PROPOSED CHILDCARE CENTRE @ 53 GORGE ROAD, TREVALLYN, TAS 7250

DRAWING SCHEDULE

NUMBER	NAME	REVISION	DESCRIPTION	DATE
TPL00	COVER SHEET	5	REVISED CAR PARKING	12/02/2023
TPL01	SITE CONTEXT PLAN	4	TOWN PLANNING ISSUE	07/02/2023
TPL02	DESIGN RESPONSE	5	REVISED CAR PARKING	12/02/2023
TPL03	EXISTING GROUND FLOOR PLAN	4	TOWN PLANNING ISSUE	07/02/2023
TPL04	PROPOSED GROUND FLOOR PLAN	6	REVISED CAR PARKING	12/02/2023
TPL05	PROPOSED FIRST FLOOR PLAN	5	REVISED CAR PARKING	12/02/2023
TPL06	PROPOSED ROOF PLAN	5	REVISED CAR PARKING	12/02/2023
TPL07	PROPOSED ELEVATIONS	5	REVISED CAR PARKING	12/02/2023
TPL08	PROPOSED SECTIONS	5	REVISED CAR PARKING	12/02/2023
TPL09	PROPOSED SHADOWS SHEET 1	6	REVISED CAR PARKING	12/02/2023
TPL10	PROPOSED SHADOWS SHEET 2	6	REVISED CAR PARKING	12/02/2023

3D PERSPECTIVE - GORGE RD VIEW

3D PERSPECTIVE - AERIAL VIEW

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1	18/01/2023	TOWN PLANNING PRELIMINARY ISSUE	MC
2	19/01/2023	TOWN PLANNING ISSUE	MC
3	03/02/2023	TOWN PLANNING ISSUE	MC
4	07/02/2023	TOWN PLANNING ISSUE	KT
5	12/02/2023	REVISED CAR PARKING	MC

NORTH POINT

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JAMES ARIAS

PROJECT
PROPOSED CHILDCARE CENTRE

PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
COVER SHEET

TOWNPLANNING

SCALE

REV No. 5

DRAWN BY MC

DATE 12/02/2023

DWG No. TPL00

JOB No. 22032

ORIGINAL SHEET SIZE A1

Document Set ID: 4914797
Version: 1, Version Date: 30/06/2023

1 SITE CONTEXT PLAN
1 : 500

REV.	DATE	DESCRIPTION	BY
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3	03/02/2023	TOWN PLANNING ISSUE	MC
4	07/02/2023	TOWN PLANNING ISSUE	KT

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53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
SITE CONTEXT PLAN

TOWNPLANNING

SCALE	1 : 500	REV No.	4
DRAWN BY	MC		
DATE	07/02/2023	DWG No.	TPL01
JOB No.	22032		

ORIGINAL SHEET SIZE A1

V:\01 - PROJECTS\22\22032 Proposed Child Care Centre @ 53 Gorge Road Trevallyn Launceston Tas\DOCUMENTATION\03 BM\22032 PROPOSED CHILDCARE CENTRE - 53 GORGE RD TREVALLYN TAS.rvt

1
SK001

DESIGN RESPONSE PLAN

1 : 500

REV.	DATE	DESCRIPTION	BY
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3	03/02/2023	TOWN PLANNING ISSUE	MC
4	07/02/2023	TOWN PLANNING ISSUE	KT
5	12/02/2023	REVISED CAR PARKING	MC

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PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
DESIGN RESPONSE

TOWNPLANNING

SCALE 1 : 500
REV No. 5
DRAWN BY MC
DATE 12/02/2023
DWG No. TPL02
JOB No. 22032

ORIGINAL SHEET SIZE A1 Y:\01_PROJECTS\22\22032 Proposed Child Care Centre @ 53 Gorge Road Trevallyn Launceston Tas\DOCUMENTATION\03 BIM\22032 PROPOSED CHILDCARE CENTRE - 53 GORGE RD TREVALLYN TAS.rvt

Document Set ID: 4914797
Version: 1, Version Date: 30/06/2023

1 EXISTING GROUND FLOOR
1 : 100

2 SITE SECTION
1 : 100

REV.	DATE	DESCRIPTION	BY
1	18/01/2023	TOWN PLANNING PRELIMINARY ISSUE	MC
2	19/01/2023	TOWN PLANNING ISSUE	MC
3	03/02/2023	TOWN PLANNING ISSUE	MC
4	07/02/2023	TOWN PLANNING ISSUE	KT

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PROJECT ADDRESS
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DRAWING TITLE
EXISTING GROUND FLOOR PLAN

TOWNPLANNING

SCALE	1 : 100	REV No.	4
DRAWN BY	MC		
DATE	07/02/2023	DWG No.	TPL03
JOB No.	22032		

ORIGINAL SHEET SIZE A1 Y:\01_PROJECTS\22\22032 Proposed Child Care Centre @ 53 Gorge Road

AREA SCHEDULE

SITE AREA	- 1,343.26m^2
SITE COVERAGE	- 49%
EXISTING DWELLING	- 211.80m^2
PROPOSED GROUND FLOOR	- 403.47m^2
GF OUTDOOR PLAY AREA	- 214.17m^2
PROPOSED FIRST FLOOR	- 257.07m^2
FF OUTDOOR PLAY AREA	- 295.00m^2
TOTAL BUILDING AREA	**- 660.54m^2**
PERMEABLE AREA	- 532.41m^2
CHILDRENS ROOM 1 AREA	- 39.40m^2
MAX CHILDREN NUMBER	- 12
CHILDRENS ROOM 2 AREA	- 61.00m^2
MAX CHILDREN NUMBER	- 18
CHILDRENS ROOM 3 AREA	- 65.00m^2
MAX CHILDREN NUMBER	- 20
CHILDRENS ROOM 4 AREA	- 72.00m^2
MAX CHILDREN NUMBER	- 22

PROPOSED GROUND FLOOR PLAN

1 : 100

REV.	DATE	DESCRIPTION	BY
1	18/01/2023	TOWN PLANNING PRELIMINARY ISSUE	MC
2	19/01/2023	TOWN PLANNING ISSUE	MC
3	03/02/2023	TOWN PLANNING ISSUE	MC
4	07/02/2023	TOWN PLANNING ISSUE	KT
5	06/04/2023	ADDED DRAINAGE DETAILS	MC
6	12/02/2023	REVISED CAR PARKING	MC

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53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
PROPOSED GROUND FLOOR PLAN

TOWNPLANNING

SCALE	1 : 100	REV No.	6
DRAWN BY	MC		
DATE	12/02/2023	DWG No.	TPL04
JOB No.	22032		

Document Set ID: 4914797
Version: 1, Version Date: 30/06/2023

AREA SCHEDULE

SITE AREA	-	1,343.26m²
SITE COVERAGE	-	49%
EXISTING DWELLING	-	211.80m²
PROPOSED GROUND FLOOR	-	403.47m²
GF OUTDOOR PLAY AREA	-	214.17m²
PROPOSED FIRST FLOOR	-	257.07m²
FF OUTDOOR PLAY AREA	-	295.00m²
TOTAL BUILDING AREA	-	**660.54m²**
PERMEABLE AREA	-	532.41m²
CHILDRENS ROOM 1 AREA	-	39.40m²
MAX CHILDREN NUMBER	-	12
CHILDRENS ROOM 2 AREA	-	61.00m²
MAX CHILDREN NUMBER	-	18
CHILDRENS ROOM 3 AREA	-	65.00m²
MAX CHILDREN NUMBER	-	20
CHILDRENS ROOM 4 AREA	-	72.00m²
MAX CHILDREN NUMBER	-	22

PROPOSED FIRST FLOOR PLAN

1 SK004 — 1 : 100

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4	07/02/2023	TOWN PLANNING ISSUE	KT
5	12/02/2023	REVISED CAR PARKING	MC

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PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
PROPOSED FIRST FLOOR PLAN

TOWNPLANNING

SCALE 1 : 100
REV No. 5
DRAWN BY MC
DATE 12/02/2023
DWG No. TPL05
JOB No. 22032

AREA SCHEDULE

SITE AREA	- 1,343.26m²
SITE COVERAGE	- 49%
EXISTING DWELLING	- 211.80m²
PROPOSED GROUND FLOOR	- 403.47m²
GF OUTDOOR PLAY AREA	- 214.17m²
PROPOSED FIRST FLOOR	- 257.07m²
FF OUTDOOR PLAY AREA	- 295.00m²
TOTAL BUILDING AREA	**- 660.54m²**
PERMEABLE AREA	- 532.41m²
CHILDRENS ROOM 1 AREA	- 39.40m²
MAX CHILDREN NUMBER	- 12
CHILDRENS ROOM 2 AREA	- 61.00m²
MAX CHILDREN NUMBER	- 18
CHILDRENS ROOM 3 AREA	- 65.00m²
MAX CHILDREN NUMBER	- 20
CHILDRENS ROOM 4 AREA	- 72.00m²
MAX CHILDREN NUMBER	- 22

PROPOSED ROOF PLAN

1 SK001 — 1 : 100

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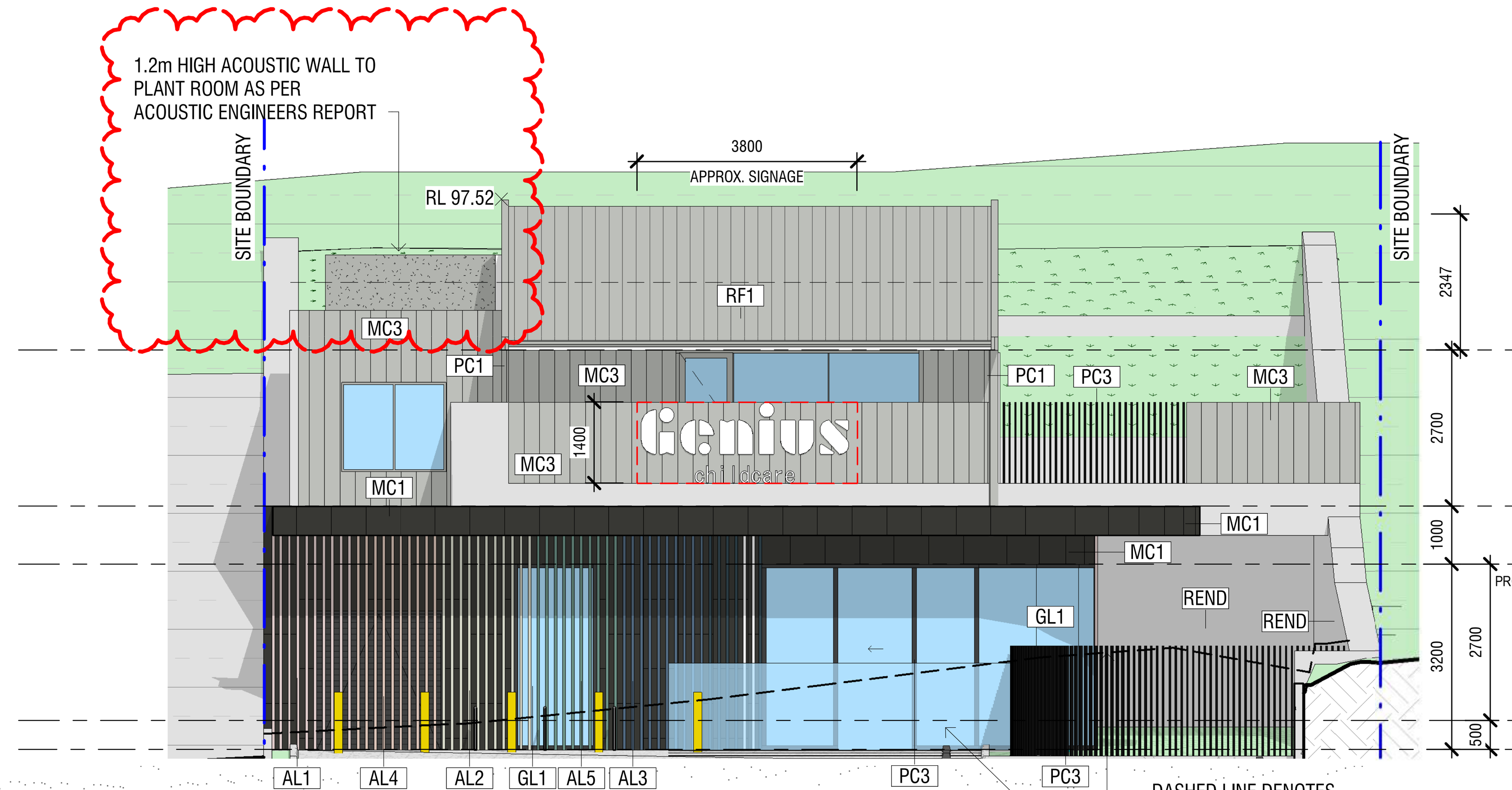
PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

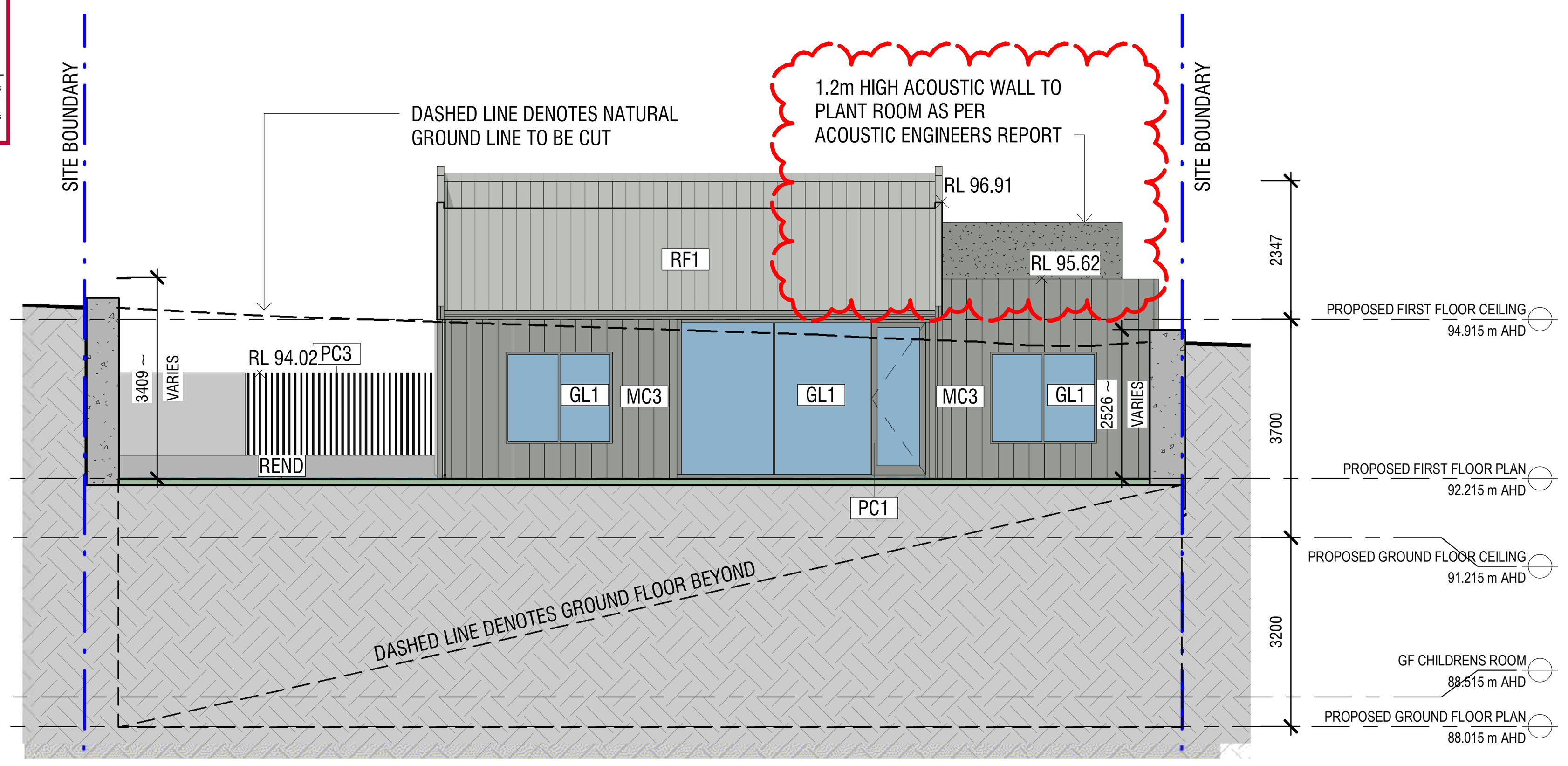
DRAWING TITLE
PROPOSED ROOF PLAN

TOWNPLANNING

SCALE 1 : 100
REV No. 5
DRAWN BY MC
DATE 12/02/2023
DWG No. TPL06
JOB No. 22032



1 PROPOSED WEST ELEVATION
1 : 100



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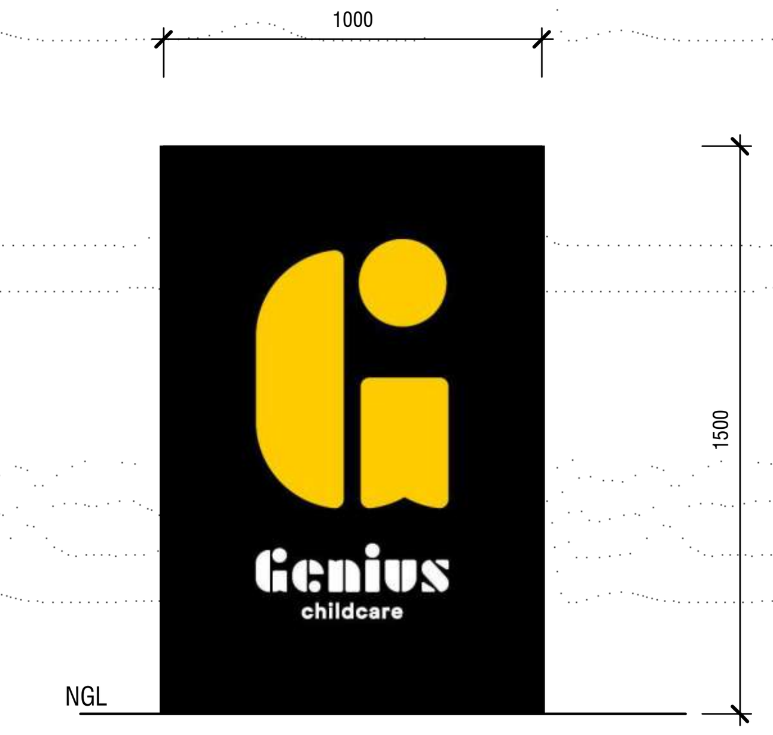
1 : 100



5 ENTRY SIGNAGE DETAIL
1 : 20

6 COLOUR PALLETTE
1 : 10

EXTERNAL MATERIAL & FINISHES

RF1	METAL ROOF SHEETING MAKE: KLIPLOK OR APPROVED EQUAL COLOUR: COLORBOND 'SHALE GREY' **(SRI 66)**
MC1	METALLIC CLADDING NON COMBUSTIBLE ALUMINIUM CLADDING COLOUR: MONUMENT GREY
MC2	METALLIC CLADDING COLORBOND METAL SHEET CLADDING (LARGE PROFILE) COLOUR: TO MATCH COLORBOND 'SHALE GREY'
MC3	METALLIC CLADDING COLORBOND METAL SHEET CLADDING (SMALL PROFILE) COLOUR: TO MATCH COLORBOND 'SHALE GREY'
AL1	ALUMINIUM BATTENS VARIOUS COLORED RAINBOW ALUMINIUM BATTENS COLOUR: DULUX POWDERCOAT - ALPHATEC - VARIES
REND	RENDERED FINISH
GL1	GLAZING - CLEAR DOUBLE GLAZED
PC1	POWDERCOATING COLOUR: DULUX POWDERCOAT - SHALE GREY
PC2	POWDERCOATING COLOUR: DULUX POWDERCOAT - WHITE
PC3	POWDERCOATING COLOUR: DULUX POWDERCOAT - MONUMENT

3 PROPOSED NORTH ELEVATION
1 : 100

4 PROPOSED SOUTH ELEVATION
1 : 100

REV.	DATE	DESCRIPTION	BY
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4	07/02/2023	TOWN PLANNING ISSUE	KT
5	12/02/2023	REVISED CAR PARKING	MC

NORTH POINT

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PROPOSED CHILDCARE CENTRE

PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

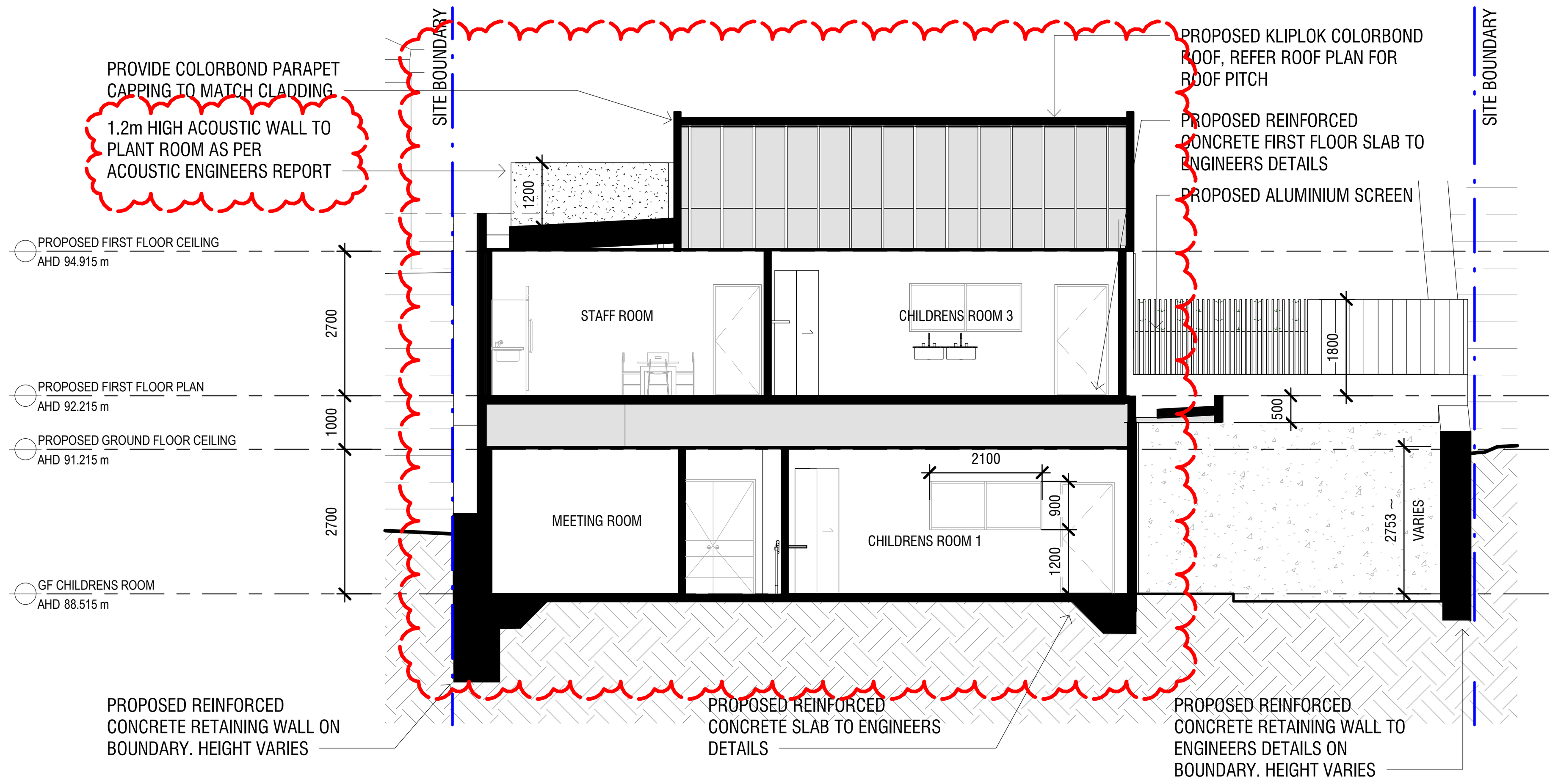
DRAWING TITLE
PROPOSED ELEVATIONS

TOWNPLANNING

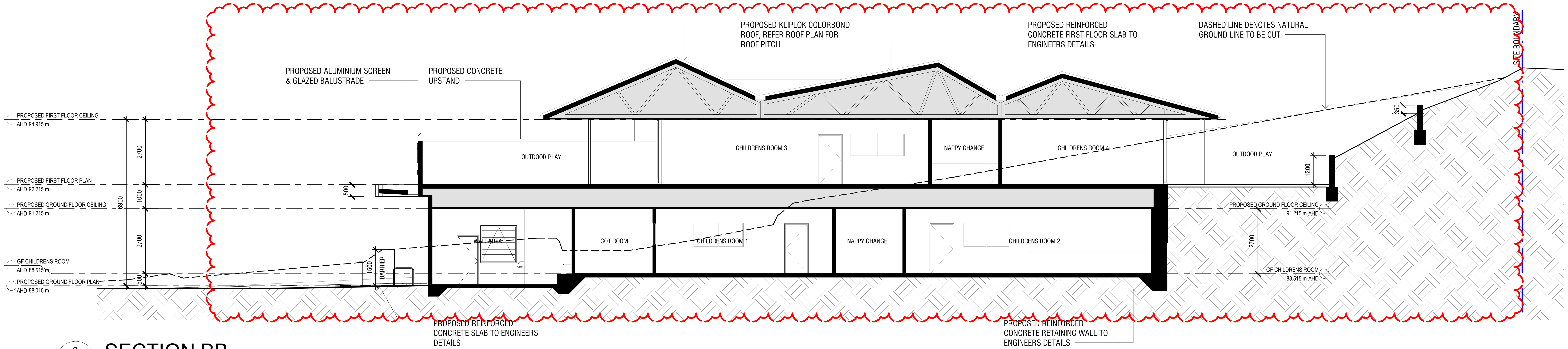
SCALE As indicated
REV No. 5
DRAWN BY MC
DATE 12/02/2023
DWG No. TPL07
JOB No. 22032

ORIGINAL SHEET SIZE A1

Document Set ID: 4914797
Version: 1, Version Date: 30/06/2023



1 SECTION AA
TPL04 1 : 100



2 SECTION BB
TPL04 1 : 100

REV.	DATE	DESCRIPTION	BY
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4	07/02/2023	TOWN PLANNING ISSUE	KT
5	12/02/2023	REVISED CAR PARKING	MC

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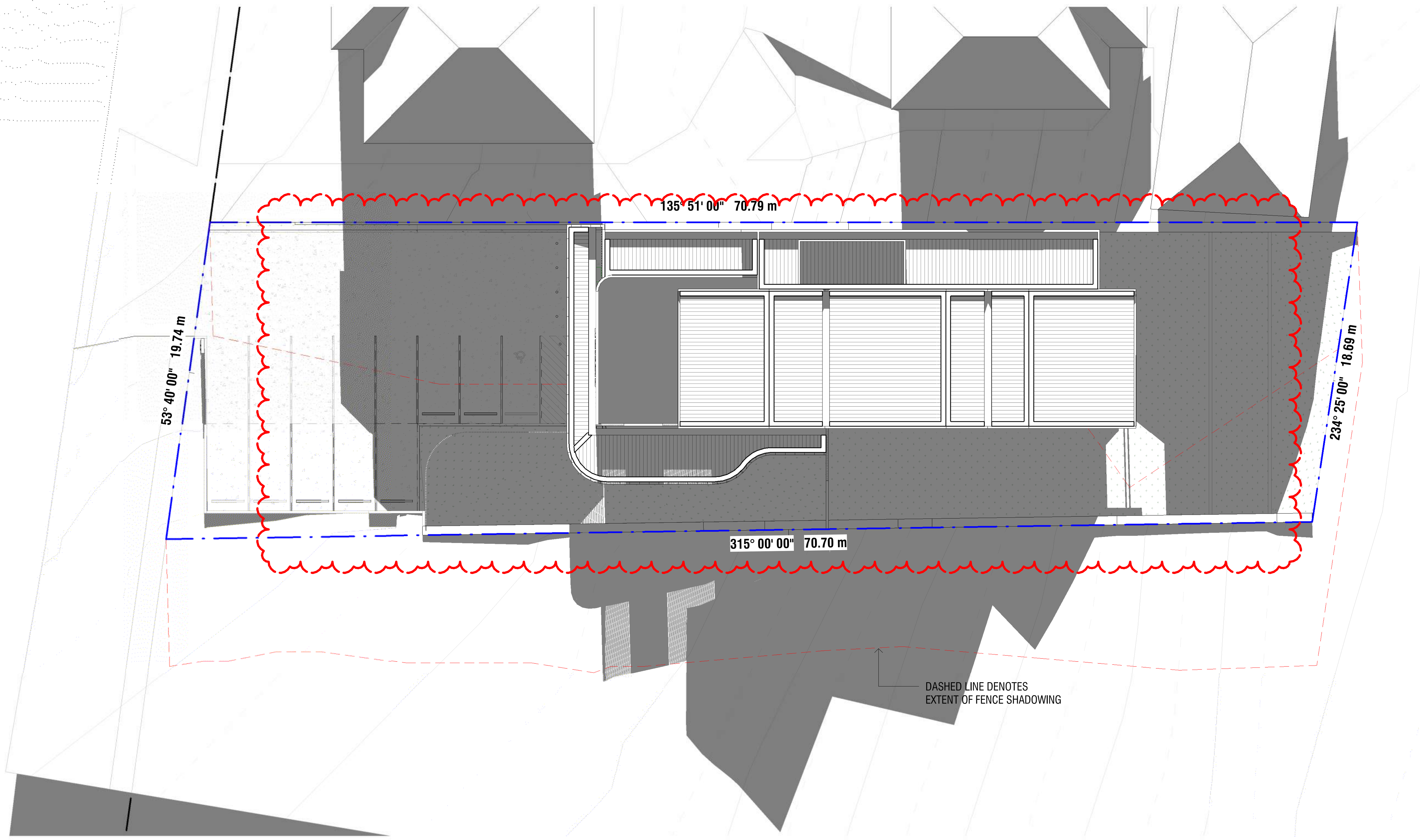
PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

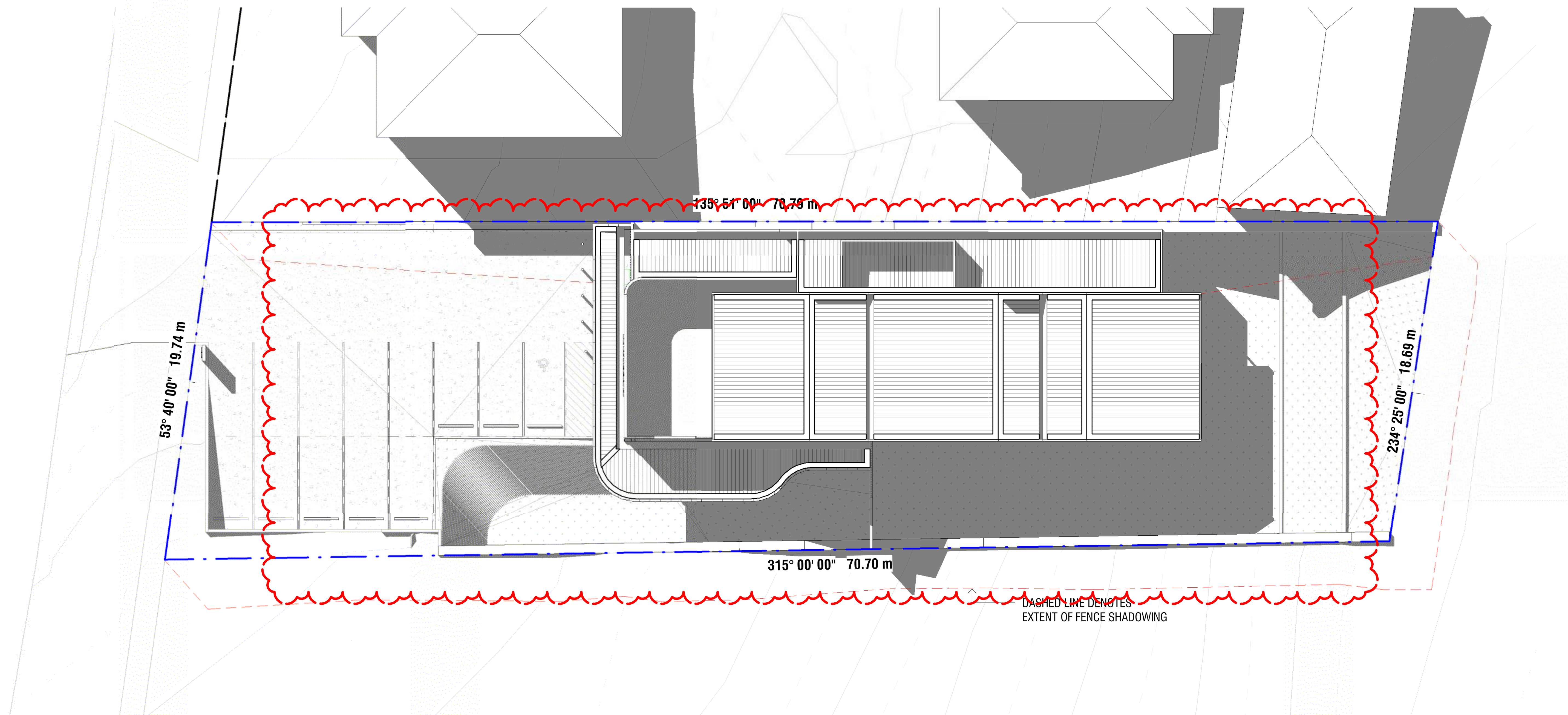
DRAWING TITLE
PROPOSED SECTIONS

TOWNPLANNING

SCALE 1 : 100
REV No. 5
DRAWN BY MC
DATE 12/02/2023
DWG No. TPL08
JOB No. 22032



1 PROPOSED 9AM SHADOWS
1 : 200 @ WINTER SOLSTICE - 21 JUN



2 PROPOSED 12PM SHADOWS
1 : 200 @ WINTER SOLSTICE - 21 JUN

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5	07/02/2023	TOWN PLANNING ISSUE	KT
6	12/02/2023	REVISED CAR PARKING	MC

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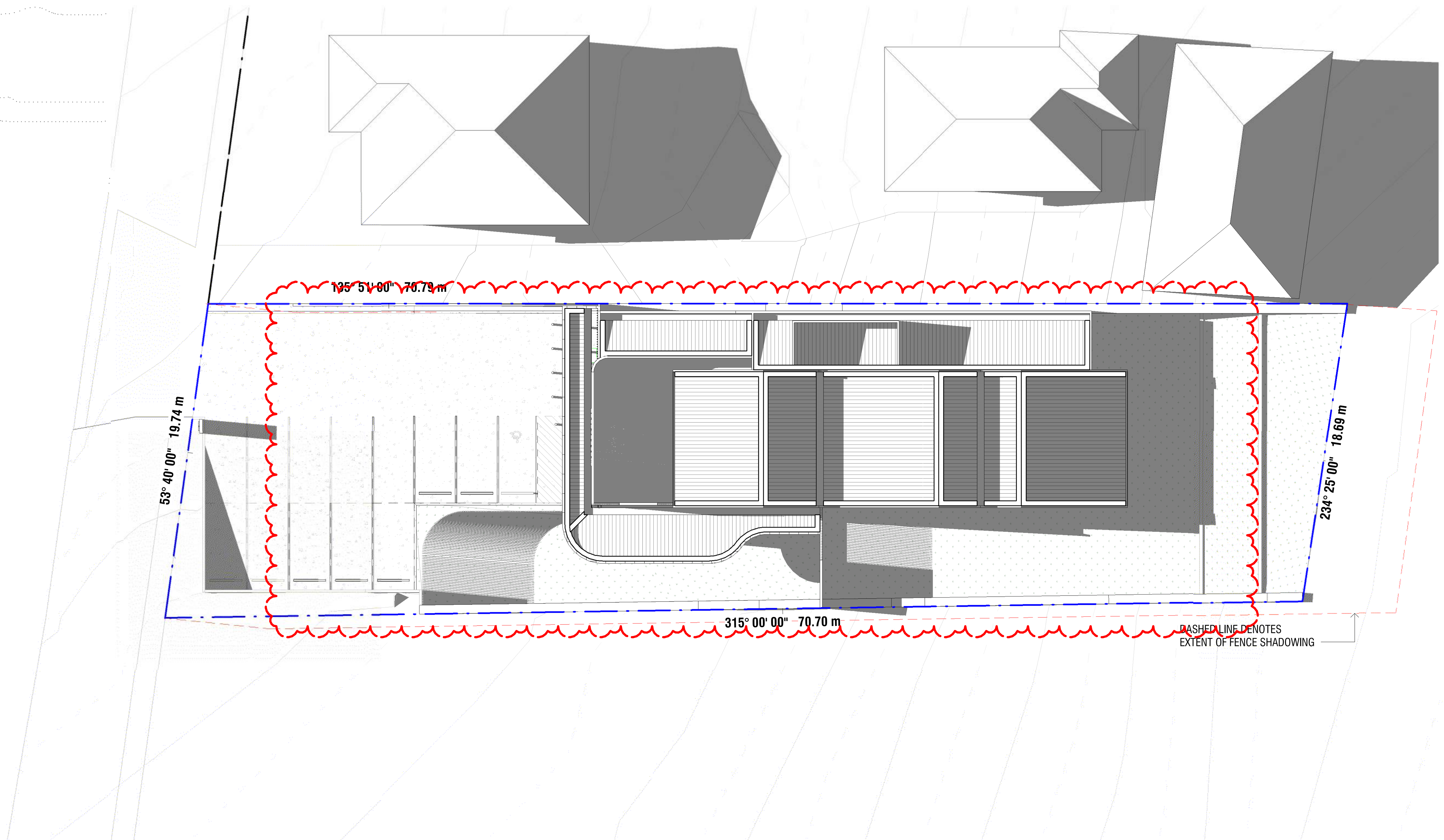
PROPOSED CHILDCARE CENTRE

PROJECT ADDRESS
53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
PROPOSED SHADOWS SHEET 1

TOWNPLANNING

SCALE 1 : 200
REV No. 6
DRAWN BY MC
DATE 12/02/2023
DWG No. TPL09
JOB No. 22032



1 PROPOSED 3PM SHADOWS

SK001 1 : 200 @ WINTER SOLSTICE - 21 JUN

REV.	DATE	DESCRIPTION	BY
1	18/01/2023	TOWN PLANNING PRELIMINARY ISSUE	MC
2	19/01/2023	TOWN PLANNING ISSUE	MC
3	24/01/2023	SHADOWS REVISED	MC
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5	07/02/2023	TOWN PLANNING ISSUE	KT
6	12/02/2023	REVISED CAR PARKING	MC

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53 GORGE ROAD, TREVALLYN, TAS

DRAWING TITLE
PROPOSED SHADOWS SHEET 2

TOWNPLANNING

SCALE 1 : 200
REV No. 6
DRAWN BY MC
DATE 12/02/2023
DWG No. **TPL10**
JOB No. 22032

ORIGINAL SHEET SIZE A1

Document Set ID: 4914797
Version: 1, Version Date: 30/06/2023

1 Cooper Crescent
Riverside TAS 7250
M: 0456 535 746
P: 03 6334 1868
E: Richard.burk@trafficandcivil.com.au

17th May 2023

Mr James Arias

Director

Churchill Architects

Dear James,

TRAFFIC IMPACT ASSESSSMENT 53 GORGE ROAD, TREVALLYN

This traffic impact statement assesses the proposal at 53 Gorge Road in terms of traffic engineering principles and the Tasmanian Planning Scheme - Launceston requirements including:

- site inspection and review of available sight distances and the speed environment
- consideration of references on property access requirements including Council guidelines and Australian Standard provisions
- consideration of safety issues regarding all road users including pedestrians and cyclists

1) Background

The developer proposes a creche at 53 Gorge Road adjacent the Trevallyn Primary School as shown in the plans in Appendix A and in Figure 1.

