in the design.

Plants
Supply plants in accordance with the landscape design drawings and schedules, which have the following characteristics:
- Large healthy root systems, with no evidence of root curl, restriction or damage;
- Vigorous, well established, free from disease and pests, of good form consistent with the species/variety;
- Hardened off, not soft or forced, and suitable for planting in the natural climatic conditions prevailing at the site in full sun, partial shade or full shade conditions;
- Grown in final containers for not less than twelve weeks;
- Trees, unless required to be multi-stemmed, shall have a single leading shoot; and
- Containers shall be free from weeds and of appropriate size in relation to the specified plant size.

Plant Installation
Following excavation of the planting hole, place and spread 15gms of wetting agent pre-mixed with one (1) litre of water. Place the plant correctly orientated to north or for best presentation. Backfill the planting holes with specified topsoil mixture. Lightly tamp and water to eliminate air pockets. Ensure that the backfill soil is not placed over the top of the root ball and that the root ball is not higher than the soil in which it is planted. Apply fertiliser, as specified around the plants in the soil at the time of planting.
Ensure all plants are non toxic . For safe plants refer to Grow me Safely Guidelines.

Embankment Stabilisation
Where necessary and shown on the drawings prevent soil erosion or soil movement by stabilising embankments as follows. As a minimum, this should be on slopes steeper than or equal to 1:3 gradient. Stabilise embankments using biodegradable fibre reinforced heavy weight jute fabric. Lay fabric from top to bottom of slope. Install in accordance with manufacturer's specification, including 300 x 300mm anchor trench at top and bottom of slope, backfilled with soil over the fabric and compacted into the trenches. Using U-shaped galvanised steel pegs at 1000 mm centres generally and 250mm centres at edge overlaps, secure the fabric to the prepared soil surface. Plant through the fabric after it is installed.

Root Barrier
Supply and install root control barriers to all new tree plantings adjacent to walls, paths, kerbs and all service trenches, where their proximity poses a threat to the stability of the built infrastructure. Install in accordance with manufacturer's recommendations.

Mulch
Unless noted otherwise, mulch shall be approved proprietary recycled wood fibre or pine bark material. Place mulch in all garden beds to a depth of 75mm after all specified plants are installed. Keep mulch clear of all plant stems and rake to an even plane, flush with the surrounding surfaces evenly graded between design surface levels. Over fill to allow mulch to settle to the specified depth.

Stakes and Ties
Stakes shall be durable hardwood, straight, free of knots and twists, pointed at one end, in the following quantities and sizes for each of the various plant pot sizes:
- Plants ≥25 lt: 1 off 38 x 38 x 1200mm;
- Semi-advanced plants ≥75 lt: 2 off 50x50x 1800mm;
- Advanced plants ≥100 lt: 3 off 50 x 50 x 2400mm.

IRRIGATION TO EXTERNAL AREAS

Scope: Unless otherwise noted or instructed irrigate all planted areas shown on plans including planters, tubs, gardens, turf and the like. The irrigation system shall be an automatic permanent system, with an irrigation controller self operated via a soil moisture sensor. The system shall be calibrated to deliver the optimum rate and volume of water appropriate to the type of plants in the design. The system shall be adjustable and fully serviceable. The layout of the entire irrigation system shall focus on delivering the required amount of water to maintain healthy and vigorous growth. The irrigation system shall be such that, component theft, vandalism, over-spray and wetting of paths shall be reduced to a minimum or eliminated with the use of drip, pop-up sprinklers and judiciously placed fixed spray emitters. Generally, do not use fine mist emitters that provide a drifting mist that may wet paths and the buildings unless specifically required by the design.

The Landscape Contractor shall engage a qualitied irrigation consultant to design the system, document all components, accessories and materials for review by the Landscape Architect prior to starting landscape works generally.

INDOOR PLANTING

Indoor planting areas to have the following specific specification requirements:

1. Lightweight soil to fabricated planters.
   - Refer to details for construction of planters, waterproofing and drainage provisions.
2. Indoor Plants to be manually watered.
3. Regular maintenance is required to keep foliage trimmed and healthy.
4. Regular checks for pest and diseases required to ensure a healthy environment is maintained.
   - All products must be natural / safe to use around Children.D'd

LANDSCAPE MAINTENANCE

Landscape areas to be fully maintained.
Works shall include, but not be limited to the following:

- Replacing failed plants;
- Pruning;
- Insect & Pest control (only using natural / safe materials to use around children);
- Fertlising;
- Maintaining & removing stakes & ties;
- Maintaining Mulch;
- Irrigation & watering ; and
- Weeding & rubbish removal

NOT FOR CONSTRUCTION

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Issue	Revision Description	Drawn	Check	Date
A	Preliminary	MW	NM	20.07.2021

A1

Legend

Key Plan

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Client
Place Studio

Project
Punchbowl Childcare
31 Telopea St,
Punchbowl

Drawing Name
Landscape Specification Notes

DA SUBMISSION

Scale 1:50 @ A1
0 0.5 1 1.5 2 2.5m

Job Number
SS21-4729

Drawing Number
501

Issue
A

A1

PROPOSED CHILDCARE
31 TELOPEA STREET, PUNCHBOWL
STORMWATER CONCEPT DESIGN

LOCALITY PLAN
NOT TO SCALE
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DRAWINGS LIST			
SHEET No.	DWG No.	TITLE	REV
1	SW100	COVER SHEET	C
2	SW110	STORMWATER CONCEPT DESIGN - SITE PLAN	C
3	SW200	STORMWATER CONCEPT DESIGN - BASEMENT PLAN	C
4	SW201	STORMWATER CONCEPT DESIGN - GROUND FLOOR PLAN	C
5	SW202	STORMWATER CONCEPT DESIGN - ROOF PLAN	C
6	SW300	STORMWATER CONCEPT DESIGN - DETAILS SHEET	C
7	SW400	EROSION AND SEDIMENT CONTROL - PLAN AND DETAILS	C
8	SW500	STORMWATER CONCEPT DESIGN - OSD CATCHMENT PLAN & DRINS MODEL RESULT	C

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CLIENT:
TONY GEAGEA

SGC Reference Number: 20210183
Drawing Number: SW100
Revision Number: C

A1

DATE PLOTTED: 28 January 2022 2:26 PM BY : USER

XREF's: $?
CAD FILE: Z:\Production\2021\20210183 31 Telopea Street, Punchbowl\Civil\cad\SW110 SITE PLAN.dwg

Issue	Last revision title	by	Date	Status
C	ISSUE FOR DA	DR	28.01.22	2
P2	ISSUE FOR DA	DR	28.01.22	1
B	ISSUE FOR DA	DR	26.07.21	2
A	ISSUE FOR DA	DR	21.07.21	2
P1	PRELIMINARY ISSUE	DR	16.07.21	1

Issuer internal sequence and revision history
1-preliminary 2-development application 3-construction certificate
4-tender 5-construction 6-other

Reference Coordination Drawing

Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MECH			
ELEC			
HYD			
FIRE			
LANDS			
CIVIL			
SURVEY			

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QUALITY CONTROL

DRAWN	DR	DATE	28.07.21
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DESIGNED	DR	DATE	28.07.21
VERIFIED	SH	DATE	28.07.21
APPROVED	SH	DATE	28.07.21

Scales
0m 2 4 6 8 10
SCALE 1:200 ON ORIGINAL SIZE

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PROJECT
PROPOSED CHILDCARE DEVELOPMENT
31 TELOPEA STREET,
PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	2 OF 8	1:200 @ A1

Drawing Status: FOR APPROVAL
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Drawing Title
STORMWATER CONCEPT DESIGN
SITE PLAN

Project No	Drawing No	Revision No
20210183	SW110	C

A1

SERVICES ON THIS DRAWING
ARE SHOWN BELOW SLAB U.N.O

PUMP-OUT PIT NOTE:

INSTALL WITH THE FOLLOWING ITEMS:
- 900SO HEAVY DUTY STEEL GRATED LID FOR ACCESS AND MAINTENANCE PURPOSES.
-CONFINED SPACE SIGN ABOVE PUMP OUT PIT FOR PUBLIC AWARENESS AND WARNING.
-STEP IRONS. REFER TO DETAILS.
-PUMPOUT PIT CONTROL BOX (CTRL) TO MANUFACTURERS SPECIFICATIONS. LOCATIONS TO BE CONFIRMED WITH ARCHITECT.
-PUMPS TO OPERATE IN ALTERNATE MODE TO INCREASE LIFESPAN.
-INSTALL VISIBLE FLASHING LIGHT SYSTEM IN CASE OF PUMP FAILURE.
-USE DRN 300/2/65 A1DT/50 OR EQUIVALENT DUAL PUMPS TO BE INSTALLED IN SUMP AND CONNECTED TO CONTROL.
-INSTALL 2x SUBMERSIBLE PUMPS EACH WITH A PUMP CAPACITY OF 10L/s AT 5.0m HEAD, FLOAT SWITCH AND CONTROL PANEL TO MANUFACTURER'S SPECIFICATIONS.

SUBSOIL DESIGN CALCS:

THE AREA OF DRIVEWAY RAMP IS COVERED THEREFORE IN ACCORDANCE WITH AS3500, THE MINIMUM PUMPOUT PIT SIZE IS 3m³.

NOTES

BASEMENT DRAINAGE DESIGN SUBJECT TO GEOTECHNICAL INVESTIGATION AND STRUCTURAL DESIGN OF WALLS AND SLABS IN CC STAGE.

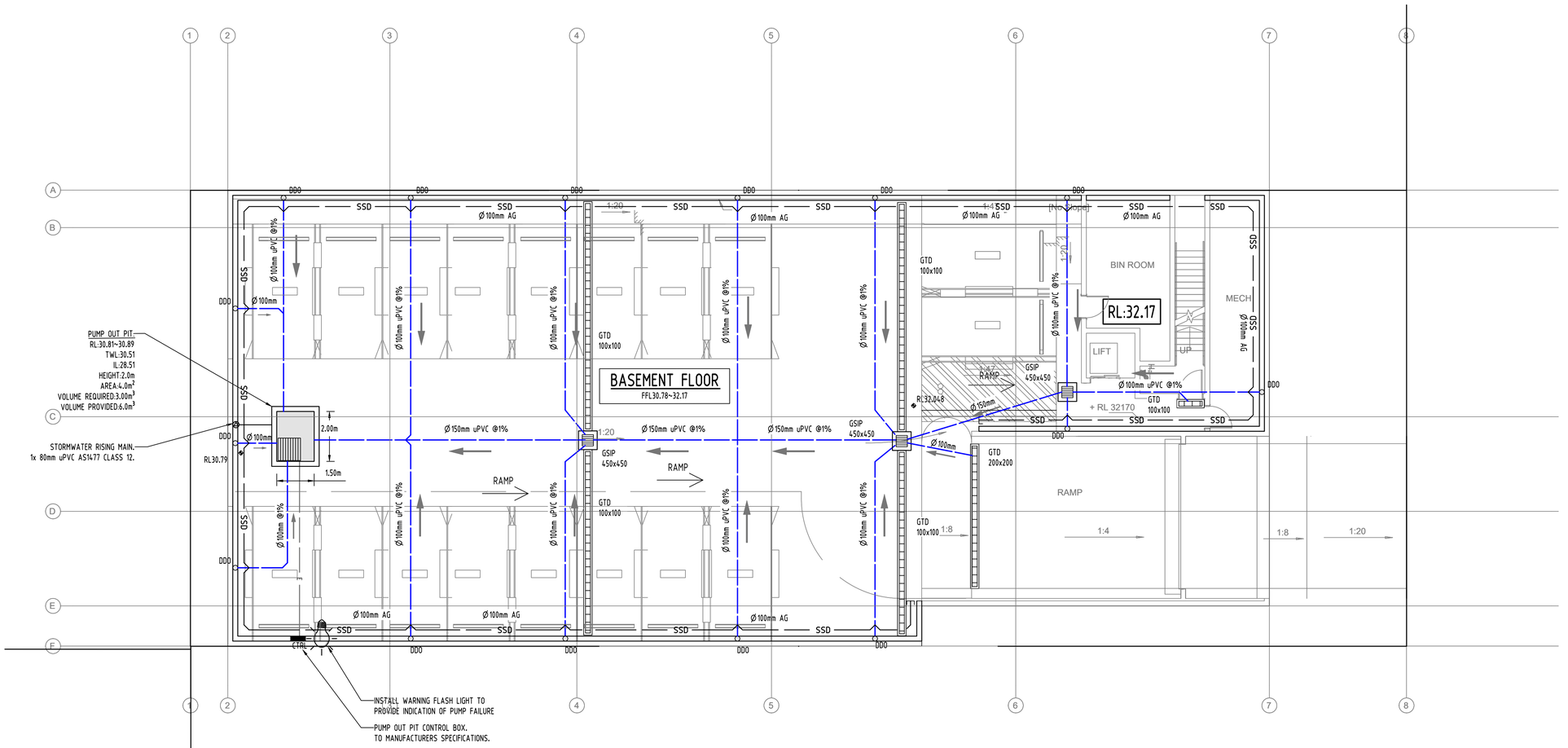
ALL SUBSOIL DRAINAGE (SSD) TO BE 100AG AND ALL DISH DRAIN OUTLETS (DDO) TO BE Ø 100mm U.N.O

NOTE:

ALL STORMWATER PUMPS TO BE CLASS 1 ZONE 2 FLAME SAFE TO ELECTRICAL CONSULTANT'S REQUIREMENTS.

SURFACE GRADING NOTE:

SURFACES ARE TO BE GRADED TOWARDS SURFACE INLET PIT (GSIP) AND RAINWATER OUTLET (RWO) AT 1% MIN. FOR UNCOVERED AREA AND AT 0.5% MIN. FOR COVERED AREA AS PER AS2890.



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Discipline	Drawing Title and Number	Date	Rev.
ARCH			
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0m 1 2 3 4 5
SCALE 1:100 ON ORIGINAL SIZE

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PROJECT
PROPOSED CHILDCARE DEVELOPMENT
31 TELOPEA STREET,
PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	3 OF 8	1:100 @ A1

Drawing Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Drawing Title
STORMWATER CONCEPT DESIGN
BASEMENT PLAN

Project No	Drawing No	Revision No
20210183	SW200	C

DATE PLOTTED: 28 January 2022 2:01 PM BY : USER

A1

SERVICES ON THIS DRAWING
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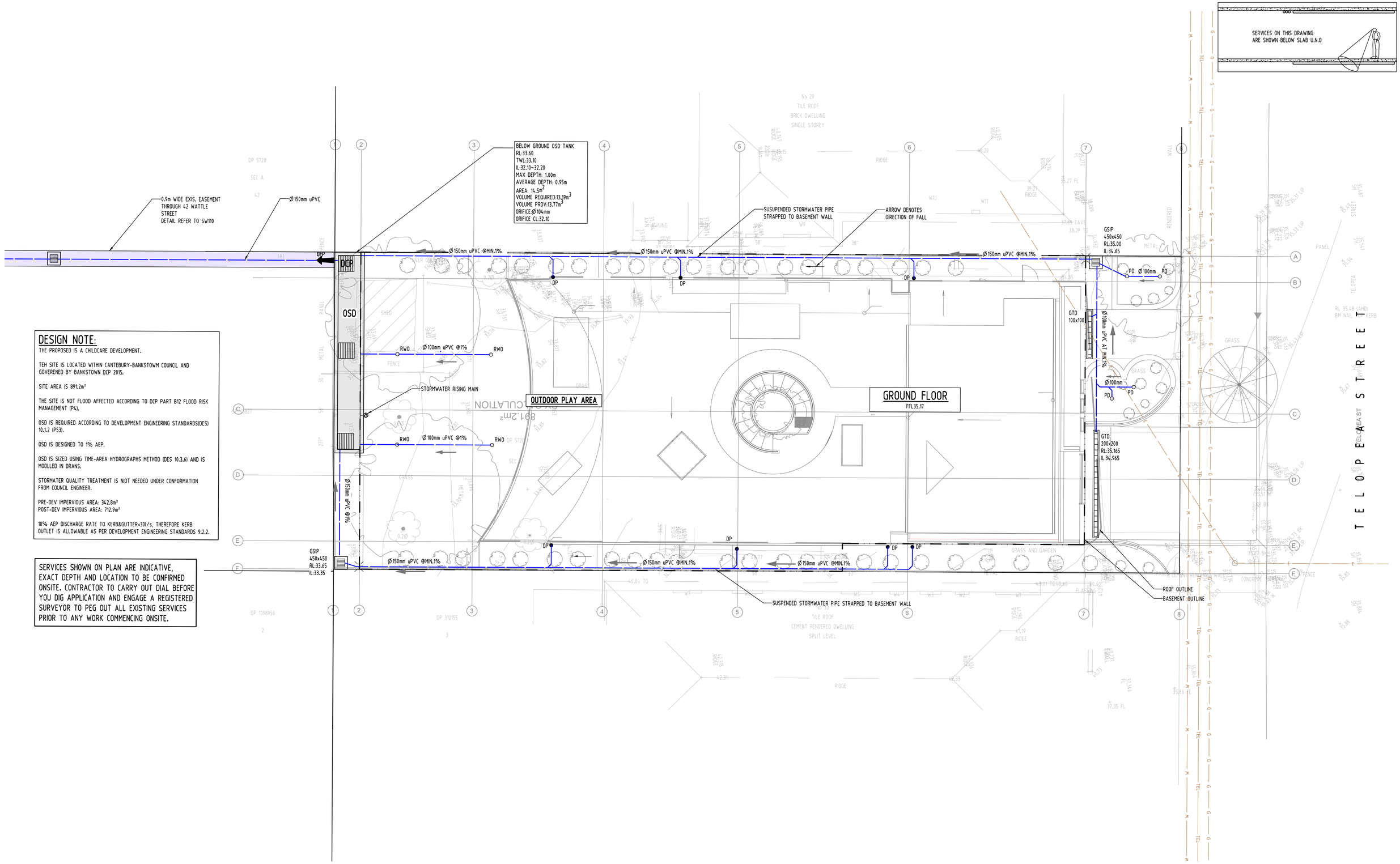

DESIGN NOTE:

THE PROPOSED IS A CHILDCARE DEVELOPMENT.

TEH SITE IS LOCATED WITHIN CANTEBURY-BANKSTOWM COUNCIL AND GOVERENED BY BANKSTOWN DCP 2015.

SITE AREA IS 891.2m²

THE SITE IS NOT FLOOD AFFECTED ACCORDING TO DCP PART B12 FLOOD RISK MANAGEMENT (P4).

OSD IS REQUIRED ACCORDING TO DEVELOPMENT ENGINEERING STANDARDS(DES) 10.1.2 (P53).

OSD IS DESIGNED TO 1% AEP.

OSD IS SIZED USING TIME-AREA HYDROGRAPHS METHOD (DES 10.3.6) AND IS MODLLED IN DRANS.

STORMATER QUALITY TREATMENT IS NIOT NEEDED UNDER CONFORMATION FROM COUNCIL ENGINEER.

PRE-DEV IMPERVIOUS AREA: 342.8m²
POST-DEV IMPERVIOUS AREA: 712.9m²

10% AEP DISCHARGE RATE TO KERB&GUTTER<30l/s, THEREFORE KERB OUTLET IS ALLOWABLE AS PER DEVELOPMENT ENGINEERING STANDARDS 9.2.2.

SERVICES SHOWN ON PLAN ARE INDICATIVE, EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.

Issue	Last revision title	by	Date	Status
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SCALE 1:100 ON ORIGINAL SIZE

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PROJECT
PROPOSED CHILDCARE DEVELOPMENT
31 TELOPEA STREET,
PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	4 OF 8	1:100 @ A1

Drawing Status: FOR APPROVAL
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Drawing Title
STORMWATER CONCEPT DESIGN
GROUND FLOOR PLAN

Project No	Drawing No	Revision No
20210183	SW201	C

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DATE PLOTTED: 28 January 2022 2:01 PM BY : USER

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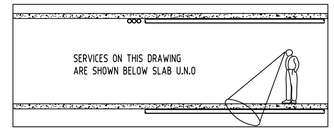
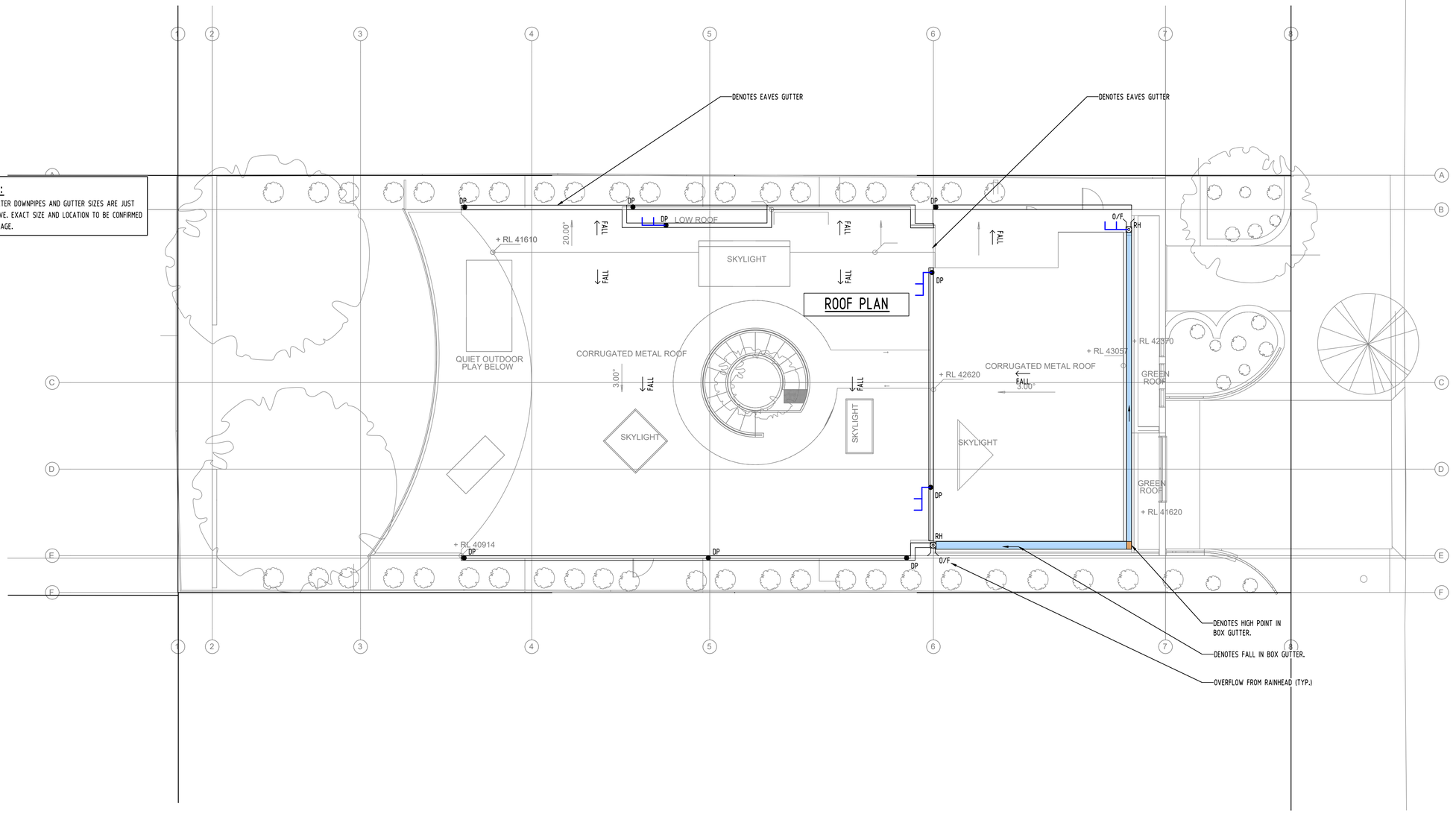


NOTE:
STORMWATER DOWNPIPES AND GUTTER SIZES ARE JUST INDICVATIVE. EXACT SIZE AND LOCATION TO BE CONFIRMED AT CC STAGE.



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31 TELOPEA STREET,
PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	5 OF 8	1:100 @ A1

Drawing Status: FOR APPROVAL
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Drawing Title
STORMWATER CONCEPT DESIGN
ROOF PLAN

Project No	Drawing No	Revision No
20210183	SW202	C

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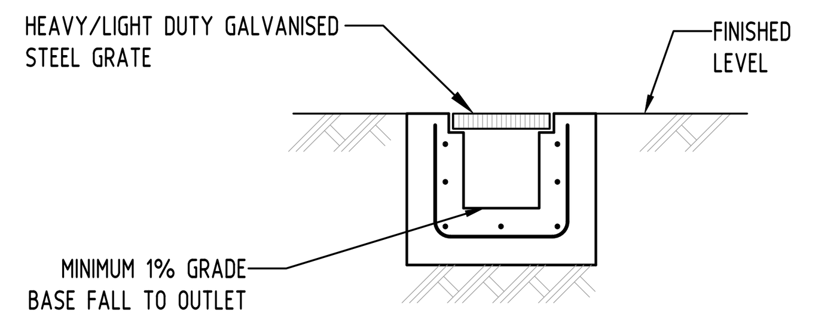

GRATED TRENCH DRAIN
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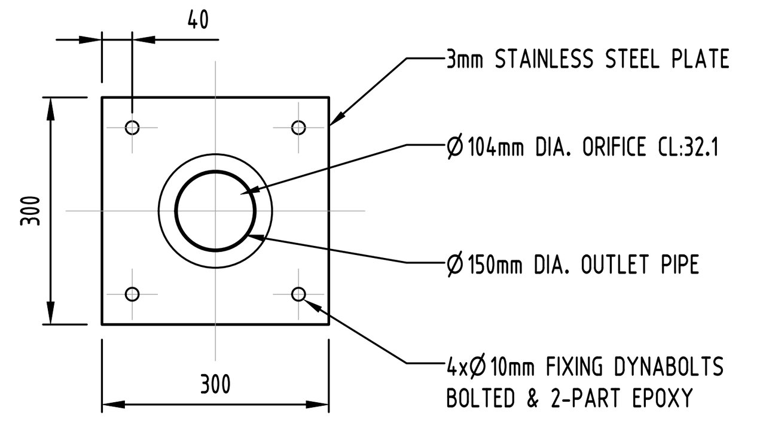

ORIFICE PLATE
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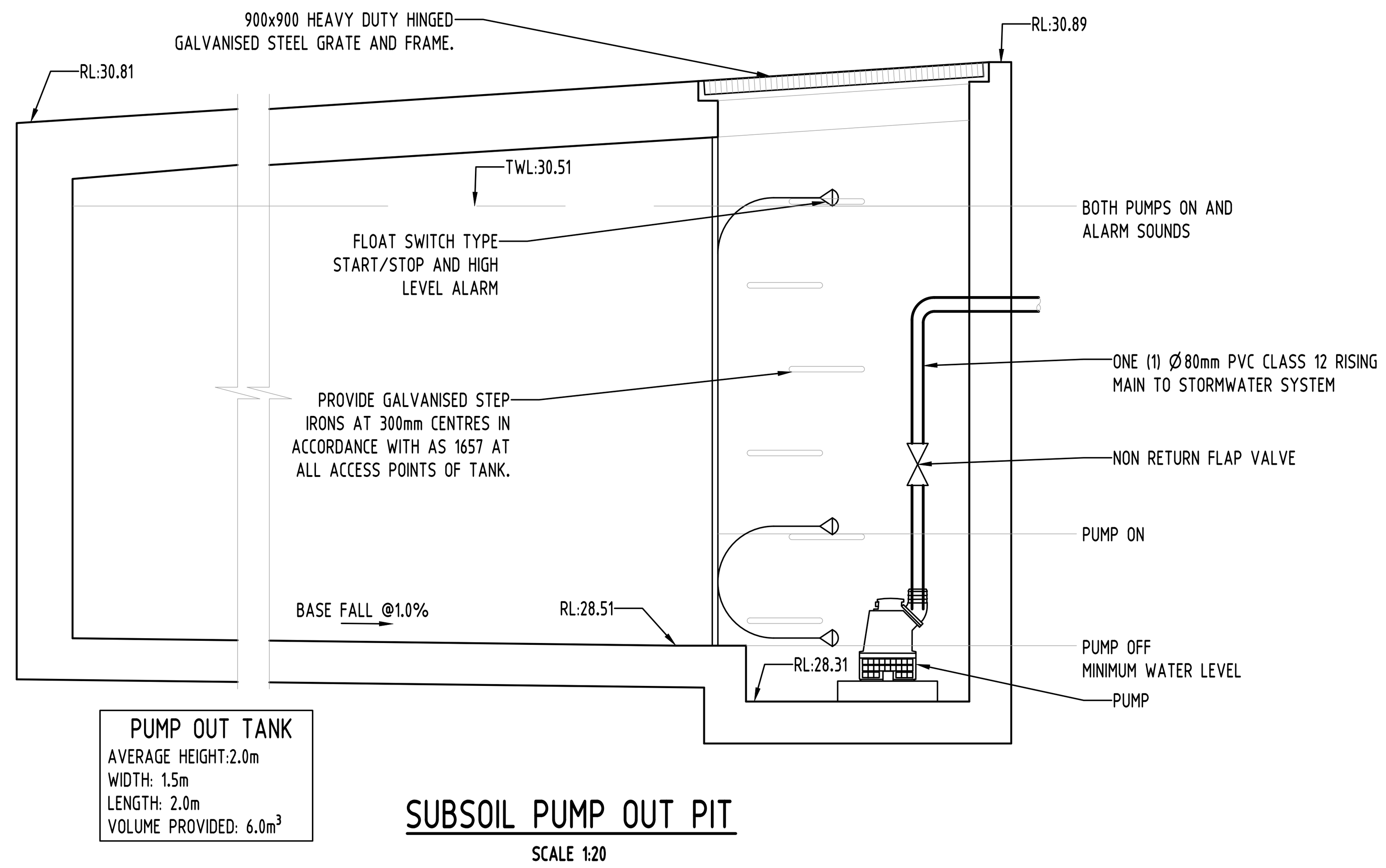

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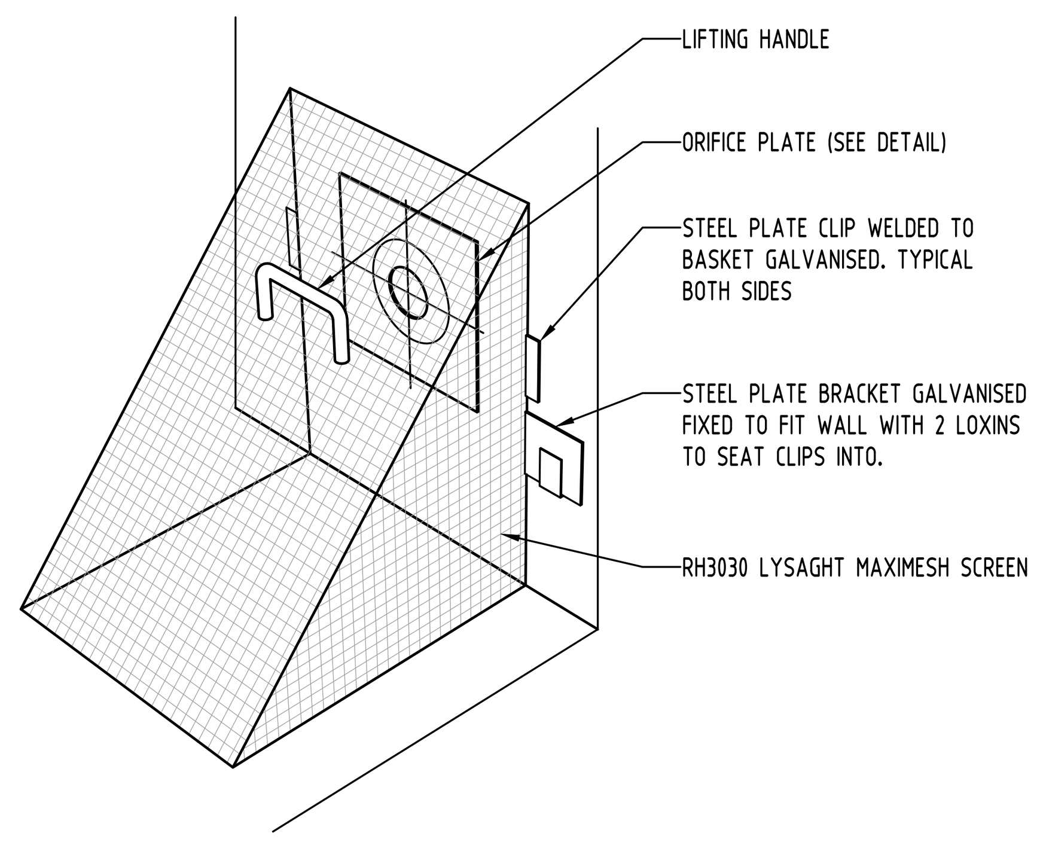
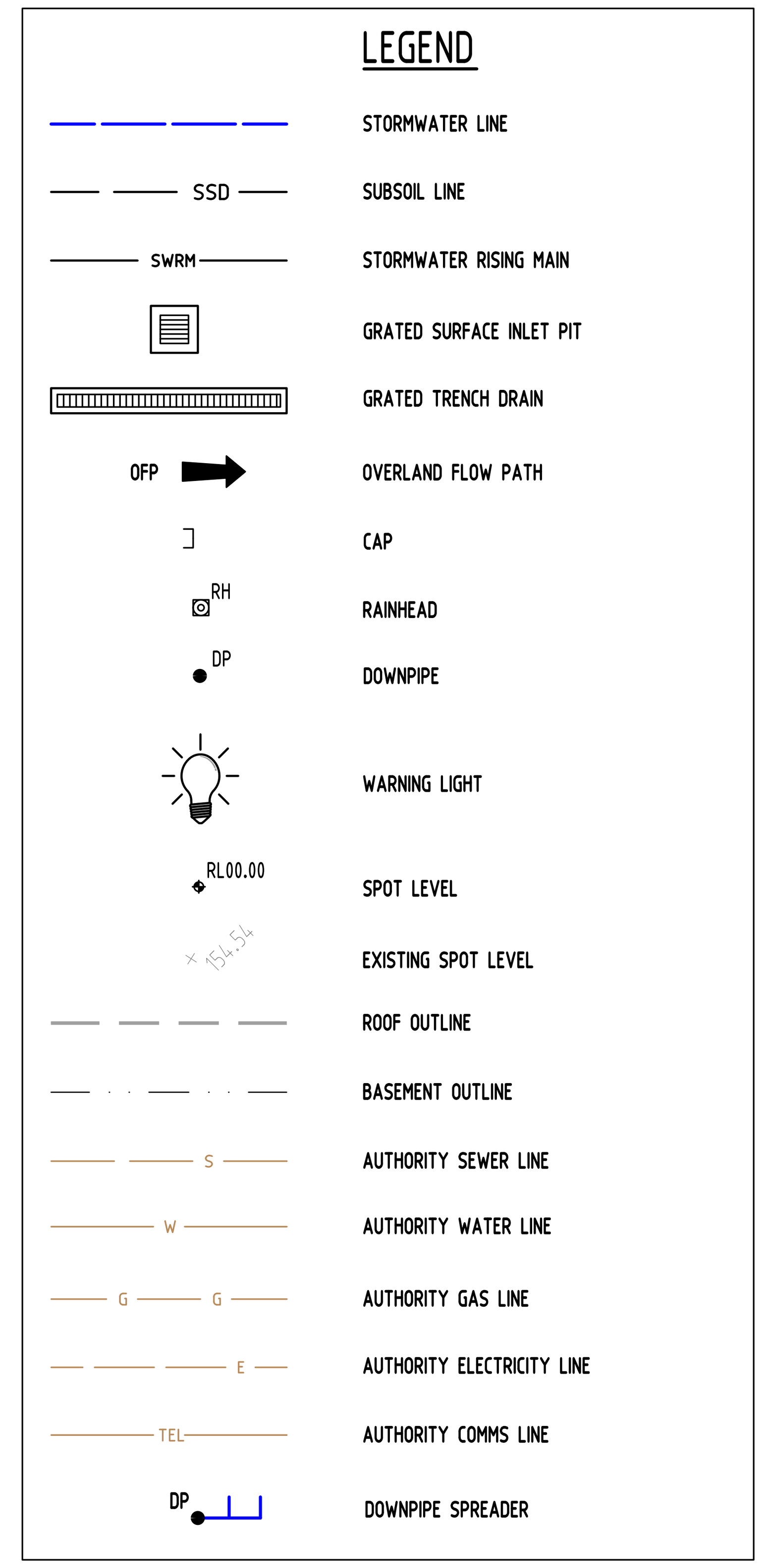
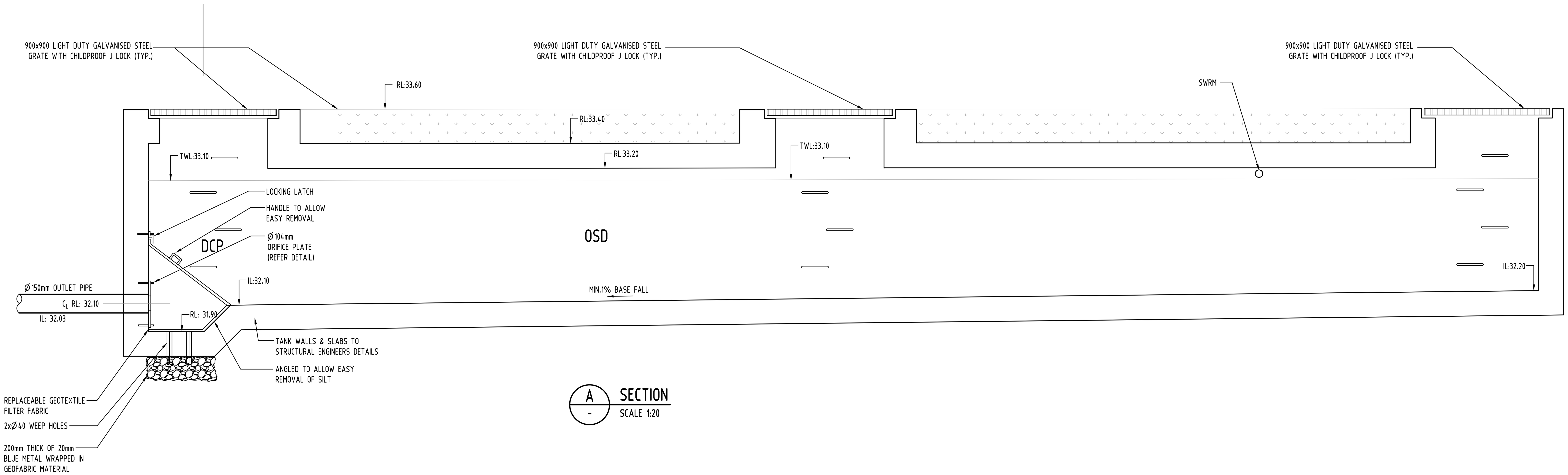


DEBRIS SCREEN
NTS





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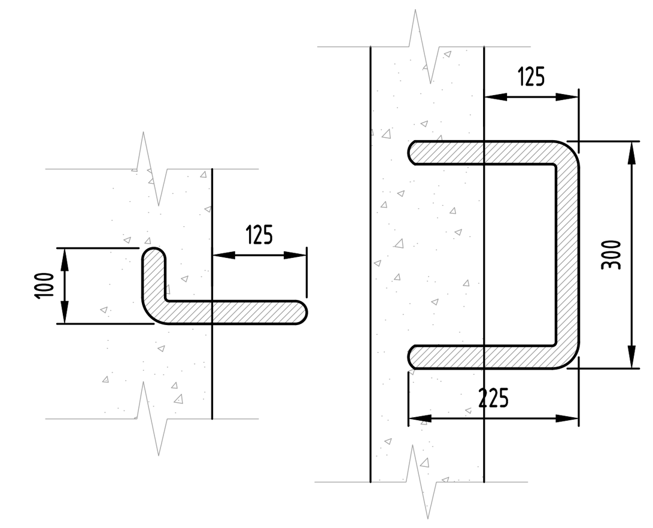
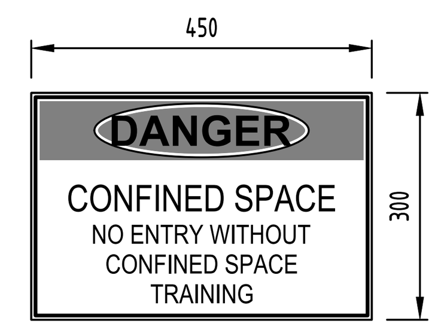


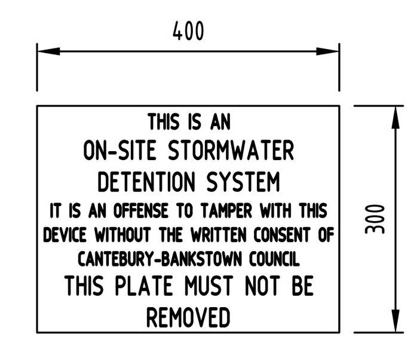
STEP IRONS
SCALE 1:10

POST-DEVELOPMENT OSD REQUIREMENTS:

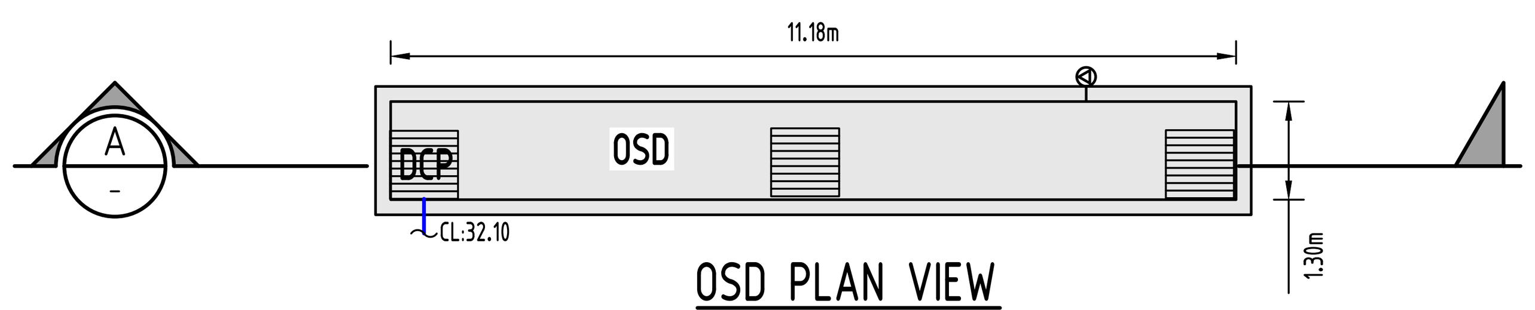
LOT AREA (m2)	PRE-DEV IMPERVIOUS (%)	POST-DEV IMPERVIOUS (%)	STORM (%AEP)	PRE-DEV FLOW (m3/s)	PIPE OUTFLOW (m3/s)	WIER OUTFLOW (m3/s)	BYPASSING FLOW (m3/s)	TOTAL POST-DEV FLOW (m3/s)	OSD VOLUME (m3) FOR 1%AEP STORM STORAGE
891.2	38.5	80	20%	0.027	0.017	0.000	0	0.017	13.19
			5%	0.036	0.020	0.000	0	0.020	
			1%	0.047	0.023	0.000	0	0.023	



CONFINED SPACE SIGN
SCALE 1:10



OSD SIGN
SCALE 1:10



OSD PLAN VIEW
SCALE 1:100

Issue	Last revision title	by	Date	Status
C	ISSUE FOR DA	DR	28.01.22	2
P2	ISSUE FOR DA	DR	28.01.22	1
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ENGINEERS AUSTRALIA Chartered Professional Engineer MEMBER

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SCALE 1:20 ON ORIGINAL SIZE
SCALE 1:100 ON ORIGINAL SIZE

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PROJECT
PROPOSED CHILDCARE DEVELOPMENT
31 TELOPEA STREET, PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	6 OF 8	AS SHOWN

Drawing Status
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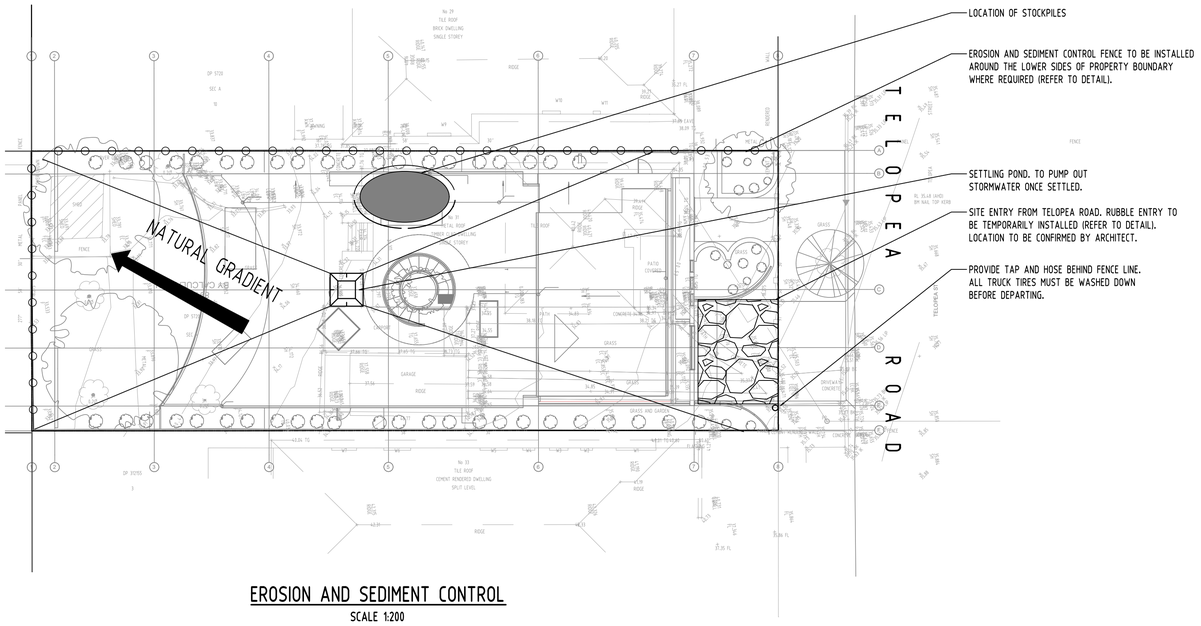
Drawing Title
STORMWATER CONCEPT DESIGN
DETAILS SHEET

Project No	Drawing No	Revision No
20210183	SW300	C

A1



EROSION AND SEDIMENT CONTROL

SCALE 1:200

EROSION & SEDIMENTATION CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS. TIE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (EG. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND & EXTENDING 150mm BELOW GROUND.
2. EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL.
3. NO PARKING OR STOCKPILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
4. GRASS VERGES SHALL BE MAINTAINED AS MUCH AS PRACTICAL TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
5. CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPPABLE SOIL & SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING & LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

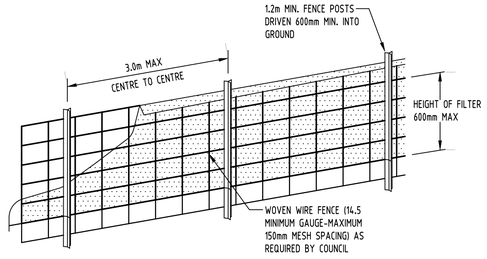
GENERAL NOTES

1. THIS PLAN IS A CONCEPT PLAN ONLY FOR STORMWATER DISPOSAL & EROSION CONTROL. IT IS NOT SUITABLE FOR CONSTRUCTION. THIS PLAN SHOULD BE ADAPTED BY THE BUILDER DURING DEMOLITION, EXCAVATION & CONSTRUCTION PHASES TO ENSURE ADEQUATE PERFORMANCE.
2. ALL DRAINAGE LAYOUT & DETAILS ARE DIAGRAMMATIC & INDICATIVE ONLY. ACTUAL LOCATION, SIZES, LEVELS & GRADES MAY ALTER WHEN DETAIL DESIGN WORKS ARE DOCUMENTED.

