MARIAN STREET THEATRE

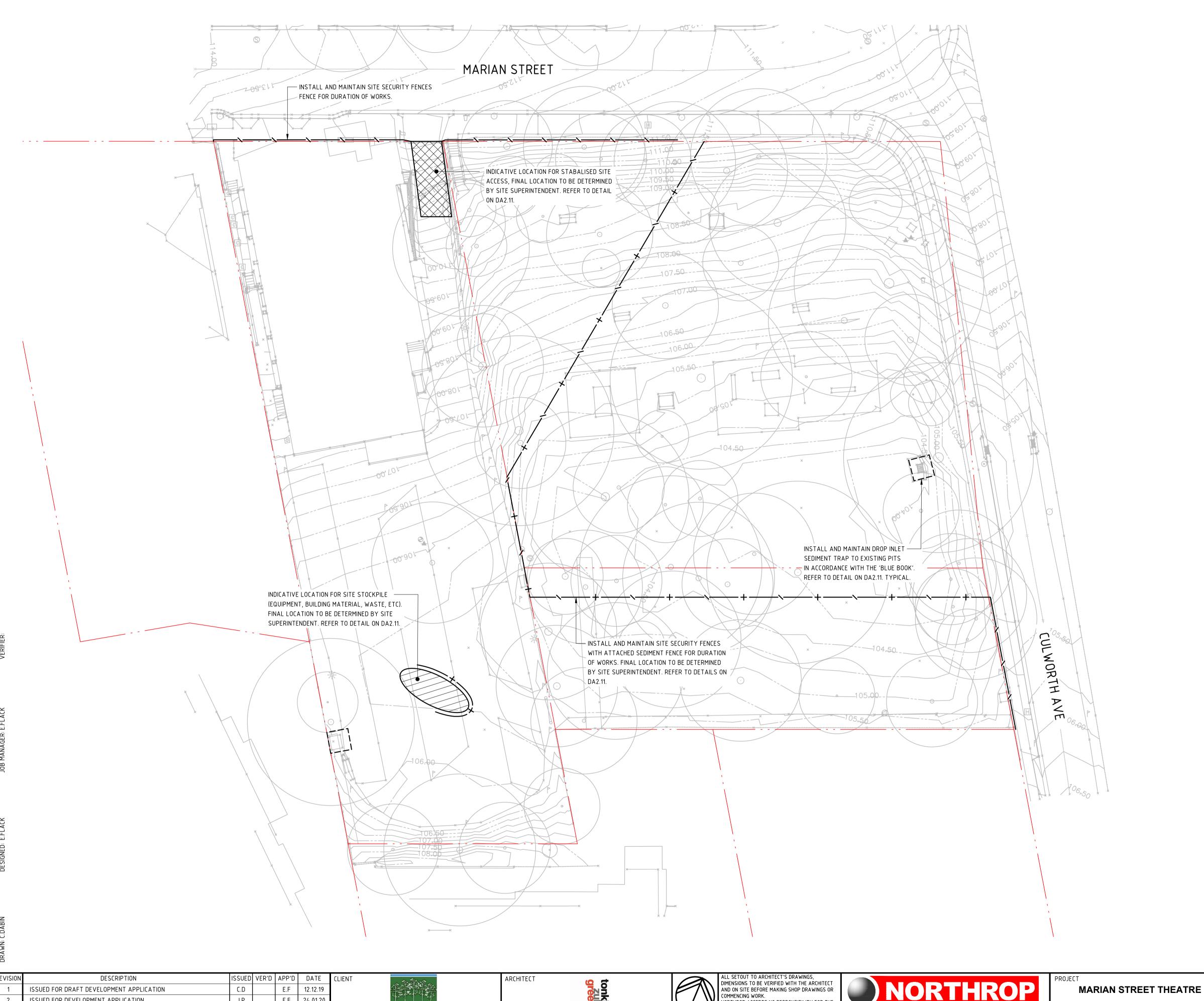
2 MARIAN ST, KILLARA NSW 2071 CIVIL ENGINEERING WORKS PACKAGE

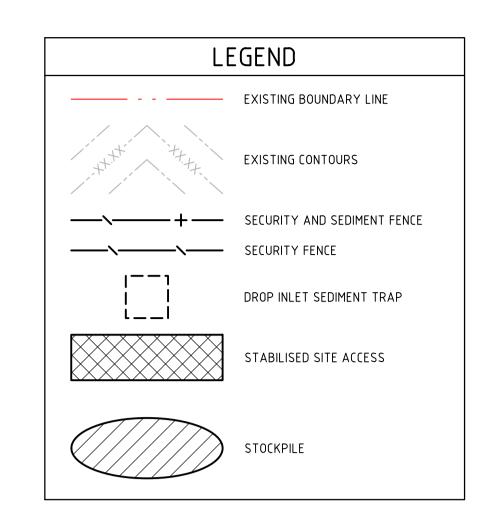


	DRAWING SCHEDULE
DRG No.	DRAWING TITLE
DA1.01	COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DA2.01	CONCEPT SEDIMENT AND EROSION CONTROL PLAN
DA2.11	SEDIMENT AND EROSION CONTROL DETAILS
DA3.01	CONCEPT SITEWORKS AND STORMWATER PLAN
DA4.01	ROAD LONGITUDINAL SECTION - SHEET 1
DA4.02	ROAD LONGITUDINAL SECTION - SHEET 2

NOT FOR CONSTRUCTION

ALL SETOUT TO ARCHITECT'S DRAWINGS, DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT DESCRIPTION MARIAN STREET THEATRE ISSUED FOR DRAFT DEVELOPMENT APPLICATION E.F 12.12.19 COVERSHEET, DRAWING SCHEDULE AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. ISSUED FOR DEVELOPMENT APPLICATION AND LOCALITY PLAN E.F 24.01.20 NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE DRAWING NUMBER USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. Wollongong
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GENERAL NOTES

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).

NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.

ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK.

DETAIL SURVEY DATA WAS SUPPLIED BY DEGOTARDI SMITH & PARTNERS, DRAWING DATED 09/08/19.

EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

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CONCEPT SEDIMENT AND EROSION **CONTROL PLAN**

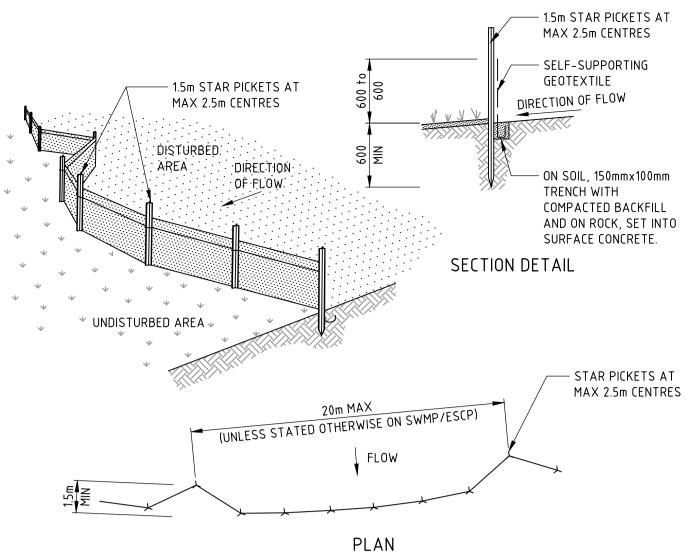
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CONSTRUCTION NOTES

- 1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
- 2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
- 4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
- 5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

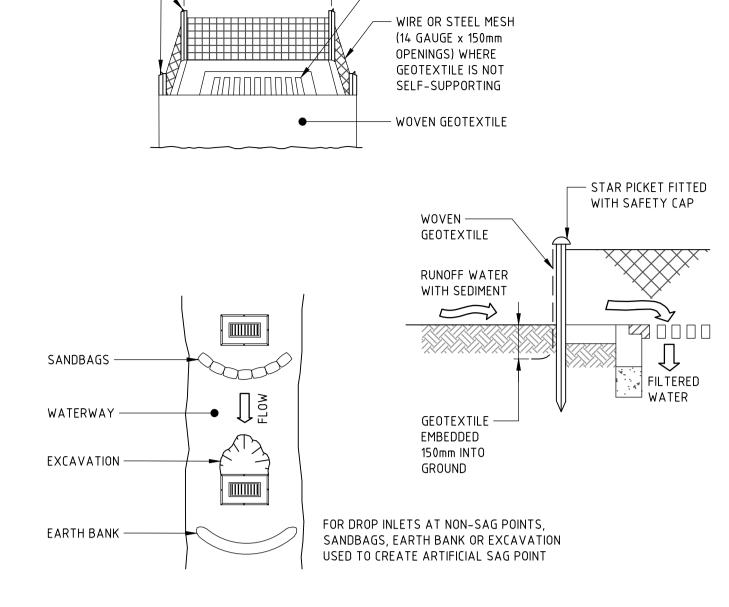
STOCKPILE



CONSTRUCTION NOTES

- 1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
- 2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- 3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- 4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
- 5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
- 6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE SD6.8



- DROP INLET WITH GRATE

CONSTRUCTION NOTES

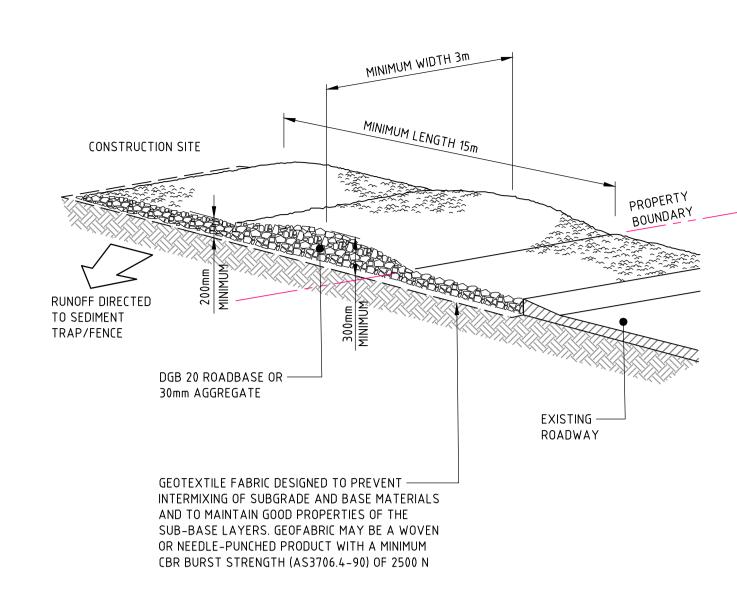
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.

1 METRE MAX.

STAR PICKETS —

- 2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
- 3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
- 4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS SD6.12



CONSTRUCTION NOTES

- 1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
- COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
- 3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
- 4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES
- 5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS

DESCRIPTION 12.12.19 ISSUED FOR DRAFT DEVELOPMENT APPLICATION ISSUED FOR DEVELOPMENT APPLICATION E.F 24.01.20 DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

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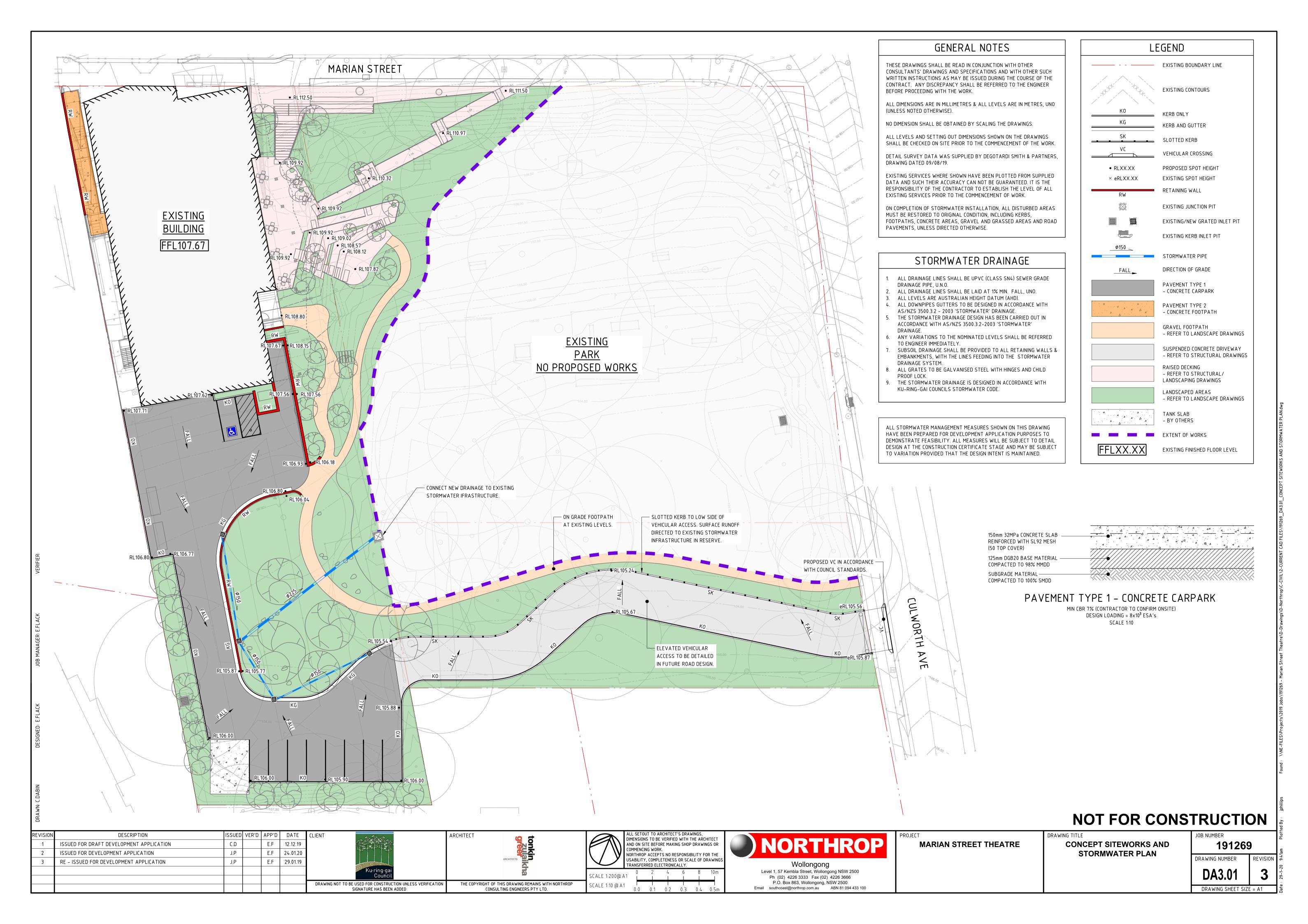


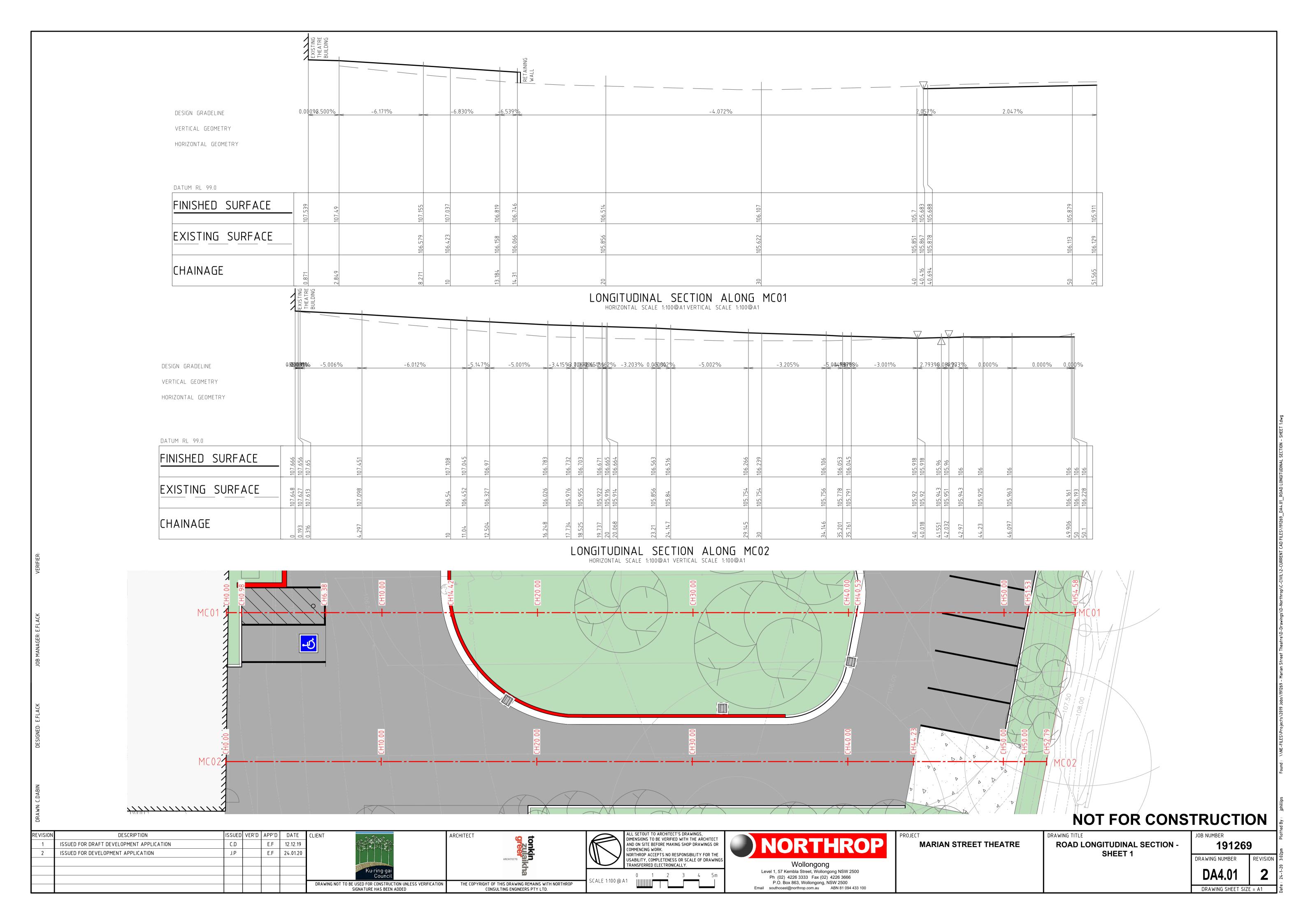
Email southcoast@northrop.com.au ABN 81 094 433 100

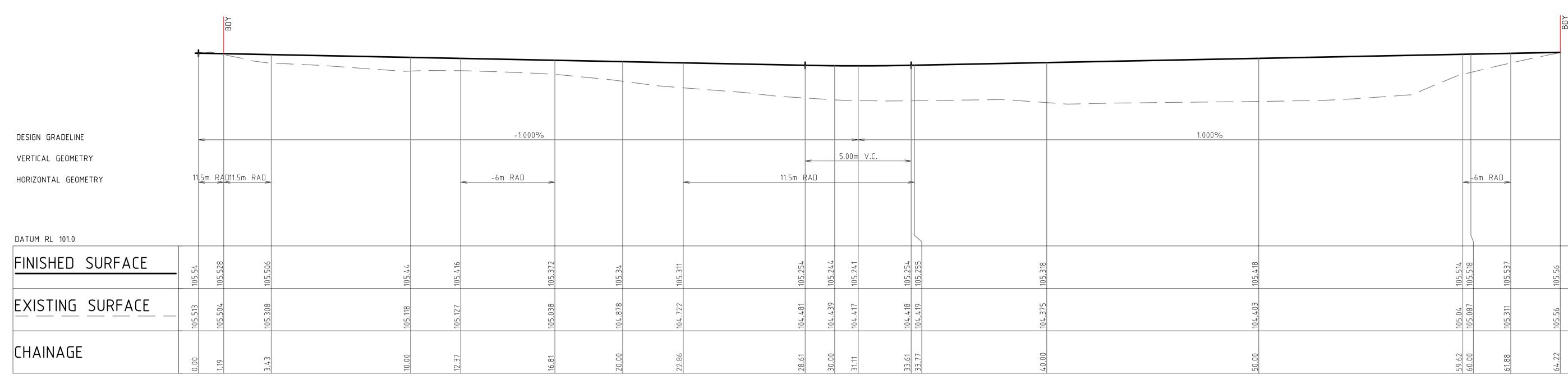
191269

DRAWING SHEET SIZE = A1

NOT FOR CONSTRUCTION MARIAN STREET THEATRE **SEDIMENT AND EROSION CONTROL DETAILS** DRAWING NUMBER



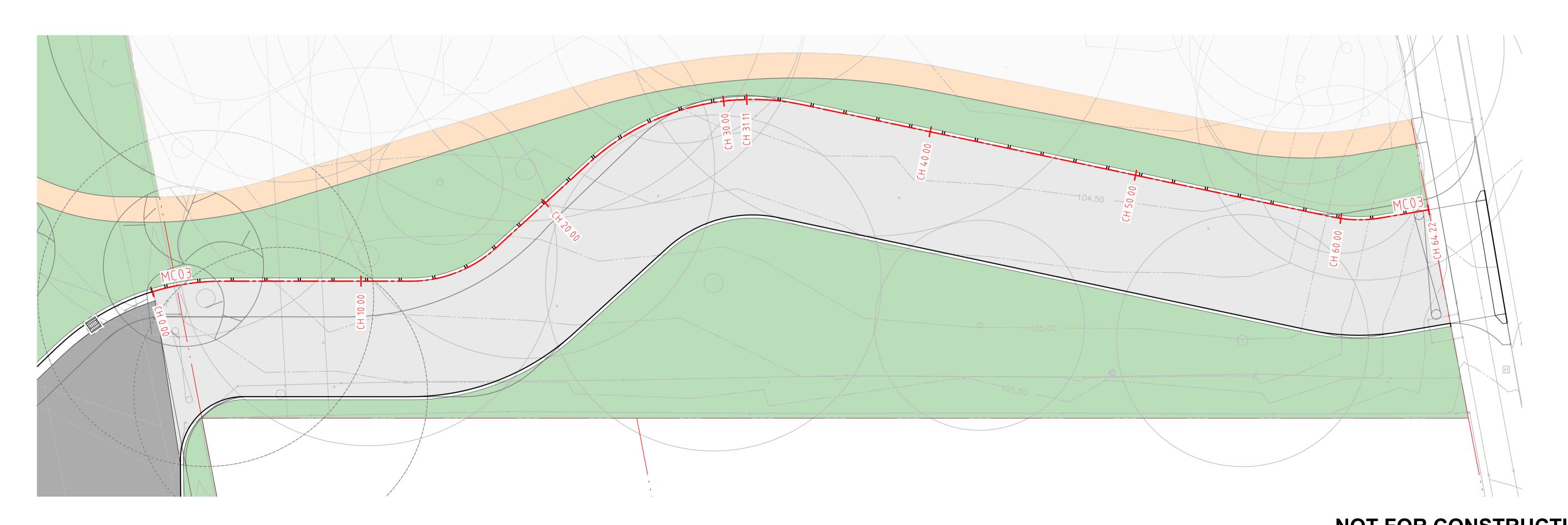




LONGITUDINAL SECTION ALONG MC03

HORIZONTAL SCALE 1:100@A1

VERTICAL SCALE 1:50@A1



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DEVELOPMENT APPLICATION - MARIAN STREET THEATRE REDEVELOPMENT



A 000 GENERAL INF A-000 A-001 A-002 A-003 A-004 A 020 DEMOLITION I A-020 A-021 A-022 A-023 A 100 GENERAL ARI A-100 A-101 A-102 A-103 A-104	COVER PAGE LOCATION PLAN SITE ANALYSIS EXISTING SITE PLAN PROPOSED SITE PLAN	1:250 1:250 1:100 1:100 1:100 1:100
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A-101 A-102 A-103		
A-102 A-103	LEVEL 1 FLOOR PLAN	1:100
A-103		1:100
	LEVEL 2 FLOOR PLAN	1:100
A-104	LEVEL 3 ROOF PLAN	1:100
	ROOF PLAN	1:100
A 200 ELEVATIONS		
A-200	ELEVATIONS - 1	
A-201	ELEVATIONS - 2	1:100
A 300 SECTIONS		
A-300	SECTIONS - 1	1:100
A-301	SECTIONS - 2	1:100
A-302	SECTIONS - 3	1:100
A 400 PERSPECTIVE	IMAGES	
A-400	MATERIALS SCHEDULE	
A-401	PERSPECTIVE IMAGES - 1	
A-401	PERSPECTIVE IMAGES - 3	
A-402	PERSPECTIVE IMAGES - 2	
A-402	PERSPECTIVE IMAGES - 4	
A-405	SIGNAGE PLANS -1	
A 500 SHADOW DIA	GRAMS	
A-500	SHADOW DIAGRAMS - MAR / SEP 21	
A-501	SHADOW DIAGRAMS - JUNE 21	
A-502	SHADOW DIAGRAMS - DECEMBER 21	
A 600 GFA DRAWING	GS	
A-600		

	Description
VC	Air conditioning unit
ACC	Accessible
\FFL	Above finished floor level
BAL1	Balustrade, vertical batten
BIN	Garbage bin
BKR	Bicycle racks
BM1	Balustrade, steel
BOH	Back of House
BRP	Brickwork, painted
CCTV	Security camera - cctv
CFA	Concrete finish, Aggregate
CFP	Concrete finish, protective coating
CIRC.	Circulation Zone
COMMS	Communications cupboard
COWL	Mechanical cowl hood
CS	Stair, concrete
CW	Cold Water Services
)	Door
)P	
	Down pipe
ELEC	Electrical Services
EWIS	Emergency Warning System
XH	Exhaust
CL	Finished ceiling level
CP	Fibre cement panel, paint finish
CU	Fan Coil Unit
FL	Finished floor level
:H	Fire hydrant
	•
HR	Fire hose reel
TIP	Fire Indicator Panel
N	Fence
NG	Fence gate
ОН	Front of House
GCL	Glass, clear, laminated
iD	Door, Garage
6L1	Glass, clear
	<u> </u>
SLB	Timber Beam, Glulam
SLC	Tmber Column, Glulam
IRM1	Handrail, steel
IYD	Hydraulic Services
NSA	Insulation, Acoustic
BF	Lighting bar, fixed
BX	Lightbox, illuminated
CK	Lockers
OR	Ladder
IC	Metal cladding, Vertical, zinc finish
IECH	Mechanical Services
IFD	Metal Framed Door
/IGR	Metal Grille
110	Paint Finish, Micaceous Oxide
1LF	Louvre, metal, fixed
IR	Metal roof, corrugated
IRG	Roof gutter, eaves, colourbond
RV	Metal roof vent
IS	Stair, metal
1W1	Window, aluminium framed
F1	Paint finish, white
F2	Paint Finish, Red
F3	Paint Finish, Dark Grey
V	Photovoltaic cells
/A	Return Air
•	
S	Roller shutter
/A	Supply Air
CR1	Screen, vertical batten
l	Sign, Illuminated
D	Sign, Painted
	Timber
 D	Timber deck
W	Window, timber framed
V	Window
VC	Water closet
	Existing
(Priolework existing pointed
	Brickwork, existing, painted
(BRP	
(BRP	Existing Door
(BRP (D (MR	Existing Door Metal roof, existing
	Existing Door