Figure 1 – Development site and adjacent road network

Source: LISTmap, DPIPWE

Figure 2 – Aerial view of development site

Source: LISTmap, DPIPWE

2) Site and Development Description

53 Gorge Road is located next to Trevallyn Primary School and currently consists of a residential home on a 1,500m2 block which slope downhill to Gorge Road at a grade of some 5 %, see Figure 2.

The proposed driveway to 53 Gorge Road is 50m East of the Gorge Road School Crossing for the Trevallyn Primary School.

The proposal is to convert the property to a child care centre with capacity for 72 children and 16 staff with the layout shown in Figures 3.1 & 3.2.

Figure 3.1 – Proposed property layout

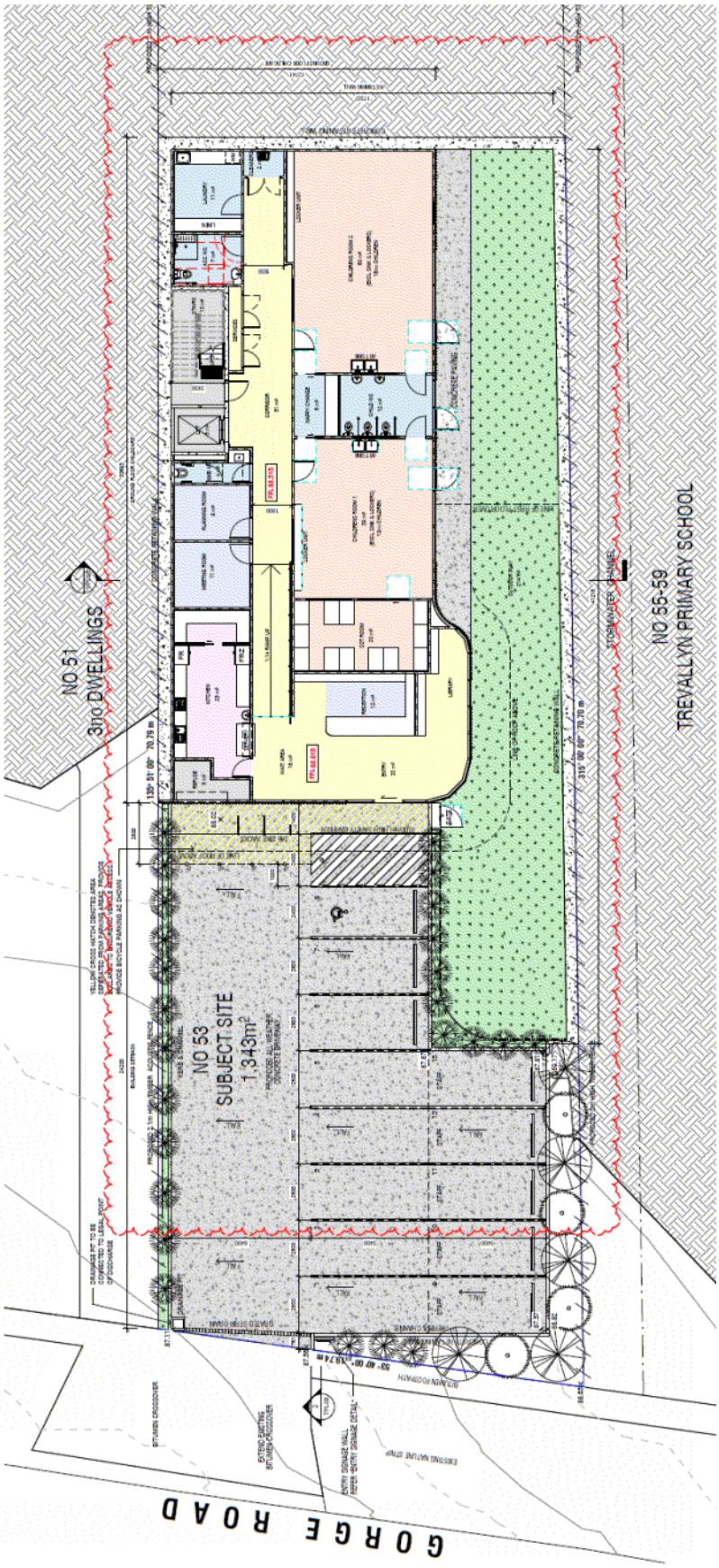


Figure 3.2 – Proposed Carpark Layout - Part 1

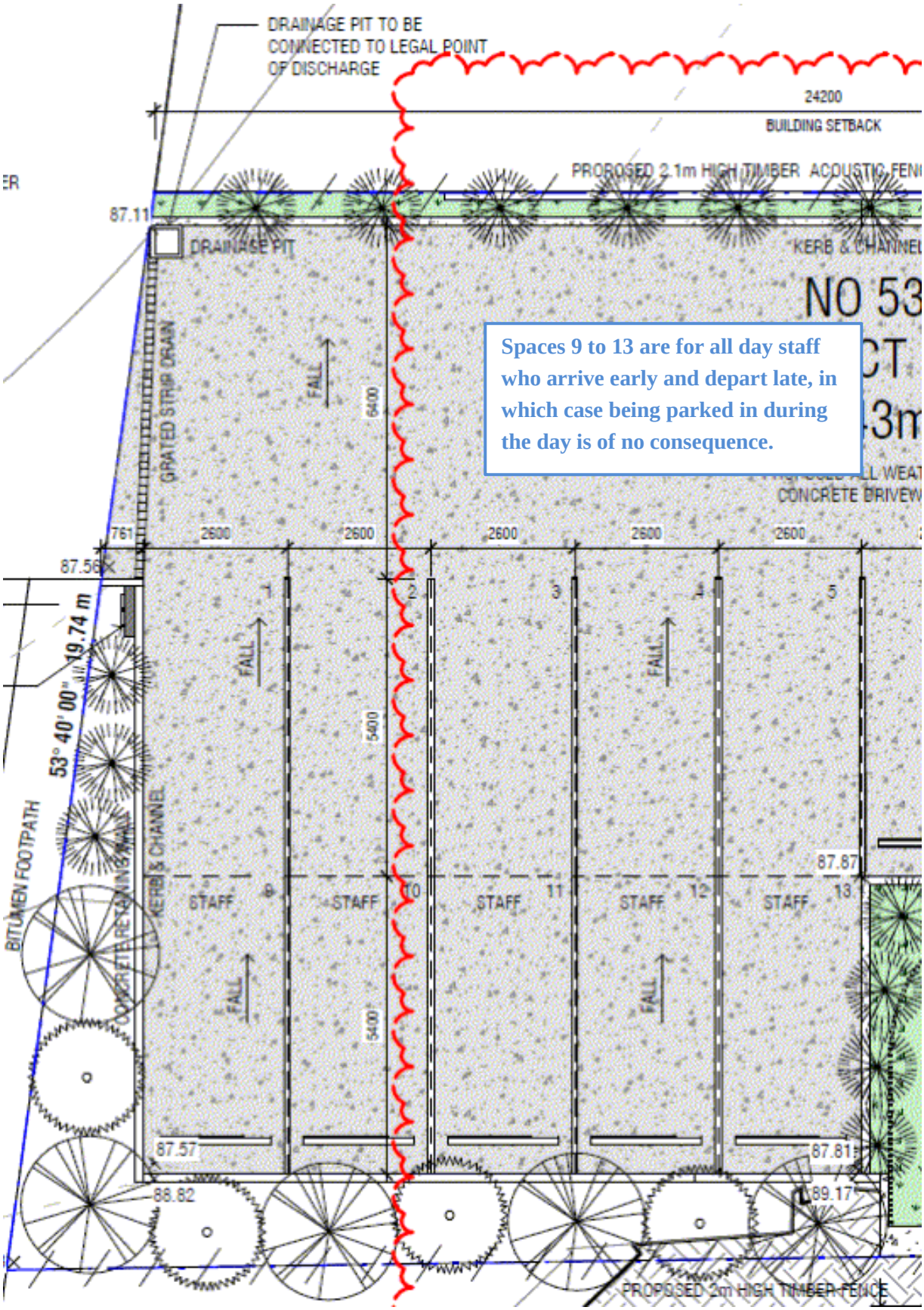
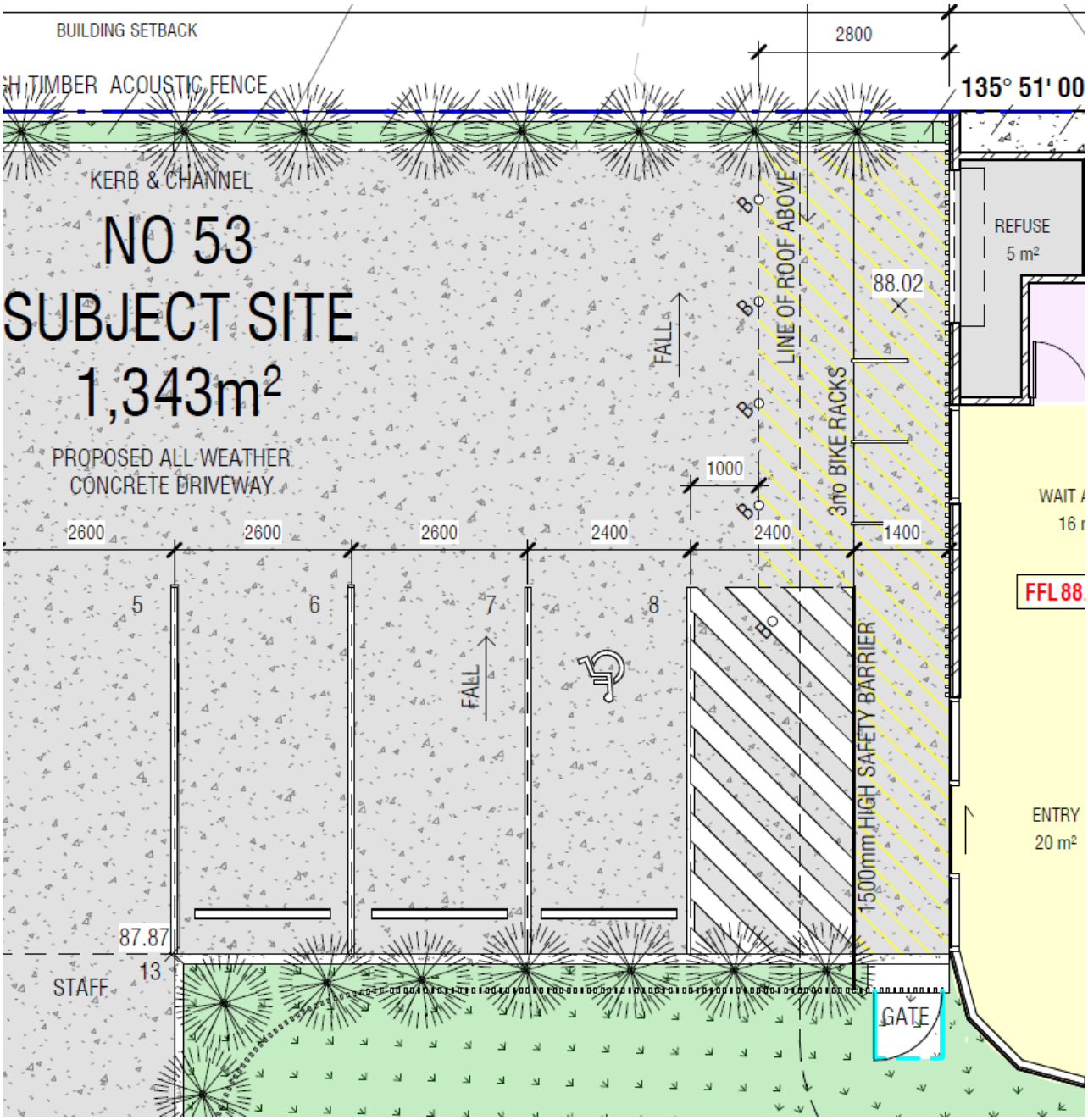


Figure 3.3 – Proposed Carpark Layout - Part 2



13* 90 Degree Parking Spaces:

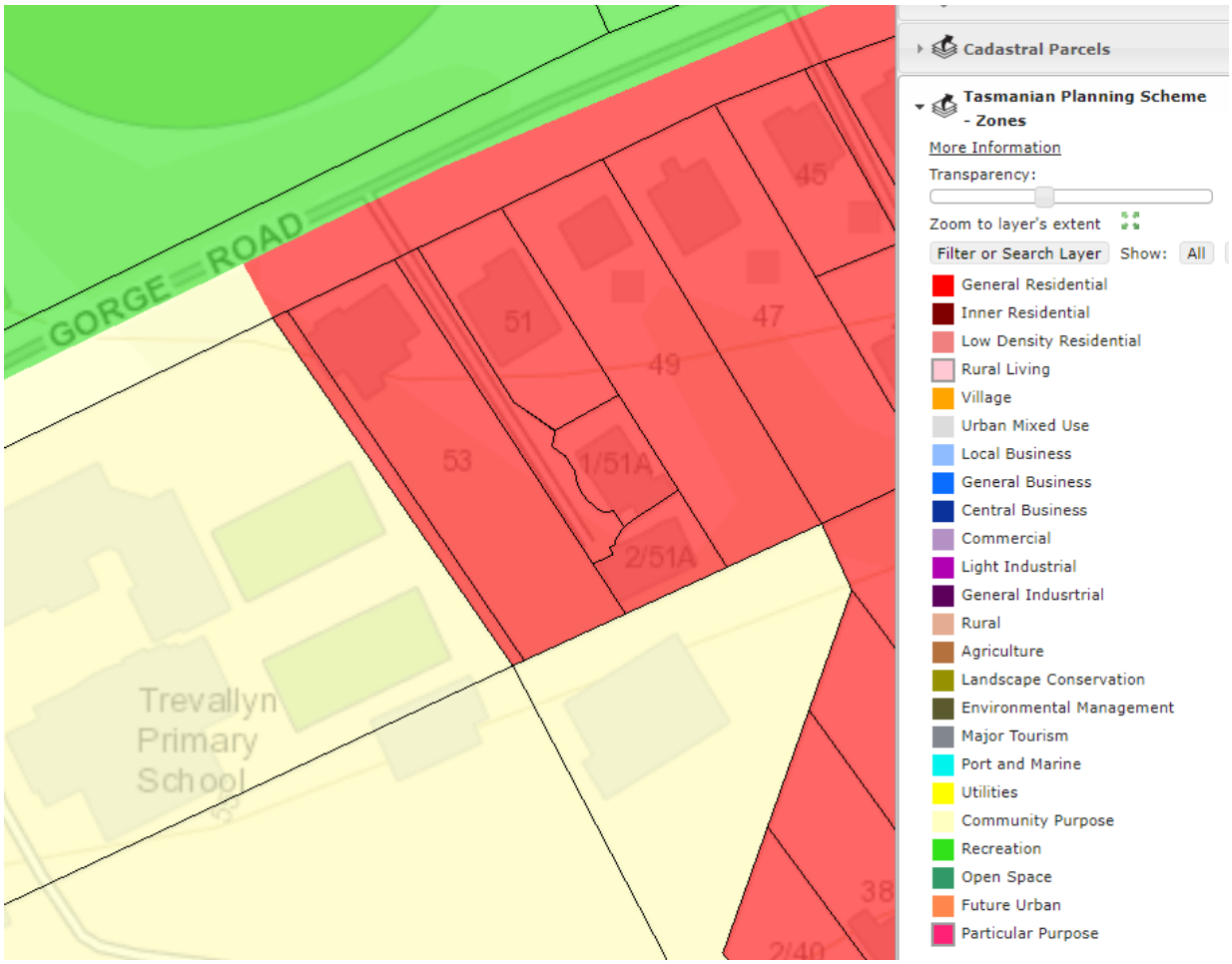
- **Dimensions 2.6m* 5.4m.**
- **6.4m Manoeuvre Space.**
- **Crossfall of 0.5m over 25m i.e 2%.**

3) Development Criteria

3.1 Planning Scheme

The applicable Land use zoning for the development site as per the Tasmanian Planning Scheme – Launceston 2022 is shown in Figure 4.

Figure 4 – 53 Gorge Road zoned General Residential



Source: LISTmap, DPIPWE

3.2 Local Road Authority Objectives

City of Launceston objectives are to maintain traffic safety and transport efficiency on the Council Road network for all road users, including pedestrians and cyclists.

4) Existing Conditions

4.1 Gorge Road

Gorge Road has a Collector Road function in the Council Road Hierarchy providing residential access to Trevallyn, Trevallyn Primary School and the Launceston Cataract Gorge. The road is not part of the Tas. 26m B Double Network, see Appendix C. Estimated AADT is 1,850vpd (2022), see Appendix D.

Gorge Road has an Electronic 40 School Zone at school times and otherwise the speed limit is 50km/h.

Footpath is provided both sides of the road and there is a School Crossing on Gorge Road at the Trevallyn Primary School and some 50m West of the driveway to 53 Gorge Road, see Figure 5. The School Crossing has a Patrol Officer managed by the Department of State Growth (DSG).

Gorge Road is typically 10.0m wide and supports on street parking both sides of the road. There is a Bus Zone on the Northern side of Gorge Road which extends from 30m to 80m East of the School Crossing.

Figure 5 – Aerial view of Gorge Road School Crossing, Trevallyn Primary School.

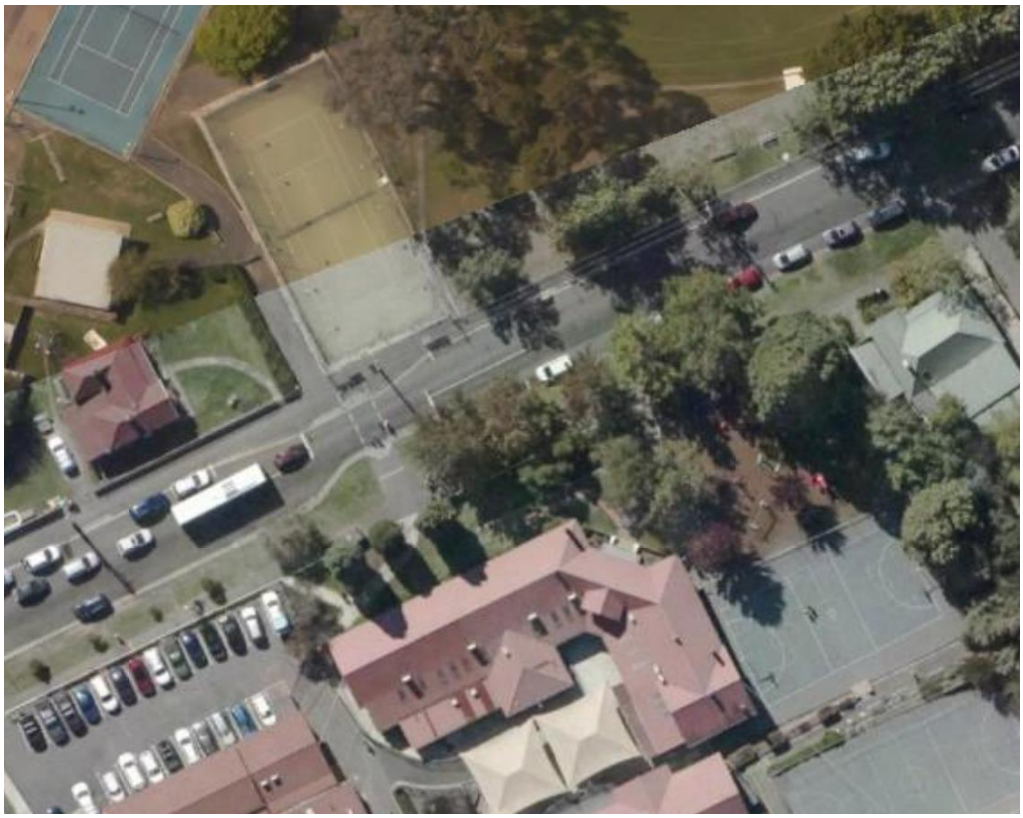


Figure 6 – Gorge Road Eastern appraoch to #53 and Trevallyn Primary School.

4.2 53 Gorge Road Driveway

The 53 Gorge Road access and approaches are shown in Figures 7-14.

Figure 7 – Aerial view of 53 Gorge Road access

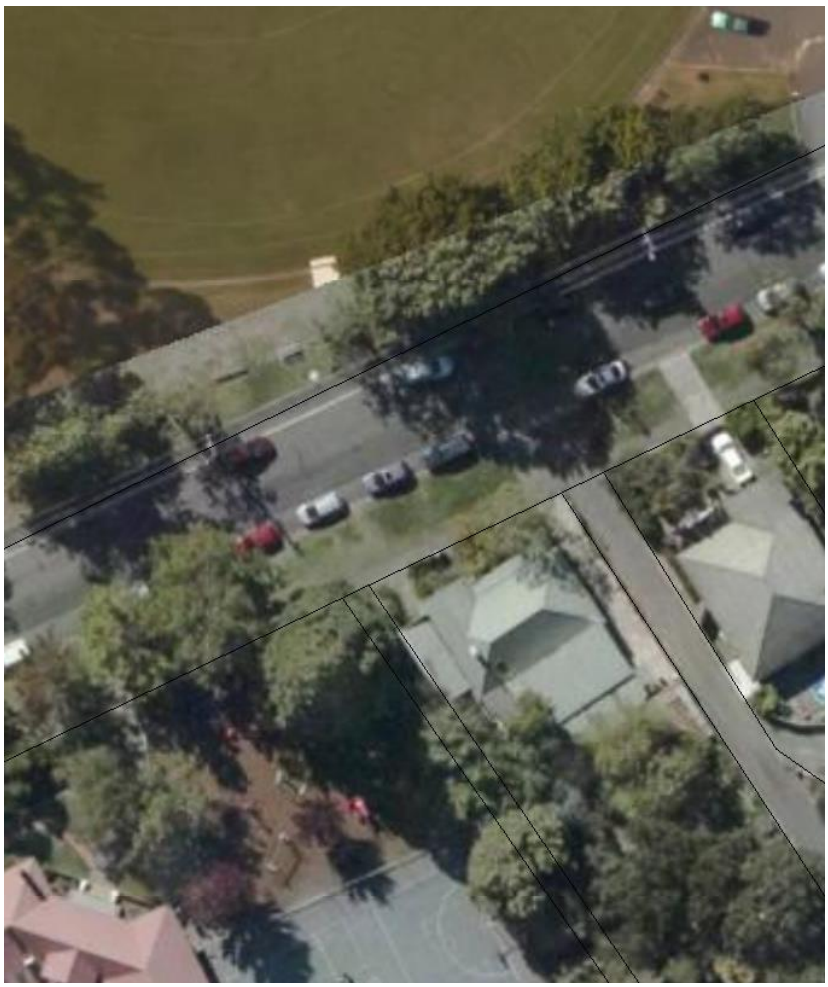


Figure 8 – Elevation view of 53 Gorge Road access

Figure 9 – 53 Gorge Road approach to Gorge Road

Figure 10 – Looking right along Gorge Road from 53 Gorge Road driveway

Sight distance right is 200m.

Figure 11 – Looking left along Gorge Road from 53 Gorge Road driveway

Sight distance left is > 65m.

Figure 12 – Gorge Road Western approach to #53 Gorge Road

Figure 13 – Gorge Road Western approach at #53 Gorge Road

Figure 14 – Gorge Road Eastern approach to #53 Gorge Road

4.3 Gorge Road School Zone for Trevallyn Primary

The Gorge Road School zone is shown in Figure 15.

Figure 15 – Gorge Road Western approach to School Zone

4.4 Gorge Road Bus Zone opposite driveway to #53

Gorge Road Bus zone Opposite #53 Gorge Road, see Figures 16-20.

Figure 16 – Aerial view of Gorge Road bus zone opposite #53 driveway

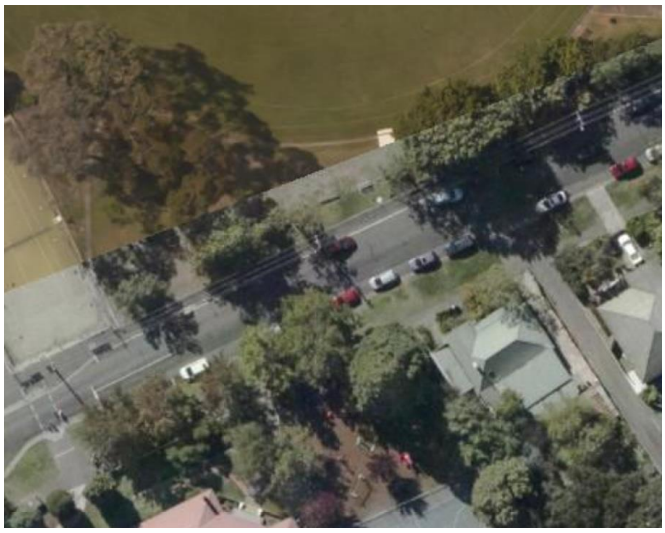


Figure 17 – Gorge Road Western approach to Bus Zone

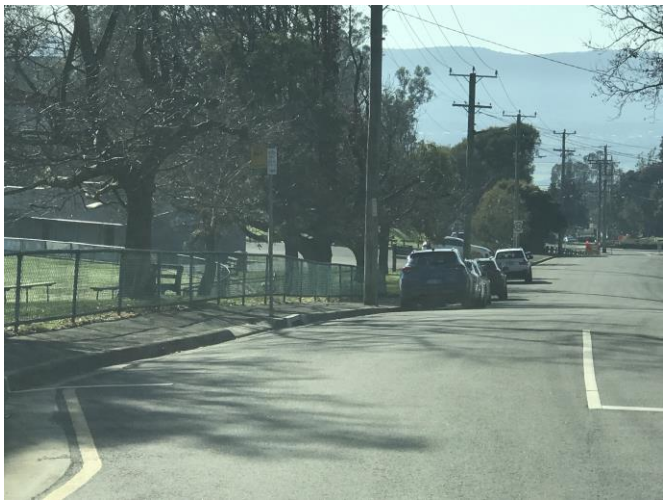


Figure 18 – Gorge Road Bus Stop times

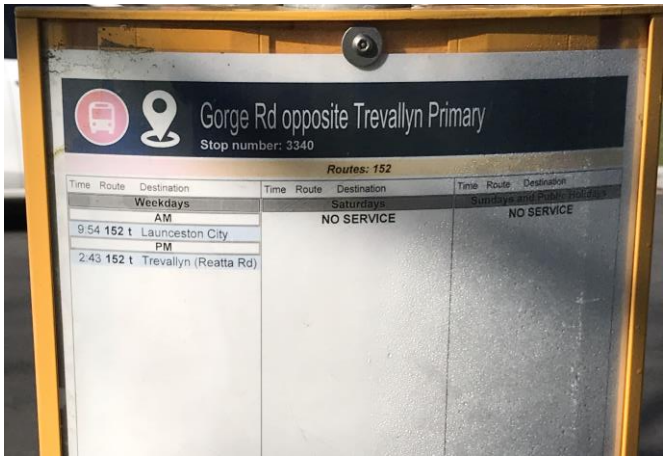


Figure 19 – Gorge Road Western approach to Bus Zone

Figure 20 – Gorge Road Bus Zone Western approach to Bus Zone

4.5 Gorge Road off street carpark, Trevallyn Park

Typical daily Trevallyn Park carpark utilisation is shown in Figure 21.

Figure 21 – Gorge Road Bus Zone Western approach to Bus Zone

4.6 Gorge Road on-street parking adjacent driveway to #53

Gorge Rd On Street parking by #53 driveway is shown in Figures 22-23.

Figure 22 – Typical Gorge Road On Street Parking, Southern side of road.

Figure 23 – Typical Gorge Road On Street Parking, Northern side of road.

4.7 Traffic Generation

From RTA Guide to Traffic Generating Developments, typical traffic generation rates are summarised in Figure 24.

Figure 24 – Child Care Centre traffic generation rates

Centre Type	Peak Vehicle Trips / Child			Attendance Range (no. of children)
	7-9 AM	2:30 - 4 PM	4-6 PM	
Pre-school	1.4	0.8	0	25-60
Long-day care	0.8	0.3	0.7	29-66
Before/after care	0.5	0.2	0.7	22-55

The proposal is for a 72-space child care centre providing long day care as summarised in Figure 25. Also see Appendix B for relevant Tasmanian Licensing Standards for Centre Based Child Care.

Figure 25 – Proposed Child and Staff numbers for 53 Gorge Road Child Care Centre

Child Age Group	0 -1 YO	1-2 YO	2-3 YO	3-4 YO	Total
Children	12	20	20	20	72
Carer to Child ratio	4	5	7	13	
Carers (TAFE Trained)	3	4	3	2	12
Carers (Uni Trained)	2				2
Administrators	2				2
Total Staff					16

Based on Figures 24 and 25 the peak vehicle arrival / departure rate for a 72-child facility will be:

- 0.8 vehicle trips / child / 7-9 AM i.e 29 vph
- 0.7 vehicle trips / child / 4-6 PM i.e 25 vph

In addition, arrival and departure rates for 16 staff are estimated at 8 vph at AM and PM peaks.

Estimated total trip generation:

- 37 vph (AM)
- 33 vph (PM)

4.8 5 Year Reported Crash History

DSG is supplied with reported crashes by Tasmania Police. DSG maintains a crash database from the crash reports which is used to monitor road safety, identify problem areas and develop countermeasures and improvement schemes. Figure 26 summarises the crash history for Gorge Road.

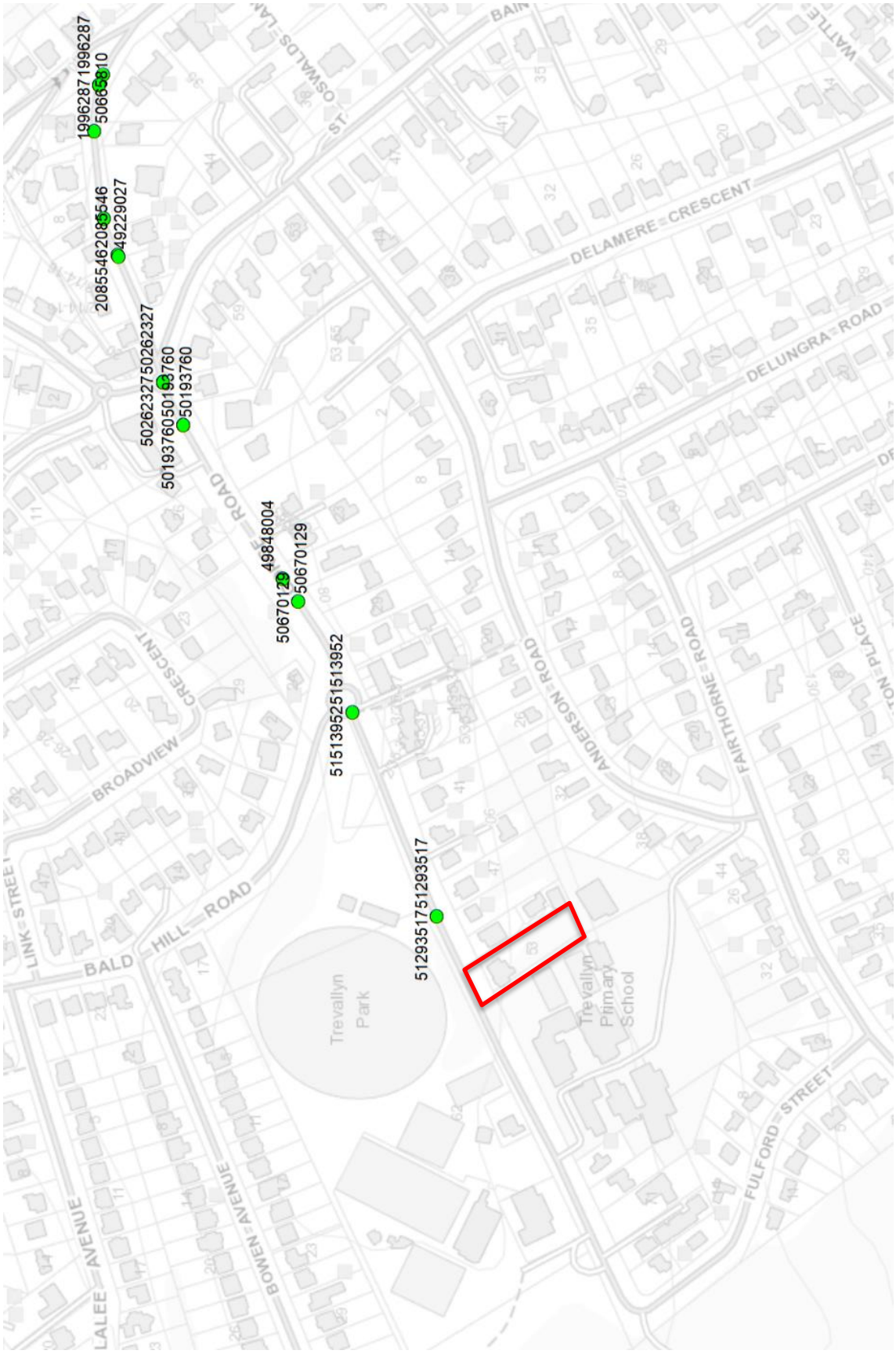
Figure 26 – Summary of 5-year reported crash history for Gorge Road, Trevallyn

Crash Id	Description	Date	Time	Severity	Light	Location	Unit
1996287	120	13-Jan-2017	17:00	PDO	Day	Gorge Road	LV & LV
2085546	120	25-Aug-2017	22:30	PDO	Night	Gorge Road	LV & LV
49185121	189 - Other curve	30-Mar-2018	02:15	Minor	Night	Gorge Road	LV
49229027	179 - Other straight	29-Apr-2018	20:00	First Aid	Night	Gorge Road	Bicycle
49848004	160 - Parked	08-Feb-2019	12:00	PDO	Day	Gorge Road	LV & LV
50193760	130 - Vehicles in same lane/ rear end	07-Aug-2019	17:25	Minor	Day	Gorge Road	LV & LV & LV
50262327	130 - Vehicles in same lane/ rear end	04-Sep-2019	07:35	PDO	Day	Gorge / Bain Rabt	LV & LV
50651889	181 - Off right bend into obj./pkd veh.	12-May-2020	22:50	Minor	Night	Gorge Road	LV
50665810	149 - Other maneuvering	28-May-2020	08:35	PDO	Day	Gorge Road	LV & LV
50670129	130 - Vehicles in same lane/ rear end	03-Jun-2020	09:26	PDO	Day	Gorge Road	LV & LV
50700705	121 - Right through	29-Jun-2020	12:35	PDO	Day	Gorge / Bain Rabt	LV & LV
50833012	132 - Vehicles in same lane/ right rear	30-Sep-2020	16:20	PDO	Day	Gorge / Bain Rabt	LV & LV
50911880	111 - Right far	19-Dec-2020	13:00	PDO	Day	Gorge / Bain Rabt	LV & LV
51205841	130 - Vehicles in same lane/ rear end	31-May-2021	10:13	PDO	Day	Gorge / Bain Rabt	LV & LV
51293517	147 - Emerging from driveway or lane	24-Jun-2021	14:45	PDO	Day	Gorge Road	LV & LV
51653711	130 - Vehicles in same lane/ rear end	10-Nov-2021	00:00	Minor	Day	Gorge Road	LV & LV
51513952	121 - Right through	11-Jan-2022	11:30	PDO	Day	Gorge / Bain Rabt	LV & LV

PDO	Property Damage Only
LV	Light Vehicle
120	Wrong side / other head on (not overtaking)

Figure 27 shows the crash distribution along Gorge Road and shows no crash propensity in the vicinity of the Trevallyn Primary School or 53 Gorge Road.