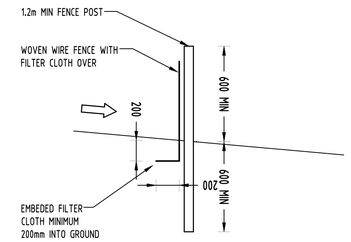
CLAY SOILS

A SYSTEM SHALL BE INSTALLED TO EITHER:

1. TRANSPORT STORMWATER RUNOFF WITH SUSPENDED SOLIDS FROM SITE VIA PUMP TRUCKS.
2. TREAT THE STORMWATER RUNOFF WITH SUSPENDED SOLIDS SO THE DISCHARGE WATER QUALITY TO COUNCIL STORMWATER DRAINAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENDED SOLIDS THAT DOES NOT EXCEED 50 MILLIGRAMS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT (POEO 1997) AND SHALL BE APPROVED BY LOCAL COUNCIL



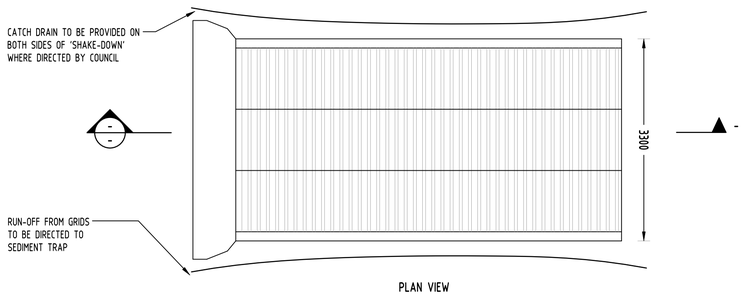
DIAGRAMMATIC VIEW



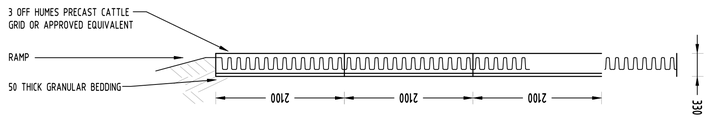
TYPICAL SECTION

SEDIMENT FENCE

NOT TO SCALE



PLAN VIEW

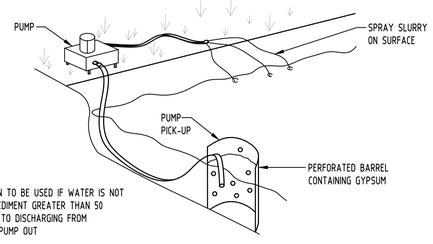


TYPICAL SECTION

'CATTLE GRID' ALTERNATIVE

TEMPORARY CONSTRUCTION EXIT

NOT TO SCALE



NOTE:

1. FLOCCULATION TO BE USED IF WATER IS NOT CLEAR (ie. SEDIMENT GREATER THAN 50 mg/L) PRIOR TO DISCHARGING FROM TEMPORARY PUMP OUT
2. FOR RATES & AGENTS SEE APPENDIX E OF NEW SOUTH WALES DEPARTMENT OF HOUSING "MANAGING URBAN STORMWATER SOILS & CONSTRUCTION".

FLOCCULATION DETAIL

NOT TO SCALE

LEGEND

- SEDIMENT FENCE
- STABILISED SITE ACCESS
- SANDBAGS

Issue	Last revision title	by	Date	Status
C	ISSUE FOR DA	DR	28.01.22	2
P2	ISSUE FOR DA	DR	28.01.22	1
B	ISSUE FOR DA	DR	26.07.21	2
A	ISSUE FOR DA	DR	21.07.21	2
P1	PRELIMINARY ISSUE	DR	16.07.21	1

Issuer infernal sequence and revision history

1-preliminary 2-development application 3-construction certificate 4-tender 5-construction 6-other

Reference Coordination Drawing

Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MECH			
ELEC			
HYD			
FIRE			
LANDS			
CIVIL			
SURVEY			

ENGINEERS AUSTRALIA Chartered Professional Engineer MEMBER

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QUALITY CONTROL

DRAWN	DR	DATE	28.07.21
CHECKED	SH	DATE	28.07.21
DESIGNED	DR	DATE	28.07.21
VERIFIED	SH	DATE	28.07.21
APPROVED	SH	DATE	28.07.21

Scales

0m 2 4 6 8 10

SCALE 1:200 ON ORIGINAL SIZE

CLIENT

TONY GEAGEA

ARCHITECT

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PROJECT

PROPOSED CHILDCARE DEVELOPMENT

31 TELOPEA STREET,
PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	7 OF 8	AS SHOWN

Drawing Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Drawing Title

EROSION AND SEDIMENT CONTROL

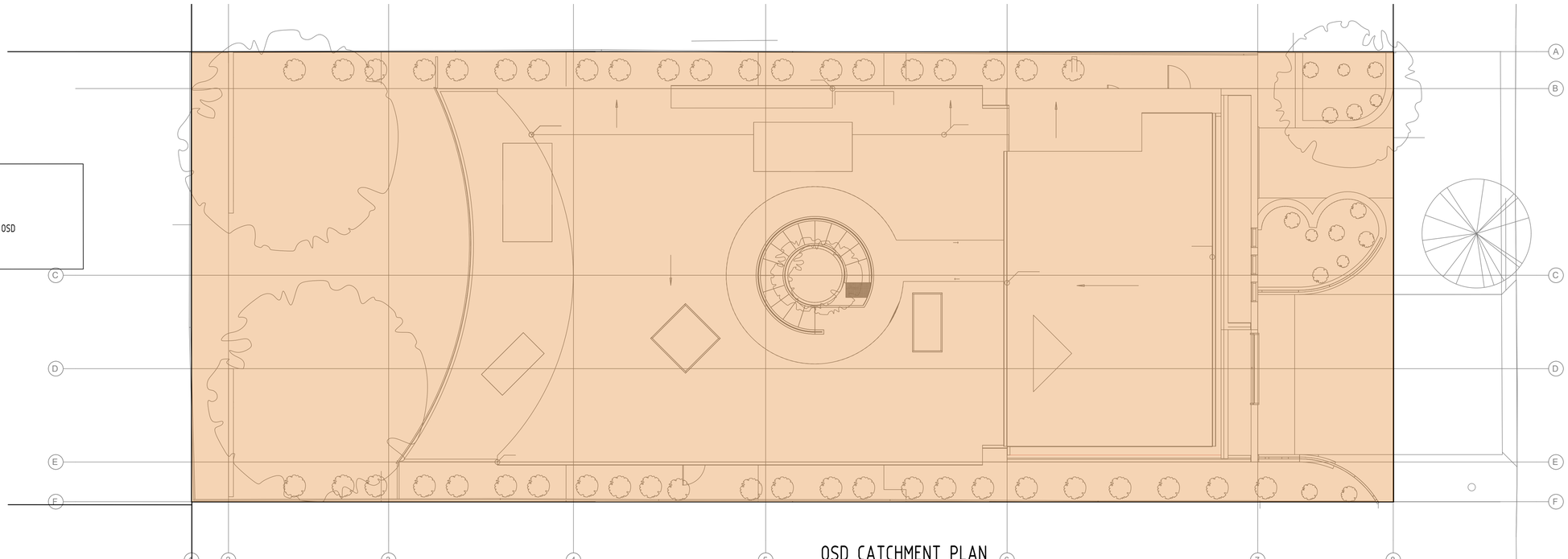
PLAN AND DETAILS

Project No	Drawing No	Revision No
20210183	SW400	C

A1

LEGEND

AREA DRAINING TO OSD
891 m^2



OSD CATCHMENT PLAN

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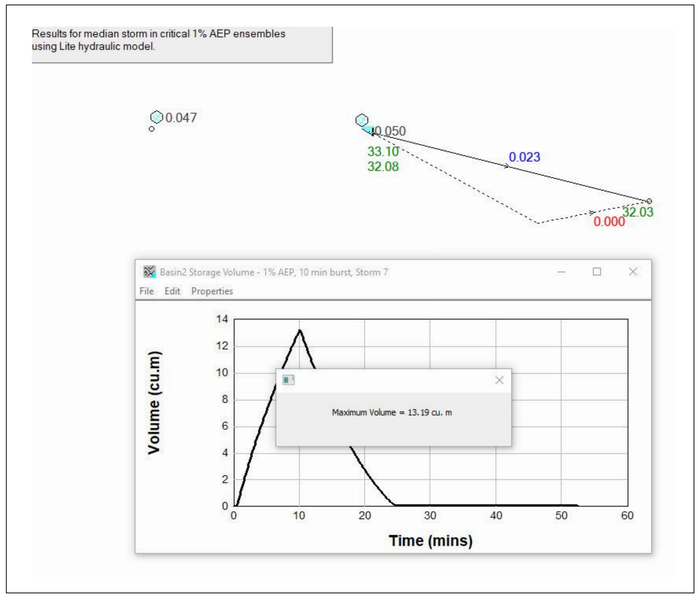

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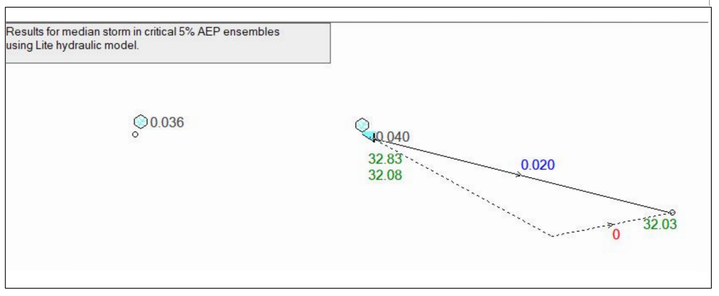

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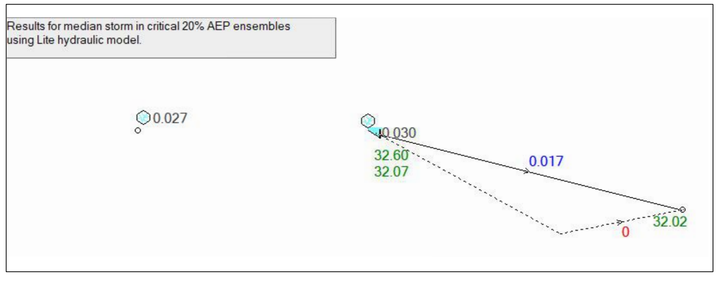

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Issue	Last revision title	by	Date	Status
C	ISSUE FOR DA	DR	28.01.22	2
P2	ISSUE FOR DA	DR	28.01.22	1
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Scales
0m 1 2 3 4 5
SCALE 1:100 ON ORIGINAL SIZE

CLIENT
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PROPOSED CHILDCARE DEVELOPMENT
31 TELOPEA STREET,
PUNCHBOWL

Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	8 OF 8	1:100 @ A1

Drawing Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Drawing Title
STORMWATER CONCEPT DESIGN
OSD CATCHMENT PLAN &
DRAINS MODEL RESULT

Project No	Drawing No	Revision No
20210183	SW500	C

Plan of Management

Proposed Child Care Centre

31 Telopea Street Punchbowl NSW 2196

Written by Lynda Campbell

On behalf of:

EthanGroup Pty Ltd

27th January 2022

Version 4

Early Education Solutions

Contents

Appendices

Introduction

This Plan of Management provides guidelines and controls for the operation and management of the proposed child care centre at 31 Telopea Street Punchbowl NSW 2196.

This Plan of Management has been prepared to ensure children in attendance at the centre receive the highest quality of care in a safe environment and to ensure the centre operates in a manner which minimises impacts on neighbours.

The aim of the centre is to provide a high quality programme which is based on the intellectual pursuit for excellence in early childhood education and care through collaboration, informed by reflection, experimentation and practice in view of a child as a capable and competent learner.

In this regard, the centre will:

- recognise and value the child as a citizen with rights and responsibilities;
- respect the child and recognise the value of building an authentic trusting relationship;
- recognise the child as competent and resourceful and a constructor of knowledge;
- value play, respect for others and the physical world, the centre, commitment to others' well-being and to the good of the community;
- encourage connection, relationship and collaboration, feelings, as well as thoughts and, as ways of understanding and communicating, beauty, thoughtfulness and critical reflection, continuous pursuit of knowledge and understanding;
- facilitate cooperation, creativity, children's initiative, and an open setting that encourages resilience and perseverance, confidence and autonomy;
- recognise that care and education are interwoven and cannot be separated;
- value and promote a home like, ecological sustainable, healthy and safe physical environment;
- respect families and value the need for professionals to work in collaboration with families;
- recognise and honour diversity;
- recognise that staff work collaboratively in a mutually supportive environment;
- recognise the need for management to support the components underlying the continual improvement process in provide high quality early childhood care and education;
- respect and value the important role of our service in the broader community; and
- recognise that families and the community share responsibility for all children.

The Plan aims to ensure that the child care centre at 31 Telopea Street Punchbowl

- Operates in a manner consistent with good management;
- Operates in accordance with the relevant Education and Care Services National Law and Regulations;
- Takes a proactive role in being a responsible neighbour/land owner within Canterbury/Bankstown City.

- Operates in a manner so as not to disturb the surrounding area.

This Plan of Management will set out controls for:

- Hours of operation, staff levels and child levels
- Noise control
- Car parking and traffic
- Delivery of goods and services
- Waste management
- Complaints procedure
- Evacuation and emergency procedure
- Annual review of Plan of Management

All staff at the centre will be required to be acquainted with the Plan of Management and conduct their work within the Plan of Management.

A copy of the Plan of Management will be provided to parents/carers and neighbours. Parents/carers are required to observe the requirements of the Plan of Management.

The indicative daily program and the areas referred to in this Plan of Management is based on:

- Architectural Plans prepared by Place Studio Revision D

Operational Matters

Licensing and Approvals

The centre will not commence operation until necessary licences have been issued by the relevant authorities.

The centre will be operated strictly in accordance with the relevant licence conditions and regulations including (but not limited to) the *Children (Education and Care Services) National Law (NSW)* and *Education and Care Services National Regulations*.

Hours of Operation

The hours of operation of the childcare centre are:

- Monday – Friday: 7.00am – 6.00pm
- Saturday/Sunday: Closed
- Public Holidays: Closed
- The centre will operate 52 Weeks of the year
- No staff or deliveries on site prior to 6.45 am

Capacity

A maximum of children 74 will be accommodated at the centre.

For the purposes of this Plan of Management the indicative numbers of children in each age group are as follows:

Ground Level 0 – 2 years – 10 children (3 educators)

Level One 2 - 3 years – 24 children (5 educators)

Level One 3 - 6 years – 40 children (4 educators)

Staffing

Staff ratios at the centre will be in accordance with the Education and Care Services National law and the Education and Care Services National Regulations 2011.

Educators within the centre will be employed to ensure that minimum qualification requirements are met through the employment of trained Educators.

At least 2 members of staff will be present during operating hours. A staff member with a current first aid certificate, including emergency asthma and anaphylaxis training will be present throughout the day between 7:00am and 6:00pm.

Based on the indicative number in each age group, a total of 12 permanent childcare educators are required to be working directly with the children.

The centre will also employ an additional staff centre manager on a part-time basis who will also assist with relief during staff lunch breaks, programming time, and other general duties.

Generally routine daily cleaning is done by the educators thorough the day therefore a cleaner will not be required. There would be an external cleaner come when required for deep cleaning carpets and windows.

Consistent and committed educators and coordinators support good quality standards and continuity of care for children. Effective, transparent and equitable recruitment processes ensure the service attracts and retains educators, coordinators and other staff members who can best meet the needs of children and their families.

To safeguard children against risks to their safety and wellbeing:

- All educators and coordinators need to verify their fitness and propriety by providing a current and valid 'working with children' check prior to commencing employment.
- Any student or volunteer will also need to verify their fitness and propriety by providing a current and valid 'working with children' check prior to attendance at the service.

Nominated Supervisor

The Education and Care Services National law and the Education and Care Services National Regulations 2011 require the service to designate a Nominated Supervisor. If this person is not present, then the service will have delegated responsible people.

All staff must agree to follow the code of conduct/code of ethics that applies to management, educators, coordinators and staff members which clearly explains the responsibilities of all parties in relation one another and to children and families using the service. The approved provider of an education and care service must designate, in writing, a suitably qualified and experienced educator, coordinator or other individual as educational leader at the service to lead the development and implementation of education programs in the service.

There must be enough staff in accordance with The Education and Care Services National law and the Education and Care Services National Regulations 2011 ratios present at all times while children are inside/outside in designated play areas. Staff will be positioned in all areas to effectively supervise children playing in those areas.

Educators will have direct supervision of all children at the centre at all times and a sign in/out record will be maintained throughout the day to identify the number of children in the service at all times. Educators will be required to ensure all children have signed out and left the centre before close each day and reconfirm this with a secure sign in/out system. Clear pathways, regularly maintained and cleaned will provide safe access for all children, families and staff between rooms.

Drop off/Pick up procedures

The following drop off/pick up procedures will be followed by all parents/carers:

- All children must arrive and leave the centre accompanied by a parent or other adult that has been nominated, in writing, by the parent.
- All children must be signed in and out by the parent (or other nominated adult on an attendance register) with arrival and departure times recorded.
- Parents will be advised to use the allocated spaces for parents/visitors in the basement car park, if they drive, and the use of public transport and walking will be encouraged.
- The arrivals and departures policy as required under regulation 168 of Education & Care Services National regulation will include parents complying with all safety and signage procedures in the basement car park and storage of any prams in the designated spaces.
- If parents wish to have an extended conversation with educators or the management they will be advised to make an appointment outside of the peak arrival and departure periods.

Visitors

The following guidelines will relate to any visitors to the centre:

- Visitors to the centre include maintenance personnel and any other person not employed by the centre (excluding the parent of a child enrolled at the centre).
- All visitors must sign in and out on a centre visitor's register with the arrival and departure time recorded.
- The access gate will be a coded/locking system with audio and visual surveillance points in each of the internal/ external play spaces and office areas.
- All visitors are always accompanied by an educator/staff member and not left with any child or children.

Laundry Arrangements

Laundry services will be provided on site for kitchen items and child bibs/washers and be done by the educators on a roster system.

The children typically wear disposable nappies. Any cloth style nappy would be bagged and sent home daily with the child for laundry at home.

If a child has wet or soiled clothing this is bagged and sent home for laundering.

The parent will supply sheets for sleep/rest time and these will be sent home weekly or more often if required for laundering at home.

Food preparation and Service

The parent will provide all the food and drinks for their individual child/children in a labelled lunch box. The arrival routine will include the child/parent placing it in the refrigerator located in each play room. The children will be encouraged to access their own lunch box so this will be part of the agency promoted through the program and a learning opportunity.

Parent/s will be advised upon enrolment of suitable meal/snack ideas, low waste lunches and that food will not be heated.

The service will keep a stock of basic food items such as fruit, bread, cheese and savory biscuits in the event of a child needing additional food during the day.

Children will have an individual drink bottle for water which is taken into the play room and stored in the child's locker.

When it is time for a meal or snack the child will collect their lunch boxe from the refrigerator and take them to the eating area. Part of the educational program will be for the child to identify their lunch box and agency will be promoted as they learn self help skills to open lunches etc.

To promote sustainable practices parents will be encouraged to use re-usable lunch containers, and recyclable items will be separated for the recycling bin or washed for re-use, food waste will be composted and any plastic wrapping separated for Red-cycling at a local collection point (currently Coles or Woolworths supermarkets).

Centre Management

Daily Program

The daily routine within the centre is referred to as a daily living experience. It is an element of the program that has a major impact on whether or not the child has a good experience. Daily living experiences, including group times, transitions, eating, sleeping and resting, toileting, bathing, dressing, and undressing, and even arriving and leaving, occur at particular parts of the day and provide qualified trained staff with valuable information about the child's daily living skills.

The proposed routines are used as a guide and allows for flexibility to respond to varying circumstances including as adverse weather conditions, culture, children's/family needs and interests, mixed ages, planned experiences and/ or spontaneity. Families and staff work together to ensure each child's specific needs with respect to eating, sleeping, toileting, play and rearing techniques are, as far as possible, consistent with home routines.

The eating/snack routines can be flexible (progressive) which means the children can choose when to eat. The lunch routine for infants is flexible and for the toddlers and preschool aged children they usually eat as a small group.

Sleep/rest routines are again flexible for infants who will all have individual sleep times. For toddlers and pre-schoolers the service will provide stretcher style beds for each child. All children will have a short rest time where beds are located in an area of the play room. After 30 minutes children who are not needing a sleep will have quiet activities. For children going to school the following year the service would discuss with the parent if the child is to be offered a bed to rest on or offered alternative quiet activities. The stretcher beds can either be hung from a wall or stacked depending on the style chosen.

The indicative scheduling program has been structured having regard to:

- The above principles
- The nature of the anticipated activities

The schedule may be changed from time to time dependent upon weather and daylight saving. However, the usage will at all times remain within any conditions of the development consent issued by Council.

For the purposes of this Plan of Management, a reference to quiet passive outdoor play is taken to include the following activities:
- Sandpit
- Drawing
- Seated activities
- Story-telling
- Crawling spaces
- Gardening
- Literature/Poetry
- Arts & Craft
- Science and Biology lessons
- Environmental and exploring lessons
- Interactive Garden
- Role play
- Creative movement (including Yoga).

For the purposes of this Plan of Management active play is taken to include the following activities:
- Sports Program

- Gross Motor Development ie running
- General Outdoor Play ie bikes/ball games

Passive and active play activities can be offered both indoors and out through the flexible daily timetable. A mixture of free play time and structured group times will include both active and passive play activities

The indicative daily program assumes the centre will be at maximum capacity 74 children for the total operating hours – 7.00am – 6.00pm. In reality, this is a situation that is unlikely to occur. Typically, the morning drop off times occur from 7.30am to 9.30 am and the afternoon pick up times will commence around 3pm.

Outdoor play area

The outdoor play areas provide a variety of functional spaces dedicated to specific activities enabling compartmentation and independent supervision of each play area. The open spaces provide a variety of environmental spaces from outdoor areas with no roof structure and some with partial enclosure.

The outdoor play areas at the centre are as follows:

- Outdoor Play Area OPA 1 is the ground floor active play area

  OPA1 can be used for active play with the following maximum numbers:

  0 - 2 years (up to 10 children)
  2 - 3 years (up to 24 children with OPA2 in use for passive play only – either whole group 0 – 2 years or 3 – 5 years)
  3 – 5 years (up to 15 children with OPA2 in use for passive play only – either whole group 0 – 2 years; 2 – 3 years or 25 x 3 – 5 years)

- Outdoor Play Area OPA 2 is the outdoor play area on level one for passive play only with maximum numbers:

  0 -2 years (up to 10 children)
  2 – 3 years (up to 24 children)
  3 – 5 years (25 to 40 depending on who is using OPA1)

  The outdoor play areas a connect via a circular staircase allowing for easy access between spaces.

  (a) Group 1 are the children 0 – 2 years (home room IPA1 Ground floor)

  (b) Group 2 are the children 2 – 3 years (home room IPA2 on level one)

  (c) Group 3 ages 3 – 5 year (home room IPA3)

This timetable is proposed to comply with the acoustic recommendation of background +5dB across the whole day.

Time	Outdoor play area 1 Active	Outdoor play area 2 Passive
7.00am	Family Group (0 - 5 years) Max 15 children	-
7.30am	Group 1 (0 - 2 years) active	Family group (2 – 5 years) max 40 children
8.30am	Group 2 (2 – 3 years)	Group 1 (10 children)
9.30am	Flexible Group 3 (3 - 5 years) Max 15 children at any one time	Flexible grouping for either 2 – 3 years or 3 – 5 years Max 20 children outside at any one time.
10.30am		
11.30am		
12.30pm	Group 1 (0 - 2 years)	
1.30pm	No use	Non Sleepers max 40 children
2.30pm	Group 2 (2 – 3 years)	Group 1 (0 – 2 years)
3.30pm	Flexible group 3 (3 – 5 years) Max 15 children	Flexible group 3 (3 – 5 years) Max 25 children
4.30pm		
5.30pm	Family Group (0 - 5 years) Max 15 children	

Indicative daily program and routine for ages 0 – 2 YEARS (Group 1 home room IPA1)

For children aged 0-2 years, the program is flexible to cater for individual routines.

7.00 – 7.30 am Family grouping with Early Learners and Pre-Schoolers (indoors IPA1 or OPA1 max 15 children)

7.30 – 8.30 am Outdoor Active play (OPA1)

8.30 am Morning tea/ Indoor learning centres or passive outdoor play (OPA2)

9.30 am Indoor learning centres

10.30 am Indoor for group time (story/dance)

11.00 am Lunch and sleep

12.30 am Outdoor play (OPA1)

1.30 pm Indoor play and progressive afternoon tea

2.30 pm Outdoor play in OPA2

4.30 pm Indoor play includes music/movement

5.30 pm Family group with other ages flexible indoor/outdoor (active outdoor play in OPA1 max 15 children)

Indicative daily program and routine for ages 2 - 3 years (Early Learners Group 2 home room IPA2)

7.00 – 7.30 Family grouping with all other ages in IPA1 or OPA1 max 15 children outside

7.30 – 8.30 Family grouping with 3 – 5 years. Flexible indoor/outdoor (active outdoor play in OPA2 max 40 children)

8.30 – 9.30 Outdoor Active Play (OPA1)

9.30 – 12.30 Flexible program with 3 – 5 years – choice of indoor/outdoor (OPA2) to maximum of 20 children outside at any time
Progressive morning tea

12.30 – 1.00 Lunch

1.30 – 2.30 Sleep/rest

1.30 – 2.30 Non sleepers outdoor play passive in OPA2 (max 40 children)

2.30 – 3.30 Outdoor play in OPA1

3.30 – 5.30 Indoor play includes story and music

5.30 – 6.00 Family group with other ages flexible indoor/outdoor (active outdoor play in OPA1 max 15 children)

Indicative daily program and routine for Preschool room ages 3 – 5 years (40 children home room IPA3)

This group will have flexible choice to use OPA1 for active play and/or OPA 2 for passive play or indoor play for large blocks of time to support exceeding the National Quality standards.

7.00 – 7.30 Family grouping with other ages IP1 or OPA 1 max 15 children outside.

7.30 - 8.30 Family grouping with 2 – 3's. Flexible indoor/outdoor (passive outdoor play in OPA2 max 40 children).

8.30 – 9.30 Indoor group session (Talk about child's interests, weekly topics, story time, colours, numbers, shapes, days of the week) and progressive morning tea

9.30 – 12.30 Flexible child choice free play either active (OPA1 max 15 children; passive in OPA 2 max 20 children or indoor in IPA3)

12.30 – 1.30 Lunch & Rest time/Quiet activities for the children who do not sleep

1.30 – 2.30 Free choice indoor or passive outdoor in OPA2 (max 40 children)

2.30 – 3.30 Planned group movement and afternoon tea.

3.30 – 5.30 Flexible child choice free play either active (OPA1 max 15 children; passive in OPA 2 max 25 children or indoor in IPA3)

5.30 – 6.00 Family group with other ages flexible indoor/outdoor (active outdoor play in OPA1 max 15 children)

Noise Management Plan

Staff and parents will be instructed in the importance of being a good neighbour to assist in controlling privacy and noise levels, in particular noise levels from outdoor play areas. Initially, this will be part of the induction process and then ongoing using various strategies such as: National Quality Framework (NQF) high quality practice; tools; training and meetings to convey the message.

Staff will consider elements such as noise reduction both between and within spaces when planning and evaluating play.

Outdoor play experiences will be supervised by staff in accordance with The Education and Care Services National law and the Education and Care Services National Regulations 2011 to encourage quiet play and in addition to the centre philosophies, care and learning approach and NQF High Quality Practice Standards.

No amplification of music or sound outside the building.

the operable windows on the eastern façade of the classroom for 2 to 3-year-old children (W 1-04) and the western façade of the classroom for 3 to 5-year-old children (W 1-23) are required to be closed when the classroom is in use. In addition, the classroom for 2 to 3-year-old children is required to have acoustic absorption to 50% of the ceiling with an NRC of noise less than 0.7 to reduce the reverberant build-up of sound in that space.

To satisfy the internal RNP noise target of 35 dB(A) for sleeping areas, the window on the western façade of the cot room (W G-11) is required to be closed when the cot room is in use.

Air conditioning will only be run during business hours.

When playing outdoors educators will constantly monitor children's behaviour and take any child inside who is crying or screaming if they cannot be settled quickly then returned to outside play.

Acoustic fencing and balustrades will be installed and maintained in accordance with the approved development application plans and in accordance with the recommendations of the acoustic consultant.

Property maintenance shall be undertaken at times and in a manner so as to not cause "*offensive noise*" as defined by the Protection of the Environment Operations Act 1997. Maintenance activities shall also satisfy relevant provisions of the Protection of the Environment Operations (Noise Control) Regulation 2008 at all times.

Car Parking

Parents/visitors/staff will have access to 19 car spaces: 18 in the basement and one on ground level. . This includes 1 accessible space that will include space to facilitate wheelchair access.

Upon enrolment of a child, parents/carers will be provided with information regarding the availability and use of the 18 car parking spaces in the basement car park. The car space on ground level is for a staff.

Staff arriving for the 7am start to open the centre will park in the basement (if they are driving).

Staff and parents/carers will be encouraged to walk or use public transport.

Upon enrolment of a child, information / instructions will be provided to all parents/carers regarding the need to comply with parking rules and signage. A sign to this effect will also be displayed in prominent locations within the centre.

The wording of the information/instructions will include the following:

> *Parents **MUST NOT** park cars in the following manner when visiting the centre:*
>
> 1. *Within any bus zone.*
> 2. *Double or triple park on any public street.*
> 3. *Across driveways.*
> 4. *On footpaths or road verges.*
> 5. *In any "No Stopping" zone or other areas where vehicles are prohibited to park under Motor Traffic Regulations.*
>
> *The traffic/parking arrangements will be reviewed within 6 months and 12 months of the commencement of service operations and then again every 12 months in line with the regular review schedule.*

Delivery of Goods and Services

The delivery of goods and services will only occur outside peak drop off/pick up hours and whilst staff are present at the centre to accept delivery.

Waste Management

Where possible, food waste will be recycled as compost used in the gardens and as an integral part of the process of promoting on-site sorting and storage of waste products pending re-use or collection with the aim of maximising re-use and minimising disposal.

In addition to composting kitchen and green waste, the centre will use recyclable materials such as paper, plastics etc for the use of children's creative/cognitive box construction. Each play space will have its own storage for re-usable material. This is our way of providing on-going management for waste handling and minimisation in the premise by making it part of the daily life of the centre. Further, this process helps towards promoting and minimising waste and fostering the principles of ecologically sustainable development (ESD) involving the community.

Waste will be collected in the commercial waste/recycling bins to be collected on the street by the council during routine collection schedule.

Bin sizes, quantities, and/or collection frequencies may be modified by the building manager once the proposed development is operational. Building management will be required to negotiate any changes to bins or collections with the collection service provider. Seasonal peak periods such as public and school holidays should also be considered.

Childcare staff will be responsible for storing the waste and recyclables in each play room on a daily basis. General waste and recycling receptacles should be paired next to each other in convenient locations such as offices, kitchens, and playrooms. Nappies must be bagged before being placed into the hands free lidded bin.

On completion of each trading day or as required, nominated staff or contracted cleaners will transport the waste and recyclables to the Bin Storage Room via the lift or stairs, and place into the designated receptacles on Ground Floor.

The centre will use waste services such as Pink Hygiene Solutions for special waste such as sanitary items. Specialised waste will be collected as required.

Complaints Procedure

The child care centre will implement a complaints procedure, including a complaints telephone number which will be capable of receiving and recording complaints at times the centre is not operating.

The owner/operator will maintain a "Complaints Register" recording details of any incident that occurs (including the time of the incident), a description of the incident and any actions taken by the management of the Centre in response to the incident. All complaints must include the details of the person reporting the incident including a contact phone number so that management may follow up any complaint. The option will be given to a Complainant as to whether a complaint is confidential or non-confidential.

An "*Incident*" includes:

- any breach of this Plan; or
- any complaint by any person about the operation of the Child Care Centre.

The owner/operator must investigate any incident within 5 working days and the Complainant will receive a response within 10 working days detailing what action has been taken (if any action is deemed necessary) in order to address the complaint or concern.

The Complaints Register must be updated within 24 hours of any incident/complaint. The owner/operator must review and initial and date all entries made in the Complaints Register in his/her absence whenever he/she is next at the centre.

The Complaints Register will be made available to Council officers for inspection upon request.

The owner/operator must review the Complaints register regularly and where appropriate amend this Plan so as to eliminate the possibility of the incident recurring or to minimise the impacts of the incident should it recur.

All valid complaints shall be investigated and resolved to the best of the childcare centre's abilities as soon as possible.

TBA upon operational state.

Review of Plan of Management

In order to ensure the Plan of Management remains relevant, the Plan of Management will be reviewed:

- Upon any change in relevant legislation.
- If, as a result of a compliant and actions taken in response to that complaint, changes to the Plan of Management are warranted.
- Annually, in relation of centre policies and procedures as required by the National Quality Standards.

Emergency Procedures

Prior to commence of operation of the centre, a risk management plan will be prepared to assess the likelihood of possible emergencies and develop a range of emergency procedures in line with these risks.

These procedures will include emergency evacuation and lock down.

Regulation 97 requires emergency and evacuation procedures to be rehearsed at least every 3 months. Rehearsals should take place at various times of the day and week to ensure that everyone at the service has the opportunity to rehearse. These drills are to be documented to allow for reflection on their effectiveness.

The service will conduct emergency drills more often than required under the Education & Care Services National Regulations as these will be done on a monthly basis.

Emergency Evacuation Plan

Prior to commencement of operation of the centre, a comprehensive Emergency Evacuations procedure will be prepared by a licensed and accredited fire expert. Fire evacuation plans will be installed around the centre as per the expert's recommendations. This plan and the procedures will be checked by DET before a license to operate the centre is issued.

All rooms and outdoor play areas will have an emergency pack which includes whistles for teachers, roll call list, emergency contact details, a torch, water bottle. Staff will take this should an emergency evacuation be necessary.

All rooms will also have the relevant evacuation equipment for each age group such as emergency evacuation cot, the grab and go straps and rope with straps for the children to hold on to.

Management will ensure staff are appropriately trained in the use of fire safety equipment and fully understand the evacuation procedures in the case of a fire emergency. In addition, practice fire drills will occur at least every 3 months to ensure that all staff and children are proficient in the procedures.

Emergency evacuation procedures that are based on the service's floor plans will be prominently displayed near each emergency exit. The Emergency Evacuation Procedure will detail the steps to be taken in the event of an evacuation including specific roles that need to be carried out by staff.

The service will maintain an up-to-date and compact register of emergency telephone numbers that must be taken in an emergency or evacuation.

Emergency telephone numbers will be displayed prominently throughout the service near all telephones.

The service will ensure educators are provided with training on how to use fire extinguishers, fire blankets and other emergency equipment.

Fire extinguishers, fire blankets and other emergency equipment will be tested as recommended by the manufacturer by recognised authorities. All tests must be documented.

Emergency and evacuation procedures will be discussed with families and regular information will be provided to families.

The Nominated Supervisor is responsible for ensuring that all educators, including relief educators and staff members, are aware of the service's policies and procedures relating to Emergency Management and Evacuation.

Informal games and discussions will be used to familiarise children with the service's evacuation and emergency procedures.

The service has a range of evacuation equipment to cater to the various ages and mobility of children. This will include a portable emergency evacuation cot, 'grab and go' straps and evacuation ropes. Part of the evaluation process when evacuation practices are done is to determine any issues or challenges that need to be addressed.

Proposed Evacuation Procedure

Evacuation and emergency procedures will be finalised with consultation from expert prior to service approval.

Evacuation signal will be a whistle blown for 3 seconds and repeated as necessary until all areas are aware of need to evacuate.

Whom ever blows the whistle will also call where emergency is within the building.

Upon hearing the signal the educator in the area will gather the group of children and tell them where they are walking to. For example "Let's hold hands and walk to the door"

Children will be gathered for a head count before leaving their area and then each level will have a staggered route down the fire stairs.

The responsible person on duty will collect the sign on sheets from reception area (or tablet if electronic sign in) and the emergency evacuation bag/phone on the way out. They will call emergency services.

If the responsible person is supervising a group of children another educator who is close by will take over supervision of those children.

When all children and staff are assembled the responsible person will call the roll to ensure everyone is at the assembly area.

Meeting evacuation point is shown on the emergency evacuation diagram.

Evacuation from each level would be staggered and the order determined by a fire evacuation expert and then modified if necessary after reflection/evaluation of drills had occurred.

Children will be seated at the evacuation area and sing songs/have stories until the all clear to return to the play rooms is given or await collection from the parent.

The service has a supply of food available on site should an emergency occur that prevents children leaving the site.

Draft Lock down Procedure:

Whilst many emergency situations will require staff and children to evacuate from the Service, there are potential situations that will require the Service to go into 'lockdown'.

Within early childhood services there are two types of lockdown that may be required:

- '**Full lockdown'** indicating that there is a potential threat outside that you wish to prevent from entering the building. For example:
    - Potentially dangerous unwanted or uninvited intruder
    - Potentially dangerous person due to intoxication or substance abuse
    - Receiving an emergency services warning about a reported incident or civil disturbance
- '**Shelter-in-place'** which generally will be required when there is a real or perceived threat to health or safety. For example:
    - Severe storms
    - Extreme smoke from a local or distant bushfire
    - Chemical or hazardous substance spill
    - Gas leak / atmospheric hazardous substance
    - Flood outside of the service
    - Unidentified dangerous animal or insects

Lockdown means that all windows and external doors are locked, and where possible internal doors are locked, and blinds closed.

For a 'Shelter-in-place' lockdown children are able to participate in the usual experiences and activities: However, for a 'Full lockdown' children and adults must be moved to a room/position that does not allow them to be viewed.

Risk assessment in possible emergency situations:

Type of emergency	**Issue**	**Risk**	**Control strategies**
Any evacuation	Child wanders off	Possible	Younger children have grab and go straps. Older children hold the rope.
Any evacuation	Traffic	Possible	Responsible person will have a safety vest and stop traffic if required.

Any emergency	Child distress	Likely	Have regular practice drills and discussions about how the children will be kept safe. Regular visits from emergency services such as fire brigade to assist children become familiar with sirens/lights.
Any evacuation	Children may be asleep when evacuation occurs	Possible	Have practice drills during these times.
Any emergency	Phone line is cut	Possible	Responsible person to take alternate phone such as mobile.

Appendix One: Operational Policies

The Education and Care Services National Regulation 168 requires the service to have the following policies that will be developed before the service approval is granted.

(a) health and safety, including matters relating to—
(i) nutrition, food and beverages, dietary requirements; and
(ii) sun protection; and
(iii) water safety, including safety during any water-based activities; and
(iv) the administration of first aid; and
(v) sleep and rest for children;
(b) incident, injury, trauma and illness procedures complying with regulation 85;
(c) dealing with infectious diseases, including procedures complying with regulation 88;
(d) dealing with medical conditions in children, including the matters set out in regulation 90;
(e) emergency and evacuation, including the matters set out in regulation 97;
(f) delivery of children to, and collection of children from, education and care service premises, including procedures complying with regulation 99;
(g) excursions, including procedures complying with regulations 100 to 102;
(ga) if the service transports or arranges transportation of children other than as part of excursions, transportation including procedures complying with Division 7 of Part 4.2 of Chapter 4;
(h) providing a child safe environment;
(i) staffing, including—
(i) a code of conduct for staff members; and
(ii) determining the responsible person present at the service; and
(iii) the participation of volunteers and students on practicum placements;
(j) interactions with children, including the matters set out in regulations 155 and 156;
(k) enrolment and orientation;
(l) governance and management of the service, including confidentiality of records;
(m) the acceptance and refusal of authorisations;
(n) payment of fees and provision of a statement of fees charged by the education and care service;
(o) dealing with complaints.

The Acoustic Group

CONSULTING ACOUSTICAL AND VIBRATION ENGINEERS

ACOUSTICAL ASSESSMENT
PROPOSED CHILD CARE CENTRE
31 TELOPEA STREET, PUNCHBOWL
52.5470.R2A:MSC

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CONTENTS

APPENDICES

1.0 INTRODUCTION

The purpose of this report is to present the results, findings and recommendations of an acoustic assessment with respect to the proposed Childcare Centre at 31 Telopea Street, Punchbowl.

The subject site currently has a single-storey residential dwelling. The project involves demolishing the residential dwelling at the site for the construction of a two-storey Childcare Centre with basement level parking. The proposed Childcare Centre will have a maximum capacity of 74 children.

Our acoustic assessment of the proposed Childcare Centre utilises the unattended noise monitoring data from Rodney Stevens Acoustics ("RSA") which were conducted at the site between Monday 21 June to Tuesday 28 June, 2021. The first half of the RSA unattended noise monitoring period occurred prior to the commencement of public school holidays and the Greater Sydney lockdown on Saturday 26 June, 2021.

To supplement the RSA unattended noise monitoring results, The Acoustic Group conducted attended measurements in the rear yard and front boundary of the site on the afternoon of Thursday 26 August 2021.

2.0 THE SITE

The subject site is located on the northern side of Telopea Street and currently has a single-storey dwelling.

Telopea Street is a local road which was observed to have a low volume of traffic during our site visit.

Approximately 430 metres to the north-east of the site is King Georges Road which is an arterial road that carries a significant volume of traffic throughout the day and night-time periods.

To the north of the site (approximately 60 metres from the rear boundary) is Wattle Street which falls under the definition of a collector/sub-arterial road in Table 2 of the EPA's *Road Noise Policy* as it connects the local roads to arterial roads (King Georges Road, Greenacre to the east and Stacey Street, Bankstown to the west).

The noise of traffic on King Georges Road and Wattle Street controls the acoustic environment at the site and immediate surrounding area.

Adjacent to the northern boundary of the site is the residential premises of 42 Wattle Street which has three villa dwellings. The southern villa dwelling (nearest to the Childcare Centres site) is a single storey building,

As a result of the topography at the site, which slopes downwards as one moves in a northerly direction, the ground level of 42 Wattle Street is below the elevation of the Childcare Centre. It was noted during our site view that the eave of the southern villa dwelling at 42 Wattle Street has a similar elevation to the top of the existing 1.8 m high Colorbond fence at the rear boundary of the site and that there was no direct line-of-sight from the rear yard of the site to the windows of the dwellings at 42 Wattle Street.

Adjacent to the eastern boundary of the site is the residential premises of 29 Telopea Street which has a single-storey dwelling with windows that will not overlook the outdoor play areas of the proposed Childcare Centre.

Adjacent to the western boundary of the site is the residential premises of 33 Telopia Street which has a two-storey dwelling. The residential dwelling has a balcony at the rear of the first floor level which is adjacent to the proposed Childcare Centre building and therefore has a limited view of the outdoor play areas at the rear of the Childcare Centre site.

To the north-west of the site is a two-storey duplex at 44A Wattle Street. The southern façade of the dwelling is approximately 22 metres from the rear boundary of the site and is subject to shielding of noise emission from the Childcare Centre by the villa dwelling at 42 Wattle Street

Opposite the site, on the southern side of Telopea Street are residential premises with single and two-storey dwellings.

The architectural drawings of the proposed Childcare Centre prepared by Place Studio (project no. 2021013, revision D, dated 25 January 2021 – but should be 2022) identify that the project involves demolishing the existing residential dwelling at the site for the construction of a two-storey Childcare Centre facility with basement level parking.