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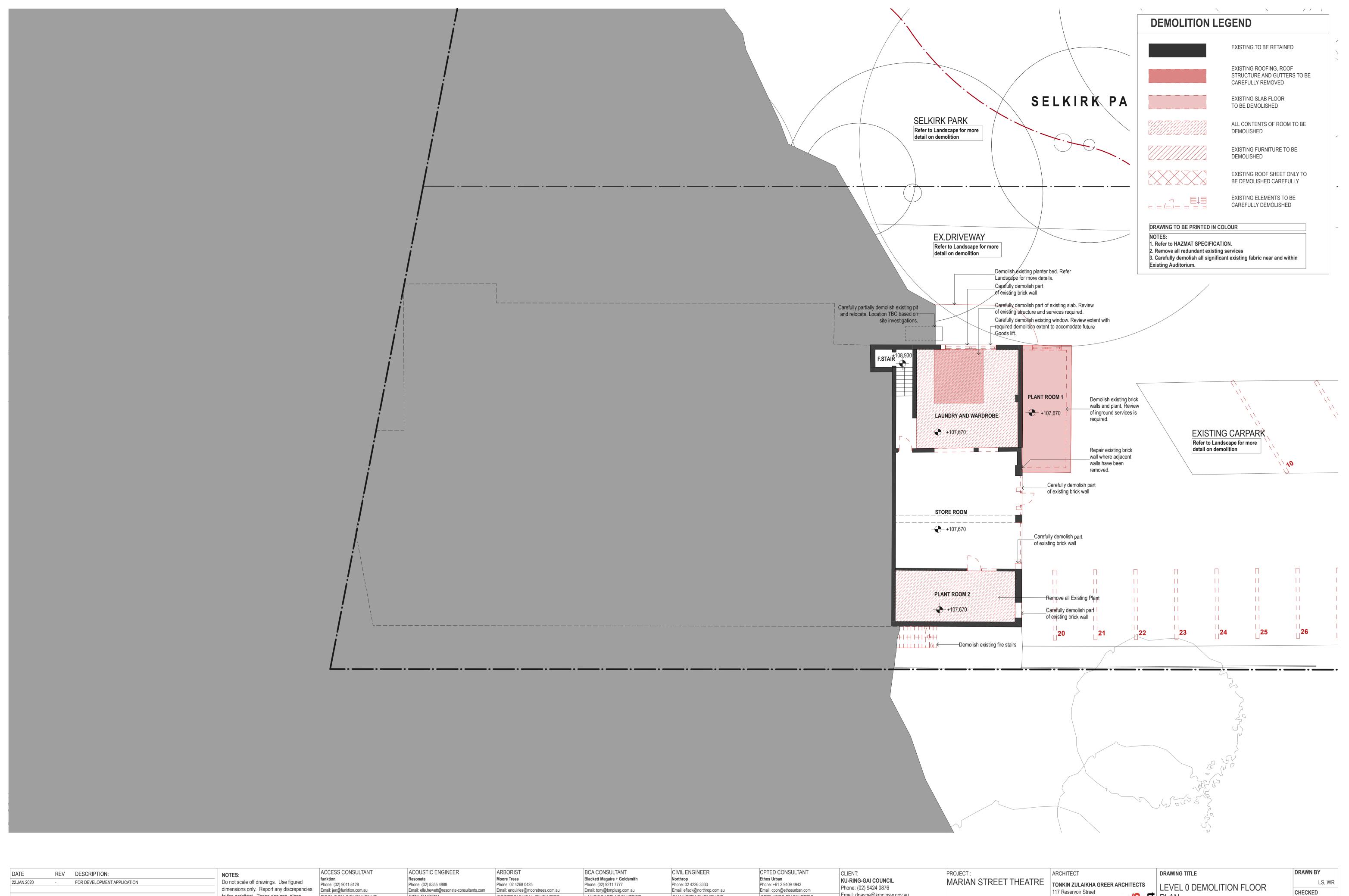
KU-RING-GAI COUNCIL Phone: (02) 9424 0876 Email: dpayne@kmc.nsw.gov.au MARIAN STREET THEATRE

PROJECT NO: 19009

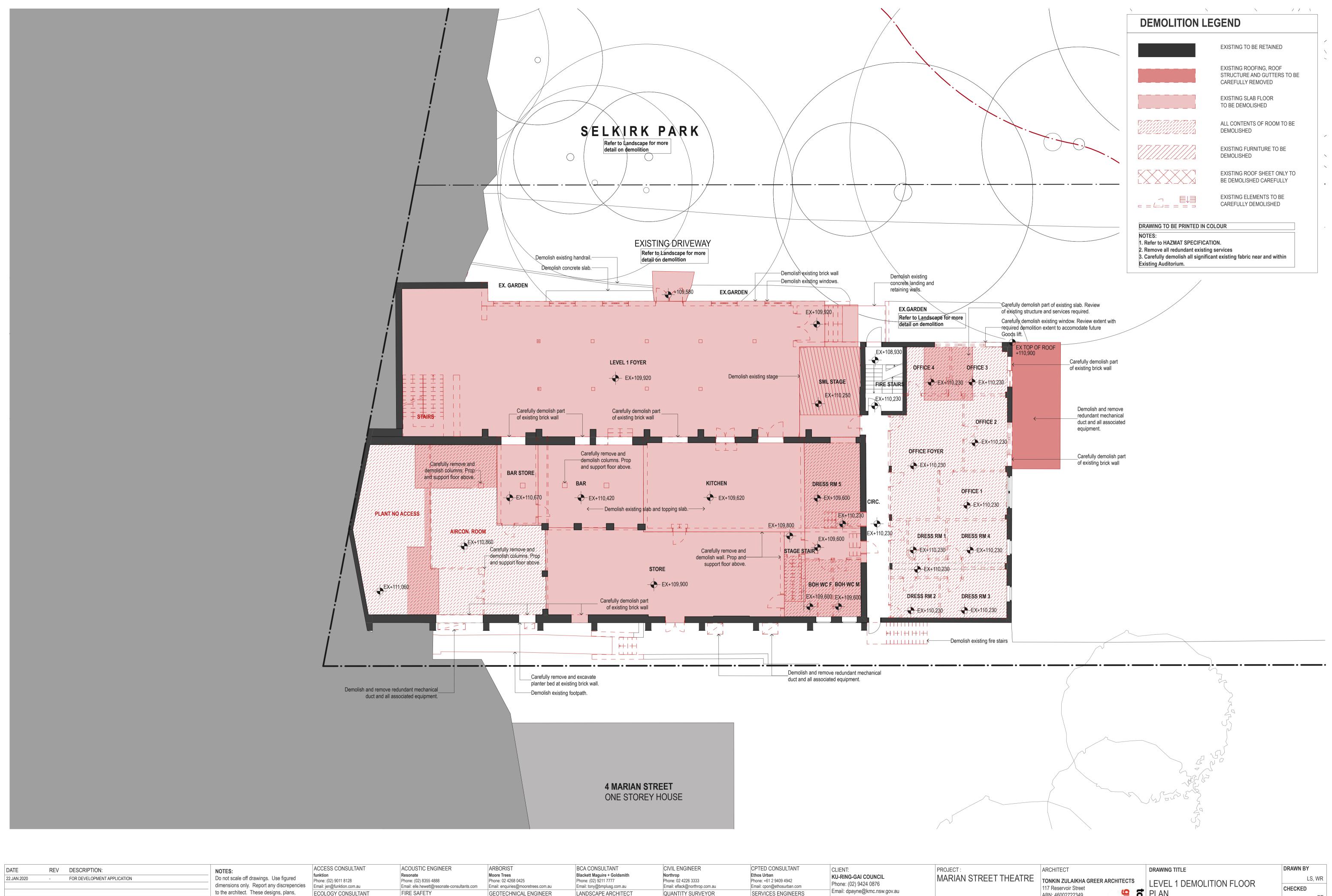
TONKIN ZULAIKHA GREER ARCHI 117 Reservoir Street ABN: 46002722349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL info@tzg.com.au WEB www.tzg.com.au

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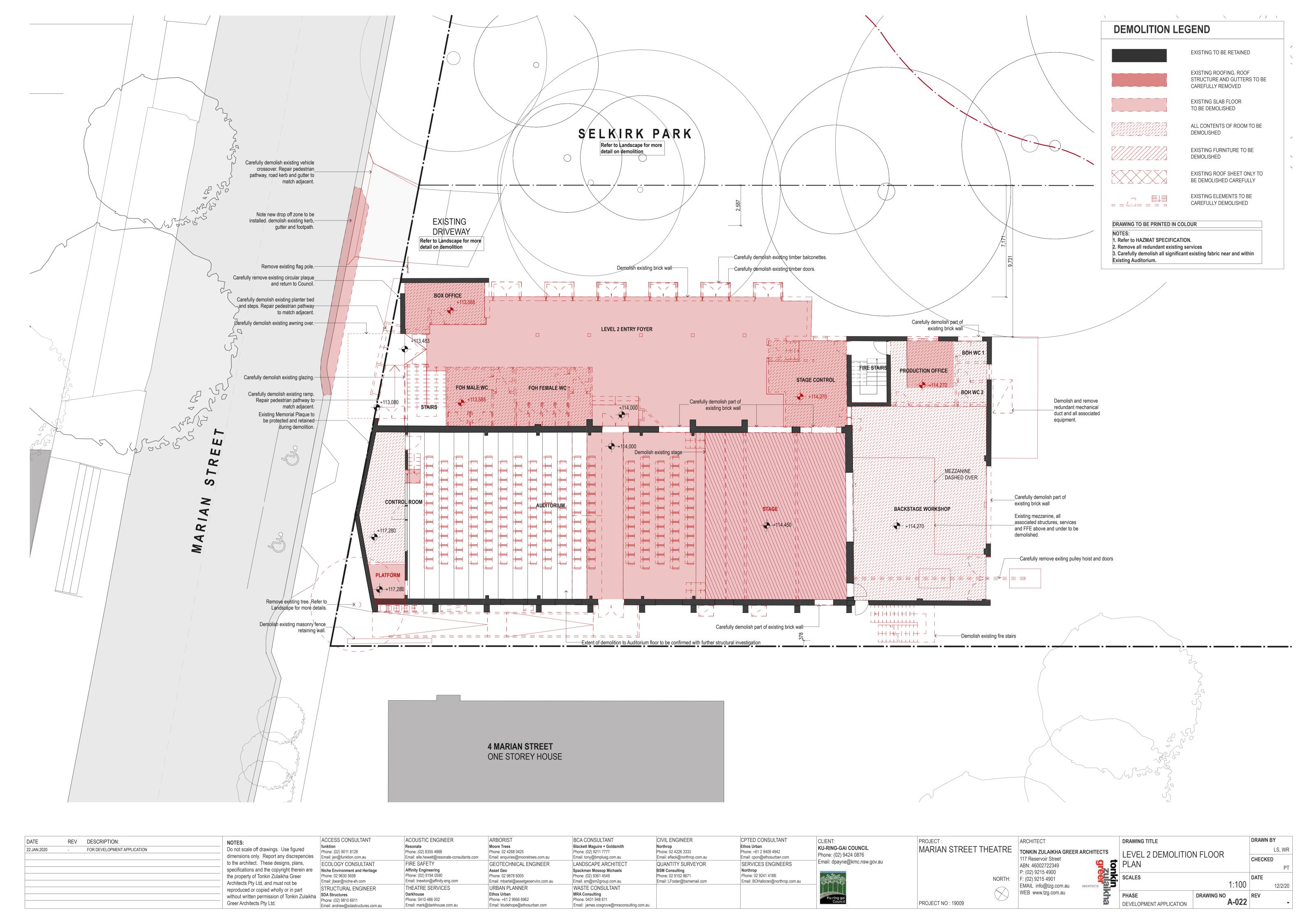
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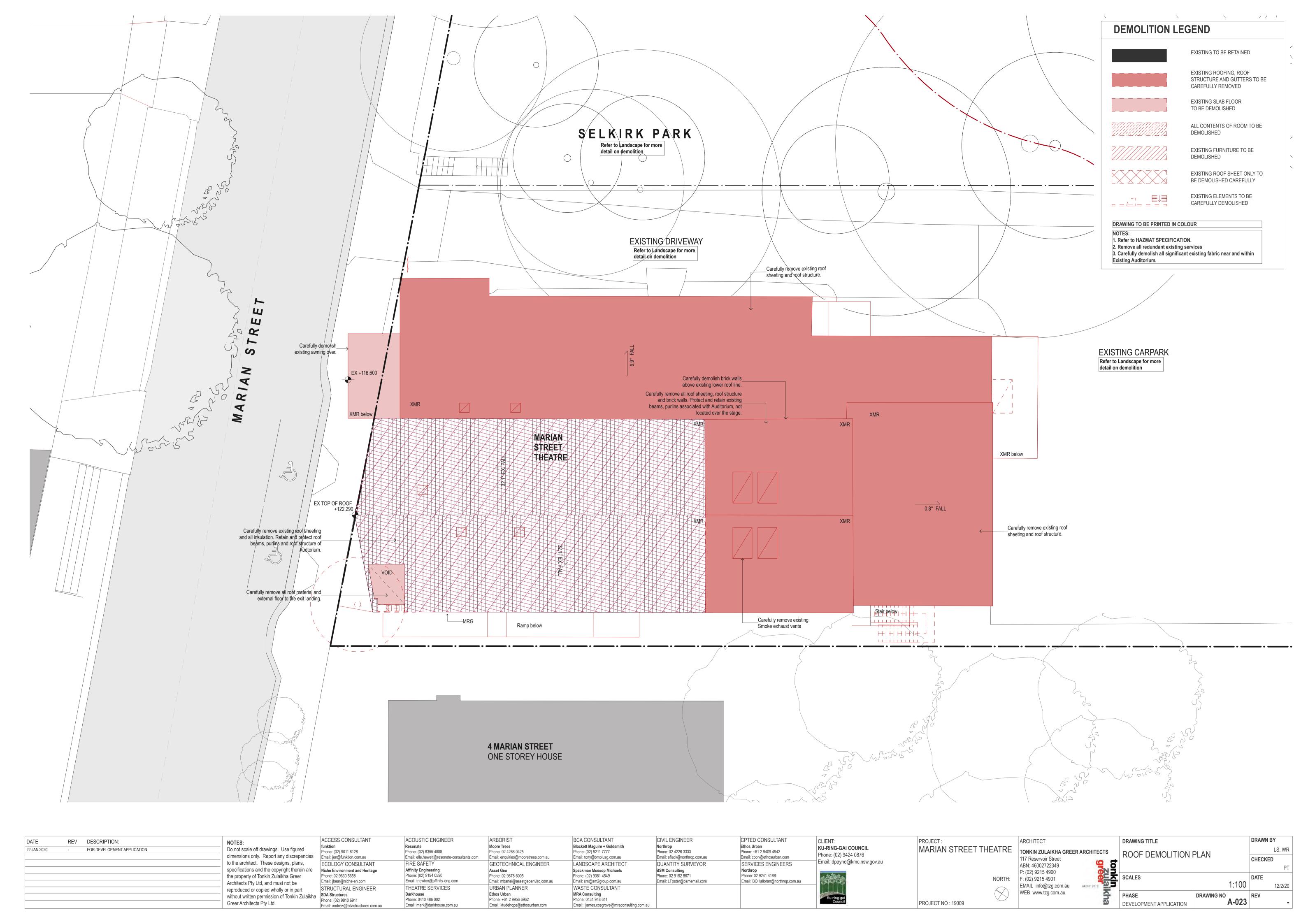


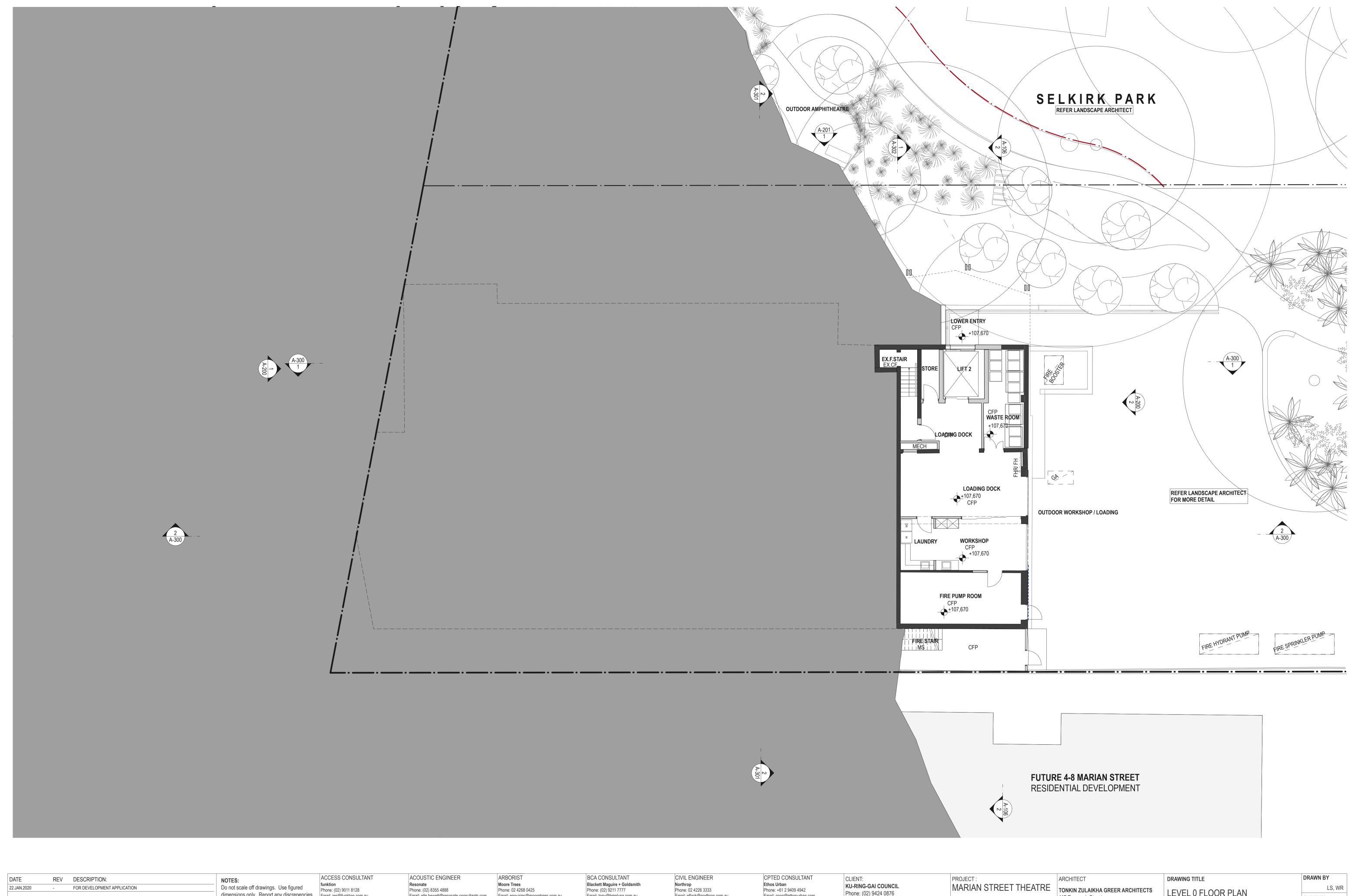
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			to the architect. These designs, plans,	ECOLOGY CONSULTANT	Email: elle.hewett@resonate-consultants.com FIRE SAFETY	GEOTECHNICAL ENGINEER	Email: tony@bmplusg.com.au LANDSCAPE ARCHITECT	QUANTITY SURVEYOR	SERVICES ENGINEERS	Email: dpayne@kmc.nsw.gov.au		117 Reservoir Street ABN: 46002722349	PLAN	CHECKED
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			Greer Architects Pty Ltd.	Phone: (02) 9810 6911 Email: andrew@sdastructures.com.au	Phone: 0410 486 002 Email: mark@darkhouse.com.au	Email: ktudehope@ethosurban.com	Email: james.cosgrove@mraconsulting.com.au			Council	PROJECT NO : 19009	0	DEVELOPMENT APPLICATION	A-020



ATE	REV	DESCRIPTION:	NOTES:	ACCESS CONSULTANT	ACOUSTIC ENGINEER	ARBORIST	BCA CONSULTANT	CIVIL ENGINEER	CPTED CONSULTANT	CLIENT:	PROJECT:	ARCHITECT	DRAWING TITLE	DRAWN	N BY
22.JAN.2020	-	FOR DEVELOPMENT APPLICATION	Do not scale off drawings. Use figured dimensions only. Report any discrepencies	funktion Phone: (02) 9011 8128 Email: jen@funktion.com.au	Resonate Phone: (02) 8355 4888 Email: elle.hewett@resonate-consultants.com	Moore Trees Phone: 02 4268 0425 Email: enquiries@mooretrees.com.au	Blackett Maguire + Goldsmith Phone: (02) 9211 7777 Email: tony@bmplusg.com.au	Northrop Phone: 02 4226 3333 Email: eflack@northrop.com.au	Ethos Urban Phone: +61 2 9409 4942 Email: cpon@ethosurban.com	KU-RING-GAI COUNCIL Phone: (02) 9424 0876	MARIAN STREET THEAT	117 Reservoir Street	LEVEL 1 DEMOLITION FLO	OOR	LS, WR
			to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd, and must not be	ECOLOGY CONSULTANT Niche Environment and Heritage Phone: 02 9630 5658 Email: jbear@niche-eh.com	FIRE SAFETY Affinity Engineering Phone: (02) 9194 0590 Email: tnewton@affinity-eng.com	GEOTECHNICAL ENGINEER Asset Geo Phone: 02 9878 6005 Email: mbartel@assetgeoenviro.com.au	LANDSCAPE ARCHITECT Spackman Mossop Michaels Phone: (02) 9361 4549 Email: sm@sm2group.com.au	QUANTITY SURVEYOR BSM Consulting Phone: 02 9152 8671 Email: LFoster@bsmemail.com	SERVICES ENGINEERS Northrop Phone: 02 9241 4188: Email: BOHalloran@northrop.com.au	Email: dpayne@kmc.nsw.gov.au	NOF	P: (02) 9215 4900	PLAN scales	DATE	PT
			reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	STRUCTURAL ENGINEER SDA Structures Phone: (02) 9810 6911 Email: andrew@sdastructures.com.au	THEATRE SERVICES Darkhouse Phone: 0410 486 002 Email: mark@darkhouse.com.au	URBAN PLANNER Ethos Urban Phone: +61 2 9956 6962 Email: ktudehope@ethosurban.com	WASTE CONSULTANT MRA Consulting Phone: 0431 948 611 Email: james.cosgrove@mraconsulting.com.au	ı		Ku-ring-gai Council	PROJECT NO: 19009	EMAIL info@tzg.com.au WEB www.tzg.com.au	PHASE DEVELOPMENT APPLICATION DRAWN	1:100 /ing no	12/2/20



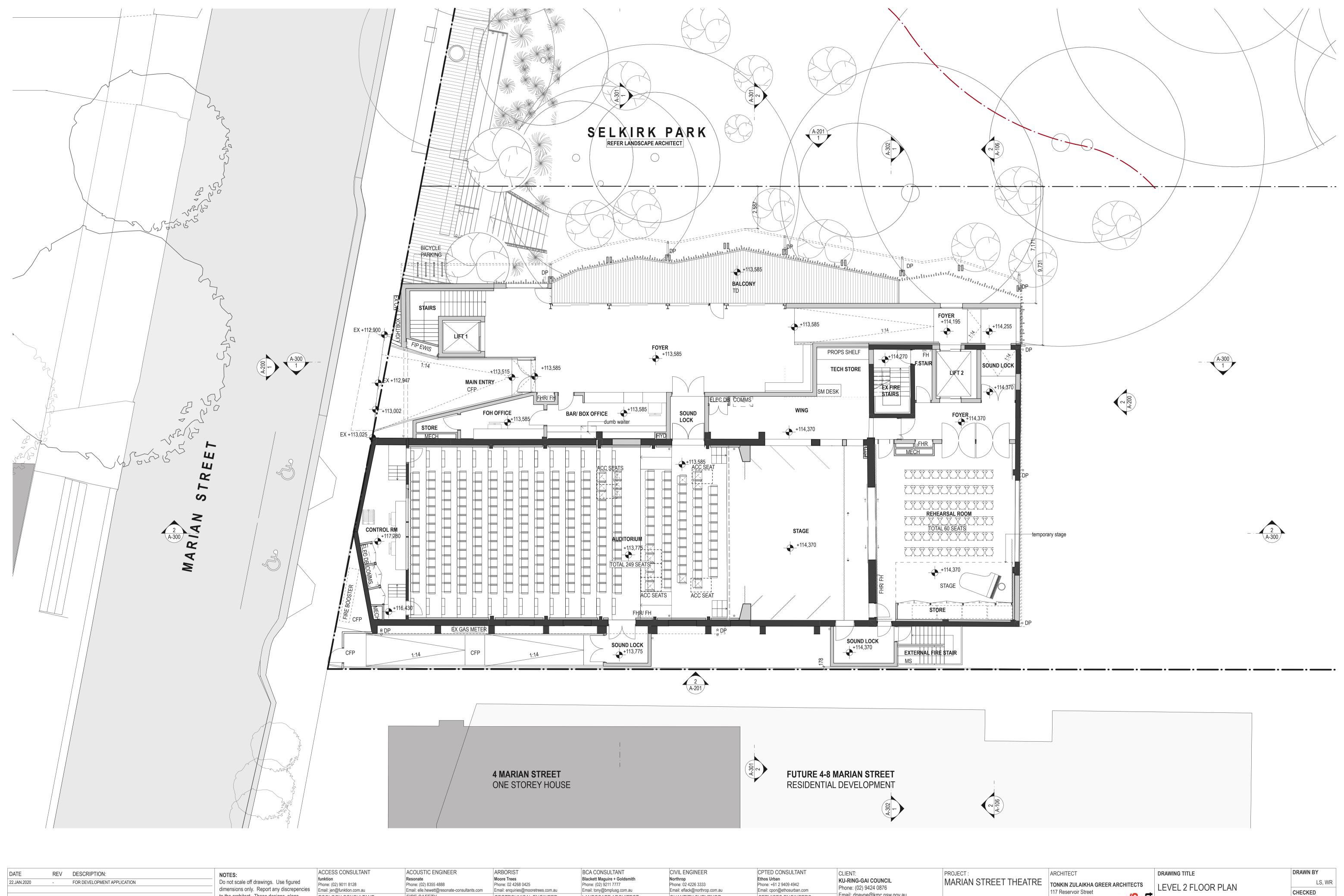




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		to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd, and must not be	ECOLOGY CONSULTANT Niche Environment and Heritage Phone: 02 9630 5658 Email: jbear@niche-eh.com	FIRE SAFETY Affinity Engineering Phone: (02) 9194 0590 Email: tnewton@affinity-eng.com	GEOTECHNICAL ENGINEER Asset Geo Phone: 02 9878 6005 Email: mbartel@assetgeoenviro.com.au	LANDSCAPE ARCHITECT Spackman Mossop Michaels Phone: (02) 9361 4549 Email: sm@sm2group.com.au	QUANTITY SURVEYOR BSM Consulting Phone: 02 9152 8671 Email: LFoster@bsmemail.com	SERVICES ENGINEERS Northrop Phone: 02 9241 4188: Email: BOHalloran@northrop.com.au	Email: dpayne@kmc.nsw.gov.au	NORTH:	ABN: 46002722349 P: (02) 9215 4900	SCALES	DATE PT
		reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	STRUCTURAL ENGINEER SDA Structures Phone: (02) 9810 6911 Email: andrew@sdastructures.com.au	THEATRE SERVICES Darkhouse Phone: 0410 486 002 Email: mark@darkhouse.com.au	URBAN PLANNER Ethos Urban Phone: +61 2 9956 6962 Email: ktudehope@ethosurban.com	WASTE CONSULTANT MRA Consulting Phone: 0431 948 611 Email: james.cosgrove@mraconsulting.com.au			Ku-ring-gai Council	PROJECT NO : 19009	WEB www.tzg.com.au	PHASE DEVELOPMENT APPLICATION DRAWING N	1:100 12/2/20 NO A-100 REV -