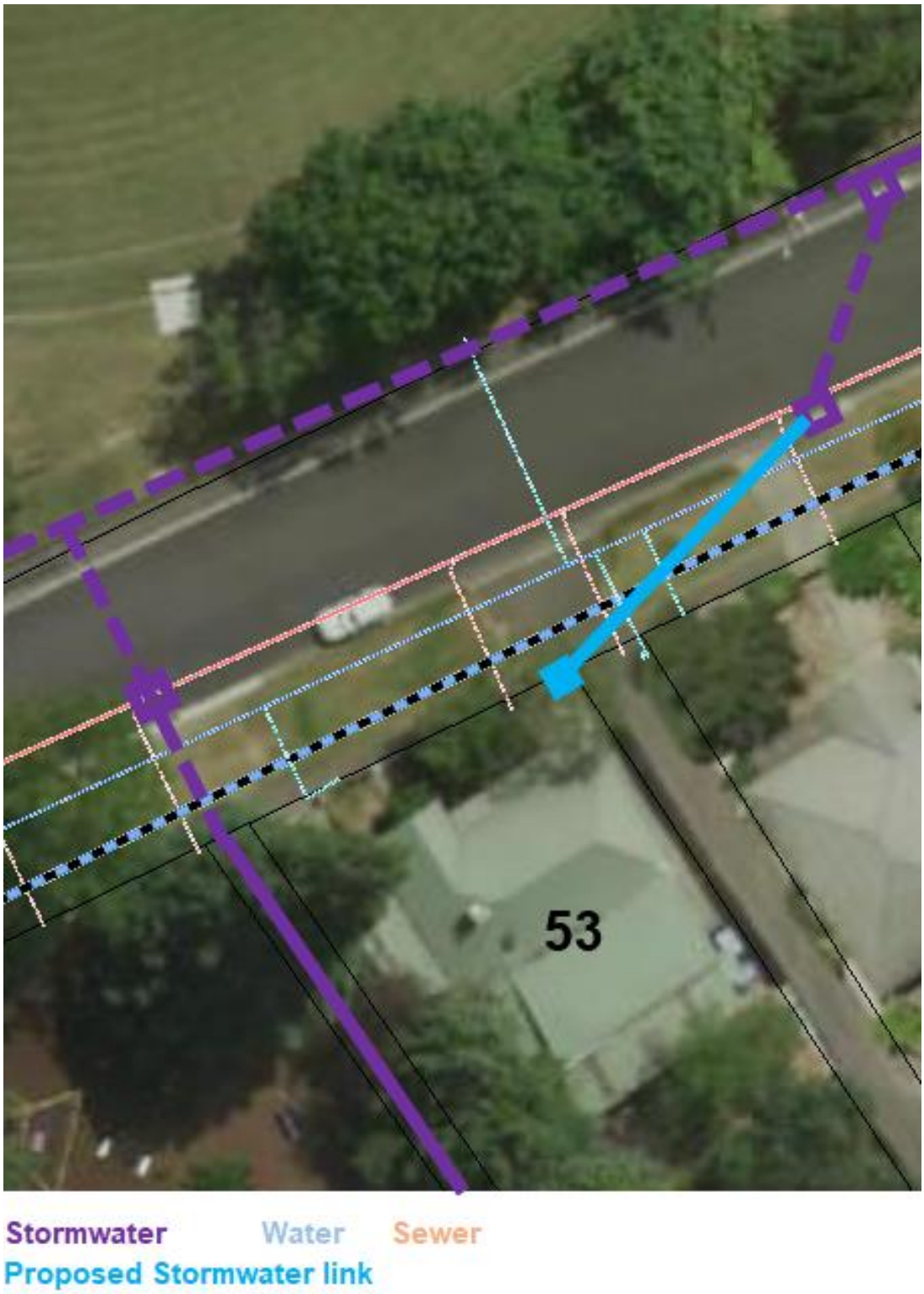
Figure 27 – 5 Year crash locations on Gorge Road, Trevallyn.



4.9 Services

Figure 28 shows the available services in the vicinity of 53 Gorge Road.

Figure 28– Available Services at 53 Gorge Road



Source: LISTmap, DPIPWE

4.10 Austroads Safe System Assessment

From Austroads Safe System Assessment the proposed access has:

- low crash exposure – 1,850 vpd on Gorge Road at #53
- low crash severity – Electronic 40km/h School Zone otherwise 50km/h speed limit and environment.
- low-medium likelihood – sight distance requirements are satisfied and on & Offstreet parking is available.

This equates to a very low crash risk.

4.11 Sight Distance Review – Figure 29

Figure 29– Sight Distance Summary for proposed 53 Gorge Road access

			Austroads	Current Provision		AS / NZS 2890.1 (m)
Junction Major Rd - Minor Rd	Speed Limit (km/h)	Speed Environ. (km/h)	Road frontage sight distance			
			SISD (m)	Available Left(m)	Available Right(m)	SSD(m)
53 Gorge Rd driveway	40-50	50	97	65	200	45

Austroads Compliant AS/NZS 2890.1 Compliant

4.11 Road Safety Review

From site observations no significant road safety issues were identified.

4.12 Parking Study

Off Street Public Car Park at Trevallyn Sports Ground

From site observations utilisation varies during week days as follows:

AM Utilisation (see Appendix E)

- 8:20AM - 4 of 34 spaces occupied.
- 8:50AM – 7 of 34 spaces occupied.
- 9:20AM – 4 of 34 spaces occupied.

PM Utilisation (see Appendix E)

- 4:50PM - 4 of 34 spaces occupied.
- 5:20PM - 25 of 34 spaces occupied.

Gorge Road On Street Parking East of #53 Gorge Road

On Street parking is available on the South side of Gorge Road , to the East of 53 Gorge Road with 10 spaces close by. From site observations utilisation varies at the morning and afternoon school times.

AM Utilisation (see Appendix E)

- 8:20 - 2 spaces occupied.
- 8:50 – 10 spaces occupied.
- 9:20 – 2 spaces occupied.

The on-street spaces are utilised by parents dropping and collecting children at the Trevallyn Primary School.

PM Utilisation (see Appendix E)

- More intense parking than AM pattern between 2:40 and 3:10PM

4.13 Stormwater Management

Stormwater drainage is proposed with a new piped connection to an existing side entry pit some 20m East of #53 Gorge Road. The open channel in the drainage easement along the West side of the property is too high and unsuitable to connect the driveway runoff from the site. Photos of the existing drainage easement are attached in Appendix G.

Figures 28, 30 and 31 show the existing and proposed drainage.

Figure 30– Exisitng Stormwater Drainage Easement Section West of 53 Gorge Road

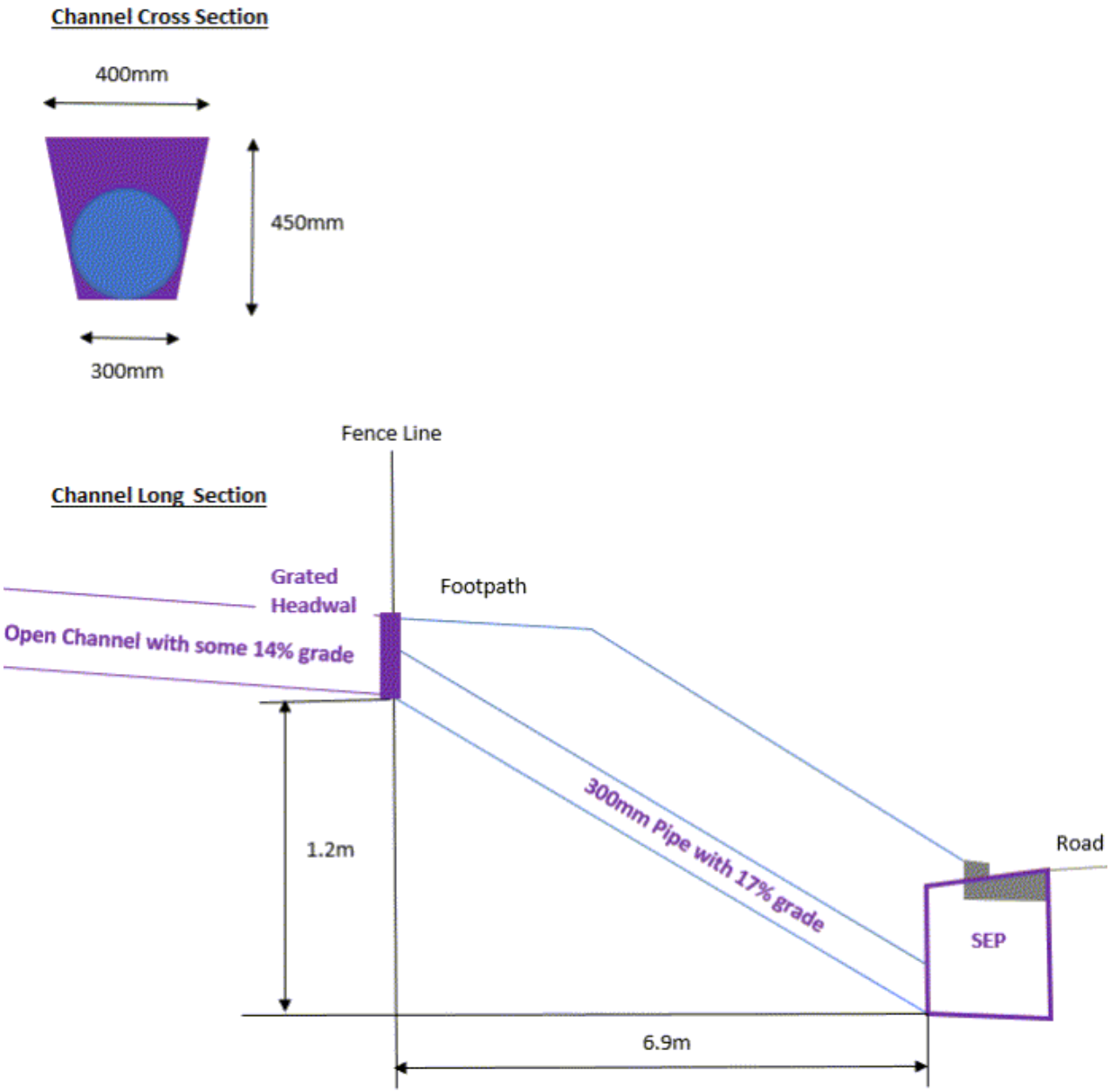
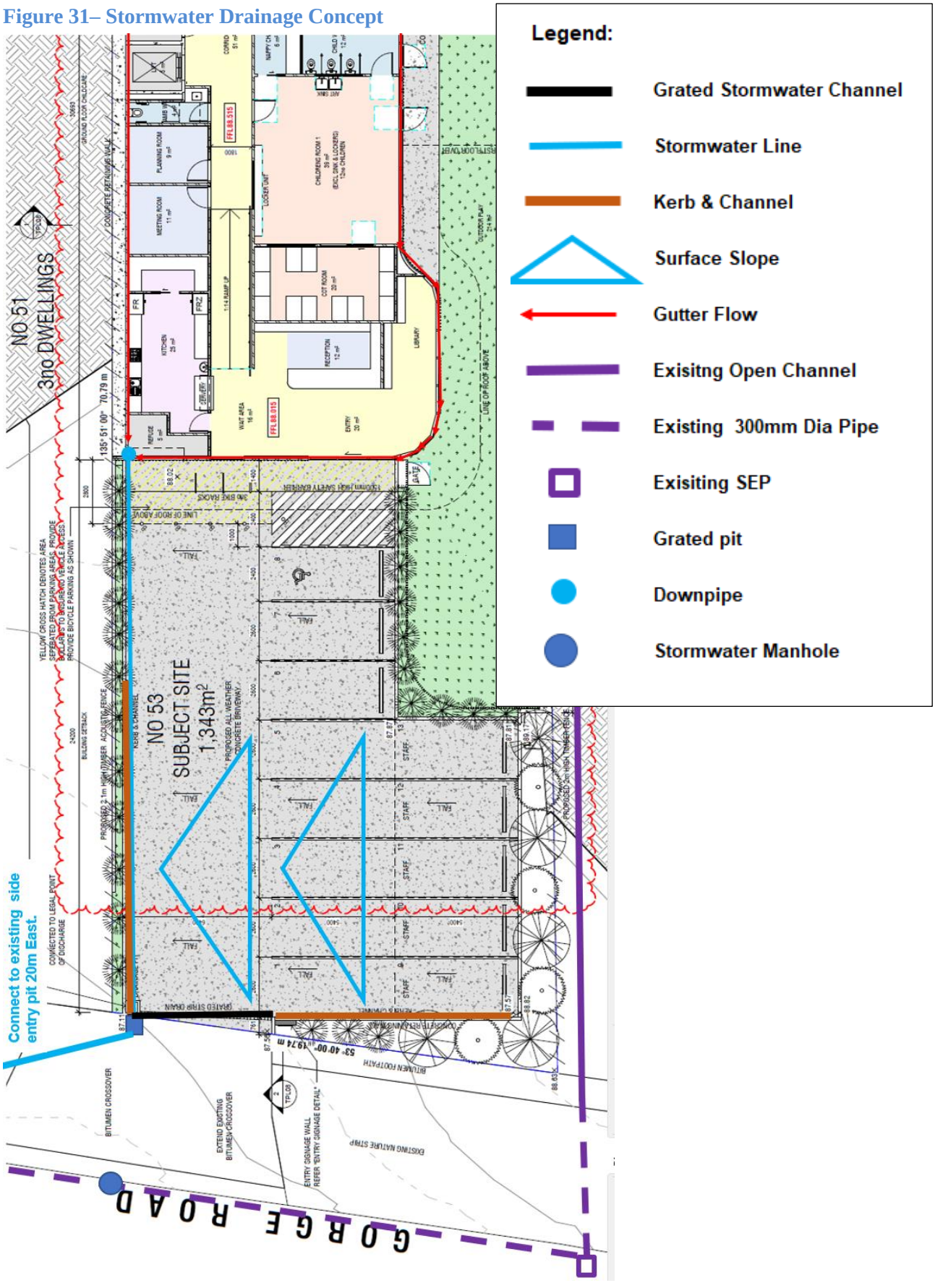


Figure 31– Stormwater Drainage Concept



5)Tasmanian Planning Scheme – Launceston 2022

Parking and Sustainable Transport Code C2

C2.5.1 Car parking numbers

Acceptable Solution A1: *The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if:*

(a) The site is subject to a parking plan for the area adopted by Council, in which case parking provision (spaces or cash in lieu) must be in accordance with that plan,

(b) The site is contained within a parking precinct plan and subject to Clause C2.7,

(c) The site is subject to Clause C2.5.5;or

(d) It relates to an intensification of an existing use or development or a change of use where:

i. The number of onsite car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional onsite car parking is required; or

ii. The number of onsite car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows:

N=A+ (C-B)

N = Number of on-site car parking spaces required

A = Number of existing on-site car parking spaces

B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1

C= Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1

The previous use was urban residential. The C2.1 rate is 2 parking spaces per dwelling. Accordingly, the previous use required 2 parking spaces.

The proposed use is for a child care centre catering for 72 children with 16 staff which is an Educational and Occasional Care land use. The C2.1 parking rate is 1 space per employee. C2.1 requires 16 parking spaces.

Proposal is to provide 13 off street parking spaces and make use of 3 on street parking spaces.

A1 is not satisfied.

Performance Criteria P1.1:*The number of on-site car parking spaces for uses excluding dwellings , must meet the reasonable needs of the use, having regard to:*

(a) The availability of off-street public car parking spaces within reasonable walking distance of the site.

There is a 34 space off street car park used by the public some 80m from 53 Gorge Road at the Trevallyn Cricket Ground which is largely unused during normal workday hours 8AM to 4PM (Monday to Friday), see Figure 32, when typical utilisation of the 34-space car park is 4 spaces. See Appendix E.

The carpark is on Council land and part of Trevallyn Park with address 62 Gorge Road. The proposal does not need to use this carpark.

Figure 32– Available off street car parking (80m from 53 Gorge Road)

(b) The ability of multiple users to share spaces because of:
(i)variations in car parking demand over time; or
(ii) efficiencies gained by consolidation of car parking spaces
Not considered likely.

(c) *The availability and frequency of public transport within reasonable walking distance of the site.*
Metro Bus Services operate on Gorge Road.

(d) *The availability and frequency of other transport alternatives.*
Other transport alternatives include walking for families within range, motorcycling and bicycling. Some staff may bicycle or motorcycle.

(e) *Any site constraints such as existing buildings, slope, drainage, vegetation, and landscaping.*

Site constraints do limit off street parking at 53 Gorge Road. The rear of the development site is steep and difficult to utilize. The designer's architect has attempted to maximise parking yield for the property but the cost of retaining walls and civil works required to yield compliant rear parking for the site is cost prohibitive. The spaces would also be difficult to access, user unfriendly and compliant pedestrian access would be awkward. Utilisation of available on street parking for 3 spaces is a better option.

(f) *The availability , accessibility, and safety of on -street parking , having regard to the nature of the roads, traffic management and other uses in the vicinity*.

On Street parking is typically available East and West of the #53 Gorge Rd property as shown in Figures 33 and 34. Also see Appendix E & F which show on and off-street parking availability.

At school times on street parking indicated by white lines is utilised and space indicated by purple and amber lines is not utilised.

It is considered that the spaces indicated by the amber lines East of the #53 Gorge Road would be available and suitable for staff or visitors.

Figure 33– Peak On Street Parking Demand at 3PM East of #53 Gorge Road

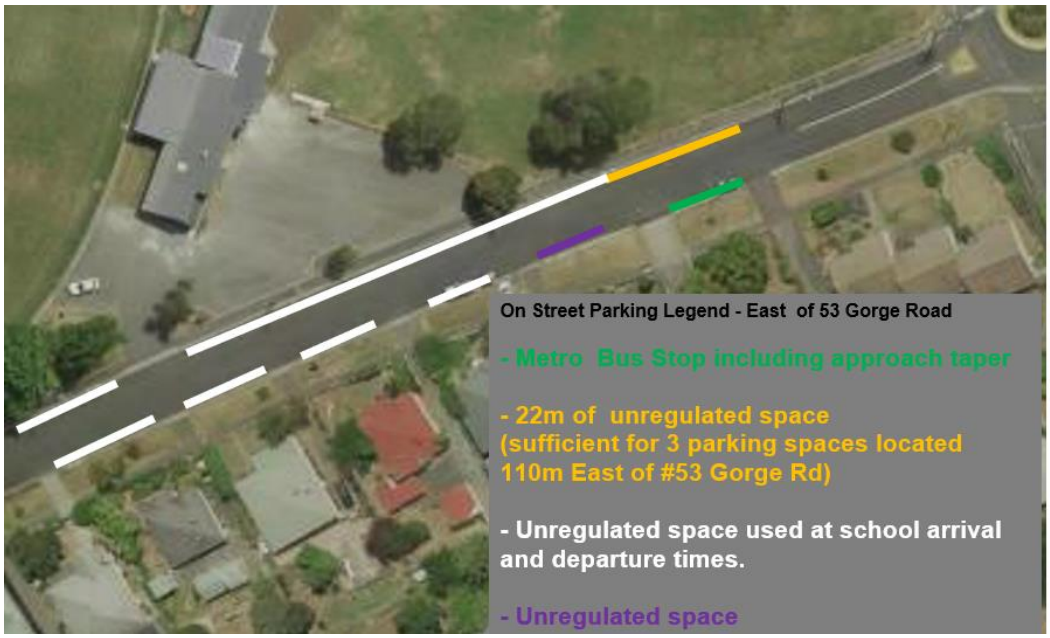


Figure 34– Peak On Street Parking Demand at 3PM West of #53 Gorge Road

The Peak On Street Parking Demand occurs 2:50 to 3:10 PM.
By 3:20PM 90% of the On- Street Parking is unoccupied. From observations at the PM Peak there are typically three free spaces East of 53 Gorge Road and six spaces on Fulford Street some 320m West.

It is also considered fair and equitable for staff from 53 Gorge Road to park in spaces available along the 53 Gorge Road frontage. The property frontage is some 17m in length not including the driveway. This is ample space for two cars to park.

All weather functionality for carers is considered negligible in this case as only a 120m distance is involved and people should have access to umbrellas when necessary. The occurrences of inclement weather at arrival and departure times is relatively low and applies to everyone regardless of the walking distance.

(g) *The effect on streetscape.* Proposal has negligibly impact.

(h) *Any assessment by a suitably qualified person of the actual car parking demand determined having regard to the scale and nature of the use and development.*

This Traffic Impact Statement assesses the proposed use of 3 on-street parking spaces as acceptable as ample spaces are available within walking distance.

Section 4.7 discussed the increase in traffic due to the proposal. Estimated traffic of 37 vph (AM) and 33 vph (PM) can easily be absorbed by Gorge Road which has estimated AADT of 1,850 vpd.

The AM and PM traffic and parking peaks for Trevallyn Primary School and the proposal are offset in time which means the TPS peaks will not be compounded by the proposal:

Trevallyn Primary School Peaks
- 8:40 – 9:10 AM
- 2:40 – 3:10 PM

Proposal Peaks
- 8:00 – 8:30 AM
- After 5 PM

On Street parking supply is assessed as adequate for the proposal and the TPS. **P1.1 is satisfied.**

C2.5.2 Bicycle parking numbers

Acceptable Solution A1: *Bicycle parking spaces must:*

(a) Be provided on the site or within 50m of the site; and
(b) Be no less than the number specified in Table C2.1.

Table C2.1 requires 1 space per 5 employees. Accordingly for 16 staff, 3 bicycle parking spaces are required**. A1 is satisfied.**

C2.5.3 Motorcycle parking numbers

Acceptable Solution A1:*The number of on-site motorcycle parking spaces for all uses must:*

(a) Be no less no less than the number specified in Table C2.4. and
(b) if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle spaces is maintained.

No requirement from Table C2.4 where 0-20 parking spaces required.

C2.5.4 Loading Bays

Acceptable Solution A1: *A loading bay must be provided for uses with a floor area of more than 1000m2 in a single occupancy.*

Floor area is less than 1000m2. **A1 is not applicable.**

C2.6.1 Construction of parking areas

Acceptable Solution A1: *All parking, access ways, manoeuvring and circulation spaces must:*

(a) be constructed with a durable all-weather pavement,
(b) be drained to the public stormwater system, or contain stormwater on the site; and
(c) excluding all uses in the Rural Zone, Agricultural Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Public Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.

Sealed driveway & parking is proposed, see Appendix A. Connection to the public stormwater system is proposed, see Section 4.13. **A1 is satisfied.**

C2.6.2 Design and layout of parking areas

Acceptable Solution A1.1:*Parking, accessways, manoeuvring and circulation spaces must All parking, access ways, manoeuvring and circulation spaces must either:*

(a) comply with the following:

i. *have a gradient in accordance with Australian Standard AS 2890 Parking facilities, Parts 1-6.* Satisfied, see Figures 3.1, 3.2 & 3.3.

ii. *Provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces.* Satisfied. Spaces 9 to 13 are for all day staff who arrive early and depart late, in which case being parked in during the day is of no consequence, see Figure 3.2.

iii. *Have an access width not less than the requirements in Table C2.2.* Proposal provides an access width of > 3.0m which satisfies Table C2.2 where 1 to 5 car parking spaces are provided.

iv. *Have car parking space dimensions which satisfy the requirements in Table C2.3.*
90 Degree parking spaces 2.6m * 5.4m are provided consistent with Table C2.3., see Figures 3.2 & 3.3.

v. *Have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces.*
Manoeuvre space of 6.4m is provided for 2.6m * 5.4m spaces satisfying Table C2.3., see Figure 3.3.

vi. *Have a vertical clearance of not less than 2.1 metres above the parking surface level,* Satisfied.

vii. *Excluding a single dwelling, be delineated by line marking or other clear physical means.* Satisfied.

(b) Comply with Aust. Stand. AS2890 Parking facilities, Parts 1-6. Satisfied.

A1.1 is satisfied.

Acceptable Solution A1.2

Parking spaces provided for use by persons with a disability must satisfy the following:

(a) Be located as close as practical to the main entry point to the building. Satisfied.

(b) be incorporated into the overall car park design. Satisfied.

(c) be designed and constructed in accordance with Australian/ New Zealand Standard AS/NZS 2890.6-2009 Parking facilities - Off-street parking for people with disabilities.

Guideline from D3 of the National Construction Code 2016 is 1 accessible space per 100 car parking spaces. As 13 parking spaces are proposed, an accessible space is proposed , see Figure 3.3. **A1.2 is satisfied**.

C2.6.3 Number of accesses for vehicles

Acceptable Solution A1: *The number of accesses provided for each frontage must:*

(a) be no more that 1; or

(b) no more than the existing number of accesses whichever is greater.

A slightly relocated existing two-way access is proposed. **A1 is satisfied.**

C2.6.5 Pedestrian access

Acceptable Solution A1.1: *Applies to uses that require 10 or more car parking space must:*

(a) have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles, by:

i. a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or

ii. protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and

(b) be signed and line marked at points where pedestrians cross access ways or parking aisles.

The proposal involves 13 car parking spaces with no footpath proposed. **A1.1 is not satisfied.**

Performance Criteria P1

Safe and convenient pedestrian access must be provided within parking areas, regarding:

(a) the characteristics of the site.
(b) the nature of the use
(c) the number of parking spaces
(d) the frequency of vehicle movements
(e) the needs of persons with a disability
(f) the location and number of footpath crossings
(g) vehicle and pedestrian traffic safety
(h) the location of any access ways or parking aisles
(i) any protective devices proposed for pedestrian safety.

The site has insufficient width to provide footpath and 2.5m separation to the driveway.

The carpark use is within a very low-speed environment < 20km/h.

Adequate off-street parking is proposed.

Vehicle activity is low with peak carer traffic at 29 vph (AM) and 25 vph(PM) in addition to staff traffic of 8 vph before and after the carer traffic peaks.

Sealed surfaces are provided in all areas conducive to safe pedestrian use.

From Austroads Safe System Assessment crash risk is considered very low:

- Crash exposure is low as traffic activity levels are low while pedestrian activity in the vicinity of vehicles is low to moderate i.e low crash exposure.

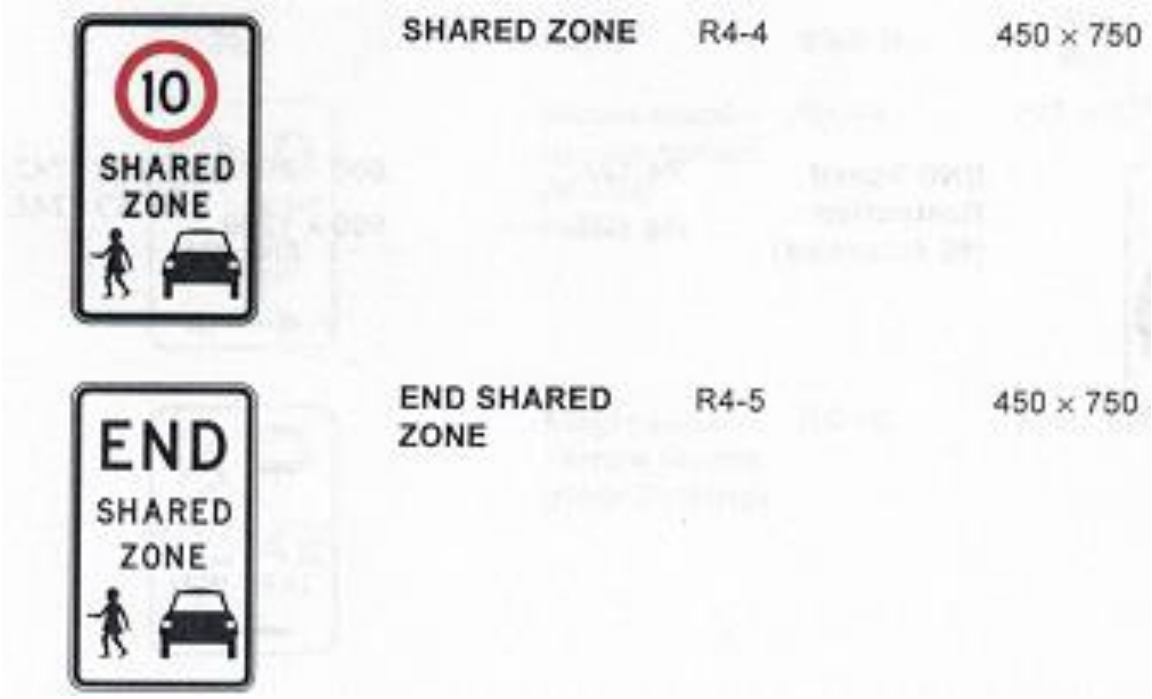
- Crash likelihood is low as Australian Standard off street parking is provided, sight lines are open and pedestrian activity and parking areas are reasonable separate and at low activity levels.

- Crash severity is very low as the vehicle speed environment is very low < 20km/h.

Formal signage of shared zones is a recognised pedestrian safety improvement where there is a mix of pedestrian, local access traffic only and situation where this is no kerb separation between pedestrians and vehicles. This is because Shared Zone signage includes provision of a regulator speed limit to keep speed to an appropriate level. In the case of

the proposed driveway a 10 km/hr speed limit is considered appropriate. The proposed development is in keeping with this kind of situation. Figure 35 shows Shared Zone signage standards.

Figure 35 – Shared Zone signage standards, AS1742.1-2014



Accordingly, TCS recommends acceptance of the proposal with provision of 10km/hr Shared and End Shared Zone signage at the entry and exit to the development to limit speeds to a safe level and increase driver awareness.

P1 is satisfied.

Road and Railway Assets Code C3

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction.

Acceptable solution A1.4:

Vehicular traffic to and from the site , using an existing vehicle crossing or private level crossing will not increase by more than:

(a) The amounts in Table C3.1

(b) Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road; and

Traffic due to the proposal of up to 37 vph for vehicles up to 5.5m in length, is estimated. Note that this traffic will not enter the site, it will mostly involve dropping and collecting children nearby either on street or off street at the publicly accessible carpark. Considering Gorge Road to be a major road(it has a Collector Road function), Table C3.1 allows an increase of a 10% or 10 vpd. **A1.4 is not satisfied.**

Performance Criteria P1

Vehicular traffic to and from the site must minimise and adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:

(a) any increase in traffic caused by the use, increase in traffic is estimated from 10 vpd to 37 vpd which is a minor increase in the volume of traffic using the road currently estimated at 2,000 vpd.

(b) the nature of the traffic generated by the use. Traffic generated by the proposal will be light vehicles only.

(c) the nature of the road. Gorge Road has a Collector Road function and suitable for access to the proposal.

(d) the speed limit and traffic flow of the road. The speed limit on Gorge Road is 50km/h.

(e) any alternative access to a road. There is no alternative access.

(f) The need for the use. The use is required for access to the property and proposed business.

(g) Any traffic impact assessment. This traffic impact statement considers the proposal to be safe and efficient in terms of impact on Gorge Road traffic.

(h) Any advice received from the rail or road authority. No advice has been received.

The proposal does not disaffect on street parking, pedestrian safety and amenity, traffic safety, residential amenity or the streetscape on Gorge Road. From Austroad Safe System Assessment Gorge Road has a low crash risk, see Section 3.4. The proposed driveway arrangement is assessed as safe. **P1 is satisfied.**

A1.5: Vehicular traffic must be able to enter and leave a major road in a forward direction.

A1.5 is satisfied.

C3.6.1 Habitable buildings for sensitive uses within a road or railway attenuation area

Not applicable as the proposal does not involve construction within a road or railway attenuation area.

C3.7.1 Subdivision for sensitive uses within a road or railway attenuation area

Not applicable as no subdivision is proposed.

6) Impacts on the environment and road users

6.1 Environment

- No adverse environmental impacts are anticipated in terms of:
    - Noise, Vibration, Visual Impact and Pedestrian Amenity
    - Ecological Impacts, Heritage and Conservation
- Street lighting is provided in Frankland Street. No additional roadside furniture is considered necessary.

6.2 Road users

- Public Transport - No impact.
- Delivery Vehicles - No impact on delivery vehicles.
- Pedestrians and Cyclists

Adequate pedestrian facilities are available in the form of the School Crossing and footpaths both sides of Gorge Road. No additional provisions for pedestrians and cyclists are necessary for the estimated increase in traffic due to the proposal.

6.3 Property Access Standard

The relevant property access standard for urban driveways is Local Government Association of Tasmania (LGAT) standard drawing TSD-R09.

LGAT standard drawings are available online at the following link:

https://www.lgat.tas.gov.au/__data/assets/pdf_file/0027/813735/Tasmanian-Municipal-Standards-Drawings-v3-December-20202.pdf

7) Recommendations and Conclusions

This traffic impact statement (TIS) has been prepared to assess the operation and safety of the proposed child care centre and parking arrangements at 53 Gorge Road, Trevallyn and any wider impacts.

Existing road conditions have been reviewed including the speed environment, 5 year reported crash history and available sight distances.

Evidence is presented that demonstrates the proposal satisfies the Tasmanian Planning Scheme - Launceston Parking & Sustainable Transport Code C2 and Road & Railway Assets Code C3 requirements.

Traffic Generation

The AM and PM arrival and departure peaks for Trevallyn Primary School(TPS) and the Proposed Child Care Centre are offset which means the proposal does not significantly compound traffic activity at the TPS arrival and departure times.

The increase in traffic generated by the proposal is estimated to peak at 37 vph (AM) and 33 vph (PM) which can easily be absorbed by Gorge Road which has estimated AADT of 1,850 vpd.

Proposed Parking:

13 off street and 3 on street parking spaces are proposed to cater for staff parking which satisfies Table C2.1 requirement for 16 spaces for 16 staff. There is ample on street parking available within 120m of the development site.