The proposed Childcare Centre will have an outdoor play area on the ground floor level and a passive outdoor play area on a first floor level rear deck. Much of the ground floor outdoor play area is subject to acoustic shielding by the full-height barriers along the eastern and western sides of the Childcare Centre building and the first floor level slab above.

3.0 ACOUSTIC CRITERIA

In terms of general noise criteria, it is common practice for industrial and commercial activities operating on a continuous basis to utilise a concept of ambient background +5 dB(A) at residential receivers. The assessment is normally taken at the nearest residential boundary. This criterion, in terms of EPA noise policies, is described as the "intrusiveness" noise level.

Normally the Council in acoustic matters rely upon criteria issued by the EPA and in particular the EPA's *Noise Policy for Industry* ("NPfI") or the *Noise Guide for Local Government* ("NGLG"). Neither of the two EPA documents specify noise emission limits for Childcare Centres, and in particular noise emitted from outdoor play areas.

The NPfI does not provide specific noise emission criteria for Childcare Centre developments. Sections 1.4 and 1.5 of the policy indicates that the noise criteria set out in the policy could apply to the noise emission of mechanical plant servicing the Childcare Centre (i.e., a commercial premises), but would not be applicable to the noise emission of children conducting indoor/outdoor play.

Section 1.4 of the NPfI identifies the noise sources that are appliable to the policy which includes "commercial premises (generally limited to noise from heating, ventilation, air conditioning and refrigeration, and energy generation equipment)".

Section 1.5 of the NPfI provides a list of noise sources that are excluded from the policy. The list identifies that the policy does not apply to "amplified music/patron noise from premises including those licensed by Liquor & Gaming NSW".

As a result of Council amalgamations, several different DCPs apply to the City of Canterbury Bankstown Local Government Area, being the Bankstown DCP 2015 and the Canterbury DCP 2012.

Section 5, Part B6 of the Bankstown DCP relates to the acoustic privacy and management of Childcare Centres. The Bankstown DCP specifies that air conditioning, mechanical ventilation or any other continuous noise source most not exceed the ambient level at any specified boundary by more than 5 dB(A). The Bankstown DCP does not provide any quantitative noise criteria in relation to the noise emission of outdoor play.

Part F2.13 of the Canterbury DCP relates to the visual and acoustic privacy of Childcare Centres but does not provide any quantitative noise criteria.

It is noted that the State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 identifies in Clause 26 that DCP criteria/restrictions in relation to the operation of Childcare Centres (i.e., prior to the Educational Establishments and Child Care Facilities SEPP) no longer apply.

There is debate that because of Clause 26 of the Educational Establishments SEPP whether any DCPs produced prior to the issue of the SEPP that provide restrictions on the operation of a Childcare Centre are valid. As Part B6 of the Bankstown DCP was amended in December 2019, it would appear that the requirements/standards/controls to the operation of Childcare Centres in the Bankstown DCP apply to the subject development.

Part F2 of the Canterbury DCP has not been amended since the DCP was originally issued and therefore, from the Educational Establishments SEPP, it would appear that the requirements/standards/controls to the operation of Childcare Centres in the Canterbury DCP may not be applicable.

For various Childcare Centres/Pre-Schools/Kindergartens/Long Day Care Centres that have come before the Land & Environment Court of New South Wales, there has been no adjustment for tonality associated with children playing, although there have been adjustments in terms of the general background +5 dB(A) criterion in relation to the total duration of the outdoor play.

The Land & Environment Court has adopted over the years the concept of reduced use of outdoor areas for active play to permit a noise criterion of background +10 dB for outdoor play areas where outdoor play occurs for 2 hours per day or less. This concept has been adopted by the Association of Australasian Acoustical Consultants (“AAAC”) as recommended criteria for outdoor play at Childcare Centres. Where the outdoor play exceeds 2 hours per day, the noise limit reduces to the general background +5 dB(A) limit.

This position of referring to the AAAC Guideline and/or the relevant DCP (that specifies noise limits) represents the current practice of the Land & Environment Court with respect to acoustic criteria for Childcare Centres.

The Council has in matters before the Land & Environment Court relied upon the AAAC Guideline for Childcare Centres. The AAAC Guideline that has been before the Land & Environment Court for various childcare centre applications has been Version 2 (dated October 2013). In September 2020, the AAAC released Version 3 of the guideline that alters the noise source levels for the children and also recommends a base criterion of 45 dB(A) for the assessment of **outdoor play** in residential areas where the background noise level is less than 40 dB(A).

Version 3 of the AAAC Guideline permits the use of a background +10 dB noise criterion for outdoor play areas, where outdoor play occurs for up to 4 hours per day (limited to no more than 2 hours in the morning and 2 hours in the afternoon). Where outdoor play exceeds 4 hours in total per day (i.e., more than 2 hours in the morning and 2 hours in the afternoon), then the noise limit reduces to background +5 dB(A)

There is no technical justification in Version 3 of the AAAC Guideline as to why on a total Leq basis that the background +10 dB noise target for 2 hours of outdoor play in Version 2 of the Guideline has been extended to 4 hours of outdoor play per day. Several Councils before the Land & Environment Court have rejected the use of the background +10 dB noise target for outdoor play operations to 4 hours per day.

In many situations, barriers may be erected to reduce noise emission from the site (or noise intrusion to the site), in addition to the provision of a management plan to identify the use of the outdoor areas.

With the arrival of staff prior to the operating hours of the Childcare Centre, there is a possibility that the driveway to the basement level carpark will be in use before 7:00 am. The use of the driveway prior to 7:00 am falls under the night-time period set out in the NPfI.

Section 2.5 of the NPfI specifies that where the night-time noise levels (from industrial noise sources) at residential locations exceed the following limits, a detailed maximum noise level event assessment should be undertaken.

- an $L_{Aeq,\ 15\ minutes}$ noise target of 40 dB(A) or the prevailing Rating Background Level +5 dB whichever is the greater, and/or
- a maximum level of 52 dB(A) or the prevailing Rating Background Level +15 dB whichever is the greater.

There is normally a requirement to consider the noise impact from external road traffic on the Childcare Centre. In considering noise impacts from external road traffic on the Childcare Centre, Table 4 of the EPA's *NSW Road Noise Policy* ("RNP") provides the following noise criteria:

- The maximum internal noise level within sleeping and indoor play areas of the centre to be 35 dB(A) and 40 dB(A) respectively during operation when assessed as an $L_{Aeq,\ 1\ hour}$.
- The maximum noise level in the outdoor play areas of the centre to be 55 dB(A) during operation when assessed as an $L_{Aeq,\ 1\ hour}$.

The RNP provides road traffic noise assessment criteria in terms of existing residences affected by additional traffic on existing roads generated by land use developments. For residences affected by additional traffic on local roads, Table 3 of the RNP specifies an $L_{Aeq,\ 1\ hour}$ of 55 dB, whilst for additional traffic on freeways, arterial roads and sub-arterial roads the noise target is an $L_{Aeq,\ 15\ hours}$ of 60 dB (façade corrected, external to residential buildings). If such levels are already exceeded, then traffic noise associated with the development is permitted to be 2 dB above the existing noise level.

Telopea Street is a local road. Therefore, the additional traffic generated by the Childcare Centre has been assessed with respect to the RNP's 1 hour L_{Aeq} noise target of 55 dB.

From the RNP and the AAAC Guideline (version 3), the following noise targets would apply:

- Internal noise levels (from road traffic) 40 dB(A), $L_{Aeq,\ 1\ hour}$
- Internal noise levels of cot rooms (from road traffic) 35 dB(A), $L_{Aeq,\ 1\ hour}$
- External play areas (from road traffic) 55 dB(A), $L_{Aeq,\ 1\ hour}$

- When the total outdoor play occurs for more than 2 hours per day in either the morning or afternoon (i.e., no time restriction to the operation of the outdoor play areas), noise emission from the outdoor play area is not to exceed background +5 dB(A), $L_{Aeq,\ 15\ minutes}$ or 45 dB(A) $L_{Aeq,\ 15\ minutes}$ at residential receivers, whichever is greater
- When the total outdoor play occurs for not more than 2 hours in the morning and not more than 2 hours in the afternoon per day, noise emission from the outdoor play area is not to exceed background +10 dB(A) at residential receivers, $L_{Aeq,\ 15\ minutes}$ or 50 dB(A) $L_{Aeq,\ 15\ minutes}$, whichever is greater
- Noise emission from traffic generated by the Childcare Centre 60 dB(A), $L_{Aeq,\ 15\ hours}$ or existing $L_{Aeq,\ 15\ hours}$ +2 dB where the existing $L_{Aeq,\ 15\ hours}$ exceeds 60 dB(A)

With respect to the EPA's NPfI, there are no industrial noise sources influencing the site and therefore the only applicable NPfI criteria relates to mechanical plant and vehicles arriving before 7:00 am. For the vehicle movements prior to 7:00 am, the following criteria have been applied:

- Noise emission from vehicles on site before 7:00 am not to exceed background +15 dB or 52 dB L_{AFmax} at bedroom windows (considered to the be most sensitive location for assessing sleep disturbance), whichever is greater
- Noise emission from vehicles on site before 7:00 am not to exceed background +5 dB(A) or 40 dB(A) $L_{Aeq,\ 15\ minutes}$ at bedroom windows, whichever is greater

4.0 AMBIENT MEASUREMENTS

To utilise the acoustic criteria in the previous section, it is necessary to obtain ambient background (L_{90}) and L_{eq} levels to be applied at the residential boundaries, and on the site respectively.

Whilst one can utilise ambient background levels from short duration measurements for compliance purposes, the preferred procedure set out in the NPfI during the planning and consent stage is to conduct noise monitoring over a period for several days so as to determine the daily background noise levels, which in turn are used to determine the Rating Background Level ("RBL") to be used for assessment purposes.

With respect to the NPfI document, the background level is classified in terms of a daytime period (7.00 am to 6.00 pm), an evening period (6.00 pm to 10.00 pm), and a night time period (10.00 pm to 7.00 am), except for Sundays and public holidays when the night time period is extended to 8.00 am.

Our acoustic assessment of the proposed Childcare Centre utilises the unattended noise monitoring data from RSA which were conducted in the front and rear yards of the site between Monday 21 June to Tuesday 28 June 2021.

Section A1.3 in Fact Sheet A of the NPfI specifies that air, road and rail traffic noise during times that the transport flows are not representative of normal conditions (for example, traffic during school holidays) are considered to be extraneous. Therefore, under EPA procedures, the RSA unattended noise monitoring data from Saturday 26 June 2021 onwards (when the Greater Sydney lockdown and public school holidays commenced) have been excluded from the determination of the RBL.

Observation of data from the Bureau of Meteorology weather station at Bankstown Airport indicates that there were periods of adverse weather (rain and strong winds) on the afternoon of Friday 25 June 2021. In accordance with Section B1.3 in Fact Sheet B of the NPfI, the noise logger data obtained on Friday 25 June 2021 has also been excluded from the determination of the RBL.

Appendix B of this report presents extracts of the RSA logger graphs.

The RSA logger graphs for the period of Monday 21 June to Thursday 24 June 2021 (inclusive) identify a daytime RBL of 39 dB(A) at the front and rear of the Childcare Centre site.

With respect to the noise emission from outdoor play, the daytime RBL measured in the rear yard of the Childcare Centre site is less than the 40 dB(A) threshold identified in the AAAC Guideline (version 3) to apply for outdoor play assessments. Therefore, the base criterion of 45 dB(A) has been applied to the nearest residential receivers for the assessment of noise emission from outdoor play.

To supplement the RSA unattended noise monitoring results, The Acoustic Group conducted attended measurements in the rear yard (Location 1) and at the front boundary of the site (Location 2) on the afternoon of Thursday 26 August, 2021.

The sound level measurements obtained by The Acoustic Group were taken in accordance with Australian Standard AS1055 *Acoustics – Description and Measurement of Environmental Noise* and the ambient background measurement procedures set out in Fact Sheet B of the Environment Protection Authority's*, Noise Policy for Industry*.

The measurements were conducted using a Brüel & Kjær Sound Level Meter Type 2250 (serial no. 3009280). The reference calibration of the meter was checked prior to and after measurements and exhibited no deviation. The calibration of the meter to manufacturer's requirements is current.

The results of the attended measurement are provided in Appendix C as an A-weighted time splice graph and a table of statistical octave band data.

During the attended measurements, the weather conditions were overcast and warm (18 ^{o}C) with occasional light southerly wind gusts detected at the site.

The attended measurement conducted in the rear yard of the site (adjacent to the RSA logger location) revealed an ambient background level of 36 dB(A) which was the result of distant traffic to the north-east on King Georges Road and to the north on Wattle Street, with intermittent noise from birds and a dog barking giving rise to an ambient Leq level of 50 dB(A).

The RSA logger graphs show the weekdays having background levels during the morning and late-afternoon/evening periods that are generally higher than the background levels around midday which is typical of sites that are affected by road traffic noise (because of influence from the peak periods of road traffic).

During the daytime period (7:00 am – 6:00 pm), the unattended monitoring conducted by RSA in the rear yard reveals background levels of 35 dB(A) to 48 dB(A) with the 48 dB(A) background level related to the morning period of peak traffic. The lowest tenth percentile of daytime background noise levels occurs around midday and ranges between 36 dB(A) and 43 dB(A).

The attended measurements occurred during the COVID-19 lockdown which resulted in a significant reduction to the road traffic throughout the Greater Sydney area and in turn, gave rise to ambient noise levels that are lower than typical. As a result, the background level of 36 dB(A) determined from our attended measurement in the rear yard of the site is at the lower range of background levels measured by the RSA unattended noise logger.

Monitoring at the front boundary of the site (Location 2) revealed a higher ambient background level of 40 dB(A) as the front of the site has a greater exposure to the general traffic roar of distant traffic on King Georges Road. The ambient Leq of 59 dB(A) measured at the front boundary of the site was the result of individual vehicles passing the monitoring location on Telopea Street and the alarm of a vehicle parked near the monitoring location from 1:21 pm to 1:24 pm.

The unattended monitoring conducted by RSA in the front yard of the site revealed background levels of 40 – 44 dB(A) for a similar time period during the day which generally agrees with our attended measurement results at Location 2. However, the Leq levels of 50 – 62 dB(A) determined by the RSA logger in the front yard is less than our attended measurement result by reason of the RSA logger being further removed from the path of the vehicles on Telopea Street than our attended measurement at Location 2.

In terms of potential sleep disturbance from the arrival of Childcare Centre staff prior to 7:00 am on weekdays and utilising the L90 background levels obtained by the RSA noise logger at the front of the site on Tuesday 22 June to Thursday 24 June (set out in Appendix B), the background level (using the shoulder period methodology set out in Section A3 of the NPfI) for the period of 6:00 am to 7:00 am becomes 44 dB(A).

The primary function of considering the background level in the 6:00 am to 7:00 am period is in relation to the use of the driveway to the basement level carpark by staff arriving before the Childcare Centre opens for business, where such vehicle movements before 7:00 am falls within the night-time period set out in the NPfI document.

The background level of 44 dB(A) in the front yard of the site for the period of 6:00 am to 7:00 am gives rise to a sleep arousal criterion of 59 dB(A) L_{AFmax} and an $L_{eq,\ 15\ minute}$ criterion of 49 dB(A) outside bedroom windows at the front of the dwelling at 33 Telopea Street (which is adjacent to the driveway).

5.0 ACOUSTIC ANALYSIS

5.1 Impact of Childcare Centre on Surrounding Neighbourhood

In relation to the assessment of noise emission of the Childcare Centre we rely upon the noise source levels nominated in Table 1 of the AAAC Guideline (version 3).

With respect to the noise emitted from children playing, Version 3 of the AAAC guideline amends the noise source level data to provide a single sound power level for each of the different age groupings (rather than a range of sound power levels that were provided in version 2 of the AAAC Guideline). Therefore, if one adopts a worst case scenario, it would be using the single (only) sound power level value for the respective age groupings and considering all children generating the relevant sound power level.

Version 3 of the AAAC guideline provides spectral information for the noise emitted from children relevant to the specified age categories and nominates for passive play sound power levels 6 dB below that specified for active play.

Appendix D3 presents a satellite image of the site and surrounding residential properties with an illustration of the residential assessment locations indicated by blue circles. Appendix D4 presents a photo of the dwelling at 29 Telopea Street (from the rear yard of the site) with an illustration of residential assessment location in the north-western corner of the rear terrace (Location B2). Appendix D5 presents a photo of the dwelling at 33 Telopea Street (from the rear yard of the site) with an illustration of the residential assessment locations on the rear balcony (Location C2) and the window on the eastern façade of the dwelling (Location C3).

Appendix D6 presents an extract of the ground floor plan with an illustration of the outdoor play noise source locations and residential assessment locations adjacent to the site. Appendix D7 presents an extract of the first floor plan with an illustration of the first floor level outdoor play noise source locations.

With respect to the residential premises adjacent to the northern boundary of the site (42 Wattle Street), the assessment of noise emission from the Childcare Centre has been conducted at the southern façade of the rear villa dwelling (Location A). It is noted that the ground level of 42 Wattle Street is below the elevation of the subject site with the eave of the villa dwelling being at a similar elevation to the existing 1.8 m high fence along the rear boundary.

The assessment of noise emission from the Childcare Centre to the residential premises adjacent to the eastern boundary of the site (29 Telopea Street) has been conducted in the rear yard (Location B1) and the north-western corner of the terrace at the rear of the dwelling (Location B2). During our site view, balustrades were observed around the sides of the terrace which indicates that the terrace is elevated above the natural ground level. This assessment considers the floor level of the terrace to have the same elevation as the floor level of the dwelling.

For the two-storey dwelling at 33 Telopea Street (adjacent to the western boundary of the site), the noise emission of the Childcare Centre has been conducted in the rear yard (Location C1), the balcony at the rear of the first floor level (Location C2) and the first floor level window on the eastern façade of the dwelling (Location C3).

With respect to the residential premises to the north-west of the site (44A Wattle Street), the assessment of noise emission from the Childcare Centre has been conducted with respect to the first-floor level window on the southern façade of the duplex which is subject to acoustic shielding by the building at 42 Wattle Street.

With respect to the residential receivers to south of the site (on the opposite side of Telopea Street), the noise emission of outdoor play will be significantly below the ambient background level because of distance attenuation and shielding by the Childcare Centre building.

5.1.1 Outdoor Areas

For this assessment the use of the outdoor play areas has been based on the background + 5 dB(A) noise target, not the background + 10 dB(A) target that could be applied for 2 hours or 4 hours a day (depending upon the position of Council).

The development of larger Childcare Centres and the requirement for outdoor activities has led to the concept of passive areas/activities that may be separate (physically and in time) to active activities. The use of a Plan of Management document to identify the different activities/areas form the development of the Childcare Centre in accordance with regulations governing the operation of a Childcare Centre. The different types of outdoor activities have different noise emission levels that form the basis of this acoustic assessment.

Table 1 below identifies the range of effective sound power levels nominated in the AAAC guideline for groups of 10 children playing.

Table 1: Effective Sound Power Levels for groups of 10 children playing

Age Group	dB(A)	Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
10 Children (0-2 years)	78	54	60	66	72	74	71	67	64
10 Children (2-3 years)	85	61	67	73	79	81	78	74	70
10 Children (3-5 years)	87	64	70	75	81	83	80	76	72

Effective Sound Power Level for “n” children = Effective Sound Power Level for 10 children + 10 log (n/10)

The Level 1 plan (sheet no. 2002, revision C, dated 22 November 2021) identifies the first floor level deck is a “quiet outdoor play” area. Therefore, this assessment considers the use of the first floor level deck for passive play.

With respect to the sandpits in the north-western corner and the eastern side the of the ground floor outdoor play area (Source Locations 1 and 10 respectively), observations of operational Childcare Centres have found children in sandpits to normally be sitting on the sand and playing in a quiet manner. Our measurements and measurements by other acoustic consultants have found sandpit activities to generate noise emission levels similar to that of passive play. Therefore, this assessment utilises passive play sound power levels for Source Locations 1 and 10, whilst the remainder of the source locations in the ground floor outdoor play area utilise active play sound power levels.

Our analysis considers the children distributed across the outdoor area and a worst-case scenario of all children talking/playing simultaneously at the A-weighted sound power levels nominated by the AAAC guideline. This is a more conservative than the approach adopted by other acoustical engineering firms which in some cases may consider one-third of the children talking simultaneously. As an averaged level across the entire play area can lead to an underestimate of noise emission, our analysis utilises nominated source locations and groups of children per source location, noting that typically children move around the play area and do not remain at a fixed location over a 15-minute period, except for the use of a sandpit.

From the A-weighted and octave band sound power levels nominated in the AAAC Guideline, the relevant distance attenuation and shielding effects were determined for each source location so as to derive a contribution with respect to each receiver location.

Examination of the plans reveals, with respect to acoustics, much of the ground floor play area is located under the first floor slab (see Appendix D6) and similarly for the first floor level much of the outdoor play is under a solid roof (see Appendix D7).

For the original design of the development, to provide acoustic shielding of noise emission from the outdoor play areas to the nearest residential receivers, based on our assessment the following noise control measures are to be incorporated into the design of the Childcare Centre:

- The eastern and western boundary fence adjacent to the outdoor play area (up to two metres past the northern alignment of the Childcare Centre building) and the northern boundary fence are to have a height of 2 metres above the finished ground level of the outdoor play area. The barriers are to have a solid construction (i.e., no gaps) such as lapped-and-capped timber or similar with a density not less than 12 kg/m^2;
- Full-height barriers to the ground floor outdoor play area along the eastern and western sides of the Childcare Centre building. The eastern and western elevation drawings (sheet no. 4002, revision C, dated 22 November 2021) identify the full-height barriers to be transparent. The full-height barriers are to be constructed from 10.38 mm thick laminated glazing.

- To reduce the reverberant build-up of sound in the covered outdoor play areas, 50% of the ceiling above the ground floor and first floor outdoor play areas are to be lined with acoustic absorptive material that has a noise reduction coefficient ("NRC") of not less than 0.85 which can be CSR Martini Absorb MD50 polyester insulation and a perforated ply, plasterboard, metal or similar facing (open area not less than 23%). Alternatively, the acoustic absorption can be achieved by treating the ceiling with a 75 mm thick layer of Envirospray 300; and
- The northern, eastern and western sides of the Level 1 passive outdoor play area are to have a 1.5 metre high barrier with a solid construction (i.e., no gaps). The barrier can be constructed from 6.38 mm thick laminated glazing, 10 mm thick solid (not multi-cell) polycarbonate or 12 mm thick Perspex.

Appendices D8 – D9 presents illustrations of the proposed barriers in plan view.

The provision of a table of predicted noise levels, whether by a computer program or manual calculations, does not in itself identify the analysis that has been undertaken or provide material that would permit an independent review/validation of the predicted levels. To address this issue, Appendix D presents the methodology used in the analysis of noise emission from children in the outdoor play areas by identification of the allocated noise source locations, the receiver assessment locations, the height of the source/receiver locations, the number of children at each noise source location and the type of activities occurring at the noise source locations.

As the Childcare Centre has multiple outdoor play areas and combinations of age groups that can utilise the outdoor play areas simultaneously, Appendices D10 to D15 provide results of the Predictor-Lima V2021.1 computer noise model as noise contours for the different age groups utilising the individual outdoor play areas to the residential receivers adjacent to the Childcare Centre site. The computer noise model was interrogated to determine the A-weighted noise contribution level for all noise source and receiver locations (see tables in Appendices D17 – D20).

In accordance with the AAAC Guideline, the source heights of the children are 1 metre above the ground/floor level whilst the height of the residential assessment locations are 1.5 metres above the ground/floor level.

With respect to the two-storey duplex at 44A Wattle Street, the survey plan prepared by Ramsay Surveyors (reference no. 9031, dated 9 June 2021) does not provide the height of the ground level or the height of the first floor level windows. Taking into consideration the RL height of 33.6 m at the rear boundary of the Childcare Centre site, this assessment considers the first floor level windows of 44A Wattle Street to have an elevation of 33.6 + 4.5 = 38.1 metres.

For the nominated barriers and the various combinations of outdoor play areas being used simultaneously (listed in Table 4), Appendix D16 provides a matrix of cumulative noise emission levels from outdoor play. The matrix in Appendix D21 reveals cumulative noise emission levels from outdoor play that do not exceed the AAAC Guideline's base criterion of 45 dB(A) for outdoor play at all residential assessment locations.

To validate the accuracy of the computer noise model, a sample spreadsheet calculation of noise emission from the 3 to 5-year-old children in the ground floor outdoor play area to Location B (rear yard of 29 Telopea Street) is provided in Appendices D22 – 26. The spreadsheet calculation reveals a total noise contribution of 45 dB(A) which is equal to the results of computer noise model.

For source locations that are subject to acoustic shielding by the boundary fence, the spreadsheet calculation reveals noise emission levels that are within 1 dB of the computer noise model. For source locations in the south-eastern corner of the ground floor outdoor play area (Source Location 10 and Source Locations 12 – 15) that are subject to acoustic shielding by the full-height barrier along the eastern side of the Childcare Centre building, the spreadsheet calculation considers the acoustic shielding by the full-height barrier only which gives rise to higher noise emission levels than the computer noise model (which takes into account the full-height barrier and the boundary fence).

To satisfy the AAAC Guideline's noise target targets for outdoor play, Table 2 below presents the combination of outdoor play areas that can operate simultaneously.

Table 2: Matrix of Outdoor Play Area Operations

Scenario	Ground Floor (active)	First Floor (passive)
1	15 children, 3-5 years	25 children, 3-5 years
2	15 children, 3-5 years	24 children, 2-3 years
3	15 children, 3-5 years	10 children, 0-2 years
4	24 children, 2-3 years	40 children, 3-5 years
5	24 children, 2-3 years	10 children, 0-2 years
6	10 children, 0-2 years	40 children, 3-5 years
7	10 children, 0-2 years	24 children, 2-3 years

From the matrix, the Childcare Centre expert can derive suitable timetables for outdoor play whilst satisfying the noise target and the relevant Childcare Centre operational regulations.

5.1.2 Indoor Areas

Under the AAAC Guideline (version 3) there is a requirement for the cumulative level of noise from indoors areas of the Centre, vehicle movements on site and mechanical plant to not exceed background +5 dB(A).

The architectural drawings identify that the classroom for 0 to 2-year-old children is on the ground floor level and has sliding doors/windows which lead out to the ground floor outdoor play area.

The classroom for 2 to 3-year-old children on the first floor level has windows on the eastern façade which face the residential premises at 29 Telopea Street. The northern and western sides of the 2 to 3-year-old classroom has external doors/windows which lead out to the first floor level outdoor play area and the external terrace in the middle of the first floor level.

The classroom for 3 to 5-year-old children on the first floor level has fixed windows on the eastern and southern facades. The western facade of the 3 to 5-year-old classroom has an awning window which faces the residential premises at 33 Telopea Street, whilst the north-eastern corner of the classroom has a sliding door which leads out to the external terrace.

Typically, the structured nature of the activities that take place indoors (such as structured learning, sleeping and painting, etc.) generate lower noise emission levels in comparison to active outdoor play. For the assessment of noise emission from the classrooms, we have considered general indoor activities to generate noise emission levels equivalent to passive outdoor play (i.e., 6 dB less than active outdoor play). For the occurrence of noisier activities in the classrooms (such as music/singing) we have considered reverberant noise emission levels from such activities to be equivalent to the sound power levels nominated in the AAAC guideline for active outdoor play.

To satisfy the background +5 dB(A) noise criterion, the following operational noise controls to the classrooms are required:

- The classroom for 2 to 3-year-old children is to have acoustic absorption installed to 50% of the ceiling with an NRC of not less than 0.7 to reduce the reverberant build-up of sound in that space;
- The awning window on the eastern façade of the 2 to 3-year-old classroom (W 1-04) is required to be closed when the classroom is in use; and
- The awning window on the western façade of the 3 to 5-year-old classroom (W 1-23) is required to be closed when the classroom is in use.

This assessment of noise emission from the classrooms considers the external doors/windows to the outdoor play areas/external terrace to be open for natural ventilation.

Utilising the same procedure for calculating the noise emission of outdoor play (described in Section 5.1.1 above) but with an additional consideration to the reverberant nature of the classrooms and the attenuation through open doorways/windows, Appendix E presents the noise contours and A-weighted noise contribution levels from the computer noise modelling of the noisy activities occurring in the classrooms.

5.2 Vehicle Movements On-Site

The proposed Childcare Centre will have a basement level carpark. The carpark is accessed via a driveway which runs adjacent to the western boundary of the site.

The ground floor plan (sheet no. 2001, revision C, dated 22 November 2021) identifies that the driveway to the basement level carpark will have a gradient between 1:4 to 1:20.

This assessment utilises previous measurements of vehicles travelling down a 1:6.25 gradient at low speeds which revealed an average SEL of 57.0 dB(A) and a maximum level of 48 dB(A) when measured at a position that has a horizontal distance of 8 metres from the vehicle path and 5.3 metres above the ground (L&EC 254836 of 2016).

The assessment of noise emission from vehicle movements on the driveway has been conducted with respect to the residential premises adjacent to the western boundary of the Childcare Centre (33 Telopea Street) which is nearest residential premises to the driveway.

Appendix F1 presents an illustration of the residential receiver locations for the assessment of noise emission from vehicle movements on the driveway which are at the southernmost window on the western façade of the dwelling (Location C4) and the western end of the covered patio at the front of the dwelling (Location C5).

The noise emission of the vehicle movements on the driveway with respect to the reference assessment locations towards the rear of the site will be significantly below the ambient background level because of distance attenuation and shielding by the Childcare Centre building.

5.2.1 Sleep Disturbance

If staff arrive before the operating hours of the Childcare Centre and utilise the carpark, there is a requirement to consider sleep disturbance of vehicle movements on the site before 7:00 am.

The NPfI presents maximum level and Leq, 15 minute noise targets to be considered as trigger levels for sleep disturbance which are assessed external to bedroom windows.

Taking into consideration distance attenuation to the window at Location C4, the noise of a staff vehicle descending the driveway is calculated to have a maximum level of 49 dB(A) and an $L_{eq,\ 15\ minute}$ level of 28 dB(A).

The arrival of a staff vehicle gives rise to noise levels significantly less than the L_{AFmax} noise target of 59 dB(A) and the $L_{eq,\ 15\ minute}$ noise target of 49 dB(A). Therefore, the threshold levels for an assessment of sleep disturbance are not exceeded an no detailed assessment of maximum noise level events is required.

In terms of the cumulative impact of noise emission from the site prior to 7:00 am, the contribution of mechanical plant and sleep disturbance levels are clearly less than background +5 dB(A).

5.2.2 Drop-Off/Pick-Up of Children

In terms of vehicle movements on site during the operating hours of the Childcare Centre (drop-off/pick-up of children), the vehicle noise (when vehicles are on the site) is required to be assessed in terms of the EPA's intrusiveness noise target of background +5 dB(A) as an Leq over 15 minutes.

The drop-off/pickup of children will occur in the basement level carpark and therefore the primary noise emission of vehicles on site will be the descending and ascending of vehicles on the driveway during the drop-off/pick-up periods.

A vehicle ascending a gradient was measured to have an SEL of 60.6 dB(A) at a position 5 metres horizontally from the vehicle path and 5.3 metres above the ground.

Typically, the drop-off of children occurs over a 2 hour period. Assuming that the arrival of 74 children (maximum capacity of the proposed Childcare Centre) occurs steadily over a 2 hour period, there will be on average 10 children arriving in a 15-minute period. This assessment considers a total of 20 vehicle movements on the driveway (one vehicle movement entering and one vehicle movement leaving per child) in a 15-minute period.

Taking into consideration distance to the residential assessment locations at 33 Telopea Street, the $L_{eq,\ 15\ minute}$ noise level of vehicle movements on the Childcare Centre site during the drop-off period is calculated to be 41 dB(A) at Location C4 and 43 dB(A) at Location C5 (see Appendix F2).

5.3 Mechanical Plant

The noise criteria set out in the EPA's NPfI and the AAAC Guideline are applicable to the noise emission of mechanical plant servicing the Childcare Centre. The EPA's NPfI specifies an intrusiveness noise target of background +5 dB(A) for mechanical plant which is assessed at residential premises.

The AAAC Guideline also specifies a noise criterion of background +5 dB(A) at residential premises but is more stringent than the intrusiveness noise target in the EPA's NPfI as the AAAC noise criterion covers all "other" noise from the Childcare Centre (excluding outdoor play) as a cumulative level. Under the AAAC Guideline, the cumulative other noise emission of the Childcare Centre includes indoor play, vehicle movements on-site and mechanical plant.

Utilising the AAAC Guideline target and the predicted noise for vehicles movements on-site, the assessment determined the permitted maximum noise level of mechanical plant for the subject site (by logarithmic subtraction).

The resultant mechanical plant noise targets set out in Table 3 below have been nominated.

Table 3: Mechanical Plant Noise Targets – dB(A)

Residential Reference Location	Noise Target
A	42
B1	42
B2	42
C1	38
C2	38
C3	38
C4	38
C5	38
D	38

Based on other Childcare Centre developments, achieving the above mechanical plant noise targets is not envisaged to present any major difficulty. At the development application stage, the location and selection of mechanical plant is currently unknown. Normally, identification of mechanical plant associated with the proposed development and controls (if necessary) to comply with acoustic criteria occur at the Construction Certificate stage.

5.4 Cumulative Level of On-Site Noise

As discussed above, under the AAAC Guideline (version 3) the assessment of noise emission from outdoor play is not included in the assessment of cumulative other noise from the site.

Appendix E presents calculations of the noise contribution from indoor play to the various residential reference locations, whilst Appendix F presents calculations of the noise contribution of vehicle movements in the carpark during drop-off/pick-up of children to the front of the adjoining residential premises.

Taking into consideration the calculated noise contribution from vehicle movements in Appendix E and the noise contribution of mechanical plant nominated in Table 5, Appendix F presents the cumulative noise impact of the Childcare Centre site which will not exceed the background levels by more than 5 dB(A).

5.5 Traffic Noise Impact on Outdoor Play Areas

With respect to the traffic noise at the site intruding into the Childcare Centre, Table 4 of the EPA's RNP identifies $L_{Aeq,1\ hour}$ noise level targets of 55 dB for outdoor play areas, 40 dB for indoor play areas and 35 dB for sleeping areas.

Page 48 of the RNP (Appendix B3 – Noise Monitoring Procedures) reveals the $L_{Aeq,1\ hour}$ is the "average maximum" one-hour noise level, not an energy average level over the day. The general procedure is to determine the $L_{Aeq,1\ hour}$ from the logger measurements that is exceeded 10% of the time for each day and then the median value of the individual days.

The RSA logger in the rear yard of the site revealed an $L_{Aeq,\ 1\ hour}$ level of 47 dB(A) on weekdays. Therefore, the noise level of traffic in the ground floor outdoor play area satisfies the RNP noise target of 55 dB(A) for external play areas by a significant margin.

The elevation of the outdoor play area on the first floor level deck gives rise to a greater exposure to the noise of distant traffic but the outdoor play area is subject to shielding from traffic noise intrusion by the 1.5 metre high barriers around the northern, eastern and western sides of the play area. Therefore, it is expected that the first floor outdoor play area will have a similar traffic noise level to the rear yard and satisfy the RNP noise target of 55 dB(A).

5.6 Traffic Noise Impact in Indoor Play Areas

With respect to the traffic noise at the site intruding into the indoor areas of the Childcare Centre, the RNP identifies internal noise targets of 40 dB for indoor play areas and 35 dB for sleeping areas.

Generally, the outside-to-inside attenuation of an open window is taken as 10 dB(A), whilst an attenuation of 20 – 25 dB(A) is applied for closed (single glazing) windows dependent upon the glazing thickness and area of the glazing.

Taking into consideration the ambient $L_{Aeq,\ 1\ hour}$ noise levels measured by the RSA noise loggers at the front and rear of the Childcare Centre site, the classrooms can satisfy the 40 dB(A) traffic noise target with the external doors/windows to the outdoor play areas/external terrace open.

With respect to the cot room on the ground floor level, the window on the western façade of the Childcare Centre building (W G-11) is required to be closed to satisfy the 35 dB(A) traffic noise target for sleeping areas.

5.7 Traffic Movements External to Site

With respect to the additional traffic that will be generated by the Childcare Centre, the RNP specifies a 1 hour L_{Aeq} of 55 dB for residences affected by additional traffic on local roads. If such levels are already exceeded, then traffic noise associated with the development is permitted to be 2 dB above the existing noise level. The assessment location is external to the façade of residential dwellings and therefore requires a façade correction from free field measurements/prediction of +2.5 dB.

The RSA logger in the front yard of the site revealed an $L_{Aeq,\ 1\ hour}$ level of 54.5 dB(A) on weekdays which becomes a façade corrected level of 57 dB(A). The Leq noise level of the existing traffic at the front façade of the residential dwellings along Telopea Street exceeds the 55 dB(A) noise target. Therefore, from the RNP, the traffic noise level associated with the development is permitted to give rise to a 2 dB increase above the existing noise level.

Typically, the peak generation of traffic by the Childcare Centre occurs during the drop-off/pick-up period of children. Assuming that the arrival of 74 children (maximum capacity of the proposed Childcare Centre) occurs steadily over a 2 hour period, the assessment considers the proposed Childcare Centre will generate a maximum of 74 vehicle movements on Telopea Street in a one hour period (37 children arriving in a one hour period with parents entering/leaving the site generating 2 vehicle movements per arrival).

The attended measurement at Location 2 adjacent to the front boundary of the site reveals the existing traffic on Telopea Street passing the measurement location to have an average L_{AE} of 71.1 dB(A) (free field). This assessment considers the vehicles associated with the Childcare Centre to have a similar L_{AE} level to the existing traffic.

Taking into consideration distance attenuation to the front façade of the residential dwellings and a +2.5 dB correction for façade reflections, the $L_{eq,\ 1\ hour}$ noise level of the additional traffic generated by the Childcare Centre on Telopea Street is calculated to be 54 dB(A) and therefore satisfies the RNP noise criterion.

6.0 CONCLUSION

The proposed Childcare Centre at 31 Telopea Street, Punchbowl has been the subject of an acoustic assessment. The project involves demolishing the existing residential dwelling at the subject site for the construction of a 74 place Childcare Centre

The acoustic assessment utilised noise targets from the AAAC Guideline (version 3) with respect to noise emission from the children, $L_{eq,\ 1\ hour}$ traffic noise intrusion targets for internal and outdoor play areas from the EPA's RNP, and noise targets for vehicle movements prior to 7:00 am from the EPA's NPfI.

This assessment utilises the ambient noise levels obtained from the unattended noise monitoring conducted by Rodney Stevens Acoustics ("RSA") at the front and rear yards of the site between Monday 21 June to Tuesday 28 June 2021. To supplement the RSA unattended noise monitoring results, The Acoustic Group conducted attended measurements in the rear yard and front boundary of the site on the afternoon of Thursday 26 August 2021.

From the assessment of noise emission from outdoor play with respect to the AAAC Guideline criteria for outdoor play, Table 2 in Section 5.1.1 of this report (reproduced below) presents a matrix of the maximum capacity, types of activities and combination of outdoor play areas that can operate simultaneously on the basis of the recommended physical noise control measures and satisfy the background +5 dB(A) criterion for outdoor play.

Table 2: Matrix of Outdoor Play Area Operations

Scenario	Ground Floor (active)	First Floor (passive)
1	15 children, 3-5 years	25 children, 3-5 years
2	15 children, 3-5 years	24 children, 2-3 years
3	15 children, 3-5 years	10 children, 0-2 years
4	24 children, 2-3 years	40 children, 3-5 years
5	24 children, 2-3 years	10 children, 0-2 years
6	10 children, 0-2 years	40 children, 3-5 years
7	10 children, 0-2 years	24 children, 2-3 years

Utilising the above matrix, Appendix D21 provides a summary of noise emission levels for outdoor play to all the nominated residential receiver locations and identifies acoustic compliance with the AAAC Guideline's base noise criterion of 45 dB(A).

The above operational restrictions to achieve the acoustic criteria applicable to the subject application form part of the Plan of Management to identify a timetable or similar to permit the above constraints to apply whilst satisfying the regulatory requirements for the operation of a Childcare Centre.

In terms of noise emission from the outdoor play areas, the following physical noise controls are to be implemented into the design of the Childcare Centre:

- The eastern and western boundary fence adjacent to the outdoor play area (up to two metres past the northern alignment of the Childcare Centre building) and the northern boundary fence are to have a height of 2 metres above the finished ground level of the outdoor play area. The barriers are to have a solid construction (i.e., no gaps) such as lapped-and-capped timber or similar with a density not less than 12 kg/m^2;

- Full-height barriers to the ground floor outdoor play area along the eastern and western sides of the Childcare Centre building. The eastern and western elevation drawings (sheet no. 4002, revision C, dated 22 November 2021) identify the full-height barriers to be transparent. The full-height barriers are to be constructed from 10.38 mm thick laminated glazing;
- To reduce the reverberant build-up of sound in the outdoor play areas, 50% of the ceiling above the ground floor and first floor outdoor play areas are to be lined with acoustic absorptive material that has a noise reduction coefficient ("NRC") of not less than 0.85 which as CSR Martini Absorb MD50 polyester insulation and a perforated ply, plasterboard, metal or similar facing (open area not less than 23%). Alternatively, the acoustic absorption can be achieved by treating the ceiling with a 75 mm thick layer of Envirospray 300; and
- The northern, eastern and western sides of the Level 1 passive outdoor play area are to have a 1.5 metre high barrier with a solid construction (i.e., no gaps). The barrier can be constructed from 6.38 mm thick laminated glazing, 10 mm thick solid (not multi-cell) polycarbonate or 12 mm thick Perspex.

Appendices D8 – D9 presents illustrations of the proposed barriers in plan view.

With respect to noise emitted from the classrooms, the operable windows on the eastern façade of the classroom for 2 to 3-year-old children (W 1-04) and the western façade of the classroom for 3 to 5-year-old children (W 1-23) are required to be closed when the classroom is in use. In addition, the classroom for 2 to 3-year-old children is required to have acoustic absorption to 50% of the ceiling with an NRC of noise less than 0.7 to reduce the reverberant build-up of sound in that space.

In terms of traffic noise intrusion into the Childcare Centre, our assessment revealed the traffic noise level in the outdoor play areas satisfy the external RNP noise target of 55 dB(A) whilst the classrooms can satisfy the internal RNP noise target of 40 dB(A) with the doors and windows to the outdoor play areas/external terrace open. To satisfy the internal RNP noise target of 35 dB(A) for sleeping areas, the window on the western façade of the coatroom (W G-11) is required to be closed when the cot room is in use.

The AAAC Guideline's background +5 dB(A) noise target covers all noise from the Childcare Centre (except for outdoor play) as a cumulative level. Table 3 in Section 5.3 of this report presents noise design targets for the mechanical plant so that the total noise contribution of the Childcare Centre does not exceed the background +5 dB(A) noise target.

An assessment of noise emission from vehicle movements on the site revealed compliance with the EPA's intrusiveness noise level during the drop-off/pick-up of children and the sleep arousal criteria for the arrival of staff before 7:00 am.

The assessment of noise emission from the additional traffic on Telopea Street generated by the Childcare Centre identifies that the noise contribution of the additional traffic RNP noise criteria for local roads.

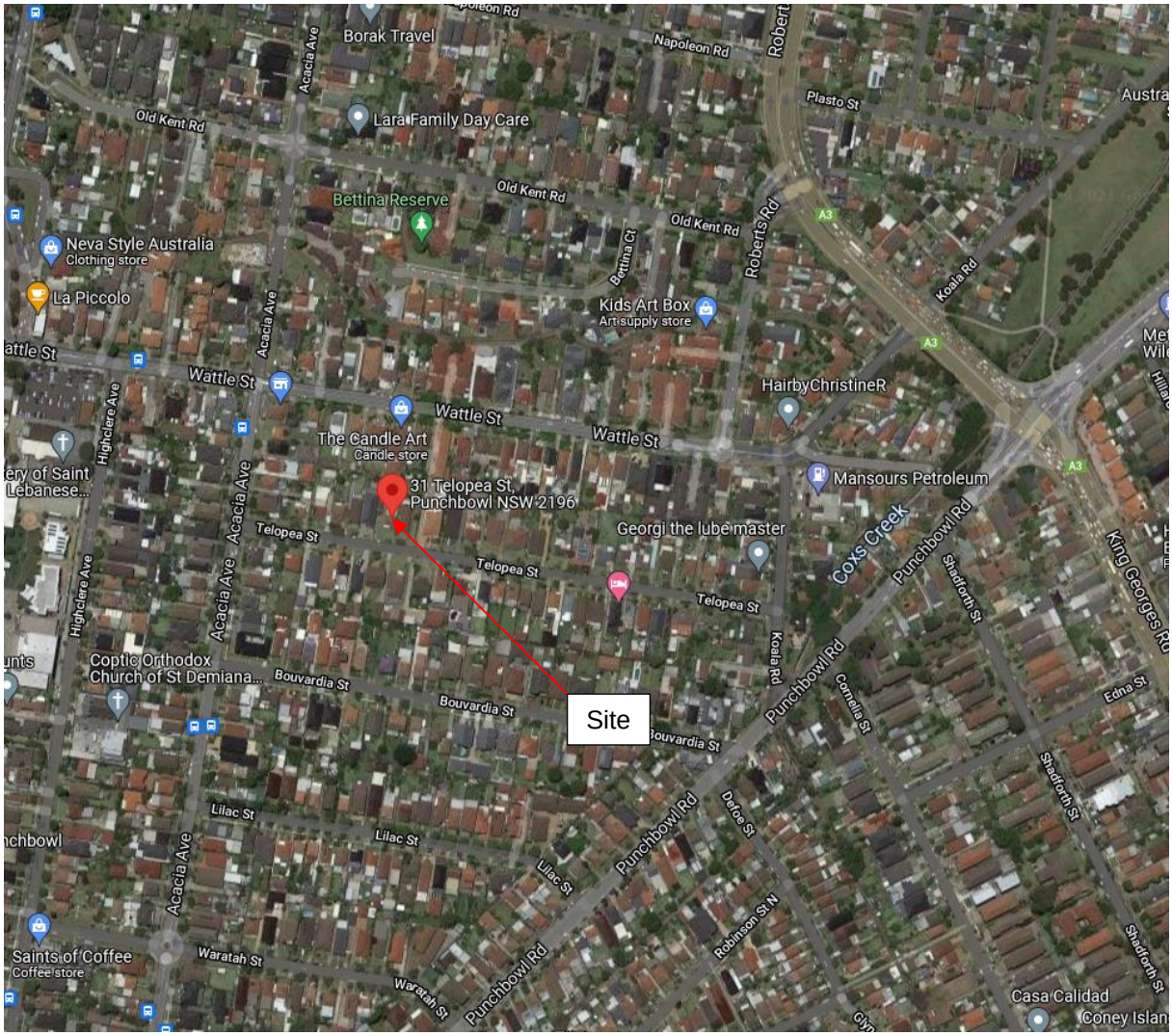
The acoustic assessment identifies that for the noise targets set out in Section 3 of this report (being the applicable targets from the AAAC Guideline, the RNP and the NPfI), the proposed development will satisfy all the noise targets based on the matrix of outdoor play set out in Table 2. The Plan of Management is to incorporate the nominated noise control measures and provide a timetable to confirm the proposed outdoor play for the Childcare Centre will comply with the matrix set out in Table 2.