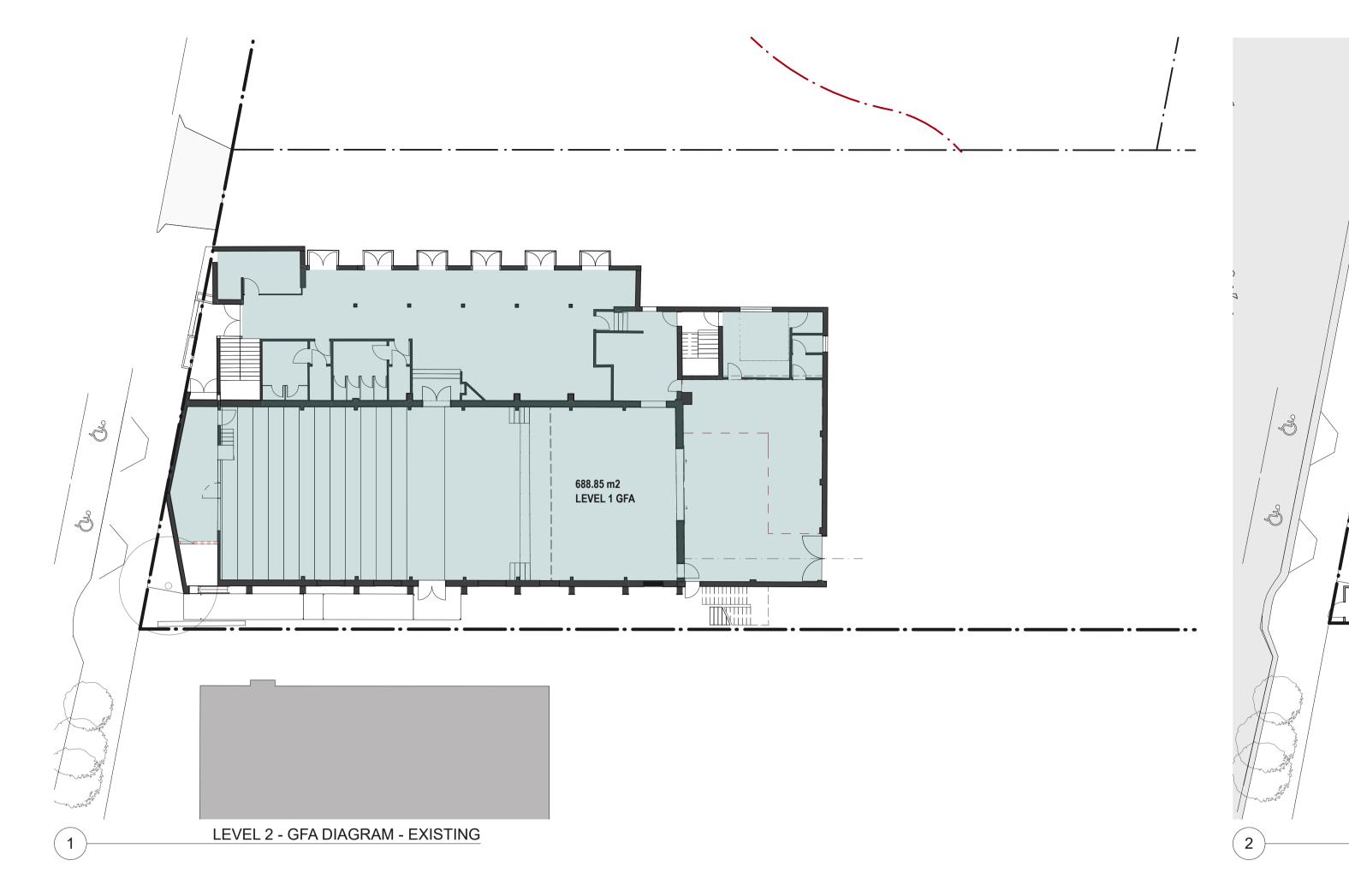


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DATE REV DESCRIPTION:	NOTES:	ACCESS CONSULTANT	ACOUSTIC ENGINEER	ARBORIST	BCA CONSULTANT	CIVIL ENGINEER	CPTED CONSULTANT	CLIENT:	PROJECT:	ARCHITECT	DRAWING TITLE	DRAWN BY
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AREA SCH	EDULE EXISTING - TOTAL GF	-A	
LEVEL	NAME	AREA (m2)	Zone Category
LEVEL 0, E	XISTING		
	LEVEL 0 GFA	37.52	GROSS FLOOR AREA (GFA)
		37.52 m²	
LEVEL 1, E	XISTING	'	<u>'</u>
	LEVEL 1 GFA	575.89	GROSS FLOOR AREA (GFA)
		575.89 m²	
LEVEL 2, E	XISTING	'	
	LEVEL 1 GFA	688.85	GROSS FLOOR AREA (GFA)
		688.85 m²	
		1,302.26 m ²	

		1,302.20 111	
AREA SCI	HEDULE - PROPOSED - GFA		
LEVEL	NAME	AREA (m2)	Zone Category
LEVEL 0,	PROPOSED		
	LEVEL 0 GFA	37.55	GROSS FLOOR AREA (GFA)
		37.55 m²	
LEVEL 1,	PROPOSED		
	LEVEL 1 GFA	558.12	GROSS FLOOR AREA (GFA)
		558.12 m²	
LEVEL 2,	PROPOSED		
	LEVEL 0 GFA	695.81	GROSS FLOOR AREA (GFA)
		695.81 m ²	
		1,291.48 m²	

MAXIMUM ALLOWED FSR RATIO: 0.75:1

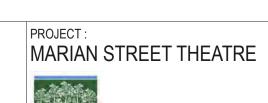
TOTAL SITE AREA: 2789 m²

EXISTING FSR: 0.466:1

PROPOSED FSR: 0.463:1

NOTES:

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PROJECT NO: 19009

695.81 m2 LEVEL 0 GFA

LEVEL 2 - GFA DIAGRAM - PROPOSED

ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 46002722349 P: (02) 9215 4900

NORTH: EMAIL info@tzg.com.au

WEB www.tzg.com.au

DRAWING TITLE			DRAWN BY
GFA DIAGRAMS	LS, WR		
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SCALES			DATE
			DD.MM.201X
PHASE	DRAWING NO		REV
DEVELOPMENT APPLICATION	ON	A-601	-

DEVELOPMENT APPLICATION



LIST OF DRAWINGS

L-001	Cover Page
L-002	Design Statement
L-003	Existing Tree Plan
L-004	Demolition Plan
L-101	Landscape Plan
L-102	Detailed Plan - North
L-103	Detail Plan - South
L-104	Detail Plan - Amphitheatre
L-201	Section AA & BB
L-301	Material Palette
L-302	Planting Palette
L-303	Lighting Strategy
L-304	Artist Impression

MARIAN ST THEATRE

2 MARIAN ST, KILLARA NSW

LANDSCAPE CONCEPT DESIGN - For Development Application

Prepared for



spackman mossop michaels PROJECT

MARIAN ST THEATRE

RAWING

Cover Page

DRAWING L-001 SCALE N/A NUMBER

CLIENT

Ku-ring-gai Council

SMM PROJECT No. ISSUE 19056 100% DA

31/1/20



DESIGN STATEMENT

Spackman Mossop Michaels have been engaged by Tonkin Zulaikha Greer (TZG) to prepare a landscape design for the proposed development of Marian Street Theatre, Killara for Ku-ring-gai Council. The Landscape documentation and this landscape statement should be read in conjunction with the Architectural drawings by TZG and other specialist reports submitted with the Development Application.

LANDSCAPE DESIGN APPROACH

Marian Street Theatre will be transformed into a new innovative performance space for Ku-ring-gai's community.

The adjacent Selkirk Park provides a unique opportunity to extend the theatrical character of the theatre into the public domain. The landscape design around the theatre and the park will play a prominent role in delivering Councils vision for the innovative performance precinct for Ku-ring-gai's community, also improving amenity of the existing parkland.

The incorporation of an informal performance space with the roll of providing opportunity for "incidental performances" has been explored to provide additional facilities for the Theatre while also developing an engaging landscape language that enhances a sense of place and the sites unique character. The landscape approach seamlessly integrates the theatre with the park through form, materiality, planting and programming.

KEY OPPORTUNITIES

- Improve the parks connection to the Theatre and to the surrounding community
- Enhance ecology
- Improve accessibility
- Improve diversity of uses within the park
- Provide opportunity for informal play
- Enhance the parks inherent woodland character

LANDSCAPE DESIGN PRINCIPLES + OBJECTIVES

1. Integrate Selkirk Park with Marian St Theatre

- Utilise existing topography to provide an informal performance space in Selkirk Park
- Improve park accessibility from the Marian St Theatre
- Consider alternate surfaces for the existing driveway to provide improved pedestrian connection between the park and the theatre / remove driveway between park and Theatre
- DDA complying pathways and entrances
- Circulation throughout the site is to be easy, intuitive, accessible

2. Enhance the local ecology and biodiversity

· Protect and reinstate where possible the Blue Gum High

Forest (BGHF) ecological community where possible.

- Ensure plant species are suitable to the existing vegetation profile of the site and appropriate soil preparation is undertaken to maximise plant growth
- Respond to and use the landform in the landscape design including the performance spaces
- Reduce hard surfaces
- Improve stormwater quality by reducing runoff and improving absorption

3. Develop a sense of place and style that enhance the site as a cultural precinct

- Enhance the sense of arrival from street and Theatre entrances
- Use local robust materials that reflect the parks bushland character
- DDA complying pathways and entrances

4. Community building through sharing of assets

- Flexible open space to accommodate community events, gatherings, and performances
- Embellish and extend existing open space to increase carrying capacity and enhance usability of Selkirk Park.

THEATRE IN THE PARK

The landscape design brings the theatre into the park while drawing the parkland's bushland character into the building by:

- Enhancing the sense of arrival to the park and the Theatre
- Widen the existing pedestrian path on Marian St over the park, creating a viewing point and a spill out zone for before and after theatre productions.
- Physically and visually connect the park with the theatre
- Provide a structure that has a 'light touch' with little disturbance to the existing ground and root structures.
- Maximise new planting with including endemic trees, groundcovers, shrubs and grasses
- A space that is flexible to accommodate small performances or rehearsal space
- Additional park amenities for seating and informal nature play
- Reduction of hard surface
- Increase native vegetation and additional parkland
- Providing a space for "incidental performing" that doubles as a functional and attractive space for park users and public amenity.

ROJECT

MARIAN ST THEATRE

DRAWING

Design Statement

DRAWING L-002 SCALE 1:800

CLIENT

Ku-ring-gai Council

SMM PROJECT No. 19056

DATE 31/1/20

100% DA



Tree	Species
T1	Sydney blue gum (Eucalyptus saligna)
T2	Jacaranda (Jacaranda mimosifolia)
T3	Liquidambar (Liquidambar styraciflua)
T4	Ulmus sp
T5	Liquidambar (Liquidambar styraciflua)
T6	Chinese elm (Ulmus parvifolia)
T7	China doll tree (Radermachera sinica)
T8	Red iron Bark (Eucalyptus fibrosa)
T9	Brushbox (Lophostemon confertus)
T10	Blackbutt (Eucalyptus pilularis)

T11	Sydney blue gum (Eucalyptus saligna)
T12	Blackbutt (Eucalyptus pilularis)
T13	Iron bark (Eucalyptus crebra)
T14	Sydney blue gum (Eucalyptus saligna)
T15	Iron bark (Eucalyptus crebra)
T16	Sydney blue gum (Eucalyptus saligna)
T17	Rough bark apple (Angophora floribunda)
T18	Jacaranda (Jacaranda mimosifolia)
T19	Sydney blue gum (Eucalyptus saligna)
T20	Sydney blue gum (Eucalyptus saligna)
T21	Blackbutt (Eucalyptus pilularis)
T22	Sydney blue gum (Eucalyptus saligna)
T23	Blackbutt (Eucalyptus pilularis)
T24	Illawarra flame tree (Brachychiton acerifolius)
T25	
	Blackbutt (Eucalyptus pilularis)
T26	Blackbutt (Eucalyptus pilularis)
T27	Sydney red gum (Angophora costata)
T28	Sydney blue gum (Eucalyptus saligna)
T29	Blackbutt (Eucalyptus pilularis)
T30	Sydney blue gum (Eucalyptus saligna)
T31	Blackbutt (Eucalyptus pilularis)
T32	Sydney blue gum (Eucalyptus saligna)
T33	Blackbutt (Eucalyptus pilularis)
T34	Blackbutt (Eucalyptus pilularis)
T35	Ash (Fraxinus sp)
T36	Sydney blue gum (Eucalyptus saligna)
T37	Blackbutt (Eucalyptus pilularis)
T38	Blackbutt (Eucalyptus pilularis)
T39	Blackbutt (Eucalyptus pilularis)
T40	Sydney blue gum (Eucalyptus saligna)
T41	Sydney blue gum (Eucalyptus saligna)
T42	Blackbutt (Eucalyptus pilularis)
T43	Sydney blue gum (Eucalyptus saligna)
T44	Ash (Fraxinus sp)
T45	Sydney blue gum (Eucalyptus saligna)
T46	Sydney blue gum (Eucalyptus saligna)
T47	Sydney blue gum (Eucalyptus saligna)
T48	Brushbox (Lophostemon confertus)
T49	
	Sydney blue gum (Eucalyptus saligna)
T50	Rough bark apple (Angophora floribunda)
T51	Broad leaved paperbark (Melaleuca quinquenervia)
T52	Native daphne (Pittosporum undulatum)
T53	Broad leaved paperbark (Melaleuca quinquenervia)
T54	Native daphne (Pittosporum undulatum)
T55	Sydney blue gum (Eucalyptus saligna)
T56	Iron bark (Eucalyptus crebra)
T57	Iron bark (Eucalyptus crebra)
T58	Blackbutt (Eucalyptus pilularis)
T59	Ash (Fraxinus sp)
T60	Sydney blue gum (Eucalyptus saligna)
T61	Blackbutt (Eucalyptus pilularis)
T62	Sydney blue gum (Eucalyptus saligna)
T63	Sydney blue gum (Eucalyptus saligna)
T64	Blackbutt (Eucalyptus pilularis)
T65	Blackbutt (Eucalyptus pilularis)
T66	Iron bark (Eucalyptus crebra)
T67	Blackbutt (Eucalyptus pilularis)
T68	Iron bark (Eucalyptus crebra)
TAO	I Sydney blue gum (Eugalyptus caligns)
T69	Sydney blue gum (Eucalyptus saligna)
T69 T70 T71	Sydney blue gum (Eucalyptus saligna) Rough bark apple (Angophora floribunda) Crepe Myrtle (Lagerstroemia spp.)

LEGEND

EXTENT OF LANDSCAPE WORKS
 EXISTING SURVEYED SITE EXTENT BOUNDARY

EXISTING SURVEYED DEPOSITED PLAN LOT BOUNDARY



TPZ = TREE PROTECTION ZONE
SRZ = STRUCTURAL ROOT ZONE
REFER TO ARBORIST REPORT

IPZ O

EXISTING TREE CONSIDER FOR REMOVAL

PROJECT

MARIAN ST THEATRE

RAWING

Existing Tree Plan

DRAWING L-003 SCALE 1:500 NUMBER

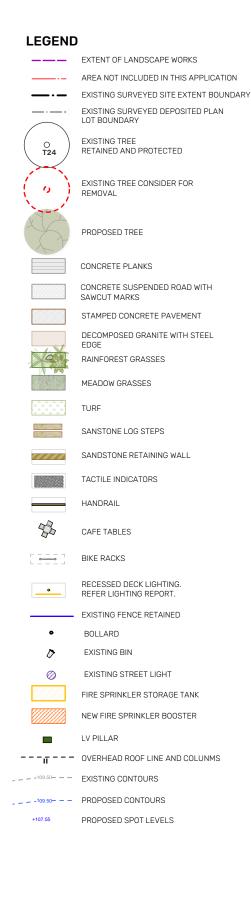
CLIENT

Ku-ring-gai Council

SMM PROJECT No. ISSUE 19056 100% DA

DA 31/1/20

LEGEND — EXTENT OF LANDSCAPE WORKS AREA NOT INCLUDED IN THIS APPLICATION EXISTING SURVEYED SITE EXTENT BOUNDARY EXISTING SURVEYED DEPOSITED PLAN EXISTING TREE RETAINED AND PROTECTED ○ **T24** MARIAN`ŞTREET EXISTING TREE CONSIDER FOR REMOVAL O -REMOVE DRIVEWAY ACCESS REMOVE KERB REMOVE TIMBER FENCE - REMOVE STAIRS HARD SURFACE ITEM REMOVED OTEHR ITEM REMOVED FFF EXISTING FENCE REMOVED REFER ARCHECTURAL DRAWINGS FOR BUILDING DEMOLITION WORKS REMOVE CONCRETE SLAB AND PARK BENCH MARIAN STREET REMOVE EXISTING RETAINING WALL THEATRE REMOVE EXISTING REMOVE FENCE GARDEN BED CULWORTH RÉMOVE EXISTING SERVICES REMOVE EXISTING GARDEN BED AVENUE REMOVE TO ALLOW FOR DRIVEWAY WORKS REMOVE TIMBER FENCE -REMOVE TIMBER FENCE -REMOVE BOOMGATE LREMOVE STONE EDGE MARIAN ST THEATRE REMOVE SECTION OF EXISTING GARDEN BED DRAWING Demolition Plan DRAWING L-004 SCALE 1:500 NUMBER CLIENT REMOVE ASPHALT Ku-ring-gai Council DATE 31/1/20 SMM PROJECT No. 19056 100% DA





PROJECT

MARIAN ST THEATRE

DRAWING

Landscape Plan

DRAWING L-002 SCALE 1:500 NUMBER

CLIENT

Ku-ring-gai Council

SMM PROJECT No. ISSUE 19056 100% E

100% DA 31/1/20

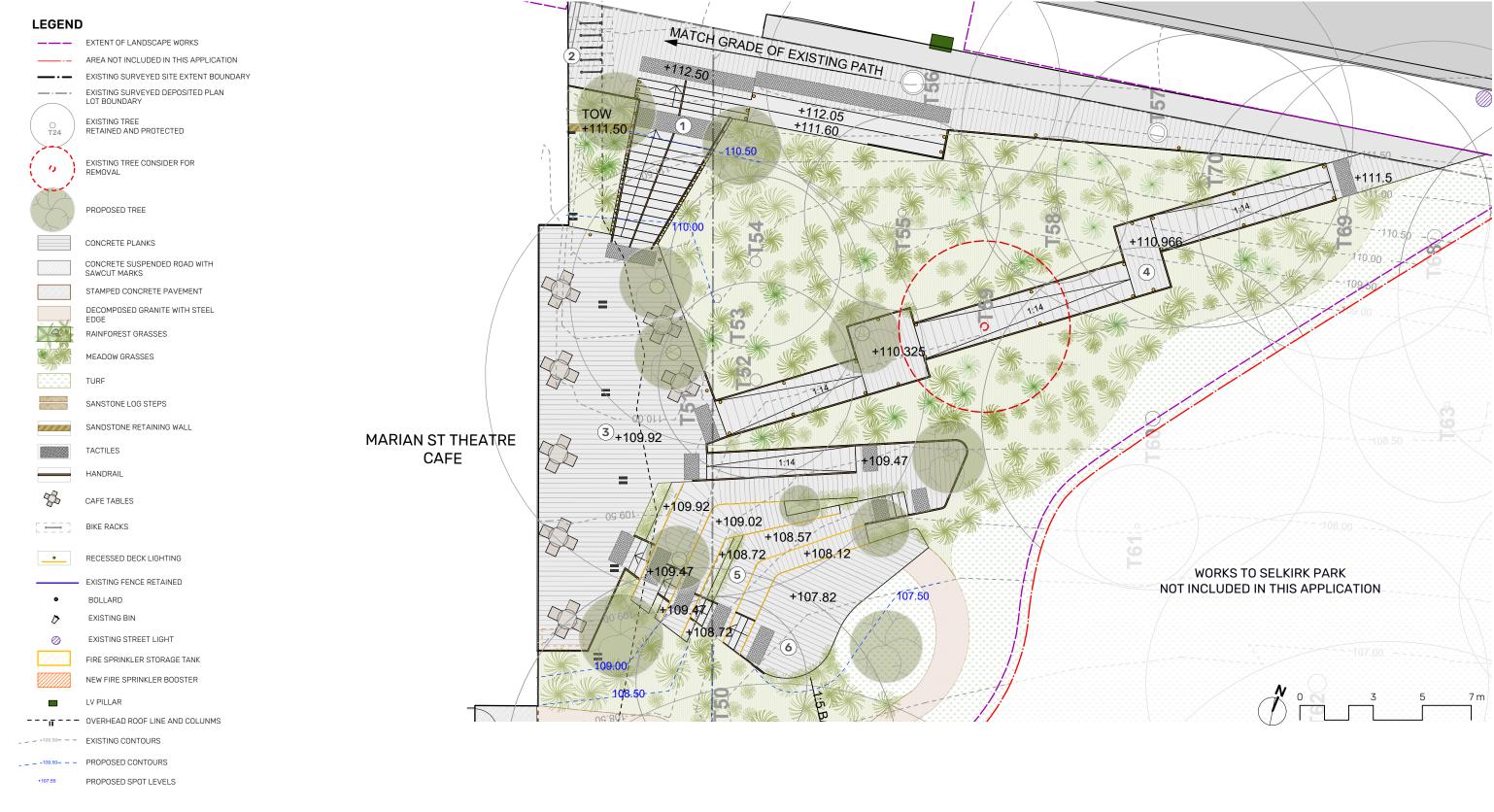


(5) TERRACED SEATING

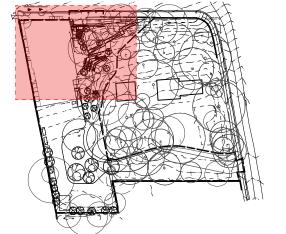
SMM PROJECT No. 1SSUE DATE 31/1/20

Spackman mossop michaels





- 1 ENTRY STAIRS TO CAFE DECK
- 2 BICYCLE PARKING #5
- 3 CAFE DECK
- 4) ACCESSIBLE ENTRANCE TO CAFE THROUGH PARK
- (5) TERRACED SEATING
- (6) INFORMAL PERFORMANCE SPACE



MARIAN ST THEATRE

Detail Plan - Outdoor Amphitheatre

DRAWING L-104 SCALE 1:150 NUMBER

Ku-ring-gai Council

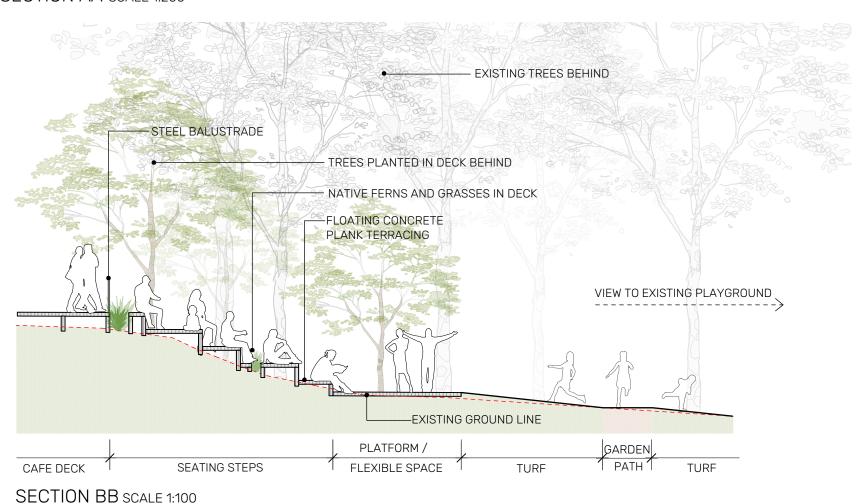
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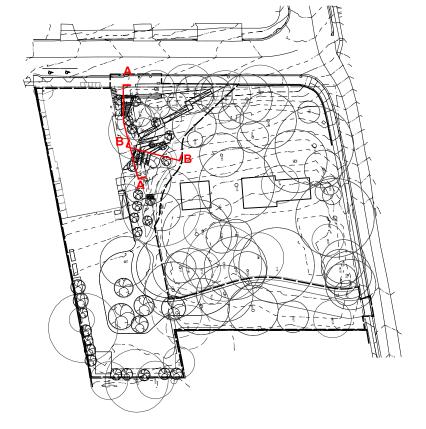
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PROJECT

MARIAN ST THEATRE

DRAWING

Section AA & BB

DRAWING L-201 SCALE NUMBER

CLIENT

Ku-ring-gai Council

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100% DA

DA 31/1/20

PRECEDENTS









BLUE GUM HIGH FOREST RAISED FOREST WALK NATIVE TREE PLANTING IN DECK SOFT PLANTED EDGES

MATERIALS

AMPHITHEATRE AND CAFE DECK





CONCRETE PLANKS

DRIVEWAY AND CAR PARK



SAW CUT CONCRETE



SALT STAMPED CONCRETE

WALLS



SANDSTONE RETAINING WALL

GARDEN PATH



DECOMPOSED GRAVEL WITH STEEL EDGE

PROJECT

MARIAN ST THEATRE

DRAWING

Material Palette

DRAWING L-301 SCALE N/A NUMBER

CLIENT

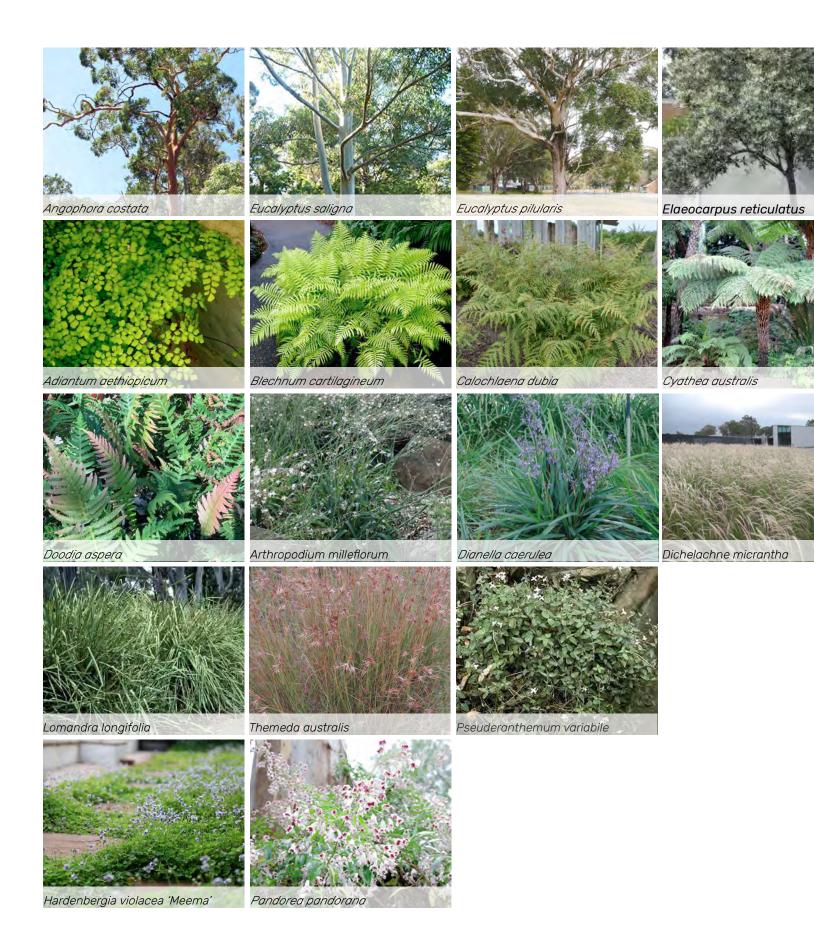
Ku-ring-gai Council

PROJECT No. ISSUE 100% [

ISSUE 100% DA

spackman mossop michaels

DATE 31/1/20



COMMON NAME	BOTANICAL NAME	SIZE (m)	POT SIZE	QTY
Tree				
Smooth Barked Apple	Angophora costata	25 x 10m	200L	6
Sydney Blue Gum	Eucalyptus saligna	40-50m Tall	200L	7
Blackbutt	Eucalyptus pilularis	40-70m Tall	200L	7
Blueberry Ash	Elaeocarpus reticulatus	9 x 4m	200L	16
FERN PLANTING				
Common Maidenhair	Adiantum aethiopicum	0.5 x 0.5m	150mm	44
Gristle Fern	Blechnum cartilagineum	0.5 x 0.5m	150mm	44
Soft Bracken	Calochlaena dubia	1 x 1.5m	150mm	44
Rough Tree Fern	Cyathea australis	6 x 5m	200mm	44
Prickly Rasp Fern	Doodia aspera	0.4 x 0.6m	150mm	44
GRASSES AND GROUNDCOV	ERS			
Pale Vanilla Lily	Arthropodium milleflorum	1 x 0.3m	150mm	485
Tufted Lily	Dianella caerulea	1 x 1m	150mm	485
Plume Grass	Dichelachne micrantha	0.8 x 0.5m	150mm	485
Spiny-Head Mat Rush	Lomandra longifolia	0.8 x 1.5m	150mm	485
Kangaroo Grass	Themeda australis	1 x 0.5m	150mm	485
Love Flower	Pseuderanthemum variabile		150mm	863
Climbers / Creepers	1			
Meema Hardenbergia	Hardenbergia violacea 'Meema'	0.5 x 2m	150mm	117
Wonga Wonga Vine	Pandorea pandorana	5 x 15m	150mm	117

All shrub, groundcover and climber species that have been selected are a mix native species from the Blue Gum High Forest community.

Planting is restricted to those species selected or approved equivalent.

Plant quantities and pot sizes are indicative only.

PROJECT

MARIAN ST THEATRE

DRAWING

Planting Palette

DRAWING L-302 SCALE N/A NUMBER

CLIENT

Ku-ring-gai Council

SMM PROJECT No. ISSUE 19056 100% DA

DATE 31/1/20

PARKLAND LIGHTING STRATEGY





Floating lighting in the deck stairs





2.

Ambient illumination of the selected tree specimens to create an illuminated backdrop during night-time performances





Pole top lighting to car park and 3. pathways.





Note:

Additional park lighting will need to be assessed to identify any impacts on the existing fauna. Ligting indicative only. Refer to Lighting Report.