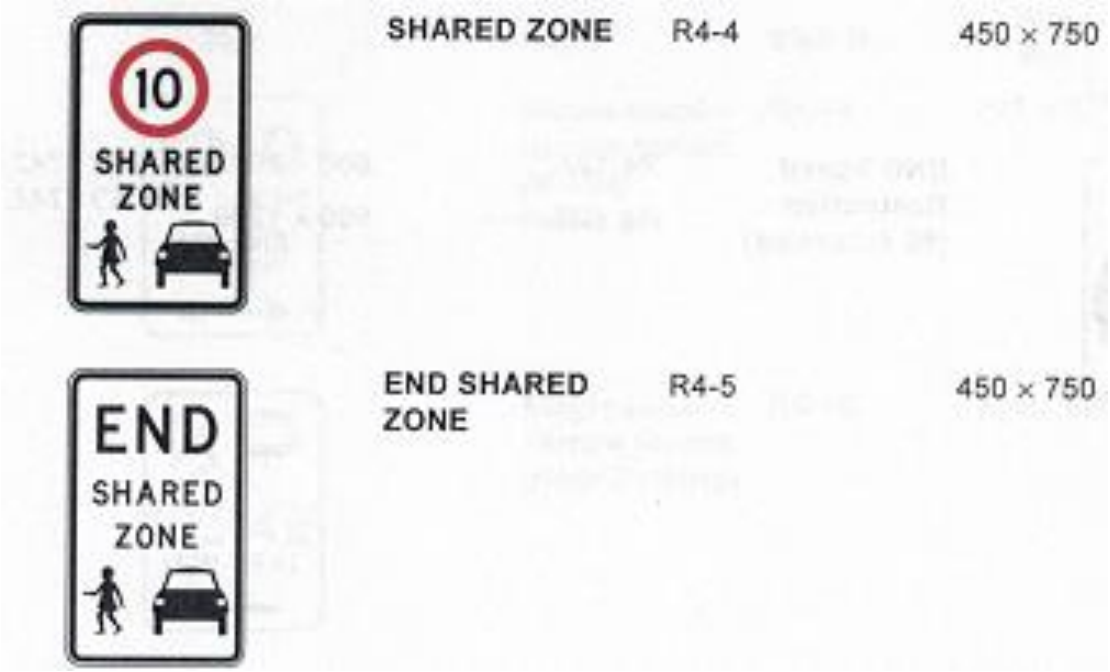
Traffic Safety

It is assessed that the safety for all road users, including pedestrians and cyclists, will not be adversely impacted by the proposal.

Austroads Safe System Assessment guidelines indicate a low crash risk.

Recommendations:

- *Provide the following 10km/hr Shared and End Shared Zone signage at the entry and exit to the 53 Gorge Road property to limit speeds to a safe level and increase driver awareness.*



Overall, it is concluded that the proposed development will not create any traffic issues and traffic will continue to operate safely and efficiently along Gorge Road and at the proposed driveway to 53 Gorge Road.

Based on the finding of this report and subject to the above recommendations the proposal is supported on traffic grounds.

8) Assessor Credentials

This traffic impact statement has been prepared by Richard Burk, an experienced and qualified traffic engineer in accordance with the requirements of the Department of State Growth's guidelines and Council's requirements. Richard's experience and qualifications include:

- 36 years of experience in the road & traffic engineering industry
- Previous Manager Traffic Engineering, Department of State Growth
- National committee involvement:
    - Austroads Traffic Management Working Group
    - State Road Authorities Pavement Marking Working Group
- Master of Traffic, Monash University, 2004
- Post Graduate Diploma in Management, Deakin University, 1995
- Bachelor of Civil Engineering, University of Tasmania, 1987

Yours sincerely

Richard Burk

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Traffic and Civil Services
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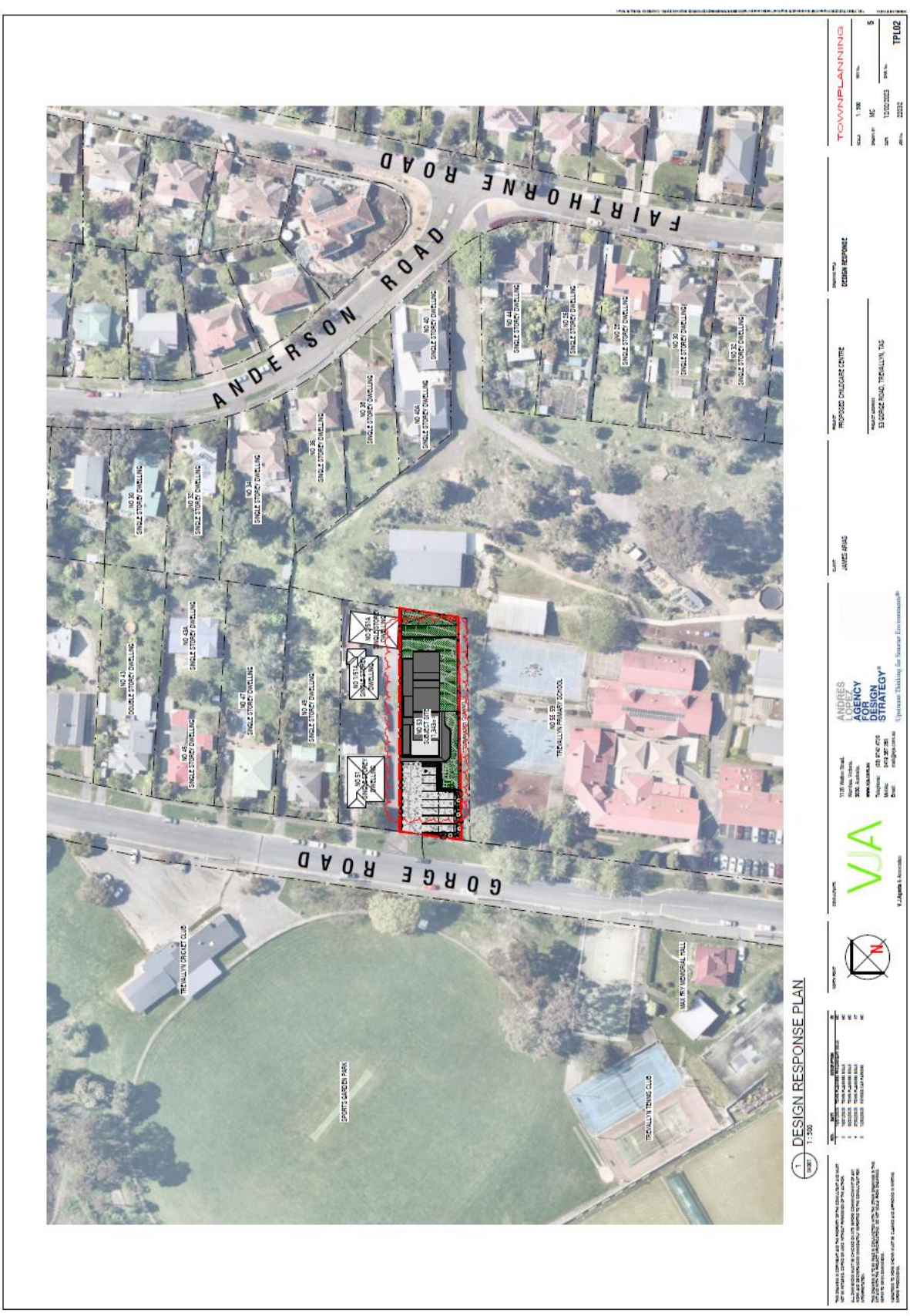
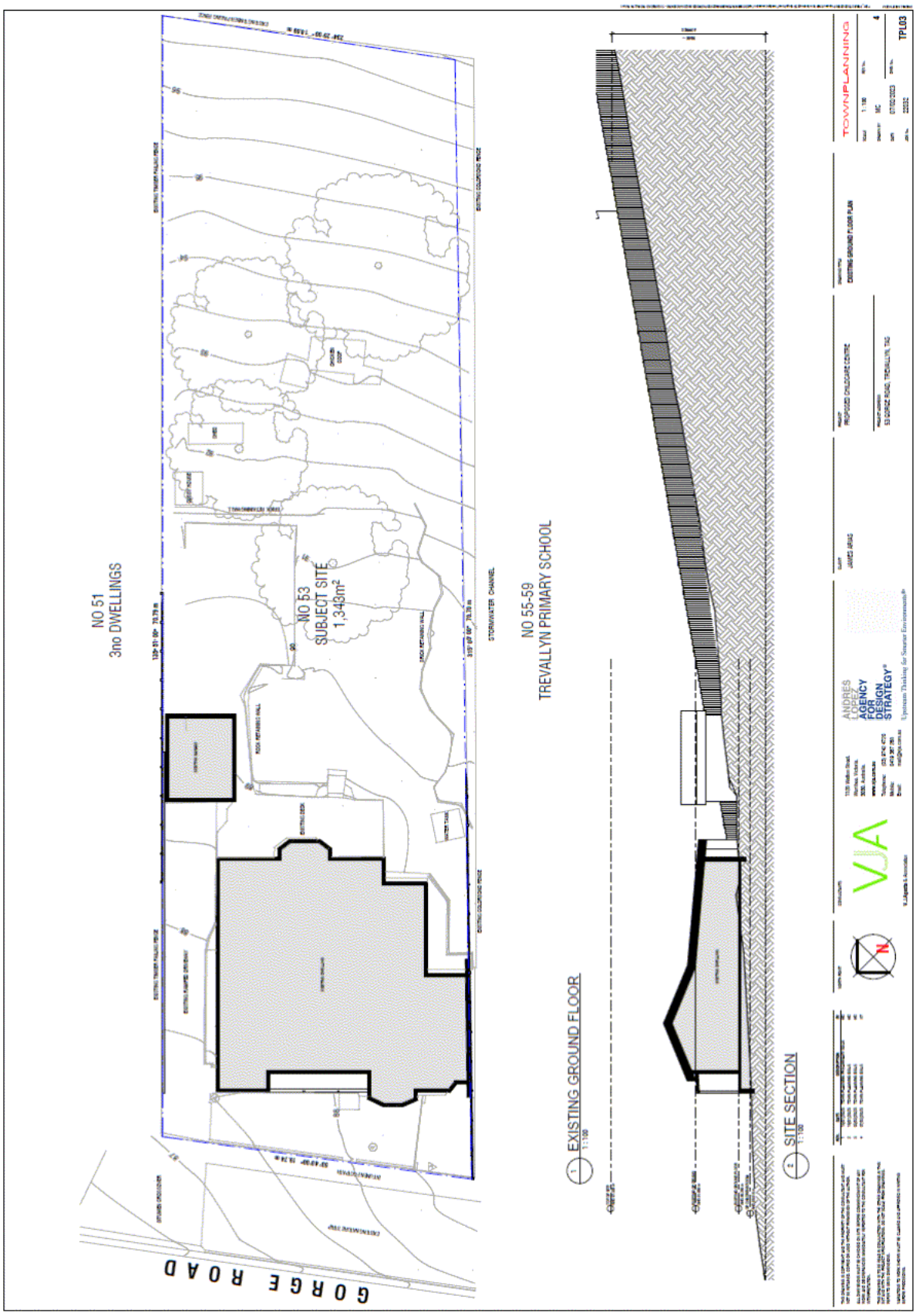
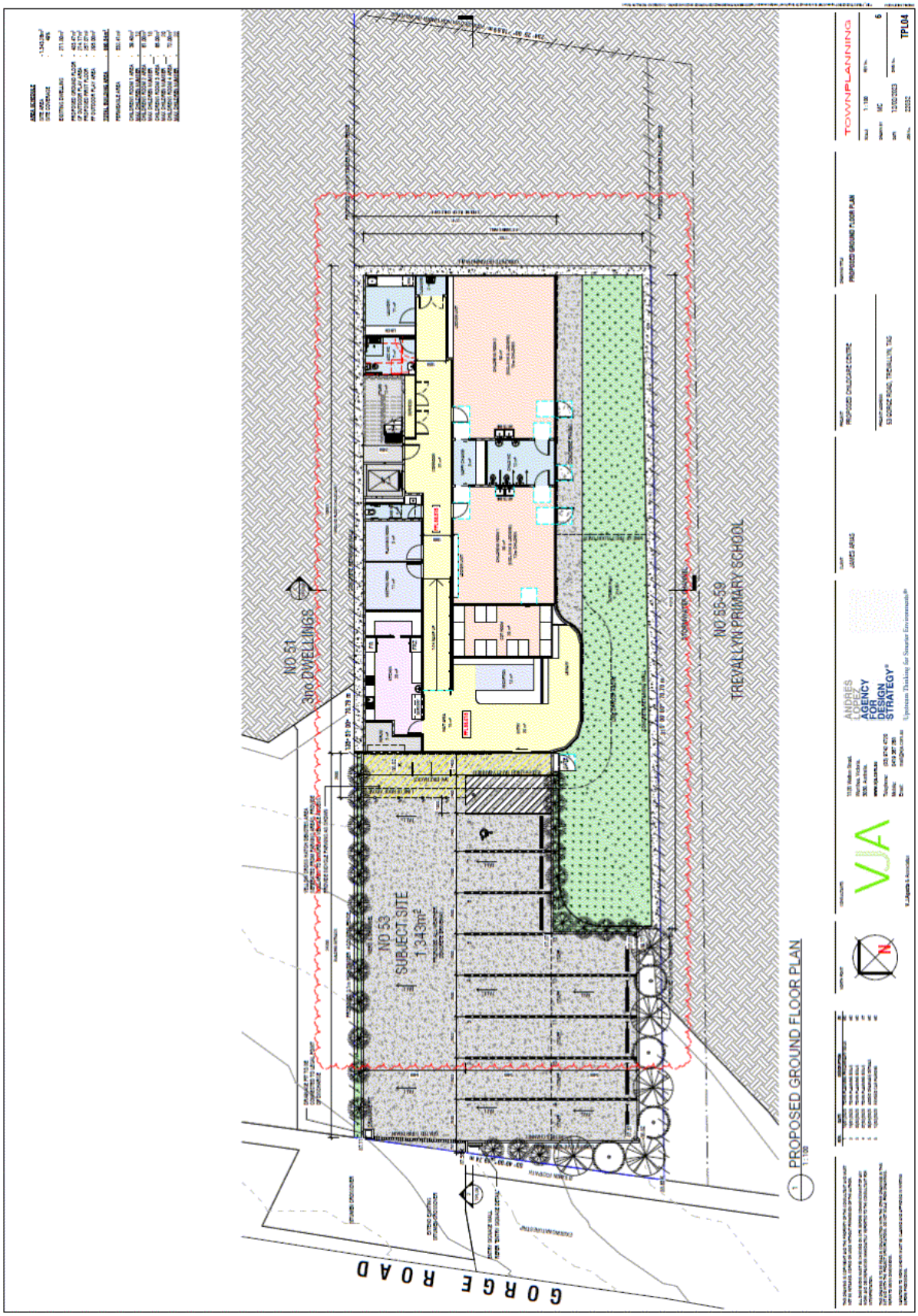
P: 03 63341868
E: Richard.burk@trafficandcivil.com.au

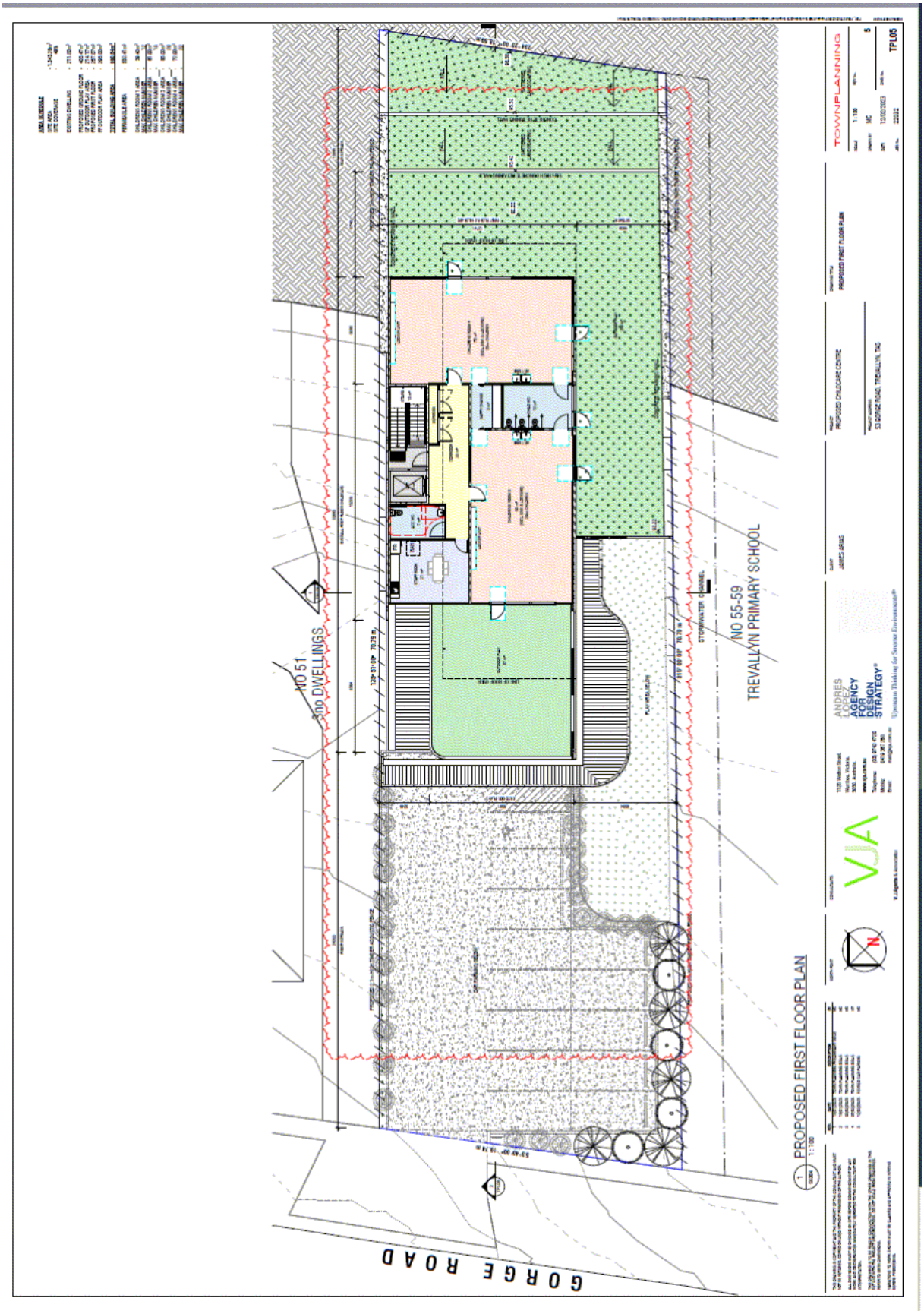
Appendices:
Appendix A – Location and site plans
Appendix B – Tas. Licensing Standards – Centre Based Child Care
Appendix C – Tasmanian 26m B Double Network
Appendix D – Gorge Road Traffic Data
Appendix E – Gorge Road Off & On Street Parking Observations
Appendix F – Gorge Rd & Fulford St. West of 53 Gorge Rd
Appendix G – Existing Stormwater Drainage Easement & channel.

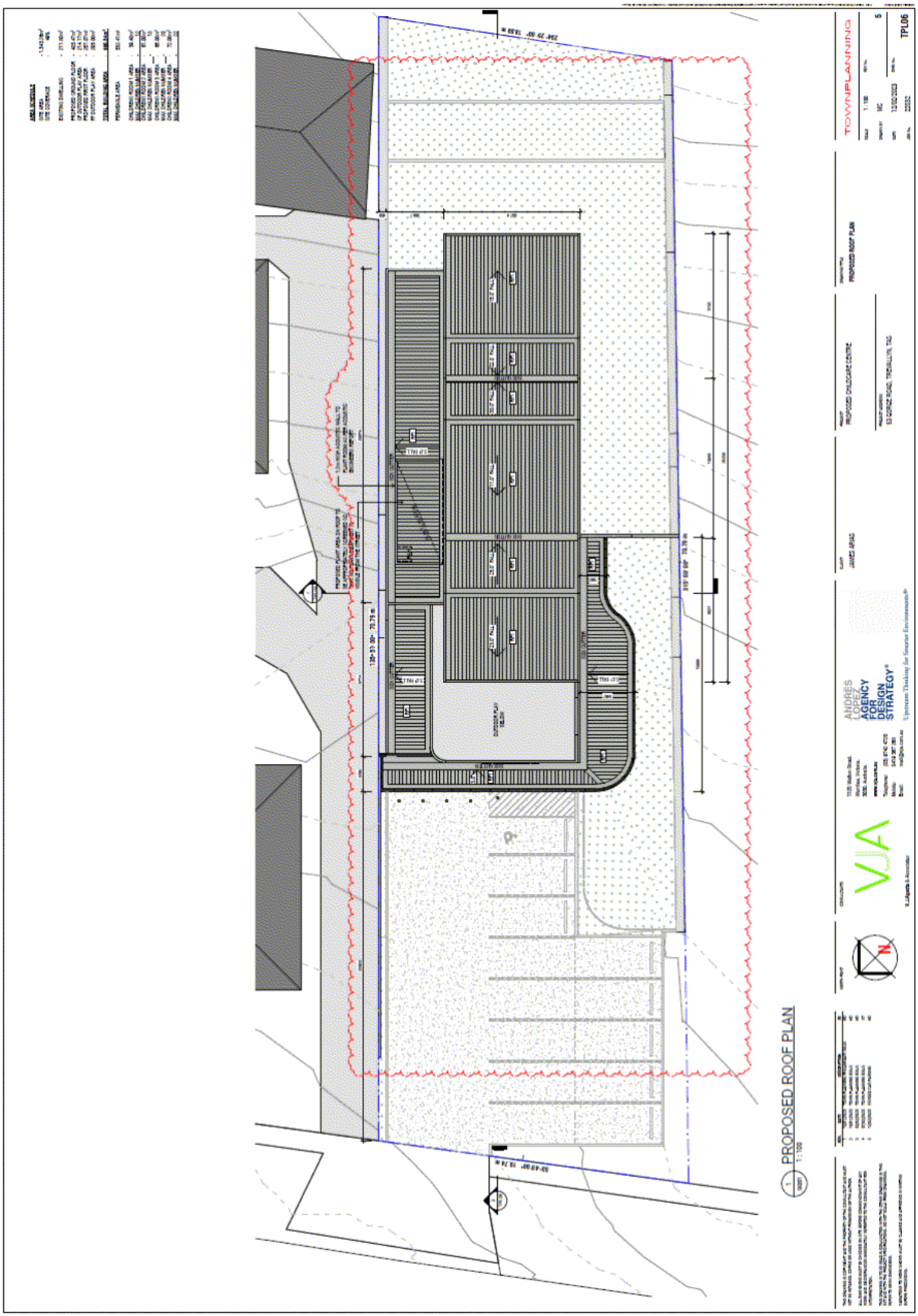
Appendix A – Location and site plans

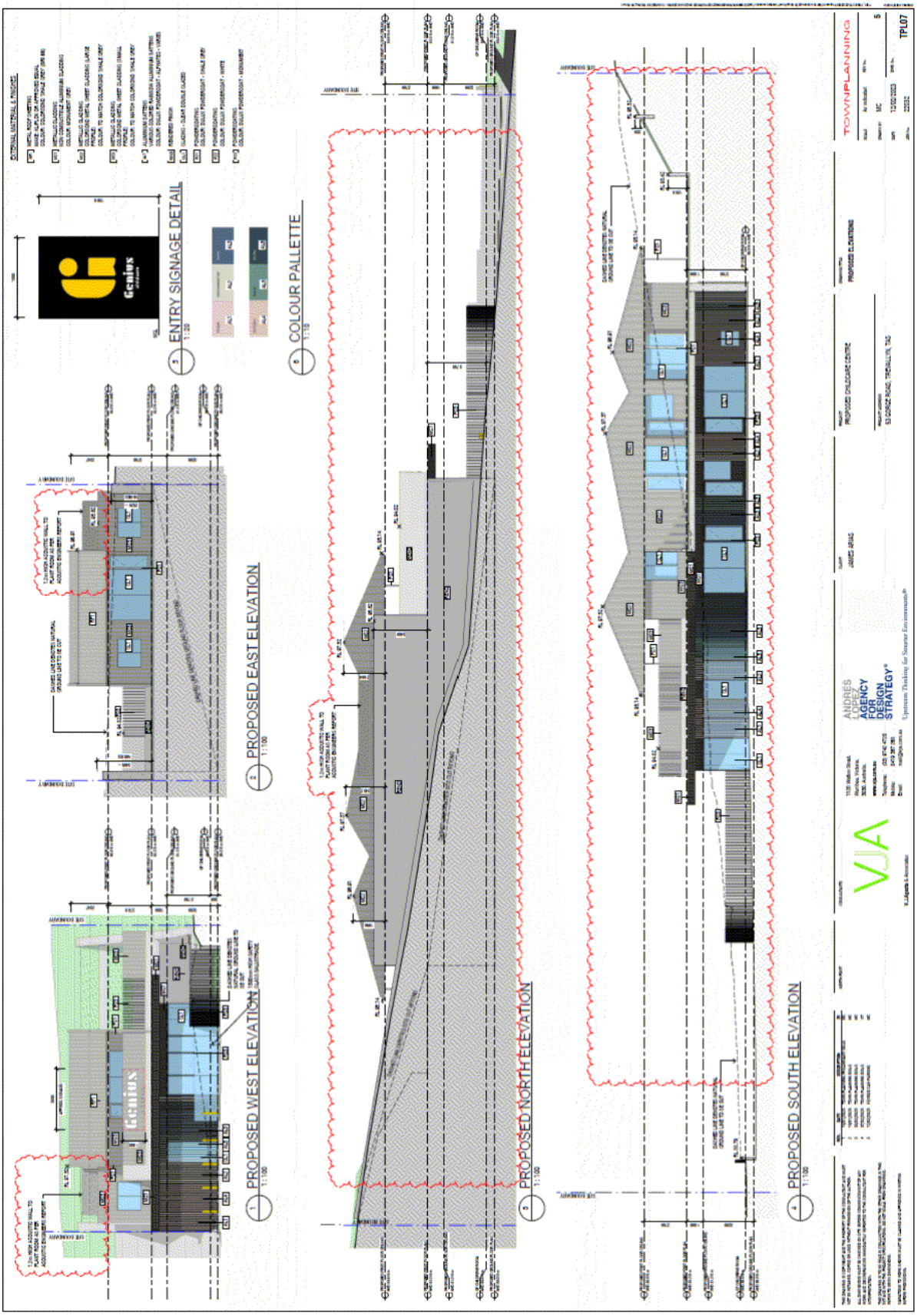


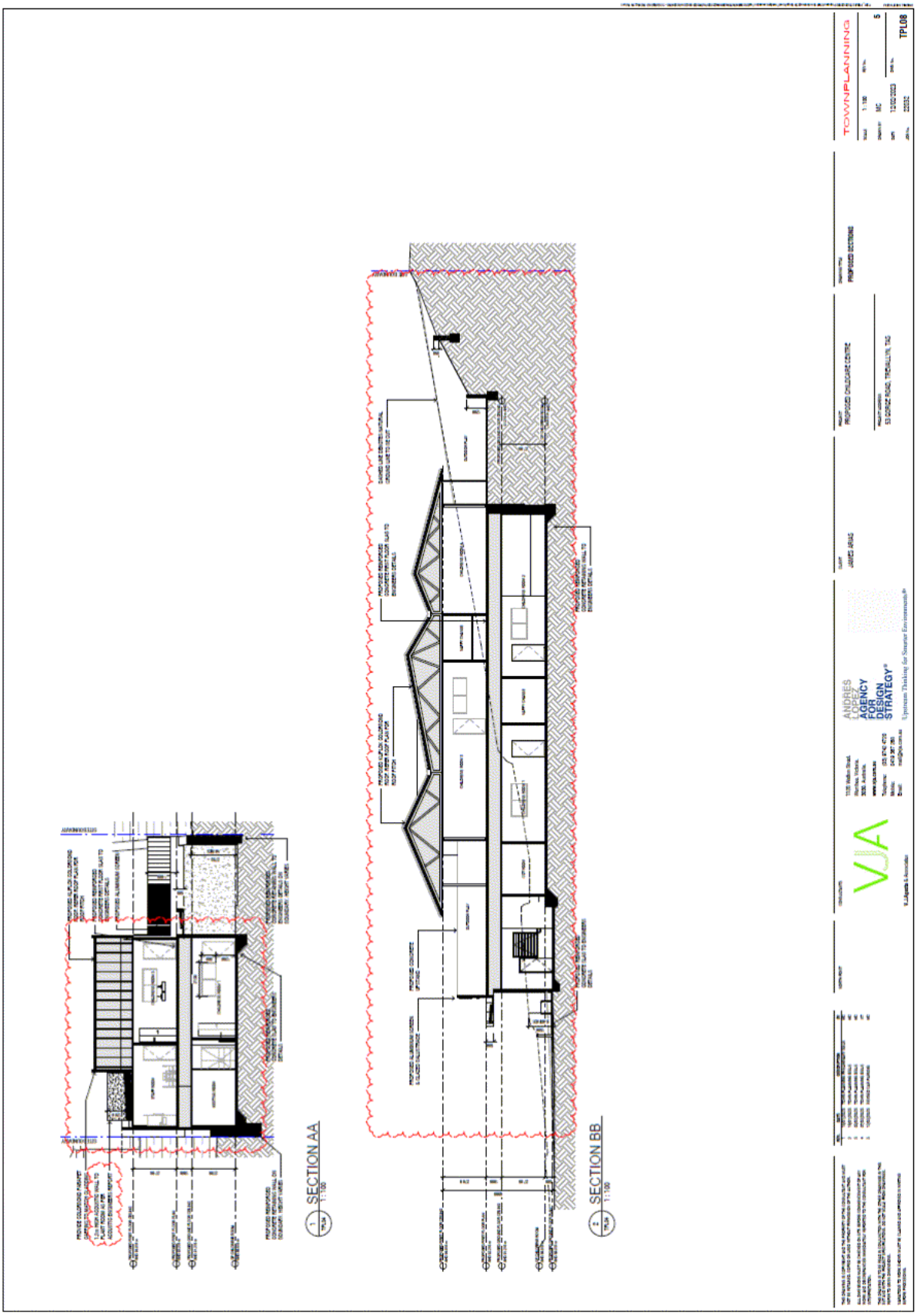


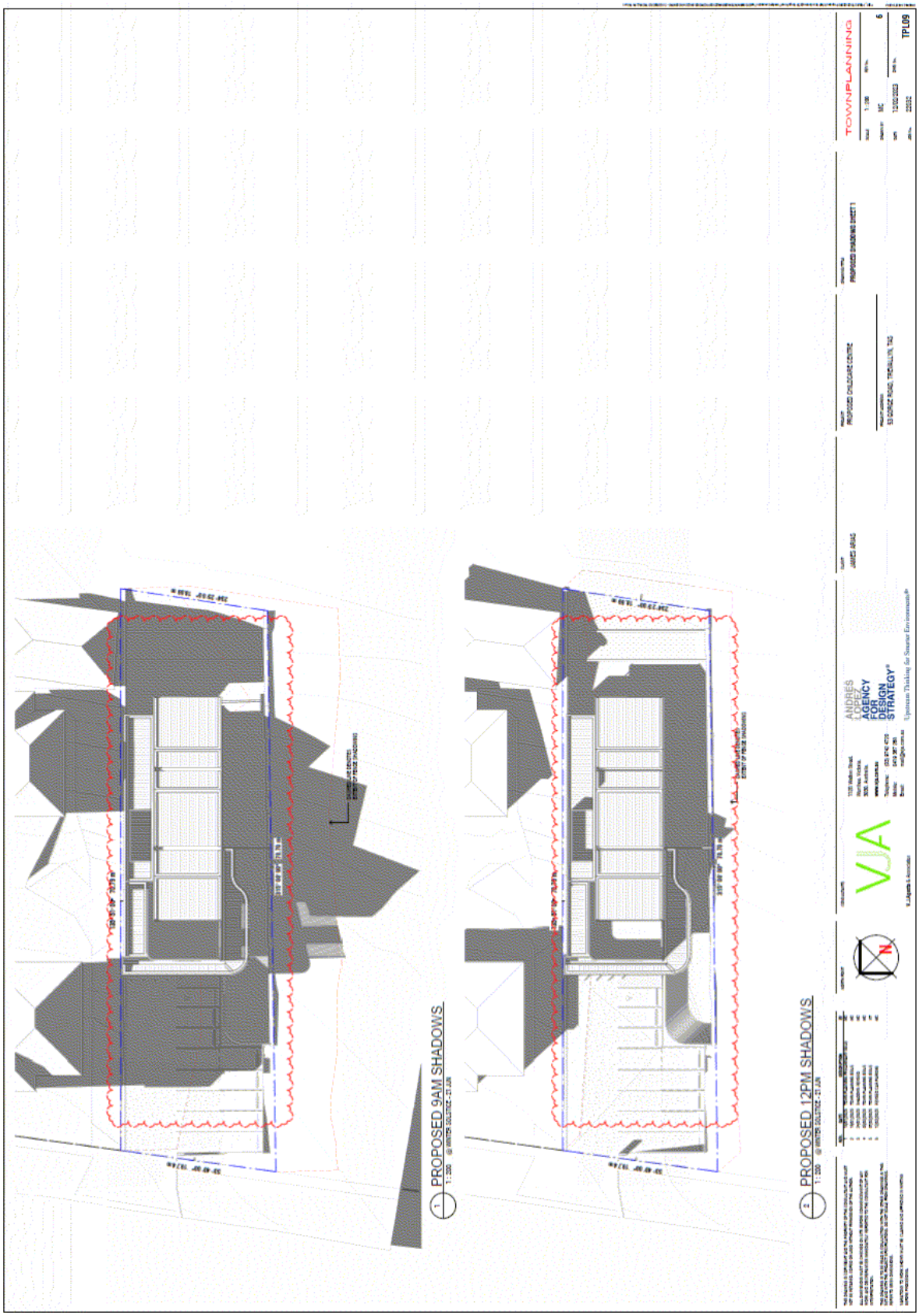


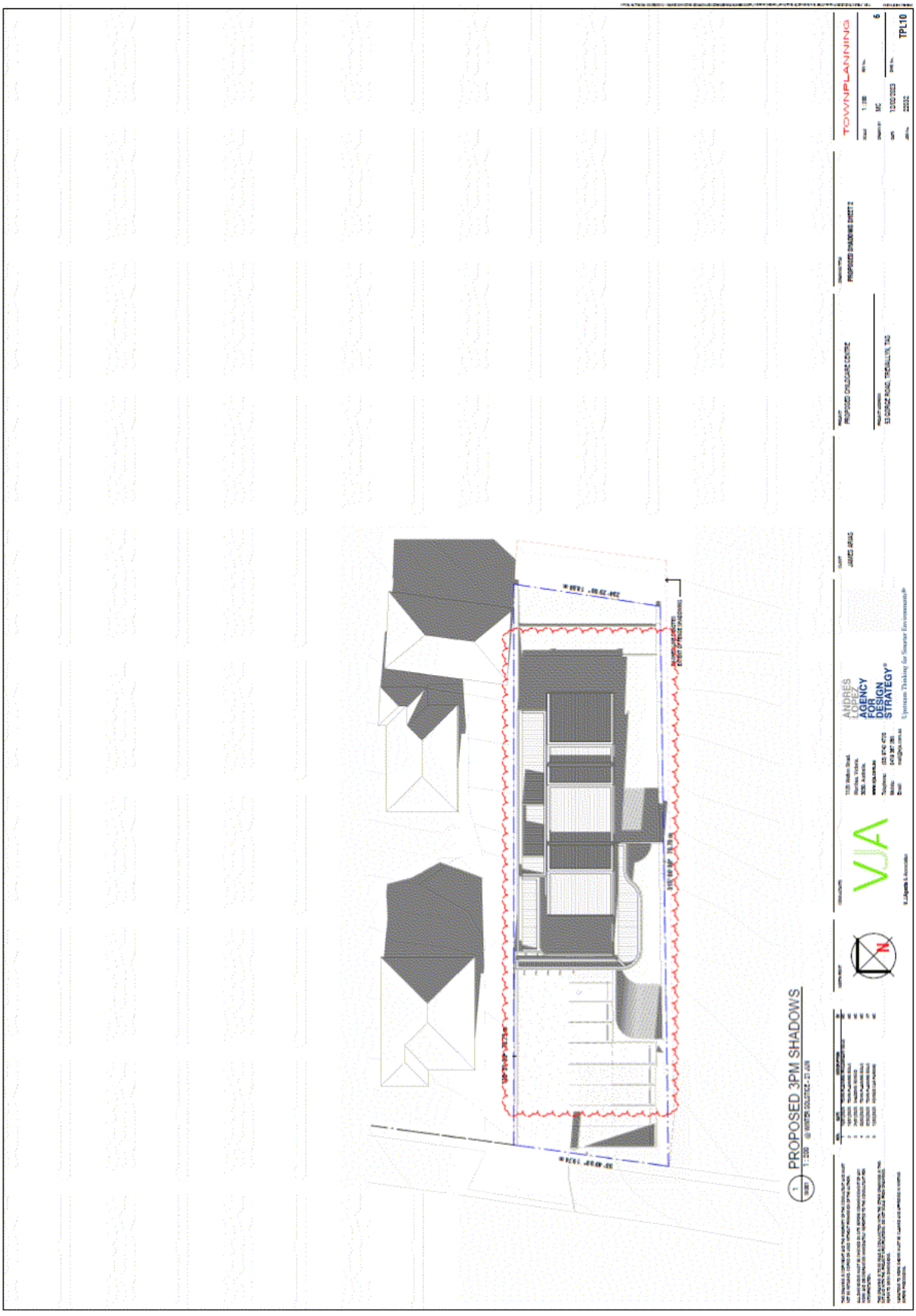












Appendix B – Tas. Licensing Standards – Centre Based Child Care

For Class 5 (0-12 years), Department of Education Child Care Unit (Oct 2014) specifies the following child care ratios and staff numbers.