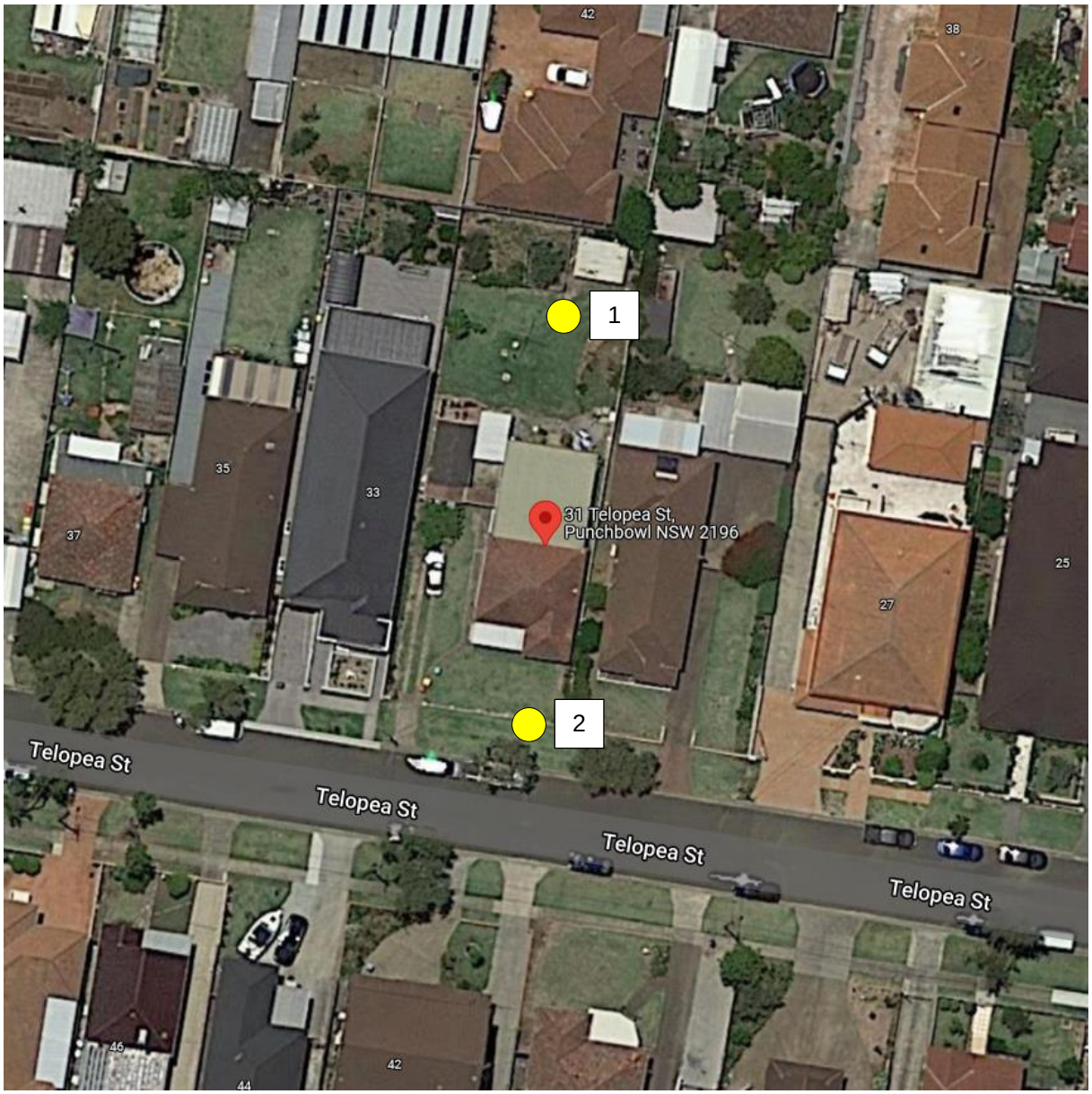
Yours faithfully,

THE ACOUSTIC GROUP PTY LTD

STEVEN E. COOPER

APPENDIX A: Site and Measurement Locations



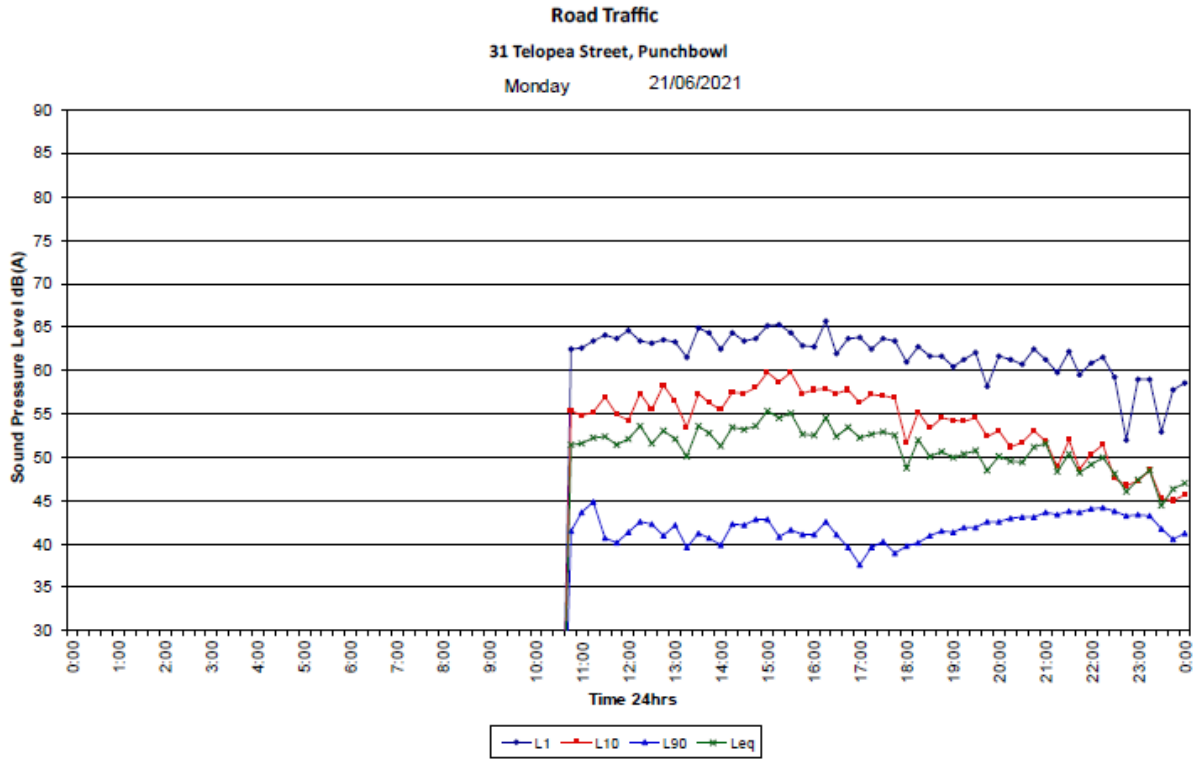


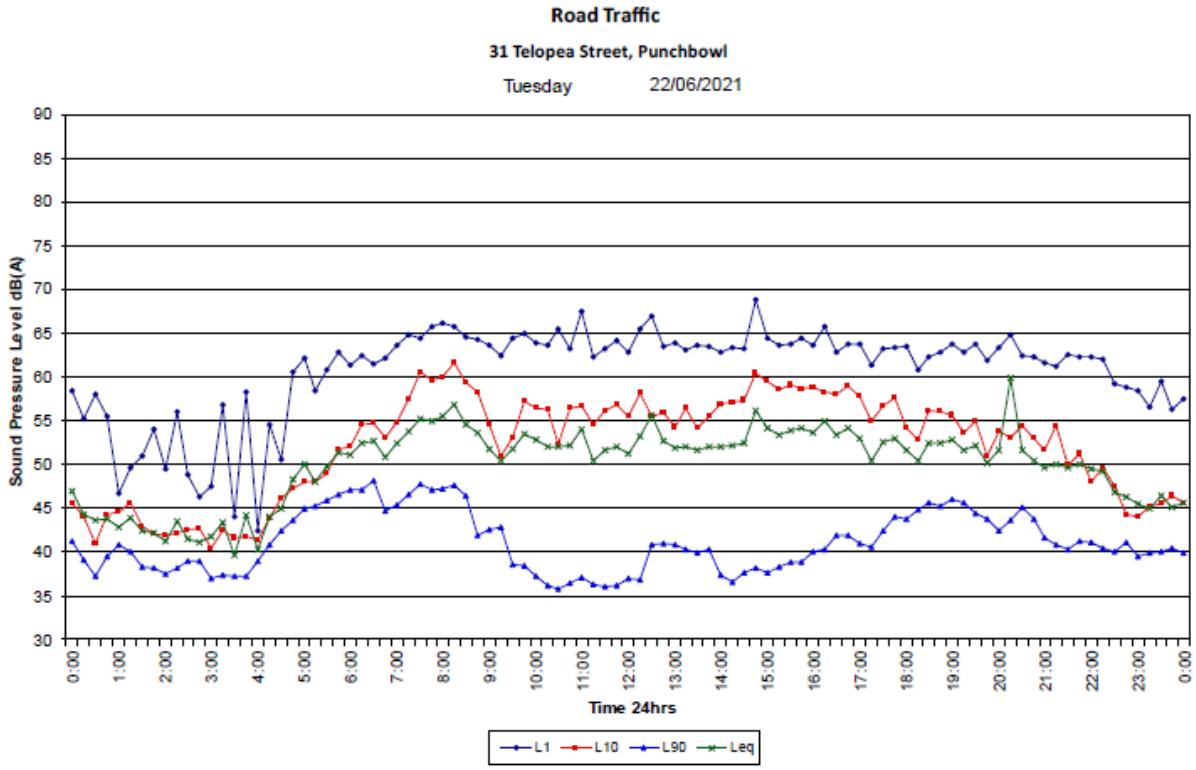
Attended Measurement Locations

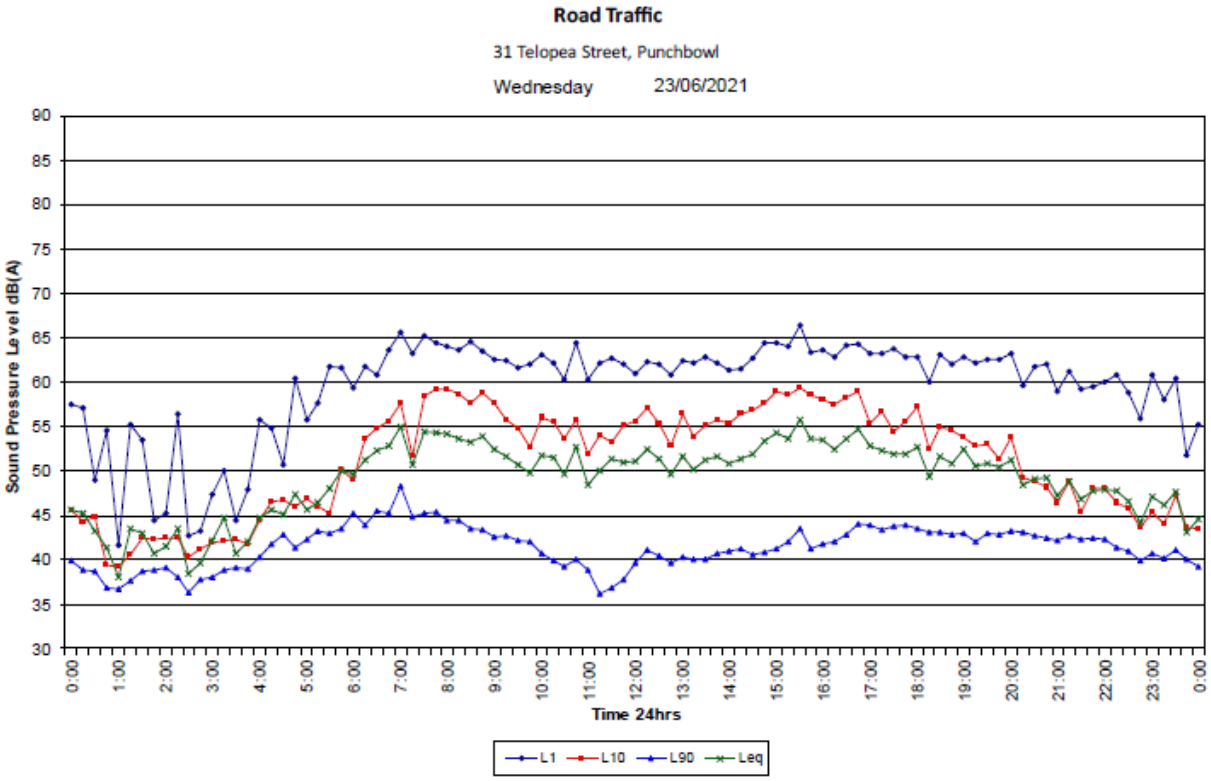
APPENDIX B: RSA Logger Results

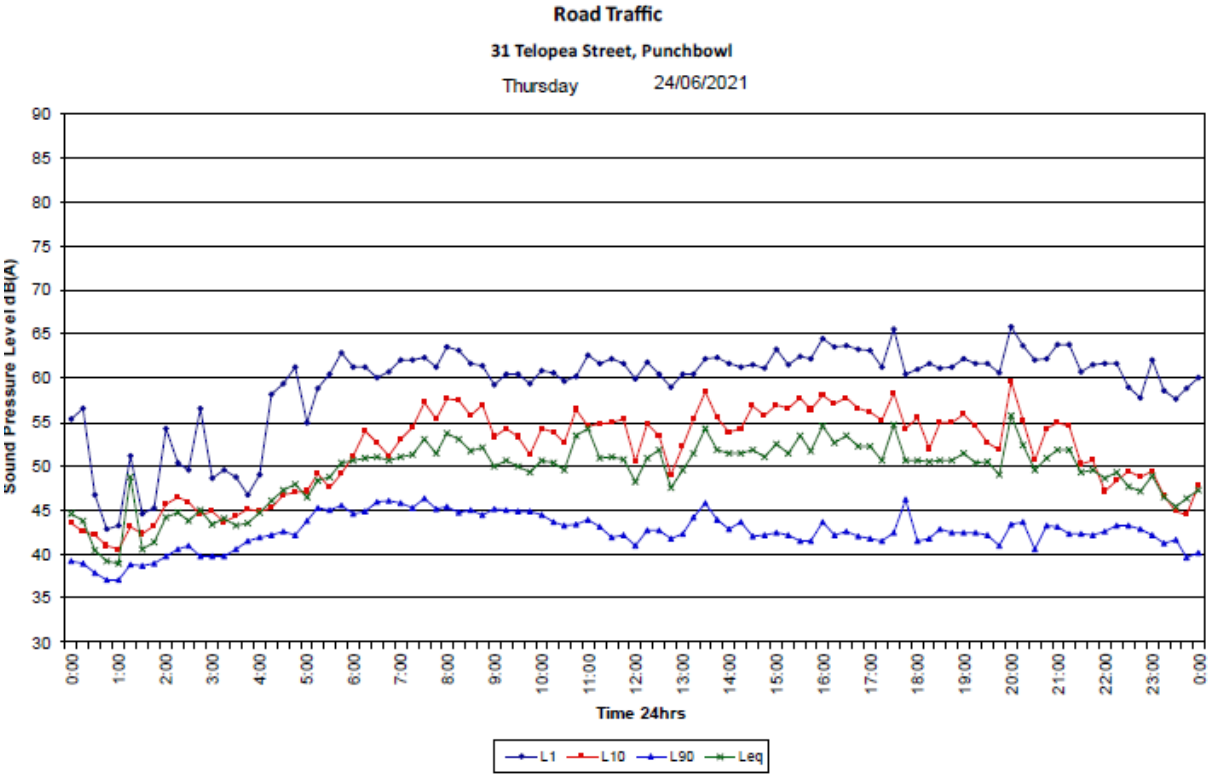
Figure 2-1 Site Location

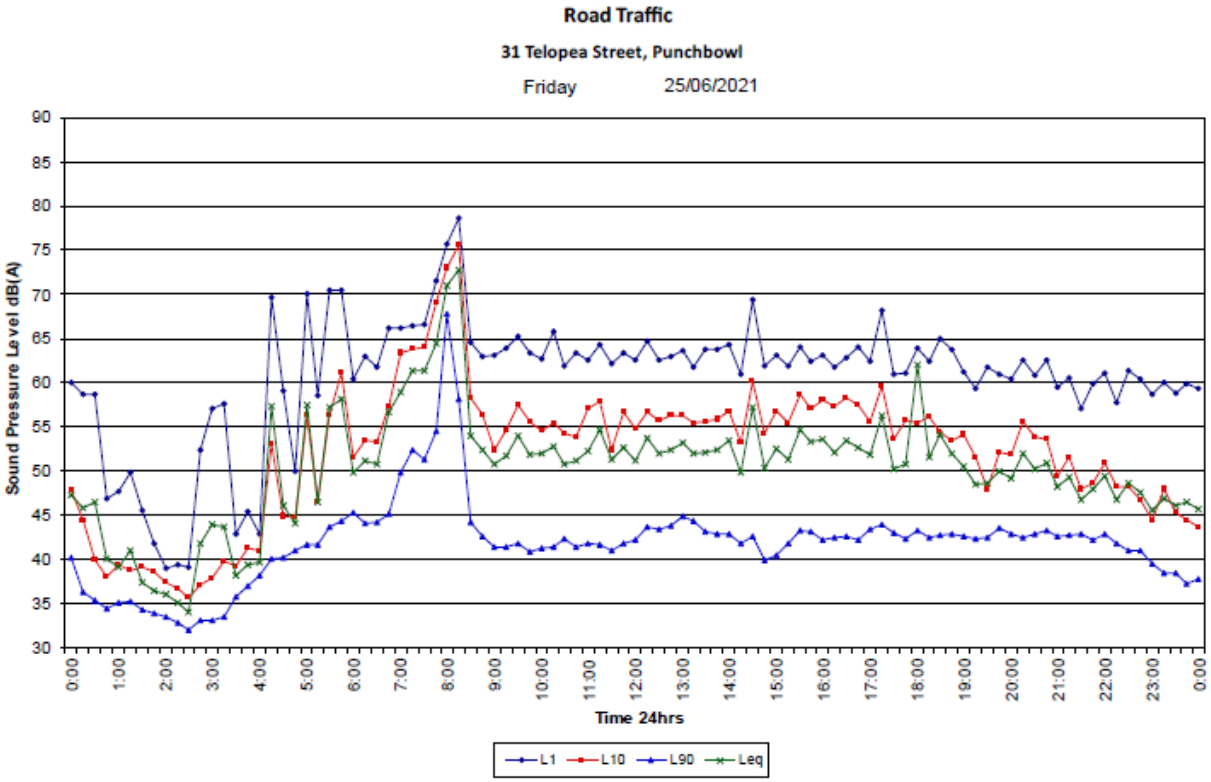
Traffic Logger

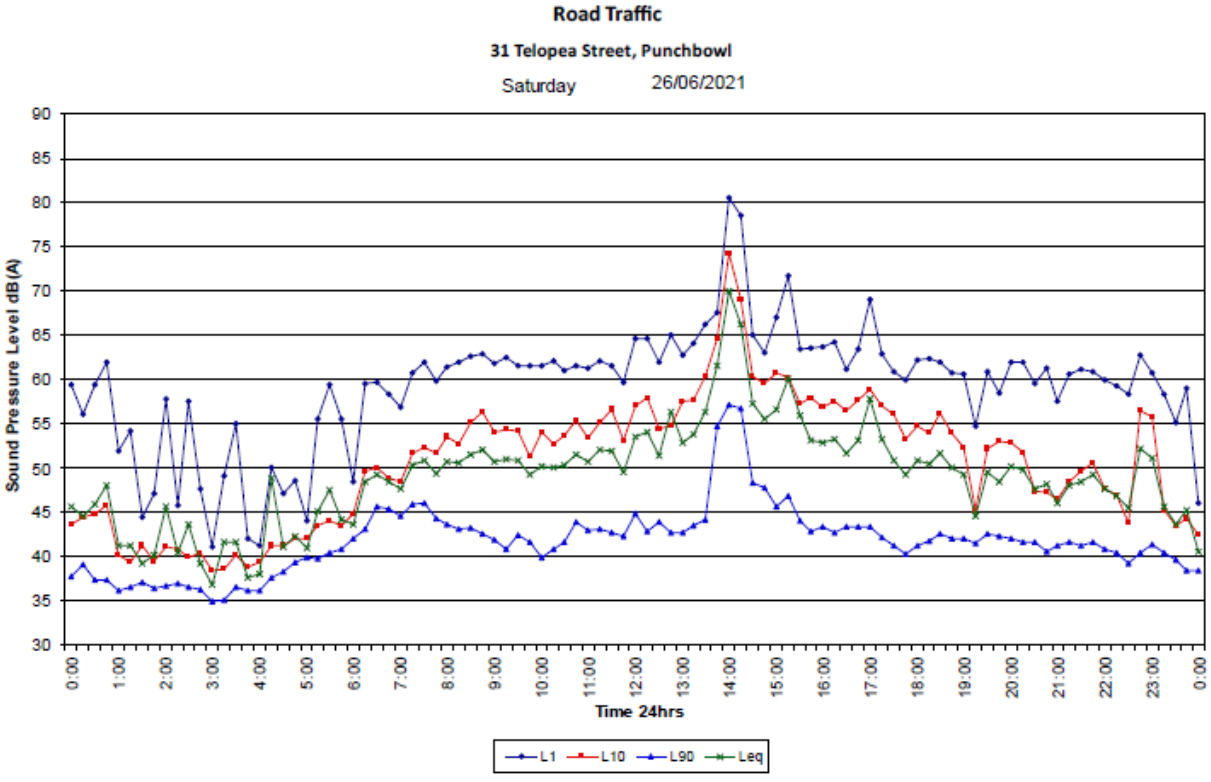


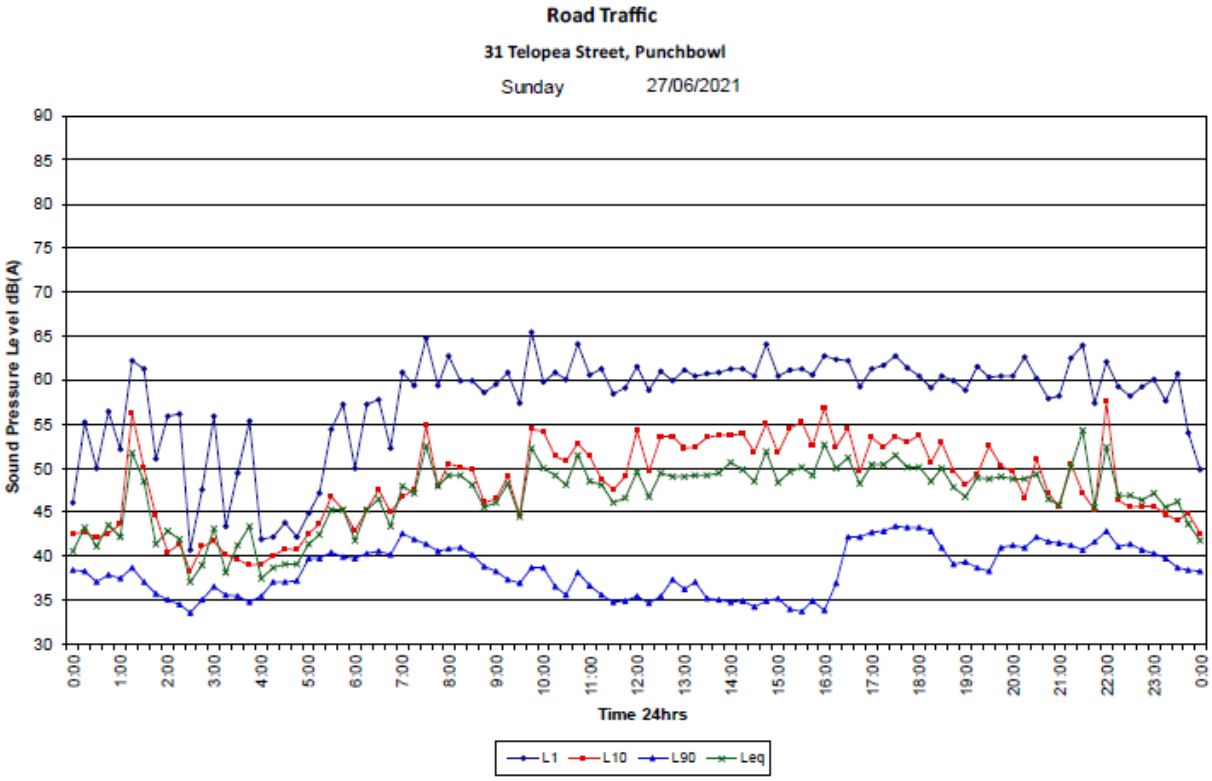


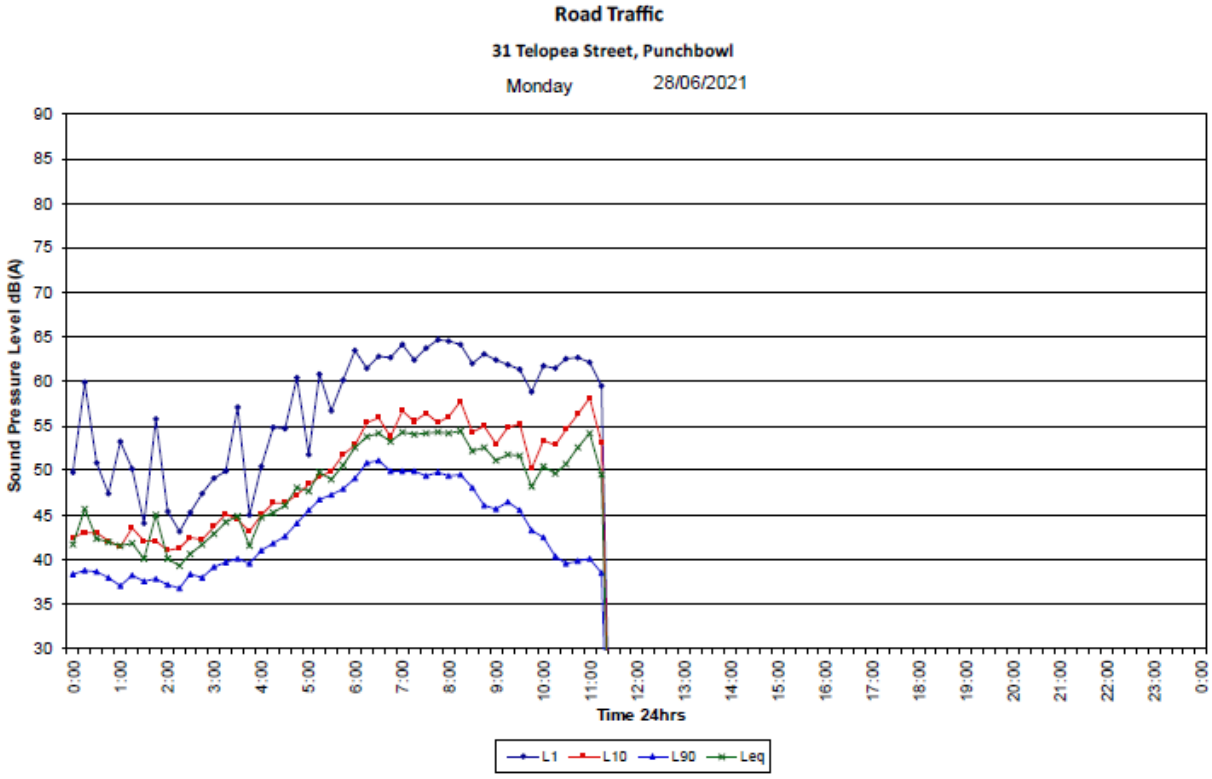

Road Traffic
31 Telopea Street, Punchbowl
Wednesday 23/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq


Road Traffic
31 Telopea Street, Punchbowl
Thursday 24/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

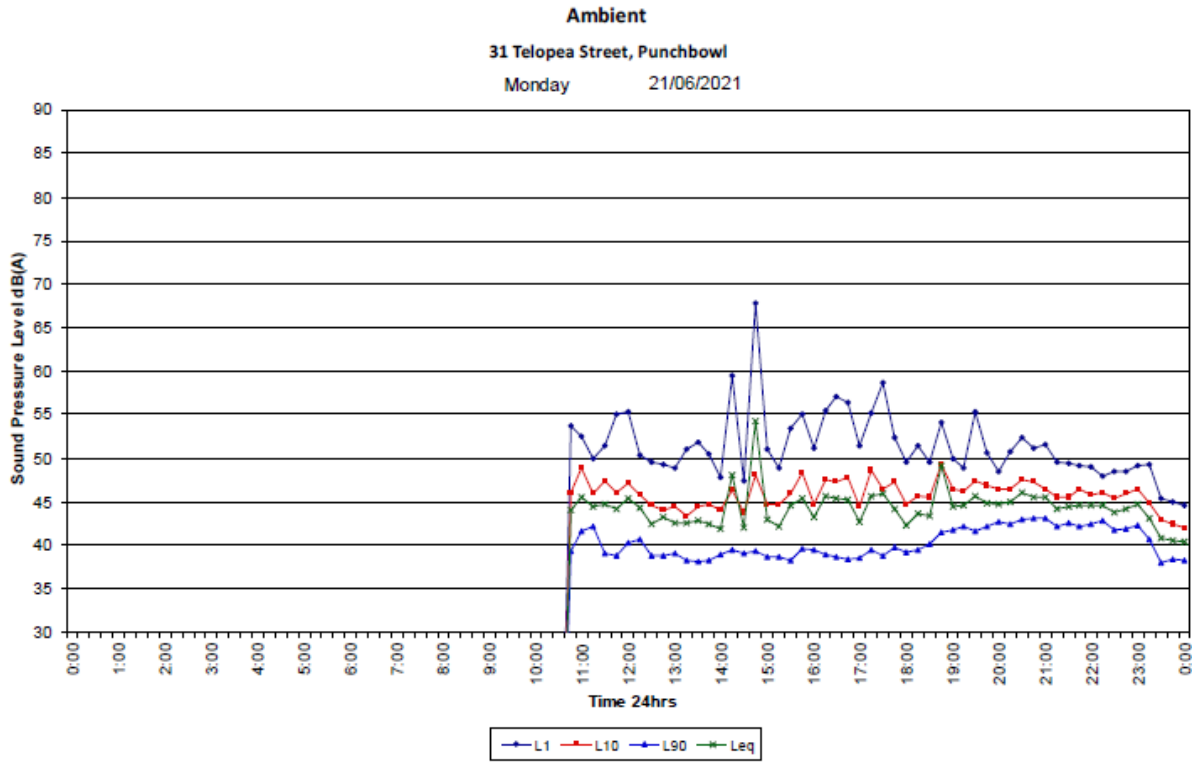

Road Traffic
31 Telopea Street, Punchbowl
Friday 25/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

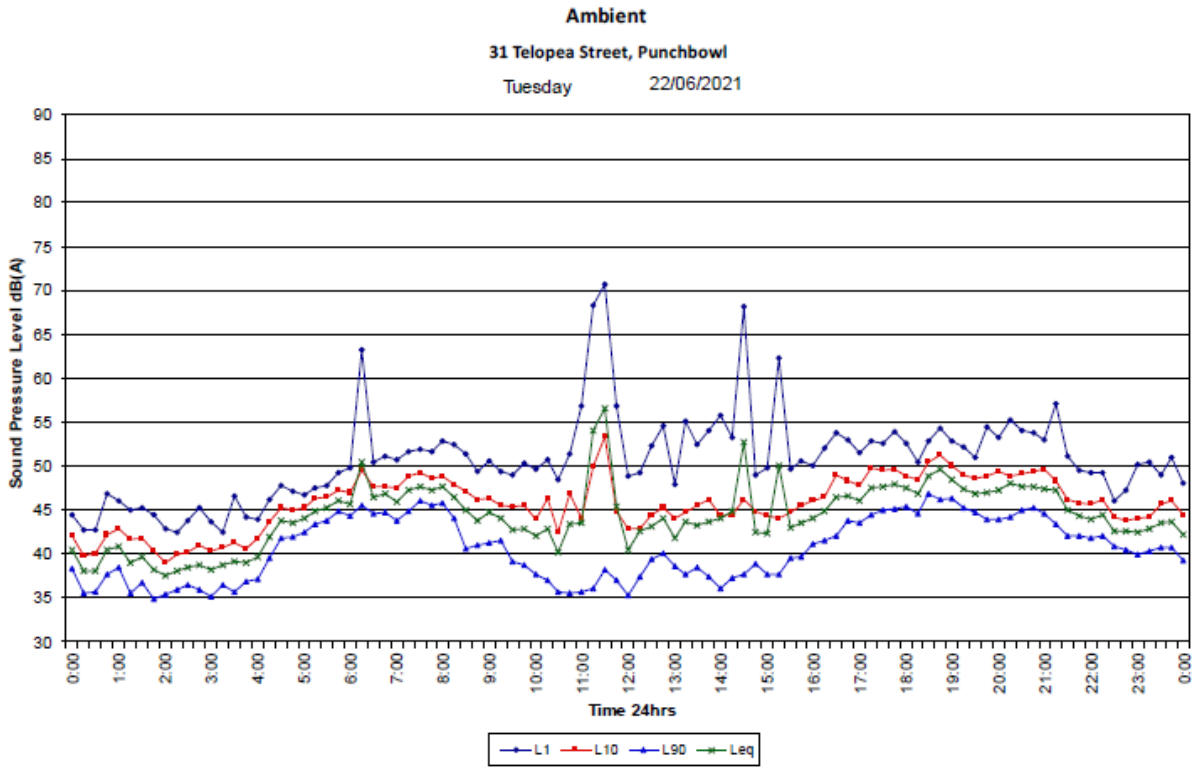

Road Traffic
31 Telopea Street, Punchbowl
Saturday 26/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

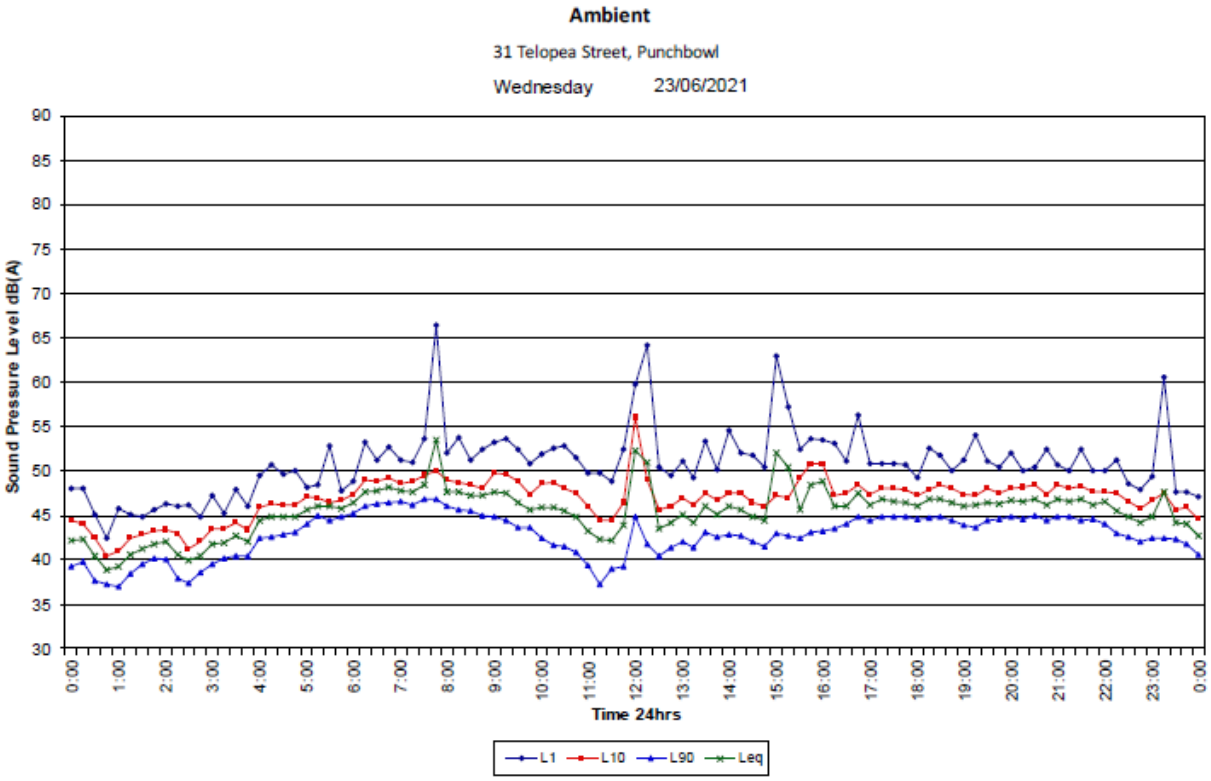

Road Traffic
31 Telopea Street, Punchbowl
Sunday 27/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

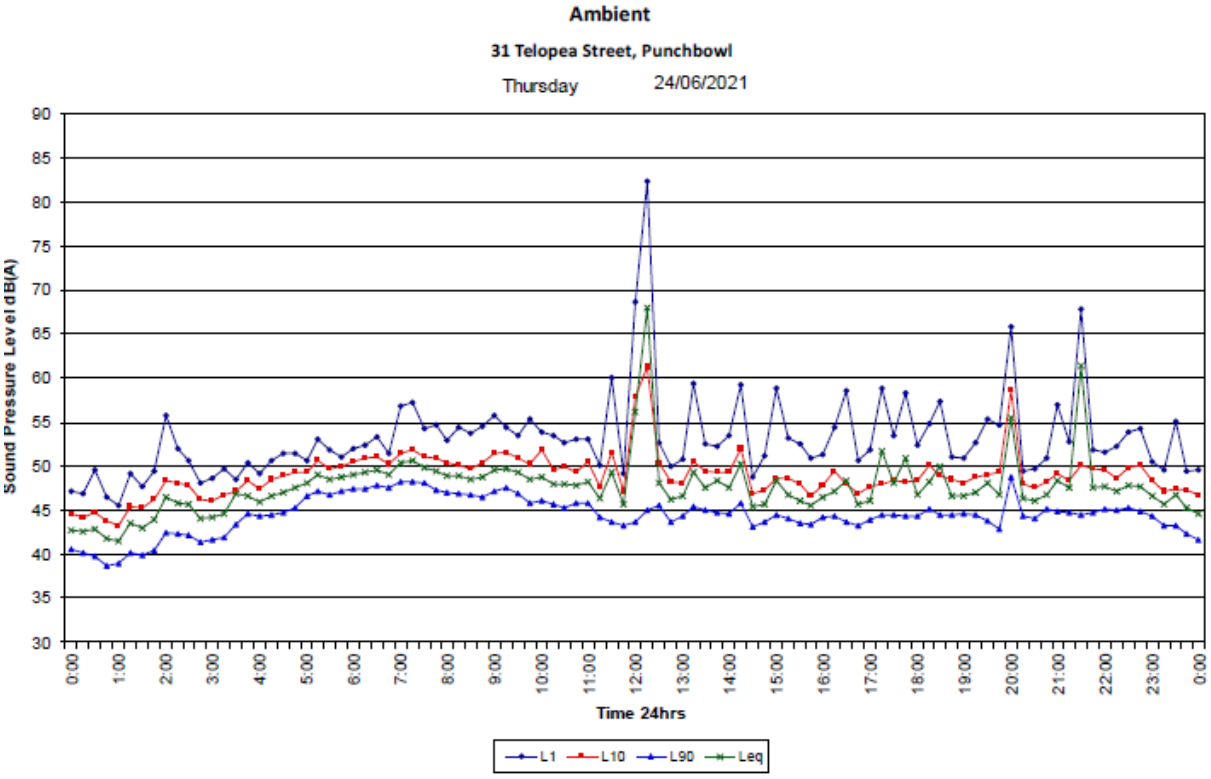

Road Traffic
31 Telopea Street, Punchbowl
Monday 28/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