MARIAN ST THEATRE

Lighting Strategy

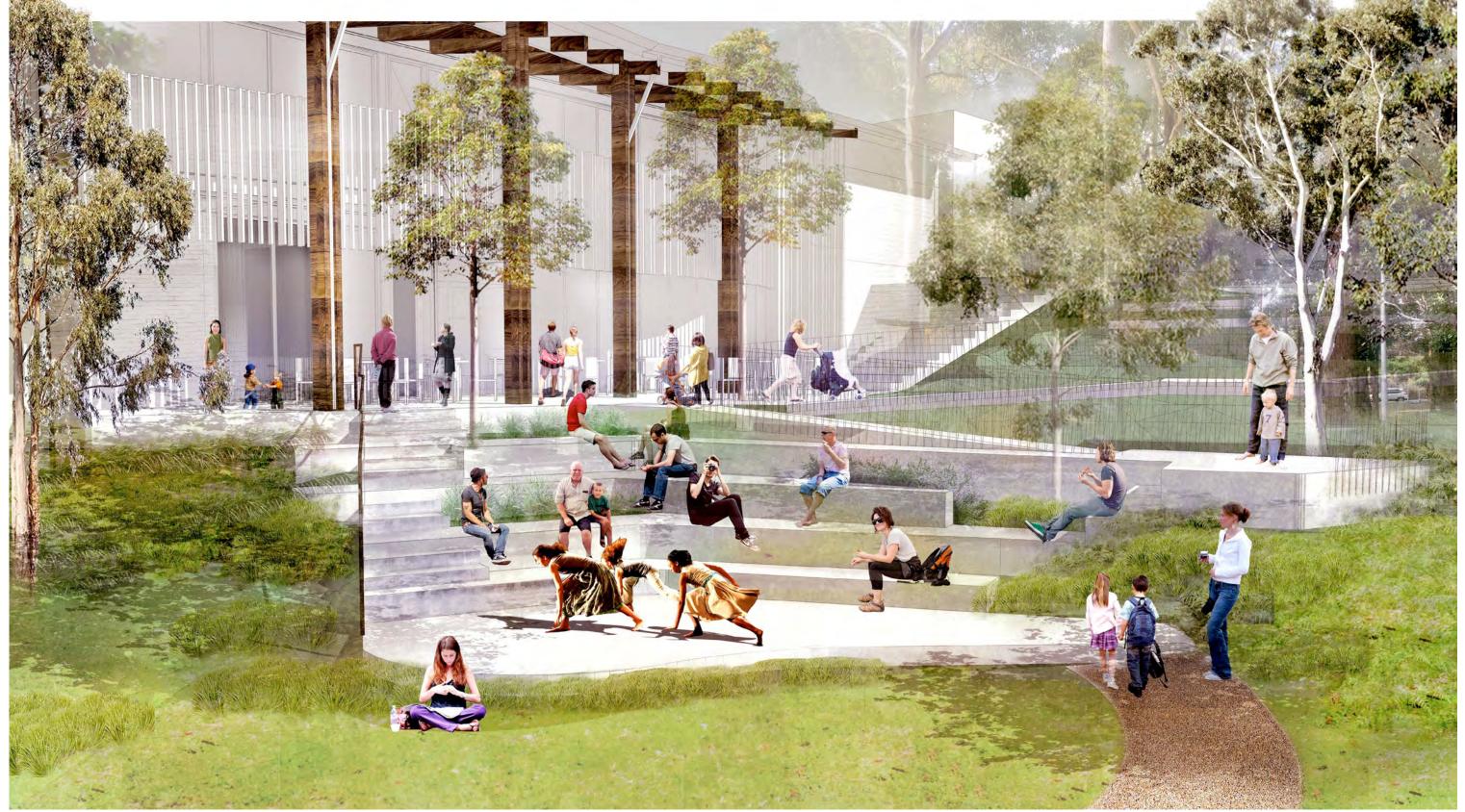
DRAWING L-303 SCALE 1:100 NUMBER

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MARIAN ST THEATRE

Landscape Visualisation

DRAWING L-304 SCALE N/A NUMBER

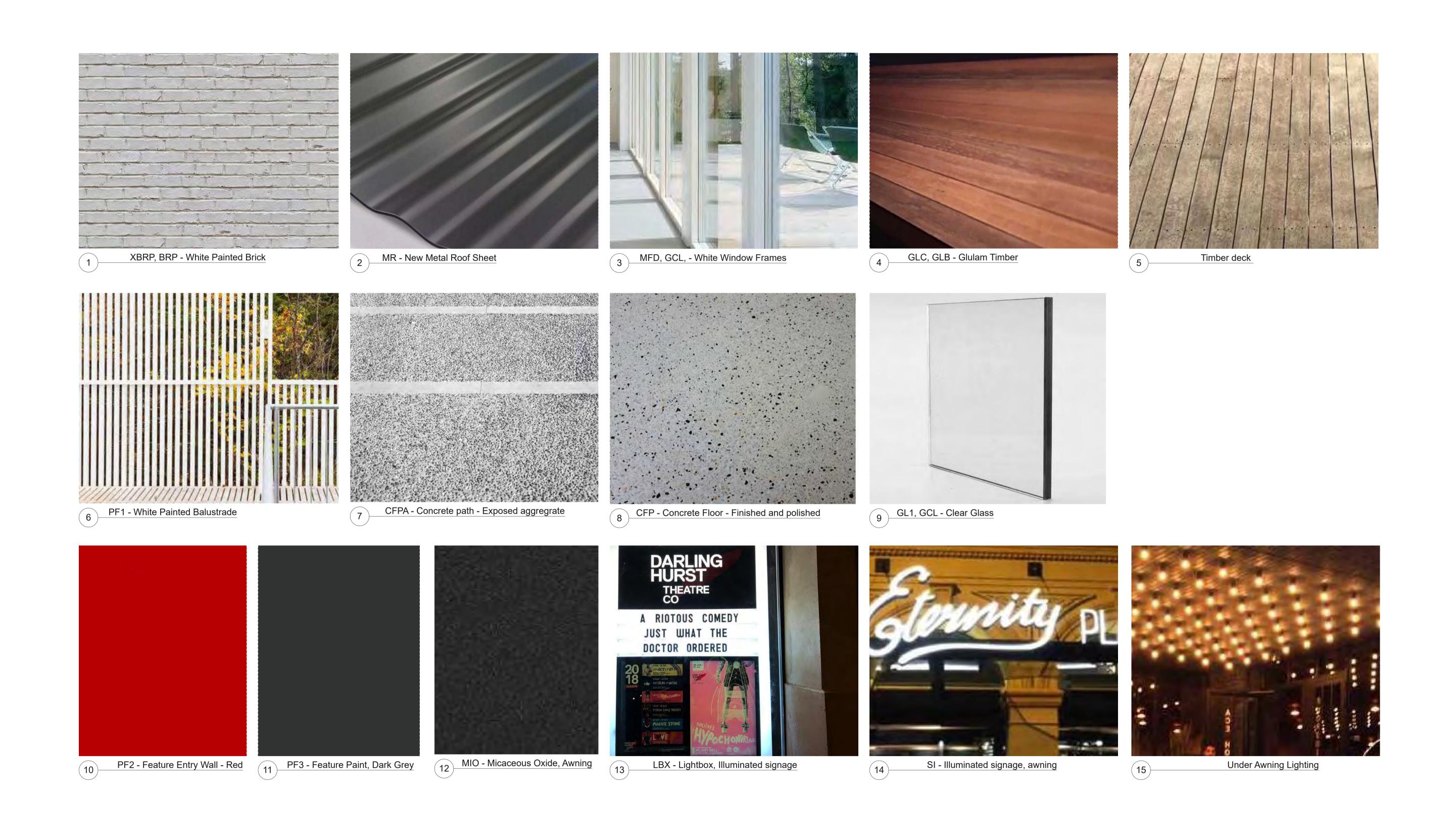
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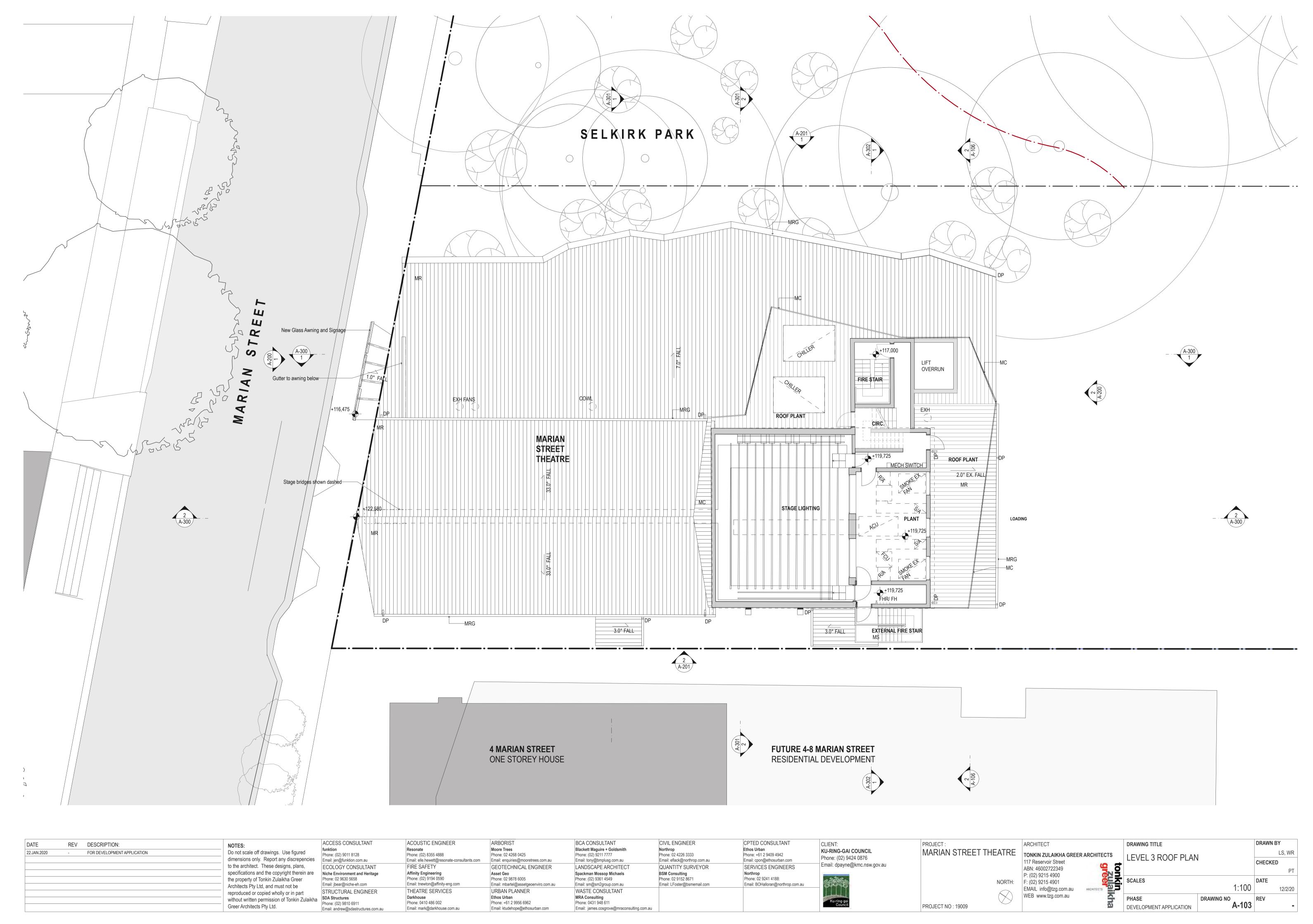


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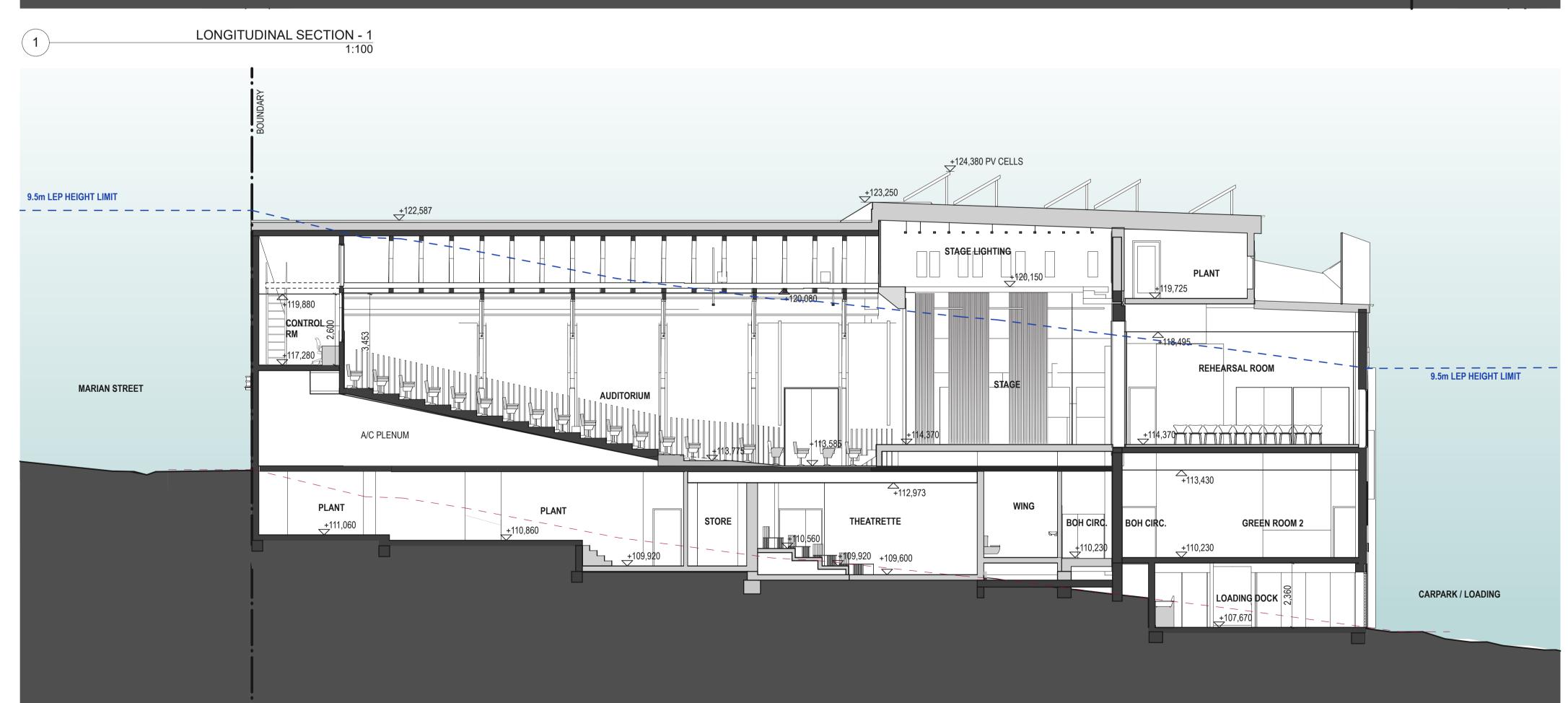
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FOYER

FLEXIBLE COMMUNITY SPACE

BAR/ BOX OFFICE

CAFE

FIRE STAIRS

EX FIRE STAIR

FOYER

OFFICES

WASTE ROOM

LIFT 2

+122,580 9.5m LEP HEIGHT LIMIT

> L2 ENTRY +112,965

MAIN ENTRY

LOWER FOYER



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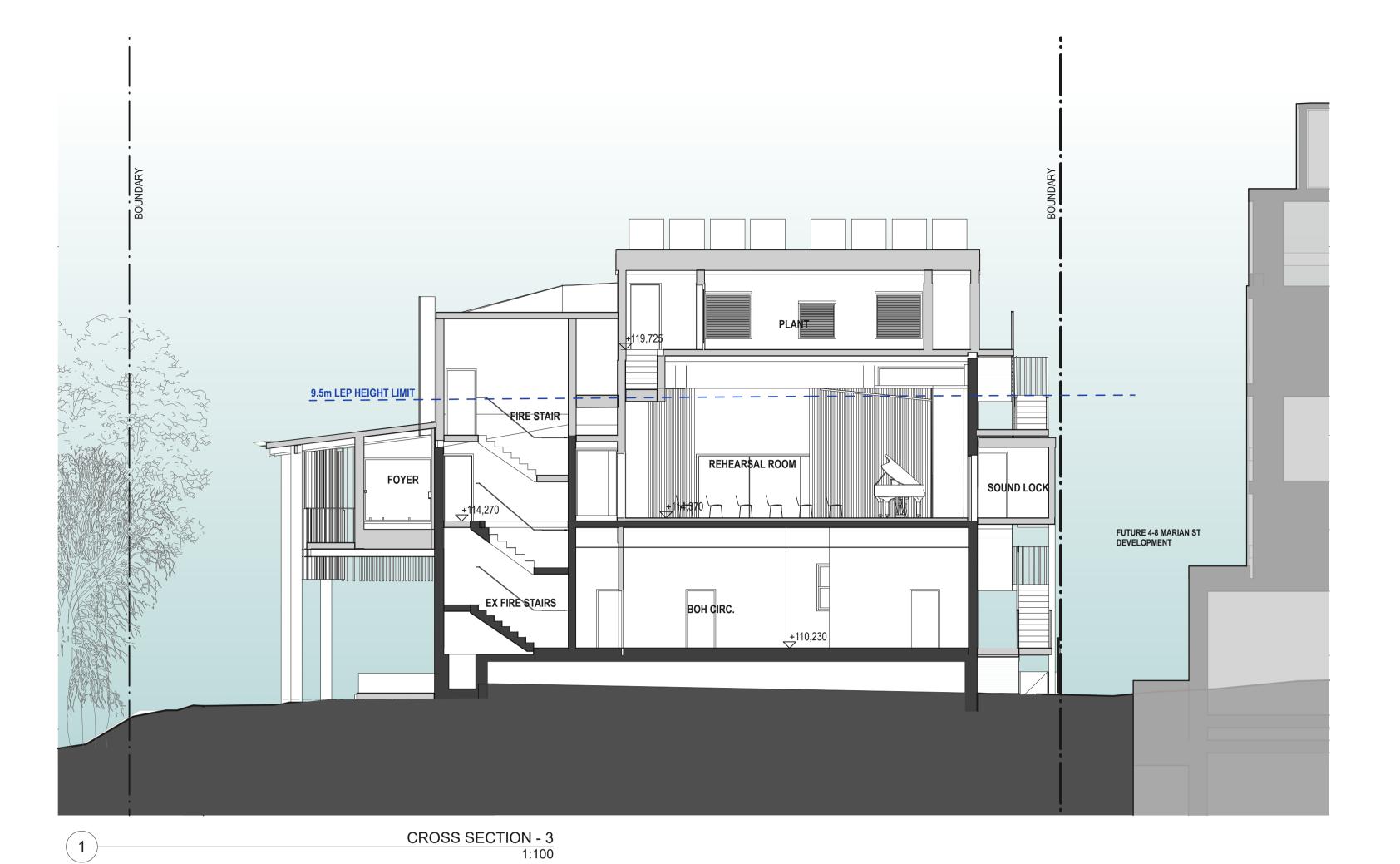
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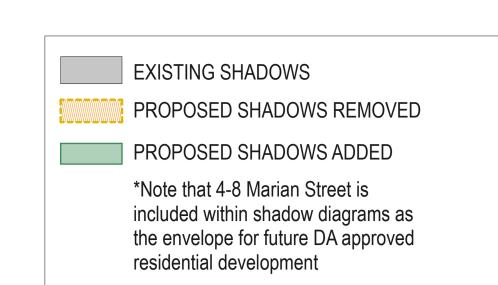
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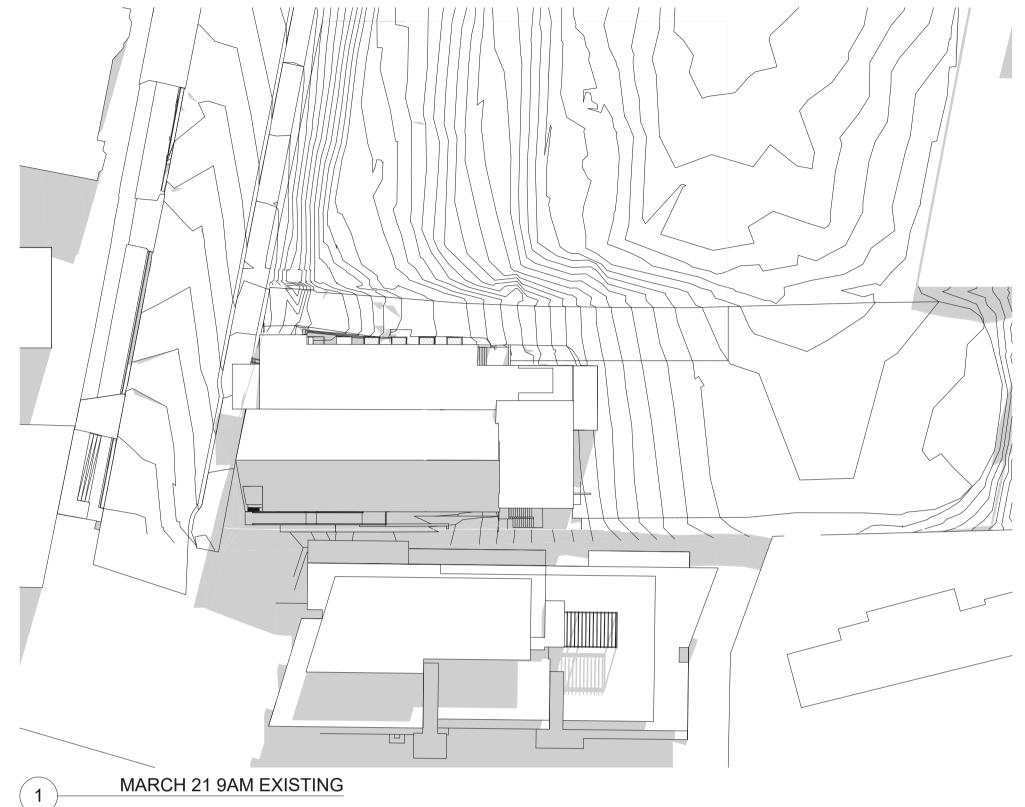
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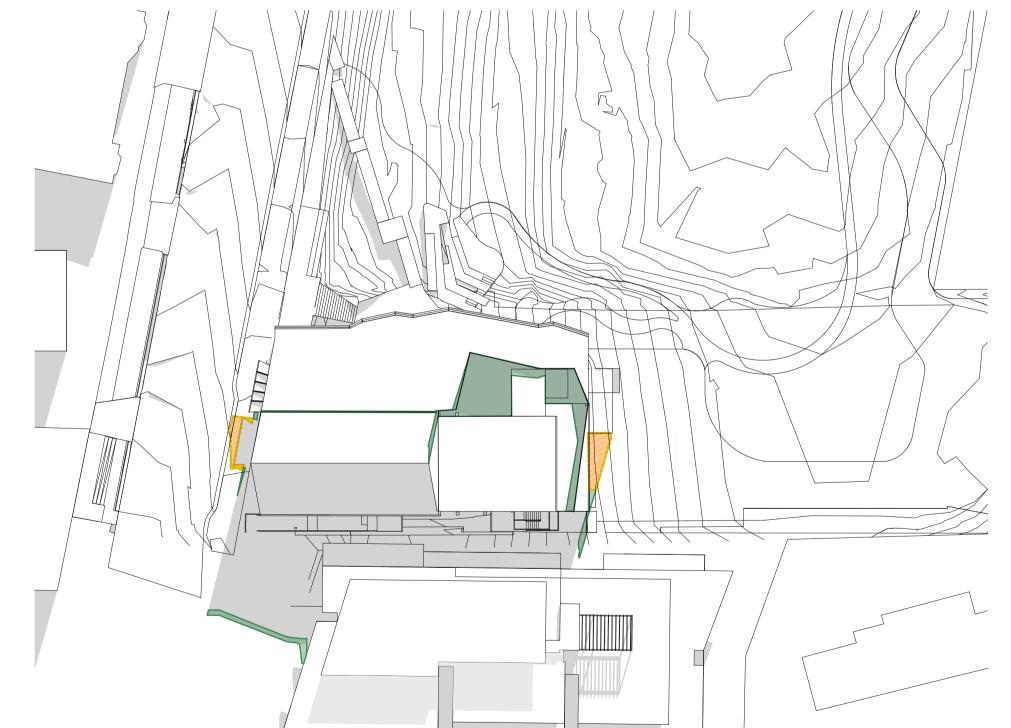
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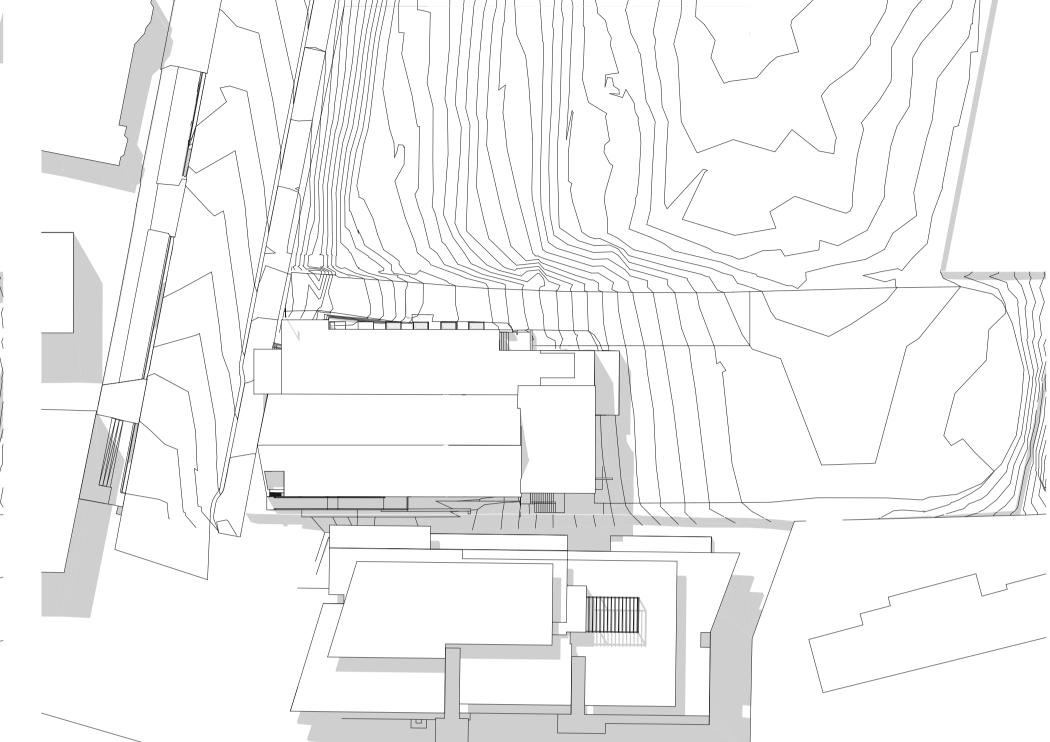
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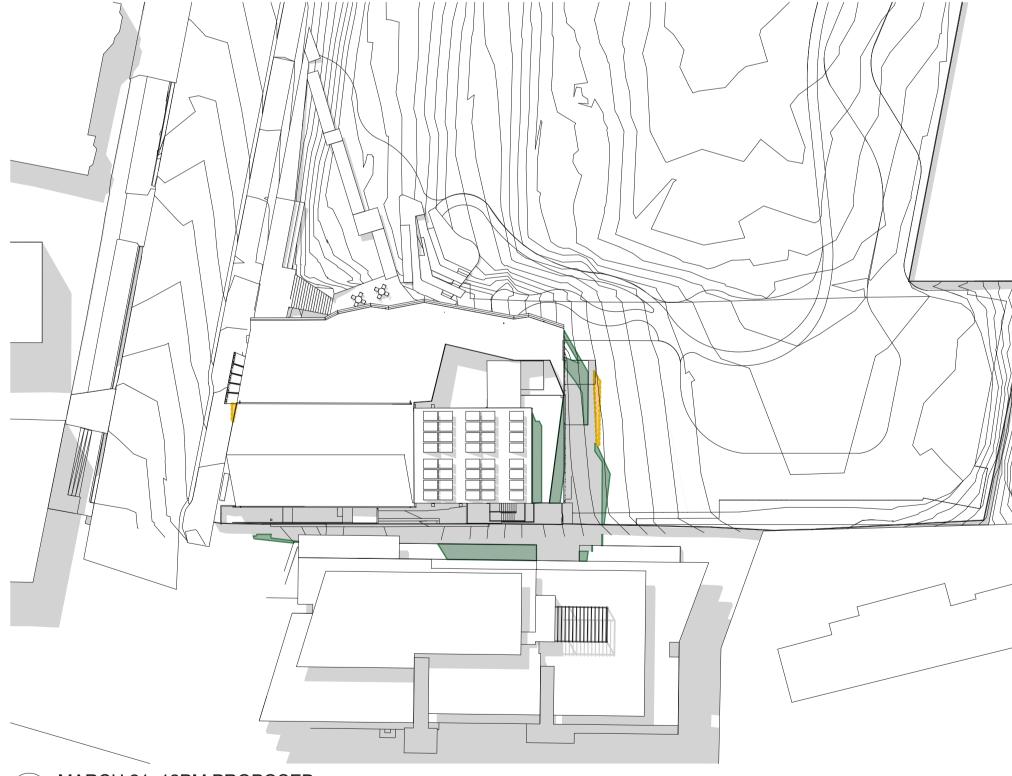