3.2 Carer:child ratio

The minimum carer to children ratio is:

Age of child	**Carer:child ratio**
Under school age children:	
• Under three years	1:5 (or part thereof)
• Three to five years inclusive	1:10 (or part thereof)
School age children:	1:15 (or part thereof)

3.3 Number of staff on premises

a) Under school age care setting:

i. Where there are children under three years of age, and the number of children exceeds five, there must be at least two carers on duty, one of whom must be qualified.

ii. Where the youngest child is three years or older, and the number of children exceeds six, there must be at least two staff on duty, one of whom must be a qualified carer.

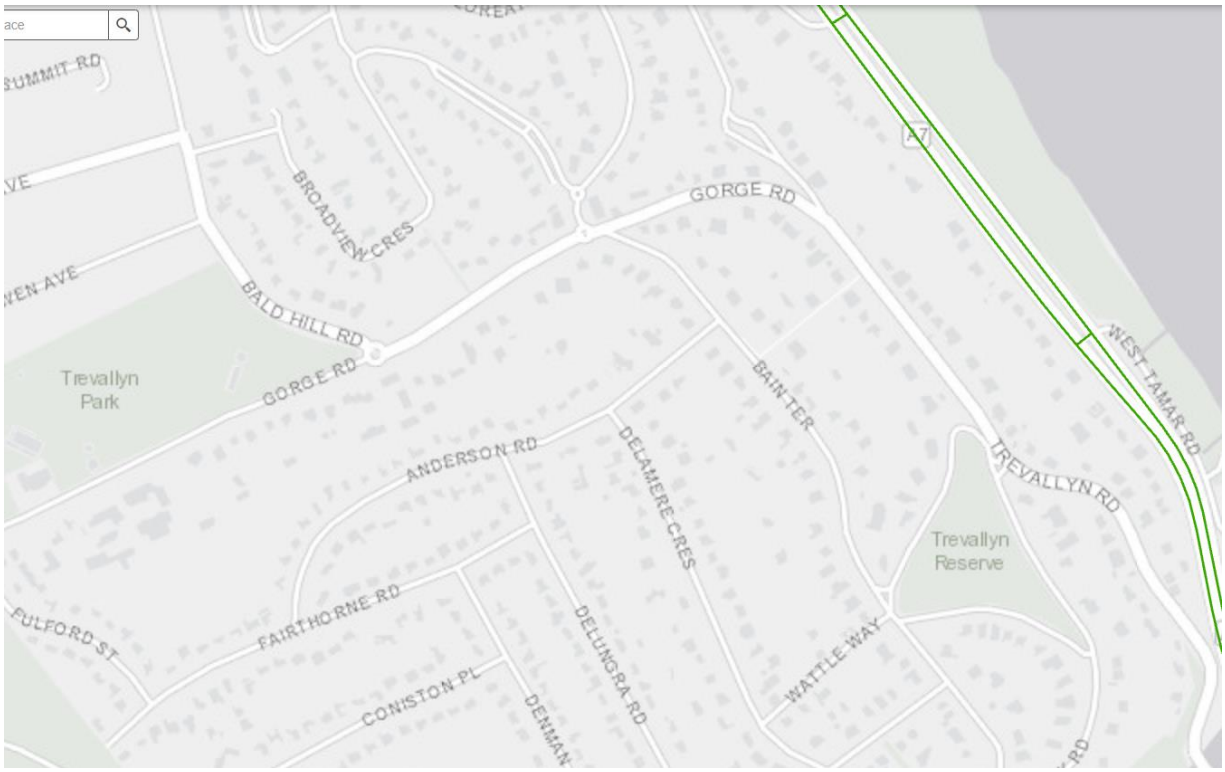
Note: Refer to Standard 11.1d) regarding the protocol for single staff.

b) School age care setting:

i. At all times, there must be a minimum of one carer on duty. When there are 13 or more children on the premises, there must be at least two carers on duty.

https://publicdocumentcentre.education.tas.gov.au/library/Shared%20Documents/Centre-Based-Care-Class-5-Licensing-Standards.pdf

Appendix C – Tasmanian 26m B Double Network



Legend

Network Access - State Growth

B Double (26m) Structures with conditions
- Conditionally approved B-Double overpass
- Conditionally approved B-Double bridge
- Restricted Structure

B Double (26m)
- 26m B-Double access
- Conditionally Approved 26m B-Double access
- Restricted Road

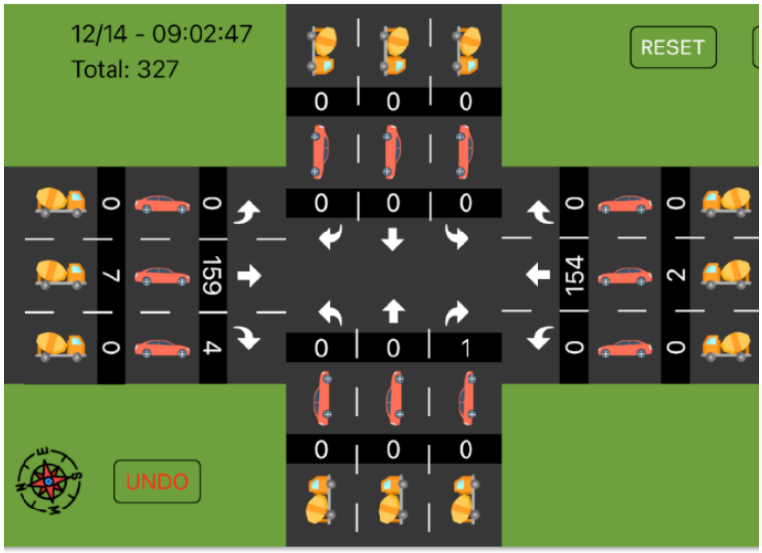
Network Access - not State Growth

B Double (26m) Structures with conditions
- Conditionally approved B-Double overpass
- Conditionally approved B-Double bridge
- Restricted Structure

B Double (26m)
- 26m B-Double access
- Conditionally Approved 26m B-Double access
- Restricted Road

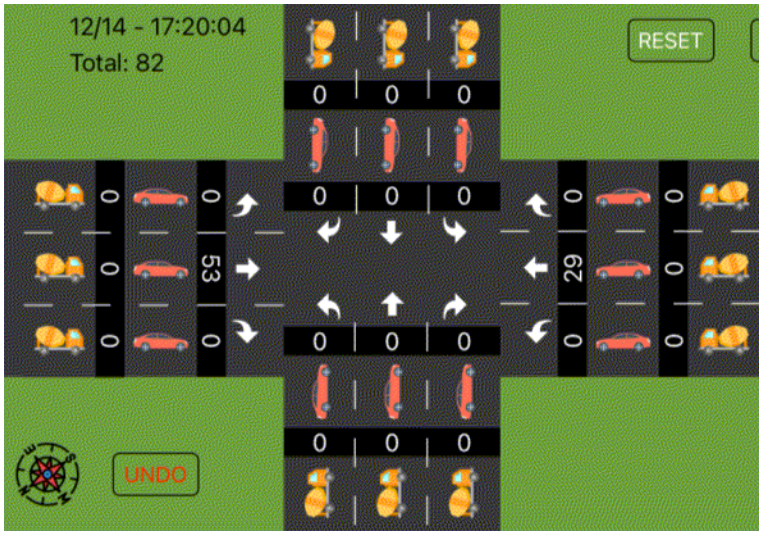
Appendix D – Gorge Road Traffic Data

8:33-9:03 AM Wednesday 14th Dec 2022



327 vehicles in 30 minutes (with 250 movements due to school traffic) i.e 77 movements / 30 minutes without school traffic.

4:50 – 5:20 PM Wednesday 14th Dec 2022



82 vehicles in 30minutes (with 32 movements due to cricket training) ie 50 movements / 30 minutes without cricket training.

Estimated AADT on Gorge Road is 1,850 vpd at 53 Gorge Road.

Appendix E – Gorge Road Off & On Street Parking Observations

Off-street Car Park

14th Dec 2022 8:20AM

- **Capacity – 34 spaces**
- **Utilisation – 4 spaces**

14th Dec 2022 9:20AM

- **Capacity – 34 spaces**
- **Utilisation – 4 spaces**

14th Dec 2022 5:20PM

- **Capacity – 34 spaces**
- **Utilisation – 25 spaces**

On-street Parking PM

17th May 2023 2:00PM On Street Parking

17th May 2023 3:00PM On Street Parking

17th May 2023 3:15 PM On Street Parking

17th May 2023 3:00 PM On Street Parking Efficiency

Inefficient parking with large spaces between vehicles of 4m. Potential for denser parking if required.

17th May 2023 3:00 PM On-Street Parking Efficiency

17th May 2023 3:00 PM Free On-Street Spaces

Two on- street spaces on the Southern side of Gorge Road some 60m East of 53 Gorge Road.

On Street Parking AM

14th Dec 2022 8:20AM

14th Dec 2022 9:20AM

The images show ample on street parking is available East of 53 Gorge Road.

Parking peaks at 8:50 AM when there are an additional 8 cars.

There is ample on Street parking available East of the 62 Gorge Road car park driveway.

Appendix F – Gorge Rd & Fulford St. West of 53 Gorge Rd

17th May 2023 – Gorge Road Bus Zone – 3PM

17th May 2023 – Fulford Street Bus Zone – 3PM

17th May 2023 – Fulford St On Street Parking & Bus Zone 3PM

Two on- street spaces on the Southern side of Gorge Road some 60m East of 53 Gorge Road.

17th May 2023 – Fulford Street Bus Zone 3PM

Appendix G – Existing Stormwater Drainage Easement & channel.

Looking Upstream from the Gorge Rd footpath, West side of #53

Looking Upstream from the Gorge Rd footpath, West side of #53

Looking downstream towards Gorge Rd footpath, West side of #53

Looking downstream at inlet to Stormwater Pipe beside Gorge Rd Footpath, West side of #53

Side view of fence across the drainage easement

Elevation view of fence across the drainage easement

Existing stormwater line

View of development site slope in relation to drainage easement

Stormwater continuation from drainage easement

Nearest suitable stormwater connection point to 53 Gorge Road

Existing stormwater line

Proposed stormwater line & pit.

Environmental Noise Level Impact Assessment for Proposed Child Care Centre, 53 Gorge Road, Trevallyn, Tasmania

conducted for

James Willson Arias Charry

Report No: R22128.docx/D3014D3739/Rev.1/11.05.2023

Description	Name	Date
Interim report	David Moore	15.12.2022
Ambient noise assessment	David Moore	17-23.01.2023
Draft Report	David Moore	27.01.2023
Final Report	David Moore	31.01.2023
Revision 1 – responding to Council queries	David Moore	11.05.2023

Report prepared for:	James Willson Arias Charry 1402/572 St Kilda Road MELBOURNE VIC 3004
Authorised by:	Mr James Arias
	Telephone: 0421 253 359 Fax: -
Dates of assessment:	Tuesday 17 to Monday 23 January 2023
Consultants:	David Moore & Associates Pty Ltd (PO Box 38) 7 Eleanor Drive SILVAN VIC 3795
	Telephone: 07 3170 3222 Mobile: 0417 717 506
	.... David Moore, B App Sc, MAAS
Our reference:	R22128.docx/D3014D3739/Rev.1/11.05.2023

Table of Contents

Page No.

INTRODUCTION

It is proposed to develop a child care centre on the subject site at 53 Gorge Road, Trevallyn, Tasmania. The subject site is adjoined by residential properties to the east and the Trevallyn Primary School to the west and south, with Trevallyn Park/Trevallyn Cricket Club to the north on the northern side of Gorge Road. There is no potential noise impact upon the proposed child care centre, however noise from the child care centre has the potential to noise impact the adjoining residences.

Noise from the child care centre could include vehicle activities, children at play outdoors and air-conditioning units.

The proposed child care centre will include the following features:

- carpark;
- child care centre building – ground floor and first floor;
- external play areas at ground and first floor levels.

l have not been able to locate any specific reference with respect to child care centres and applicable noise limits. No general reference could be found for overall noise limits of noise criteria either. In the absence of any apparent noise limit criteria imposed by Council reference has been made to the Association of Australasian Acoustical Consultants document *Guideline for Child Care Centre Acoustic Assessment, Version 3.0.* This Guideline requires that the ambient noise levels be measured over five consecutive weekdays and, from this information, the background sound levels (average of the minimum sound levels, $L_{A90,T}$) be determined for the hours of operation of the child care centre. From the background sound levels the relevant noise limits are determined. This ambient noise assessment was conducted from monitoring location A on the western boundary of the subject site approximately 30 metres from the Trevallyn Road boundary with the microphone elevated approximately 2 metres. The ambient noise assessment was conducted from Tuesday 17th to Monday 23rd January 2023 and the background sound levels extracted from this data. Typical child care centre source noise levels have been taken from the Guideline.

Further to the original version of this report (revision 0 dated 31.01.2023) City of Launceston issued an information request dated 24 April 2023. With respect to noise please note the following:

- final para. of page 1 of information request – the noise impact assessment report includes the location of the ground floor acoustic barriers at Figure 7A and the Level 1 acoustic barriers at Figure 7B;
- first para. of page 2 of information request – this revision 1 includes all of the requested information with respect to the roof mounted air-conditioning units and any associated acoustic barrier for the air-conditioning units.

This report details the background sound levels, noise limits, noise level impact to the closest adjoining residences, state of compliance with noise limits and any required noise control measures.

In preparing this report the following drawings, prepared by V.J.Agosta & Associates and dated 7th February 2023 were referenced:

- TPL01,4: Site Context Plan;
- TPL02,4: Design Response;
- TPL03,4: Existing Ground Floor Plan;
- TPL04,5: Proposed Ground Floor Plan;
- TPL05,4: Proposed First Floor Plan;
- TPL06,4: Proposed Roof Plan;
- TPL07,4: Proposed Elevations;
- TPL08,4: Proposed Sections.

Refer Figure 1 for locality plan and monitoring location A, Figure 2 for aerial photograph, Figures 3, 4 and 5 for plans for Ground and First Floor and roof respectively and Figure 6 for representative sections.

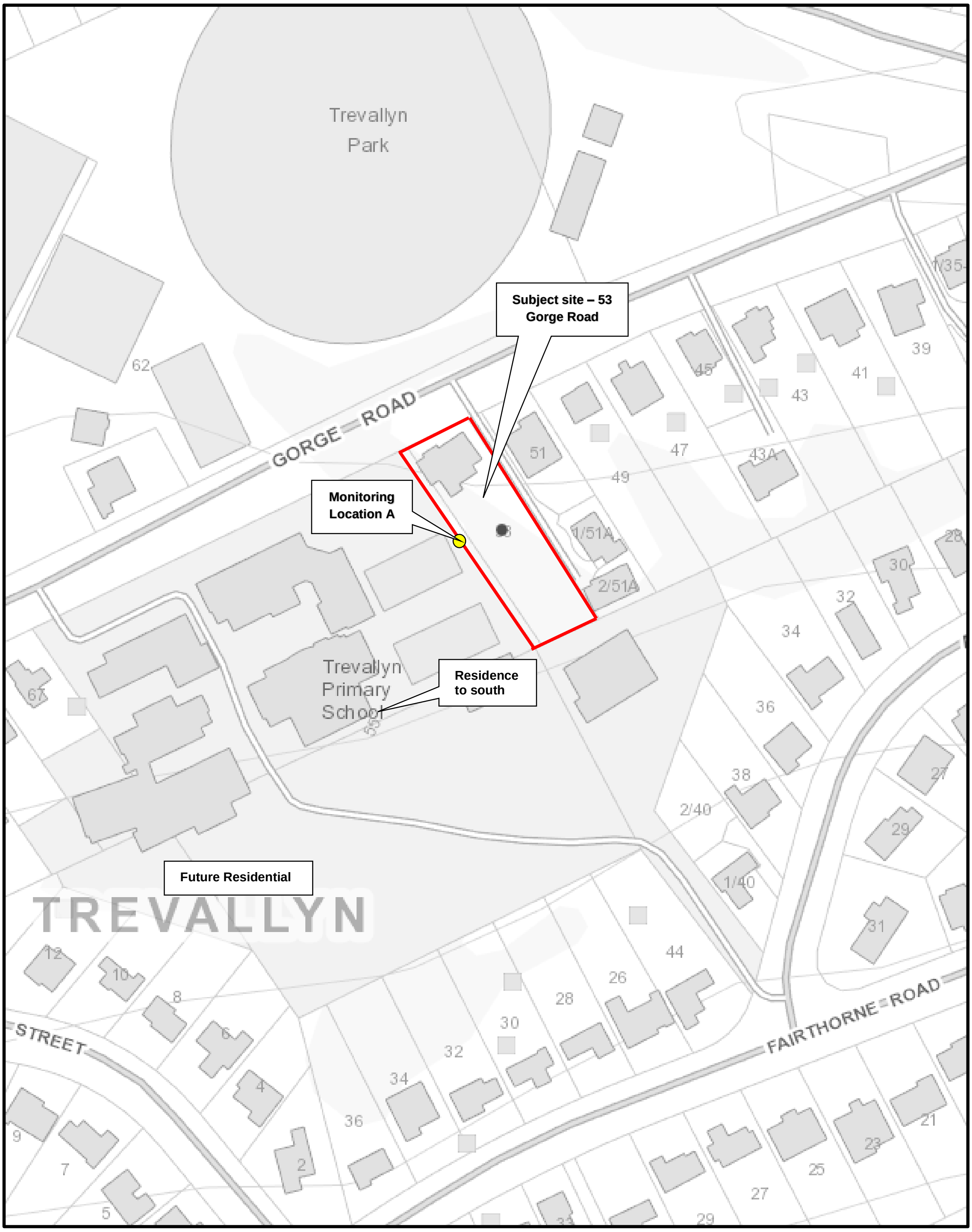


Figure 1
Locality Plan and Monitoring Location A (Top of the Page is North)

Figure 2
Aerial Photo of Subject Site and Immediate Surrounds (Top of the Page is NE)

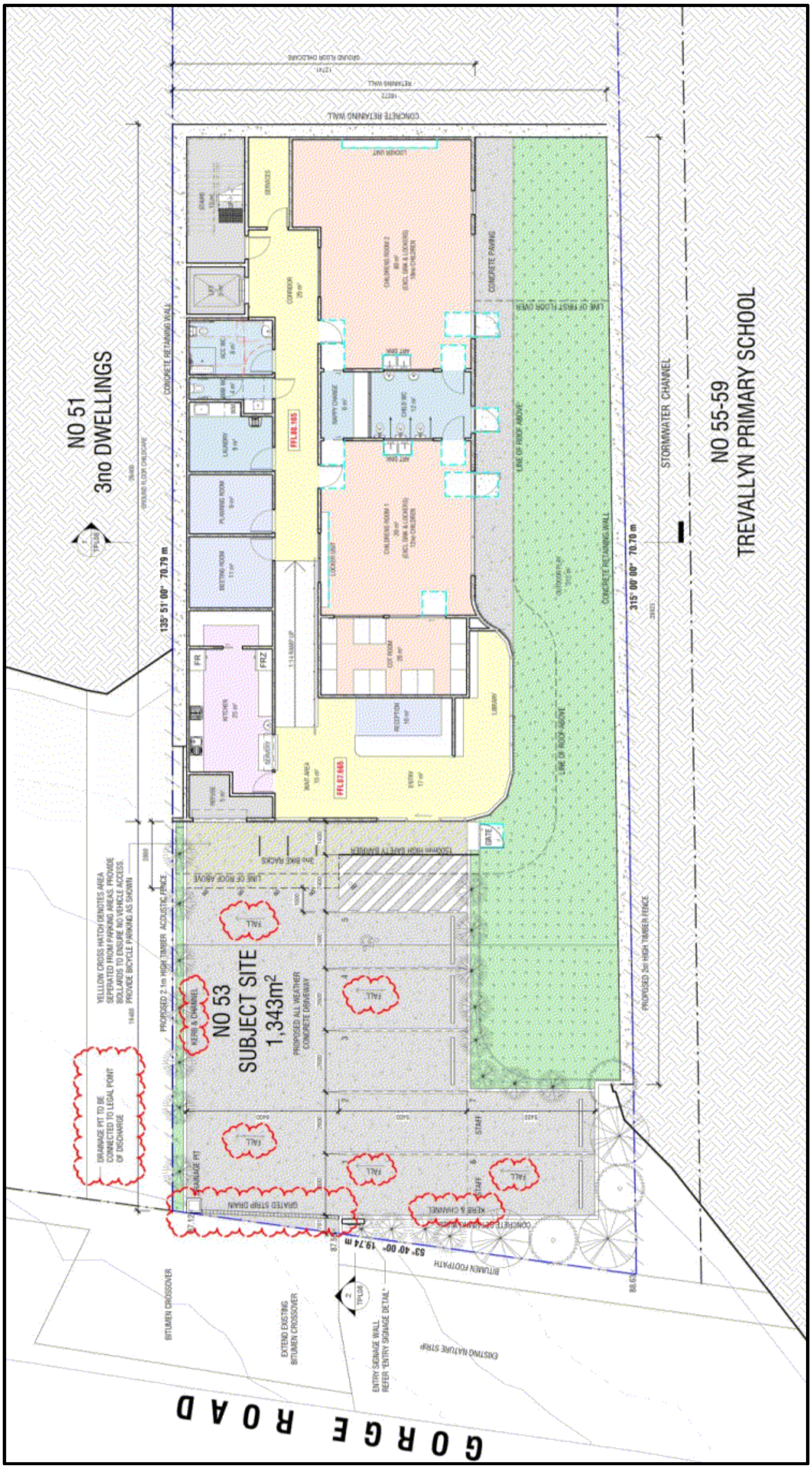


Figure 3
Ground Floor Plan

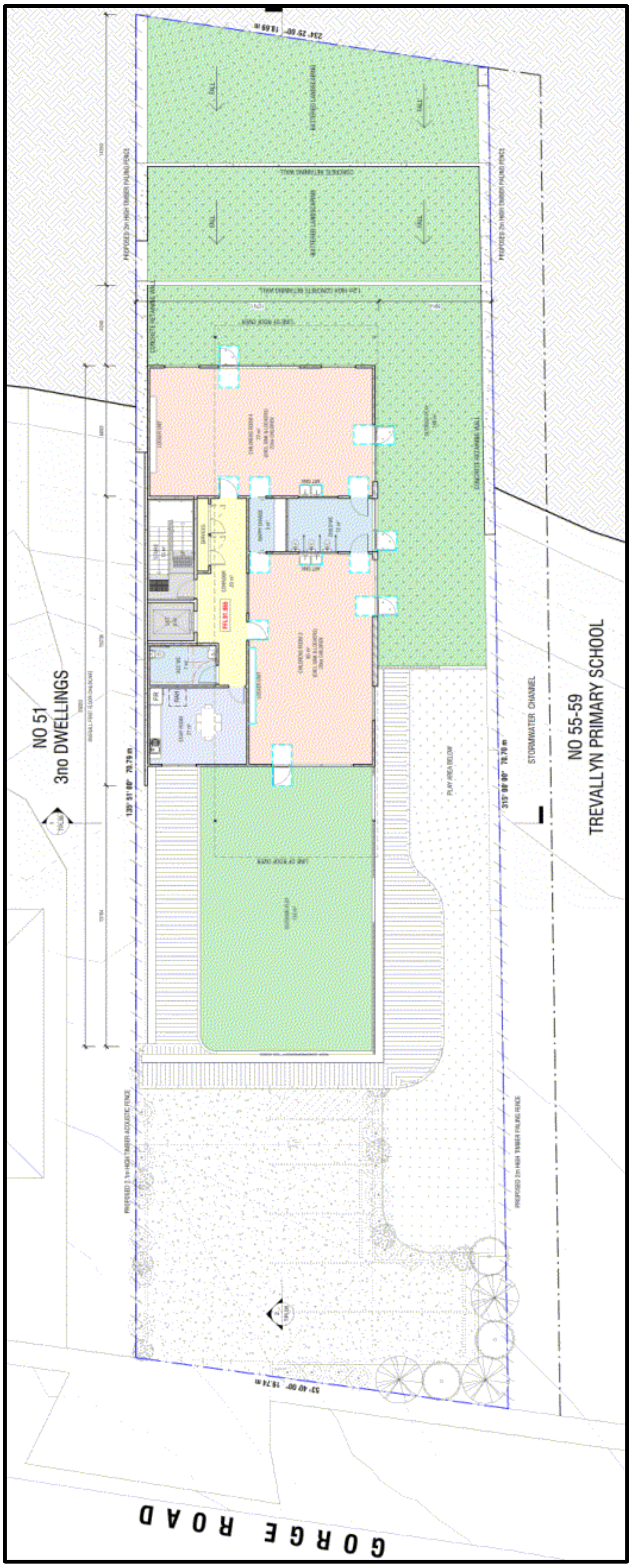


Figure 4
First Floor Plan

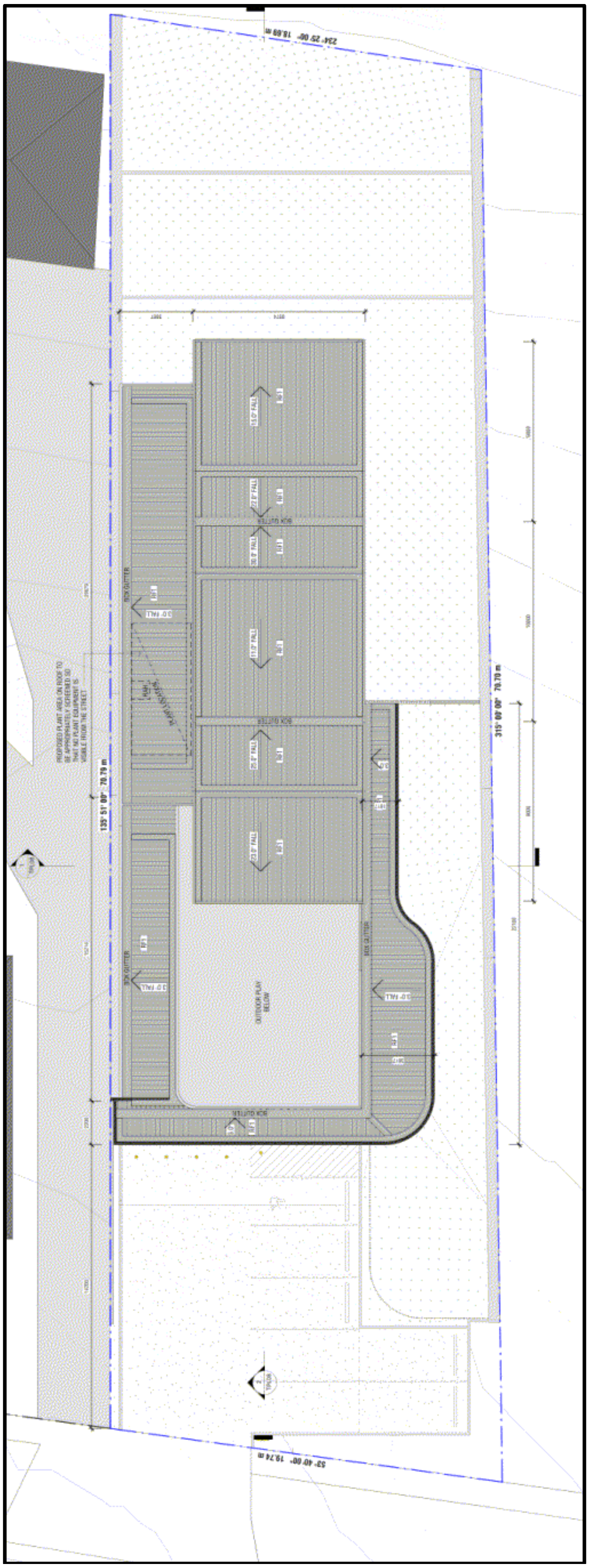


Figure 5
Roof Plan

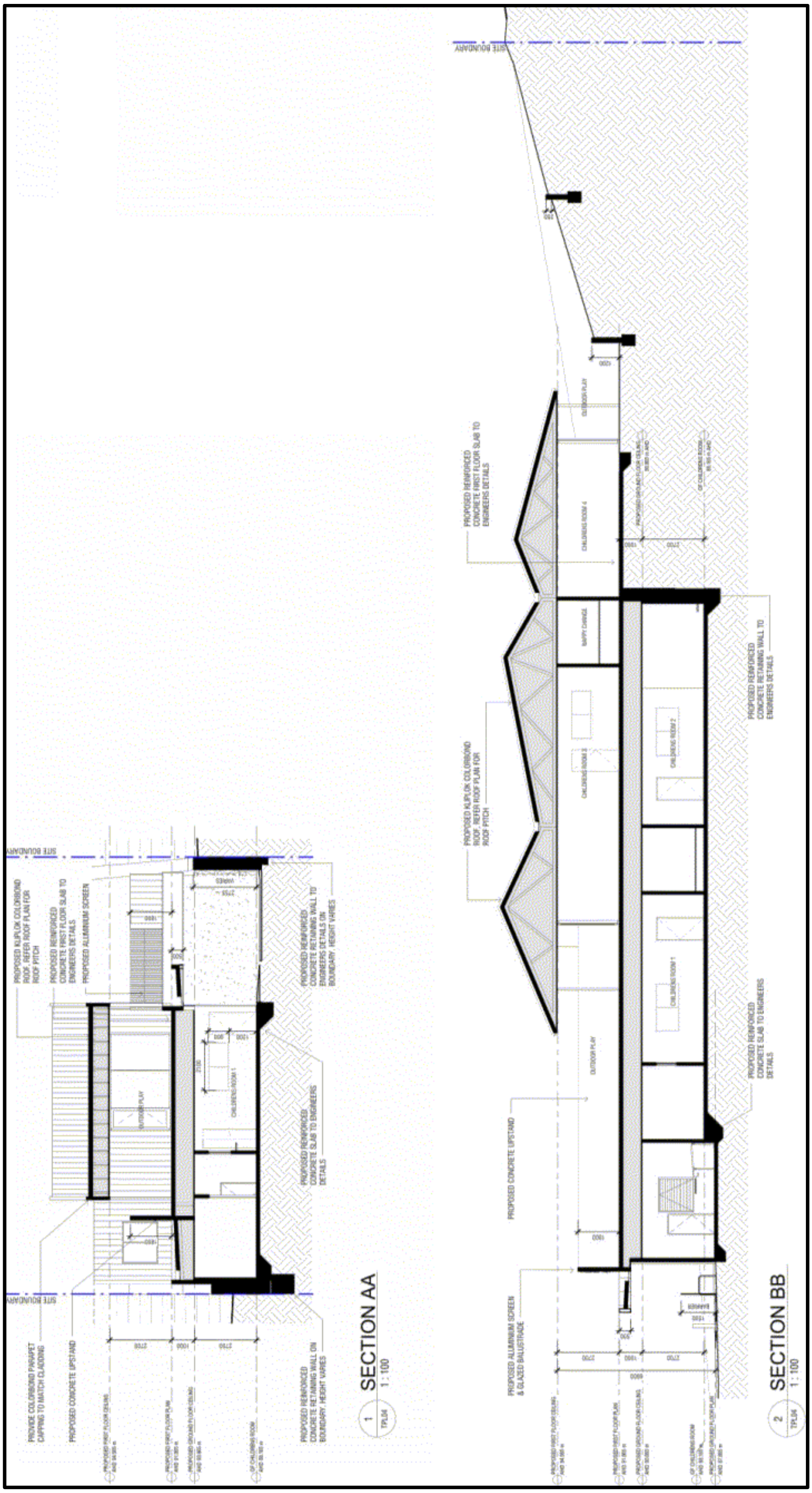


Figure 6
Sections

CRITERIA

Measurements and Calculations

All noise level measurements were conducted in accordance with the following:

- general requirements of the Tasmanian environmental protection legislation;
- *Noise Measurement Procedures Manual*, Tasmanian Government – Department of Environment, Parks, Heritage and the Arts, Second Edition, July 2008;
- Australian Standard AS 1055-2018, *Acoustics – Description and measurement of environmental noise;*
- Association of Australasian Acoustical Consultants document *Guideline for Child Care Centre Acoustic Assessment, Version 3.0.* (Guideline)

Noise Limits

In accordance with the Guideline if the measured background sound level relative to the hours of operation of the child care centre is less than 40 dB(A) then noise from the outdoor play area should not exceed 45 dB(A) $L_{Aeq,15min}$.

If the measured background sound level relative to the hours of operation of the child care centre is greater than 40 dB(A) then the noise from the outdoor play area should not exceed:

1. If the outdoor play area is not used for more than 2 hours in the morning and more than two hours in the afternoon, that is up to 4 hours total per day, then the noise limit is the measured background sound level + 10 dB(A), expressed as the $L_{Aeq,15min.}$
2. If the outdoor play area is not limited to no more than 2 hours in the morning and no more than two hours in the afternoon, that is more than 4 hours total per day, then the noise limit is the measured background sound level + 5 dB(A), expressed as the $L_{Aeq,15min.}$

For all other potential noise sources associated with the child care centre, including carpark activity, air-conditioning, indoor play, etc (but not including outdoor play) the noise limit criteria is background + 5 dB(A), expressed as the $L_{Aeq,15min.}$

The noise impact of the outdoor play area is considered one noise source. The noise level of all other potential noise sources, combined, is considered as another noise source.

AMBIENT NOISE LEVELS

Table 1 details the results of the ambient noise assessment conducted from the subject site from monitoring location A. Refer to Appendix A for details of sound level measurement equipment, equipment settings, calibration, monitoring location and atmospheric conditions and Appendix B for graphical presentation of the results of the ambient noise assessment for the primary parameters.

With respect to noise the following should be noted:

- daytime: 0700 to 1800 hours;
- evening: 1800 to 2200 hours;
- night-time: 2200 to 0700 hours;
- 'A' weighted: adjustment made by the sound level meter to the measured noise to correspond to the response of the human ear. This adjustment is standardised by international noise standards;

- $L_{Aeq,T}$: the equivalent continuous (or approximately the 'average') 'A' weighted sound pressure level for the measurement period 'T';
- $L_{A1,T}$: the 'A' weighted sound pressure level exceeded for 1% of the measurement period 'T';
- $L_{A10,T}$: the 'A' weighted sound pressure level exceeded for 10% of the measurement period 'T', which is an approximation of the 'average of the maximum noise levels';
- $L_{A90,T}$: the 'A' weighted sound pressure level exceeded for 90% of the measurement period 'T', which is an approximation of the 'average of the minimum noise levels', which is also known as the 'background' noise level.