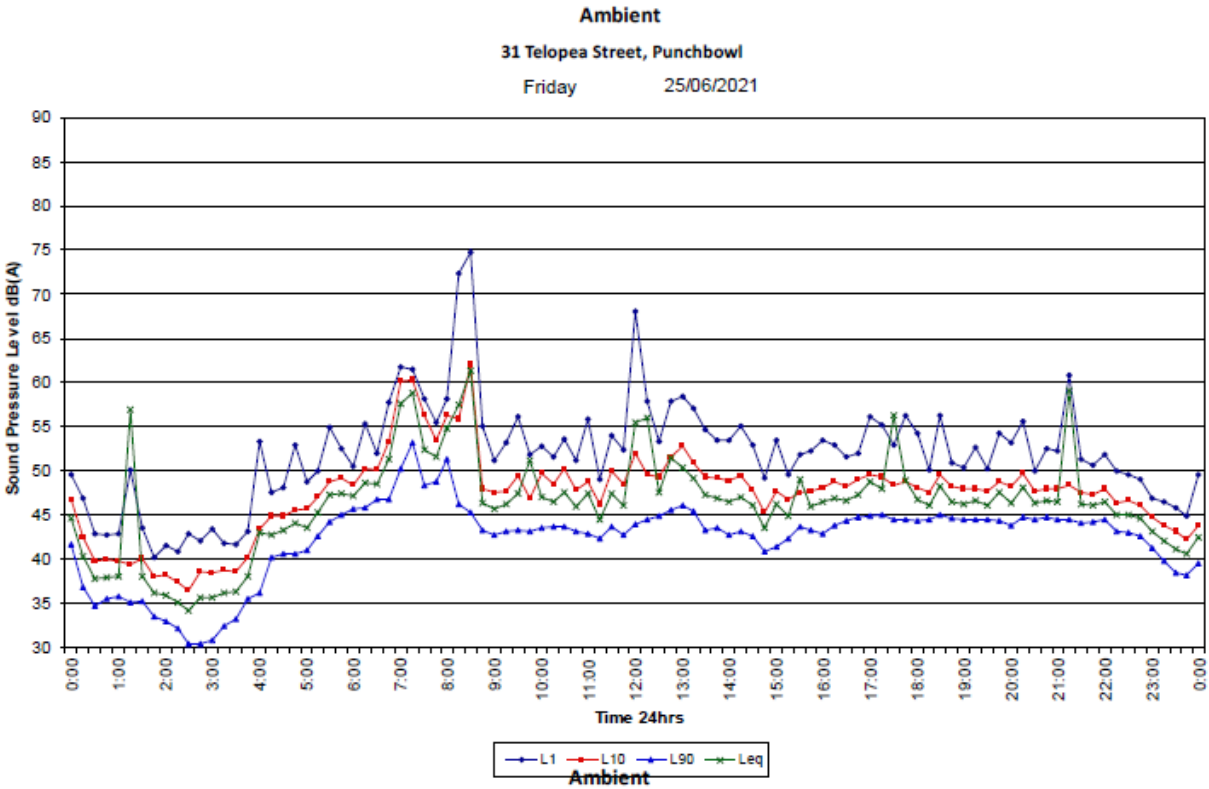
Ambient Logger

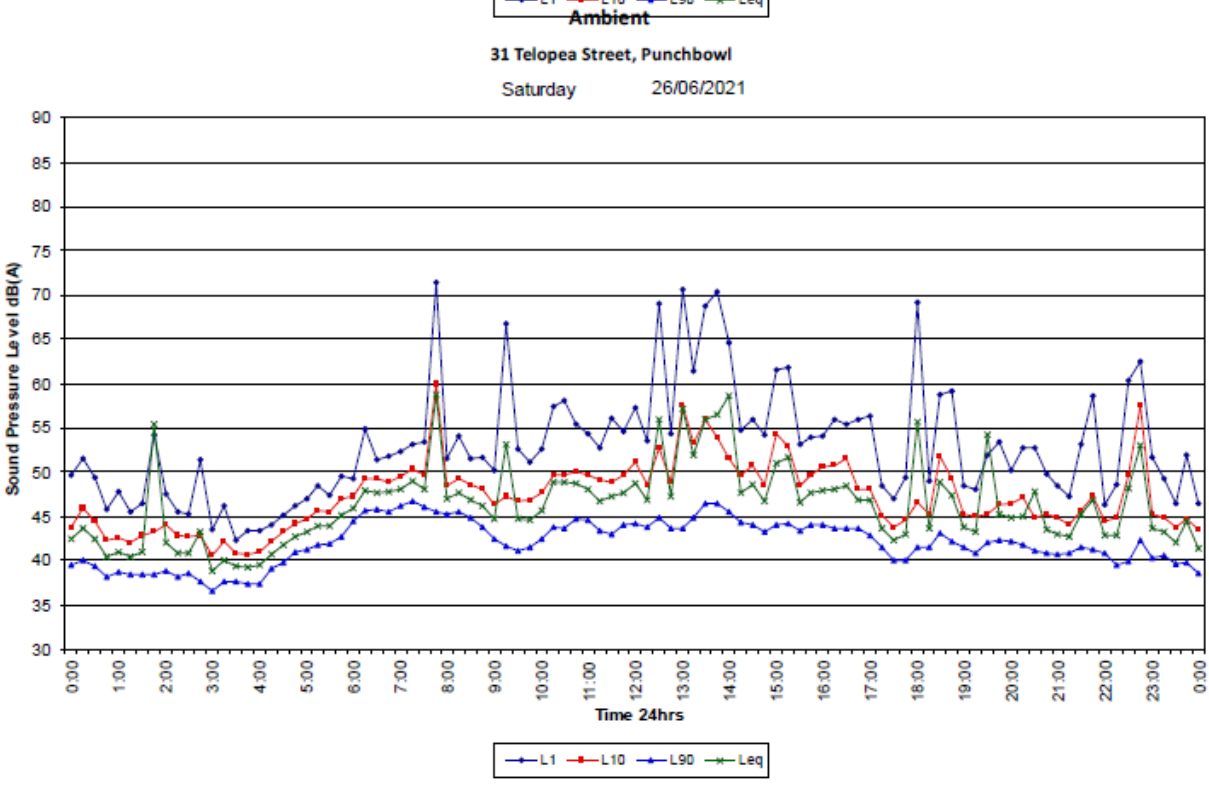


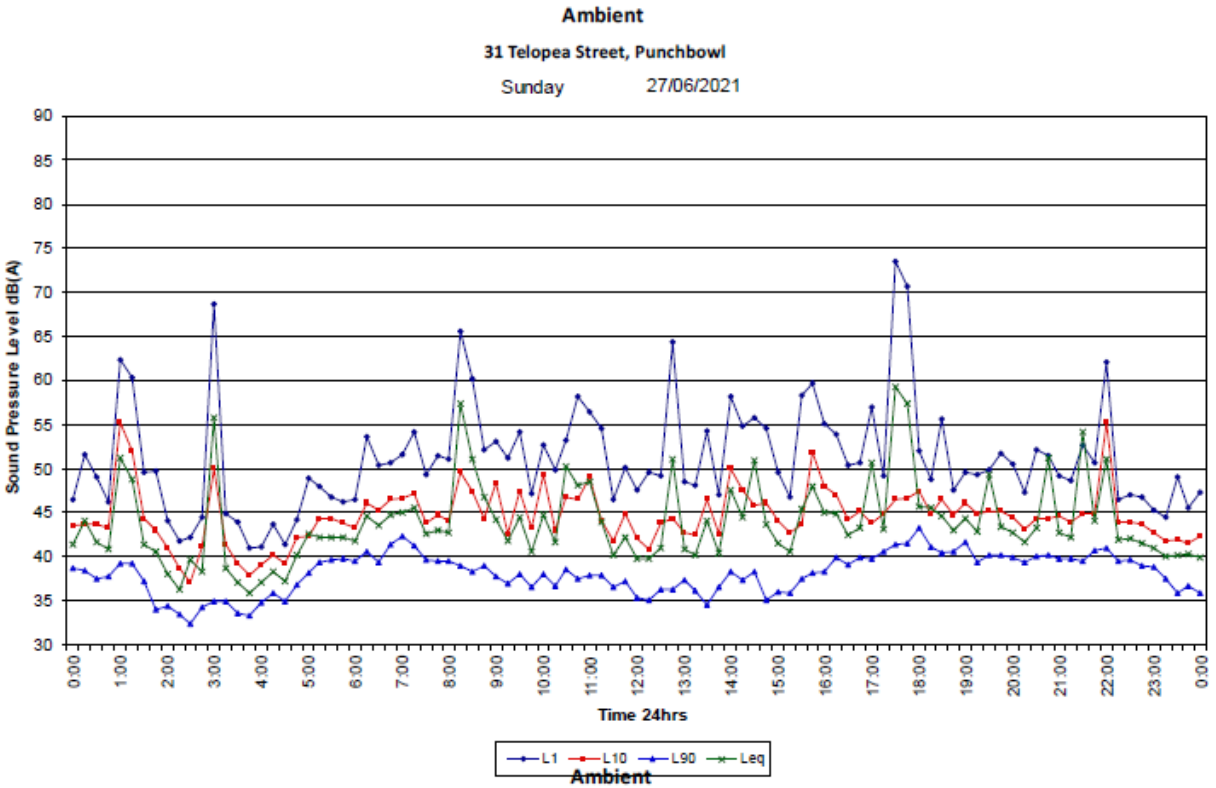


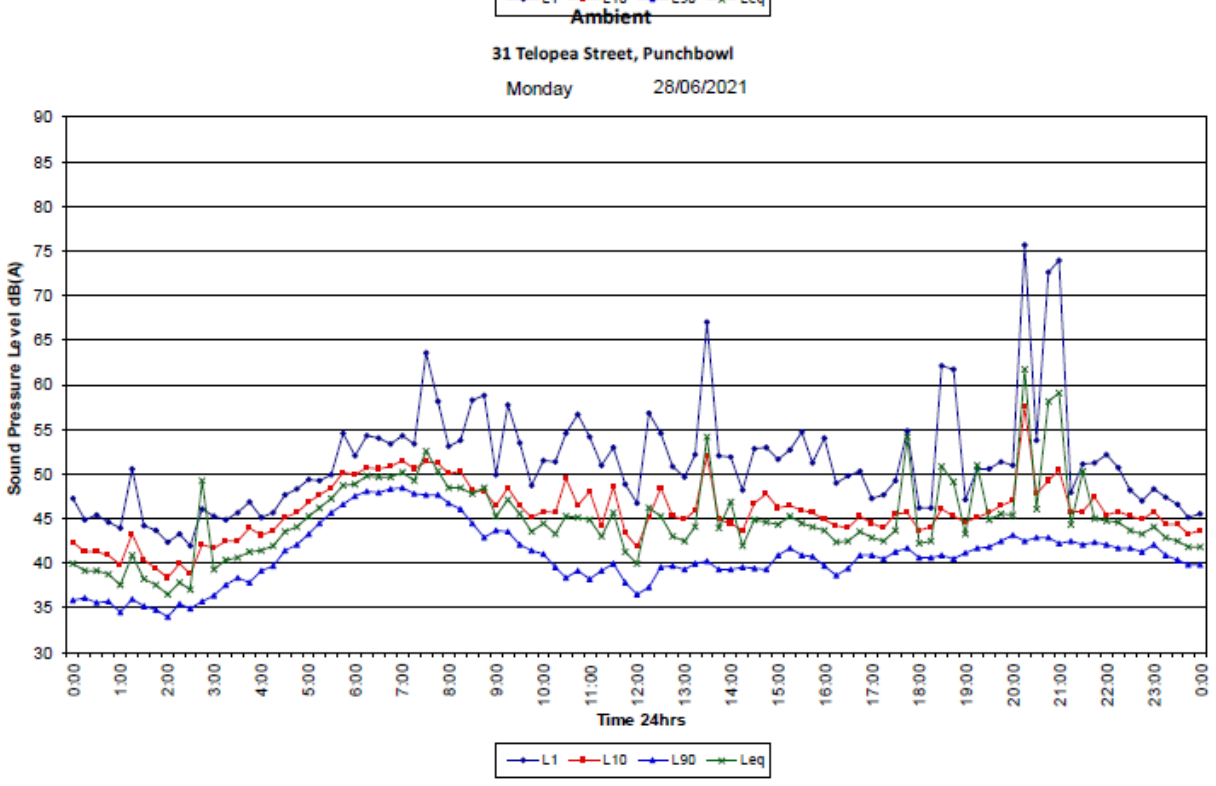

Ambient
31 Telopea Street, Punchbowl
Wednesday 23/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

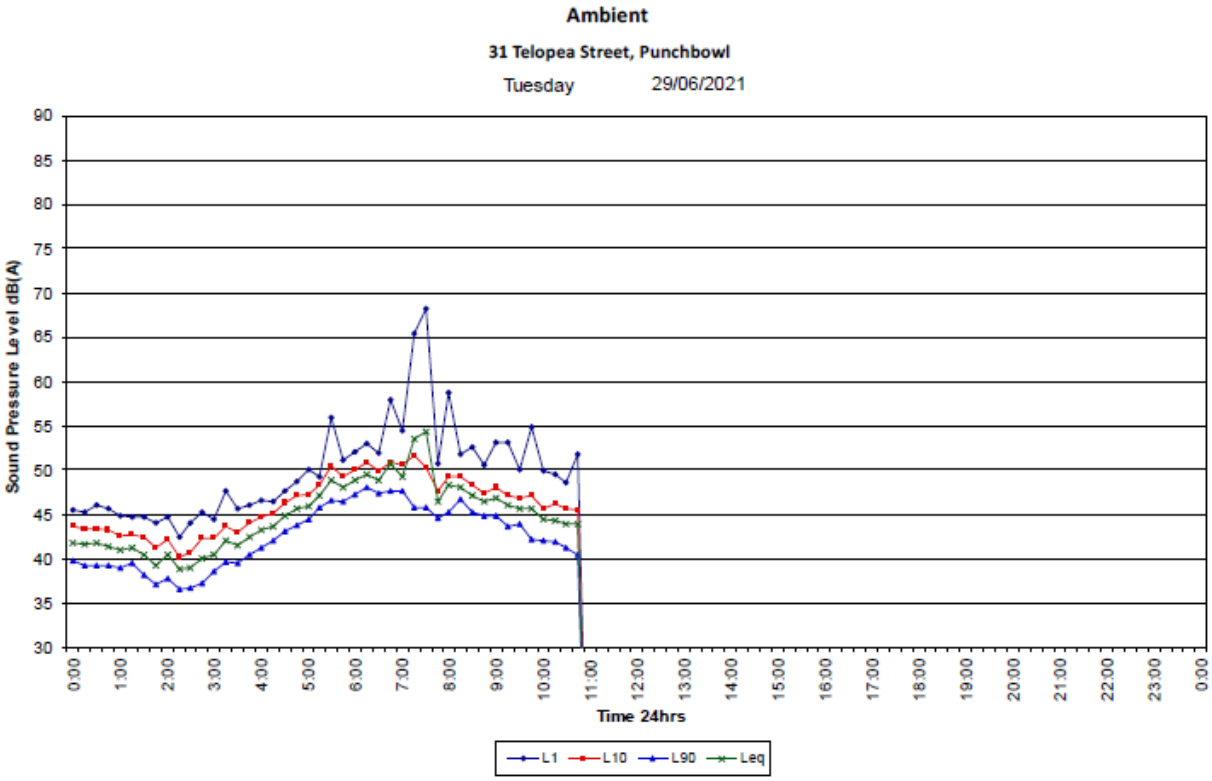

Ambient
31 Telopea Street, Punchbowl
Thursday 24/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq


Ambient
31 Telopea Street, Punchbowl
Friday 25/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1 L10 L90 Leq

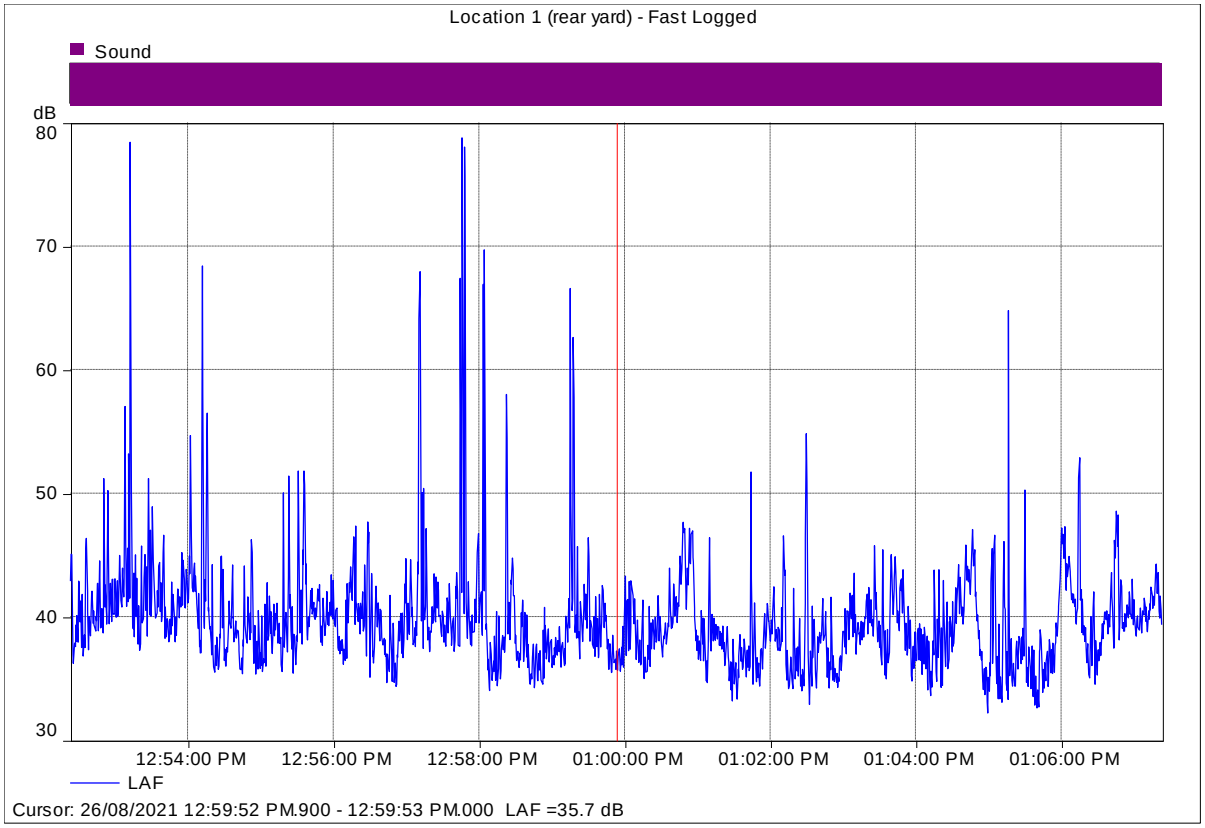

Ambient
31 Telopea Street, Punchbowl
Saturday 26/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1 L10 L90 Leq

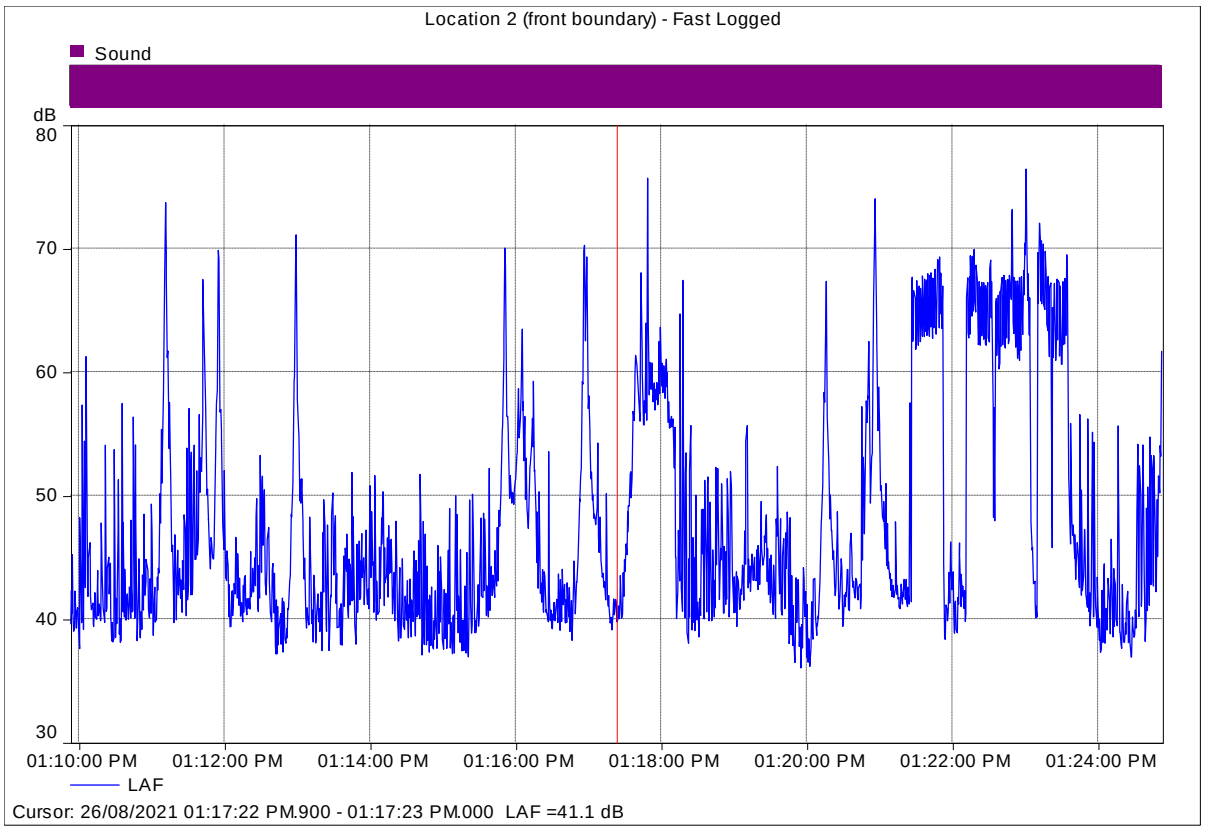

Ambient
31 Telopea Street, Punchbowl
Sunday 27/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1 L10 L90 Leq


Ambient
31 Telopea Street, Punchbowl
Monday 28/06/2021
Sound Pressure Level dB(A)
Time 24hrs
L1 L10 L90 Leq


Ambient
31 Telopea Street, Punchbowl
Tuesday 29/06/2021
Sound Pressure Level dB(A)
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time 24hrs
L1
L10
L90
Leq

APPENDIX C: TAG Attended Measurement Results





Location	Parameter	dB(A)	A-weighted Octave Band Centre Frequency (Hz)								
			31	63	125	250	500	1k	2k	4k	8k
Rear Yard	Ambient L_{10}	43	17	25	27	30	37	39	37	33	21
	Ambient L_{eq}	50	15	23	24	28	42	48	39	35	28
	Ambient L_{90}	36	7	15	21	23	29	31	27	20	14
Front Boundary	Ambient L_{10}	64	21	32	40	41	46	51	58	60	41
	Ambient L_{eq}	59	21	31	42	41	46	51	54	54	35
	Ambient L_{90}	40	9	20	25	27	32	34	31	24	15

APPENDIX D: Analysis of Outdoor Area Noise Emissions

The proposed Childcare Centre at 31 Telopea Street, Punchbowl has outdoor play areas on the ground floor level and first floor level. The Level 1 plan by Place Studio (sheet no. 2002, revision C, dated 22 November 2021) identifies the first floor level deck to be a "quiet outdoor play area" which will be used for passive play/activities.

The acoustic requirements and the different areas in which outdoor play may occur leads to a number of permutations with respect to the age groups and number of children that can utilise the outdoor play areas simultaneously. The following pages set out the basis of the analysis and provides noise contours from the computer modelling of different age groups utilising the individual outdoor play areas (in a horizontal plane 1.5 metres above the natural ground level). The noise contours also include the noise emission of outdoor play at the various residential reference locations.

Appendices D3 – D5 present aerial image/photos of the Childcare Centre site and surrounding residential properties with an illustration of the residential assessment locations.

Appendix D6 presents the ground floor plan of the Childcare Centre with an illustration of the outdoor play area noise source locations used in this assessment and the residential assessment locations adjacent to the site. Appendix D7 illustrates the outdoor play area noise source locations on the first floor level of the Childcare Centre. Appendices D8 and D9 present in plan view the proposed barriers.

Appendices D10 – D11 provide the noise contours from the computer noise modelling of the outdoor play areas being utilised by the 3 to 5-year-old children, the contours of noise emission from the outdoor play areas being utilised by the 2 to 3-year-old children are presented in Appendices D12 – D13, and the contours of noise emission from the outdoor play areas being utilised by the children in the 0 to 2-year-old age group are presented in Appendices D14 – D15.

The table in Appendix D16 provides the height of the source/receiver locations and the type of activities occurring at the noise source locations for the assessment.

Appendices D17 – D19 provide a summary of the A-weighted noise contribution level for all source and receiver locations. For the nominated barriers and the various combinations of outdoor play areas being used simultaneously (listed in Table 4) Appendix D21 provides a matrix of cumulative noise emission levels from outdoor play.

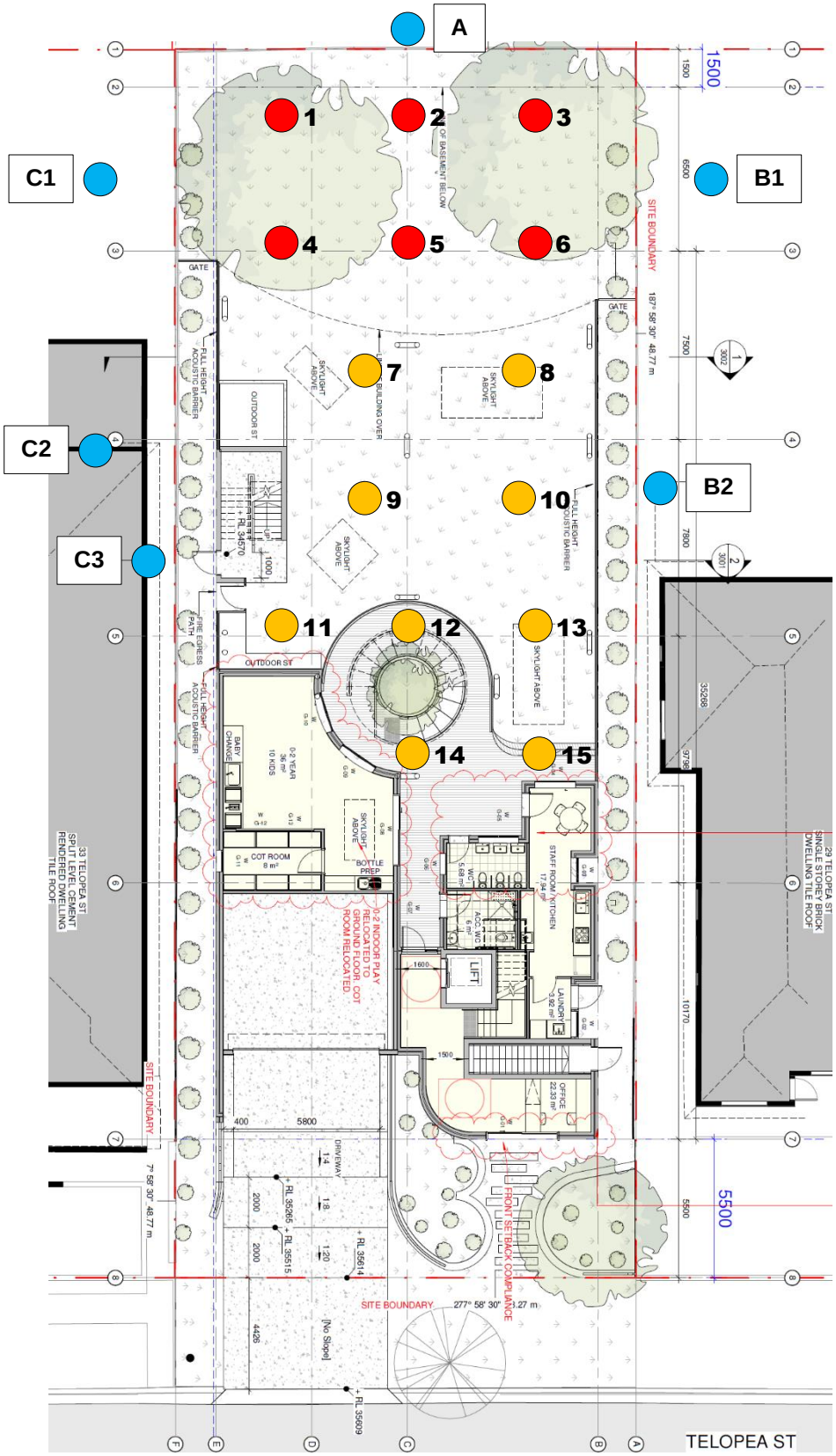
To validate the accuracy of the computer noise model, Appendices D22 – D26 provide a sample spreadsheet calculation of noise from the ground floor outdoor play area being utilised by the 3 to 5-year-old children to Location B1 (rear yard of 29 Telopea Street). The appendices provide individual calculations from each source location to Location B which identify the source sound power level of the children, attenuation from the barrier along the southern side of the play area and distance attenuation (including conversion of sound power level to sound pressure level) to determine the resultant contribution of that source location to the receiver location.

As the attenuation for barriers is dependent upon the frequency of the noise source and cannot be expressed as a dB(A) value, the calculations are carried out in octave bands from which the resultant dB(A) contribution is determined. Appendix D26 then provides the individual contributions in octave bands per source location and the cumulative noise level of the 3 to 5-year-old children in the ground floor outdoor play area children in octave bands to Location B1.

Residential Assessment Locations

Residentail Assessment Location

Residentail Assessment Location

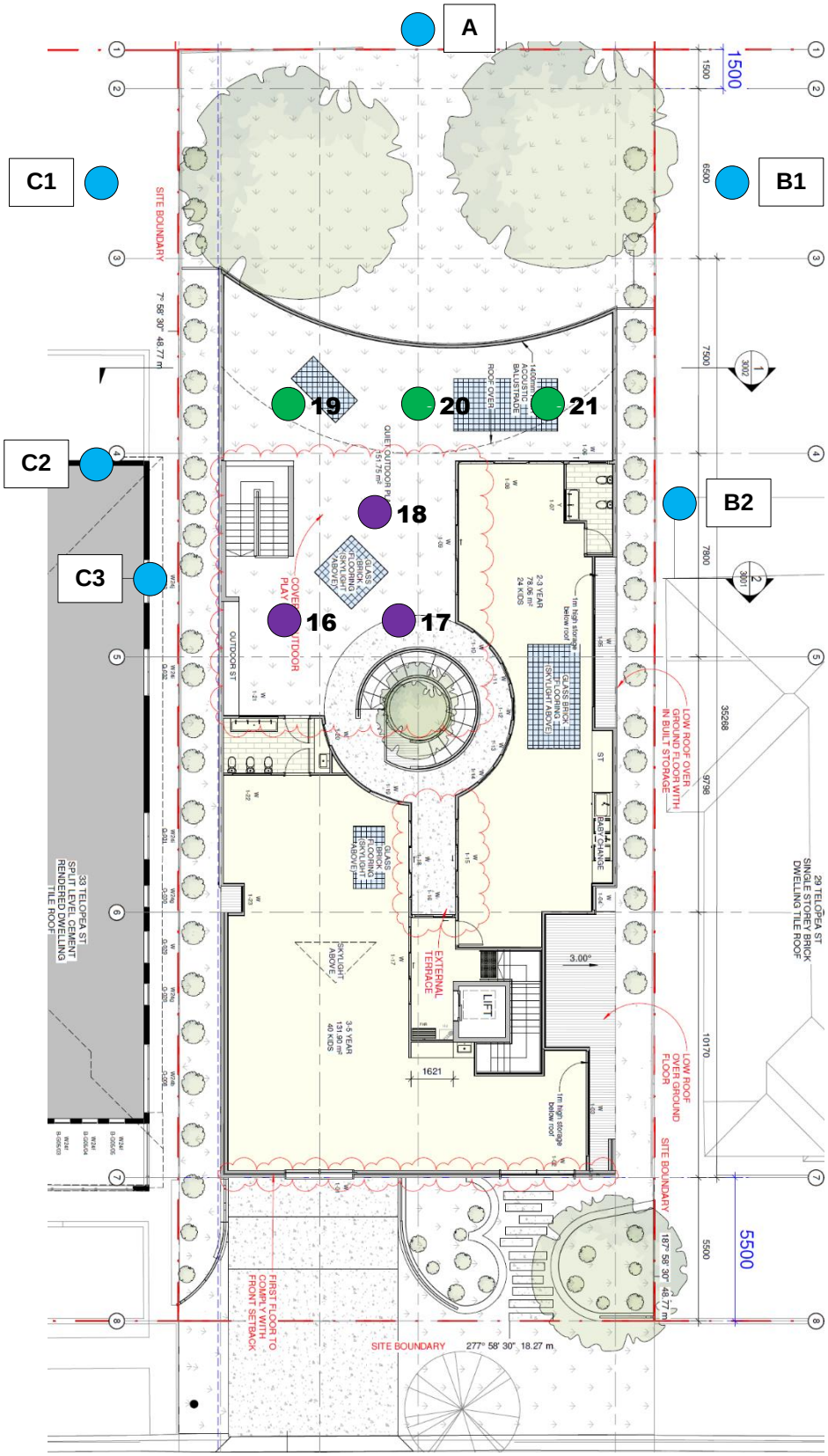


Ground Floor Plan

Uncovered Ground Floor Source Location

Covered Ground Floor Source Location

Residential Assessment Location

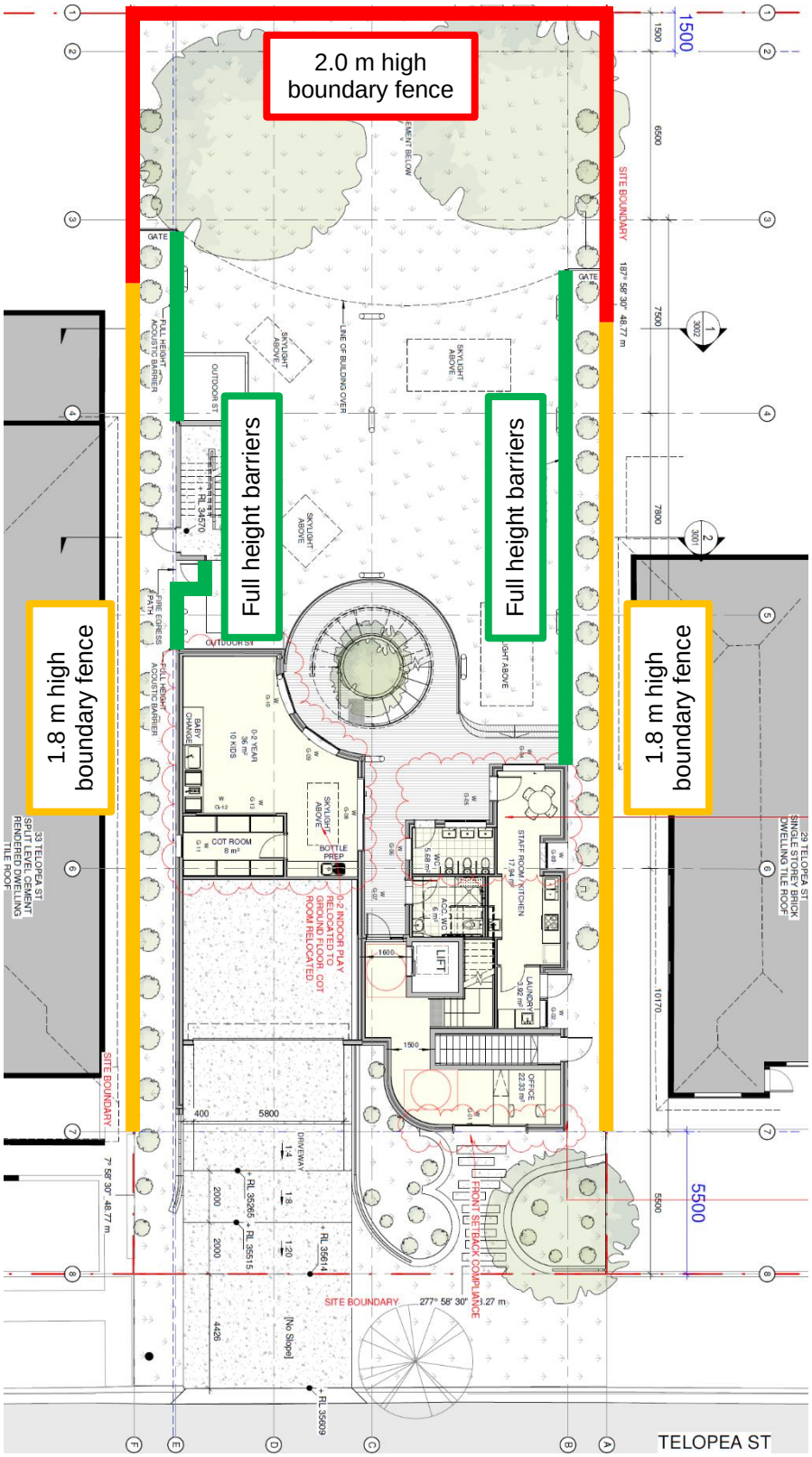


Level 1 Plan

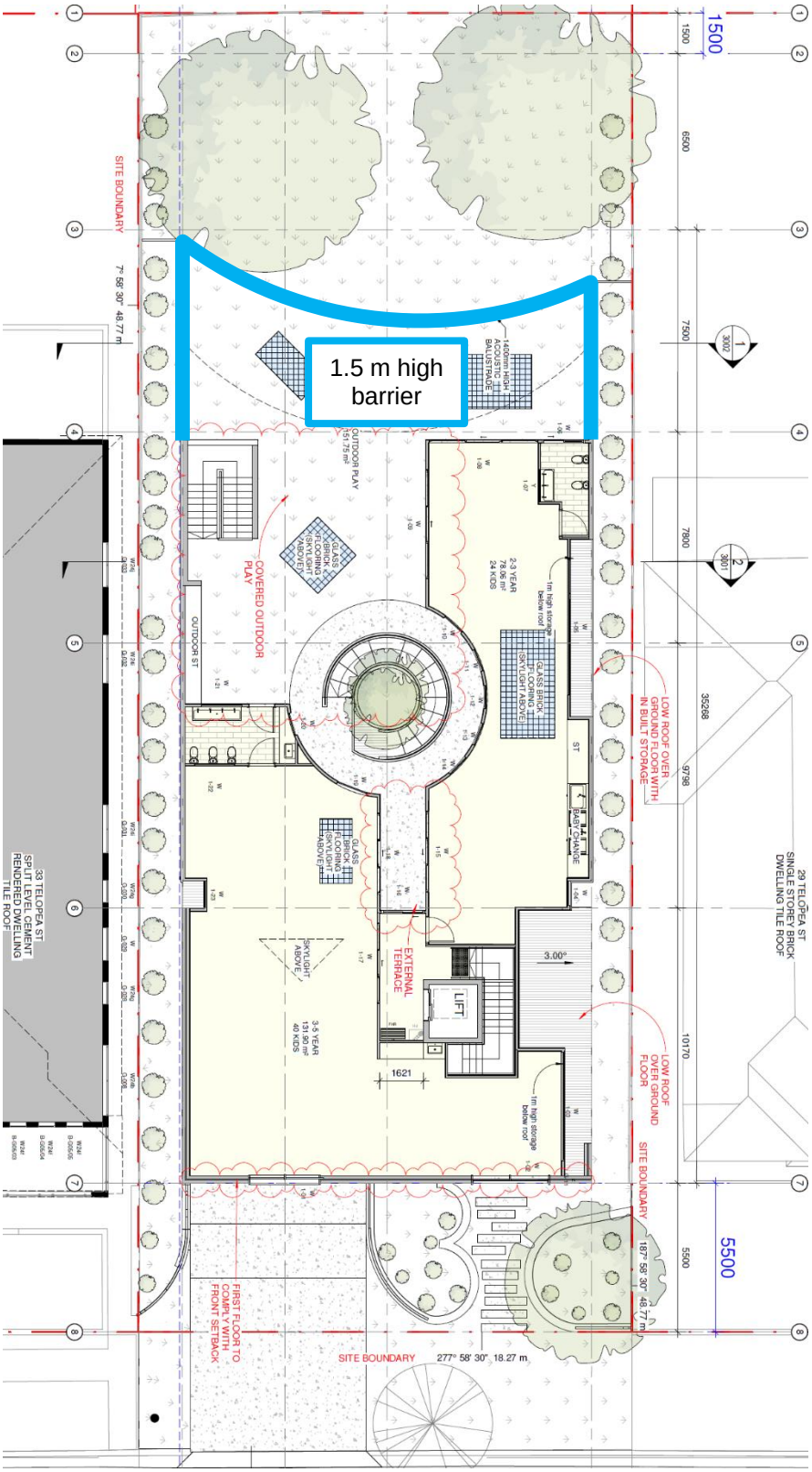
Uncovered First Floor Source Location

Covered First Floor Source Location

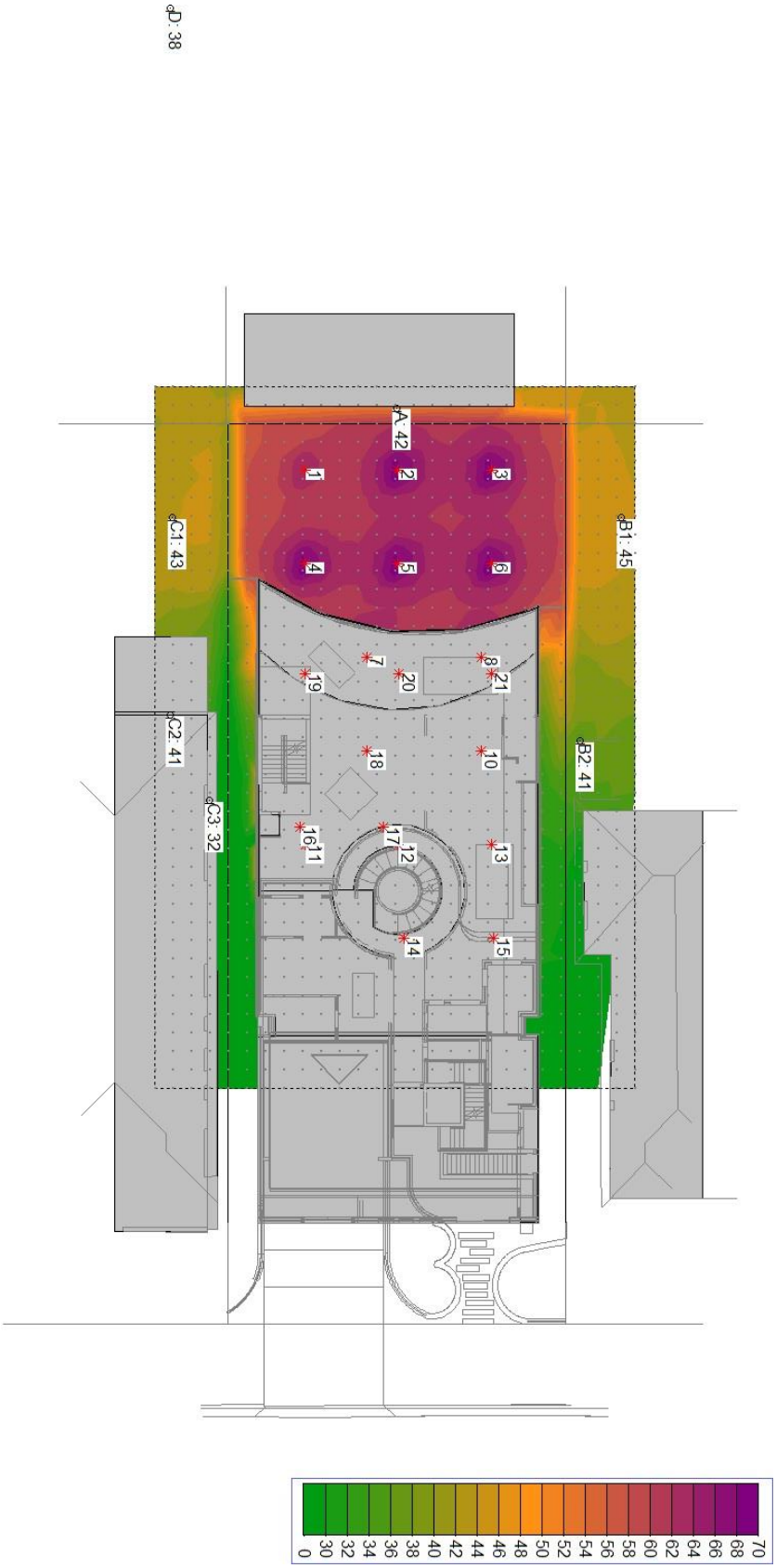
Residential Assessment Location



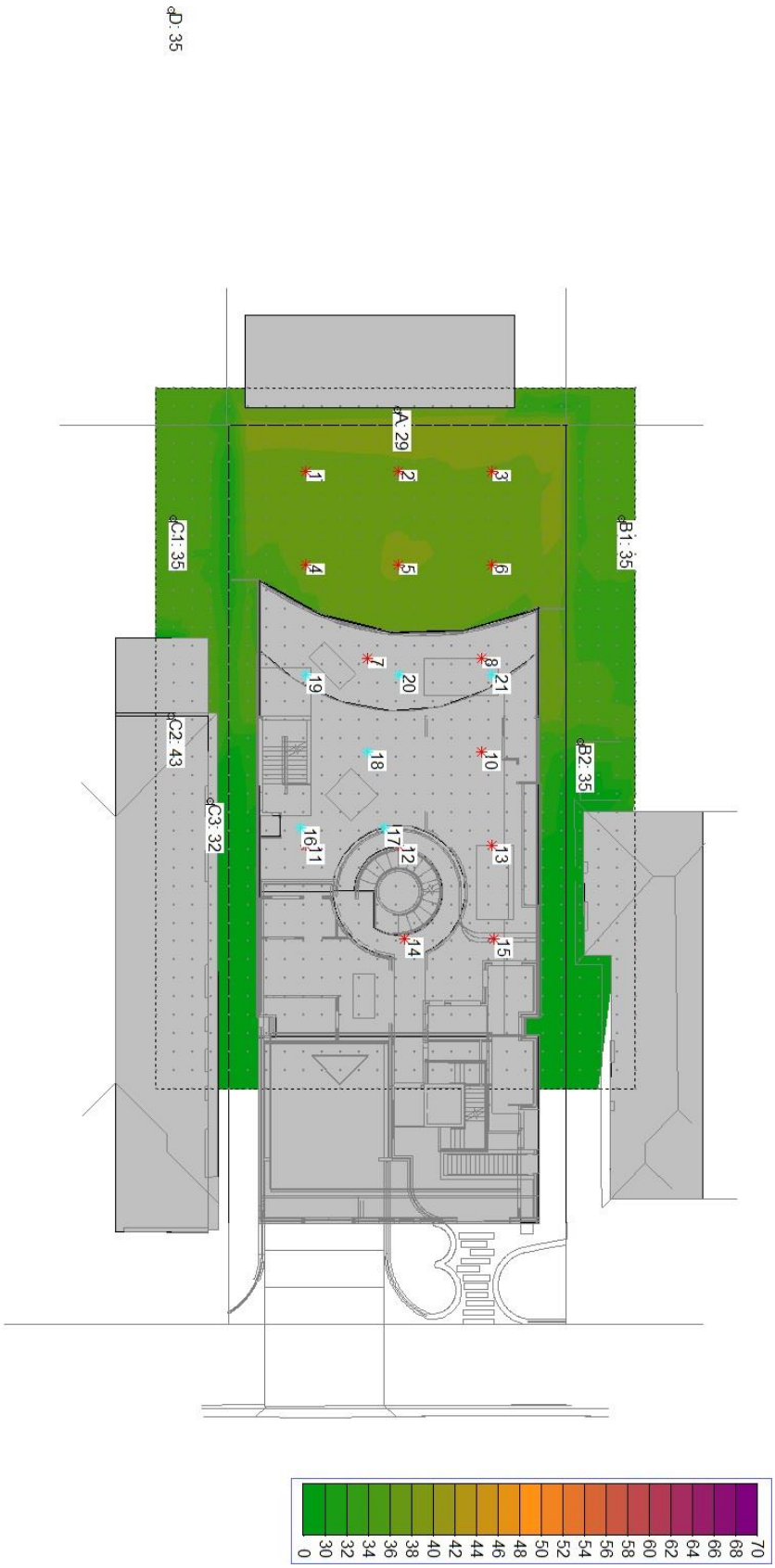
Ground Floor Plan


1.5 m high barrier
SITE BOUNDARY
7° 58' 30" 48.77 m
OUTDOOR PLAY
COVERED OUTDOOR PLAY
OUTDOOR ST
EXTERNAL TERRACE
LIFT
1621
3.00°
LOW ROOF OVER GROUND FLOOR WITH IN BUILT STORAGE
LOW ROOF OVER GROUND FLOOR
SITE BOUNDARY
187° 58' 30" 48.77 m
SITE BOUNDARY 277° 58' 30" 18.27 m
FIRST FLOOR TO COMPLY WITH FRONT SETBACK
33 TELOPEA ST SPLIT LEVEL CEMENT RENDERED DWELLING TILE ROOF
29 TELOPEA ST SINGLE STOREY BRICK DWELLING TILE ROOF
1500
6500
7500
7800
35268
9798
10170
5500