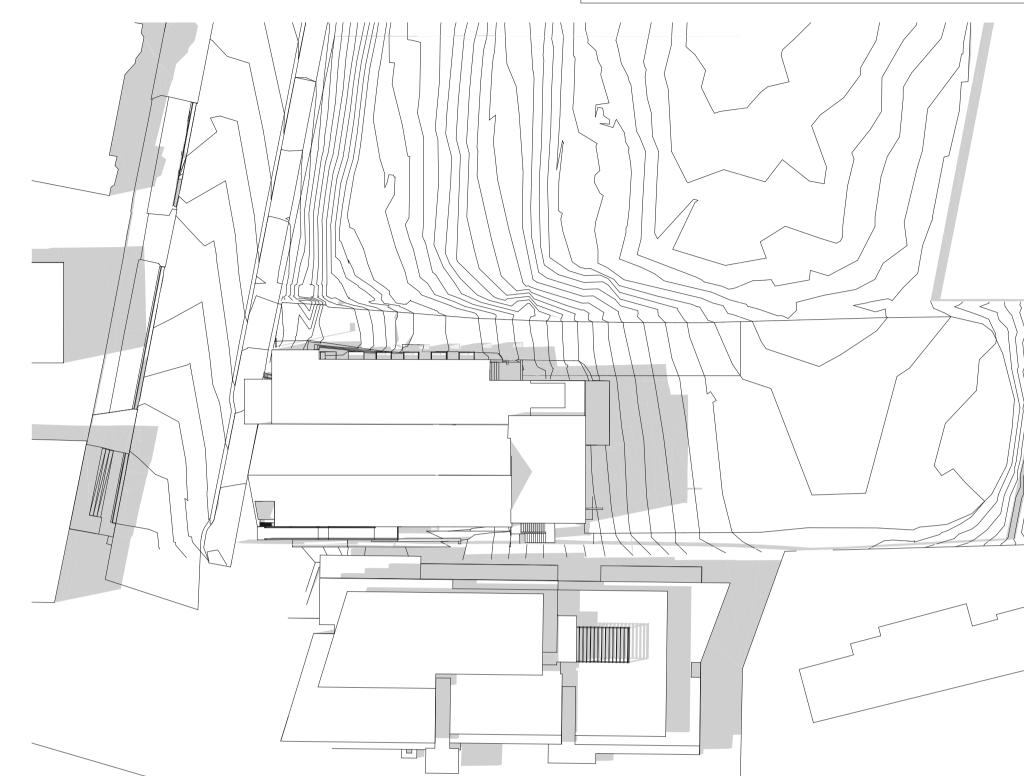




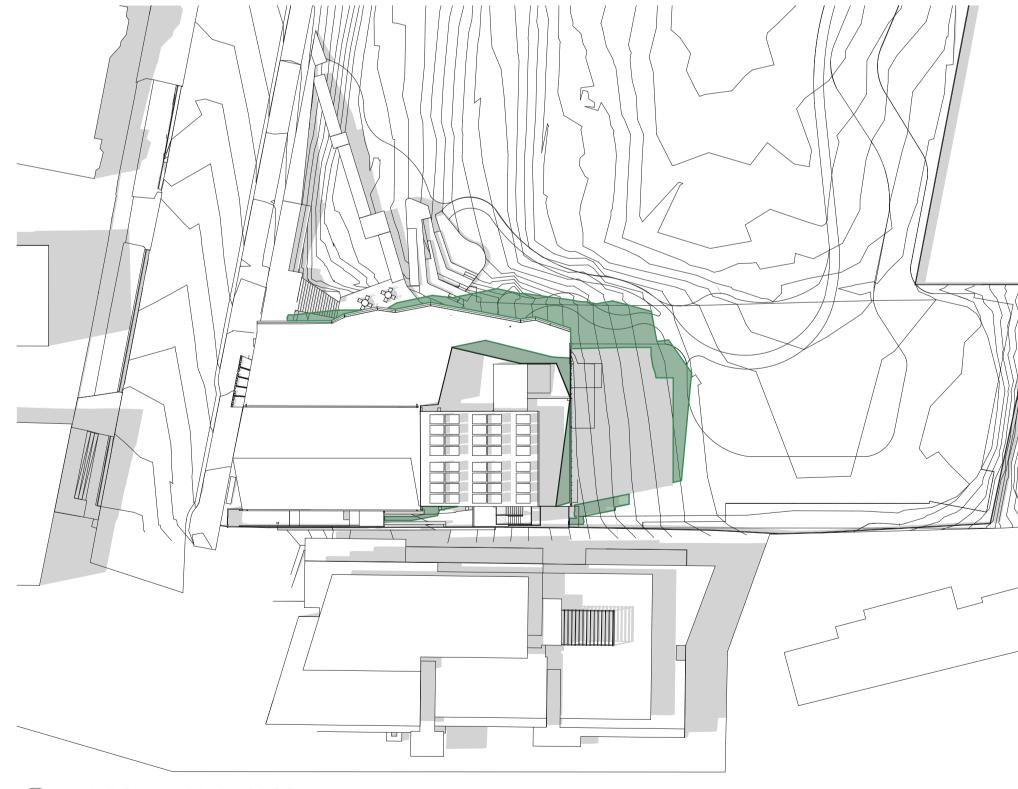
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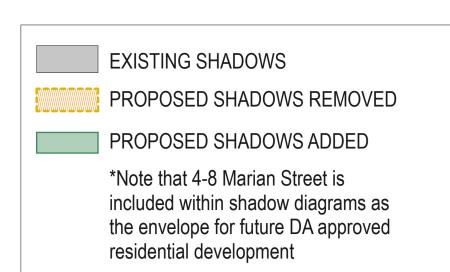
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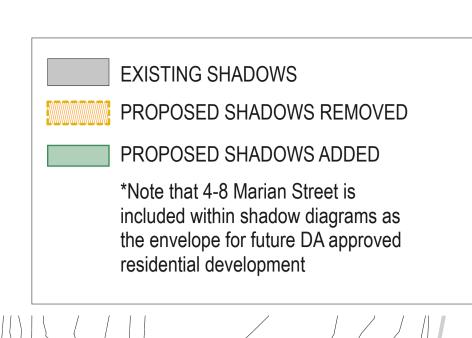
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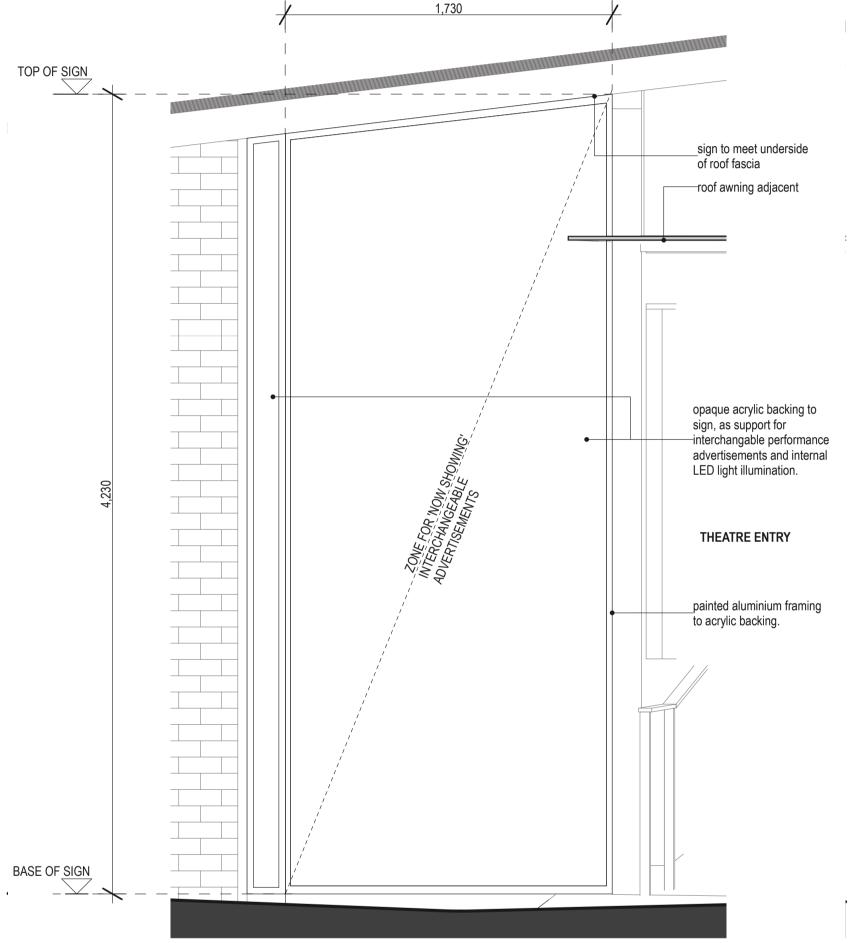




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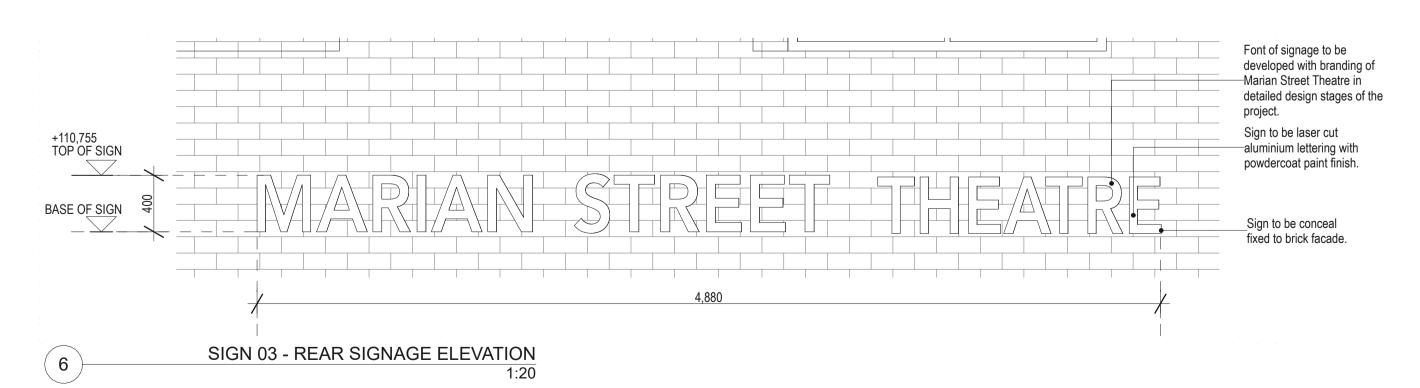






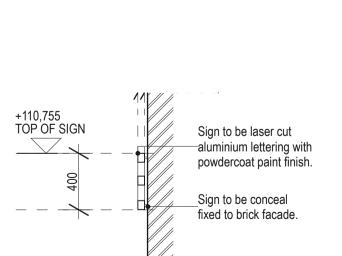
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TOP OF SIGN LETTERING

_Indicative awning cantilevered

structural frames beams

-clear glass roofing to awning

SIGN 01 - ILLUMINATED AWNING SIGNAGE SECTION

TOP OF AWNING

Sign to be fixed to new awning structural steel

Sign to be metal framed lettering with acrylic facing _ and internal LED light

SIGN 03 - REAR SIGNAGE SECTION

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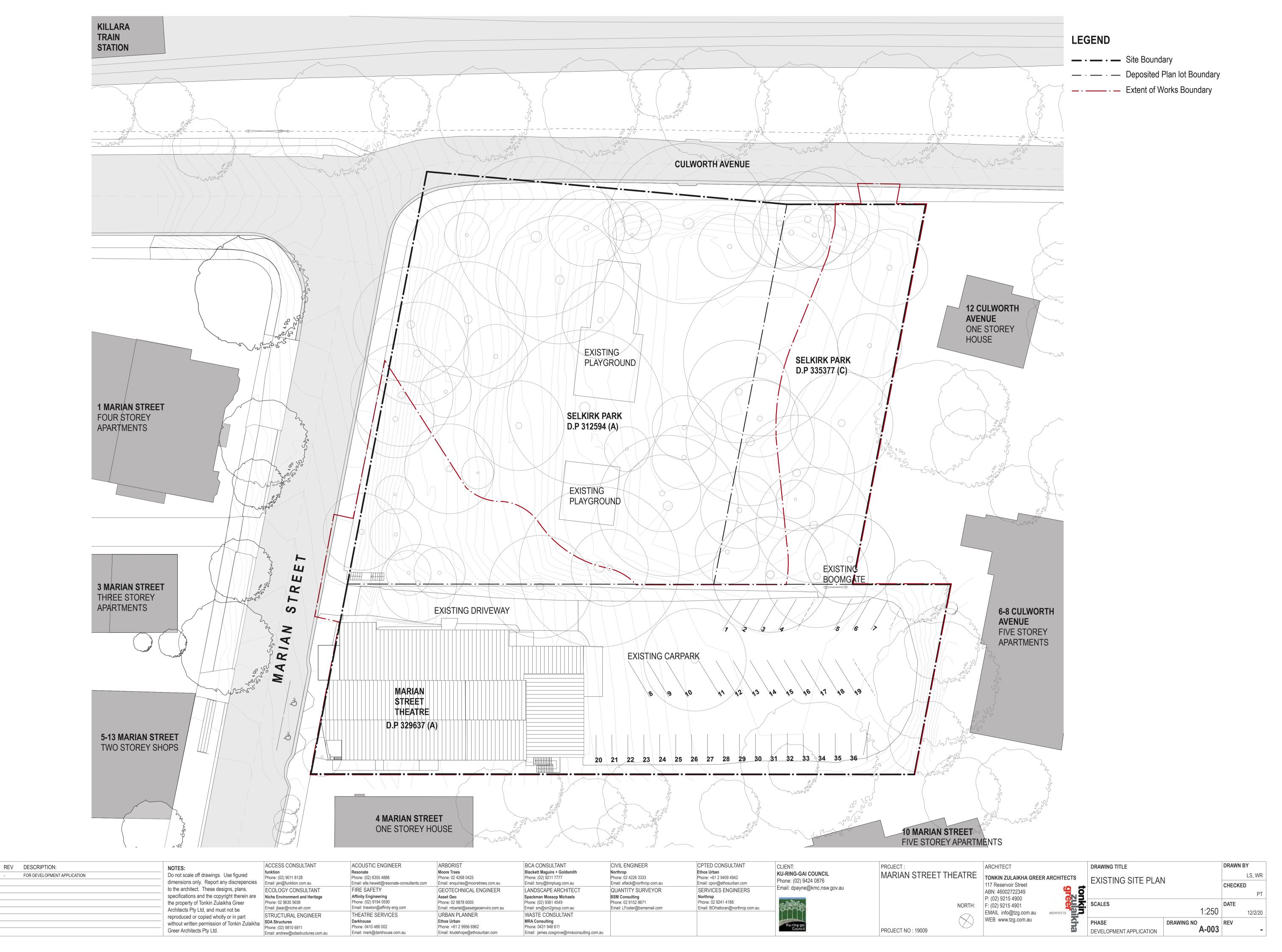
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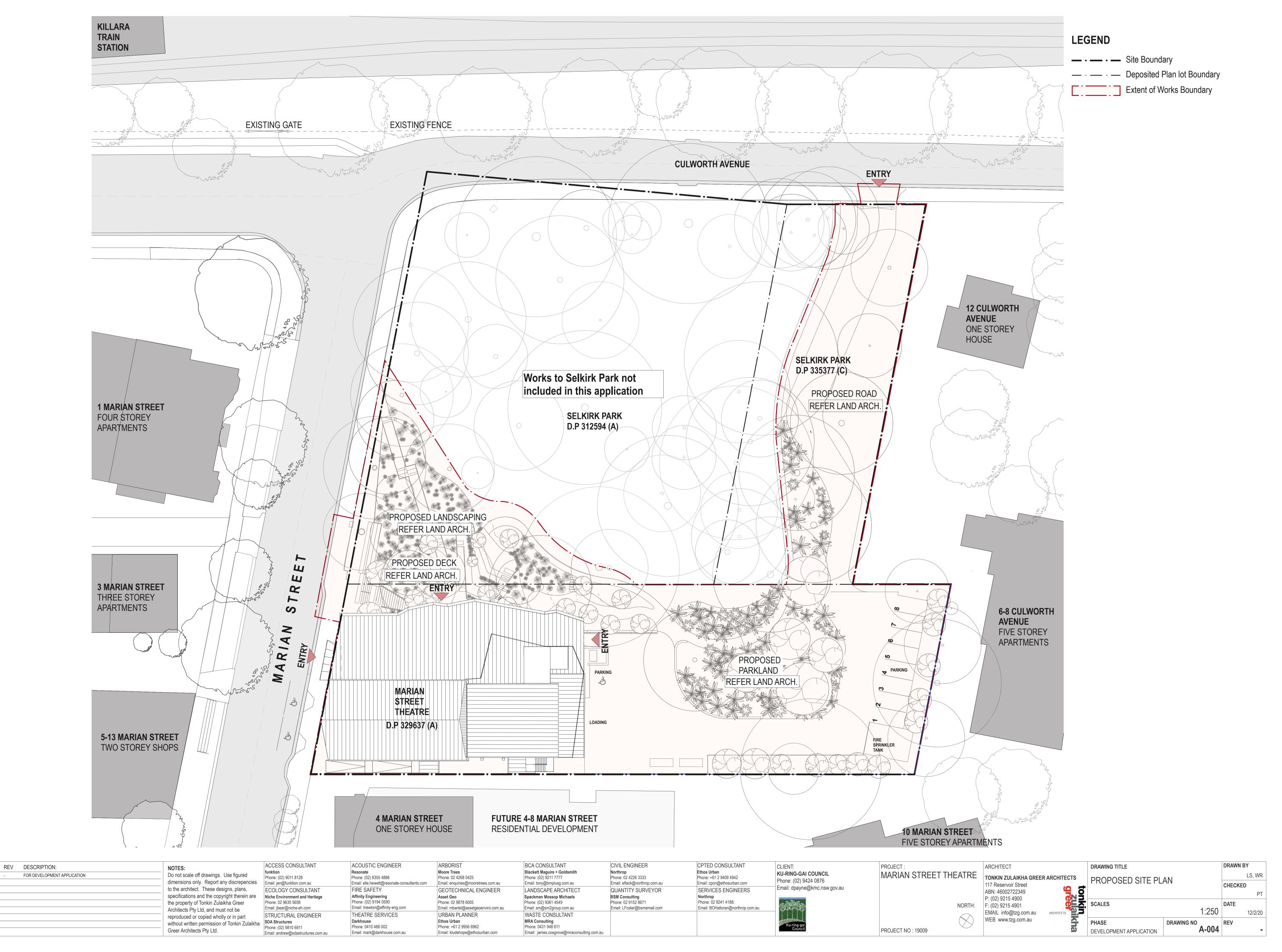
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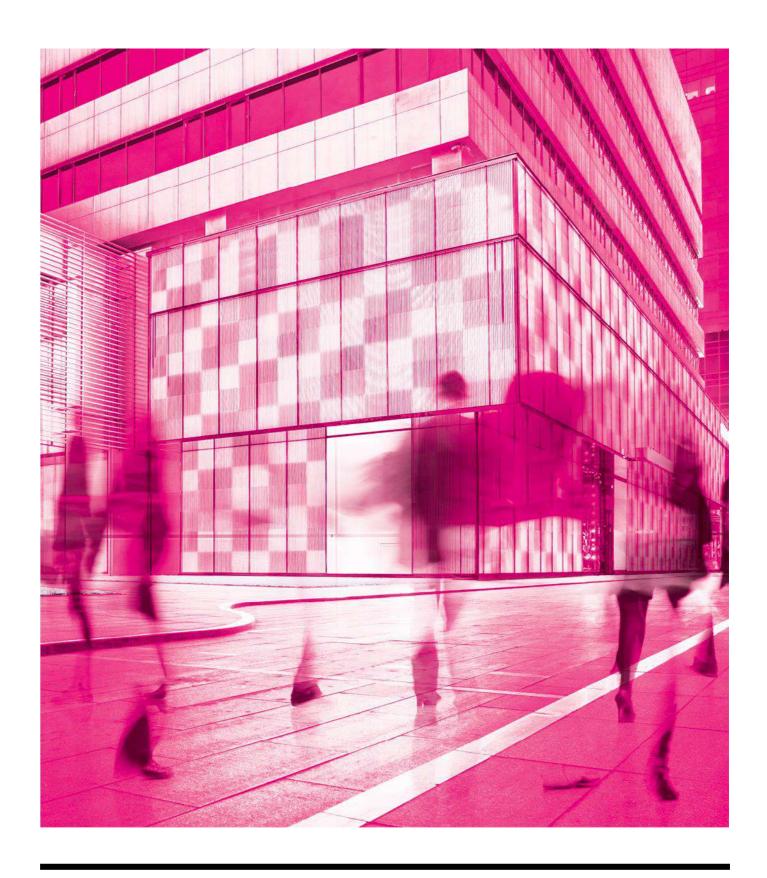
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Traffic Impact Assessment;

Marian Street Theatre

For Tonkin Zulaikha Greer Architects 29 January 2020 parking; traffic; civil design; wayfinding; **ptc.**

Document Control

Marian Street Theatre, Traffic Impact Assessment

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1. Introduction

1.1 Project Summary

ptc. has been engaged by Tonkin Zulaikha Greer Architects (TZG) to prepare a Traffic and Parking Assessment to accompany a Development Application (DA) to Ku-ring-gai Council for the redevelopment of the Marian Street Theatre located in 2 Marian Street, Killara. The development includes a linkage of the site to the adjacent Selkirk Park.

The purpose of this TIA is to assess the traffic, parking and transport implications associated with the proposed development. The location of the subject site is outlined in Figure 1.



Figure 1 – Site Location

1.2 Purpose of this Report

This report presents the following considerations in relation to the Traffic and Parking assessment of the Proposal:

- Section 1 Introduction of the project;
- Section 2 Background information, including a description of the site and current use;
- Section 3 A description of the proposed development;
- Section 4 A description of the road network serving the development site, the existing transportation options and active transport facilities;
- Section 5 A description of the proposed parking requirement and provision;
- Section 6 Determination of the traffic activity associated with the development proposal, and the adequacy of the surrounding road network, including recommendations in relation to any required road upgrades.
- Section 7 Assessment of the proposed parking, access and circulation arrangements,
- Section 8 Summary & Conclusion

2. Background Information

2.1 Site Location

The subject site has a listed street address of 2 and 2a Marian Street, Killara and comprises the following 2 lots:

- Lot No. A, DP329637 (Marian St Theatre);
- Lot No. A, DP312594 (Selkirk Park).

The total size of the subject site amounts to approximately 6,400m².

The development area is located in Killara, which is approximately 15km northwest of the Sydney CBD.

The property has a frontage of approximately 30m to Marian Street.

The subject site is bordered by Marian Street in the north and Culworth Avenue in the east, as shown in Figure 2.



Figure 2 – Aerial View of the Subject Site & Surrounds (Source: Nearmap)

2.2 Surrounding Land Use

The subject site lies within a Neighbourhood Centre (B1) zone with a Public Recreation (RE1) zone, comprising of Selkirk Park, directly adjacent to the subject site. The key features surrounding the site are the following:

- An Infrastructure zone (SP2) comprising of Killara Train Station and its railway, Pacific Highway and Regimental Park;
- A Private Recreational (RE2) zone comprising of Killara Golf Club;
- The greater residential precinct, surrounding the site, comprising typically Low Density (R2) and High Density (R4) residential zones.



Figure 3 – Local Land Use Map (Source: NSW Planning Viewer)

2.3 Current Site Use

Having served as a community hall for many years, Marian Street Theatre was closed down in 2013 due to identified non-compliances and has been closed since.

3. Development Proposal

Ku-ring-gai Council's vision for the Marian Street Theatre is as follows:

"Marian Street Theatre will be Ku-ring-gai's innovative new community performance space.

It will provide a stage for a diverse range of expressive entertainers, from professional artists to talented community performers, who will deliver a program of stimulating and engaging productions for the community.

As well as a theatre experience visitors will enjoy café facilities and multi-purpose spaces, all connecting sensitively with the surrounding natural environment. The new Marian Street Theatre will honour the live theatrical traditions for which it has been loved, at the same time moving forward into an era of exciting and thought-provoking performance.

The focus will be on content diversity, which will include live performances, musical experiences and new productions. Our goal will be on promoting creativity, originality and inclusivity for anyone who enjoys the delight of great live performances".

In detail, the development addresses the following elements:

- New entry;
- Upgraded foyer and balconies;
- Acoustic upgrade;
- New lift;
- New Level 2 toilets and bar;
- Upgraded stage, as part of the auditorium works;
- Upgraded side wing and backstage;
- New separate workshop;
- Upgraded dressing rooms;
- Upgraded amenities and offices;
- Relocation of existing plant to the roof;
- Outdoor Amphitheatre;
- New (roof) stage bridges;
- Reconfigured lower ground level.

- Upgraded 249 seat auditorium;
- New 63 seat second performance space with tiered seating;
- New flexible community space with 48 seats;
- New Rehearsal room with 60 seats;
- New car park entry off Culworth Avenue;

Overall, the proposed maximum capacity of the building is 395 persons; however, the maximum patron capacity, which equals the maximum number of patrons leaving the site at any one time is 249 patrons. This can be reached at the end of a performance in the main auditorium.

The landscape architectural drawings in **Attachment 1** are provided by spackman mossop michaels and they show the development. Figure 4 shows an overview of the proposed site layout.



Figure 4 - Proposed Development

It should be noted that various options for the car park capacity and layout as well as the location of the access road / driveway have been investigated. The discussion based on parking and traffic factors is shown in **Attachment 2**.

4. Existing Transport Facilities

4.1 Road Hierarchy

The subject site is located in the suburb of Killara and is primarily serviced by the State Roads including Pacific Highway, as well as Regional Roads such as Stanhope Road, Rosebery Road, Koola Avenue and Birdwood Avenue. The subject site is also serviced by local roads managed by Ku-ring-gai Council.

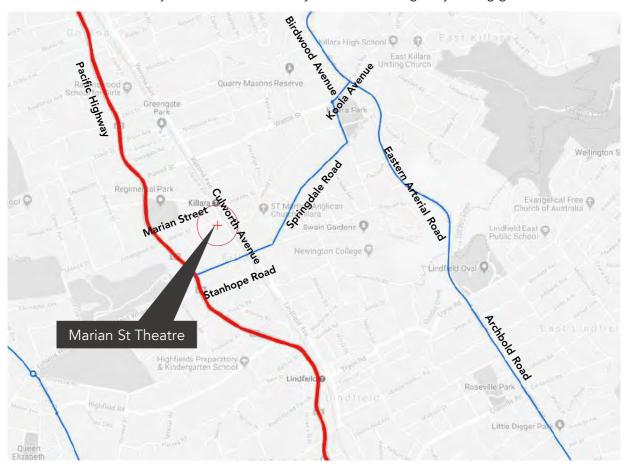


Figure 5 – Road Hierarchy (RMS Road Hierarchy Review)

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads - Freeways and Primary Arterials (RMS Managed)

Regional Roads - Secondary or sub arterials (Council Managed, Part funded by the State)

Local Roads - Collector and local access roads (Council Managed)

Marian Street
Road Classification Local Road

Alignment East – West

Number of Lanes 1 lane in each direction

Carriageway Type
Carriageway Width
Speed Limit
School Zone
Undivided
11.5m
50km/h
No

Parking Controls Varies – 1P 8:30am-6:00pm Mon-Fri 8:30am-12:30pm Sat, 2P 7:00am-

6:00pm Mon-Fri 7:00am-12:30pm Sat, Accessible, No Parking and Mail

parking zone restrictions and unrestricted parking

Forms Site Frontage Ye



Figure 6 – Marian Street (Westbound towards Pacific Highway)

Culworth Avenue

Road Classification Local Road Alignment North-South

Number of Lanes 1 lane in each direction

Carriageway Type
Carriageway Width
Speed Limit
School Zone
Undivided
5.5m
50km/h
No

Parking Controls Varies – No Parking 6:00am-10:00am Mon-Fri, No Parking, No Stopping

restrictions and unrestricted parking

Forms Site Frontage No



Figure 7 - Culworth Avenue (Northbound towards Marian Street)

Stanhope Road
Road Classification Regional Road
Alignment East-West

Number of Lanes 1 lane in each direction

Carriageway Type
Carriageway Width
Speed Limit
School Zone
Undivided
10.5m
50km/h
No

Parking Controls Unrestricted

Forms Site Frontage No



Figure 8 – Stanhope Road (Eastbound towards Culworth Avenue)

Pacific Highway
Road Classification State Road
Alignment North-South

Number of Lanes 3 lanes in each direction

Carriageway Type
Carriageway Width
Speed Limit
School Zone

Divided
18.5m
60km/h
No

Parking Controls Varies – No Stopping, Clearway 6:00am-10:00am Mon-Fri on southbound

side, Clearway 3:00pm-7:00pm Mon-Fri on northbound side parking

restrictions and unrestricted parking

Forms Site Frontage No



Figure 9 – Pacific Highway (Northbound towards Marian Street)

4.2 Public Transport

The locality has been assessed in the context of available forms of public transport that may be utilised by prospective staff and patrons. When defining accessibility, reference is made to the NSW Planning Guidelines for Walking and Cycling (2004) (the Cycling and Walking Guide), where a distance of 400-800m is recommended as a comfortable walkable catchment to access public transport and local amenities. The document also suggests a distance of 1500m as a suitable catchment for cycling.