Day	Date	Time	$L_{Aeq,T}$			$L_{A1,T}$			$L_{A10,T}$			$L_{A90,T}$		
			Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
Tuesday	17.01.23	Day	44.7	56.5	50.0	53.8	66.3	61.3	47.4	60.3	52.6	36.9	42.9	39.6
		Evening	45.3	62.7	55.7	51.3	70.2	63.2	46.2	65.9	58.5	41.2	55.9	46.6
		Night	41.6	56.1	50.7	44.2	64.4	58.5	42.7	59.7	54.5	38.0	46.6	41.4
Wednesday	18.01.23	Day	42.8	70.6	58.0	53.0	80.7	68.1	43.9	75.4	61.9	36.9	48.4	42.1
		Evening	43.9	64.1	57.7	47.4	76.3	68.2	44.9	67.2	60.5	40.6	58.9	49.8
		Night	38.7	59.3	50.2	41.7	66.3	58.6	40.2	60.3	52.3	36.3	50.2	43.2
Thursday	19.01.23	Day	46.0	55.7	51.2	55.4	70.3	62.5	47.7	56.3	53.1	37.7	43.1	40.7
		Evening	46.5	61.2	56.7	57.0	64.4	60.8	49.3	62.3	58.5	38.6	59.8	53.5
		Night	41.5	56.9	50.3	47.2	66.5	59.6	41.2	60.2	52.4	36.7	49.5	42.8
Friday	20.01.23	Day	43.9	56.2	50.3	54.2	69.1	61.6	45.5	56.5	51.5	36.5	42.1	39.1
		Evening	46.3	60.1	53.4	52.2	64.6	60.4	48.1	63.8	56.0	39.5	55.1	47.6
		Night	43.5	58.9	50.3	47.6	68.2	59.1	44.7	59.4	51.9	37.5	49.4	44.1
Saturday	21.01.23	Day	44.4	67.8	57.6	54.3	81.3	69.6	47.2	71.3	59.1	37.1	47.7	40.4
		Evening	42.6	66.0	55.6	50.1	68.1	60.5	45.0	66.9	57.3	37.5	63.5	52.4
		Night	40.7	62.5	51.8	47.1	74.6	61.7	41.7	58.9	52.5	36.0	50.5	42.6
Sunday	22.01.23	Day	44.4	59.9	53.0	53.7	69.0	62.1	45.3	65.2	56.4	34.5	50.9	44.1
		Evening	44.5	73.4	62.3	50.0	75.0	67.2	45.6	74.4	65.1	40.0	71.8	59.8
		Night	39.7	65.4	51.8	42.7	71.7	59.2	40.7	70.6	56.2	37.5	47.7	41.8
Monday	23.01.23	Day	45.6	54.7	49.5	54.2	69.0	60.5	47.7	56.8	51.4	38.1	43.5	40.4

With respect to atmospheric conditions during the above ambient noise monitoring refer Appendix C for details. The only day that there was rain was Wednesday 18th January 2023. However, as this rain event did not adversely impact the ambient noise levels there was no need to exclude any of the data from the averaging.

Average Noise Level, dB(A)

$L_{Aeq,T}$	Daytime	52.8
	Evening	56.9
	Night-time	50.9
$L_{A1,T}$	Daytime	63.7
	Evening	63.4
	Night-time	59.5
$L_{A10,T}$	Daytime	55.1
	Evening	59.3
	Night-time	53.3
$L_{A90,T}$	Daytime	40.9
	Evening	51.6
	Night-time	42.7

For the anticipated hours of operation for the child care centre, namely 0600 to 1800 hours Monday to Friday, the average background sound level for this time period for the five week days was 40.4 dB(A) $L_{A90,T}$. As the average background sound level was greater than 40 dB(A) the applicable noise limit for the external play areas would be:

- 50 dB(A) $L_{Aeq,15min}$ if the outdoor play area is not used for more than 2 hours in the morning and more than two hours in the afternoon, that is up to 4 hours total per day;
- 45 dB(A) $L_{Aeq,15min}$ if the outdoor play area is not limited to no more than 2 hours in the morning and no more than two hours in the afternoon, that is more than 4 hours total per day

The noise limit for all other noise sources (eg carpark activities, air-conditioning units, indoor play areas (but not including external play areas, etc) is 45 dB(A) $L_{Aeq,15min}$.

NOISE FROM SUBJECT SITE

Noise from the proposed child care centre has been considered to the closest residences, with these residences identified in Figure 7 below.

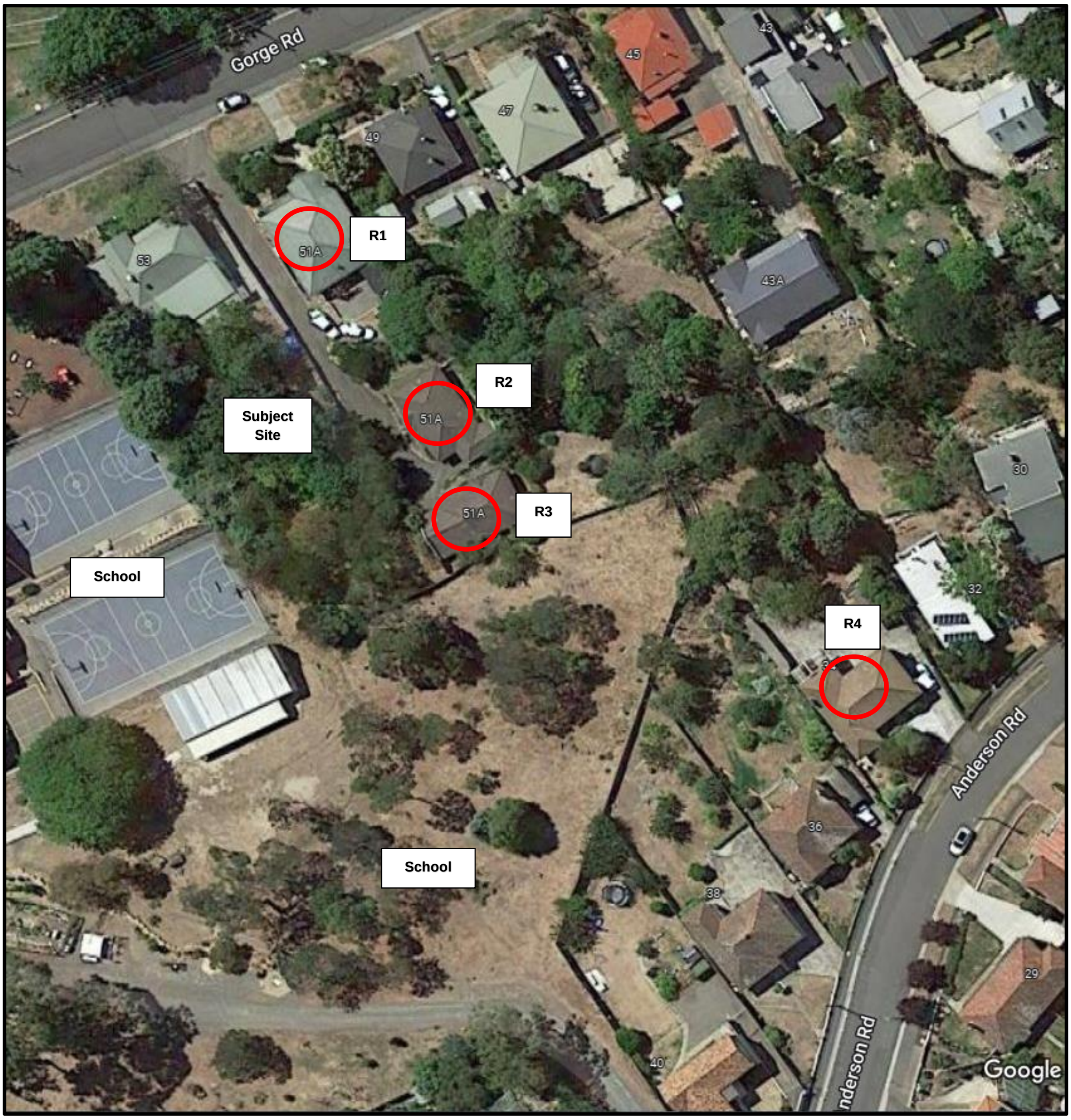


Figure 7
Closest Residences to Proposed Child Care Centre, R1 to R4

Outdoor Play Areas

In accordance with the Guideline the following source noise levels for different age children outdoors playing (for 10 children) are:

- 0 to 2 years: 78 dB(A) $L_{WAeq,T}$;
- 2 to 3 years: 85 dB(A) $L_{WAeq,T}$;
- 3 to 5 years: 87 dB(A) $L_{WAeq,T}$.

For more than 10 children at play outdoors the following formula is used:

- effective sound power level for 'n' children = effective sound power level for 10 children + 10log(n÷10)

In accordance with the plans there are two rooms at ground floor level with 12 and 18 children respectively with the one external play area, whilst for the first floor level there are two rooms, one with approximately 22 children and the other with approximately 18 children, each with their own external play area. The internal rooms have been identified as follows for the purpose of this report, together with the anticipated age groups:

- ground floor:
  - Room 1: 12 children, 0 to 2 years;
  - Room 2: 18 children, 2 to 3 years;
- First floor:
  - Room 3: 22 children, 4 to 5 years;
  - Room 4: 18 children, 3 to 4 years.

It has been assumed that there will be a different age group in each of the rooms and for the ground floor single external play area there would only ever be one room of children out playing at any one time. For the different rooms, for the anticipated age groups, the associated noise levels are:

- Room 1 (0-2 years): 12 children, noise level = 79 dB(A) $L_{WAeq,T}$;
- Room 2 (2-3 years): 18 children, noise level = 88 dB(A) $L_{WAeq,T}$;
- Room 4 (3-4 years): 18 children, noise level = 90 dB(A) $L_{WAeq,T}$;
- Room 5 (4-5 years): 22 children, noise level = 90 dB(A) $L_{WAeq,T}$.

For the closest residences the noise of children at play outdoors will be (calculated from the centre of each outdoor play area):

- R1:
  - Room 1: 79 – 35 (distance) – 8 (acoustic barrier) = 36 dB(A) $L_{Aeq,15min}$;
  - Room 2: 88 – 37 (distance) – 15 (barrier-building) = 36 dB(A) $L_{Aeq,15min}$;
  - Room 3: 90 – 31 (distance) – 10 (acoustic barrier) = 49 dB(A) $L_{Aeq,15min}$;
  - Room 4: 90 – 41 (distance) – 15 (barrier-building) = 34 dB(A) $L_{Aeq,15min}$;
- R2:
  - Room 1: 79 – 41 (distance) – 15 (barrier-building) = 23 dB(A) $L_{Aeq,15min}$;
  - Room 2: 88 – 36 (distance) – 15 (barrier-building) = 37 dB(A) $L_{Aeq,15min}$;
  - Room 3: 90 – 37 (distance) – 10 (acoustic barrier) = 43 dB(A) $L_{Aeq,15min}$;
  - Room 4: 90 – 34 (distance) – 10 (acoustic barrier) = 46 dB(A) $L_{Aeq,15min}$;
- R3:
  - Room 1: 79 – 43 (distance) – 15 (barrier-building) = 21 dB(A) $L_{Aeq,15min}$;
  - Room 2: 88 – 38 (distance) – 10 (barrier-building) = 40 dB(A) $L_{Aeq,15min}$;
  - Room 3: 90 – 40 (distance) – 15 (barrier-building) = 35 dB(A) $L_{Aeq,15min}$;
  - Room 4: 90 – 30 (distance) – 10 (acoustic barrier) = 50 dB(A) $L_{Aeq,15min}$;

- R4:
  - Room 1: 79 – 49 (distance) – 8 (barrier-building) = 22 dB(A) $L_{Aeq,15min}$;
  - Room 2: 88 – 48 (distance) – 8 (barrier-topography) = 32 dB(A) $L_{Aeq,15min}$;
  - Room 3: 90 – 48 (distance) – 10 (barrier-building) = 32 dB(A) $L_{Aeq,15min}$;
  - Room 4: 90 – 45 (distance) – 10 (barrier-topography) = 35 dB(A) $L_{Aeq,15min}$.

Assuming that the outdoor play areas will not be used for more than 2 hours during the morning and not more than 2 hours in the afternoon the noise limit for the outdoor play area is 50 dB(A) $L_{Aeq,15min}$. This noise limit is complied with at all of the closest residences, provided that there are acoustic barriers providing up to 10 dB(A) reduction for R1, R2 and R3, as detailed in Figures 8A and 8B.

All Other Noise Sources

It has been assumed that the child care centre will be air-conditioned and that the air-conditioning units will be located in the dedicated area on the roof, as shown on the roof plan (Figure 5 refers). At the time of preparing this revision 1 report the manufacturer and model number for the air-conditioning units had been decided, namely Daikin RZA100CV1 for the external units with a sound power level of 71 dB(A) L_{WAeq}. There will be four to six of these air-conditioning units located within the dedicated area on the roof.

For carpark activity, including vehicles arriving and departing, car doors closing, engines starting and people talking, the noise level is 52 dB(A) $L_{Aeq,15min}$ @ 8 metres.

For the closest residences these noise sources will be:

- R1:
  - air-conditioners = 71 dB(A) L_{WAeq} + 7.8 (6 air-conditioning units) – 31 (distance) – 6 (acoustic barrier) = 41.8 dB(A) $L_{Aeq,15min}$;
  - carpark = 52 dB(A) @ 8m – 5 (distance) – 8 (acoustic barrier) = 39 dB(A) $L_{Aeq,15min}$;
  - total = 41.8 + 39 = 43.6 = 44 dB(A) $L_{Aeq,15min}$;
- R2:
  - air-conditioners = 71 dB(A) L_{WAeq} + 7.8 (6 air-conditioning units) – 28 (distance) – 6 (acoustic barrier) = 44.8 dB(A) $L_{Aeq,15min}$;
  - carpark = 52 dB(A) @ 8m – 15 (distance) – 10 (barrier-building) = 27 dB(A) $L_{Aeq,15min}$;
  - total = 44.8 + 27 = 44.9 = 45 dB(A) $L_{Aeq,15min}$;
- R3:
  - air-conditioners = 71 dB(A) L_{WAeq} + 7.8 (6 air-conditioning units) – 34 (distance) – 6 (acoustic barrier) = 38.8 dB(A) $L_{Aeq,15min}$;
  - carpark = 52 dB(A) @ 8m – 17 (distance) – 15 (barrier-building) = 20 dB(A) $L_{Aeq,15min}$;
  - total = 38.8 + 20 = 38.9 = 39 dB(A) $L_{Aeq,15min}$;
- R4:
  - air-conditioners = 71 dB(A) L_{WAeq} + 7.8 (6 air-conditioning units) – 47 (distance) – 6 (acoustic barrier) = 25.8 dB(A) $L_{Aeq,15min}$;
  - carpark = 52 dB(A) @ 8m – 23 (distance) – 8 (barrier-topography) = 21 dB(A) $L_{Aeq,15min}$;
  - total = 25.8 + 21 = 27.0 = 27 dB(A) $L_{Aeq,15min}$;

For all of the above adjacent residences to the proposed child care centre all other noise sources do not exceed the 45 dB(A) noise limit, provided that the acoustic barriers for the external play areas and the roof-mounted air-conditioning units are in place.

NOISE CONTROL

The noise of children at play outdoor needs to be reduced by acoustic barriers by the following margins at the nominated closest residences:

- R1: 8 dB(A) for ground floor and 10 dB(A) for first floor;
- R2: 0 dB(A) for ground floor and 10 dB(A) for first floor;
- R3: 0 dB(A) for ground floor and 10 dB(A) for first floor;
- R4: 0 dB(A) for ground floor and 0 dB(A) for first floor.

For the combined impact of all other noise sources, these noise sources need to be reduced by acoustic barriers by the following margins at the nominated closest residences:

- R1: 8 dB(A) reduction for carpark activity and 6 dB reduction for roof mounted air-conditioning units;
- R2: 0 dB(A) for carpark and 6 dB reduction for roof mounted air-conditioning units;
- R3: 0 dB(A) for carpark and 6 dB reduction for roof mounted air-conditioning units;
- R4: 0 dB(A) for carpark and 6 dB reduction for roof mounted air-conditioning units.

Combining the above two sets of noise reductions for the children at play and the carpark, the overall noise reduction requirements are:

- R1: 8 dB(A) for ground floor and 10 dB(A) for first floor;
- R2: 0 dB(A) for ground floor and 10 dB(A) for first floor;
- R3: 0 dB(A) for ground floor and 10 dB(A) for first floor;
- R4: 0 dB(A) for ground floor and 0 dB(A) for first floor.

Separate to the above the roof mounted air-conditioning units (total number of units = 6) need an acoustic barrier to reduce their combined noise level by 6 dB(A).

For the carpark and external play areas an acoustic barrier 2.1 metres high will provide a noise reduction of 8 dB(A) for the Room 1 outdoor play area and the carpark to R1, whilst an acoustic barrier 1.2 metres high will provide a noise reduction of 11 dB(A) for the first floor outdoor play areas. The height of the acoustic barriers is referenced to the finished level of the outdoor play areas. For the first floor outdoor play areas some or all of the height of the required acoustic barriers could be achieved with retaining walls. The extent of the acoustic barriers is detailed in Figure 8A for the ground floor and Figure 8B for the first floor. In accordance with the Guideline the adopted source height for children at play outdoors was 1.0 metres and the adopted receiver height was 1.6 metres.

The acoustic barriers must be continuous and gap free, height relative to existing ground levels, located as per Figure 6 and be constructed from materials with a minimum surface area density of 12.5 kg/m^2. EXAMPLES of suitable materials of construction for the acoustic barriers include, but are not limited to:

- reinforced concrete;
- concrete block;
- brick;
- hebel panel;
- sheet metal at least 2.5 mm thick;
- minimum 9 mm thick fibrous cement sheet;
- lapped timber palings, for example, kiln dried softwood palings at least 23 mm thick and overlapped a minimum 20 mm;
- any combination of the above.

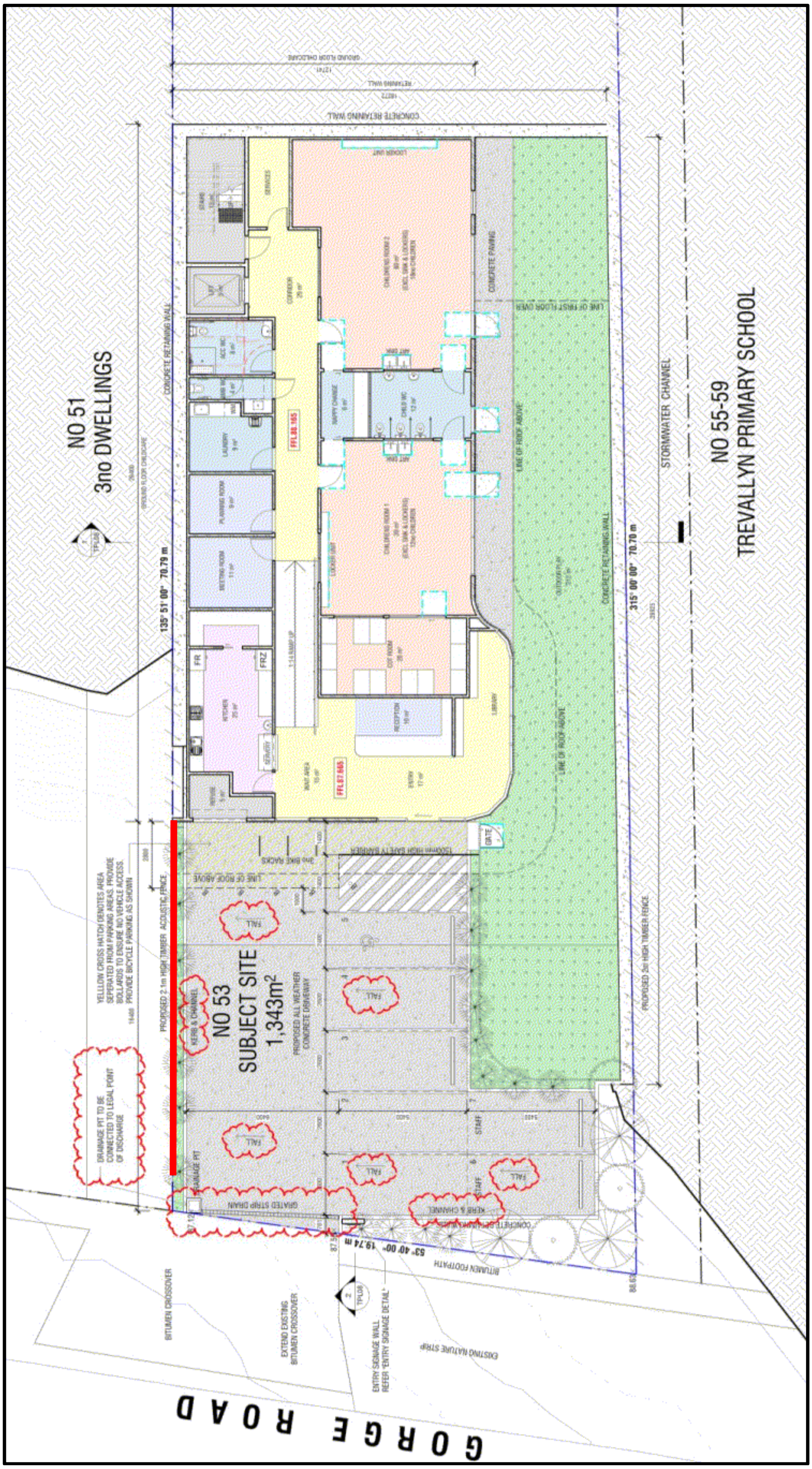


Figure 8A
Location of 2.1 metre High Acoustic Barrier (Bold Red Line) for Ground Floor

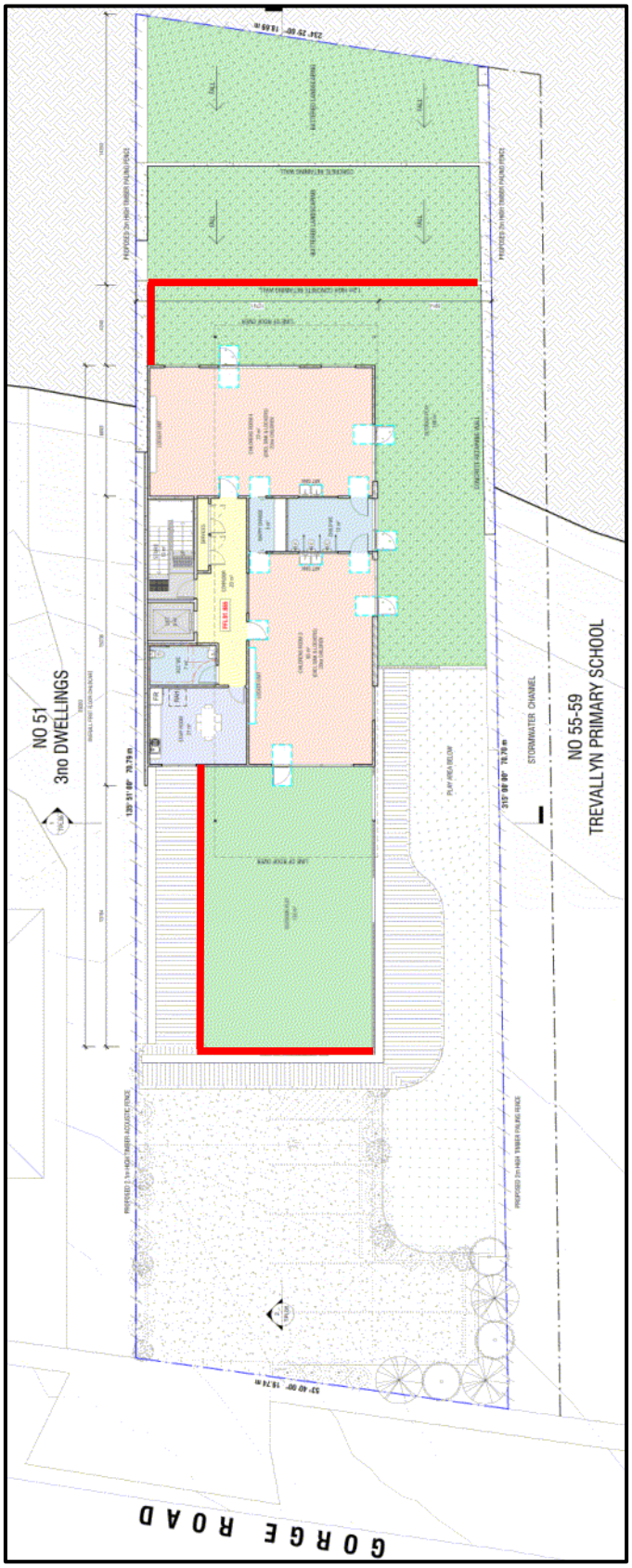


Figure 8B
Location of Required Minimum 1.2 metre High Acoustic Barriers (Bold Red Lines) for First Floor

For the rooftop air-conditioning units an acoustic barrier 1.2 metres high relative to the base level of the air-conditioning units and located as per Figure 9 will reduce air-conditioning unit noise levels by at least 6 dB(A). This acoustic barrier could be constructed from any materials with have a surface area density of at least 12.5 kg/m^2 (as listed above). Another example of suitable materials of construction for the rooftop acoustic barrier would be:

- steel studs at least 70mm deep;
- external cladding of minimum 7.5mm thick fibrous cement sheeting;
- internal cladding of perforated metal;
- cavity infill of thermal insulation;
- capped at the top with sheet metal to prevent water penetration to the cavity.

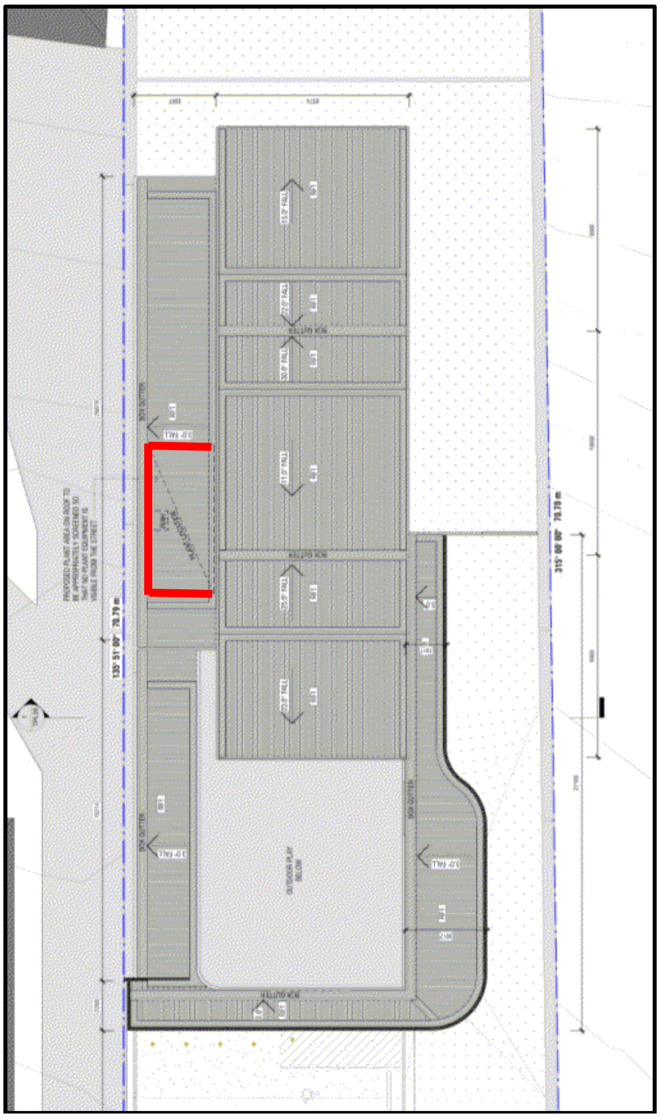


Figure 9
Location of 1.2 metre High Acoustic Barrier for Rooftop Air-conditioning Units (Bold Red Line)

CONCLUSIONS

It is proposed to develop a child care centre on the subject site at 53 Gorge Road, Trevallyn, Tasmania. The subject site is adjoined by residential properties to the east and the Trevallyn Primary School to the west and south, with Trevallyn Park/Trevallyn Cricket Club to the north on the northern side of Gorge Road. There is no potential noise impact upon the proposed child care centre, however noise from the child care centre has the potential to noise impact the adjoining residences.

In accordance with the following Tasmanian documents:

- Launceston Council Town Planning Scheme;
- Tasmanian Environment Protection (Noise) Policy 2009;
- Tasmanian Noise Measurement Procedures Manual;
- Environmental Protection Pollution Control (Noise) Regulation 2016;

I have not been able to locate any specific reference with respect to child care centres and applicable noise limits. No general reference could be found for overall noise limits of noise criteria either. In the absence of any apparent noise limit criteria imposed by Council reference has been made to the Association of Australasian Acoustical Consultants document *Guideline for Child Care Centre Acoustic Assessment, Version 3.0.* This Guideline requires that the ambient noise levels be measured over five consecutive weekdays and, from this information, the background sound levels (average of the minimum sound levels, $L_{A90,T}$) be determined for the hours of operation of the child care centre. From the background sound levels the relevant noise limits are determined.

The background noise assessment was conducted from monitoring location A on the western boundary of the subject site approximately 30 metres from the Trevallyn Road boundary with the microphone elevated approximately 2 metres. The ambient noise assessment was conducted from Tuesday 17th to Monday 23rd January 2023 and the background sound levels extracted from this data.

For the likely hours of operation of the child care centre, namely 0600 to 1800 hours, the average background sound level was 40.4 dB(A) and, therefore, in accordance with the Guideline, the noise limit for the external play areas would be:

- 50 dB(A) $L_{Aeq,15min}$ if the outdoor play area is not used for more than 2 hours in the morning and more than two hours in the afternoon, that is up to 4 hours total per day;
- 45 dB(A) $L_{Aeq,15min}$ if the outdoor play area is not limited to no more than 2 hours in the morning and no more than two hours in the afternoon, that is more than 4 hours total per day

The noise limit for all other noise sources (eg carpark activities, air-conditioning units, indoor play areas (but not including external play areas, etc) is 45 dB(A) $L_{Aeq,15min}$. The air-conditioning units to be installed are Daikin RZA100CV1 outdoor units with a noise level of 71 dB(A) L_{WAeq} and there will be a maximum of 6 units.

For the purpose of this report it has been assumed that the external play areas will not be used for more than 2 hours in the morning and two hours in the afternoon.

Source noise levels were calculated to the closest adjoining residences – identified as R1 to R4 in Figure 7 – and compared to the noise limits. In accordance with the Guideline noise from the external play areas was considered as a separate noise source to all other potential noise sources.

The required noise reductions can be achieved with the ground floor 2.1 metre high acoustic barrier and the first floor minimum 1.2 metre high acoustic barriers detailed in the Noise Control section of this report – Figures 8A and 8B refer. It should be noted that for the first floor acoustic barriers some or all of the required barrier height could be achieved with retaining walls.

These acoustic barriers must be continuous and gap free, height relative to existing ground levels, located as per Figures 8A and 8B and be constructed from materials with a minimum surface area density of 12.5 kg/m^2.

For the roof mounted air-conditioning units a 'U' shaped acoustic barrier is required, located as per Figure 9 and this acoustic barrier must also have a minimum surface area density of 12.5 kg/m^2 and be at least 1.2 metres high relative to the base of the air-conditioning units.

With these acoustic barriers in place noise from the proposed child care centre, for operation from 0600 to 1800 hours Monday to Friday, will comply with the noise limit criteria detailed in the Association of Australasian Acoustical Consultants document *Guideline for Child Care Centre Acoustic Assessment, Version 3.0.*

RECOMMENDATION

It is recommended that, from an environmental noise perspective, the proposed child care centre for 53 Gorge Road, Trevallyn, Tasmania be approved, provided that the noise control measures detailed in this report are incorporated into this development.

APPENDIX A: AMBIENT NOISE LEVEL MEASUREMENT EQUIPMENT

Measurement Equipment

The following equipment was used to conduct the ambient noise level study at Monitoring Location A, on the subject site:

- Bruel and Kjaer Type 2260 Handheld Analyzer, Serial No 2487423, with Type BZ 7219 Software version 1.2 and Pre-polarised free field ½" microphone, Type 4189, Serial No. 2469624;
- Bruel and Kjaer Type 3592 outdoor microphone kit, including Type UA1404 outdoor microphone;
- Bruel and Kjaer Type AO 0442 ten metre microphone extension cable; and
- Bruel and Kjaer Type 4231 Sound Level Calibrator, Serial No. 2292736.

All of the above equipment is Type 1 in accordance with the requirements of Australian Standard AS 1259-1990, *Acoustics – Sound Level Meters*, as required by Australian Standard AS 1055.1-1997.

Measurement Equipment Settings

The above equipment was used with the following settings:

- Detector: RMS
- Time Weighting: FAST
- Frequency Weighting: A
- Sound Incidence: FRONTAL
- Microphone sensitivity: -29.6 dB

Calibration

The sound level meter was calibrated to the required value of 93.8 dB at 1000 Hz immediately before and after the noise level measurements were conducted. At no time was an adjustment of more than ±0.5 dB required. This complies with the requirements of the Australian Standard.

Monitoring Location

Monitoring Location A was located approximately 30 metres inside the Gorge Road boundary on the western side boundary, with the microphone elevated approximately 2.0 metres. Refer Figure 1 for further detail.

Atmospheric Conditions

Throughout the 7-day ambient noise level study atmospheric conditions complied with the requirements of the Australian Standard.