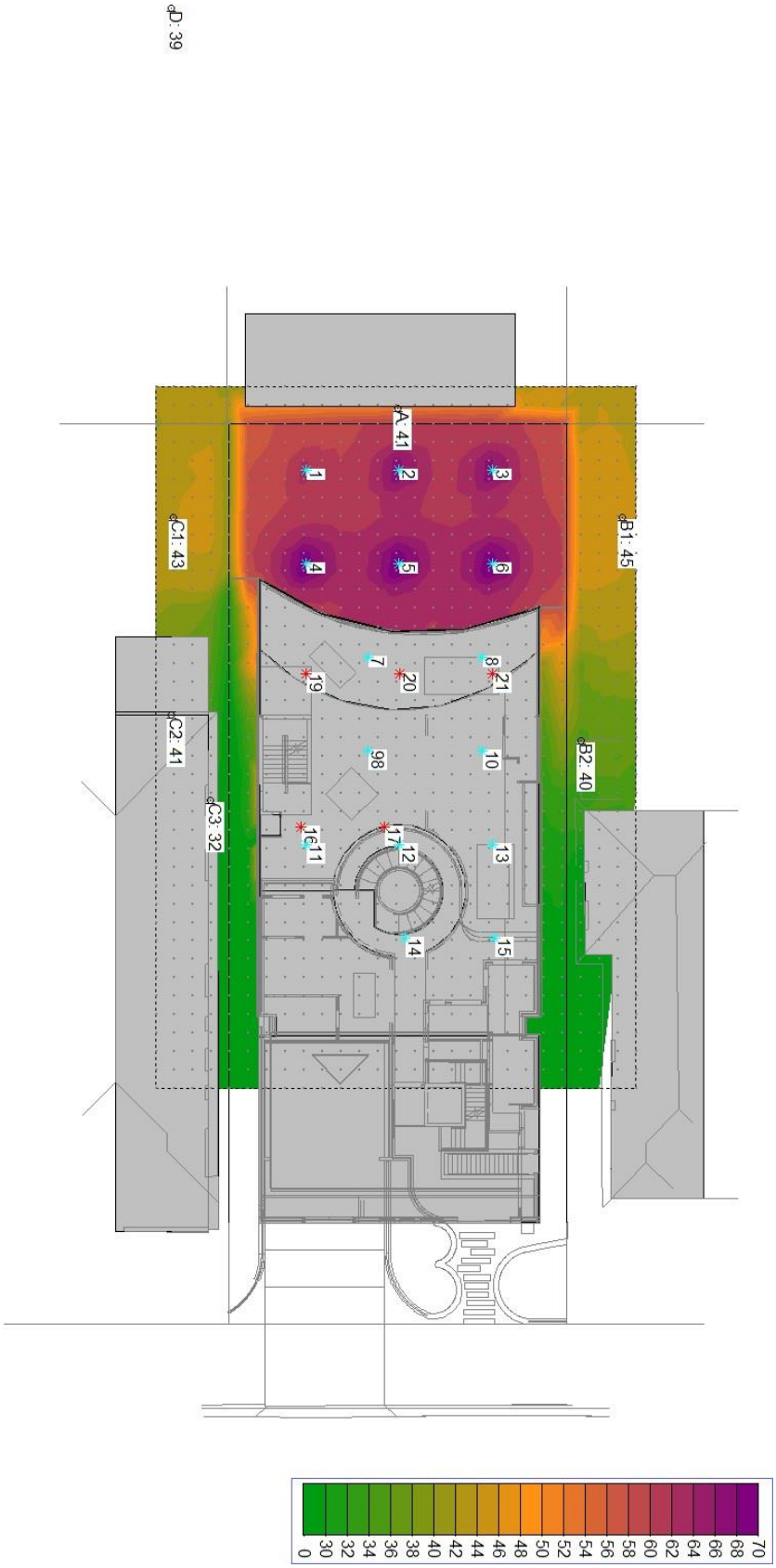
Level 1 Plan



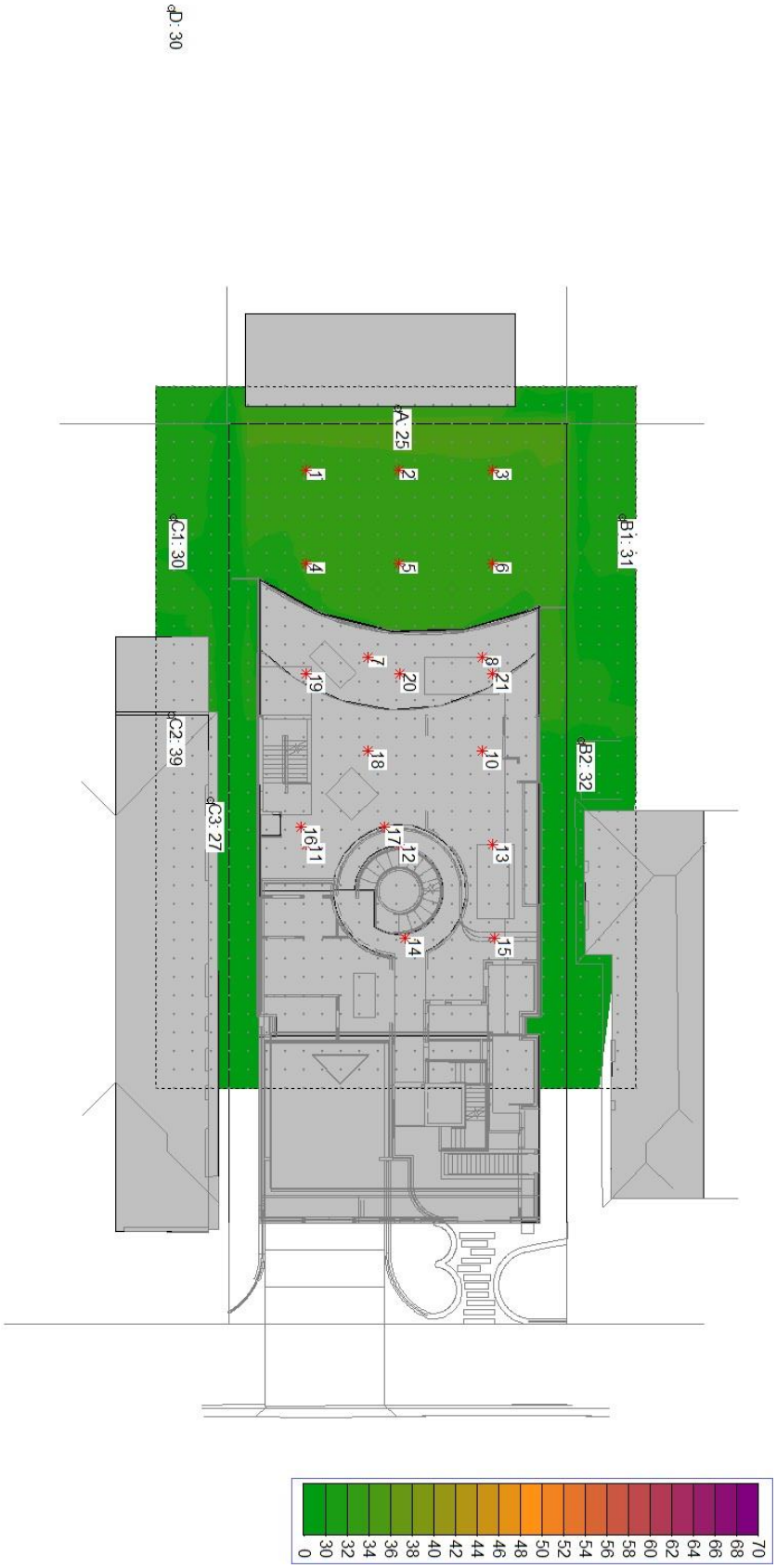
Noise Contour (horizontal plane 1.5 m above natural ground level) for 15 children (3-5 years) in ground floor outdoor play area



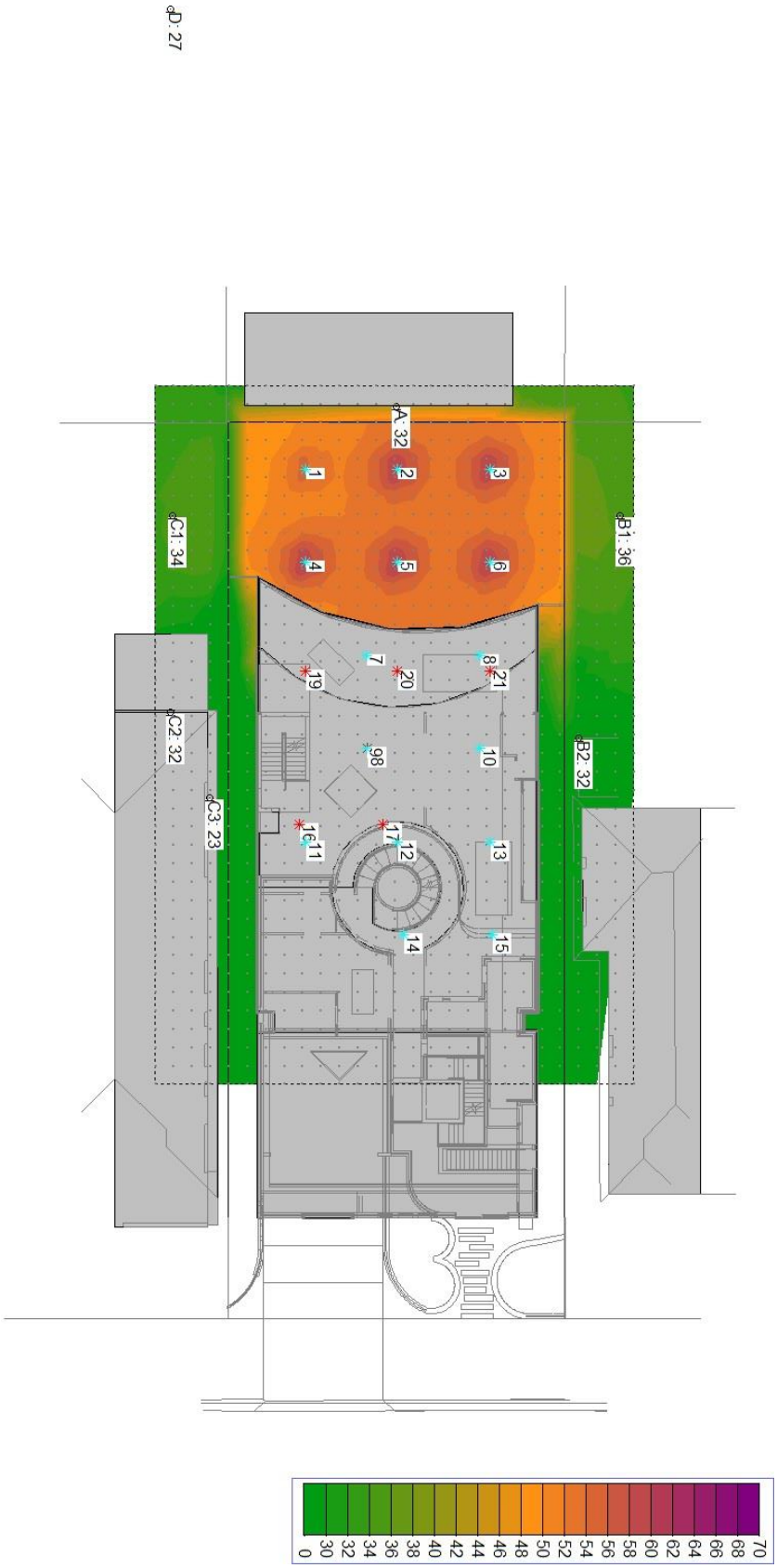
Noise Contour (horizontal plane 1.5 m above natural ground level) for 40 children (3-5 years) in Level 1 outdoor play area



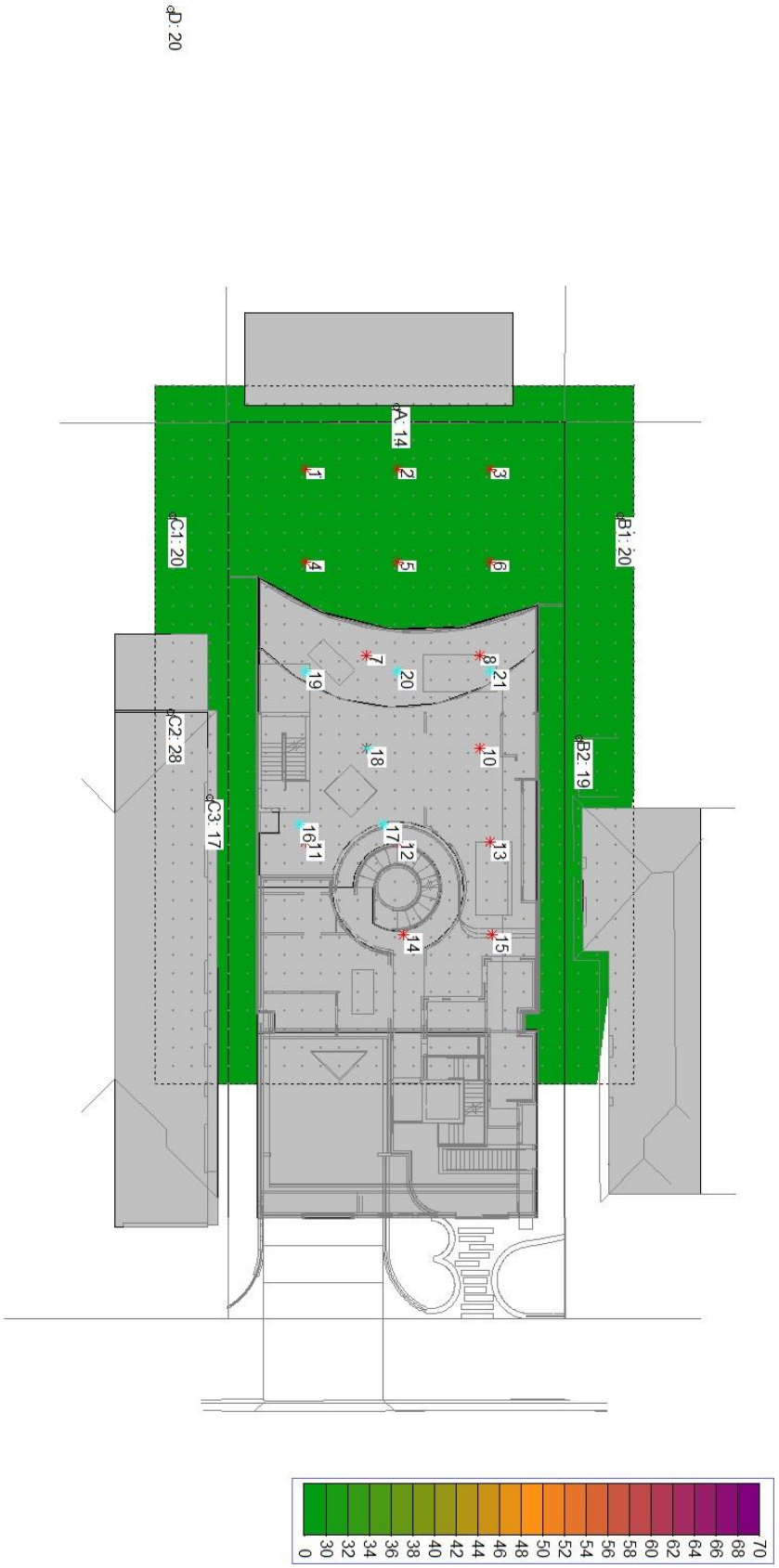
Noise Contour (horizontal plane 1.5 m above natural ground level) for 24 children (2-3 years) in ground floor outdoor play area



Noise Contour (horizontal plane 1.5 m above natural ground level) for 24 children (2-3 years) in Level 1 outdoor play area



Noise Contour (horizontal plane 1.5 m above natural ground level) for 10 children (0-2 years) in ground floor outdoor play area



Noise Contour (horizontal plane 1.5 m above natural ground level) for 10 children (0-2 years) in Level 1 outdoor play area

Source/Receiver Parameters

Location	Activity	RL Height
Ground floor outdoor play area		
Source 1	Sandpit	33.71 + 1 = 34.71 m
Source 2	Active	33.68 + 1 = 34.68 m
Source 3	Active	33.66 + 1 = 34.66 m
Source 4	Active	33.88 + 1 = 34.88 m
Source 5	Active	33.81 + 1 = 34.81 m
Source 6	Active	33.74 +1 = 34.74 m
Source 7	Active	33.96 + 1 = 34.96 m
Source 8	Active	33.87 + 1 = 34.87 m
Source 9	Active	34.18 + 1 = 35.18 m
Source 10	Sandpit	34.48 +1 = 35.48 m
Source 11	Active	34.43 + 1 = 35.43 m
Source 12	Active	35.17 + 1 = 36.17 m
Source 13	Active	34.42 + 1 = 35.43 m
Source 14	Active	35.17 + 1 = 36.17 m
Source 15	Active	35.17 + 1 = 36.17 m
Level 1 outdoor play area		
Source 16	Passive	38.17 + 1 = 39.17 m
Source 17	Passive	38.17 + 1 = 39.17 m
Source 18	Passive	38.17 + 1 = 39.17 m
Source 19	Passive	38.17 + 1 = 39.17 m
Source 20	Passive	38.17 + 1 = 39.17 m
Source 21	Passive	38.17 + 1 = 39.17 m
Residential Receivers		
Receiver A	-	32.75 + 1.5 = 34.25 m
Receiver B1	-	33.67 + 1.5 = 35.17 m
Receiver B2	-	35.27 + 1.5 = 36.77 m
Receiver C1	-	33.91 + 1.5 = 35.41 m
Receiver C2	-	37.35 + 1.5 = 38.85 m
Receiver C3	-	(38.52 + 39.69)/2 = 39.11 m
Receiver D	-	33.6 + 4.5 = 38.1 m

Summary of A-weighted Noise Contributions from Predictor-Lima Computer Noise Model

Ground Floor Outdoor Play Area – 15 children, 3-5 years

Report: Table of Control
Model: Copy of Model 3-5yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Ground Floor Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
1	1 child (sandpit)	29	27	15	33	36	25	18
2	1 child (active)	38	35	25	35	30	21	23
3	1 child (active)	35	39	40	33	30	18	23
4	1 child (active)	30	33	19	37	31	24	29
5	1 child (active)	30	35	23	35	34	19	27
6	1 child (active)	30	37	34	33	33	20	26
7	1 child (active)	26	34	18	31	31	22	29
8	1 child (active)	26	35	24	32	25	17	28
9	1 child (active)	23	33	16	-14	18	25	28
10	1 child (sandpit)	17	1	16	19	11	13	22
11	1 child (active)	21	31	13	0	14	18	14
12	1 child (active)	21	9	18	10	15	11	30
13	1 child (active)	21	1	20	24	9	8	27
14	1 child (active)	19	9	17	9	13	17	27
15	1 child (active)	19	0	15	0	6	17	29
	Total	42	45	41	43	41	32	38

Ground Floor Outdoor Play Area – 24 children, 2-3 years

Report: Table of Control
Model: Copy of Model 2-3yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Ground Floor Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
1	1 child (sandpit)	27	25	13	31	34	23	16
2	1 child (active)	36	33	23	33	28	19	21
3	1 child (active)	33	37	38	31	28	16	21
4	2 children (active)	31	34	20	38	32	25	30
5	2 children (active)	31	36	24	36	35	20	28
6	2 children (active)	31	38	35	34	34	21	27
7	2 children (active)	27	34	19	32	32	23	30
8	2 children (active)	27	36	25	33	26	18	29
9	2 children (active)	24	34	17	-13	19	26	29
10	2 children (sandpit)	18	2	17	20	12	14	23
11	2 children (active)	22	32	14	1	15	19	15
12	2 children (active)	22	10	19	11	16	12	31
13	1 child (active)	19	-1	18	22	7	6	25
14	1 child (active)	17	7	15	7	11	15	25
15	1 child (active)	17	-2	13	-2	4	15	27
	Total	41	45	40	43	41	32	39

Ground Floor Outdoor Play Area – 10 children, 0-2 years

Report: Table of Control
Model: Copy of Model 0-2yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Ground Floor Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
1	1 child (sandpit)	20	18	6	24	27	16	9
2	1 child (active)	29	26	16	26	21	12	14
3	1 child (active)	26	30	31	24	21	9	14
4	1 child (active)	21	24	10	28	22	15	20
5	1 child (active)	21	26	14	26	25	10	18
6	1 child (active)	21	28	25	24	24	11	17
7	1 child (active)	17	24	9	22	22	13	20
8	1 child (active)	17	26	15	23	16	8	19
9	1 child (active)	14	24	7	-23	9	16	19
10	1 child (sandpit)	8	-8	7	10	2	4	13
11		--	--	--	--	--	--	--
12		--	--	--	--	--	--	--
13		--	--	--	--	--	--	--
14		--	--	--	--	--	--	--
15		--	--	--	--	--	--	--
	Total	32	36	32	34	32	23	27

Level 1 Outdoor Play Area – 40 children, 3-5 years

Report: Table of Control
Model: Copy of Model 3-5yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Level 1 Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
16	6 children (passive)	18	22	13	6	17	23	15
17	7 children (passive)	19	15	20	17	20	24	28
18	7 children (passive)	21	25	12	26	16	20	28
19	7 children (passive)	23	29	19	31	41	26	28
20	7 children (passive)	24	30	24	28	37	26	27
21	6 children (passive)	22	30	35	28	33	21	26
	Total	29	35	35	35	43	32	35

Level 1 Outdoor Play Area – 25 children, 3-5 years

Report: Table of Control
Model: Copy of Model 3-5yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Level 1 Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
16	4 children (passive)	16	20	12	4	15	21	13
17	4 children (passive)	16	12	18	14	18	22	25
18	5 children (passive)	19	24	11	25	14	18	27
19	4 children (passive)	21	26	16	28	39	23	26
20	4 children (passive)	21	27	22	26	35	23	25
21	4 children (passive)	21	28	33	26	31	19	25
	Total	27	33	33	33	41	29	33

Level 1 Outdoor Play Area – 24 children, 2-3 years

Report: Table of Control
Model: Copy of Model 2-3yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Level 1 Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
16	4 children (passive)	14	18	10	2	13	19	11
17	4 children (passive)	14	10	16	12	16	20	23
18	4 children (passive)	16	21	8	22	11	15	24
19	4 children (passive)	19	24	14	26	37	21	24
20	4 children (passive)	19	25	20	24	33	21	23
21	4 children (passive)	19	26	31	24	29	17	23
	Total	25	31	31	30	39	27	30

Level 1 Outdoor Play Area – 10 children, 0-2 years

Report: Table of Control
Model: Copy of Model 0-2yr
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Level 1 Outdoor Play Area
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
16	1 child (passive)	1	5	-3	-11	0	6	-2
17	2 children (passive)	4	0	6	2	6	10	13
18	2 children (passive)	6	11	-2	12	1	5	14
19	2 children (passive)	9	14	4	16	27	11	14
20	2 children (passive)	9	15	10	14	23	11	13
21	1 child (passive)	6	13	18	11	16	4	10
	Total	14	20	19	20	28	17	20

Matrix of Cumulative Noise Emission Levels from Outdoor Play

Row	Area	Contribution at Assessment Locations – dB(A)						
		A	B1	B2	C1	C2	C3	D
a	Ground floor, 15 children, 3-5 years	42	45	41	43	41	32	38
b	Ground floor, 24 children, 2-3 years	41	45	40	43	41	32	39
c	Ground floor, 10 children, 0-2 years	32	36	32	34	32	23	27
d	Level 1, 40 children, 3-5 years	29	35	35	35	43	32	35
e	Level 1, 25 children, 3-5 years	27	33	33	33	41	29	33
f	Level 1, 24 children, 2-3 years	25	31	31	30	39	27	30
g	Level 1, 10 children, 0-2 years	14	20	19	20	28	17	20
a + e		42	45	42	43	44	34	39
a + f		42	45	41	43	43	33	39
a + g		42	45	41	43	41	32	38
b + d		41	45	41	44	45	35	40
b + g		41	45	40	43	41	32	39
c + d		34	39	37	38	43	33	36
c + f		33	37	35	35	40	28	32

Calculation of 15 children (3-5 years) in ground floor outdoor play area to Assessment Location B (rear yard of 29 Telopea Street)

Location	1
Source	1 child (3-5 years)
Distance from Source to Receiver	17.3 m
Path Length Difference	0.07 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (passive)	71	22	38	50	62	67	65	61	55
Barrier Attenuation (boundary fence)		-6	-6	-7	-8	-10	-13	-15	-18
Distance Attenuation		-33	-33	-33	-33	-33	-33	-33	-33
SPL Contribution	27	-16	-1	11	21	24	20	13	4

Location	2
Source	1 child (3-5 years)
Distance from Source to Receiver	12.4 m
Path Length Difference	0.09 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-6	-7	-9	-11	-13	-16	-19
Distance Attenuation		-30	-30	-30	-30	-30	-30	-30	-30
SPL Contribution	35	-7	8	19	30	32	28	21	12

Location	3
Source	1 child (3-5 years)
Distance from Source to Receiver	7.5 m
Path Length Difference	0.15 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-7	-8	-10	-13	-16	-19	-22
Distance Attenuation		-25	-25	-25	-25	-25	-25	-25	-25
SPL Contribution	38	-4	12	22	32	35	30	23	14

Location	4
Source	1 child (3-5 years)
Distance from Source to Receiver	17.3 m
Path Length Difference	0.08 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-6	-7	-8	-10	-13	-16	-19
Distance Attenuation		-33	-33	-33	-33	-33	-33	-33	-33
SPL Contribution	33	-10	5	16	27	30	25	18	9

Location	5
Source	1 child (3-5 years)
Distance from Source to Receiver	12.3 m
Path Length Difference	0.10 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-6	-7	-9	-11	-14	-17	-20
Distance Attenuation		-30	-30	-30	-30	-30	-30	-30	-30
SPL Contribution	35	-8	8	19	29	32	27	20	11

Location	6
Source	1 child (3-5 years)
Distance from Source to Receiver	7.5 m
Path Length Difference	0.17 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-7	-8	-11	-13	-16	-19	-22
Distance Attenuation		-25	-25	-25	-25	-25	-25	-25	-25
SPL Contribution	37	-4	11	22	32	34	29	22	13

Location	7
Source	1 child (3-5 years)
Distance from Source to Receiver	15.7 m
Path Length Difference	0.08 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-6	-7	-8	-10	-13	-16	-19
Distance Attenuation		-32	-32	-32	-32	-32	-32	-32	-32
SPL Contribution	34	-9	6	17	28	31	26	19	10

Location	8
Source	1 child (3-5 years)
Distance from Source to Receiver	10.8 m
Path Length Difference	0.10 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-6	-6	-7	-9	-11	-14	-17	-20
Distance Attenuation		-29	-29	-29	-29	-29	-29	-29	-29
SPL Contribution	36	-6	9	20	31	33	29	22	13

Location	9
Source	1 child (3-5 years)
Distance from Source to Receiver	18.7 m
Path Length Difference	0.06 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-5	-6	-6	-7	-9	-11	-14	-17
Distance Attenuation		-33	-33	-33	-33	-33	-33	-33	-33
SPL Contribution	33	-11	5	16	27	30	26	19	10

Location	10
Source	1 child (3-5 years)
Distance from Source to Receiver	14.8 m
Path Length Difference	0.26 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (passive)	71	22	38	50	62	67	65	61	55
Barrier Attenuation (full-height barrier)		-7	-8	-10	-12	-15	-18	-21	-24
Distance Attenuation		-31	-31	-31	-31	-31	-31	-31	-31
SPL Contribution	24	-16	-1	9	18	21	16	9	0

Location	11
Source	1 child (3-5 years)
Distance from Source to Receiver	24.6 m
Path Length Difference	0.05 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (boundary fence)		-5	-6	-6	-7	-9	-11	-14	-16
Distance Attenuation		-36	-36	-36	-36	-36	-36	-36	-36
SPL Contribution	31	-13	3	14	25	29	24	18	9

Location	12
Source	1 child (3-5 years)
Distance from Source to Receiver	21.5 m
Path Length Difference	0.11 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (full-height barrier)		-6	-6	-7	-9	-12	-14	-17	-20
Distance Attenuation		-35	-35	-35	-35	-35	-35	-35	-35
SPL Contribution	30	-12	3	14	24	27	22	15	6

Location	13
Source	1 child (3-5 years)
Distance from Source to Receiver	19.1 m
Path Length Difference	0.68 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (full-height barrier)		-9	-11	-13	-16	-19	-22	-25	-28
Distance Attenuation		-34	-34	-34	-34	-34	-34	-34	-34
SPL Contribution	23	-14	0	9	18	20	15	8	-1

Location	14
Source	1 child (3-5 years)
Distance from Source to Receiver	25.7 m
Path Length Difference	0.34 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (full-height barrier)		-7	-8	-11	-13	-16	-19	-22	-25
Distance Attenuation		-36	-36	-36	-36	-36	-36	-36	-36
SPL Contribution	24	-15	-1	9	19	21	16	9	0

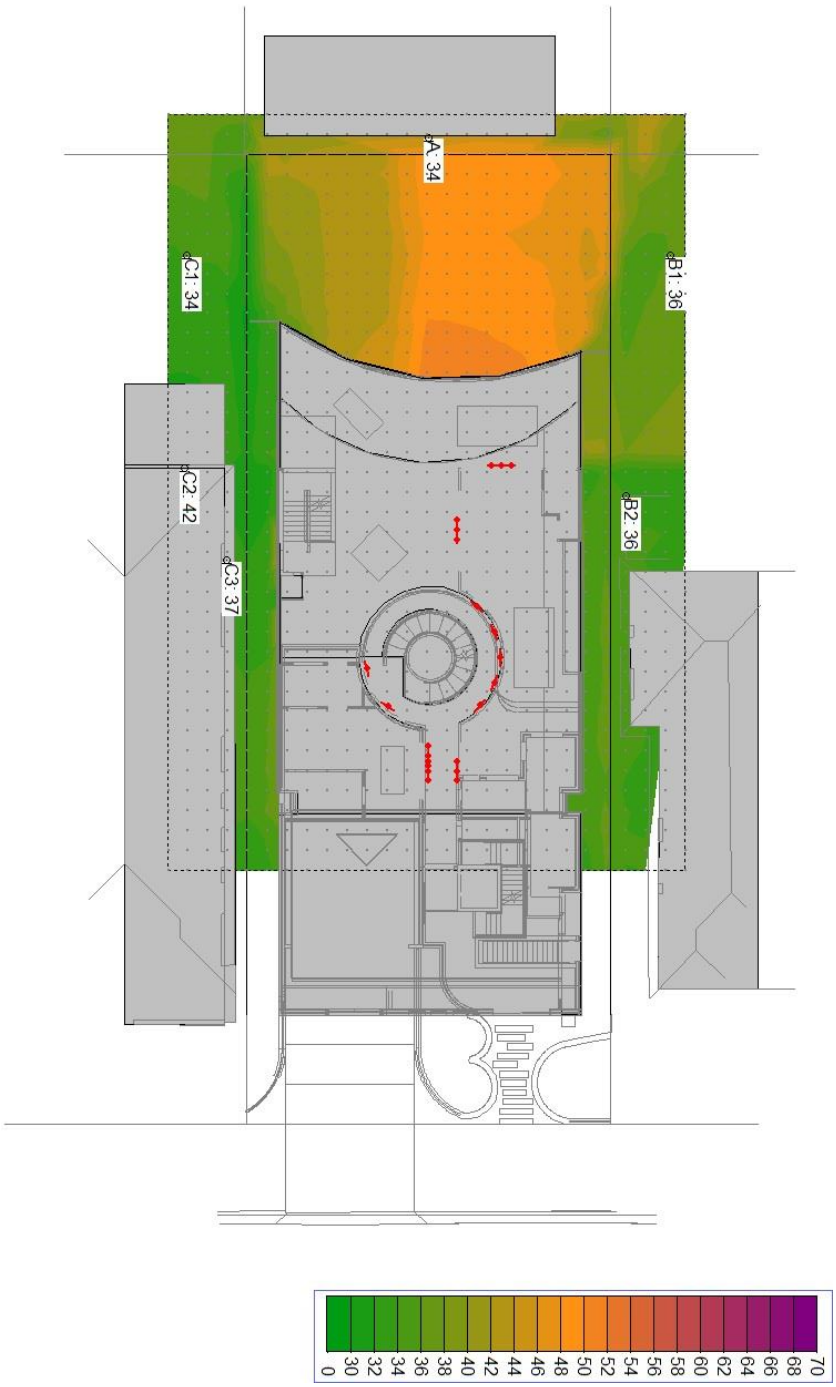
Location	15
Source	1 child (3-5 years)
Distance from Source to Receiver	23.9 m
Path Length Difference	0.93 m

Description	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Source Lw (active)	77	28	44	56	68	73	71	67	61
Barrier Attenuation (full-height barrier)		-10	-12	-15	-18	-21	-24	-27	-30
Distance Attenuation		-36	-36	-36	-36	-36	-36	-36	-36
SPL Contribution	20	-17	-3	6	15	17	12	5	-4

3-5yo Children in Ground Floor Outdoor Play Area to Assessment Location B (rear yard of 29 Telopea Street)

Source Contribution	dB(A)	A-weighted Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
1 (passive)	27	-16	-1	11	21	24	20	13	4
2 (active)	35	-7	8	19	30	32	28	21	12
3 (active)	38	-4	12	22	32	35	30	23	14
4 (active)	33	-10	5	16	27	30	25	18	9
5 (active)	35	-8	8	19	29	32	27	20	11
6 (active)	37	-4	11	22	32	34	29	22	13
7 (active)	34	-9	6	17	28	31	26	19	10
8 (active)	36	-6	9	20	31	33	29	22	13
9 (active)	33	-11	5	16	27	30	26	19	10
10 (passive)	24	-16	-1	9	18	21	16	9	0
11 (active)	31	-13	3	14	25	29	24	18	9
12 (active)	30	-12	3	14	24	27	22	15	6
13 (active)	23	-14	0	9	18	20	15	8	-1
14 (active)	24	-15	-1	9	19	21	16	9	0
15 (active)	20	-17	-3	6	15	17	12	5	-4
Total Contribution	45	3	18	29	39	42	37	30	21

APPENDIX E: Analysis of Classroom Noise Emissions

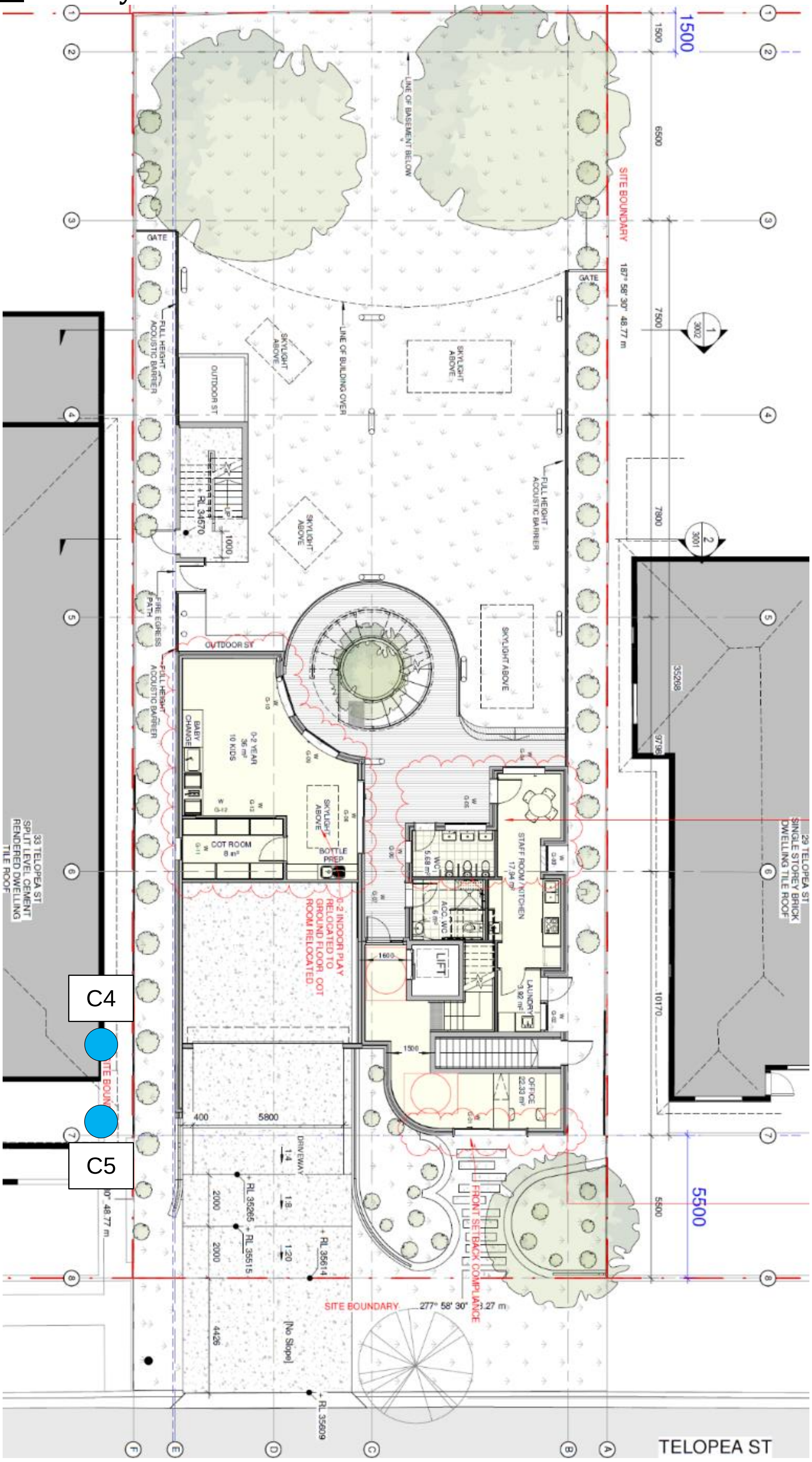


Noise contour (horizontal plane at 1.5 m above natural ground level) for cumulative level of noisy activities occurring in all classrooms

Report: Table of Control
Model: Classrooms
Path: C:\Users\Lima\Documents\Predictor\31 Telopea St, Punchbowl\
Group: Classrooms
Period: Day

Name	Description	A_A	B1_A	B2_A	C1_A	C2_A	C3_A	D_A
W 1-08	2-3yo Classroom	28	35	33	32	41	22	37
W 1-09	2-3yr Classroom	20	12	14	23	19	21	28
W 1-10	2-3yo Classroom	9	10	16	12	15	19	13
W 1-11	2-3yo Classroom	10	10	17	12	14	19	11
W 1-12	2-3yo Classroom	10	10	17	17	14	19	12
W 1-13	2-3yo Classroom	10	10	16	17	14	19	12
W 1-14	2-3yo Classroom	12	12	17	13	13	19	24
W 1-15	2-3yo Classroom	17	13	19	14	16	21	26
W 1-18	3-5yo Classroom	31	29	33	27	31	37	28
W G-08	0-2yo Classroom	14	-3	7	-5	-1	0	19
W G-09	0-2yr Classroom	10	1	7	-8	-3	-2	16
W G-10	0-2yo Classroom	11	-1	7	-8	-1	8	12
	Total	34	36	36	34	42	37	38

APPENDIX F: Analysis of Noise Emission from Vehicle Movements



Driveway Noise Emission Assessment Location

Drop-off of Children to Location C4 (southernmost window on western façade of 33 Telopea Street)

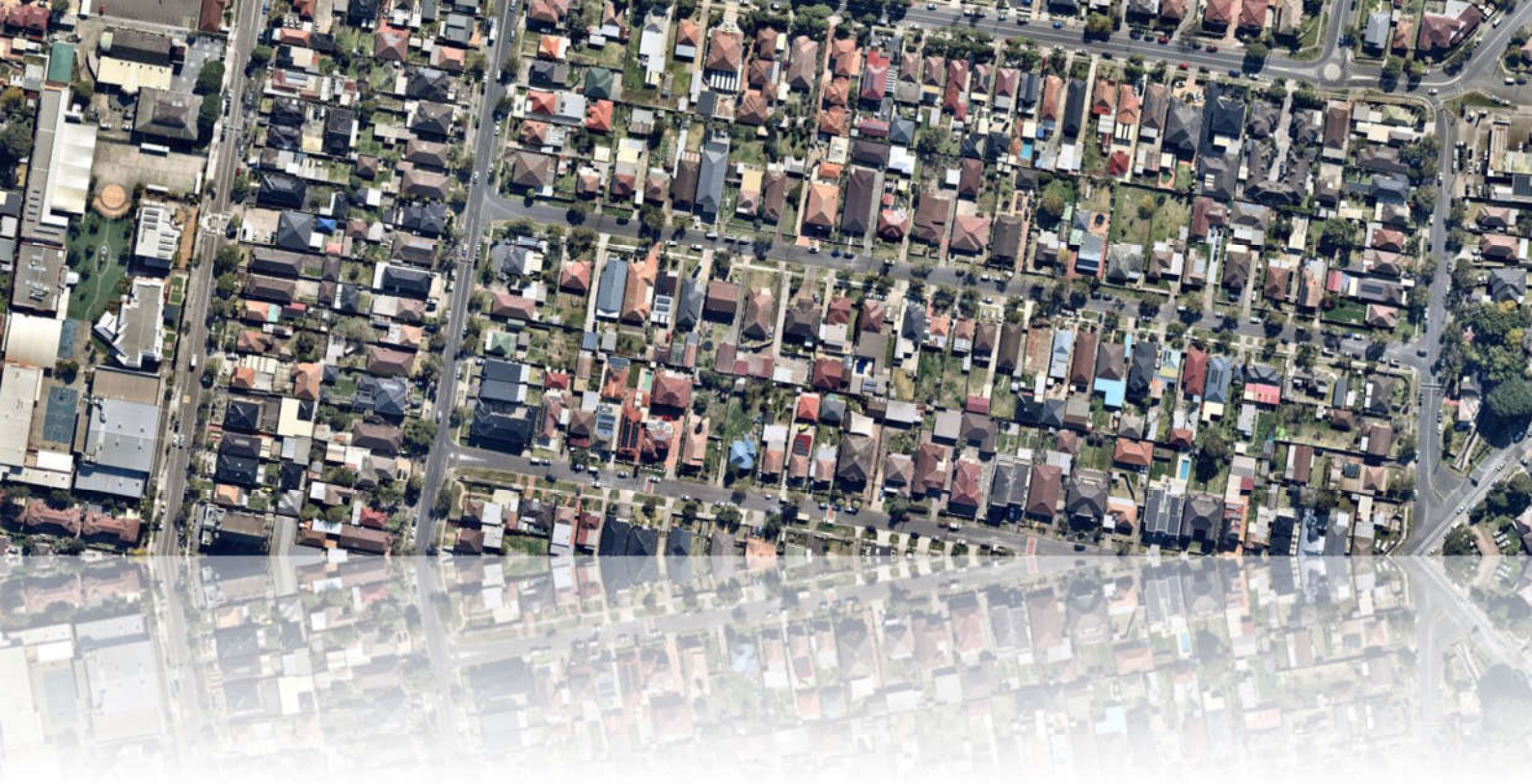
	L_{AE}	Correction for no. of vehicles	Correction for distance	L_{AE} to $L_{eq,\ 15\ min}$	Contribution dB(A)
Vehicles arriving	57.0 dB(A)	+10	+1	-30	38
Vehicles exiting	60.6 dB(A)	+10	-3	-30	38
				Total	41

Drop-off of Children to Location C5 (western end of covered patio at the front of 33 Telopea Street)

	L_{AE}	Correction for no. of vehicles	Correction for distance	L_{AE} to $L_{eq,\ 15\ min}$	Contribution dB(A)
Vehicles arriving	57.0 dB(A)	+10	+2	-30	39
Vehicles exiting	60.6 dB(A)	+10	-1	-30	40
				Total	43

APPENDIX G: Cumulative Noise Contribution

Area	Reference	Contribution at Assessment Locations – dB(A)								
		A	B1	B2	C1	C2	C3	C4	C5	D
Classrooms	Appendix E2	34	36	36	34	42	37	-	-	38
Vehicle Movements on Site	Appendix F2	-	-	-	-	-	-	41	43	-
Mechanical Plant	Table 3	42	42	42	38	38	38	38	38	38
Total Noise Contribution		43	43	43	39	43	41	43	44	41
Daytime RBL		39	39	39	39	39	39	39	39	39



TRAFFIC AND PARKING IMPACT ASSESSMENT OF CHILD CARE CENTRE AT 31 TELOPEA STREET, PUNCHBOWL

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Division of RAMTRANS Australia ABN: 45067491678 RPEQ: 19457

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

210923.01FB - 11 February 2022

Development Type: **Child Care Centre**

Site Address: **31 Telopea Street, Punchbowl**

Prepared for: **EthanGroup Pty Ltd**

Document reference: **210923.01FB**

Status	Issue	Prepared By	Checked By	Date
Draft	A	ME	DF	1 October 2021
FINAL	A	CM		25 January 2022
FINAL	B	CM		11 February 2022

TABLE OF CONTENTS

1 INTRODUCTION

M^CLaren Traffic Engineering was commissioned by *EthanGroup Pty Ltd* to provide a Traffic and Parking Impact Assessment of the Child Care Centre at 31 Telopea Street, Punchbowl as depicted in **Annexure A**.

1.1 Description and Scale of Development

The proposed development has the following characteristics relevant to traffic and parking:

- A child care centre accommodating 74 children and 12 staff members as per the following:
    - 10 children between 0-2 years old (3 staff assigned at 1 per 4 children);
    - 24 children between 2-3 years old (5 staff assigned at 1 per 5 children);
    - 40 children between 3-5 years old (4 staff assigned at 1 per 10 children).
- Hours of operation are 7:00am to 6:00pm, Monday to Friday;
- A total of 19 car parking spaces provided, comprising 18 spaces in the proposed basement carpark (with vehicular access via a proposed two-way driveway from Telopea Street) and 1 on-street car parking space along the site frontage allocated as a staff space. The allocation of the basement parking area that accommodates 18 car spaces is as follows:
    - Nine (9) car spaces for visitor use, including one (1) disabled spaces;
    - Nine (9) car spaces for staff.