Figure 10 illustrates the walkable 400m and 800m catchments from the development site.

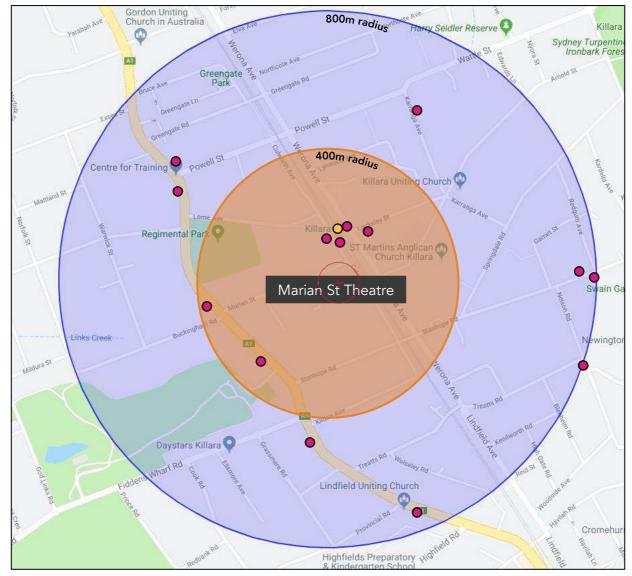


Figure 10 – Public Transport Accessibility (Bus Stops in Pink, Train Stations in Yellow)

A number of public transport options are available in the vicinity of the site in the form of train and bus services. Details of the public transport options available are outlined in the following sections.

4.2.1 Train Services

The closest train station is Killara Station, situated approximately 150m north-east of the site. This places the service within a comfortable walking distance.

Killara Station serves the T1 North Shore Line & T9 Northern Line. The T1 Line provides frequent services with trains arriving approximately every 10 minutes during the weekday and approximately every 15 minutes on the weekend.

The T9 Line provides services approximately every 15 minutes Monday-Sunday.

Considering the proximity of the theatre to the train station and the frequency of train services, trains are expected to be an attractive mode of share.

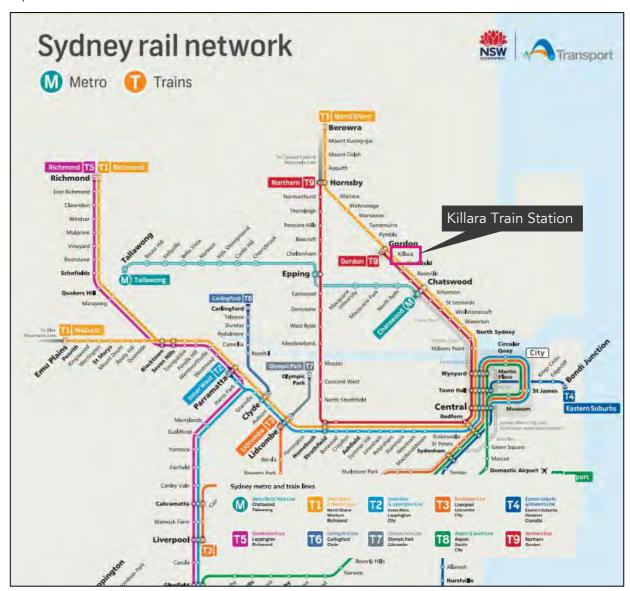


Figure 11 – Sydney Trains Network

4.2.2 Bus Services

As illustrated in Figure 10, the site is well serviced, with multiple bus stops within a comfortable walking distance. A summary of the available bus routes is presented in Table 1 which services the subject site.

Table 1 – Bus Route Summary

Bus Route	Coverage (to and from)	Service Frequency
16T1	Central, Town Hall, Wynyard, Chatswood, then all stations to Hornsby	Mon-Thurs: Every 15 min (Only night services available with services commencing at approximately 10:30pm) Fri-Sun: No services provided
N90	City Town Hall to Hornsby via Chatswood	Mon-Sun: Every 1 hour (Only late night/early morning services available with services commencing at approximately 11:40pm)
556	Lindfield to East Killara (Loop Service)	Mon-Fri: Every 30-60 min Sat: Every 45-75 min Sun & Public Holidays: Every 2 hours
565	Chatswood to Macquarie University	One service available in the afternoon peak
8042	Killara High School Koola Avenue	One service available in the morning peak
8044	Lindfield East Public School	One service available in the morning peak
8047	Masada College, Link Road	One service available in the morning peak
8050	Northern Beaches Christian School	One service available in the morning peak
8059	Killara High School Koola Avenue	One service available in the morning peak
8061	Killara High School Koola Avenue	One service available in the morning peak
9121	West Lindfield (CSIRO)	One service available in the morning peak

As outlined in Table 1, the subject site is serviced by various routes, most of which are school buses offering very limited services. The remaining bus services are limited in the evening hours and on the weekends, when the development is assumed to have the highest usage. Therefore, buses are not expected to be a much utilised mode of share by the theatre's patrons and staff.

4.3 Active Transport

4.3.1 Cycling Infrastructure

There is limited cycling infrastructure within the vicinity of the proposed development as illustrated in Figure 12. However, the road network in the immediate vicinity of the site has a residential character with relatively flat gradients. Therefore, cycling is expected to be a viable option for both patrons and staff.

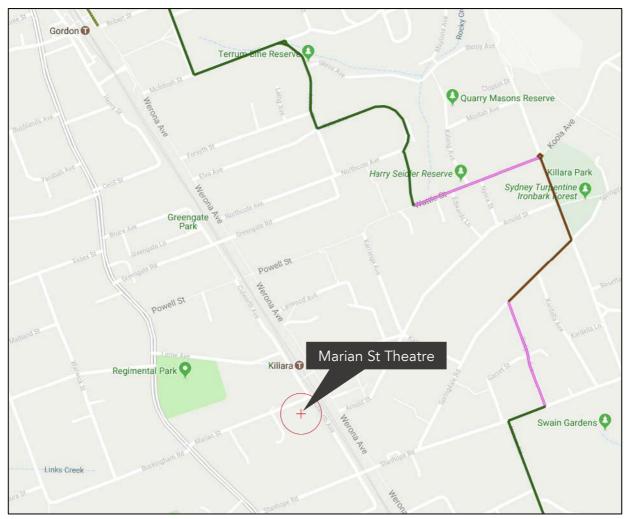


Figure 12 - Cycling Network (Source: RMS Cycleway Finder)

4.3.2 Pedestrian Infrastructure

There is sufficient pedestrian amenity within the vicinity of the site. Footpaths are present on one or both sides of the surrounding streets. Due to the proximity of the site to Killara Train Station, pedestrian amenity and infrastructure is developed towards the east. West of the site, there is less developed pedestrian infrastructure (limited number of crossings and road calming devices). However, such is typical of a residential area and provides sufficient connectivity (eg. footpath ramps) for wheelchair users and parents with prams.

5. Parking Assessment

5.1 Planning Policy

Typically, parking requirements are established with reference to the local planning controls i.e. Development Control Plan (DCP) and Local Environmental Plan (LEP). In regard to the proposed development, Ku-ring-gai Council has issued the Ku-ring-gai Development Control Plan in June 2016, in which parking rates are stipulated. The parking rates for individual uses are outlined in the following sub sections.

5.2 Car Parking

5.2.1 Parking Requirement

The DCP states the following in regard to parking requirements for the proposed development:

- Entertainment Facilities, Public Halls, Function Centres:
 - The minimum parking provision is to be 1 space per 10 seats for day time parking and 1 space per 6 seats for Friday and Saturday evenings;
 - "The recommended level of parking might be reduced, at the discretion of Council, if it can be proven that there is adequate parking available in the vicinity of the site on Friday and Saturday evening";
- Restaurants, cafes, coffee shops, new development:
 - General: 1 space per 17m2 gross floor area. For minor additions to existing shops or conversion of existing premises to shops, 1 space per 28m²;
 - If gross floor area less than 100m²: The parking above provision is desirable but Council will consider a reduction if a parking study indicates that there is parking available in adjacent offstreet or on-street parking areas at the time of trading of the proposed development.

The DCP does not provide separate car parking rates for staff. However, this does not exclude the use of parking spaces by staff.

As outlined in Section 3, the proposed theatre will be comprised of the following components:

Main Auditorium: 249 seats
Theatrette: 63 seats
Rehearsal Room: 60 seats
Flexible Community Space: 48 seats
Café: 94m²

For acoustics reasons, the main auditorium cannot operate simultaneously with the theatrette or the rehearsal room, but it can operate while either the café or the flexible community space are in operation.

In times when the auditorium is not in operation, all other areas of the theatre can be in use simultaneously.

All performance rooms can by utilised throughout the day and in the evenings. The café will open between 7am - 9pm

Parking requirements are summarised in Table 2. The numbers highlighted in green represent the cumulative worst case scenario for parking demand, based on the proposed simultaneous usage as outlined above.

Table 2 - Car Parking Requirement

Period	Use	Relevant Rate	Parking Rate (min)	Parking Provision Requirement (min)
	Main Auditorium	249 seats		25
Day Time	Theatrette	63 seats	1 / 10	6
	Rehearsal Room	60 seats	1 space / 10 seats	6
	Flexible Community Space	48 seats		5
	Café	94m²	1 space per 17m ²	6
			WORST CASE Day Time	31
	Main Auditorium	249 seats		42
	Theatrette	63 seats	4 / /	11
Evening	Rehearsal Room	60 seats	1 space / 6 seats	10
	Flexible Community Space	48 seats		8
	Café	94m²	1 space per 17m ²	6
			WORST CASE Evening	53

As outlined in Table 2, the proposed development requires the provision of 31 parking spaces during day time and 53 car parking spaces during evenings. In order to be able to cater for both time periods, the development is required to provide a total of 53 parking spaces.

In order to determine the possibility of reducing the recommended level of parking as per the DCP, parking occupancy surveys were undertaken between the hours of 6:00PM-10:00PM on a Friday and Saturday. The results are described in Section 5.2.2.

5.2.2 Current Car Parking Provision and Occupancy Study

Car parking occupancy surveys were undertaken to determine the existing utilisation of the on street parking and car parks available in the vicinity of the subject site. The areas where the occupancy survey was undertaken are shown in Figure 13.

It is noted that parking restrictions are present in the vicinity of the theatre (see **Attachment 3**). However, all restrictions expire at 6:00PM and are converted into unrestricted parking.

The Killara Train Station Car Park has a 10P parking restriction and is therefore assumed to be a commuter car park, which serves those who use the train to get to and from work / university on a daily basis.

The Marian St Theatre Car Park has a 3P parking restriction and is assumed to have served as parking for the theatre's patrons when the facility was in operation.

The morning "No Parking" restriction along Culworth Avenue is likely to be related to the increased commuter traffic volumes in the morning as well as a means to better accommodate waste collection vehicles.

The P10minutes areas along Culworth Avenue are likely to serve as a pick-up and drop-off zone for commuters using the train.

Lastly, the 1P and 2P parking restrictions along Marian Street are assumed to serve lunch-time visitors to the park and to the local shops across the road of the theatre.

All of the on-street parking restrictions contribute to directing commuters to the dedicated commuter car park and therefore to retaining parking spaces for residents, park visitors, shops' customers and theatre's patrons.



Figure 13 – Surveyed existing parking locations

5.2.2.1. Daytime Occupancy Surveys

The daytime occupancy surveys were undertaken on the following day:

• Tuesday, 22 October 2019 between 9am – 6pm;

The results of the survey are shown in Figure 14, Figure 15, Figure 16 and Figure 17.

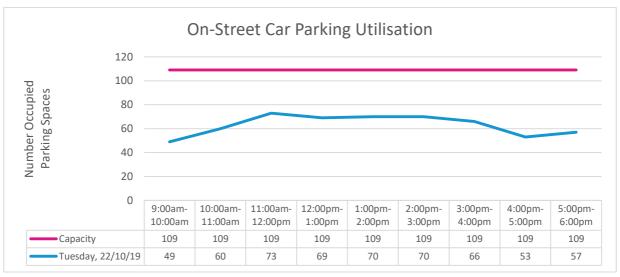


Figure 14 – On-Street Parking Utilisation



Figure 15 – Marian Street Car Park Utilisation

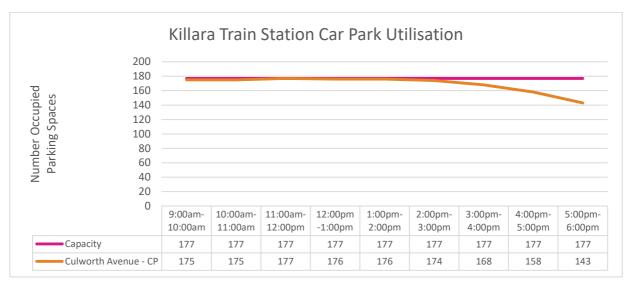


Figure 16 - Culworth Avenue (Council) Car Park Utilisation

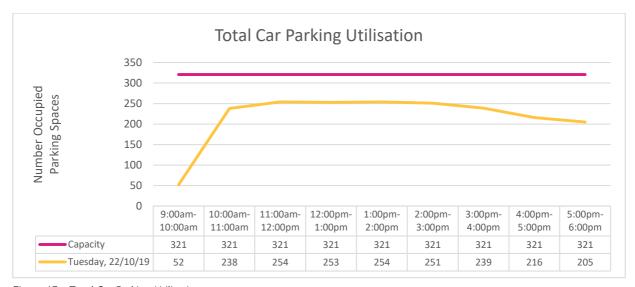


Figure 17 – Total Car Parking Utilisation

As demonstrated in the figures above, the Culworth Avenue car park is currently being utilised at or near full capacity throughout the morning and afternoon periods. The Marian Street car park is currently being underutilised with a maximum occupancy of 8 vehicles at any hour throughout the survey period. However, the on-street parking spaces currently have a spare capacity of approximately 40%, which is likely to be related to the currently imposed parking restrictions (refer to **Attachment 3** showing a map of the parking restrictions).

The survey data indicates that the peak occupancy of the available parking spaces occurred between 11:00am-3:00pm. The peak occupancy numbers throughout the day-time survey period are summarised in Table 3.

Table 3 – Daytime Parking Space Peak Occupancy

Date & Time	Existing No. spaces	No. of occupied spaces	No. of available spaces	Occupancy Rate %
Tuesday, 22 October 2019 11:00am-3:00pm	321	254 (max)	67	79%

The proposal involves a reduction of the existing 35 car parking spaces to 9, which then will be utilised by staff and a small number of patrons. Therefore, the forecasted occupancy rate of the available public parking spaces in the vicinity of the subject site, post development, is summarised in Table 4.

Table 4 – Predicted Future Daytime Parking Space Peak Occupancy

Date & Time	Future No. of spaces	No. of occupied spaces	No. of available spaces	Occupancy Rate %
Tuesday, Daytime	321-35=286	254	32	89%

6pm - 10pm.

5.2.2. Evening Occupancy Survey

Saturday, 10 August 2019

The evening occupancy surveys were undertaken on the following days:

between

Friday, 9 August 2019 between 6pm – 10pm;

The results of these surveys are shown in Figure 18, Figure 19, Figure 20 and Figure 21.

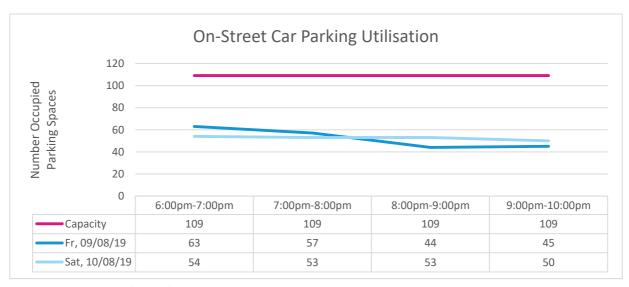


Figure 18 – On-Street Parking Utilisation

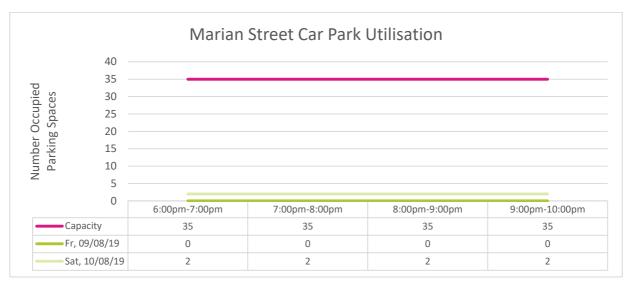


Figure 19 – Marian Street Car Park Utilisation

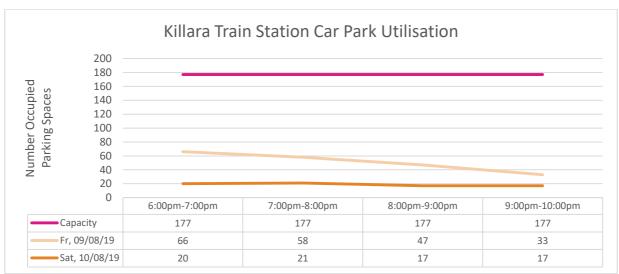


Figure 20 – Culworth Avenue (Council) Car Park Utilisation

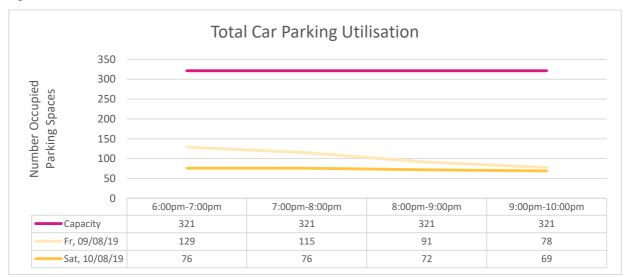


Figure 21 – Total Car Parking Utilisation

As demonstrated in the figures above, throughout the periods that the site was surveyed, the peak occupancy of the parking spaces occurred during Friday and Saturday evening between 7pm-8pm. The peak occupancy rate of the parking spaces during the survey period are summarised in the table below:

Table 5 – Evening Parking Space Peak Occupancy

Date & Time	Existing No. of spaces	No. of occupied spaces	No. of available spaces	Occupancy Rate %
Friday, 9 August 2019 7:00pm-8:00pm	224	115	206	36%
Saturday, 10 August 2019 7:00pm-8:00pm	321	76	245	23%

The proposal involves a reduction of the existing 35 car parking spaces to 9, which then will be utilised by staff and a small number of patrons. Therefore, the forecasted occupancy rate of the available public parking spaces in the vicinity of the subject site, post development, is summarised in Table 6.

Table 6 - Predicted Future Evening Parking Space Peak Occupancy

Date & Time	Future No. of spaces	No. of occupied spaces	No. of available spaces	Occupancy Rate %
Friday evening	321-35=286	115	171	40%
Saturday evening	321-35=286	76	210	27%

5.2.3 Proposed Car Parking

The development proposes to provide a total of 9 car parking spaces, including 1 accessible space. These spaces will cater for the theatre's staff (3 spaces) and a small number of visitors. It is proposed to accommodate the remaining parking demand within the local roads and the nearby car park available for public use. It is noted that there are 2 existing parking spaces for people with disabilities located at the front of the building, which were originally installed for the use of the theatre's patrons and are proposed to be retained.

The DCP planning control states that the proposed development requires 53 car parking spaces during Friday and Saturday evenings and 31 during daytime (refer to Table 2 in Section 5.1). The occupancy study described in Section 5.2.2 demonstrates that this demand can be entirely accommodated by the available on-street parking and the nearby car park available for public use. However, it is noted that most of the onstreet parking has parking restrictions imposed, as shown in **Attachment 3**.

The parking requirement and the on-site and on-street provision during daytime and evening are summarised below:

Table 7 – Proposed Car Parking Provision

Time Period			Proposed On-Street Parking Utilisation	No. of Available Public Parking Spaces
Daytime	31	9	22	32 (Refer to Table 4)
Evening	53	9	44	171-210 (Refer to Table 6)

5.2.4 Car Parking Discussion

As shown in Table 7, the car parking provision in the direct vicinity of the site is expected to be sufficient to accommodate the theatre's patrons throughout the day. In the evenings, a large surplus in parking is expected.

The individual parking areas are discussed below.

5.2.4.1. Marian Street Theatre Car Park

The car park behind the theatre was observed to be largely underutilised throughout all survey periods, which is likely to be related to the 3P restriction between 8:30am and 6pm on weekdays. Nevertheless, a slight peak was observed between 12pm-3pm, which is likely to be related to lunch-time traffic. It is noted that there is a café, a post office and a couple of small retail shops located on Marian Street. The park is also likely to attract visitors.

With the proposed reduction in parking spaces on site, vehicles currently using this parking area will be displaced. This has been taken into consideration when calculating the parking provisions.

The proposed 9 on-site parking spaces will serve the theatre's staff, a part of the theatre's patrons and the café's visitors.

5.2.4.2. Killara Train Station Car Park

The Killara Train Station Car Park is assumed to be primarily utilised by commuters using the train. This is reflected in the survey data, as the car park is near its full capacity throughout the morning and afternoon periods and begins to decrease at approximately 4:00pm. On Fridays and Saturdays evenings the car park is significantly underutilised.

Based on the above, it is recommended that the Marian Street Theatre advertises this car park for evening and weekend events as the primary parking area, which would help minimising the impact on the on-street parking.

In regard to pedestrian connectivity, the Culworth Avenue Car Park can be accessed from Marian Street and from Culworth Avenue and there is a footpath along both roads, as shown in Figure 8. Although no pedestrian crossing is provided, the area has a local character, and relatively low traffic volumes and speeds are expected. In addition, the site does not meet required warrants for the provision of a zebra crossing (based on traffic and pedestrian volumes).

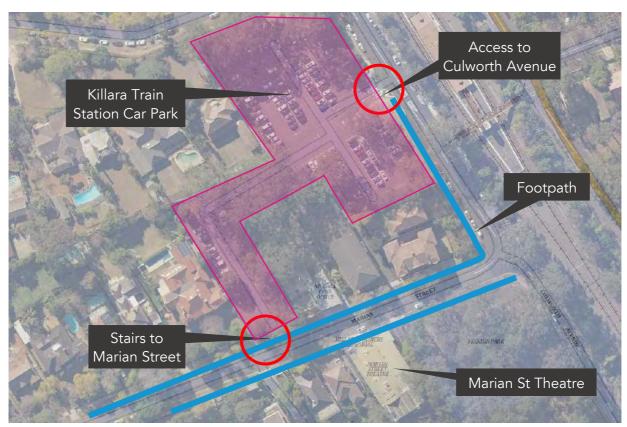


Figure 8 - Killara Train Station Car Park - Pedestrian Connectivity

5.2.4.3. On-Street Parking

As shown in Section 5.2.2.1 and Section 5.2.2.2, the on-street car parking has availabilities both throughout the day and in the evenings. This is likely related to the parking restrictions imposed in the surrounding streets, as shown in **Attachment 3** and discussed in Section 5.2.2.

It is assumed that parking restrictions along Culworth Avenue ("No Parking" between 6am – 10am) are related to increased traffic volumes and waste collection conducted in the morning. The P10min restriction in Culworth Avenue is likely a pick-up and drop-off area for commuters using the train. The 1P and 2P restrictions along Marian Street are likely to serve lunch-time park visitors and customers to the local shops.

The survey data indicates that the on-street parking supply will be able to accommodate the parking demand generated by patrons. However, it is proposed to extend the current parking restrictions along Marian Street to 3P to enable the theatre's patrons to park in the vicinity of the theatre throughout a performance. A 3P restriction is consistent with the currently signposted restriction within the Marian Street theatre.

In regard to extending the restriction period, it is assumed that the primary function of parking restrictions along Marian Street is to redirect commuters to the commuter car park. Therefore, an extension of the allowable parking time to 3P is unlikely to increase on-street parking utilisation by commuters.

5.3 Changes to Parking Restrictions

As discussed in Section 5.2.4.3, it is proposed to extend parking restriction timings along Marian Street from 1P and 2P to 3P, in order for theatre's patrons to be able to utilise on-street parking during day-time performances.

With the proposed relocation of the driveway from Marian Street to Culworth Avenue, approximately 3 spaces will be lost along Culworth Avenue and 3 will be gained along Marian Street.

The section in front of the existing driveway is proposed to be appropriately signposted and utilised as an approximately 12m long pick-up and drop-off area with a P10minutes restriction and an approximately 6m long 3P restricted parking space.

The proposed parking restriction and sign changes are shown in Attachment 4.

5.4 Accessible Car Parking

The DCP states the following in regard to the accessible parking requirements for the proposed development:

Entertainment facility: 3-4% minimum rate of provision;
 Community centres: 2-3% minimum rate of provision.

Considering the requirement for the entire facility to provide 41 car parking spaces, the calculation of required accessible spaces is based on this number. In accordance with the DCP, accessible parking requirements have been calculated as summarised in Table 8.

Table 8 – Accessible Car Parking Requirement

Period	Use	Total No. of Spaces	Parking Rate (min)	Parking Provision Requirement (min)		
Day	Entertainment Facility	31	3-4% of number of parking spaces	0.9 - 1.2		
Time	Café	6	2-3% of number of parking spaces	0.1 - 0.2		
			TOTAL Day Time	2		
F	Entertainment Facility	53	3-4% of number of parking spaces	1.6 - 2.1		
Evening	Café	-	2-3% of number of parking spaces	-		
			TOTAL Evening	2 - 3		

As outlined in Table 8, the proposed development requires the provision of 2 accessible parking spaces during day time and 2-3 in the evenings.

There are 2 accessible parking spaces located at the entry to the theatre along Marian Street and a ramp directly next to these spaces provides a barrier free connection to the building. Our understanding is that these spaces were originally installed to cater for the theatre's patrons. Therefore, it is proposed to offset these existing accessible parking spaces from the provision requirement.

In addition, the development is proposing to provide 1 accessible parking bay within the on-site car park, which is located adjacent to a footpath providing a link to the building.

Considering the above, the development will satisfy the DCP's accessible car parking provision rate by providing 2 on-street accessible parking spaces on Marian Street and 1 on-site accessible space within the internal car park.

5.5 Motorcycle Parking

There are no parking requirements for motorcycle parking spaces provided in the current DCP (2016).

5.6 Bicycle Parking

The parking requirements for bicycle are not stipulated in the current DCP (2016) for the proposed development. However, to provide alternative modes of transport and to encourage active transport methods, the development proposes to provide some bicycle parking.

The bicycle parking rate stipulated in the previous DCP (1998) is summarised in Table 9.

Table 9 – Bicycle Parking Provision

Use	No. of Spaces	Parking Rate (min)	Parking Provision Requirement (min)	Proposed Parking Provision
Entertainment Facility	9	2% of total parking supply	1	5

6. Development Traffic Assessment

The potential traffic generation of the proposed development has been estimated with reference to the following:

- RMS Guide to Traffic Generating Developments 2002 (RMS Guide)
- RMS Technical Direction 2013/04 (TDT)
- Intersection survey data collected on Wednesday, 7th August 2019.

6.1 Existing Traffic Generation

The subject site has not been operational since 2013. However, the car park servicing the subject site is Council owned and operated and is currently being utilised as a public car park with the following restriction:

3P 8:30am-6:30pm;

A traffic count of vehicles accessing the Marian Theatre car park was undertaken in conjunction with the intersection survey on Wednesday, 7th August 2019 between 4:00pm-7:00pm. It was observed that throughout this period, only one vehicle utilised the car parking. Hence, to take a conservative approach, the car park is considered to generate zero traffic.

6.2 Development Traffic Generation

The proposed development involves a main auditorium, a theatrette, a rehearsal room and a flexible community space. The Guide does not provide a traffic generation rate for such a development. However, the following was taken into consideration when determining the traffic generation of the proposed development. The DCP stipulates the proposed development is required to provide minimum 53 car parking spaces in the evenings (refer to Section 5). Hence, it is assumed that the worst-case scenario would involve these 53 vehicles to either enter or exit the vicinity of the site within the peak hour period.

6.3 Net Traffic Generation

Net traffic generation is calculated by subtracting the current traffic generation from the proposed traffic generation. The number of trips that are anticipated to be generated by the proposed development on exclusive of the current traffic is shown in Table 10.

Table 10 – Proposed Net Traffic Generation

Period	Proposed Current Traffic	Proposed Development	Proposed Net Traffic
	Generation	Traffic Generation	Generation
PM peak hour	0	53	53

The proposed development is likely to generate an additional 53 trips throughout the evening peak hour period.