APPENDIX B: RESULTS OF AMBIENT NOISE LEVEL MEASUREMENTS

Instrument:		2260
Application:		BZ7219 version 1.2
Start Time:		17/01/2023 07:00:02 AM
End Time:		23/01/2023 06:01:21 PM
Elapsed Time:		168:45:34
Bandwidth:		1/3 Octave
Peaks Over:		140.0 dB
Range:		13.6-93.6 dB
	Time	Frequency
Broad-band measurements:	S F I	A C
Broad-band statistics:	F	A
Octave measurements:	F	L
	Logging	
Log Rate:	0:15:00	
Broadband Parameters:	All	
Spectrum Parameters:	All	
Instrument Serial Number:		2487423
Microphone Serial Number:		
Input:		Microphone
Windscreen Correction:		None
S. I. Correction:		Frontal
Calibration Time:		17/01/2023 06:49:08 AM
Calibration Level:		94.0 dB
Sensitivity:		-29.6 dB
ZF0023:		Not used

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
17/01/2023	07:00:00 AM	49.4	33.4	72.2	60.4	52.0	42.3	37.3	35.2
17/01/2023	07:15:00 AM	48.8	34.7	74.5	60.2	49.2	41.8	37.4	36.4
17/01/2023	07:30:00 AM	45.8	35.5	69.4	57.1	48.5	41.2	37.5	36.7
17/01/2023	07:45:00 AM	48.6	33.8	66.5	62.4	50.1	40.5	37.5	35.1
17/01/2023	08:00:00 AM	48.7	33.9	76.4	59.4	50.8	42.7	37.6	35.5
17/01/2023	08:15:00 AM	51.2	35.6	75.2	63.2	51.0	42.2	37.7	37.0
17/01/2023	08:30:00 AM	47.2	36.6	70.5	56.4	49.7	44.0	38.1	38.6
17/01/2023	08:45:00 AM	48.9	37.2	66.4	59.7	51.5	44.6	38.1	38.6
17/01/2023	09:00:00 AM	49.8	37.1	69.7	60.8	52.6	44.2	38.3	38.3
17/01/2023	09:15:00 AM	49.0	37.6	67.5	59.7	52.0	43.8	38.4	38.8
17/01/2023	09:30:00 AM	48.8	36.3	69.7	59.3	51.0	44.3	38.4	39.1
17/01/2023	09:45:00 AM	51.8	38.4	70.7	62.7	54.8	46.5	38.5	39.9
17/01/2023	10:00:00 AM	50.8	37.9	70.2	62.8	52.9	45.2	38.5	40.4
17/01/2023	10:15:00 AM	45.2	37.6	64.1	54.9	47.4	42.3	38.6	38.9
17/01/2023	10:30:00 AM	56.5	38.8	67.3	63.8	60.3	54.1	38.8	40.6
17/01/2023	10:45:00 AM	55.0	39.4	70.6	66.3	59.4	45.9	39.0	40.6
17/01/2023	11:00:00 AM	47.1	37.6	60.8	55.9	50.5	44.1	39.0	38.8
17/01/2023	11:15:00 AM	49.9	36.5	71.9	60.0	53.3	43.3	39.0	37.7
17/01/2023	11:30:00 AM	49.4	36.3	69.8	61.3	52.3	42.7	39.1	37.4
17/01/2023	11:45:00 AM	49.4	36.7	70.8	61.5	50.0	42.4	39.1	38.1
17/01/2023	12:00:00 PM	46.9	36.1	63.7	57.6	50.0	42.0	39.1	37.6
17/01/2023	12:15:00 PM	45.0	36.3	58.8	54.3	48.3	41.8	39.1	37.7
17/01/2023	12:30:00 PM	50.9	36.6	74.1	62.6	52.8	42.6	39.2	38.0
17/01/2023	12:45:00 PM	49.8	35.9	64.8	62.4	51.9	42.2	39.2	37.7
17/01/2023	01:00:00 PM	44.7	36.5	67.6	53.8	47.7	41.5	39.2	37.8
17/01/2023	01:15:00 PM	50.1	36.5	67.8	60.4	53.8	45.0	39.3	37.5
17/01/2023	01:30:00 PM	49.6	35.8	74.4	58.4	51.2	42.0	39.5	37.0
17/01/2023	01:45:00 PM	48.0	36.5	70.7	58.0	50.8	41.5	39.5	37.7
17/01/2023	02:00:00 PM	47.6	35.4	66.4	60.3	49.4	40.2	39.7	36.5
17/01/2023	02:15:00 PM	47.7	35.2	62.5	58.5	51.9	41.3	39.7	36.2
17/01/2023	02:30:00 PM	49.2	35.2	73.6	62.2	49.3	41.5	39.8	36.7
17/01/2023	02:45:00 PM	45.1	35.8	64.3	55.7	47.9	40.8	40.1	36.9
17/01/2023	03:00:00 PM	46.3	35.0	64.9	58.5	48.5	39.2	40.3	36.0
17/01/2023	03:15:00 PM	50.7	35.5	70.1	63.1	52.2	42.0	40.3	36.9
17/01/2023	03:30:00 PM	47.0	35.4	67.0	59.3	49.0	40.1	40.3	36.6
17/01/2023	03:45:00 PM	49.7	35.7	70.0	61.3	52.4	42.4	40.5	37.0
17/01/2023	04:00:00 PM	51.4	35.2	74.7	65.5	50.3	40.2	40.8	36.1
17/01/2023	04:15:00 PM	50.9	36.1	71.2	63.6	53.3	43.1	41.1	37.2
17/01/2023	04:30:00 PM	51.4	36.3	72.5	63.1	54.1	43.6	41.2	37.9
17/01/2023	04:45:00 PM	50.3	36.4	73.2	62.7	52.6	42.6	41.4	37.5
17/01/2023	05:00:00 PM	51.3	36.1	72.6	63.6	53.2	44.9	41.7	37.8
17/01/2023	05:15:00 PM	50.8	35.9	74.3	61.5	52.6	43.2	42.0	37.4
17/01/2023	05:30:00 PM	51.9	37.7	71.6	62.0	54.0	45.4	42.1	39.2
17/01/2023	05:45:00 PM	50.7	38.1	74.6	61.7	53.2	45.0	42.9	39.9
17/01/2023	06:00:00 PM	50.0	38.7	68.9	61.0	52.6	45.8	42.0	40.1
17/01/2023	06:15:00 PM	57.6	37.8	80.0	70.2	56.0	46.0	41.3	39.5
17/01/2023	06:30:00 PM	57.0	41.2	77.6	66.2	60.5	53.8	45.9	42.7
17/01/2023	06:45:00 PM	49.6	40.4	68.2	59.2	53.0	45.5	42.8	41.7
17/01/2023	07:00:00 PM	62.7	41.8	68.0	66.6	65.9	63.3	45.6	43.6

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
17/01/2023	07:15:00 PM	60.9	47.6	65.9	64.1	63.4	61.1	55.9	53.1
17/01/2023	07:30:00 PM	55.9	42.9	83.0	65.8	56.6	48.4	44.6	43.8
17/01/2023	07:45:00 PM	45.3	41.2	59.8	51.3	46.2	44.8	43.4	42.3
17/01/2023	08:00:00 PM	47.3	39.7	56.8	54.7	51.3	44.8	43.0	41.8
17/01/2023	08:15:00 PM	50.4	41.5	75.3	57.5	50.2	44.9	43.6	42.8
17/01/2023	08:30:00 PM	50.1	41.6	73.4	56.0	48.9	44.8	43.7	42.8
17/01/2023	08:45:00 PM	51.6	40.7	60.2	58.7	57.3	44.6	43.0	41.9
17/01/2023	09:00:00 PM	46.4	40.8	57.9	54.7	49.0	44.4	43.0	41.9
17/01/2023	09:15:00 PM	49.1	39.4	61.1	59.3	53.2	42.7	41.5	40.7
17/01/2023	09:30:00 PM	56.8	40.5	69.7	62.0	59.4	57.4	43.4	42.0
17/01/2023	09:45:00 PM	53.5	38.9	60.7	59.6	58.7	44.2	41.2	40.2
17/01/2023	10:00:00 PM	56.1	40.2	60.8	59.3	57.7	56.7	42.4	41.4
17/01/2023	10:15:00 PM	41.8	38.3	52.9	47.5	42.8	41.4	39.9	39.2
17/01/2023	10:30:00 PM	41.9	36.0	58.1	49.1	43.2	40.9	38.7	37.4
17/01/2023	10:45:00 PM	53.1	37.3	61.3	59.8	59.0	43.2	41.5	39.8
17/01/2023	11:00:00 PM	54.6	39.5	66.9	60.5	59.5	47.6	42.1	40.9
17/01/2023	11:15:00 PM	53.2	37.6	61.8	60.1	59.0	42.0	40.5	39.2
17/01/2023	11:30:00 PM	42.9	38.1	56.0	46.7	44.5	42.2	40.9	39.9
17/01/2023	11:45:00 PM	42.7	38.1	48.7	45.2	44.0	42.5	41.3	40.3
18/01/2023	12:00:00 AM	42.0	37.5	48.1	45.5	43.4	41.7	40.5	39.3
18/01/2023	12:15:00 AM	54.7	38.7	62.0	60.3	59.2	44.9	41.3	40.2
18/01/2023	12:30:00 AM	55.2	39.2	62.2	60.4	59.1	52.9	41.9	40.7
18/01/2023	12:45:00 AM	53.7	34.0	60.1	58.1	57.0	53.0	41.3	36.0
18/01/2023	01:00:00 AM	50.7	35.6	58.2	56.5	55.3	47.5	39.3	37.4
18/01/2023	01:15:00 AM	42.9	36.5	51.2	46.0	44.6	42.6	40.4	39.0
18/01/2023	01:30:00 AM	43.1	35.2	51.1	48.4	44.7	42.8	40.5	38.4
18/01/2023	01:45:00 AM	43.6	35.5	57.4	47.3	44.7	43.4	41.5	38.1
18/01/2023	02:00:00 AM	50.3	37.0	56.7	55.0	54.2	48.3	40.3	38.5
18/01/2023	02:15:00 AM	43.1	36.6	55.5	48.8	44.9	42.7	39.2	37.8
18/01/2023	02:30:00 AM	44.1	36.7	52.9	46.9	45.7	44.1	41.5	38.5
18/01/2023	02:45:00 AM	42.6	36.6	47.4	45.8	44.5	42.5	39.4	37.9
18/01/2023	03:00:00 AM	42.0	36.9	47.0	44.5	43.4	42.0	39.2	37.9
18/01/2023	03:15:00 AM	42.6	36.8	57.1	46.3	44.1	42.4	40.0	38.4
18/01/2023	03:30:00 AM	41.6	37.1	53.6	44.2	42.7	41.4	39.5	38.3
18/01/2023	03:45:00 AM	43.2	38.0	57.5	52.5	43.7	42.0	40.4	39.3
18/01/2023	04:00:00 AM	42.2	38.5	57.7	50.1	43.3	41.0	39.8	39.2
18/01/2023	04:15:00 AM	44.8	39.2	59.7	54.4	47.1	42.5	41.0	40.1
18/01/2023	04:30:00 AM	44.2	38.9	59.5	55.6	43.9	42.0	40.6	39.8
18/01/2023	04:45:00 AM	55.0	39.6	67.9	63.2	59.7	50.5	42.2	40.6
18/01/2023	05:00:00 AM	55.5	41.9	69.0	62.9	59.7	52.5	46.6	43.7
18/01/2023	05:15:00 AM	54.2	41.9	76.6	64.3	58.0	49.0	45.0	43.4
18/01/2023	05:30:00 AM	51.2	40.8	69.4	61.8	53.8	47.3	44.2	42.7
18/01/2023	05:45:00 AM	53.3	40.3	74.3	63.1	56.3	49.0	44.4	42.0
18/01/2023	06:00:00 AM	51.5	36.1	74.4	64.4	53.0	43.4	39.5	37.5
18/01/2023	06:15:00 AM	46.9	35.3	71.0	56.6	49.4	42.4	39.2	37.1
18/01/2023	06:30:00 AM	51.9	35.5	74.8	63.5	54.1	43.9	39.3	37.3
18/01/2023	06:45:00 AM	49.6	34.8	76.8	58.7	51.9	43.0	38.0	36.2
18/01/2023	07:00:00 AM	51.8	34.8	75.9	64.7	53.0	43.7	39.5	37.2
18/01/2023	07:15:00 AM	56.7	37.0	76.5	69.6	58.4	45.9	41.4	39.0
18/01/2023	07:30:00 AM	49.3	40.3	67.1	58.8	51.7	46.5	43.2	41.6

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
18/01/2023	07:45:00 AM	67.9	41.7	93.1	78.2	70.6	51.6	45.5	43.4
18/01/2023	08:00:00 AM	59.6	40.8	78.2	70.1	63.8	53.4	45.5	42.7
18/01/2023	08:15:00 AM	48.4	40.0	69.6	57.4	51.1	45.4	42.7	41.5
18/01/2023	08:30:00 AM	48.2	39.6	65.3	56.6	51.5	45.3	42.3	40.9
18/01/2023	08:45:00 AM	48.3	39.5	64.4	57.1	51.8	45.4	42.2	40.6
18/01/2023	09:00:00 AM	52.7	41.3	69.2	59.9	55.8	50.7	44.5	42.7
18/01/2023	09:15:00 AM	49.4	39.1	74.6	56.4	52.4	46.1	42.7	40.8
18/01/2023	09:30:00 AM	53.5	39.8	66.5	62.1	58.2	49.4	42.3	41.0
18/01/2023	09:45:00 AM	56.9	39.3	72.4	70.0	60.0	45.1	41.4	40.2
18/01/2023	10:00:00 AM	62.2	39.2	72.4	70.3	65.7	60.4	41.9	40.2
18/01/2023	10:15:00 AM	56.5	40.3	73.0	66.7	60.7	49.6	43.7	41.8
18/01/2023	10:30:00 AM	56.9	46.3	68.8	64.6	61.6	50.4	48.0	47.2
18/01/2023	10:45:00 AM	62.5	40.4	72.5	70.6	67.5	58.0	44.0	41.9
18/01/2023	11:00:00 AM	46.1	37.8	61.8	55.1	48.6	43.8	41.0	39.5
18/01/2023	11:15:00 AM	46.4	37.2	59.3	55.6	49.6	43.4	40.7	39.0
18/01/2023	11:30:00 AM	47.6	38.1	68.3	58.2	49.1	43.7	41.0	39.7
18/01/2023	11:45:00 AM	51.0	38.8	71.6	63.8	51.9	44.0	40.9	39.7
18/01/2023	12:00:00 PM	51.4	37.7	75.4	64.6	51.8	43.2	39.9	38.8
18/01/2023	12:15:00 PM	47.1	36.9	68.7	57.4	49.1	42.7	39.9	38.5
18/01/2023	12:30:00 PM	60.9	38.1	81.1	70.3	62.3	56.5	48.4	39.5
18/01/2023	12:45:00 PM	70.6	37.9	82.5	80.7	75.4	64.4	43.1	38.8
18/01/2023	01:00:00 PM	49.5	36.2	72.5	61.3	51.3	41.5	38.6	37.2
18/01/2023	01:15:00 PM	49.8	36.5	72.9	62.2	50.5	42.1	38.9	37.4
18/01/2023	01:30:00 PM	50.2	35.9	70.6	63.1	50.5	43.7	38.7	37.1
18/01/2023	01:45:00 PM	46.9	37.0	65.8	57.8	49.8	41.7	38.9	37.9
18/01/2023	02:00:00 PM	43.8	34.9	59.6	53.0	47.6	39.6	36.9	35.9
18/01/2023	02:15:00 PM	44.3	35.2	64.6	55.8	45.8	39.0	37.4	36.1
18/01/2023	02:30:00 PM	44.2	35.8	62.6	55.2	45.6	40.1	37.6	36.7
18/01/2023	02:45:00 PM	44.7	36.1	63.6	55.1	47.4	41.0	38.5	37.3
18/01/2023	03:00:00 PM	46.9	37.5	60.7	55.1	49.5	44.9	40.6	38.9
18/01/2023	03:15:00 PM	42.8	34.7	68.0	53.1	43.9	39.5	37.4	35.8
18/01/2023	03:30:00 PM	45.1	35.5	63.6	56.8	46.7	41.1	38.2	36.9
18/01/2023	03:45:00 PM	47.0	36.4	65.4	59.8	49.2	40.7	38.5	37.3
18/01/2023	04:00:00 PM	44.9	35.8	58.4	54.7	48.3	41.3	38.7	37.0
18/01/2023	04:15:00 PM	50.3	36.0	71.7	64.0	50.4	41.6	39.0	37.4
18/01/2023	04:30:00 PM	51.5	37.6	74.3	64.7	51.1	43.1	40.5	39.1
18/01/2023	04:45:00 PM	50.6	37.2	73.3	60.7	51.9	44.1	41.0	39.3
18/01/2023	05:00:00 PM	46.2	36.9	69.2	54.2	49.1	43.2	39.7	38.0
18/01/2023	05:15:00 PM	51.6	37.2	70.5	61.9	55.5	45.6	41.0	38.6
18/01/2023	05:30:00 PM	51.3	41.2	66.4	60.3	54.9	47.9	44.0	42.3
18/01/2023	05:45:00 PM	49.2	39.6	65.7	59.5	51.6	46.2	42.5	40.9
18/01/2023	06:00:00 PM	50.9	38.0	71.1	63.1	52.2	44.1	40.7	39.3
18/01/2023	06:15:00 PM	46.3	38.6	62.6	56.4	48.9	42.8	40.6	39.6
18/01/2023	06:30:00 PM	48.4	39.2	68.4	59.2	50.2	44.2	41.4	40.3
18/01/2023	06:45:00 PM	64.1	41.6	84.5	76.3	67.2	53.8	44.5	42.8
18/01/2023	07:00:00 PM	64.0	49.9	85.3	74.7	66.8	59.8	54.1	51.2
18/01/2023	07:15:00 PM	62.9	53.7	83.6	71.6	65.0	61.0	58.9	56.0
18/01/2023	07:30:00 PM	59.5	46.8	79.4	67.9	63.1	56.8	52.1	49.6
18/01/2023	07:45:00 PM	53.4	44.0	64.5	61.7	56.7	50.8	47.3	45.3
18/01/2023	08:00:00 PM	53.3	42.9	66.3	61.5	56.7	50.7	46.7	45.1

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
18/01/2023	08:15:00 PM	56.2	43.8	71.1	66.9	59.5	52.1	47.1	45.1
18/01/2023	08:30:00 PM	49.9	42.6	62.5	59.7	52.7	47.5	45.1	43.8
18/01/2023	08:45:00 PM	46.9	40.4	59.9	54.6	48.8	45.6	43.8	42.1
18/01/2023	09:00:00 PM	46.9	41.2	62.5	53.3	47.5	46.2	44.2	43.1
18/01/2023	09:15:00 PM	46.3	41.0	58.9	56.1	46.8	45.1	43.5	42.5
18/01/2023	09:30:00 PM	48.6	39.4	74.8	57.3	45.7	43.0	41.6	40.7
18/01/2023	09:45:00 PM	43.9	40.0	52.2	47.4	44.9	43.8	42.3	41.2
18/01/2023	10:00:00 PM	44.8	37.9	63.1	55.7	44.8	42.9	41.5	40.3
18/01/2023	10:15:00 PM	44.2	38.2	56.5	51.3	45.5	43.5	41.0	39.6
18/01/2023	10:30:00 PM	44.4	38.5	54.6	47.6	45.7	44.1	42.5	40.8
18/01/2023	10:45:00 PM	43.9	37.1	59.1	52.9	44.7	42.7	40.1	38.5
18/01/2023	11:00:00 PM	44.8	39.6	58.8	53.2	45.3	43.9	42.7	41.2
18/01/2023	11:15:00 PM	43.8	36.8	47.6	45.8	45.0	43.8	42.2	40.4
18/01/2023	11:30:00 PM	43.6	37.8	47.4	46.0	45.1	43.6	41.3	39.6
18/01/2023	11:45:00 PM	42.0	35.2	56.5	50.4	43.7	40.6	38.1	36.5
19/01/2023	12:00:00 AM	43.0	36.0	53.3	45.8	44.5	42.9	40.8	39.0
19/01/2023	12:15:00 AM	42.4	37.6	53.6	45.1	43.6	42.3	40.8	39.5
19/01/2023	12:30:00 AM	42.4	36.4	54.3	48.7	43.5	41.8	40.3	38.8
19/01/2023	12:45:00 AM	40.2	36.0	52.2	44.3	42.4	39.4	37.5	36.7
19/01/2023	01:00:00 AM	39.4	35.1	48.1	42.4	40.8	39.2	37.2	36.3
19/01/2023	01:15:00 AM	38.8	34.3	45.6	42.6	40.8	38.3	36.3	35.3
19/01/2023	01:30:00 AM	54.6	37.3	70.0	63.3	59.7	46.0	40.9	39.7
19/01/2023	01:45:00 AM	51.2	40.3	71.2	58.4	55.3	46.0	42.4	41.3
19/01/2023	02:00:00 AM	44.9	37.1	60.4	50.0	47.6	43.8	40.7	38.8
19/01/2023	02:15:00 AM	41.6	35.5	54.1	47.0	43.6	40.6	37.9	36.7
19/01/2023	02:30:00 AM	47.8	40.1	71.8	54.5	43.8	43.0	42.3	41.8
19/01/2023	02:45:00 AM	43.1	36.4	59.1	47.4	43.5	42.6	41.6	38.1
19/01/2023	03:00:00 AM	41.6	36.6	52.4	43.2	42.7	41.7	40.1	37.7
19/01/2023	03:15:00 AM	38.7	35.2	53.9	41.7	40.2	38.2	37.1	36.4
19/01/2023	03:30:00 AM	41.7	35.1	54.8	50.1	44.9	38.3	37.3	36.6
19/01/2023	03:45:00 AM	44.7	38.6	60.1	51.1	45.2	44.1	42.6	40.7
19/01/2023	04:00:00 AM	42.7	37.5	58.9	50.9	43.0	41.8	39.7	38.6
19/01/2023	04:15:00 AM	40.7	38.0	51.5	46.2	41.7	40.1	39.4	38.8
19/01/2023	04:30:00 AM	51.8	39.2	61.4	57.0	54.2	51.6	41.7	40.5
19/01/2023	04:45:00 AM	59.3	40.5	86.7	66.3	55.1	52.3	49.4	43.2
19/01/2023	05:00:00 AM	54.6	39.6	68.1	63.5	58.8	50.8	43.5	41.1
19/01/2023	05:15:00 AM	56.5	41.1	70.7	64.7	60.3	53.7	46.5	43.1
19/01/2023	05:30:00 AM	52.4	41.4	69.6	64.7	53.9	47.9	45.9	44.0
19/01/2023	05:45:00 AM	53.9	44.2	76.6	61.8	55.5	51.7	48.9	46.1
19/01/2023	06:00:00 AM	54.8	46.8	67.8	60.7	57.1	54.1	50.2	48.4
19/01/2023	06:15:00 AM	51.1	40.0	71.8	60.9	53.0	48.3	44.3	42.1
19/01/2023	06:30:00 AM	50.0	40.0	68.1	60.6	52.6	46.0	42.8	41.3
19/01/2023	06:45:00 AM	53.0	39.5	71.3	64.9	55.3	46.7	43.2	41.6
19/01/2023	07:00:00 AM	52.3	39.6	73.5	63.9	54.0	46.6	43.0	41.2
19/01/2023	07:15:00 AM	51.8	38.9	71.4	63.0	54.7	46.4	42.6	40.7
19/01/2023	07:30:00 AM	50.5	36.8	73.3	60.3	53.2	45.7	41.1	38.9
19/01/2023	07:45:00 AM	53.1	36.6	79.4	64.6	54.8	46.2	41.3	38.8
19/01/2023	08:00:00 AM	54.4	36.3	77.9	66.1	56.3	47.1	40.9	38.3
19/01/2023	08:15:00 AM	51.1	34.2	74.2	62.2	52.4	44.0	39.9	36.8
19/01/2023	08:30:00 AM	48.4	33.3	73.3	58.5	50.3	43.2	38.0	35.1

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
19/01/2023	08:45:00 AM	52.3	36.2	77.2	61.8	56.0	47.0	40.9	38.3
19/01/2023	09:00:00 AM	49.7	35.9	68.7	58.6	53.5	45.4	40.3	37.8
19/01/2023	09:15:00 AM	50.0	35.7	75.1	60.5	53.1	43.0	38.7	37.0
19/01/2023	09:30:00 AM	53.0	35.9	75.3	64.9	55.4	44.8	39.9	37.8
19/01/2023	09:45:00 AM	49.2	34.6	67.8	59.1	53.0	44.0	38.9	36.3
19/01/2023	10:00:00 AM	49.3	35.9	65.4	60.0	52.6	44.5	39.7	37.6
19/01/2023	10:15:00 AM	50.2	35.0	74.0	59.7	51.8	42.4	37.7	36.1
19/01/2023	10:30:00 AM	50.2	36.1	73.0	59.8	53.8	43.6	39.0	37.3
19/01/2023	10:45:00 AM	49.8	34.7	69.8	60.7	51.9	44.7	40.3	38.1
19/01/2023	11:00:00 AM	53.8	36.4	80.3	63.5	54.6	45.8	41.3	39.0
19/01/2023	11:15:00 AM	51.1	36.3	75.4	62.3	53.4	45.1	40.2	38.2
19/01/2023	11:30:00 AM	50.5	36.1	75.9	61.6	52.7	44.4	39.7	37.5
19/01/2023	11:45:00 AM	51.9	35.0	76.9	61.6	55.3	45.8	40.0	37.5
19/01/2023	12:00:00 PM	52.7	36.1	83.8	62.5	51.9	43.0	39.4	37.5
19/01/2023	12:15:00 PM	49.3	36.5	75.5	59.5	52.1	44.5	40.2	38.3
19/01/2023	12:30:00 PM	49.5	36.5	69.3	59.5	52.9	45.3	40.2	38.4
19/01/2023	12:45:00 PM	48.6	36.9	76.3	56.3	48.0	43.2	40.5	38.6
19/01/2023	01:00:00 PM	49.0	37.4	68.0	59.0	52.3	45.3	41.4	38.9
19/01/2023	01:15:00 PM	54.0	37.1	79.1	65.7	54.4	46.8	41.4	38.3
19/01/2023	01:30:00 PM	49.5	36.7	71.2	58.8	52.9	45.8	41.3	38.6
19/01/2023	01:45:00 PM	48.6	38.0	63.7	58.6	51.7	44.4	41.1	39.4
19/01/2023	02:00:00 PM	47.4	37.8	69.5	57.7	50.0	43.6	40.3	38.9
19/01/2023	02:15:00 PM	46.0	36.9	71.4	55.4	47.7	42.1	39.1	37.8
19/01/2023	02:30:00 PM	46.9	36.9	62.3	56.6	50.3	42.8	39.9	38.5
19/01/2023	02:45:00 PM	47.5	37.3	62.8	57.3	50.3	44.2	41.0	39.1
19/01/2023	03:00:00 PM	55.6	37.1	80.1	68.0	54.8	45.3	40.9	38.9
19/01/2023	03:15:00 PM	53.1	37.5	76.1	66.8	53.6	45.1	41.2	39.4
19/01/2023	03:30:00 PM	48.0	37.4	76.1	57.1	49.4	43.0	40.1	38.7
19/01/2023	03:45:00 PM	50.0	37.7	70.3	60.5	53.5	44.6	40.8	39.3
19/01/2023	04:00:00 PM	53.0	38.5	79.1	64.2	53.2	45.2	42.0	39.9
19/01/2023	04:15:00 PM	48.2	38.3	66.5	56.4	51.4	45.7	42.1	40.4
19/01/2023	04:30:00 PM	51.7	38.7	73.0	63.0	54.3	46.9	43.1	40.9
19/01/2023	04:45:00 PM	55.7	38.6	77.7	70.3	53.1	45.3	42.2	40.2
19/01/2023	05:00:00 PM	47.9	37.1	66.2	58.3	51.7	42.6	39.7	38.1
19/01/2023	05:15:00 PM	50.9	38.1	74.4	62.6	52.8	43.4	40.6	39.6
19/01/2023	05:30:00 PM	50.2	38.6	72.9	62.5	52.3	44.7	41.5	40.0
19/01/2023	05:45:00 PM	49.9	37.9	65.9	59.5	54.3	44.2	40.4	39.1
19/01/2023	06:00:00 PM	50.5	37.3	72.2	61.1	53.7	45.5	40.4	38.5
19/01/2023	06:15:00 PM	48.1	36.6	65.9	59.0	50.3	42.5	39.7	37.9
19/01/2023	06:30:00 PM	46.5	36.4	67.3	57.0	49.3	41.6	38.6	37.3
19/01/2023	06:45:00 PM	51.5	37.7	73.5	64.4	49.9	41.9	40.0	39.0
19/01/2023	07:00:00 PM	57.5	41.1	62.4	60.8	59.6	58.4	43.1	41.8
19/01/2023	07:15:00 PM	61.2	56.1	64.2	63.0	62.3	61.1	59.8	59.0
19/01/2023	07:30:00 PM	60.2	50.9	68.5	62.9	61.6	60.1	58.3	56.7
19/01/2023	07:45:00 PM	58.8	48.5	62.7	61.3	60.4	58.6	56.6	53.3
19/01/2023	08:00:00 PM	57.1	47.8	65.0	60.2	59.1	56.7	54.2	51.2
19/01/2023	08:15:00 PM	58.1	48.0	62.5	60.8	59.8	58.0	55.3	53.4
19/01/2023	08:30:00 PM	57.7	44.0	69.9	60.8	59.7	57.6	52.9	45.7
19/01/2023	08:45:00 PM	56.0	45.0	61.5	59.9	58.3	55.6	52.4	50.2
19/01/2023	09:00:00 PM	54.6	42.8	61.0	58.4	57.0	54.2	50.9	44.1

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
19/01/2023	09:15:00 PM	54.2	39.8	59.8	58.0	56.7	53.8	49.5	42.9
19/01/2023	09:30:00 PM	54.5	38.1	61.3	58.8	56.9	53.9	50.5	43.1
19/01/2023	09:45:00 PM	56.8	39.1	63.0	59.7	58.7	56.9	52.2	48.6
19/01/2023	10:00:00 PM	55.7	37.2	69.2	60.1	58.4	55.2	41.4	39.2
19/01/2023	10:15:00 PM	49.3	37.8	59.6	56.9	55.6	41.6	39.5	38.7
19/01/2023	10:30:00 PM	54.3	39.7	66.0	61.9	56.1	54.6	42.9	41.8
19/01/2023	10:45:00 PM	43.7	37.1	55.0	52.3	44.5	42.3	41.2	40.3
19/01/2023	11:00:00 PM	51.4	36.1	59.2	57.0	56.0	45.7	41.9	40.9
19/01/2023	11:15:00 PM	45.2	36.7	55.6	53.2	46.8	43.8	41.7	38.7
19/01/2023	11:30:00 PM	41.5	35.4	54.1	52.9	41.2	38.7	37.3	36.3
19/01/2023	11:45:00 PM	42.5	35.7	54.1	52.9	43.3	40.4	38.1	37.1
20/01/2023	12:00:00 AM	44.7	36.8	54.4	53.1	45.3	43.7	41.9	38.9
20/01/2023	12:15:00 AM	45.4	38.2	57.0	53.3	45.8	44.5	43.2	41.9
20/01/2023	12:30:00 AM	45.5	37.9	64.0	53.4	45.7	43.7	42.2	40.1
20/01/2023	12:45:00 AM	44.8	38.0	60.3	53.5	44.9	43.0	42.0	40.7
20/01/2023	01:00:00 AM	43.3	37.0	54.1	52.4	43.3	42.6	41.7	38.9
20/01/2023	01:15:00 AM	43.8	37.5	54.1	52.9	43.7	42.7	41.6	39.1
20/01/2023	01:30:00 AM	43.9	36.3	54.0	52.7	43.8	42.7	41.8	37.3
20/01/2023	01:45:00 AM	43.5	36.2	55.1	52.3	44.2	43.0	39.7	37.0
20/01/2023	02:00:00 AM	48.6	36.6	74.6	56.1	46.1	43.7	40.7	38.6
20/01/2023	02:15:00 AM	45.6	38.8	55.2	53.8	46.0	44.4	42.9	41.7
20/01/2023	02:30:00 AM	48.9	36.2	74.1	54.3	45.5	44.1	42.1	40.7
20/01/2023	02:45:00 AM	43.7	37.6	54.3	52.7	44.0	42.7	41.8	41.2
20/01/2023	03:00:00 AM	42.0	36.8	54.3	47.2	42.7	41.8	39.2	38.0
20/01/2023	03:15:00 AM	42.6	37.8	54.3	50.6	42.9	41.8	41.1	40.4
20/01/2023	03:30:00 AM	43.7	36.5	60.5	52.8	43.8	41.8	40.8	38.1
20/01/2023	03:45:00 AM	44.4	38.1	53.0	50.1	45.9	43.8	42.0	40.7
20/01/2023	04:00:00 AM	46.5	41.5	60.0	55.4	48.3	44.6	43.7	42.6
20/01/2023	04:15:00 AM	46.1	42.1	59.7	54.0	46.2	44.9	44.3	43.8
20/01/2023	04:30:00 AM	45.5	38.5	60.9	53.9	47.9	43.4	42.4	40.6
20/01/2023	04:45:00 AM	56.9	41.7	86.4	65.9	52.0	47.3	43.1	42.5
20/01/2023	05:00:00 AM	56.4	42.6	69.6	64.6	60.2	53.6	47.9	44.7
20/01/2023	05:15:00 AM	56.3	47.0	73.2	65.5	59.9	52.8	49.5	48.1
20/01/2023	05:30:00 AM	54.9	41.3	75.2	66.5	56.4	50.4	48.0	43.6
20/01/2023	05:45:00 AM	54.0	39.5	76.4	66.4	54.9	47.2	43.3	41.3
20/01/2023	06:00:00 AM	50.0	37.1	72.0	61.6	52.4	44.6	42.0	40.8
20/01/2023	06:15:00 AM	52.7	37.3	80.1	63.0	55.1	46.0	41.5	39.0
20/01/2023	06:30:00 AM	46.7	34.7	64.9	59.4	47.8	40.7	37.5	36.0
20/01/2023	06:45:00 AM	48.7	34.0	69.7	59.5	52.9	40.7	36.7	35.2
20/01/2023	07:00:00 AM	47.9	34.5	67.8	59.2	50.6	41.9	37.8	36.0
20/01/2023	07:15:00 AM	56.0	35.6	78.9	69.1	56.5	44.5	39.7	37.4
20/01/2023	07:30:00 AM	48.4	33.1	78.1	58.3	50.4	41.8	37.2	35.1
20/01/2023	07:45:00 AM	53.7	33.7	84.9	62.6	50.5	40.4	36.5	34.9
20/01/2023	08:00:00 AM	48.9	33.1	72.4	59.9	51.3	43.7	38.0	35.5
20/01/2023	08:15:00 AM	48.4	33.8	69.6	59.1	51.8	42.8	36.8	35.1
20/01/2023	08:30:00 AM	49.5	34.7	76.2	59.8	51.5	43.6	38.7	36.5
20/01/2023	08:45:00 AM	49.4	34.4	65.9	59.6	53.2	44.1	38.6	36.8
20/01/2023	09:00:00 AM	47.1	34.7	67.5	58.0	49.8	41.0	37.5	36.0
20/01/2023	09:15:00 AM	52.2	35.3	81.2	63.3	51.9	42.4	38.1	36.7
20/01/2023	09:30:00 AM	50.7	35.6	72.0	62.0	53.0	45.0	39.6	37.2

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
20/01/2023	09:45:00 AM	49.2	36.1	71.7	59.6	52.2	44.5	39.6	37.6
20/01/2023	10:00:00 AM	52.6	35.0	79.3	60.0	49.6	43.4	38.0	36.0
20/01/2023	10:15:00 AM	50.5	35.0	70.8	63.6	51.9	44.0	40.4	38.0
20/01/2023	10:30:00 AM	52.6	37.8	80.6	64.5	50.6	43.5	40.6	39.1
20/01/2023	10:45:00 AM	48.5	36.5	67.0	60.6	49.8	44.2	40.8	38.5
20/01/2023	11:00:00 AM	47.1	39.8	68.2	55.6	48.8	44.3	42.1	40.8
20/01/2023	11:15:00 AM	50.4	36.7	70.9	64.7	50.9	42.3	39.7	38.2
20/01/2023	11:30:00 AM	49.0	34.9	71.8	59.4	49.9	40.7	37.8	36.2
20/01/2023	11:45:00 AM	48.5	35.3	74.6	57.6	47.6	39.9	37.4	36.4
20/01/2023	12:00:00 PM	47.4	34.8	66.7	59.0	50.9	40.4	37.1	35.9
20/01/2023	12:15:00 PM	48.2	35.2	68.1	58.0	51.5	42.5	38.1	36.5
20/01/2023	12:30:00 PM	46.0	35.9	69.0	57.0	46.7	41.1	37.9	36.8
20/01/2023	12:45:00 PM	46.2	36.3	65.7	56.1	47.8	41.9	39.2	37.6
20/01/2023	01:00:00 PM	52.7	35.4	82.6	64.3	49.8	42.1	38.8	37.2
20/01/2023	01:15:00 PM	50.4	35.6	73.0	62.9	52.7	42.8	38.7	37.0
20/01/2023	01:30:00 PM	47.1	35.5	73.2	57.3	49.3	41.8	38.2	36.6
20/01/2023	01:45:00 PM	46.9	36.2	64.7	57.1	50.6	41.9	38.5	37.2
20/01/2023	02:00:00 PM	43.9	35.4	61.1	54.2	45.5	40.6	38.3	36.9
20/01/2023	02:15:00 PM	45.1	34.7	67.6	55.5	46.8	40.1	37.0	35.7
20/01/2023	02:30:00 PM	46.9	34.5	67.9	58.6	48.6	41.2	38.1	36.1
20/01/2023	02:45:00 PM	49.6	35.6	68.8	62.7	51.2	42.9	39.4	37.2
20/01/2023	03:00:00 PM	48.0	35.8	66.4	57.6	51.4	44.2	40.1	37.6
20/01/2023	03:15:00 PM	48.6	36.8	64.7	59.3	51.7	43.8	40.1	38.2
20/01/2023	03:30:00 PM	47.1	35.4	66.2	58.3	50.1	41.3	38.0	36.7
20/01/2023	03:45:00 PM	48.2	36.4	70.5	59.5	50.8	42.4	39.1	37.6
20/01/2023	04:00:00 PM	48.8	36.9	67.8	60.7	50.6	43.1	39.7	38.4
20/01/2023	04:15:00 PM	52.4	36.7	78.3	63.8	53.5	43.4	39.4	38.0
20/01/2023	04:30:00 PM	48.1	37.2	72.1	58.7	50.5	43.4	40.3	38.6
20/01/2023	04:45:00 PM	52.3	37.3	71.7	64.0	54.8	45.1	41.0	38.7
20/01/2023	05:00:00 PM	50.4	35.9	69.4	62.6	52.4	44.1	39.9	37.6
20/01/2023	05:15:00 PM	51.1	36.0	76.7	61.7	51.4	44.1	40.3	38.3
20/01/2023	05:30:00 PM	52.8	35.8	77.5	64.8	55.1	44.4	39.3	37.3
20/01/2023	05:45:00 PM	56.2	36.6	84.1	65.2	54.8	45.5	41.6	39.3
20/01/2023	06:00:00 PM	52.8	37.2	72.4	65.8	54.8	44.2	40.4	38.7
20/01/2023	06:15:00 PM	48.5	36.9	68.0	59.5	51.9	42.9	39.5	38.2
20/01/2023	06:30:00 PM	48.3	40.4	70.3	58.1	50.5	44.8	42.8	42.0
20/01/2023	06:45:00 PM	54.1	41.6	75.7	65.7	51.1	44.5	43.2	42.3
20/01/2023	07:00:00 PM	60.1	42.7	66.4	64.6	63.8	53.7	44.3	43.4
20/01/2023	07:15:00 PM	59.6	51.6	65.6	63.9	62.6	58.8	55.1	53.5
20/01/2023	07:30:00 PM	54.7	49.1	66.3	59.1	56.2	54.3	52.6	51.1
20/01/2023	07:45:00 PM	53.0	44.9	58.6	56.4	54.9	52.7	50.3	47.5
20/01/2023	08:00:00 PM	49.9	43.0	57.9	54.9	52.7	48.7	46.4	45.0
20/01/2023	08:15:00 PM	47.2	39.6	58.0	54.1	49.2	46.3	43.6	41.8
20/01/2023	08:30:00 PM	46.7	40.1	63.6	54.1	48.9	45.3	43.3	41.4
20/01/2023	08:45:00 PM	46.4	39.5	58.9	53.5	48.2	45.3	43.2	41.5
20/01/2023	09:00:00 PM	46.3	39.3	58.1	52.6	48.4	45.4	42.8	40.9
20/01/2023	09:15:00 PM	47.6	40.5	64.6	55.7	48.6	46.5	44.6	42.9
20/01/2023	09:30:00 PM	47.0	41.5	61.9	52.2	48.1	46.4	45.0	43.7
20/01/2023	09:45:00 PM	46.9	38.5	59.9	52.3	48.3	46.4	44.5	42.7
20/01/2023	10:00:00 PM	46.7	40.1	57.7	53.4	48.0	45.9	44.3	42.7