1.2 State Environmental Planning Policy (Infrastructure) 2007

The proposed development does not qualify as a traffic generating development with relevant size and/or capacity under *Clause 104* of the *SEPP (Infrastructure) 2007*. Accordingly, formal referral to Transport for New South Wales (TfNSW) is unnecessary, and the application can be assessed by Canterbury Bankstown Council officers accordingly.

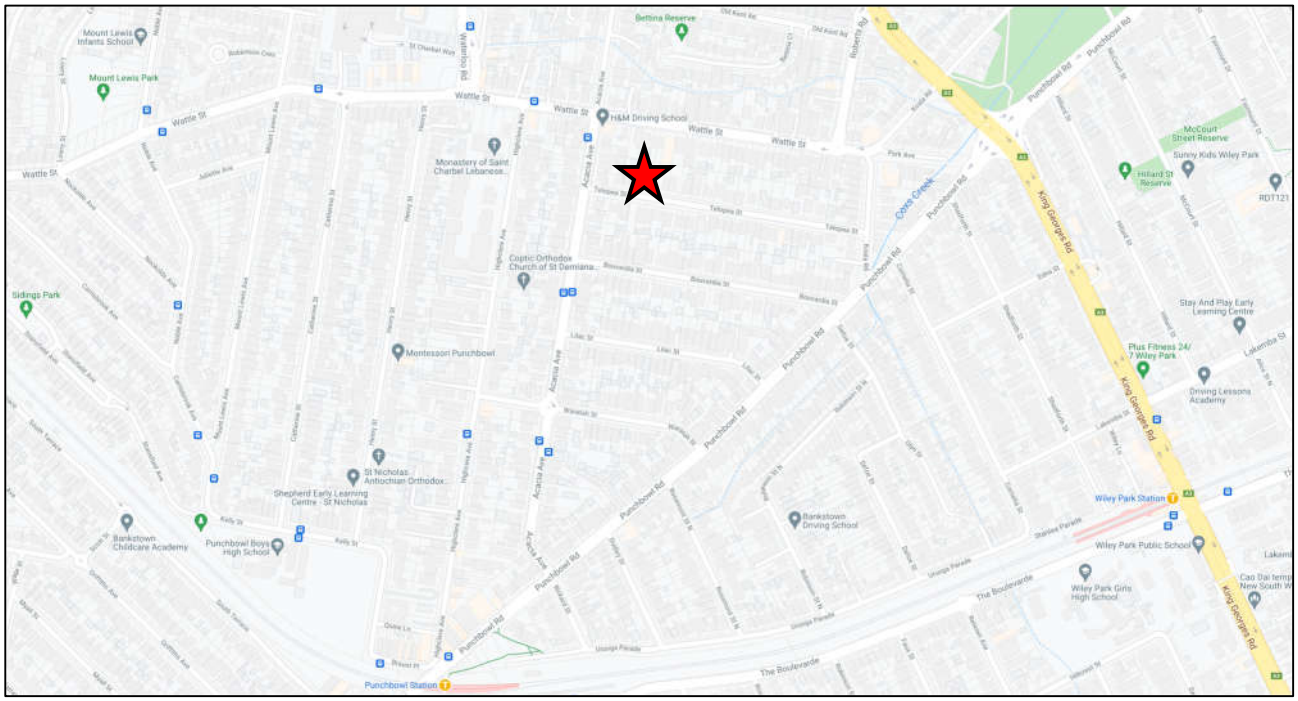
1.3 Site Description

The subject site is currently occupied by a single residential dwelling and is currently zoned *R2 – Low Density Residential* under the Bankstown Local Environmental Plan 2015 as adopted by Canterbury Bankstown Council. The site has a single frontage to Telopea Street to the south.

The site is surrounded by low-density residential dwellings in all directions, with St Charbel's College and the Monastery of Saint Charbel Lebanese Maronite Order located approximately 250m to the west. Further, Punchbowl Boys Highschool is located approximately 880m to the south, with the Punchbowl town centre accommodating Punchbowl Train Station located approximately 850m to the south.

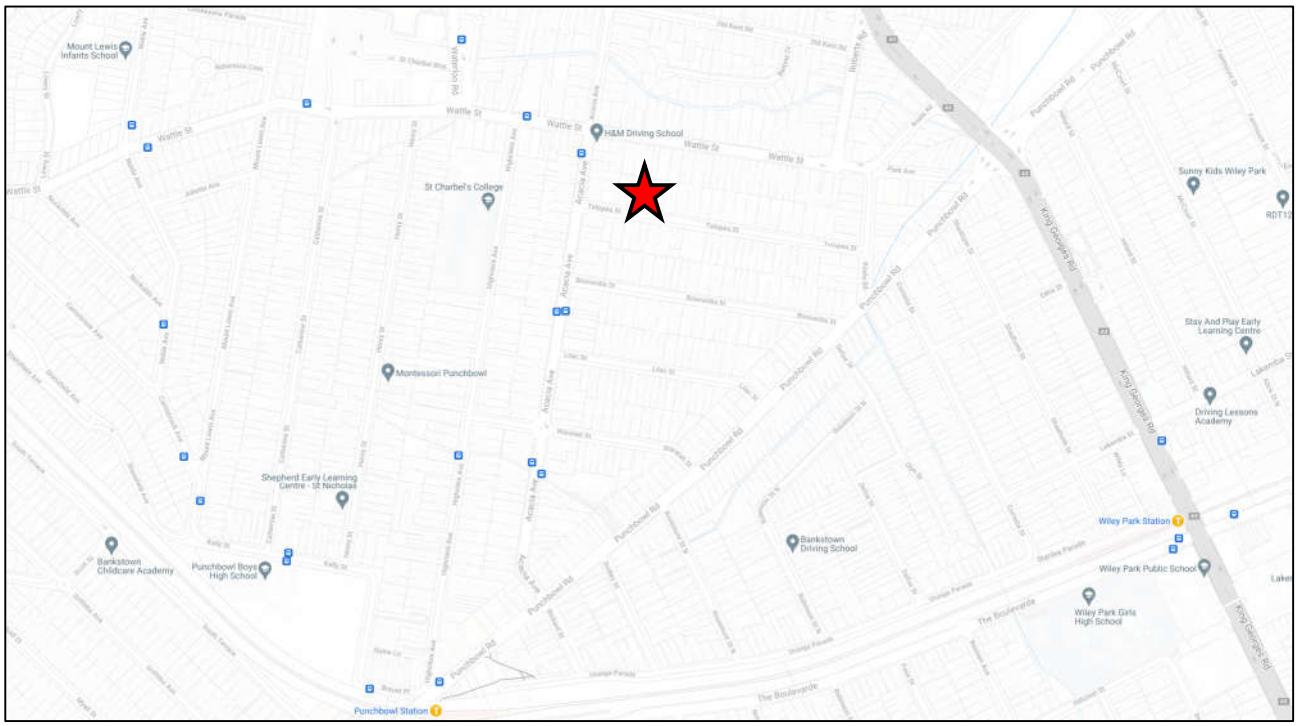
1.4 Site Context

The location of the site is shown on an aerial photo and a street map in **Figure 1** and **Figure 2** respectively.



Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The road network servicing the site has characteristics as described in the following sub-sections.

2.1.1 Telopea Street

- Unclassified LOCAL Road;
- Road reserve width of approximately 20m with a road carriageway facilitating two-way traffic flow and kerbside parking on both sides of the road;
- Default 50km/h speed limit;
- Unrestricted kerbside parking permitted along both sides of the road.

2.1.2 Acacia Avenue

- Unclassified COLLECTOR Road;
- Road reserve width of approximately 20m with a two-way carriageway (one lane in each direction) and line-marked kerbside parking lane on both sides of the road;
- Signposted 50km/h speed limit;
- Unrestricted kerbside parking permitted along both sides of the road within the dedicated line-marked parking lane.

2.2 Existing Traffic Management

- Priority controlled intersection of Telopea Street / Acacia Avenue;
- Priority controlled intersection of Telopea Street / Koala Road.

2.3 Existing Traffic Environment

Due to the previous COVID-19 lockdowns across NSW, the client has provided traffic surveys for relevant intersections within close proximity to the subject site.

Intersection traffic surveys provided were conducted at the intersections of Telopea Street / Acacia Avenue and Telopea Street / Koala Road from 8:00am to 9:00am and 4:45pm to 5:45pm on a weekday in June 2021, representing a typical operating weekday. It is noted that only the two (2) single hourly periods were provided at the two (2) identified intersections. The traffic data as provided is reproduced in **Annexure B** for reference.

It is noted that in NSW, the first COVID-19 case as part of the 'Bondi Cluster' outbreak was confirmed on 16 June 2021. Restrictions were mandated across the affected LGAs, with tighter social distancing restrictions enacted from 23 June 2021 for the residents of Greater Sydney. By 26 June 2021, lockdowns were enacted across Greater Sydney.

2.3.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 9.0, **Table 1** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure** .

TABLE 1: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 9.0)

Intersection	Peak Hour	Degree of Saturation [1]	Average Delay [2] (sec/veh)	Level of Service [3][4]	Control Type	Worst Movement
EXISTING PERFORMANCE						
Acacia Ave /Telopea St	AM	0.21	2 (Worst: 8)	**NA** (Worst: A)	Give Way	RT from Telopea St
	PM	0.16	1.4 (Worst: 7.5)	**NA** (Worst: A)		RT from Telopea St
Koala Rd /Telopea St	AM	0.15	2.6 (Worst: 6.7)	**NA** (Worst: A)	Give Way	RT from Telopea St
	PM	0.12	2.7 (Worst: 6.7)	**NA** (Worst: A)		RT from Telopea St

NOTES:
(1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
(3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

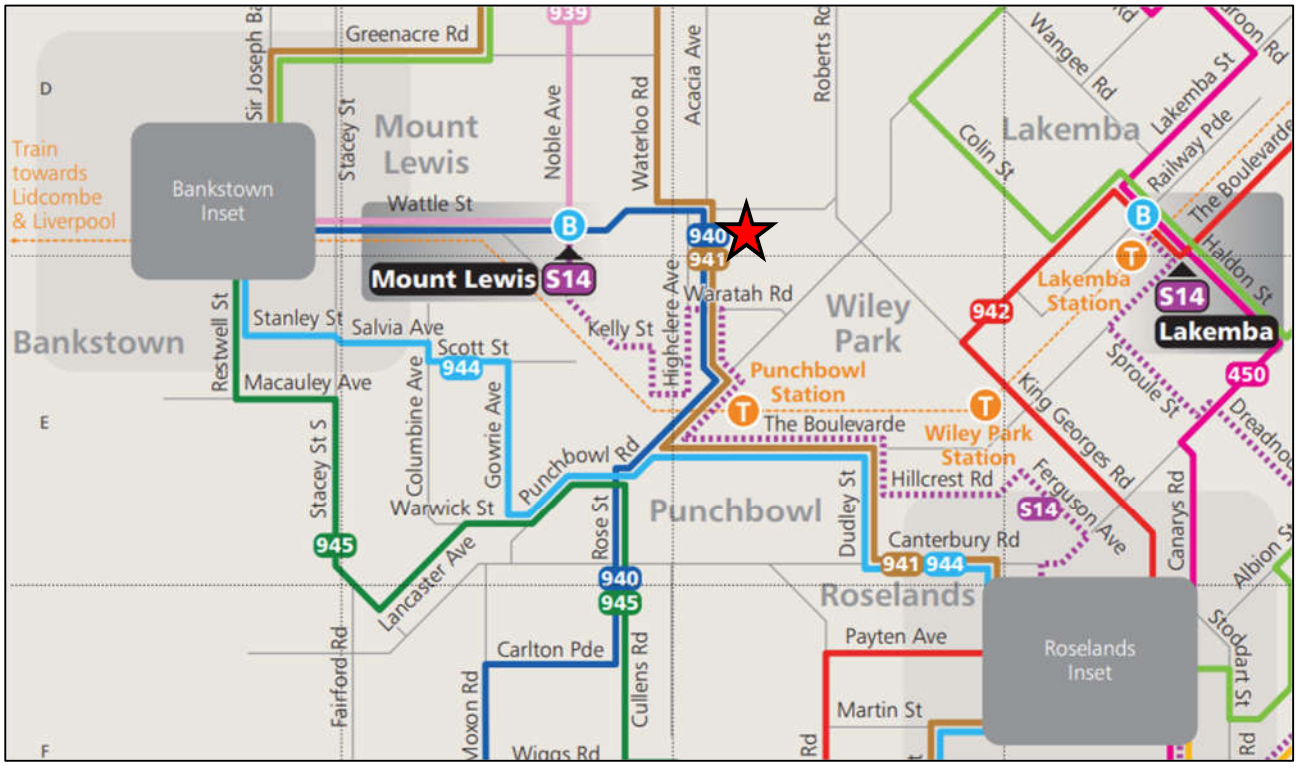
As shown, the relevant intersections are currently performing at a high level of efficiency, with a low degree of saturation and minimum average delay (less than three seconds). This indicates that the subject intersections are operating efficiently with ample spare capacity. Further, as the intersection is performing well during the modelled AM and PM periods and that the volumes are not expected to be significantly different during the hours of 7-9am and 3-6pm (being the AM and PM peak periods), the performance of the intersection will not significantly change upon a slightly greater traffic volume. As such, the modelled scenario is reflective of the expected operations of the intersections.

2.4 *Public Transport*

The subject site has access to existing bus stop (ID: 2196139 and ID: 2196137) located approximately 200m walking distance to the west of site on Acacia Avenue. The bus stop services existing bus route 940 (Bankstown to Hurstville via Riverwood) and 941 (Bankstown to Hurstville via Greenacre) provided by Punchbowl Bus Company.

Punchbowl Train Station is located 1,000m walking distance to the south of the subject site, servicing the T3 – Bankstown Line. A train service is provided every 10 – 20 minutes in commuter peak periods and provides direct access between Liverpool and the Sydney CBD.

The location of the site subject to the surrounding public transport network is shown in **Figure 3**.



Site Location

FIGURE 3: PUBLIC TRANSPORT NETWORK MAP

2.5 *Future Road and Infrastructure Upgrades*

From Canterbury Bankstown Council Development Application tracker and TfNSW projects website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 PARKING ASSESSMENT

3.1 Council Parking Requirement

Reference is made to the *Bankstown Development Control Plan 2015* as adopted by Canterbury Bankstown Council which designates the following parking rates applicable to the proposed development:

> ***Section 2 – Off Street Parking***
>
> ***Schedule: Off-street parking requirements***
>
> *Child care centres*
>
> *1 car space per 4 children and*
>
> *2 additional car spaces for the exclusive use of any associated dwelling.*

Table 2 presents the parking requirements of the proposal according to the Council's above car parking rates.

TABLE 2: DCP PARKING RATES

Land Use	Scale	Rate	Spaces Required	Spaces Provided
Child Care Centre	74 Children	1 per 4 children	19 (18.5)	19

As shown, strict application of the DCP requires the provision of **19** car parking spaces. The proposed plans detail the provision of **18** car parking spaces, resulting in a shortfall of 1 off-street parking space if Council's DCP parking requirements are strictly applied.

The provision of 1 on-street car parking space along the frontage of the site is consistent with the RTA (now TfNSW / RMS) *"Guide to Traffic Generating Developments"* (Oct 2002), which allows relaxation of the 1 car parking space per 4 children in attendance, as per the following extracts from the Guide:

> *"Consideration could be given to reducing the parking required if convenient and safe on-street parking is available (e.g. indented parking bays), provided that the use of such parking does not adversely affect the amenity of the adjacent area."*

Accordingly, in view of the above and consistent with other approved child care centres, based upon MTE's experience, the 1 space shortfall is fully supportable.

It is noted that Canterbury Bankstown Council have recently released a *Draft Consolidated Development Control Plan 2021* which is expected to be enforced upon the publication of the *Consolidated Local Environmental Plan*. In any case, the Draft DCP 2021 contains the same car parking rates for child care centre developments as the Bankstown DCP 2015 and as such, the development satisfies the future DCP requirements.

3.2 Disabled Parking

The Canterbury Bankstown Council DCP requires the minimum provision of one (1) disabled car parking spaces per 100 spaces for all developments. Further, reference is made to *Table D3.5* of the *Building Code of Australia* (BCA) as part of the *National Construction Code 2019* (NCC) which categorises a child care centre as a Class 9b building and therefore requires the provision of disable car parking at a rate of:

Class 9b	*1 space for every 50 carparking spaces or part thereof.*

In accordance with the BCA requirements, being the greater rate, one (**1**) disabled car parking space is to be provided. The proposed car parking layout details the provision of one (**1**) disabled car parking space as per with *AS2890.6:2009*, complying with BCA and DCP requirements.

3.3 Bicycle & Motorcycle Parking Requirements

The Bankstown DCP 2015 does not require the provision of bicycle or motorcycle parking. It is noted however, that the *Draft Consolidated Development Control Plan 2021* to be adopted by Canterbury Bankstown Council requires the provision of one (1) bicycle space per four (4) staff, resulting in a required provision of three (**3**) bicycle parking spaces. As this DCP has not yet been formally enforced, bicycle parking is not strictly required, however if Council requires compliance with the Draft DCP bicycle parking rates, then these can be provided in the basement.

3.4 Servicing & Loading

The Bankstown DCP does not specify servicing and loading requirements for child care centre developments. It is expected that all deliveries will be undertaken within the proposed car parking area outside peak drop off/ pick up times, under a plan of management if necessary. A van (standard B99 design vehicle) or similar can be accommodated within the car parking area, utilising vacant visitor spaces. This is common practice for child care centres and will not noticeably affect operation of the site. It is reiterated that deliveries and other arrivals of similar nature are low in frequency and can be easily managed.

It is expected that site will be serviced by Council's waste collection services from the Telopea Street frontage, similar to existing operations.

3.5 Car Park Design & Compliance

The car parking layout as depicted in **Annexure A,** has been assessed to achieve the relevant clauses and objectives of *AS2890.1:2004* and *AS2890.6:2009*. Any variances from standards are addressed in the following subsections including required changes, if any.

The proposed car parking and vehicular access design achieves the following:

- 6.5m width two-way driveway facilitating access to Telopea Street;
- Pedestrian sight triangle of 2m by 2.5m at the property boundary for the exit lane;
- Minimum 6.5m clear width between walls along ramp:
    - 300mm kerb width on the eastern side of the ramp.

- 400mm kerb width on the western side of the ramp.
- 5800mm wide vehicular access ramp width for two-way traffic.

- Compliant ramp grades not exceeding 25% and no grade change greater than 12.5% over a minimum transition length of 2m;
- 5% gradient for the first 4m from the property boundary that provides the same driver sight line upon exit to pedestrians along the footpath compared to 6m @ 5%.
- Minimum aisle width of 6.918m (for manoeuvring space for car parking space numbers 4 to 18 inclusive) and 6.078m (for car parking space numbers 1, 2 & 3) wide parking aisles that both exceed the 5.8m minimum under AS2890.1-2004;
- Minimum 5.4m length, 2.6m width spaces for ALL 18 car parking (irrespective if they are allocated as staff, visitor / parent or disabled car parking spaces). This parking bay width either meets or exceeds the width under AS2890.1-2004;
- Minimum 1m blind aisle extension to end spaces;
- Minimum 0.3m clearance to high objects from trafficable areas;
- Gradients within parking module not exceeding 5% and not exceeding 2.5% in disabled parking modules;
- Minimum headroom of 2.2m for general circulation and 2.5m headroom clearance provided over disabled / adaptable parking areas.

The entire basement car parking area (excluding the car parking bays themselves and path to the lift) shall be clearly sign posted (including pavement marking of the parking manoeuvring aisles) as a 10km/h “Shared Zone” for all drivers entering the basement floor level from the vehicular access ramp. The vehicular access ramp shall also be signposted as an area prohibited from use by pedestrians. The “Shared Zone” technical documents are presented in **Annexure D** to this report. Slip resistant paint is recommended in the basement car park for the pavement treatment.

Whilst the plans have been assessed to comply with the relevant standards, it is usual and expected that a design certificate be required at the Construction Certificate stage to account for any changes following the development application.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 Traffic Generation

Traffic generation rates for the relevant land uses are provided in the *RTA Guide to Traffic Generating Developments (2002)* as adopted by Transport for New South Wales (TfNSW) and recent supplements and are as follows:

> ***3.11.3 Child care centres***
>
> *Long-day care*
>
> *7.00-9.00am* *0.8 peak vehicle trips per child*
>
> *4.00-6.00pm* *0.7 peak vehicle trips per child*

The resulting traffic generation is summarised in **Table 3**.

TABLE 3: ESTIMATED TRAFFIC GENERATION

Use	Scale	Peak	Generation Rate	Trips
Child Care Centre	74 Children	AM	0.8 per child	60 (30 in, 30 out)
		PM	0.7 per child	52 (26 in, 26 out)

Note: (1) Assumes 50% inbound, 50% outbound in the AM and PM peak hour periods.

As shown, the expected traffic generation associated with the proposed development is in the order of **60** vehicle trips in the AM peak period (30 in, 30 out) and **52** vehicle trips in the PM peak period (26 in, 26 out).

4.2 Traffic Assignment

The road network, traffic surveys and locations of residential areas surrounding the site have been assessed and the following traffic assignment has been assumed for all traffic to and from the site:

- 60% to / from the west with:
  - AM Peak Period:
    - 40% from the north;
    - 20% from the south;
    - 25% to the north;
    - 35% to the south.
  - PM Peak Period:
    - 25% from the north;
    - 35% from the south;
    - 40% to the north;
    - 20% to the south.
- 40% to / from the east with:
  - AM Peak Period:
    - 5% from the north;
    - 35% from the south;
  - PM Peak Period:
    - 25% from the north;
    - 15% from the south;

- 30% to the north;
- 10% to the south.
- 10% to the north;
- 30% to the south.

4.3 Traffic Impact

The traffic generation outlined in **Section 4.1** & **4.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 9.0 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 4**.

TABLE 4: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 9.0)

Intersection	Peak Hour	Degree of Saturation [1]	Average Delay [2] (sec/veh)	Level of Service [3][4]	Control Type	Worst Movement
EXISTING PERFORMANCE						
Acacia Ave /Telopea St	AM	0.21	2 (Worst: 8)	**NA** (Worst: A)	Give Way	RT from Telopea St
	PM	0.16	1.4 (Worst: 7.5)	**NA** (Worst: A)		RT from Telopea St
Koala Rd /Telopea St	AM	0.15	2.6 (Worst: 6.7)	**NA** (Worst: A)	Give Way	RT from Telopea St
	PM	0.12	2.7 (Worst: 6.7)	**NA** (Worst: A)		RT from Telopea St
POST DEVELOPMENT PERFORMANCE						
Acacia Ave /Telopea St	AM	0.22	2.3 (Worst: 8.1)	**NA** (Worst: A)	Give Way	RT from Telopea St
	PM	0.17	1.7 (Worst: 7.6)	**NA** (Worst: A)		RT from Telopea St
Koala Rd /Telopea St	AM	0.15	2.8 (Worst: 6.8)	**NA** (Worst: A)	Give Way	RT from Telopea St
	PM	0.12	2.9 (Worst: 6.7)	**NA** (Worst: A)		RT from Telopea St

Notes: Refer to **Table 1**

As shown, the intersection of Acacia Avenue / Telopea Steet and Koala Road / Telopea Street both retain the same overall operational performance under post development conditions with minimal delays and additional capacity, indicating that there will be no noticeable impact on the existing road network as a result of the proposed development.

The traffic assessment results in **Table 4** show that the development does not generate enough traffic to significantly impact the surrounding intersection performances. Therefore,

the development's traffic generation is supportable in terms of its traffic impacts to the surrounding road network.

4.4 Residential Amenity

Increased traffic volumes along residential roads have the potential to impact some aspects of the amenity of residents in low-density residential neighbourhoods. Over certain traffic thresholds, the ability for aged or impaired persons to cross the road and the ability for children to play safely in the street are reduced and the ambient road noise becomes noticeable to residents. The *RTA Guide to Traffic Generating Developments 2002* (RTA Guide) as adopted by TfNSW, suggests that the environmental goal thresholds for local streets is **200** vehicles per hour and that ideally local streets should not **300** vehicles per hour.

The traffic generated by the site will travel to and from the centre via the residential road of Telopea Street. The existing and future peak hourly traffic volumes along this road has been considered, as summarised in **Table 5**.

TABLE 5: RESIDENTIAL AMENITY - PEAK HOUR TRAFFIC FLOWS

Street	Existing (1)		Future (2)	
	AM	PM	AM	PM
Telopea Street (near Acacia Avenue)	189	121	225	153
Telopea Street (near Koala Road	181	190	205	210

Notes (1) Taken from intersection surveys reproduced within **Annexure B**.
(2) Future equals existing two-way traffic flow plus traffic generation as determined in **Section 4.1**.

As shown, the two-way peak hour flows under the future scenario remain below the ideal local road traffic volume limit of 300 vehicles per hour suggested in the TfNSW Guide. Therefore, it is concluded that residential amenity will not be adversely affected by the relatively minor increases in two-way vehicle trips.

5 CONCLUSION

In view of the foregoing, the subject Child Care Centre proposal at 31 Telopea Street, Punchbowl (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts. The following outcomes of this traffic impact assessment are relevant to note:

(a) The proposal includes the provision of **19** car parking spaces, 18 of which within the proposed basement car park and 1 on-street staff space along the site frontage. This provision is deemed to be acceptable in the circumstances with regard to both the Council's DCP controls and the RMS Guide to Traffic Generating Developments as discussed in Section 3.1 of this report.

(b) Council's current DCP does not require the provision of bicycle and motorcycle parking facilities.

(c) The parking areas of the site have been assessed against the relevant sections of *AS2890.1:2004* and *AS2890.6:2009* and have been found to satisfy the objectives of each standard.

(d) The traffic generation of the proposed development has been estimated to be some **60** trips in the AM peak period (30 in, 30 out) and **52** trips in the PM peak period (26 in, 26 out). The impacts of the traffic generation have been modelled using SIDRA INTERSECTION 9.0, indicating that there will be no detrimental impact with due regard to nearby intersection performances, traffic flow efficiency and residential amenity considerations.

(e) The entire basement car parking area (excluding the car parking bays themselves and path to the lift) shall be clearly sign posted (including pavement marking of the parking manoeuvring aisles) as a 10km/h "Shared Zone" for all drivers entering the basement floor level from the vehicular access ramp. The vehicular access ramp shall also be signposted as an area prohibited from use by pedestrians. The "Shared Zone" technical documents are presented in **Annexure D** to this report. Slip resistant paint is recommended in the basement car park for the pavement treatment.

ANNEXURE A: PROPOSED PLANS
(3 SHEETS)

GLAZING SCHEDULE

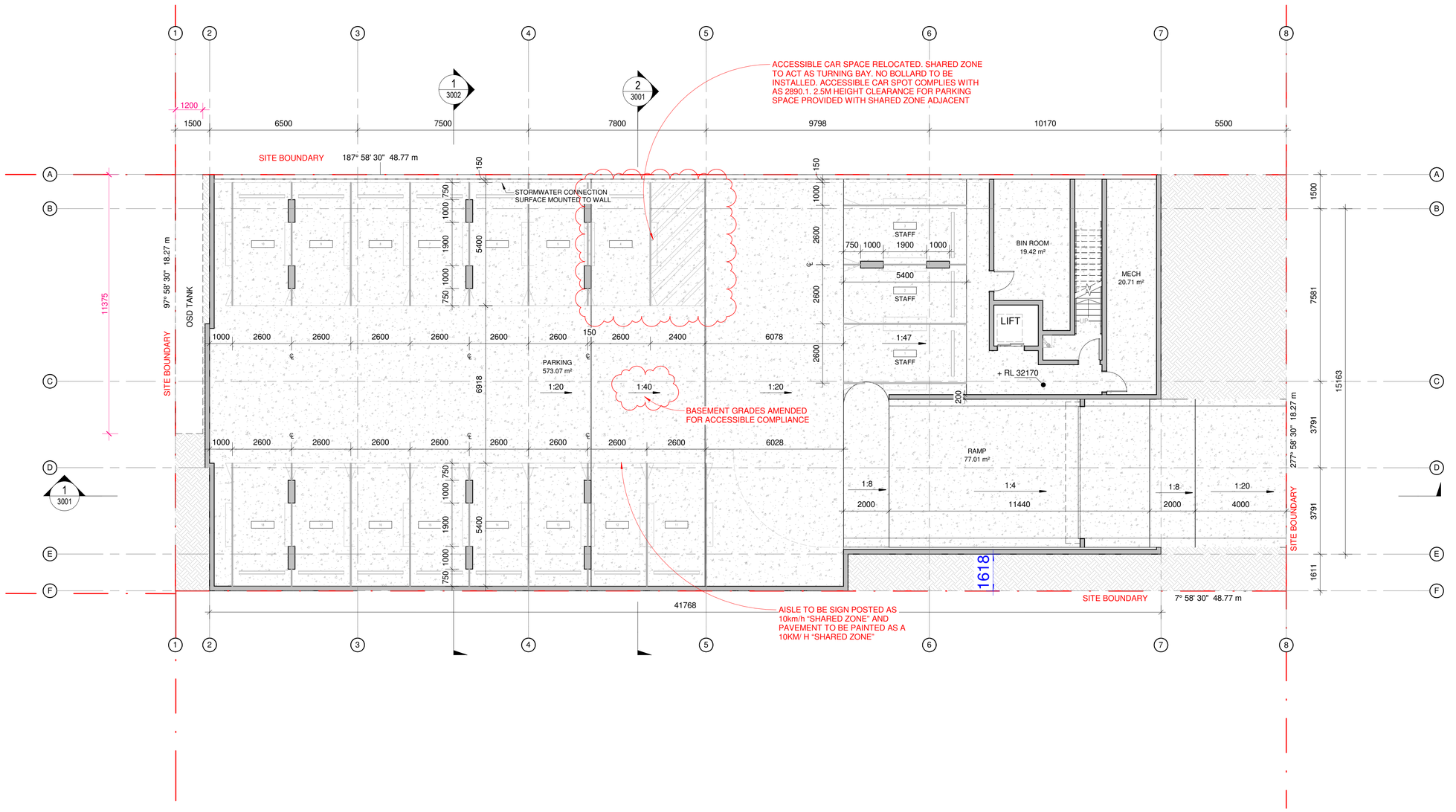
TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-01	LEVEL 01	FIXED	2300	2900
W	1-02	GROUND FLOOR	FIXED	2400	2900
W	1-03	LEVEL 01	FIXED MULTI PANEL WINDOW	920	4020
W	1-04	LEVEL 01	SINGLE AWNING WINDOW	2500	900
W	1-05	LEVEL 01	FIXED MULTI PANEL WINDOW	920	5020
W	1-06	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-08	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-09	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2500	4050
W	1-10	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-11	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-12	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-13	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-14	LEVEL 01	SINGLE AWNING WINDOW	1650	850

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	1-15	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-16	LEVEL 01	2 PANEL SLIDING DOOR	2583	1540
W	1-17	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-18	LEVEL 01	3 PANEL CENTRE SLIDING DOOR	2845	3000
W	1-19	LEVEL 01	FIXED WINDOW	1100	1180
W	1-20	LEVEL 01	SINGLE AWNING WINDOW	1650	850
W	1-21	LEVEL 01	FIXED WINDOW	1100	1500
W	1-22	LEVEL 01	FIXED WINDOW	1100	1500
W	1-23	LEVEL 01	SINGLE AWNING WINDOW	2500	1000
W	1-24	LEVEL 01	FIXED	900	2900
W	G-02	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-03	GROUND FLOOR	SINGLE AWNING WINDOW	2500	1000
W	G-04	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600

GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
W	G-05	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-06	GROUND FLOOR	SINGLE AWNING WINDOW	1650	850
W	G-07	GROUND FLOOR	HINGED SINGLE DOOR	2250	970
W	G-09	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-10	GROUND FLOOR	2 PANEL SLIDING WINDOW	1650	1600
W	G-11	GROUND FLOOR	2 PANEL SLIDING WINDOW	1800	850
W	G-12	GROUND FLOOR	FIXED WINDOW	1420	1545
W	G-13	GROUND FLOOR	FIXED WINDOW	1420	1545



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DEVELOPMENT APPLICATION

Document Notes

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REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

SCALE: 1 : 100 @ A1

PROJECT:
#2021013
PUNCHBOWL CHILDCARE
31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:
GA_BASEMENT 01

SHEET NUMBER: **1001**
REV: **E**
DATE: 10.02.22

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GLAZING SCHEDULE

TYPE	MARK	LOCATION LEVEL	OPERABILITY	HEIGHT	WIDTH
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GLAZING SCHEDULE

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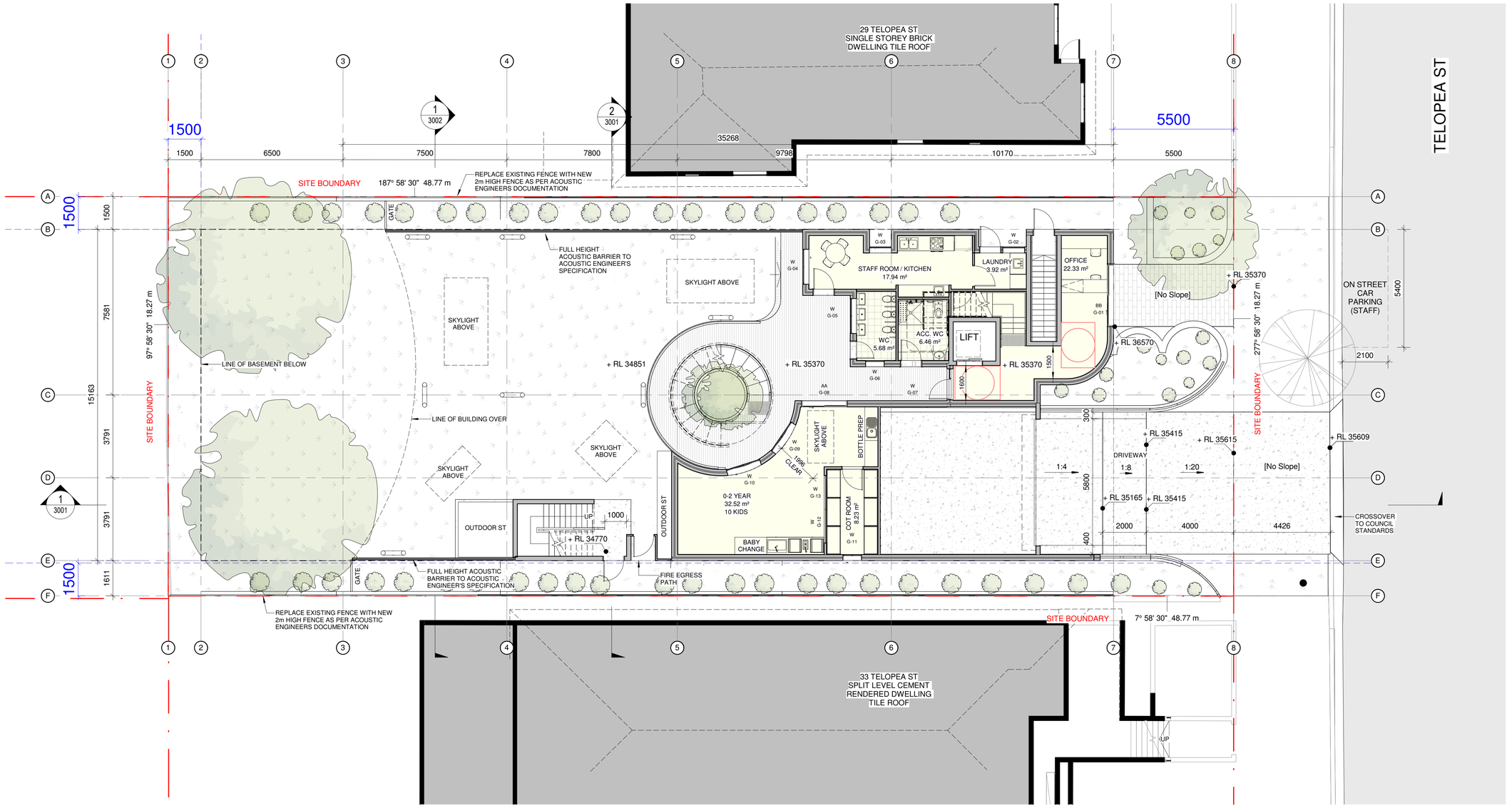

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DEVELOPMENT APPLICATION

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10/02/2022 4:47:14 PM

REVISION:

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LEGEND:

N

0 4m

1:100

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

GA_GROUND LEVEL

SHEET NUMBER: **2001**

REV: **E**

DATE: 10.02.22

ARCHITECT:

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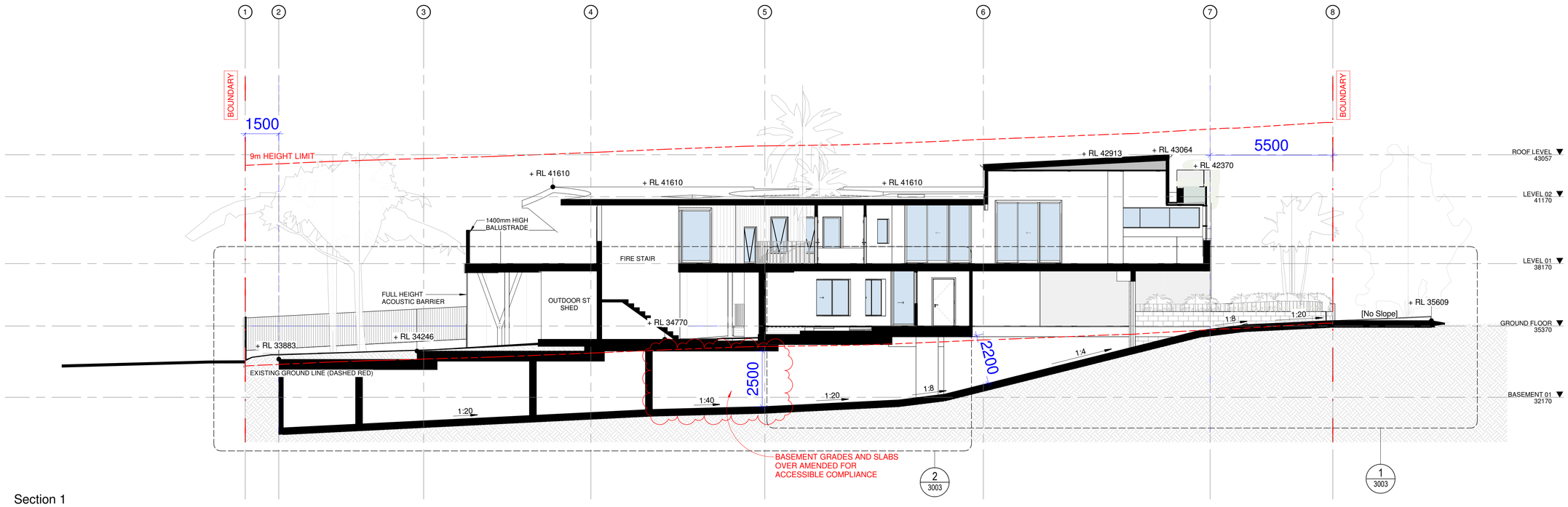
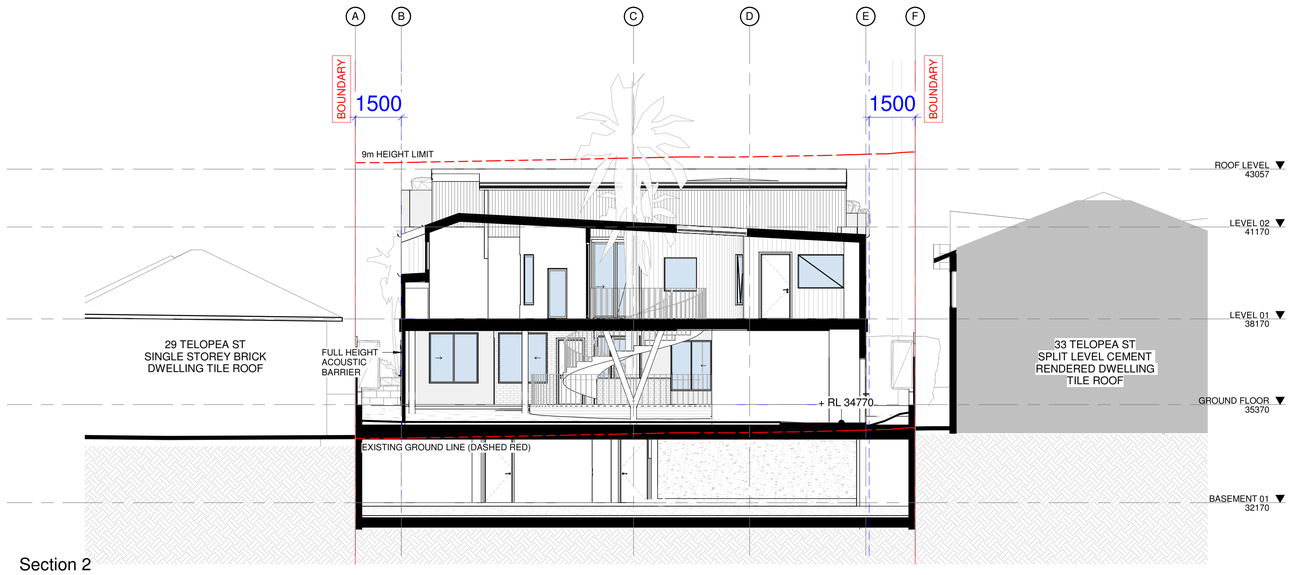


Section 1

1 : 100



Section 2

1 : 100

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

Verify all dimensions on site before commencing work. Report all discrepancies to the architect prior to construction. Place Studio shall not be held responsible for any variations to specifications or drawings due to any discrepancies without consultation. Use figured dimensions in preference to scaled dimensions. Drawings made to larger scales and those showing particular parts of the works take precedence over drawings made to smaller scales or for general purposes. All work is to conform to relevant Australian Standards and Codes together with all Authorities' requirements and Regulations.

10/02/2022 4:48:33 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	23.07.21	DEVELOPMENT APPLICATION	WC
B	09.09.21	DA ADDITIONAL INFORMATION	WC
C	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
E	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 4m
1:100

SCALE: 1 : 100 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

SECTION 01 & 02

SHEET NUMBER: **3001**

REV: **E**

DATE: 10.02.22

ARCHITECT:

PLACE STUDIO

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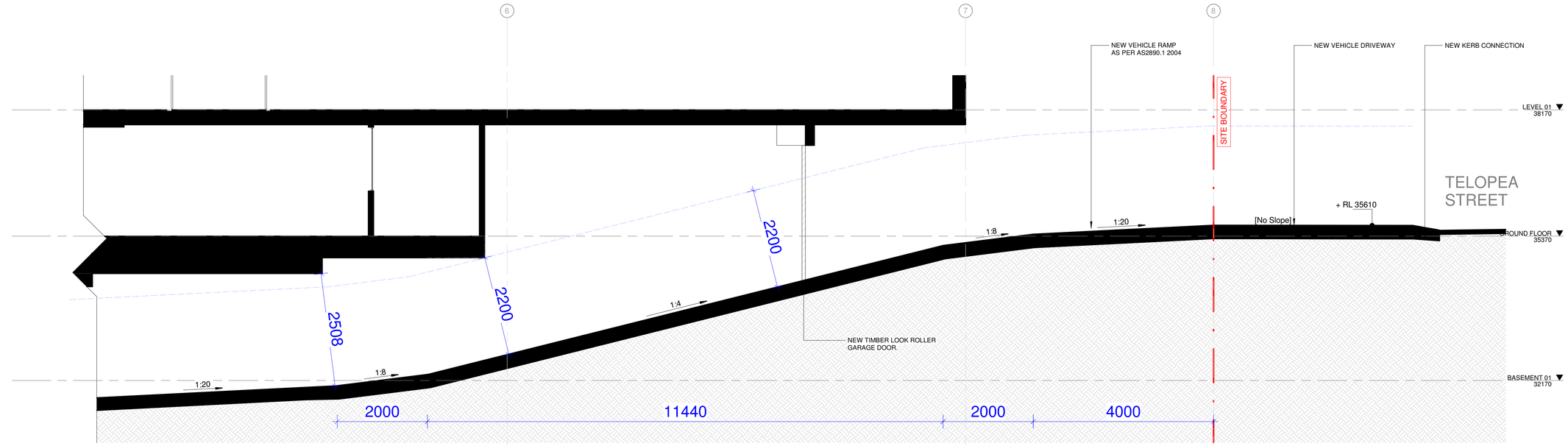
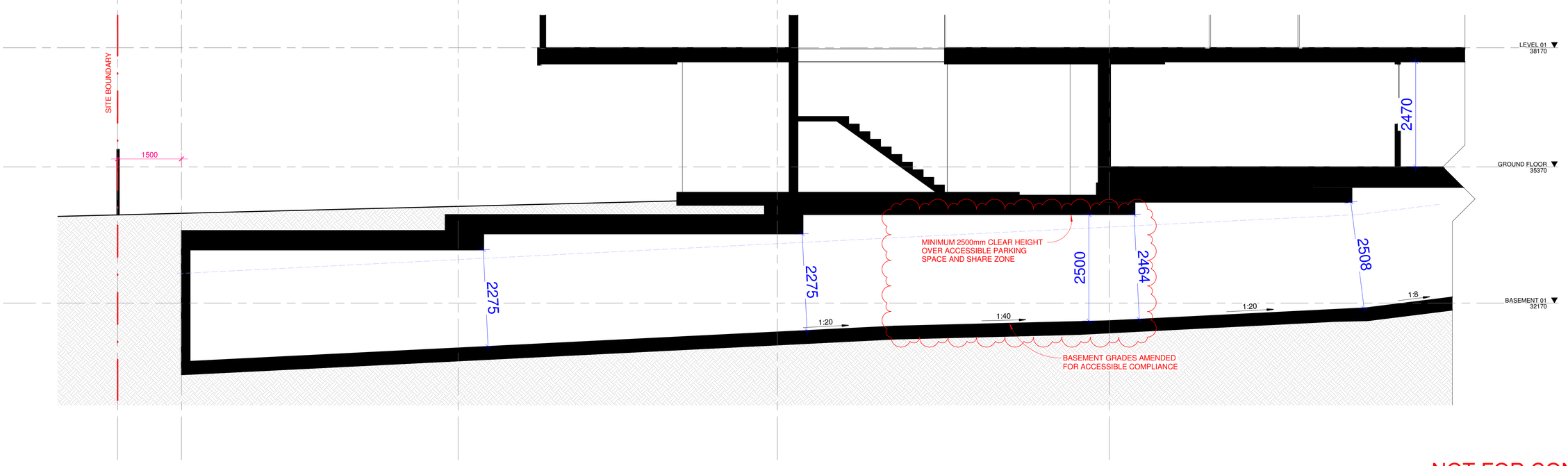


Section 1 - Callout 1

1 : 50



Section 1 - Callout 2

1 : 50

NOT FOR CONSTRUCTION

DEVELOPMENT APPLICATION

Document Notes

Verify all dimensions on site before commencing work. Report all discrepancies to the architect prior to construction. Place Studio shall not be held responsible for any variations to specifications or drawings due to any discrepancies without consultation. Use figured dimensions in preference to scaled dimensions. Drawings made to larger scales and those showing particular parts of the works take precedence over drawings made to smaller scales or for general purposes. All work is to conform to relevant Australian Standards and Codes together with all Authorities' requirements and Regulations.