6.4 Traffic Volumes

An intersection survey was undertaken on Wednesday, 7th August 2019 between 4:00pm-7:00pm at the Marian Street / Culworth Avenue, priority controlled 3-arm intersection. The intersection survey location is shown in Figure 22.



Figure 22 – Location of Intersection Survey

The peak hour for the intersection of study has been determined as follows:

• 5:00pm to 6:00pm;

6.5 Development Traffic Distribution

The following assumptions were made to determine the assignment of the additional trips generated by the proposed development:

- Taking into consideration that the proposed development is an entertainment facility, it is assumed that trips throughout the peak will be 100% inbound or 100% outbound;
- The data obtained from the intersection survey indicates that 55% of the vehicles utilising the intersection travel from the northern suburbs and 45% of the vehicles are from the southern suburbs. Therefore, an assumption is made that the traffic distribution will be consistent with the traffic generated by the proposed development;
- Inbound Traffic Distribution
 - o As vehicles travelling from the north are able to directly access Marian Street via the Pacific Highway / Marian Street intersection, it is anticipated that majority of the vehicles from Pacific Highway will utilise this intersection to travel to the proposed development. However,

- consideration is given to vehicles intending to utilise the Killara Station Car Park and those travelling from the east. Hence, taking these factors into consideration, the 55% is further divided into 20% and 35%;
- Vehicles travelling from the south cannot turn right into Marian Street at the Pacific Highway / Marian Street intersection. Hence, it is anticipated that the vehicles will utilise Stanhope Road to gain access to Marian Street.

Outbound Traffic Distribution

- o Northbound vehicles cannot utilise the Pacific Highway / Marian Street intersection due to the 'left only' restriction. Hence, it is anticipated vehicles northbound and eastbound will utilise the Culworth Avenue / Marian Street intersection;
- o It is anticipated that southbound vehicles will utilise the Pacific Highway / Marian Street intersection. However, consideration needs to be given to vehicles intending to travel east via Stanhope Road. Therefore, the 45% of the southbound vehicles is further divided into 25% and 20%;

These assumptions have been represented in Figure 23 and Figure 24.

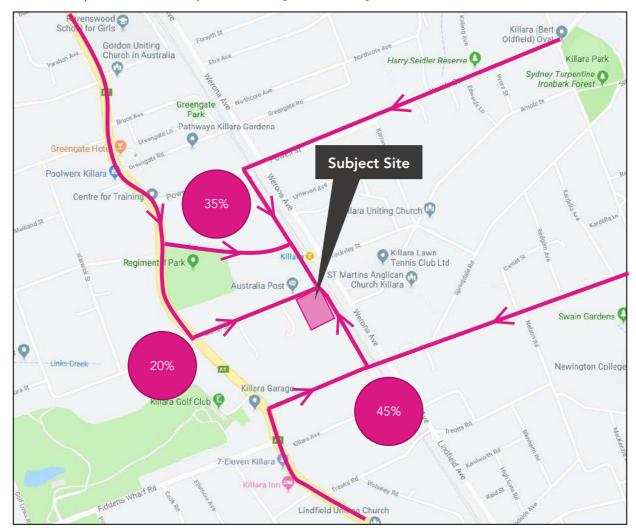


Figure 23 - PM Peak Inbound Distribution

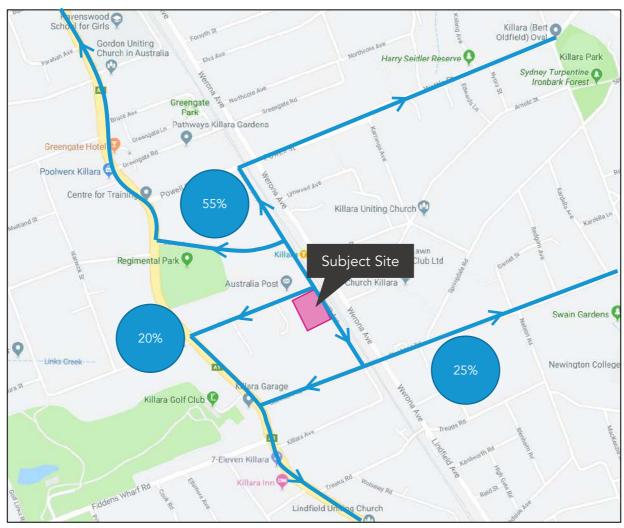


Figure 24 – PM Peak Outbound Distribution

6.6 SIDRA Analysis

A volume analysis was performed using the SIDRA Intersection 8 software, a micro-analytical tool for individual intersection and whole-network modelling. The models are based on the collected traffic survey data. SIDRA provides a number of performance indicators outlined below:

- Degree of Saturation The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay The average delay encountered by all vehicles passing through the intersection. It is often
 important to review the average delay of each approach as a side road could have a long delay time, while
 the large free flowing major traffic will provide an overall low average delay.
- 95% Queue Lengths (Q95) is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- Level of Service (LoS) This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. The RMS adopts the following bands:

Table 11 - Intersection Performance - Levels of Service

LoS	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
Α	<14	Good operation	
В	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
С	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
Е	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

A SIDRA analysis has been conducted for the following key intersection based upon the survey data collected on Wednesday, 7th August 2019:

Culworth Avenue / Marian Street

It is noted that throughout the survey, it was observed that multiple vehicles were performing U-turns at the Culworth Avenue / Marian Street intersection. Therefore, to accurately determine the existing and post development performance of the intersection, the U-turns were included in the SIDRA analysis.

The summary of the existing and proposed post development traffic conditions are summarised in Table 12. The full movement summary outputs from SIDRA are provided in **Attachment 5**.

Table 12 – Summary of Existing and Post Development Traffic Conditions

Intersection	Inbound / Outbound	Period	Level of Service	Average Delay (s)	Degree of Saturation (v/c)	95% Queue Length (m)
	Inbound	Existing	Α	6.3	0.066	1.9
Marian Street /	Outbound	Existing	Α	6.3	0.066	1.9
Culworth Avenue	Inbound	Development	Α	6.3	0.075	2.0
	Outbound	Development	Α	6.4	0.067	2.0

As summarised in Table 12, the level of service of this intersection, post-development remains at LOS A and each performance measure either increases marginally or no changes occur. The intersection will continue to operate with a spare capacity exceeding 90% throughout the PM peak periods. Therefore, it is anticipated that the traffic impact at this intersection as a result of the development will be minor.

7. Design Assessment - On-Site Car Park, Circulation and Access

The following section presents an assessment of the proposed reconstruction with reference to the requirements of AS 2890.1:2004 (Off-street car parking), AS2890.3:2015 (Bicycle Parking) and AS2890.6-2009 (Off-street parking for people with disabilities) as well as industry best practice. This section is to be read in conjunction with the architectural plans provided by TZG (see Attachment 1) and the car park assessment undertaken by **ptc.** (see Attachment 6).

The proposed car park is to be predominantly utilised by staff. Therefore, the car park has been designed as a Class 1A facility.

7.1 Car Park Assessment

7.1.1 Typical Requirements

The car park access and parking arrangements have been assessed against the requirements of AS2890.1:2004, with reference to Class 1A (residential/employee) facilities. The development is to provide the following dimensions for the parking spaces:

Class 1A (residential/employee) facilities:

• Car Spaces: 2.4m x 5.4m

Aisle Width:
 5.8m (minimum)

All parking spaces provided shall meet the minimum requirements stated in the guidelines.

7.1.2 Accessible Parking

All accessible parking spaces have been individually assessed against the requirements of AS2890.6. Accessible parking spaces are to be designed based on the following dimensions:

Accessible Space: 2.4m x 5.4m

Adjacent Shared Bay:
 2.4m x 5.4m (with a bollard)

All shared bays and accessible spaces shall be installed in accordance with AS2890.6, including the installation of bollards and relevant pavement marking. A minimum height clearance of 2.5m is to be maintained above all accessible and shared bays.

7.1.3 Bicycle Parking

All bicycle parking spaces are to be provided in accordance with AS2890.3:2015.

Approved bicycle parking devices shall be installed as per the following requirements of AS2890.3:2015:

• Horizontal parking: 0.5m x 1.8m

All proposed bicycle parking spaces meet the above requirements.

7.2 Circulation

Within the car park, 8 parking bays are arranged as 90 degree spaces on the southern end of the site and 1 accessible bay is located south of the building with a direct access to the footpath.

An aisle width of minimum 5.8m is to be provided adjacent to all parking spaces and a width of minimum 5.5m is to be provided to all other internal 2-way roads.

7.3 Access Road / Driveway

As mentioned in Section 3, various options for the car park capacity and layout as well as the location of the access road / driveway have been investigated. The discussion based on parking and traffic factors is shown in **Attachment 2**. Supported by the outcome of this discussion is the proposed relocation of the existing access driveway from Marian Street to Culworth Avenue.

The proposed access driveway allows for 2-way traffic half way through the Selkirk Park for light vehicles and for 1-way traffic for trucks. A swept path assessment has been undertaken to demonstrate that the site is accessible as described, the design assessment is shown in **Attachment 6**.

The new access would result in the requirement to remove approximately 3 parking spaces along Culworth Avenue, in order to provide sufficient sight distance and passing opportunities.

The driveway is proposed to have access control in form of a boom gate, which will be locked/unlocked and managed by the Operator of Marian Street Theatre during Theatre operating times. Staff will also have access via a key card when the parking is used. Future Operator of Marian Street Theatre may allocate the small number of parking spaces for visitors to those directly requiring them. This process is to be developed further with the operator.

7.4 New Layby

It is proposed to construct a layby behind the existing accessible parking spaces on Marian Street, along the existing driveway which is proposed to be relocated. The layby is shown in the landscape plans in **Attachment 1**.

The proposed layby is approximately 18m long, meaning that 3 vehicles can be accommodated. The main purpose of this layby is to utilise it as a kiss & drop lane during performances, but also as a loading area for delivery vehicles throughout the day.

It is proposed to restrict the first two spaces of the layby to 10 minutes parking between 6am and 6pm and the third space shall be restricted similar to directly adjacent restrictions – to 3P between during office hours.

The proposed restrictions are shown in Figure 25 and Attachment 4.

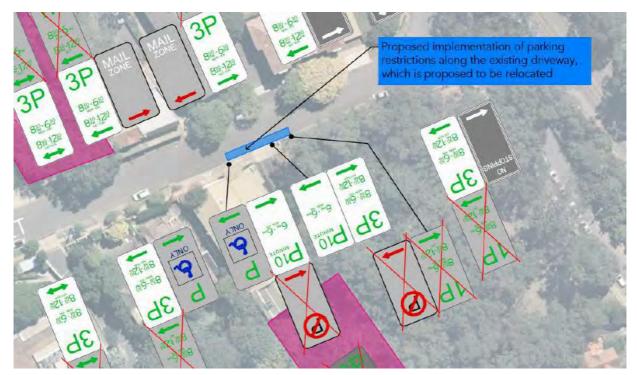


Figure 25 – Proposed Parking Restrictions

7.5 Service Vehicles

7.5.1 Deliveries

The site has been designed to accommodate a Medium Rigid Vehicle (up to 8.8m long), which will access the loading dock at the back of the building. A sufficient area is provided for the vehicle to undertake a 3-point turn within the site, in order to be able to access and exit the site in a forward direction.

7.5.2 Waste Management

Waste collection will occur on site by the smaller of the two possible Council waste trucks. The proposed vehicle is 6.3m long and a swept path assessment has been undertaken to demonstrate the possibility for the truck to undertake a 3-point turn within the site, in order to be able to access and exit the site in a forward direction.

7.5.3 Fire Services

According to the "NSW fire brigade appliance roadway design", the site needs to provide access and suitable manoeuvrability for a "General Appliance", which is 10.1m long. A swept path assessment has been undertaken to demonstrate the ability for the fire truck to undertake a 3-point turn within the site, in order to be able to access and exit the site in a forward direction.

8. Conclusion

ptc. has been engaged by Tonkin Zulaikha Greer Architects (TZG) to prepare a Traffic Impact Assessment (TIA) for the proposed redevelopment of the existing Marian Street Theatre located in 2 Marian Street, Killara. This assessment accompanies a Development Application (DA) to be presented to Ku-ring-gai Council.

The site has excellent accessibility for:

- Vehicles, as it is located just 350m from the state road Pacific highway;
- Public transport, as it is located 150m form Killara Train Station and up to 800m from various bus stops.

In regard to active transport, the vicinity of the site has reasonable amenities for pedestrians, and while bicycle infrastructure is underdeveloped, the area surrounding the proposed development is largely flat, has a residential character and traffic volumes are low.

The development proposes to provide 9 parking spaces on-site for staff and a small number of patrons. It is proposed to utilise the existing on-street and Council run parking areas in the vicinity of the site to accommodate the majority of patrons' vehicles. A detailed analysis of parking requirements and parking supply in the vicinity has been undertaken. Based on the DCP and the proposed usage of the theatre, the development requires a maximum of 31 and 53 parking spaces throughout the day and on Friday and Saturday evenings respectively. Parking occupancy surveys have shown that there are approximately 30 and 170 – 210 parking spaces available throughout the day and in the evenings respectively. With 9 parking spaces provided on-site, the theatre's remaining parking demand can be entirely accommodated within the existing parking facilities.

It is noted that the development is proposing to provide 5 bicycle parking spaces to promote active transport despite no stipulated provision in the DCP.

In regard to traffic generation, the existing traffic volumes are very low at the intersection Marian Street / Culworth Avenue. Future traffic generation has been determined considering the maximum parking requirement of 53 vehicles and assuming that all patrons will arrive or leave the vicinity of the site at the same time. SIDRA analysis shows that the intersection's performance increase only marginally in the. Therefore, the proposed development is not expected to have a major effect on the surrounding road network.

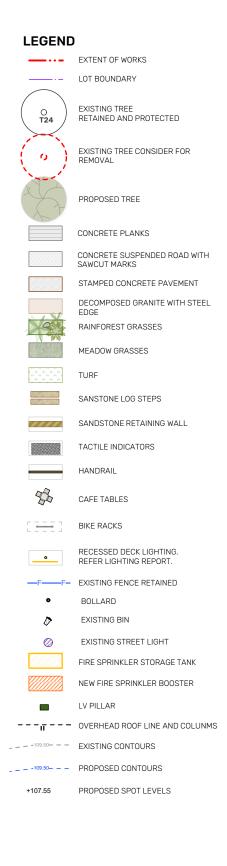
The development also proposes to relocate the existing driveway from Marian Street to Culworth Avenue. The grades of the existing access road are not compliant based on current guidelines and the required adjustments would resolve in significant civil works.

The proposed car park has been assessed according to relevant standards and is deemed compliant. The circulation is sufficient to accommodate a fire truck, which is the largest expected vehicle to access the site.

Considering the above, the development is endorsed from traffic and parking context.



Attachment 1 Architectural and Landscape Drawings





PROJECT

MARIAN ST THEATRE

DRAWING

Landscape Plan

DRAWING L-002 SCALE 1:500 NUMBER

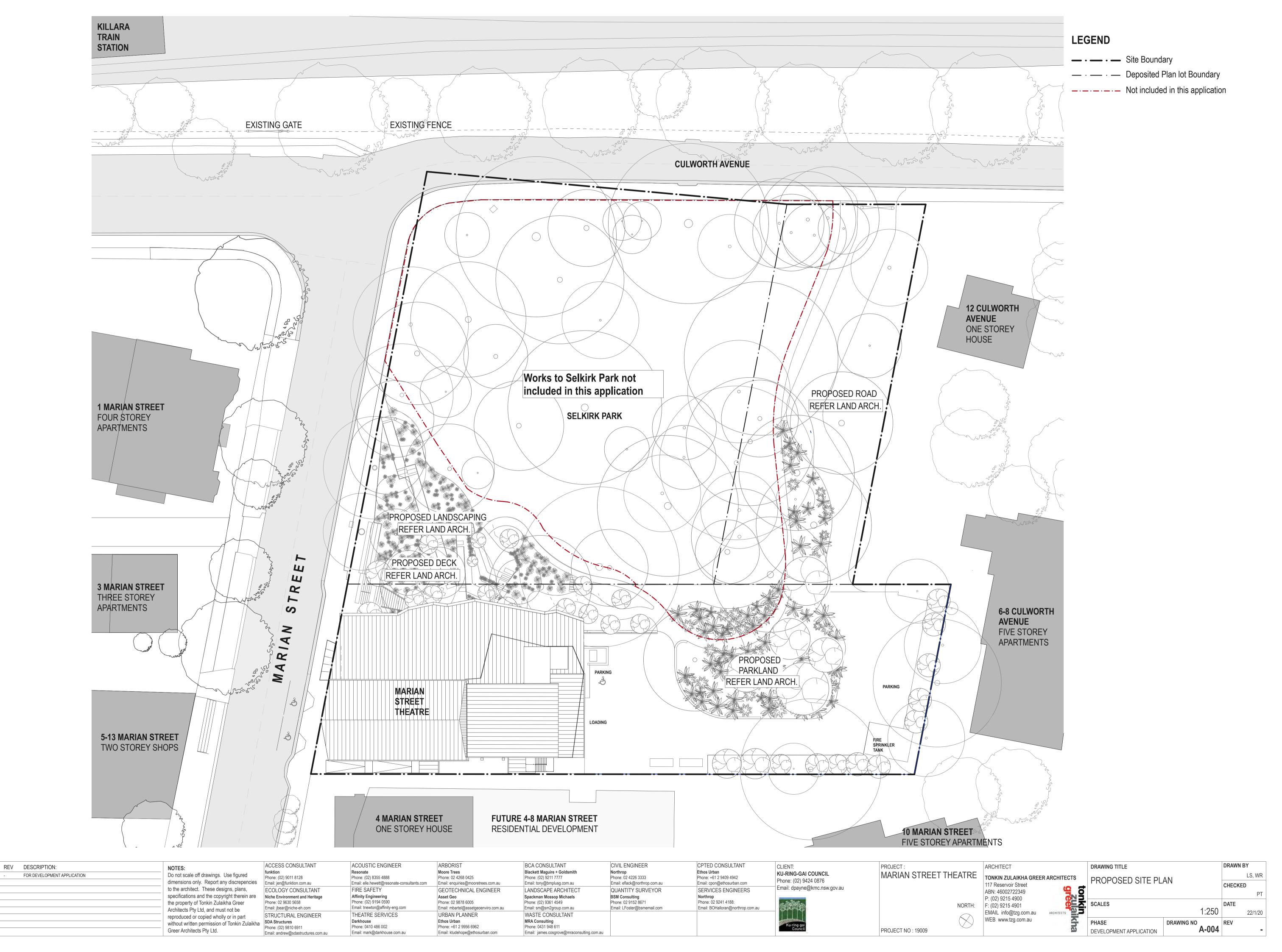
CLIENT

Ku-ring-gai Council

SMM PROJECT No. ISSUE 19056 100% DA

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spackman mossop michaels



22.JAN.2020



Attachment 2 Layout and Access Options Discussion



1. Existing Access Driveway (Option 1)

1.1 Layout

Based on the current standards, the width of the access road is insufficient for 2 way traffic, as 5.5m is the required minimum.

While it can be argued that the traffic will be tidal (most vehicles arriving and leaving at the same time), it would be beneficial to provide a possibility for two vehicles to pass each other. This can be achieved in the following ways:

- Widen the entire access road. However, it is noted that on the eastern side of the road there is a steep fall, stairs which would require to be relocated and trees, which would need to be removed; or
- Provide a passing opportunity every 30m, to allow one arriving vehicle to draw aside and to give way to
 a leaving vehicle. In addition, it would be recommended to widen the driveway to 5.5m for the first 6m
 in length, to allow two vehicles to pass at the direct entrance off Marian Street. If the above is provided,
 the overall width of the access road could be reduced to 3m for sole light vehicle usage or 3.5m if
 trucks are to enter the site.

Considering the length of the access road, it is possible to create compliant 5.5m wide passing opportunities at the beginning and at the end of the road, with a 30m long narrower section in between, as shown in Figure 1.

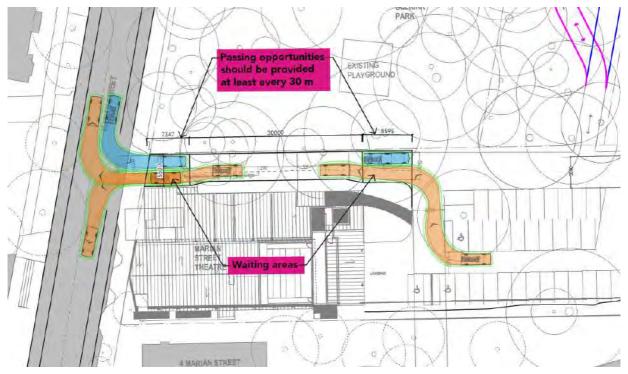


Figure 1 – Compliant Layout for Existing Access Road

1.2 Grade

Based on the current standards, the grade of the access road is non-compliant.

Generally, when a carpark component is upgraded, all facilities related to it should be brought up to the current standards as well. While a permission can be sought to retain the existing arrangements, a compliant provision is preferred.

Figure 2 shows access road grades, which would be compliant with the current standards (magenta, blue and green lines).

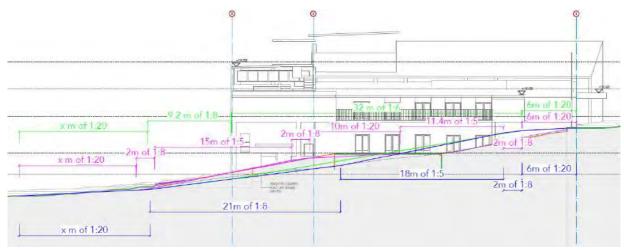


Figure 2 – Compliant Access Road Grades

2. Maximum Car Parking (Option 2)

This option provides 28 car parking spaces, including 2 accessible parking spaces. A concept layout is shown in Figure 3.

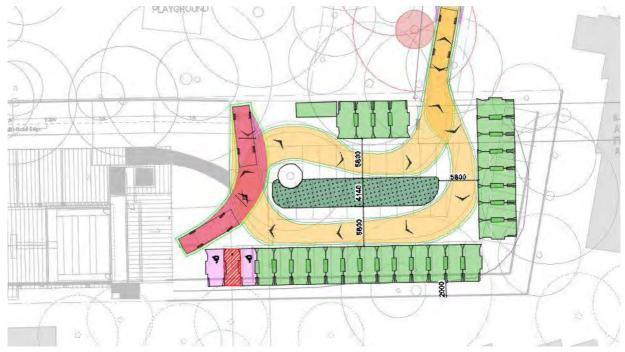


Figure 3 – Maximum Car Parking Option Layout

It should be noted that this option utilises the maximum area for parking spaces. However, if followed strictly the DCP's requirements (see Figure 4), the total number of parking spaces provided would be reduced.

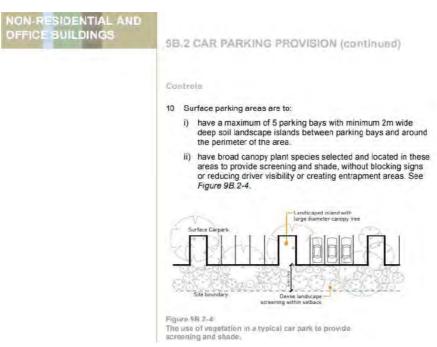


Figure 4 – Excerpt from DCP

The proposed access driveway allows for 2-way traffic half way through the park for light vehicles and for 1-way traffic for trucks. A swept path assessment has been undertaken to demonstrate that the site is accessible as described, as shown in Figure 5. As previously outlined, the new access would result in the requirement to remove a number of parking spaces along Culworth Avenue.



Figure 5 – Maximum Car Parking Option Access Road

3. Minimal Car Parking (Option 3)

This option provides a small number of parking spaces, including 1 accessible parking bay. Subject to small layout adjustments, this option also provides access to the loading dock by an up to 8.8m long Medium Rigid Vehicle (MRV). A concept layout is shown in Figure 6.

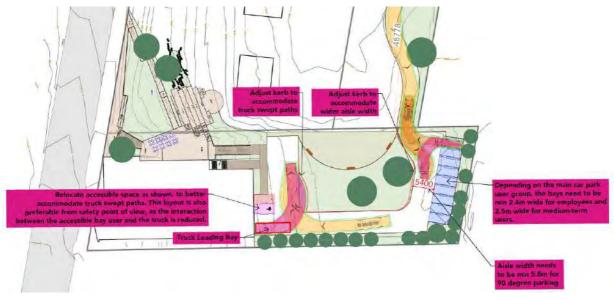


Figure 6 - Minimal Car Parking Option Layout

The proposed access driveway allows for 2-way traffic half way through the park for light vehicles and for 1-way traffic for trucks. A swept path assessment has been undertaken to demonstrate that the site is accessible as described, as shown in Figure 7. As previously outlined, the new access would result in the requirement to remove a number of parking spaces along Culworth Avenue.



Figure 7 - Minimal Car Parking Option Access Road

It is proposed that the Killara Train Station Car Park is advertised as the primary location for parking for patrons. This is based on the following assumptions:

- The Killara Train Station Car Park is assumed to be mostly used by commuters, meaning that during evening hours and on the weekends the car park is likely to have many vacancies;
- The car parking occupancy survey undertaken in August 2019 revealed a maximum occupancy rate of 29%, leaving 126 vacant parking spaces throughout Friday and Saturday evenings.

In regard to pedestrian connectivity, the Killara Train Station Car Park can be accessed from Marian Street and from Curworth Avenue and there is a footpath along both roads. Although no pedestrian crossing is provided, the area has a rural character and relatively low traffic volumes and speeds are expected. In addition, the site does not meet required warrants for the provision of a zebra crossing (based on traffic and pedestrian volumes).

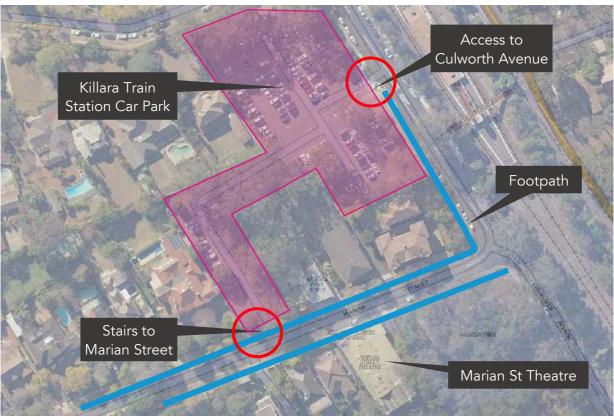


Figure 8 - Killara Train Station Car Park - Pedestrian Connectivity

4. SIDRA Analysis

Three scenarios were taken into consideration for the purpose of the SIDRA analysis. The scenarios are shown in the following figures.

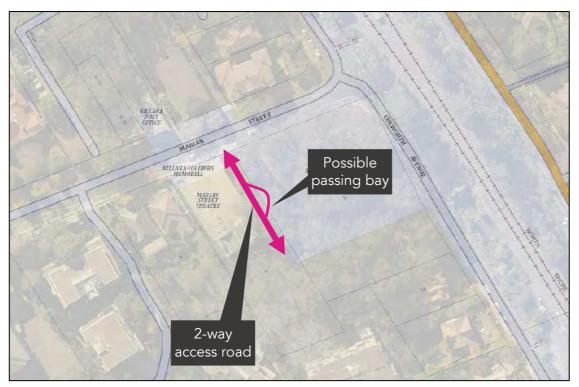


Figure 9 – Option 1 - Access via Marian Street

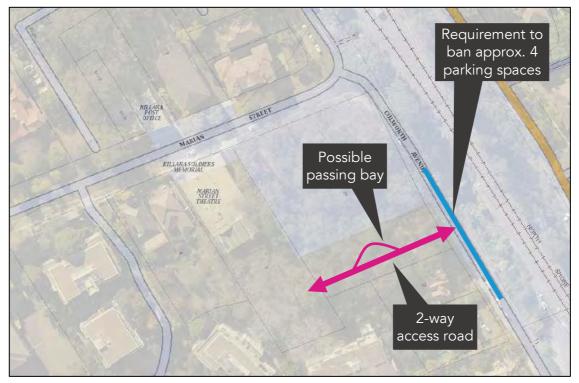


Figure 10 – Access via Culworth Avenue

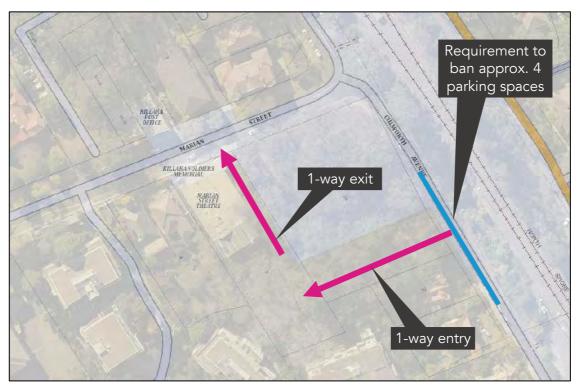


Figure 11 – Option 3 - Ingress via Culworth Avenue Egress via Marian Street

The summary of the existing and proposed post development traffic conditions are summarised in Table 1. The full movement summary outputs from SIDRA are provided in Error! Reference source not found..

Table 1 – Summary of Existing and Post Development Traffic Conditions

Intersection	Inbound / Outbound	Period	Level of Service	Average Delay (s)	Degree of Saturation (v/c)	95% Queue Length (m)
Marian Street /	Inbound	Existing	Α	6.3	0.066	1.9
Culworth Avenue	Outbound	Existing	Α	6.3	0.066	1.9
Option 1	Inbound	Development	Α	6.3	0.077	2.4
	Outbound	Development	Α	6.3	0.066	1.9
Option 2	Inbound	Development	Α	6.3	0.075	2.0
	Outbound	Development	Α	6.4	0.067	2.0
Option 3	Inbound	Development	Α	6.3	0.075	2.0
	Outbound	Development	Α	6.3	0.066	1.9

As summarised in Table 1, the level of service of this intersection, post-development remains at LOS A for all three options and each performance measure either increases marginally or no changes occur. The intersection will continue to operate with a spare capacity exceeding 90% throughout the PM peak periods. Therefore, it is anticipated that the traffic impact at this intersection as a result of the development will be minor.

Based on the above, the location of the driveway is not dictated by traffic volumes.



5. Discussion

5.1.1 Option Recommendations

Based on traffic volumes and distribution, all options are equally viable.

In regard to comfort, we are of the opinion that the existing driveway, even if brought up to standard, is the least user friendly, as maximum grades are applied.

The Maximum Car Park Option provides a generally at grade access off Culworth Ave, with on-site parking for approximately 50% of the likely public visiting the theatre.

The Minimum Car Park Option provides a generally at grade access off Culworth Ave and parking for staff only, with the public parking in the underutilised nearby Killara Train Station Car Park.

All three options incorporate a loading area (for an MRV) within the car park, however, Option 3 removes the public from the car park and therefore removes the possible conflict between service vehicles and the public (vehicles and pedestrians).

5.1.2 Trucks

The site will be restricted to a medium rigid vehicle, which is up to 8.8m long and requires a height clearance of 4.5m.

The height clearance needs to be considered when planning the access road along the existing trees.

5.1.3 Waste Management

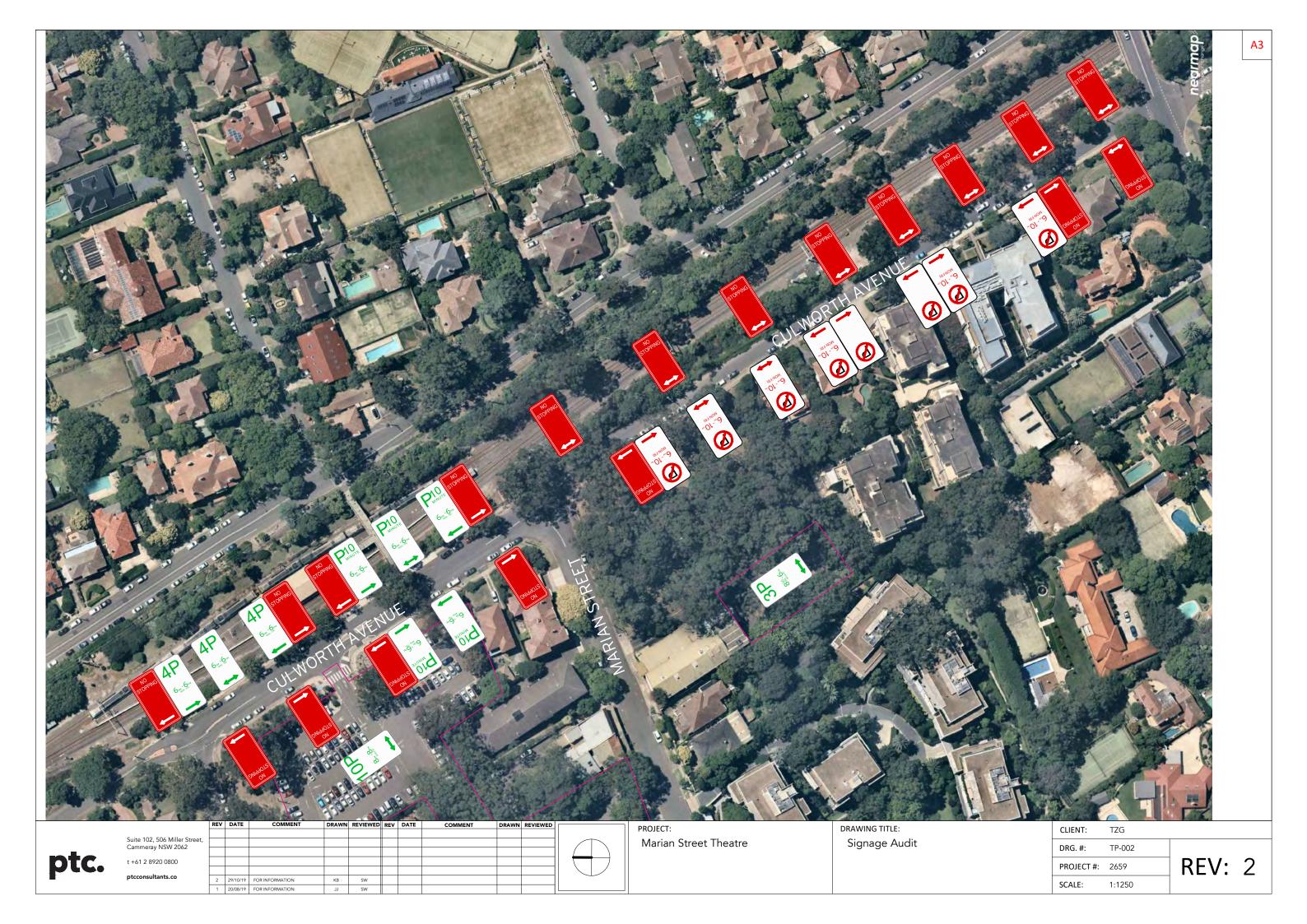
Waste management needs to be taken into consideration, particularly in regard to the location of waste collection:

- If the waste truck is to enter the site, the truck size is to be limited to an 8.8m vehicles.
- If waste is to be collected on the street, along Culworth Avenue (Options 2 and 3), the removal of
 additional parking spaces (along Culworth Ave) maybe required and this will need to be agreed with
 Council.



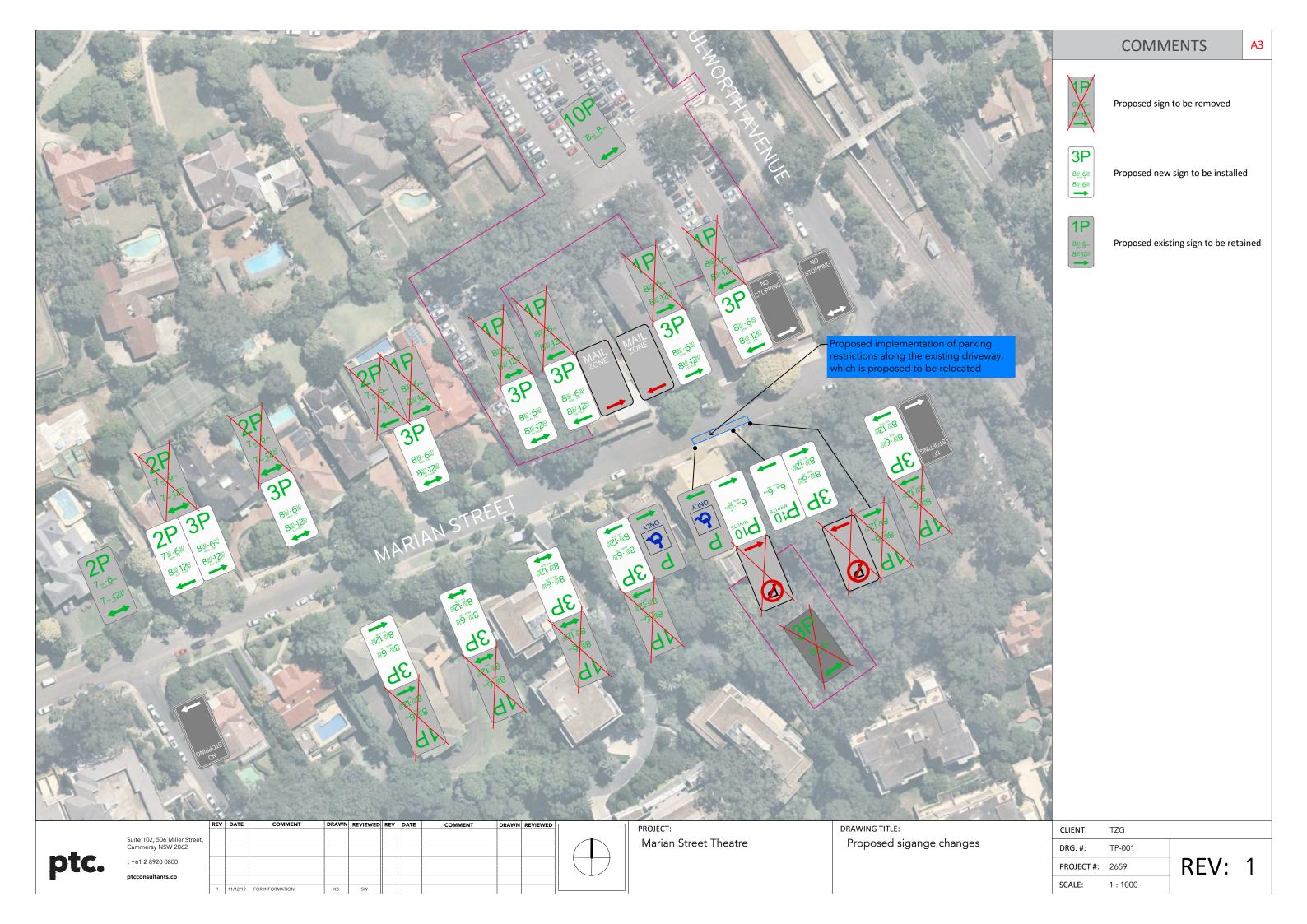
Attachment 3 Signage Audit







Attachment 4 Proposed Changes to Parking Restrictions





Attachment 5 SIDRA Results

▽ Site: 101 [Existing PM]

Existing AM
Site Category: (None)
Giveway / Yield (Two-Way)

Move	Movement Performance - Vehicles											
Mov ID	Turn	Demand I Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South	South: Culworth Avenue South											
1	L2	33	0.0	0.061	4.6	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
2	T1	82	0.0	0.061	0.0	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
3u	U	1	0.0	0.061	6.2	LOS A	0.0	0.1	0.01	0.16	0.01	46.9
Appro	ach	116	0.0	0.061	1.4	NA	0.0	0.1	0.01	0.16	0.01	47.9
North:	Culwor	th Avenue N	orth									
8	T1	65	0.0	0.066	0.2	LOS A	0.3	1.9	0.17	0.23	0.17	46.1
9	R2	34	0.0	0.066	4.9	LOS A	0.3	1.9	0.17	0.23	0.17	45.2
9u	U	12	0.0	0.066	6.3	LOS A	0.3	1.9	0.17	0.23	0.17	42.5
Appro	ach	111	0.0	0.066	2.3	NA	0.3	1.9	0.17	0.23	0.17	45.5
West:	Marian	Street										
10	L2	19	0.0	0.023	4.8	LOS A	0.1	0.6	0.19	0.52	0.19	43.3
12	R2	12	0.0	0.023	5.2	LOS A	0.1	0.6	0.19	0.52	0.19	43.8
Appro	ach	31	0.0	0.023	5.0	LOSA	0.1	0.6	0.19	0.52	0.19	43.5
All Ve	hicles	257	0.0	0.066	2.2	NA	0.3	1.9	0.10	0.23	0.10	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: PARKING AND TRAFFIC CONSULTANTS | Processed: Thursday, 15 August 2019 12:10:35 PM
Project: Z:\PCI - PROJECT WORK FILES\NSW\TZG - Marion St Theater\4. DA Stage\3. Modelling & Surveys\190808 - Marian Street &
Culworth Avenue intersection.sip8

V Site: 101 [Development PM - Option 1]

Existing AM Site Category: (None) Giveway / Yield (Two-Way)

Move	Movement Performance - Vehicles											
Mov ID	Turn	Demand F Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South	: Culwor	rth Avenue S	outh									
1	L2	56	0.0	0.073	4.6	LOS A	0.0	0.1	0.01	0.22	0.01	47.4
2	T1	82	0.0	0.073	0.0	LOS A	0.0	0.1	0.01	0.22	0.01	47.1
3u	U	1	0.0	0.073	6.2	LOS A	0.0	0.1	0.01	0.22	0.01	46.3
Appro	ach	139	0.0	0.073	1.9	NA	0.0	0.1	0.01	0.22	0.01	47.3
North:	Culwor	th Avenue N	orth									
8	T1	65	0.0	0.077	0.3	LOS A	0.3	2.4	0.21	0.27	0.21	45.5
9	R2	49	0.0	0.077	5.0	LOS A	0.3	2.4	0.21	0.27	0.21	44.8
9u	U	12	0.0	0.077	6.3	LOS A	0.3	2.4	0.21	0.27	0.21	41.8
Appro	ach	126	0.0	0.077	2.7	NA	0.3	2.4	0.21	0.27	0.21	44.9
West:	Marian	Street										
10	L2	19	0.0	0.023	4.8	LOS A	0.1	0.6	0.19	0.52	0.19	43.3
12	R2	12	0.0	0.023	5.3	LOS A	0.1	0.6	0.19	0.52	0.19	43.8
Appro	ach	31	0.0	0.023	5.0	LOS A	0.1	0.6	0.19	0.52	0.19	43.5
All Ve	hicles	296	0.0	0.077	2.6	NA	0.3	2.4	0.11	0.27	0.11	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Culworth Avenue intersection.sip8

Project: Z:\PCI - PROJECT WORK FILES\NSW\TZG - Marion St Theater\4. DA Stage\3. Modelling & Surveys\190808 - Marian Street &

Site: 101 [Development PM - Option 1 - Outbound]

Existing AM
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand F Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South	: Culwor	th Avenue S	outh									
1	L2	33	0.0	0.061	4.6	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
2	T1	82	0.0	0.061	0.0	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
3u	U	1	0.0	0.061	6.2	LOS A	0.0	0.1	0.01	0.16	0.01	46.9
Appro	ach	116	0.0	0.061	1.4	NA	0.0	0.1	0.01	0.16	0.01	47.9
North:	: Culwort	th Avenue N	orth									
8	T1	65	0.0	0.066	0.2	LOS A	0.3	1.9	0.17	0.23	0.17	46.1
9	R2	34	0.0	0.066	4.9	LOS A	0.3	1.9	0.17	0.23	0.17	45.2
9u	U	12	0.0	0.066	6.3	LOS A	0.3	1.9	0.17	0.23	0.17	42.5
Appro	ach	111	0.0	0.066	2.3	NA	0.3	1.9	0.17	0.23	0.17	45.5
West:	Marian :	Street										
10	L2	48	0.0	0.055	4.8	LOS A	0.2	1.4	0.19	0.52	0.19	43.3
12	R2	25	0.0	0.055	5.3	LOS A	0.2	1.4	0.19	0.52	0.19	43.8
Appro	ach	74	0.0	0.055	5.0	LOS A	0.2	1.4	0.19	0.52	0.19	43.5
All Ve	hicles	300	0.0	0.066	2.6	NA	0.3	1.9	0.11	0.28	0.11	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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V Site: 101 [Development PM - Option 2]

Existing AM
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand I Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South	: Culwoi	th Avenue S	outh									
1	L2	33	0.0	0.061	4.6	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
2	T1	82	0.0	0.061	0.0	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
3u	U	1	0.0	0.061	6.3	LOS A	0.0	0.1	0.01	0.16	0.01	46.9
Appro	ach	116	0.0	0.061	1.4	NA	0.0	0.1	0.01	0.16	0.01	47.9
North:	Culwor	th Avenue N	orth									
8	T1	81	0.0	0.075	0.2	LOS A	0.3	2.0	0.16	0.21	0.16	46.5
9	R2	34	0.0	0.075	4.9	LOS A	0.3	2.0	0.16	0.21	0.16	45.5
9u	U	12	0.0	0.075	6.3	LOS A	0.3	2.0	0.16	0.21	0.16	43.0
Appro	ach	126	0.0	0.075	2.0	NA	0.3	2.0	0.16	0.21	0.16	45.9
West:	Marian	Street										
10	L2	19	0.0	0.036	4.8	LOS A	0.1	0.9	0.20	0.53	0.20	43.3
12	R2	25	0.0	0.036	5.3	LOS A	0.1	0.9	0.20	0.53	0.20	43.8
Appro	ach	44	0.0	0.036	5.1	LOS A	0.1	0.9	0.20	0.53	0.20	43.6
All Ve	hicles	286	0.0	0.075	2.2	NA	0.3	2.0	0.11	0.24	0.11	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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V Site: 101 [Development PM - Option 2 - Outbound]

Existing AM
Site Category: (None)
Giveway / Yield (Two-Way)

Move	ement P	erformand	ce - Vel	hicles								
Mov ID	Turn	Demand l Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South	: Culwor	th Avenue S	outh									
1	L2	43	0.0	0.082	4.6	LOS A	0.0	0.1	0.00	0.15	0.00	47.9
2	T1	112	0.0	0.082	0.0	LOS A	0.0	0.1	0.00	0.15	0.00	48.0
3u	U	1	0.0	0.082	6.2	LOS A	0.0	0.1	0.00	0.15	0.00	46.9
Appro	ach	156	0.0	0.082	1.3	NA	0.0	0.1	0.00	0.15	0.00	47.9
North	: Culwor	th Avenue N	orth									
8	T1	65	0.0	0.067	0.3	LOS A	0.3	2.0	0.21	0.24	0.21	45.9
9	R2	34	0.0	0.067	5.0	LOS A	0.3	2.0	0.21	0.24	0.21	45.1
9u	U	12	0.0	0.067	6.4	LOS A	0.3	2.0	0.21	0.24	0.21	42.3
Appro	ach	111	0.0	0.067	2.4	NA	0.3	2.0	0.21	0.24	0.21	45.3
West:	Marian	Street										
10	L2	19	0.0	0.024	4.9	LOS A	0.1	0.6	0.22	0.52	0.22	43.2
12	R2	12	0.0	0.024	5.4	LOS A	0.1	0.6	0.22	0.52	0.22	43.7
Appro	ach	31	0.0	0.024	5.1	LOS A	0.1	0.6	0.22	0.52	0.22	43.4
All Ve	hicles	297	0.0	0.082	2.1	NA	0.3	2.0	0.10	0.22	0.10	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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▽ Site: 101 [Development PM - Option 3]

Existing AM
Site Category: (None)
Giveway / Yield (Two-Way)

Move	ment P	erformanc	e - Vel	hicles								
Mov ID	Turn	Demand F Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued		Aver. No. Cycles	Average Speed km/h
South	: Culwor	th Avenue S	outh									
1	L2	33	0.0	0.061	4.6	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
2	T1	82	0.0	0.061	0.0	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
3u	U	1	0.0	0.061	6.3	LOS A	0.0	0.1	0.01	0.16	0.01	46.9
Appro	ach	116	0.0	0.061	1.4	NA	0.0	0.1	0.01	0.16	0.01	47.9
North:	: Culwor	th Avenue N	orth									
8	T1	81	0.0	0.075	0.2	LOS A	0.3	2.0	0.16	0.21	0.16	46.5
9	R2	34	0.0	0.075	4.9	LOS A	0.3	2.0	0.16	0.21	0.16	45.5
9u	U	12	0.0	0.075	6.3	LOS A	0.3	2.0	0.16	0.21	0.16	43.0
Appro	ach	126	0.0	0.075	2.0	NA	0.3	2.0	0.16	0.21	0.16	45.9
West:	Marian	Street										
10	L2	19	0.0	0.036	4.8	LOS A	0.1	0.9	0.20	0.53	0.20	43.3
12	R2	25	0.0	0.036	5.3	LOS A	0.1	0.9	0.20	0.53	0.20	43.8
Appro	ach	44	0.0	0.036	5.1	LOS A	0.1	0.9	0.20	0.53	0.20	43.6
All Ve	hicles	286	0.0	0.075	2.2	NA	0.3	2.0	0.11	0.24	0.11	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Culworth Avenue intersection.sip8

Site: 101 [Development PM - Option 3 - Outbound]

Existing AM
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand F Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South	: Culwor	th Avenue S	outh									
1	L2	33	0.0	0.061	4.6	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
2	T1	82	0.0	0.061	0.0	LOS A	0.0	0.1	0.01	0.16	0.01	47.9
3u	U	1	0.0	0.061	6.2	LOS A	0.0	0.1	0.01	0.16	0.01	46.9
Appro	ach	116	0.0	0.061	1.4	NA	0.0	0.1	0.01	0.16	0.01	47.9
North:	Culwor	th Avenue N	orth									
8	T1	65	0.0	0.066	0.2	LOS A	0.3	1.9	0.17	0.23	0.17	46.1
9	R2	34	0.0	0.066	4.9	LOS A	0.3	1.9	0.17	0.23	0.17	45.2
9u	U	12	0.0	0.066	6.3	LOS A	0.3	1.9	0.17	0.23	0.17	42.5
Appro	ach	111	0.0	0.066	2.3	NA	0.3	1.9	0.17	0.23	0.17	45.5
West:	Marian	Street										
10	L2	48	0.0	0.055	4.8	LOS A	0.2	1.4	0.19	0.52	0.19	43.3
12	R2	25	0.0	0.055	5.3	LOS A	0.2	1.4	0.19	0.52	0.19	43.8
Appro	ach	74	0.0	0.055	5.0	LOS A	0.2	1.4	0.19	0.52	0.19	43.5
All Ve	hicles	300	0.0	0.066	2.6	NA	0.3	1.9	0.11	0.28	0.11	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Culworth Avenue intersection.sip8



Attachment 6 Design Review



Please note the following compliance requirements:

Height Clearance: 2.2m (min) throughout all areas of the

car park accessible to vehicles and

bicycles.

2.5m above accessible and shared bays **X** wherever access is required for a refuse vehicle (and safety clearance

envelope)

Sight Splays:

Visibility splays in the form of a 2.5m x 2m right-angled triangle to be provided (AS2890.1). Ensure design avoids visual obstructions in sight splay

(i.e. dense landscaping, tall fencing/walls etc.)

Parking Spaces: The parking envelopes shown, must be kept clear of all physical obstructions, including height clearance reductions. Ensure that grades within the parking module do not exceed 1:20 (1:40 for

accessible bays).

Accessible Spaces: To be designed in accordance with

AS2890.6. i.e, standard parking space with adjacent shared bay (2.4m x 5.4m), to be installed as per AS2890.6 requirements (bollard and markings).

Motorcycle Parking:

Motorcycle bays to be designed as a 2.5m x 1.2m envelope (AS2890.1).

Bicycle Parking: Bicycle spaces are to allow for a envelope of 500mm by 1800mm, with an aisle width of 2000mm for locker storage, or 1500mm for racks.

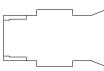
Control Measures: Please note recommended control

measures, including line markings, signage, bollards, convex mirrors, lights

etc.



Parking space envelope Class 1A (for employees) 2.4m x 5.4m



Accessible parking Space envelope 2.4m x 5.4m



Bicycle parking Space envelope 0.5m x 1.8m

T43 OT40 T35 OT28
T850 OT85
T19
OT62 T456 T456 OT22 OT95
5800
8595 0-172 03

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED	
4	24/01/20	For Development Application	KB	SW						
3	05/12/19	For Information	KB	SW						
2	14/10/19	For Information	KB	SW						
1	17/09/19	FOR INFORMATION	KB	SW						L
	4 3	4 24/01/20 3 05/12/19 2 14/10/19	4 24/01/20 For Development Application 3 05/12/19 For Information 2 14/10/19 For Information	4 24/01/20 For Development Application KB 3 05/12/19 For Information KB 2 14/10/19 For Information KB	4 24/01/20 For Development Application KB SW 3 05/12/19 For Information KB SW 2 14/10/19 For Information KB SW	4 24/01/20 For Development Application KB SW 3 05/12/19 For Information KB SW 2 14/10/19 For Information KB SW	4 24/01/20 For Development Application KB SW 3 05/12/19 For Information KB SW 2 14/10/19 For Information KB SW	4 24/01/20 For Development Application KB SW 3 SW 2 14/10/19 For Information KB SW 5 SW 2 14/10/19 For Information KB SW 5 SW	4 24/01/20 For Development Application KB SW	4 24/01/20 For Development Application KB SW



Marian Street Theatre

DRAWING TITLE: Car Park Design Review

Overview

CLIENT:	TZG
DRG. #:	TP-201
PROJECT #:	SW-2659
SCALE:	1 · 500

REV: 4



Α3

TYPICAL

Please note the following compliance requirements:

Height Clearance: 2.2m (min) throughout all areas of the car park accessible to vehicles and

bicycles.

2.5m above accessible and shared bays **X** wherever access is required for a refuse vehicle (and safety clearance

envelope)

Sight Splays:

Visibility splays in the form of a **2.5m x 2m** right-angled triangle to be provided (AS2890.1). Ensure design avoids visual obstructions in sight splay (i.e. dense landscaping, tall

fencing/walls etc.)

Parking Spaces:

The parking envelopes shown, must be kept clear of all physical obstructions, including height clearance reductions. Ensure that grades within the parking module do not exceed 1:20 (1:40 for

accessible bays).

Accessible Spaces: To be designed in accordance with

AS2890.6. i.e, standard parking space with adjacent shared bay (2.4m x 5.4m), to be installed as per AS2890.6 requirements (bollard and markings).

Motorcycle Parking:

Motorcycle bays to be designed as a 2.5m x 1.2m envelope (AS2890.1).

Bicycle Parking: Bicycle spaces are to allow for a

envelope of 500mm by 1800mm, with an aisle width of 2000mm for locker storage, or 1500mm for racks.

Control Measures: Please note recommended control

measures, including line markings, signage, bollards, convex mirrors, lights

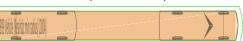
Parking space envelope Class 1A (for employees) 2.4m x 5.4m

Accessible parking Space envelope 2.4m x 5.4m

TURNING PATH ASSESSMENT DEMONSTRATING A 85th PERCENTILE VEHICLE (FORD FALCON)



TURNING PATH ASSESSMENT DEMONSTRATING A 99th PERCENTILE VEHICLE (FORD FAIRLANE)



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability

Access Road

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3 05/12/19 For Information KB SW 17/09/19 FOR INFORMATION



Parking Space Access

Marian Street Theatre

DRAWING TITLE: Car Park Design Review

Light Vehicles

oT27

CLIENT:	TZG
DRG. #:	TP-202
PROJECT #:	SW-2659
SCALE:	1 : 500

REV: 4



Α3

TYPICAL

Please note the following compliance requirements:

Height Clearance: 2.2m (min) throughout all areas of the

car park accessible to vehicles and

bicycles.

2.5m above accessible and shared bays **X** wherever access is required for a refuse vehicle (and safety clearance

envelope)

Sight Splays:

Visibility splays in the form of a **2.5m x 2m** right-angled triangle to be provided (AS2890.1). Ensure design avoids visual obstructions in sight splay

(i.e. dense landscaping, tall fencing/walls etc.)

Parking Spaces:

The parking envelopes shown, must be kept clear of all physical obstructions, including height clearance reductions. Ensure that grades within the parking module do not exceed 1:20 (1:40 for

accessible bays).

Accessible Spaces: To be designed in accordance with

AS2890.6. i.e, standard parking space with adjacent shared bay (2.4m x 5.4m), to be installed as per AS2890.6 requirements (bollard and markings).

Motorcycle Parking:

Motorcycle bays to be designed as a 2.5m x 1.2m envelope (AS2890.1).

Bicycle Parking: Bicycle spaces are to allow for a

envelope of 500mm by 1800mm, with an aisle width of 2000mm for locker storage, or 1500mm for racks.

Control Measures: Please note recommended control

measures, including line markings, signage, bollards, convex mirrors, lights

Parking space envelope Class 1A (for employees) 2.4m x 5.4m

Accessible parking Space envelope 2.4m x 5.4m

TURNING PATH ASSESSMENT DEMONSTRATING A MEDIUM RIGID VEHICLE (MRV)



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



Entry

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3 05/12/19 For Information SW 17/09/19 FOR INFORMATION



Exit

Marian Street Theatre

4

Car Park Design Review

DRAWING TITLE:

MRV Loading Vehicle Access

CLIENT:	TZG

SCALE:

DRG. #: TP-203 PROJECT #: SW-2659

1:500

REV: 4