10/02/2022 4:48:36 PM

REVISION:

REV	DATE	DESCRIPTION	APP
A	09.09.21	DA ADDITIONAL INFORMATION	WC
B	22.11.21	DA - SECTION 34 DESIGN AMENDMENT	WC
C	25.01.21	DA - SECTION 34 DESIGN AMENDMENT	WC
D	10.02.22	DA - SECTION 34 DESIGN AMENDMENT	SB

LEGEND:

0 4m
1:100

SCALE: 1 : 50 @ A1

PROJECT:

#2021013

PUNCHBOWL CHILDCARE

31 Telopea St, Punchbowl

CLIENT: TONY GEAGEA

DRAWING TITLE:

DRIVEWAY SECTION

SHEET NUMBER: **3003**

REV: **D**

DATE: 10.02.22

ARCHITECT:

PLACE STUDIO

PLACE STUDIO AU PTY LTD |
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ANNEXURE B: TRAFFIC SURVEY DATA
(1 SHEET)

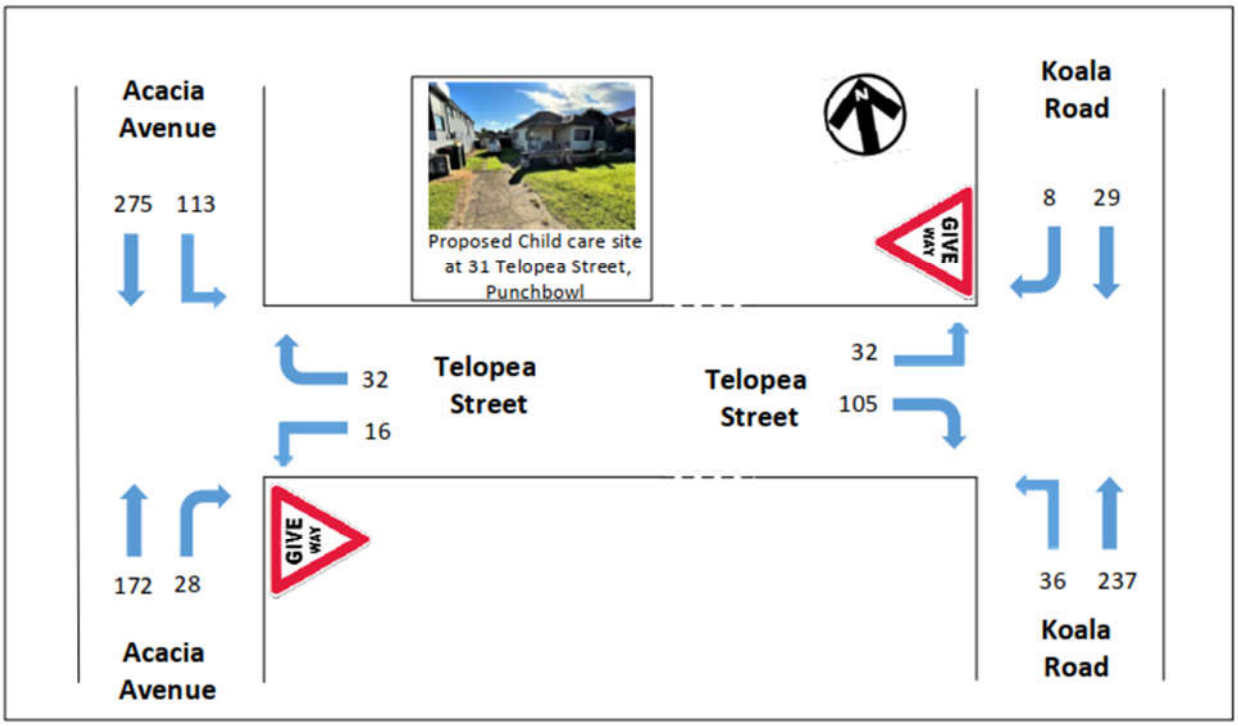

Figure 8a: Existing Weekday Traffic Volumes AM Peak Hour

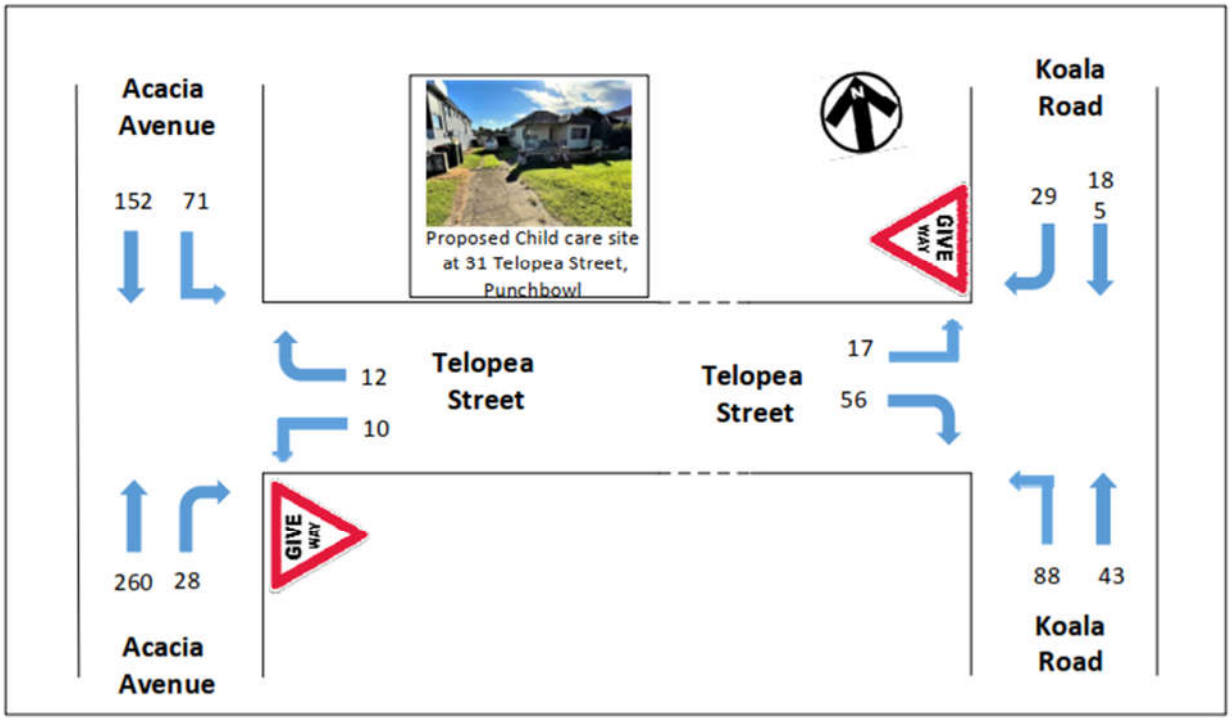

Figure 8b: Existing Weekday Traffic Volumes PM Peak Hour

ANNEXURE C: SIDRA RESULTS
(8 SHEETS)

MOVEMENT SUMMARY

Site: 101 [(AM EX) Acacia Avenue / Telopea Street (Site Folder: General)]

Priority controlled intersection of Acacia Avenue and Telopea Street
AM Peak Hour Period
Existing Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Acacia Ave (S)														
2	T1	172	0.0	181	0.0	0.118	0.4	LOS A	0.3	1.9	0.16	0.09	0.16	58.6
3	R2	28	0.0	29	0.0	0.118	7.1	LOS A	0.3	1.9	0.16	0.09	0.16	56.4
Approach		200	0.0	211	0.0	0.118	1.3	NA	0.3	1.9	0.16	0.09	0.16	58.3
East: Telopea St (E)														
4	L2	16	0.0	17	0.0	0.058	6.5	LOS A	0.2	1.4	0.41	0.67	0.41	52.1
6	R2	32	0.0	34	0.0	0.058	8.0	LOS A	0.2	1.4	0.41	0.67	0.41	51.6
Approach		48	0.0	51	0.0	0.058	7.5	LOS A	0.2	1.4	0.41	0.67	0.41	51.8
North: Acacia Ave (N)														
7	L2	113	0.0	119	0.0	0.212	5.6	LOS A	0.0	0.0	0.00	0.17	0.00	56.8
8	T1	275	0.0	289	0.0	0.212	0.1	LOS A	0.0	0.0	0.00	0.17	0.00	58.3
Approach		388	0.0	408	0.0	0.212	1.7	NA	0.0	0.0	0.00	0.17	0.00	57.9
All Vehicles		636	0.0	669	0.0	0.212	2.0	NA	0.3	1.9	0.08	0.18	0.08	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(PM EX) Acacia Avenue / Telopea Street (Site Folder: General)]

Priority controlled intersection of Acacia Avenue and Telopea Street
PM Peak Hour Period
Existing Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Acacia Ave (S)														
2	T1	260	0.0	274	0.0	0.161	0.1	LOS A	0.2	1.7	0.08	0.06	0.08	59.1
3	R2	28	0.0	29	0.0	0.161	6.3	LOS A	0.2	1.7	0.08	0.06	0.08	56.9
Approach		288	0.0	303	0.0	0.161	0.7	NA	0.2	1.7	0.08	0.06	0.08	58.9
East: Telopea St (E)														
4	L2	10	0.0	11	0.0	0.023	6.0	LOS A	0.1	0.5	0.29	0.60	0.29	52.6
6	R2	12	0.0	13	0.0	0.023	7.5	LOS A	0.1	0.5	0.29	0.60	0.29	52.1
Approach		22	0.0	23	0.0	0.023	6.8	LOS A	0.1	0.5	0.29	0.60	0.29	52.3
North: Acacia Ave (N)														
7	L2	71	0.0	75	0.0	0.122	5.6	LOS A	0.0	0.0	0.00	0.19	0.00	56.7
8	T1	152	0.0	160	0.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	58.3
Approach		223	0.0	235	0.0	0.122	1.8	NA	0.0	0.0	0.00	0.19	0.00	57.8
All Vehicles		533	0.0	561	0.0	0.161	1.4	NA	0.2	1.7	0.06	0.14	0.06	58.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(AM EX) Koala Road / Telopea Street (Site Folder: General)]

Priority controlled intersection of Koala Road and Telopea Street
AM Peak Hour Period
Existing Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Koala Rd (S)														
1	L2	36	0.0	38	0.0	0.148	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	57.6
2	T1	237	0.0	249	0.0	0.148	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.2
Approach		273	0.0	287	0.0	0.148	0.8	NA	0.0	0.0	0.00	0.08	0.00	59.0
North: Koala Rd (N)														
8	T1	29	0.0	31	0.0	0.022	0.3	LOS A	0.1	0.4	0.18	0.13	0.18	58.1
9	R2	8	0.0	8	0.0	0.022	6.4	LOS A	0.1	0.4	0.18	0.13	0.18	56.0
Approach		37	0.0	39	0.0	0.022	1.6	NA	0.1	0.4	0.18	0.13	0.18	57.7
West: Telopea St (W)														
10	L2	32	0.0	34	0.0	0.139	6.4	LOS A	0.5	3.5	0.35	0.64	0.35	52.6
12	R2	105	0.0	111	0.0	0.139	6.7	LOS A	0.5	3.5	0.35	0.64	0.35	52.1
Approach		137	0.0	144	0.0	0.139	6.7	LOS A	0.5	3.5	0.35	0.64	0.35	52.3
All Vehicles		447	0.0	471	0.0	0.148	2.6	NA	0.5	3.5	0.12	0.26	0.12	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(PM EX) Koala Road / Telopea Street (Site Folder: General)]

Priority controlled intersection of Koala Road and Telopea Street
PM Peak Hour Period
Existing Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Koala Rd (S)														
1	L2	88	0.0	93	0.0	0.073	5.6	LOS A	0.0	0.0	0.00	0.39	0.00	55.1
2	T1	43	0.0	45	0.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.39	0.00	56.5
Approach		131	0.0	138	0.0	0.073	3.7	NA	0.0	0.0	0.00	0.39	0.00	55.5
North: Koala Rd (N)														
8	T1	185	0.0	195	0.0	0.120	0.1	LOS A	0.2	1.5	0.08	0.08	0.08	58.9
9	R2	29	0.0	31	0.0	0.120	5.9	LOS A	0.2	1.5	0.08	0.08	0.08	56.8
Approach		214	0.0	225	0.0	0.120	0.9	NA	0.2	1.5	0.08	0.08	0.08	58.6
West: Telopea St (W)														
10	L2	17	0.0	18	0.0	0.072	5.7	LOS A	0.2	1.7	0.18	0.60	0.18	52.9
12	R2	56	0.0	59	0.0	0.072	6.7	LOS A	0.2	1.7	0.18	0.60	0.18	52.4
Approach		73	0.0	77	0.0	0.072	6.5	LOS A	0.2	1.7	0.18	0.60	0.18	52.5
All Vehicles		418	0.0	440	0.0	0.120	2.7	NA	0.2	1.7	0.07	0.27	0.07	56.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(AM PD) Acacia Avenue / Telopea Street (Site Folder: General)]

Priority controlled intersection of Acacia Avenue and Telopea Street
AM Peak Hour Period
Post Development Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Acacia Ave (S)														
2	T1	172	0.0	181	0.0	0.124	0.5	LOS A	0.3	2.3	0.19	0.11	0.19	58.3
3	R2	34	0.0	36	0.0	0.124	7.2	LOS A	0.3	2.3	0.19	0.11	0.19	56.2
Approach		206	0.0	217	0.0	0.124	1.6	NA	0.3	2.3	0.19	0.11	0.19	58.0
East: Telopea St (E)														
4	L2	26	0.0	27	0.0	0.079	6.5	LOS A	0.3	1.9	0.41	0.68	0.41	52.1
6	R2	40	0.0	42	0.0	0.079	8.1	LOS A	0.3	1.9	0.41	0.68	0.41	51.6
Approach		66	0.0	69	0.0	0.079	7.5	LOS A	0.3	1.9	0.41	0.68	0.41	51.8
North: Acacia Ave (N)														
7	L2	125	0.0	132	0.0	0.219	5.6	LOS A	0.0	0.0	0.00	0.19	0.00	56.7
8	T1	275	0.0	289	0.0	0.219	0.1	LOS A	0.0	0.0	0.00	0.19	0.00	58.2
Approach		400	0.0	421	0.0	0.219	1.8	NA	0.0	0.0	0.00	0.19	0.00	57.7
All Vehicles		672	0.0	707	0.0	0.219	2.3	NA	0.3	2.3	0.10	0.21	0.10	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(PM PD) Acacia Avenue / Telopea Street (Site Folder: General)]

Priority controlled intersection of Acacia Avenue and Telopea Street
PM Peak Hour Period
Post Development Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Acacia Ave (S)														
2	T1	260	0.0	274	0.0	0.168	0.2	LOS A	0.3	2.2	0.11	0.08	0.11	58.9
3	R2	37	0.0	39	0.0	0.168	6.4	LOS A	0.3	2.2	0.11	0.08	0.11	56.7
Approach		297	0.0	313	0.0	0.168	0.9	NA	0.3	2.2	0.11	0.08	0.11	58.6
East: Telopea St (E)														
4	L2	16	0.0	17	0.0	0.041	6.0	LOS A	0.1	1.0	0.31	0.61	0.31	52.5
6	R2	22	0.0	23	0.0	0.041	7.6	LOS A	0.1	1.0	0.31	0.61	0.31	52.0
Approach		38	0.0	40	0.0	0.041	7.0	LOS A	0.1	1.0	0.31	0.61	0.31	52.2
North: Acacia Ave (N)														
7	L2	78	0.0	82	0.0	0.126	5.6	LOS A	0.0	0.0	0.00	0.20	0.00	56.6
8	T1	152	0.0	160	0.0	0.126	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	58.1
Approach		230	0.0	242	0.0	0.126	1.9	NA	0.0	0.0	0.00	0.20	0.00	57.6
All Vehicles		565	0.0	595	0.0	0.168	1.7	NA	0.3	2.2	0.08	0.16	0.08	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(AM PD) Koala Road / Telopea Street (Site Folder: General)]

Priority controlled intersection of Koala Road and Telopea Street
AM Peak Hour Period
Post Development Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Koala Rd (S)														
1	L2	46	0.0	48	0.0	0.154	5.6	LOS A	0.0	0.0	0.00	0.10	0.00	57.5
2	T1	237	0.0	249	0.0	0.154	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.1
Approach		283	0.0	298	0.0	0.154	0.9	NA	0.0	0.0	0.00	0.10	0.00	58.8
North: Koala Rd (N)														
8	T1	29	0.0	31	0.0	0.024	0.4	LOS A	0.1	0.5	0.21	0.15	0.21	57.8
9	R2	10	0.0	11	0.0	0.024	6.4	LOS A	0.1	0.5	0.21	0.15	0.21	55.7
Approach		39	0.0	41	0.0	0.024	1.9	NA	0.1	0.5	0.21	0.15	0.21	57.3
West: Telopea St (W)														
10	L2	41	0.0	43	0.0	0.150	6.4	LOS A	0.5	3.8	0.36	0.65	0.36	52.6
12	R2	108	0.0	114	0.0	0.150	6.8	LOS A	0.5	3.8	0.36	0.65	0.36	52.1
Approach		149	0.0	157	0.0	0.150	6.7	LOS A	0.5	3.8	0.36	0.65	0.36	52.3
All Vehicles		471	0.0	496	0.0	0.154	2.8	NA	0.5	3.8	0.13	0.28	0.13	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [(PM PD) Koala Road / Telopea Street (Site Folder: General)]

Priority controlled intersection of Koala Road and Telopea Street
PM Peak Hour Period
Post Development Conditions
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Koala Rd (S)														
1	L2	92	0.0	97	0.0	0.075	5.6	LOS A	0.0	0.0	0.00	0.40	0.00	55.0
2	T1	43	0.0	45	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.5
Approach		135	0.0	142	0.0	0.075	3.8	NA	0.0	0.0	0.00	0.40	0.00	55.5
North: Koala Rd (N)														
8	T1	185	0.0	195	0.0	0.124	0.1	LOS A	0.3	1.8	0.10	0.10	0.10	58.8
9	R2	35	0.0	37	0.0	0.124	5.9	LOS A	0.3	1.8	0.10	0.10	0.10	56.6
Approach		220	0.0	232	0.0	0.124	1.0	NA	0.3	1.8	0.10	0.10	0.10	58.4
West: Telopea St (W)														
10	L2	19	0.0	20	0.0	0.083	5.7	LOS A	0.3	2.0	0.18	0.60	0.18	52.9
12	R2	64	0.0	67	0.0	0.083	6.7	LOS A	0.3	2.0	0.18	0.60	0.18	52.3
Approach		83	0.0	87	0.0	0.083	6.5	LOS A	0.3	2.0	0.18	0.60	0.18	52.5
All Vehicles		438	0.0	461	0.0	0.124	2.9	NA	0.3	2.0	0.08	0.29	0.08	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ANNEXURE D: SHARED ZONE TECHNICAL DETAILS
(12 SHEETS)

Technical Direction

Traffic management and road safety practice

Transport Roads & Maritime Services

TTD 2016/001 February 2016

Supersedes TTD 2014/003

Design and implementation of shared zones including provision for parking

Summary:	**Audience:**
This Technical Direction provides guidelines for the design and implementation of shared zones in a road or road related area (Category 1) and for shared zones in a road with footpath parking (Category 2).	• Traffic management staff • Road safety staff • Councils

Definitions

Shared zones are defined under Rule 24 in the NSW Road Rules (2008). A shared zone is a road or network of roads or a road related area where space is shared safely by vehicles and pedestrians and where pedestrian priority and quality of life take precedence over ease of vehicle movement.

Shared zones employ a range of regulatory and non-regulatory treatments to indicate a change in environment and priority. Where parking is provided in a shared zone, it is only allowed in marked bays and must have the relevant signage provided.

Using this Technical Direction:

- A ***Category 1*** (Cat 1) shared zone is provided on a road related area, has clearly different coloured and textured surface treatments from the surrounding roads, and typically does not have kerbs.
- *A* ***Category 2*** (Cat 2) shared zone is provided on a road which includes footpath parking and has substandard footpath widths, retains kerbs and has traffic calming devices and treatments to regulate traffic speeds to 10km/h.

Practice/General

The NSW Government is committed to improving pedestrian safety and amenity. The implementation of applicable shared zones will assist in reducing the incidence of pedestrian death and serious injury. One of the key requirements of shared zones is that they are attractive and interesting public places that reflect local needs and activities.

Shared zones are specifically designed for pedestrian priority and may be appropriate for a road, a network of roads or road related areas where there are comparatively high pedestrian volumes, where the road is narrow and pedestrian access along existing substandard (less than 1.2 metres) footpaths is limited, and/or where on-road parking on one or both sides of the road restricts the free movement of vehicles along the road (especially emergency and service vehicles).

Approvals:

The safest place for pedestrians is on a specific pedestrian facility. A shared zone will only be considered where adequate footpaths cannot be retained within the road reserve and where there are very low numbers of slow moving vehicles. Footpaths can be retained in a shared zone where footway parking is in place.

A shared zone should not look like a normal road environment and requires a self enforcing road environment. Kerbs should generally not be provided in a shared zone to ensure a discernible change in the environment from the surrounding roads, and to facilitate the ease of movement and indicate the priority for pedestrians, especially disabled pedestrians. Existing 'brownfield' roads may be suitable for conversion to Category 1 or 2 shared zones without the removal of existing kerbs if approved by Roads and Maritime Services.

Traffic control devices (ie signs and markings) referred to in this Technical Direction shall meet RMS specifications. Traffic control devices, other than the *Shared zone* (R4-4), *End shared zone* (R4-5), and *Give Way to Pedestrian*s (R2-10) signs, will still require council approval through the usual Local Traffic Committee process.

The NSW road rules (Rule 188) permit parking in designated shared zones. A driver can stop in a marked parking bay or designated parking area if the driver is permitted to do so by the road rules and where indicated by a parking bay or sign.

The maximum speed limit in shared zones is always 10 km/h. All speed zones and shared zone schemes must be authorised by RMS as per the delegations under the Roads Act.

Implementation of these guidelines must include community involvement and participation. Shared zones are designed and constructed by local councils in consultation with the local community.

This Technical Direction provides guidelines for all aspects of shared zones, including design and implementation, and for the provision of parking within designated shared zones, and supports the Transport for NSW SS/12/01 shared zone policy.

Guidelines

General

- All new shared zones (Cat 1) must be constructed without kerbs.
- In special circumstances existing roads can be converted to shared zones, without the removal of the existing kerbs. Potential reasons for not removing kerbs may include heritage or cost-prohibitive constraints. However where existing kerbs are being retained traffic calming devices and a visibly changed road environment may need to be used to address vehicle speed. The retention of kerbs requires RMS approval.
- All shared zones must display the required regulatory signage and should include pavement markers at each entry point to the area and at each exit point from the area. The entry signage is to be duplicated on both sides of the road, where possible.
- Drivers must give way to pedestrians at all times in shared zones (NSW Road Rule 83). A *Give Way to Pedestrian*s (R2-10) sign must be installed below each *Shared zone* (R4-4) sign. A *Give Way to Pedestrian*s pavement marking must be installed at each entry to a Category 2 shared zone.
- All shared zones in NSW must display a speed limit of 10 km/h. No other speed limit is allowed. All shared zones in NSW must be authorised by RMS as they are a speed zone.
- Where parking is to be provided in shared zones, *Park In Bays Only* (R5-65) signs must be provided under the shared zone (R4-4) signs at each entry into the shared zone.

- The parking bays must be marked within the shared zone. The length and width of any parking space must comply with AS2890.5 *Parking Facilities.*
- To ensure compliance with on-street parking for people with disabilities please refer to AS 2890.6-2009 *Parking Facilities*.
- As shared zones are a pedestrian priority environment there should not be any requirement for pedestrian crossings and pedestrian fencing.
- Continuous footpath treatments should be considered. Refer to TD 2013/05.
- All shared zone proposals on existing roads must have consultation with the local community by Council to provide an opportunity for feedback prior to implementation.

Design Principles

The design principles for shared zones need to be defined to ensure the proposed scheme incorporates the necessary features to provide an appropriately safe environment. In particular, the design needs to have an impact which clearly highlights to drivers that there is a change in the road environment and traffic conditions and that the priority is for pedestrians. The design features are required to be implemented in accordance with the Austroads Guide to Traffic Management Part 8: Local Area Traffic Management and the relevant RMS Austroads Guide Supplement. The following table presents the design principles for shared zones.

Features	**Information**
Street space/ kerb & gutter/ delineation	The road environment in a shared zone must be changed to ensure that it does not look like a normal road • Any delineation and kerbs shall be removed to enhance the sense of pedestrian priority (Cat 1). • Where it is not possible to remove the kerbs then the shared zone must be treated to a level where drivers can clearly identify that they are in a different driving environment. • Traffic calming or suitable pedestrian friendly treatments must be provided to reduce speeds within the zone where kerbs have been retained.
Entrance/exit points	• Prominent features such as signs, architectural or landscape features must be provided to indicate a change in the street environment and highlight the start/end of the shared zone (Cat 2). • A *Give Way to Pedestrians* pavement marking must be installed (Cat 2 only). • Continuous footpath treatments should be considered as entry/exit treatments to assist traffic calming. Refer to TD 2013/05.
Traffic signs	• Regulatory traffic signs as per the requirements of the NSW Road Rules 2008 are required. • All entry signs must be provided on both sides of the road, for one or two-way shared zones, to further enhance the changes in environment and priority.
Pavement surface	• The pavement surface shall be changed to highlight the difference in the street environment from the surrounding road network. It must be clearly distinguishable by colour, texture and/or materials. Any exceptions require RMS approval.
Traffic calming features/ treatments	• Traffic calming or suitable treatments must be provided to reduce speeds within the zone where kerbs have been retained to encourage consistently slow driving and ensure compliance with the 10 km/h speed limit. • Advisory speed plates are not required to supplement speed hump advisory signs.
Forward visibility	• To encourage drivers to drive with care and comply with the 10km/h speed limit, it is not desirable to have unlimited forward visibility in a shared zone. • In locations where it is considered necessary to maintain visibility, a minimum stopping sight distance of 12 metres shall be applied.

Features	Information
Vehicle mix and accessibility requirements	• Alternative access for large vehicles such as buses needs to be planned. • Access must be designed to safely accommodate emergency vehicles, delivery and garbage trucks. • Emergency services and Police are to be consulted during the design process.
Car parking	• Car parking provisions may need to be altered to suit the scheme. • Car parking bays must be marked along the scheme and in accordance with the prescribed lengths and widths in AS 2890.5 and AS 2890.6-2009 *Parking Facilities*. • Car parking spaces that straddle existing kerb and gutter are to be provided in Cat 2 shared zones.
Bicycles	• Cyclists must be able to safely traverse the features provided in the scheme to encourage lower vehicle speeds. • Traffic calming measures must incorporate features to make them cycle friendly. • In one way shared zones, consideration should be given to contra-flow bicycle movements. This provision will increase access for non-motorised transport and must include *Bicycles Excepted* (R9-3) signs. • Cyclists need to be aware that they must give way to pedestrians.
Mobility and vision impaired requirements	• Designs must include provision to safely accommodate the needs of the mobility and vision impaired. • Refer to AS 1428.4.1 *Design for Access and Mobility* for detailed design requirements.
Lighting and drainage grates	• Appropriate lighting should be installed for safety and security purposes. • Appropriate drainage grates should be installed to cater for pedestrian and cyclist use.

Traffic signs

Traffic signs to be used in a shared zone are described in the NSW Road Rules and are illustrated below.

Any traffic calming must display the appropriate warning signage (eg W5-10 *Speed hump*). However the supplementary advisory speed plate is not required on speed hump signage.

Entry signposting is to be duplicated on each side of the road, where possible

In shared zones, signs may be provided on both sides of the road, for one or two-way shared zones, to further enhance the changes in environment and priority.

R4-4 SHARED ZONE
- Must be displayed at the start of a shared zone.
- R4-4 may be repeated in combination with R2-10 at additional locations within a shared zone.

R2-10 GIVE WAY TO PEDESTRIANS
- Must be displayed at the start of a shared zone and below the R4-4 sign.
- R2-10 may be repeated in combination with R4-4

R4-5 END SHARED ZONE
Must be displayed at the end of the shared zone.

at additional locations within a shared zone.

R5-65 PARK IN BAYS ONLY

- Must be displayed at the start of a shared zone, below the R2-10 sign, when parking is provided.
- May be repeated in isolation at additional locations within a shared zone.

Traffic calming

Traffic calming features or treatments are required within Category 1 and 2 shared zones to reduce vehicle speeds, where a change in the road environment will not work alone. Where kerb and gutter are retained, traffic calming should be used to reduce vehicle speeds and are described in detail in the Austroads Guide to Traffic Management Part 8: Local Area Traffic Management.

There is no requirement to provide pedestrian fencing in shared zones.

Continuous footpath treatments should be considered as entry/exit treatments to assist traffic calming. Refer to TD 2013/05.

Landscaping and street furniture

Carefully located landscape features and street furniture can encourage lower speeds and enhance the experience for pedestrians. Examples of such features are bollards, architectural decorations, seating and lighting. These features can be repeated through the shared zone.

Provision for mobility and vision impaired people

The design for shared zones must safely accommodate the needs of those who are mobility restricted and vision impaired. Features such as tactile paving, hand rails and the careful placement of landscaping and street furniture must be considered during the design process. In shared zones, mobility and vision impaired access to the existing road must be provided and the ability to negotiate traffic calming must also be accommodated. AS 1428.4.1 *Design for Access and Mobility* contains detailed design requirements and must be referred to during the design process.

Shared Zones retaining kerb and gutter (Category 1 and 2)

The following table describes options for non-regulatory features used to help define shared zones to ensure pedestrian safety in shared zones that retain kerb and gutter.

Features	**Description**
Road narrowing/ kerb extension	• Encourages drivers and cyclists to reduce their speeds • Highlights to motorists and cyclists that they are in an area with changed traffic conditions such as lower speeds.

Features	Description
Raised threshold	• Encourages lower speeds. • Can also be used to indicate the entry/exit to the zone. • There is no requirement to provide pedestrian fencing in shared zones. • Continuous footpath treatments should be considered to assist traffic calming. Refer to TD 2013/05.
Change in carriageway surface and texture	• Provides characteristics that distinguish the scheme from other roads. Shared zones require a different road surface along the entire length of the road. Alternate treatments may be considered with Roads and Maritime approval. This must be provided where the existing kerb and gutter is to be retained.
Architectural and landscaping	• Assists in creating a visible change in the street environment. • Helps to enhance the quality of the scheme. • Creates a prominent feature that clearly highlights the start / end of the scheme. • Can be repeated through the shared zone.
Pavement markings	• A *Give Way to Pedestrians* pavement marking must be provided at each entry.

- Traffic calming features or suitable treatments must be provided to reduce speeds (in zones where kerbs have been retained). There is no requirement to provide pedestrian fencing in shared zones. Continuous footpath treatments should be considered to assist traffic calming. Refer to TD 2013/05.
- In a shared zone with two-way traffic movement where the available travel width is less than 6.0 metres, storage gaps should be provided to allow moving vehicles to pass each other. A convenient position for storage gaps is adjacent to driveways where the loss of parking spaces is minimised. Storage gaps may not be necessary where the street is short and a driver entering at one end of the street is able to see a vehicle entering at the opposite end of that street.
- *Give Way to Pedestrians* pavement markings must be provided at entry points.
- Enhancements to shared zones may also be considered and include pavement markings such as the pedestrian symbol and the numerals 10 at regular intervals along the existing road length, with traffic calming devices or a changed road environment to maintain a self enforcing 10km/h speed limit.

Parking

- Parking bays that straddle existing kerbs are to be provided only in Category 2 shared zones, subject to approval. Where this is the case:
  - Retaining barrier kerb (Type SA) is acceptable adjacent to parking spaces that have direct access via a driveway from one end. This would limit parking to a maximum of two parallel parking spaces in series between driveways. This will discourage people from driving illegally along the footway to access or leave parking spaces.
  - Providing roll-top kerb (Type RT) is the ideal treatment where parking spaces are not directly accessible from a driveway, or where there are long lengths between driveways. This treatment will facilitate the provision of three or more parallel parking spaces in series. Alternating short lengths of different kerb types along a kerb line should be avoided. This practice may be acceptable if the kerb types were separated by driveways.

  - Provisions for pedestrian access must be provided for essential services, including property access and letterboxes.

- Utility poles could restrict positioning and access to and from parking bays. The location of parking bays in relation to utility poles needs to be defined to suit the relevant Authority.
- If parking bays are located on each side of the road the width between them must not be less than 3.0 metres to allow vehicles to travel safely along the road or road related area.
- The location of the parking spaces or areas must not compromise sight distances at a shared zone entry point. There are existing mandatory (statutory) restrictions at intersections, road crossings, and traffic signals contained in the NSW Road Rules 2008 and RMS Technical Directions (signposted restrictions). These are applied to ensure that minimum sight distances are provided for road safety purposes.
- The parking spaces, including vehicle access to and from the spaces, are not to affect access to utilities. Utility covers may not be trafficable, so it is important to ensure that car parking does not damage them. Parking spaces and areas should be carefully located so this problem is eliminated or the devices protected.
- It is illegal to drive on the footpath, therefore parking spaces are to be located so they can be accessed without driving on the footpath.
- Trees and shrubs planted in the shared zone could affect positioning and access to and from parking bays, depending on the location and size of the tree or shrub. For safety, it is important to consider whether driver sight distance may be obstructed.
- Parking bays should not restrict access to property entrances.
- Parking bays must be provided in accordance with AS2890.5 and AS 2890.6-2009 *Parking Facilities*. The minimum width must be 2.1 metres and the minimum length must be 6.0 metres for parallel parking spaces.

90 and 45 degrees parking are not considered appropriate in a shared zone. The minimum carriage way widths required for 90 and 45 degrees parking does not adhere to the requirements for a self-enforcing road environment. In addition it is undesirable to have vehicles reversing within a shared zone.

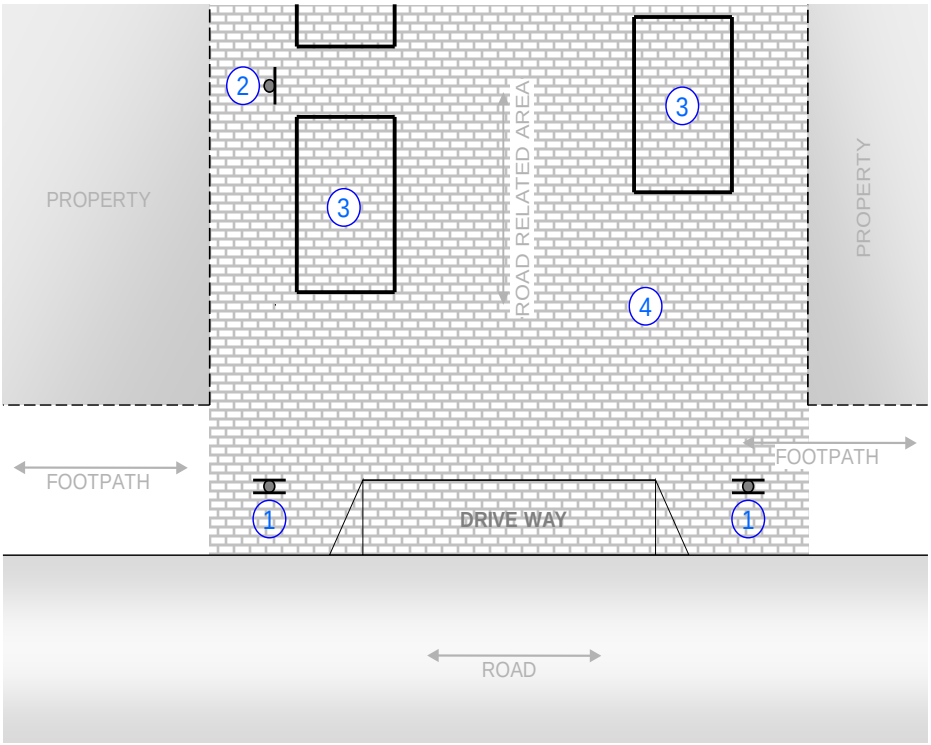
Road safety audits

Road safety audits provide a means of identifying and managing road safety risks in a shared zone scheme.

The features provided in shared zones must be safe for all road users. In particular the road safety audit is required to identify issues pertaining to vehicle speeds, movements and pedestrian safety and disability use.

Road safety audits are to be conducted at a number of points during a project, including at the design stage. The project manager must address all the identified deficiencies, prior to construction. A road safety audit is also to be conducted after implementation.

Road safety audits must be completed in accordance with the Austroads Guide to Road Safety Part 6: Road Safety Audits and the relevant RMS Austroads Guide Supplements.



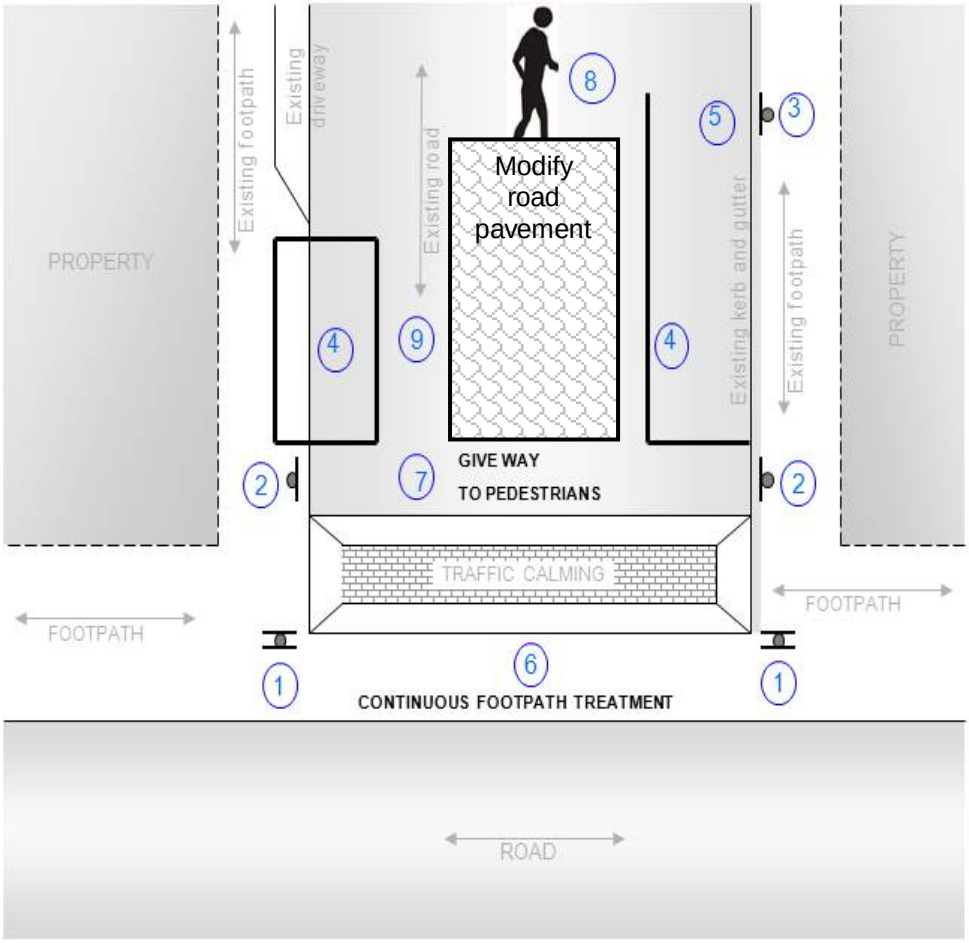
NOTES:

1. **Regulatory traffic signage per the requirements of Road Rules 2008 must be provided at each entry and exit to the shared zone. Signs must be installed on both sides of the road at each entry. These include: R4-4, R2-10, R5-65 and R4-5.**
2. **Traffic signs may be repeated at additional locations in the Shared Zone (R4-4, R2-10 and R5-65).**
3. **Parking bays may be provided. Parking is only allowed in marked bays and should not restrict property / driveway access. All parking spaces must be provided in accordance with AS 2890.5.**
4. **Pavement surface (colour, texture and materials) are used to highlight the difference in the environment from the surrounding street network.**
5. **This diagram is not to scale.**

Category 1 shared zone Indicative layout and treatments

Figure 1. Photo and diagram of a Category 1 shared zone showing regulatory signage, typical layout and treatments. [Note: The No Entry sign is site specific]
The photo may have been modified to demonstrate essential elements.

Figure 2. Photo and diagram of a Category 1 shared zone retaining kerb and gutter showing treatments, parking provision, and typical layout.
The photo may have been modified to demonstrate essential elements.



Category 2 shared zone typical layout and treatments

NOTES:

1. Regulatory traffic signage per the requirements of Road Rules 2008 must be provided at each entry and exit to the shared zone. Signs must be installed on both sides of the road at each entry. These include: R4-4, R2-10, R5-65 and R4-5.
2. No Stopping sign. Must be placed in accordance with the regulations and to ensure parking does not compromise sight distance.
3. Traffic signs may be repeated at additional locations in the Shared Zone (R4-4, R2-10 and R5-65).
4. Parking bays may be provided over existing kerbs or on road. Parking is only allowed in marked bays and should not restrict property / driveway access. All parking spaces must be provided in accordance with AS 2890.5.
5. The retention of kerb and gutter requires RMS approval.
6. Traffic calming treatments must be provided at regular intervals to maintain vehicle travel speed at no more than 10 km/h. There should not be any general requirement to provide pedestrian fencing in shared zones. Continuous Footpath Treatments should be considered as entry treatments and traffic calming (TD 2013/05).
7. A Give Way to Pedestrians pavement marking is to be provided at the entry to the shared zone. (Refer to the Delineation Manual Section 9.)
8. Optional PS-4 pedestrian logos may be repeated at intervals.
9. Pavement surface (colour, texture and materials) are used along the vehicle path to highlight the difference in the environment from the surrounding street network.
10. This diagram is not to scale.

Figure 2. Photo and diagram of a Category 2 shared zone showing treatments, traffic calming, parking provision, and typical layout. 'Give Way' to Pedestrian' pavement marking is optional.

The photo may have been modified to demonstrate essential elements.

Stakeholder consultation

To gain support for the implementation of a shared zone, to ensure compliance with the road rules, and to mitigate any potential conflicts and problems prior to the operation of the scheme, the concept and detailed design of a shared zone must be developed with the participation of the local community. Inclusive in this process is the need to liaise with disability groups.

Consultation with stakeholders such as the Police, emergency services, public transport companies, delivery/ garbage truck operators and local businesses is needed prior to the implementation of the scheme.

It is the responsibility of the local council to deliver an appropriate public awareness campaign and should include a variety of communication channels (eg door knocking, media coverage, placement of posters and signs, distribution of brochures, and public exhibitions). This campaign should advise residents on issues such as where to place garbage bins, and the need to remove them from the shared zone promptly once emptied.

Approval by RMS

The authorisation of a shared zone is not delegated to councils. Shared zones are speed zones and approval to install them must be obtained from RMS in accordance with this policy.

Implementation

The final stage involves implementing the approved scheme on site. Monitoring the implementation by the design team is recommended to ensure consistency with the design objectives and principles.

Post implementation monitoring

A road safety audit is to be conducted after implementation. Local council should also periodically monitor the scheme to assess the effectiveness of the operation of a shared zone.

Action

This Technical Direction must be followed when councils are designing and implementing shared zones.

Updates

To ensure that this Technical Direction and any related guidelines remain current and relevant, minor updates may be made from time to time. Any updates may be obtained from the RMS website using the Traffic & Transport Policies & Guidelines Register which can be found at:

www.rms.nsw.gov.au/doingbusinesswithus/guidelines/documentregister/index.html

Printed copies of this Technical Direction are uncontrolled; therefore the Register should always be checked prior to using this Technical Direction or any related guidelines.