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
20/01/2023	10:15:00 PM	46.3	40.1	57.3	53.0	47.5	45.8	44.2	42.7
20/01/2023	10:30:00 PM	53.2	41.4	62.7	57.5	56.3	52.9	45.2	43.8
20/01/2023	10:45:00 PM	48.3	40.2	59.3	54.9	50.8	46.5	44.4	42.8
20/01/2023	11:00:00 PM	49.9	40.4	57.0	53.1	51.2	50.1	45.9	43.6
20/01/2023	11:15:00 PM	48.5	38.1	54.6	52.2	51.0	48.2	43.9	41.8
20/01/2023	11:30:00 PM	45.4	39.9	52.8	51.0	46.4	45.1	43.6	42.1
20/01/2023	11:45:00 PM	44.8	37.4	53.3	50.7	46.0	44.4	42.7	40.6
21/01/2023	12:00:00 AM	45.0	38.8	53.8	51.8	46.1	44.6	43.0	41.2
21/01/2023	12:15:00 AM	45.0	38.6	55.7	50.0	46.3	44.6	43.0	41.1
21/01/2023	12:30:00 AM	45.8	38.3	57.0	51.9	47.1	45.2	43.5	41.7
21/01/2023	12:45:00 AM	45.0	38.0	62.5	50.7	46.3	44.6	42.8	40.8
21/01/2023	01:00:00 AM	45.6	36.4	58.1	52.3	47.6	44.7	42.6	40.1
21/01/2023	01:15:00 AM	43.5	36.0	53.6	50.3	44.7	43.0	41.0	38.5
21/01/2023	01:30:00 AM	44.1	35.4	55.1	49.1	45.8	43.5	41.3	38.9
21/01/2023	01:45:00 AM	43.7	35.5	57.1	49.3	45.3	43.1	40.5	38.7
21/01/2023	02:00:00 AM	44.0	35.5	57.1	51.8	45.5	43.1	40.4	38.7
21/01/2023	02:15:00 AM	43.7	36.5	57.1	48.3	45.1	43.4	41.2	39.2
21/01/2023	02:30:00 AM	46.0	36.5	59.1	51.0	49.7	43.8	41.2	39.3
21/01/2023	02:45:00 AM	49.9	39.5	54.8	51.8	50.9	49.9	48.8	46.1
21/01/2023	03:00:00 AM	49.5	38.4	54.8	52.4	50.5	49.5	48.2	41.3
21/01/2023	03:15:00 AM	48.2	36.6	56.5	51.8	51.1	48.3	39.3	38.3
21/01/2023	03:30:00 AM	45.5	37.4	52.0	47.6	46.7	45.6	43.6	39.3
21/01/2023	03:45:00 AM	45.5	37.3	55.2	48.7	46.9	45.6	40.9	38.3
21/01/2023	04:00:00 AM	47.1	39.5	57.6	51.5	47.9	46.9	45.8	44.4
21/01/2023	04:15:00 AM	46.4	38.9	58.6	50.9	48.6	46.4	40.9	40.3
21/01/2023	04:30:00 AM	50.7	40.6	66.3	62.4	50.8	47.2	46.0	44.8
21/01/2023	04:45:00 AM	58.9	39.4	87.3	68.2	53.8	47.5	41.5	40.4
21/01/2023	05:00:00 AM	55.8	44.8	68.9	62.9	59.4	53.5	49.4	47.0
21/01/2023	05:15:00 AM	55.8	44.1	73.3	65.2	59.4	51.7	48.5	47.2
21/01/2023	05:30:00 AM	51.7	39.4	73.5	61.9	53.4	48.8	45.9	42.6
21/01/2023	05:45:00 AM	53.8	36.8	80.7	65.9	56.1	46.5	42.1	39.6
21/01/2023	06:00:00 AM	52.0	36.8	71.6	63.9	54.9	45.2	40.9	38.6
21/01/2023	06:15:00 AM	52.9	33.8	83.7	63.6	53.1	42.4	38.3	36.1
21/01/2023	06:30:00 AM	48.9	35.8	70.4	58.7	51.2	44.8	40.1	37.7
21/01/2023	06:45:00 AM	48.2	34.3	74.6	59.3	49.3	41.4	37.5	35.7
21/01/2023	07:00:00 AM	49.9	34.2	74.2	60.8	52.4	43.1	38.0	35.6
21/01/2023	07:15:00 AM	47.8	34.3	70.8	58.0	50.3	43.4	38.9	36.8
21/01/2023	07:30:00 AM	47.4	34.5	75.9	57.6	49.2	41.6	37.9	36.2
21/01/2023	07:45:00 AM	49.3	33.8	71.1	61.2	50.3	41.5	37.1	35.3
21/01/2023	08:00:00 AM	47.6	33.8	68.9	58.9	49.2	42.6	37.7	35.4
21/01/2023	08:15:00 AM	46.4	34.0	67.2	57.0	48.9	41.5	37.3	35.5
21/01/2023	08:30:00 AM	49.8	36.4	70.8	62.3	51.3	42.9	39.8	38.4
21/01/2023	08:45:00 AM	50.2	37.3	70.7	62.2	52.3	44.3	40.5	38.8
21/01/2023	09:00:00 AM	47.8	37.1	71.2	56.9	48.9	44.3	41.1	38.4
21/01/2023	09:15:00 AM	49.1	36.3	73.5	59.1	50.6	42.8	39.8	38.3
21/01/2023	09:30:00 AM	67.8	37.2	85.7	80.4	71.3	55.0	43.4	39.0
21/01/2023	09:45:00 AM	54.7	37.1	80.8	67.1	56.3	45.0	41.2	38.8
21/01/2023	10:00:00 AM	65.1	38.1	81.0	75.2	69.4	59.1	47.7	43.0
21/01/2023	10:15:00 AM	60.2	37.8	75.8	69.5	64.6	54.8	45.6	41.2
21/01/2023	10:30:00 AM	60.4	36.3	85.2	69.5	63.0	52.1	41.8	38.6

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
21/01/2023	10:45:00 AM	56.2	35.9	82.6	68.1	50.2	41.6	38.7	37.4
21/01/2023	11:00:00 AM	57.1	38.2	82.6	70.7	50.9	44.4	41.7	39.6
21/01/2023	11:15:00 AM	59.5	37.4	78.9	72.1	62.5	43.8	40.7	38.6
21/01/2023	11:30:00 AM	46.0	35.8	62.4	55.6	48.5	43.5	39.8	37.5
21/01/2023	11:45:00 AM	46.7	36.0	65.5	57.5	49.4	41.4	38.6	37.6
21/01/2023	12:00:00 PM	44.5	35.7	60.9	54.3	47.2	41.1	38.1	36.7
21/01/2023	12:15:00 PM	46.0	35.9	61.4	55.5	49.1	42.5	39.0	37.0
21/01/2023	12:30:00 PM	47.1	35.3	71.9	56.7	49.6	41.2	37.9	36.6
21/01/2023	12:45:00 PM	51.3	34.8	80.8	60.3	53.3	43.5	38.5	36.0
21/01/2023	01:00:00 PM	51.1	36.2	72.5	62.7	53.7	44.3	40.4	38.0
21/01/2023	01:15:00 PM	53.6	35.7	83.9	66.0	52.1	42.7	39.0	37.3
21/01/2023	01:30:00 PM	53.3	35.4	76.1	65.9	54.5	42.9	39.5	37.5
21/01/2023	01:45:00 PM	54.2	36.0	83.7	59.3	50.4	42.8	39.4	37.6
21/01/2023	02:00:00 PM	53.9	35.4	84.1	63.3	52.3	42.8	38.7	36.6
21/01/2023	02:15:00 PM	59.7	35.1	87.1	69.4	53.3	42.2	38.5	36.6
21/01/2023	02:30:00 PM	63.6	36.5	90.7	71.7	57.3	45.0	40.1	38.0
21/01/2023	02:45:00 PM	52.2	36.0	70.9	64.0	54.9	44.2	40.0	38.1
21/01/2023	03:00:00 PM	55.8	36.1	85.0	62.8	51.1	41.4	38.6	37.3
21/01/2023	03:15:00 PM	54.2	34.6	80.9	65.5	51.1	42.4	37.6	35.9
21/01/2023	03:30:00 PM	54.5	36.6	73.3	65.5	58.4	47.2	40.8	38.2
21/01/2023	03:45:00 PM	66.5	35.8	89.6	81.3	56.1	44.3	40.5	38.6
21/01/2023	04:00:00 PM	50.2	34.9	76.2	59.7	51.3	42.0	37.8	36.4
21/01/2023	04:15:00 PM	44.4	35.0	60.2	54.6	47.9	39.9	37.3	36.0
21/01/2023	04:30:00 PM	47.6	35.7	76.7	57.7	49.1	42.0	38.4	36.8
21/01/2023	04:45:00 PM	48.0	35.3	68.0	57.7	50.9	43.8	38.5	36.5
21/01/2023	05:00:00 PM	51.7	35.8	71.4	58.9	54.6	50.4	40.6	36.9
21/01/2023	05:15:00 PM	53.4	35.4	78.8	61.2	55.4	50.4	41.6	37.1
21/01/2023	05:30:00 PM	48.8	36.2	69.1	59.3	51.8	44.3	40.2	37.8
21/01/2023	05:45:00 PM	47.2	36.6	72.9	56.7	50.2	43.5	40.0	38.0
21/01/2023	06:00:00 PM	46.4	36.4	68.9	55.4	50.1	42.4	39.2	37.7
21/01/2023	06:15:00 PM	45.4	35.1	60.9	56.4	48.7	40.9	38.1	36.8
21/01/2023	06:30:00 PM	42.6	35.7	58.6	53.1	45.0	39.4	37.5	36.6
21/01/2023	06:45:00 PM	44.2	36.0	61.5	53.6	48.1	40.1	37.7	36.8
21/01/2023	07:00:00 PM	55.7	36.1	68.6	66.2	55.4	42.0	38.7	37.3
21/01/2023	07:15:00 PM	66.0	56.4	71.5	68.1	66.9	66.2	63.5	59.7
21/01/2023	07:30:00 PM	60.3	49.6	74.5	66.0	63.9	58.6	56.0	52.6
21/01/2023	07:45:00 PM	47.7	40.7	61.1	57.7	49.2	45.1	42.8	41.8
21/01/2023	08:00:00 PM	47.0	40.4	58.8	54.3	50.8	44.2	42.9	41.9
21/01/2023	08:15:00 PM	45.5	38.0	54.3	50.1	48.2	44.1	41.0	39.5
21/01/2023	08:30:00 PM	44.6	37.9	57.7	51.8	46.7	42.5	40.8	39.6
21/01/2023	08:45:00 PM	43.7	38.0	59.0	54.0	45.0	41.6	40.5	39.5
21/01/2023	09:00:00 PM	44.9	38.1	60.7	52.4	46.9	42.8	40.8	39.5
21/01/2023	09:15:00 PM	44.9	37.8	56.7	54.1	47.4	42.8	40.6	39.0
21/01/2023	09:30:00 PM	47.4	38.5	56.8	52.0	50.0	47.2	41.3	40.1
21/01/2023	09:45:00 PM	44.9	38.5	58.8	52.5	48.6	42.7	41.3	40.2
21/01/2023	10:00:00 PM	49.8	38.4	59.5	55.8	54.3	43.6	41.4	40.1
21/01/2023	10:15:00 PM	42.8	37.5	57.8	50.1	43.3	41.8	40.7	39.6
21/01/2023	10:30:00 PM	50.1	37.9	61.0	58.0	55.7	43.0	41.2	40.0
21/01/2023	10:45:00 PM	47.9	37.6	60.5	57.9	51.0	43.3	41.4	39.7
21/01/2023	11:00:00 PM	43.5	38.1	58.5	52.0	44.2	42.3	40.9	39.7

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
21/01/2023	11:15:00 PM	43.2	38.4	55.6	51.5	44.2	42.2	41.0	40.0
21/01/2023	11:30:00 PM	48.1	38.9	57.9	54.9	52.0	43.3	41.4	40.4
21/01/2023	11:45:00 PM	43.3	39.4	53.2	49.7	44.7	42.3	41.3	40.4
22/01/2023	12:00:00 AM	48.8	38.8	54.6	53.0	51.7	48.9	41.6	40.2
22/01/2023	12:15:00 AM	50.1	39.0	55.2	52.8	51.8	50.3	45.1	40.9
22/01/2023	12:30:00 AM	53.2	38.4	62.5	60.2	58.9	46.1	41.0	39.7
22/01/2023	12:45:00 AM	48.0	38.8	60.7	56.6	50.9	45.9	41.9	40.5
22/01/2023	01:00:00 AM	49.9	39.7	59.7	55.3	52.8	48.5	44.3	41.9
22/01/2023	01:15:00 AM	48.4	38.7	58.2	53.9	52.4	45.1	41.6	40.5
22/01/2023	01:30:00 AM	48.6	39.1	64.2	59.5	50.0	46.4	42.1	40.6
22/01/2023	01:45:00 AM	46.3	37.6	59.4	53.8	49.3	43.8	39.9	38.5
22/01/2023	02:00:00 AM	45.7	38.0	55.9	52.7	48.5	44.4	39.9	38.6
22/01/2023	02:15:00 AM	46.3	38.1	58.8	54.3	49.3	44.3	40.8	39.1
22/01/2023	02:30:00 AM	47.6	37.3	57.3	53.1	50.7	46.6	41.0	38.7
22/01/2023	02:45:00 AM	49.8	37.7	59.8	55.2	52.5	49.5	41.8	39.3
22/01/2023	03:00:00 AM	52.1	38.3	57.8	54.4	53.3	52.1	50.5	42.8
22/01/2023	03:15:00 AM	51.5	38.4	58.2	54.0	52.8	51.5	49.8	41.3
22/01/2023	03:30:00 AM	48.2	37.8	54.9	53.4	52.0	45.3	39.6	38.7
22/01/2023	03:45:00 AM	50.9	37.0	55.3	53.7	53.1	51.8	41.5	38.8
22/01/2023	04:00:00 AM	40.9	36.9	58.1	49.2	41.8	39.6	38.4	37.7
22/01/2023	04:15:00 AM	40.7	36.9	57.7	47.1	41.7	39.7	38.7	37.8
22/01/2023	04:30:00 AM	59.7	37.5	87.7	66.4	47.6	40.3	39.2	38.5
22/01/2023	04:45:00 AM	54.5	38.0	74.6	67.2	57.2	42.5	39.7	38.9
22/01/2023	05:00:00 AM	55.0	40.5	72.4	64.2	58.3	51.9	46.1	43.0
22/01/2023	05:15:00 AM	62.5	38.4	88.1	74.6	57.7	47.0	42.3	40.2
22/01/2023	05:30:00 AM	48.7	37.3	69.3	59.0	50.9	44.8	41.3	39.5
22/01/2023	05:45:00 AM	45.5	35.8	70.3	56.8	46.8	40.9	38.2	36.9
22/01/2023	06:00:00 AM	46.3	34.9	66.1	59.4	46.6	39.5	37.0	36.0
22/01/2023	06:15:00 AM	46.5	33.8	70.9	57.9	47.9	41.2	37.6	35.8
22/01/2023	06:30:00 AM	46.9	32.9	72.8	57.9	48.3	39.4	36.1	34.3
22/01/2023	06:45:00 AM	48.1	31.7	68.6	59.7	50.4	41.2	36.0	33.8
22/01/2023	07:00:00 AM	47.4	31.8	68.6	58.3	50.3	42.1	37.2	34.3
22/01/2023	07:15:00 AM	48.5	32.0	75.7	56.5	48.3	40.1	35.3	33.4
22/01/2023	07:30:00 AM	46.7	31.9	73.2	58.0	45.3	38.4	34.5	33.1
22/01/2023	07:45:00 AM	49.9	33.5	75.5	61.6	51.4	41.8	36.7	34.7
22/01/2023	08:00:00 AM	48.6	34.1	75.5	58.0	49.6	41.2	37.1	35.4
22/01/2023	08:15:00 AM	47.2	35.9	64.7	58.5	49.9	42.5	39.4	37.7
22/01/2023	08:30:00 AM	49.1	36.8	72.3	60.0	51.0	44.5	40.4	38.3
22/01/2023	08:45:00 AM	51.2	36.6	69.2	62.3	54.5	45.8	39.6	37.9
22/01/2023	09:00:00 AM	48.2	36.9	70.4	57.7	50.1	44.2	41.1	39.1
22/01/2023	09:15:00 AM	46.2	35.7	67.6	56.4	48.5	42.3	39.5	37.9
22/01/2023	09:30:00 AM	59.6	36.8	71.5	68.5	65.1	46.9	40.7	38.6
22/01/2023	09:45:00 AM	59.9	37.6	73.2	69.0	65.2	48.9	40.7	38.6
22/01/2023	10:00:00 AM	57.1	37.2	71.2	65.3	62.2	47.7	40.0	38.5
22/01/2023	10:15:00 AM	50.0	36.3	68.6	61.1	52.9	45.1	39.8	37.5
22/01/2023	10:30:00 AM	50.5	36.3	69.3	58.9	53.2	48.6	40.0	37.4
22/01/2023	10:45:00 AM	50.8	37.5	69.6	63.8	52.0	43.5	40.2	38.6
22/01/2023	11:00:00 AM	47.9	36.1	69.0	59.2	48.9	43.6	40.5	37.8
22/01/2023	11:15:00 AM	45.3	36.3	64.4	53.7	48.3	42.4	39.4	37.9
22/01/2023	11:30:00 AM	51.7	36.0	72.6	64.2	52.1	43.6	38.3	37.2

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
22/01/2023	11:45:00 AM	54.0	46.3	72.9	61.7	55.7	52.1	49.7	48.3
22/01/2023	12:00:00 PM	51.9	44.1	69.3	62.0	53.7	49.7	46.8	45.0
22/01/2023	12:15:00 PM	50.2	34.6	64.9	59.9	54.1	47.5	38.3	35.6
22/01/2023	12:30:00 PM	45.5	35.1	64.0	56.2	48.8	39.8	37.1	35.9
22/01/2023	12:45:00 PM	48.9	35.7	64.4	56.2	51.8	48.4	38.7	36.5
22/01/2023	01:00:00 PM	52.6	37.0	67.8	61.5	56.6	48.7	40.0	38.1
22/01/2023	01:15:00 PM	55.9	47.2	77.2	62.5	58.2	54.5	50.9	49.0
22/01/2023	01:30:00 PM	56.3	36.8	66.4	62.7	59.3	55.3	41.3	37.9
22/01/2023	01:45:00 PM	55.0	36.3	69.3	62.2	58.0	53.4	49.6	38.7
22/01/2023	02:00:00 PM	56.0	46.3	69.1	62.8	59.2	54.1	50.8	48.8
22/01/2023	02:15:00 PM	55.5	42.3	72.1	63.5	58.8	52.8	49.4	45.5
22/01/2023	02:30:00 PM	52.8	43.9	68.0	62.2	55.6	50.3	47.7	46.1
22/01/2023	02:45:00 PM	53.7	44.7	67.0	62.6	57.3	50.6	47.6	46.0
22/01/2023	03:00:00 PM	52.2	41.3	68.1	61.4	54.4	49.7	47.8	45.6
22/01/2023	03:15:00 PM	52.2	36.5	67.8	61.8	56.2	47.7	41.5	38.0
22/01/2023	03:30:00 PM	44.4	35.5	61.9	54.7	46.2	40.7	37.9	36.7
22/01/2023	03:45:00 PM	47.2	35.4	72.7	59.6	48.0	40.2	37.6	36.2
22/01/2023	04:00:00 PM	51.2	35.9	73.2	63.8	52.4	43.3	39.5	37.7
22/01/2023	04:15:00 PM	50.0	37.5	75.4	59.1	50.3	44.0	40.7	39.1
22/01/2023	04:30:00 PM	49.2	41.7	65.9	58.2	52.4	45.9	43.8	42.9
22/01/2023	04:45:00 PM	50.9	42.1	69.8	60.7	53.9	47.1	44.4	43.4
22/01/2023	05:00:00 PM	53.7	43.2	72.8	64.2	57.1	49.0	45.6	44.2
22/01/2023	05:15:00 PM	51.6	37.2	75.3	60.1	56.1	46.8	41.8	39.3
22/01/2023	05:30:00 PM	53.8	37.9	75.7	65.6	55.6	48.8	42.4	39.6
22/01/2023	05:45:00 PM	56.6	37.3	82.7	61.8	52.4	45.5	41.4	39.2
22/01/2023	06:00:00 PM	49.0	37.4	66.3	58.3	52.5	45.5	41.4	39.2
22/01/2023	06:15:00 PM	49.3	38.1	70.5	58.2	51.6	45.7	41.8	39.8
22/01/2023	06:30:00 PM	49.4	38.1	71.5	62.0	49.5	42.5	40.0	39.0
22/01/2023	06:45:00 PM	45.0	38.6	58.6	54.5	47.6	42.3	40.5	39.7
22/01/2023	07:00:00 PM	64.6	38.3	75.8	74.0	72.8	43.9	40.4	39.4
22/01/2023	07:15:00 PM	73.4	62.0	76.4	75.0	74.4	73.5	71.8	67.8
22/01/2023	07:30:00 PM	61.5	43.5	74.9	72.5	65.9	47.4	46.0	45.0
22/01/2023	07:45:00 PM	46.1	40.7	68.4	53.6	46.9	44.8	43.4	42.4
22/01/2023	08:00:00 PM	46.1	40.3	61.2	55.2	47.1	44.6	43.2	42.0
22/01/2023	08:15:00 PM	46.5	40.5	67.3	53.7	45.9	44.4	43.2	42.3
22/01/2023	08:30:00 PM	57.3	39.2	85.1	67.1	50.9	43.9	42.4	41.1
22/01/2023	08:45:00 PM	45.7	38.8	61.4	55.4	47.2	43.7	41.8	40.3
22/01/2023	09:00:00 PM	44.6	39.5	57.1	51.5	46.2	43.5	41.9	40.5
22/01/2023	09:15:00 PM	45.6	40.4	66.4	51.0	46.2	44.8	43.2	41.6
22/01/2023	09:30:00 PM	46.5	39.6	66.3	55.4	47.1	43.9	42.2	41.1
22/01/2023	09:45:00 PM	44.5	39.7	58.0	50.0	45.6	43.9	42.4	41.3
22/01/2023	10:00:00 PM	45.1	39.6	61.2	51.4	46.5	44.3	42.7	41.5
22/01/2023	10:15:00 PM	44.3	40.4	52.3	48.1	45.5	44.0	42.9	42.0
22/01/2023	10:30:00 PM	44.5	40.6	56.6	49.2	45.6	44.2	42.6	41.7
22/01/2023	10:45:00 PM	44.0	39.5	66.5	49.0	44.7	43.3	42.1	41.1
22/01/2023	11:00:00 PM	65.4	39.7	74.1	71.7	70.6	44.7	42.3	41.1
22/01/2023	11:15:00 PM	43.5	38.2	59.9	50.5	44.3	42.6	41.3	40.1
22/01/2023	11:30:00 PM	43.2	39.2	48.4	46.0	44.3	43.0	41.8	40.7
22/01/2023	11:45:00 PM	41.9	36.6	52.4	45.2	43.4	41.7	39.9	38.5
23/01/2023	12:00:00 AM	42.0	36.7	50.9	45.0	43.4	41.7	40.1	38.7

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
23/01/2023	12:15:00 AM	41.5	36.7	54.3	44.3	42.6	41.4	40.2	38.9
23/01/2023	12:30:00 AM	41.0	37.3	54.1	44.9	42.0	40.8	39.6	38.5
23/01/2023	12:45:00 AM	41.7	37.2	48.2	44.4	43.0	41.5	40.0	38.9
23/01/2023	01:00:00 AM	42.0	37.3	49.9	44.8	43.4	41.9	40.3	38.9
23/01/2023	01:15:00 AM	41.2	36.9	47.8	43.6	42.4	41.1	39.6	38.4
23/01/2023	01:30:00 AM	42.0	36.7	54.9	48.0	42.9	41.4	39.8	38.5
23/01/2023	01:45:00 AM	41.4	36.3	47.6	45.2	42.9	41.2	39.2	37.6
23/01/2023	02:00:00 AM	41.4	35.9	45.7	43.8	42.7	41.3	39.6	37.9
23/01/2023	02:15:00 AM	41.9	37.1	46.4	44.5	43.2	41.8	40.1	38.9
23/01/2023	02:30:00 AM	42.1	36.8	47.2	45.0	43.7	41.9	40.2	38.6
23/01/2023	02:45:00 AM	43.0	38.7	50.2	45.7	44.5	42.8	41.2	39.9
23/01/2023	03:00:00 AM	42.7	37.5	46.8	45.2	44.1	42.6	40.9	39.6
23/01/2023	03:15:00 AM	43.0	37.3	56.8	50.5	44.1	42.1	40.5	39.0
23/01/2023	03:30:00 AM	41.0	37.1	53.6	44.5	41.8	40.7	39.7	37.9
23/01/2023	03:45:00 AM	39.7	35.8	47.2	42.7	40.7	39.8	37.5	36.5
23/01/2023	04:00:00 AM	41.3	35.8	58.1	50.2	41.2	40.1	39.3	37.5
23/01/2023	04:15:00 AM	43.2	35.6	58.6	53.9	44.4	40.7	39.3	36.7
23/01/2023	04:30:00 AM	50.7	37.5	69.3	58.8	51.5	50.3	42.5	40.4
23/01/2023	04:45:00 AM	53.2	39.9	69.0	63.6	56.9	49.6	42.6	41.6
23/01/2023	05:00:00 AM	55.0	42.7	67.5	62.2	58.6	53.0	47.7	44.7
23/01/2023	05:15:00 AM	52.9	42.8	76.4	61.2	55.3	50.1	47.4	44.8
23/01/2023	05:30:00 AM	53.0	39.6	82.2	63.3	54.2	48.0	44.2	42.4
23/01/2023	05:45:00 AM	52.6	38.7	79.4	62.4	55.3	47.3	43.1	40.7
23/01/2023	06:00:00 AM	51.2	38.0	77.3	62.0	53.2	46.3	41.3	39.5
23/01/2023	06:15:00 AM	50.0	37.0	78.2	59.2	51.5	43.4	39.8	38.1
23/01/2023	06:30:00 AM	49.3	37.7	75.9	58.8	51.3	44.4	40.9	38.9
23/01/2023	06:45:00 AM	48.4	36.8	73.1	58.6	51.4	43.9	40.4	38.5
23/01/2023	07:00:00 AM	52.7	36.8	75.4	64.0	54.0	47.0	42.2	38.7
23/01/2023	07:15:00 AM	48.7	38.3	73.5	58.3	50.7	44.0	41.2	39.6
23/01/2023	07:30:00 AM	51.9	35.4	76.7	63.8	53.1	44.1	38.7	36.9
23/01/2023	07:45:00 AM	49.3	35.0	70.2	61.9	51.1	41.8	38.1	36.5
23/01/2023	08:00:00 AM	50.8	34.8	77.2	64.1	52.1	43.1	38.4	36.2
23/01/2023	08:15:00 AM	50.5	39.4	68.7	62.6	52.3	46.6	43.5	41.6
23/01/2023	08:30:00 AM	47.9	36.4	71.2	57.8	49.8	44.5	39.9	37.9
23/01/2023	08:45:00 AM	48.5	35.8	66.8	59.2	51.2	45.2	41.0	38.0
23/01/2023	09:00:00 AM	49.0	36.6	66.0	59.8	51.1	46.3	41.5	38.5
23/01/2023	09:15:00 AM	48.6	38.9	71.2	58.1	50.1	44.8	41.1	39.9
23/01/2023	09:30:00 AM	45.6	38.8	63.9	54.2	48.0	43.3	40.9	39.7
23/01/2023	09:45:00 AM	48.6	38.3	71.9	58.3	49.9	43.1	40.9	39.8
23/01/2023	10:00:00 AM	48.2	36.9	72.4	59.1	50.9	43.5	40.2	38.9
23/01/2023	10:15:00 AM	47.7	37.0	66.5	56.3	51.2	44.4	41.1	39.5
23/01/2023	10:30:00 AM	54.7	37.0	77.4	67.4	53.1	43.5	40.1	38.4
23/01/2023	10:45:00 AM	49.6	37.6	77.3	59.3	49.1	42.8	39.9	38.6
23/01/2023	11:00:00 AM	47.3	37.8	68.6	56.3	50.3	43.3	40.6	39.1
23/01/2023	11:15:00 AM	47.2	36.9	65.5	57.9	50.0	42.9	39.8	38.2
23/01/2023	11:30:00 AM	47.2	36.9	61.1	55.9	50.3	45.0	40.1	38.4
23/01/2023	11:45:00 AM	48.7	36.1	77.8	56.9	48.8	41.8	39.2	37.6
23/01/2023	12:00:00 PM	46.0	36.5	66.0	57.3	47.7	41.2	39.0	37.8
23/01/2023	12:15:00 PM	47.5	37.6	63.9	59.1	49.9	43.1	40.0	38.6
23/01/2023	12:30:00 PM	46.7	36.8	64.4	57.2	49.8	42.3	39.6	38.4

Start date	Start time	LAeq	LAFmin	LAFmax	LAF1	LAF10	LAF50	LAF90	LAF99
23/01/2023	12:45:00 PM	54.5	37.5	74.7	69.0	53.9	44.2	39.8	38.6
23/01/2023	01:00:00 PM	49.5	36.9	71.5	60.4	51.3	42.8	39.8	38.3
23/01/2023	01:15:00 PM	46.3	36.7	61.0	57.6	49.7	41.0	38.4	37.5
23/01/2023	01:30:00 PM	46.6	36.3	66.3	54.8	49.3	45.0	39.1	37.4
23/01/2023	01:45:00 PM	51.7	36.0	79.1	58.5	49.3	44.7	38.6	37.1
23/01/2023	02:00:00 PM	53.3	36.0	70.9	61.0	56.8	52.0	38.1	36.9
23/01/2023	02:15:00 PM	46.6	36.7	72.1	55.9	49.1	42.9	39.4	38.1
23/01/2023	02:30:00 PM	48.4	35.9	72.1	58.2	49.7	42.6	39.5	38.1
23/01/2023	02:45:00 PM	48.2	37.9	66.3	55.6	51.6	46.2	41.4	39.3
23/01/2023	03:00:00 PM	48.2	37.4	66.6	57.0	51.6	44.3	39.9	38.6
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23/01/2023	04:30:00 PM	49.2	37.2	67.4	60.5	52.1	44.1	40.3	38.6
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23/01/2023	05:00:00 PM	49.4	39.2	66.5	60.4	51.6	45.9	42.7	41.1
23/01/2023	05:15:00 PM	49.4	39.3	69.1	58.5	52.6	45.9	42.6	41.0
23/01/2023	05:30:00 PM	48.6	40.5	62.5	56.7	52.1	46.1	43.0	41.7
23/01/2023	05:45:00 PM	69.5	39.5	93.5	83.1	65.6	46.6	42.5	41.1

APPENDIX C: ATMOSPHERIC CONDITIONS FOR LAUNCESTON, JANUARY 2023

Launceston, Tasmania
January 2023 Daily Weather Observations

Most observations from Ti Tree Bend, but pressure and cloud from the airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps Min	Temps Max	Rain	Evap	Sun	Max wind gust Dirn	Max wind gust Spd	Max wind gust Time	9am Temp	9am RH	9am Cld	9am Dirn	9am Spd	9am MSLP	3pm Temp	3pm RH	3pm Cld	3pm Dirn	3pm Spd	3pm MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Su	17.1	26.1	0			N	37	12:57	21.1	69	8	SW	2		24.0	65	3	NNW	17	
2	Mo	15.6	28.1	0			NNW	43	13:47	20.2	80	6	NNW	9		27.1	58	8	N	24	
3	Tu	17.1	21.4	3.0			SSE	35	09:11	17.4	53	8	SSE	17		19.6	55	8	SSE	17	
4	We	11.5	22.8	1.4			NNW	31	15:32	14.4	78	8	SE	15		21.7	45	8	SE	7	
5	Th	10.4	24.5	3.8			N	30	16:52	15.8	69	1	WSW	4		23.3	34	5	ESE	7	
6	Fr	13.6	25.2	2.2			NW	41	15:23	15.6	61	8	ESE	19		23.4	34		W	7	
7	Sa	13.7	22.6	0			NW	31	16:07	16.8	64	8	SE	6		21.2	50	4	N	17	
8	Su	13.8	24.6	0			NW	33	17:46	17.8	68	8	WNW	6		23.8	46		NW	19	
9	Mo	13.8	28.4	0			WNW	37	15:00	18.7	71	1	N	6		27.4	48		NW	22	
10	Tu	16.1	25.8	0			NW	31	16:56	17.8	66	8	SE	7		24.8	43	7	NW	4	
11	We	14.0	26.6	0			NW	37	13:43	17.7	69	8	WNW	2		25.3	44		NW	20	
12	Th	11.1	28.8	0			NW	35	15:38	18.8	59		ESE	4		27.2	39		NW	11	
13	Fr	17.8	29.3	0			NNW	31	15:10	22.8	58		SSE	7		27.9	43	4	NNW	15	
14	Sa	15.2	27.0	0			ENE	39	13:36	22.2	61		NNW	6		25.1	58	1	NE	15	
15	Su	15.9	27.9	0			SSE	41	12:13	21.9	79	3	N	4		26.5	24		S	19	
16	Mo	11.9	24.7	0			NW	31	16:35	16.4	53		SE	13		23.4	44	8	NW	13	
17	Tu	15.2	29.0	0			NNW	28	15:39	18.0	65	7		Calm		26.9	50	2	NNW	15	
18	We	17.4	26.2	14.4			SW	43	18:32	19.7	92	8	NNW	15		25.5	36	1	WNW	19	
19	Th	10.1	23.0	0			S	37	23:34	15.0	45		SE	19		21.0	30	2	S	11	
20	Fr	12.1	24.5	0			NW	35	15:37	17.5	52		ESE	6		23.8	35	1	NNW	9	
21	Sa	10.4	24.4	0			NW	31	17:56	16.6	67		N	2		23.7	39	8	WNW	11	
22	Su	13.0	25.5	0			NNW	37	13:53	19.9	65		ESE	9		24.4	49	7	NNW	24	
23	Mo	11.8	24.9	0			NNW	26	12:43	17.3	77	1	N	6		19.6	84	8	N	11	
24	Tu	11.7	27.7	5.0			NW	37	15:56	16.9	79	1	NE	4		26.6	34		NNW	11	
25	We	13.8	25.6	0			NW	46	15:34	18.1	85	8	NNW	6		24.6	52	6	NW	22	
26	Th	14.0	24.9	0			N	35	23:05	17.9	51	1	NW	6		23.6	26	7	S	2	
27	Fr	11.7		0						18.1	64		NE	6							
Statistics for the first 27 days of January 2023																					
	Mean	13.7	25.8							18.2	66	5		7		24.3	44	5		14	
	Lowest	10.1	21.4							14.4	45	1		Calm		19.6	24	1	S	2	
	Highest	17.8	29.3	14.4			NW	46		22.8	92	8	#	19		27.9	84	8	#	24	
	Total			29.8																	

URBAN FOREST

TRAINING & CONSULTANCY

Arboricultural Report

53 Gorge Road, Trevallyn

Client	James Arias
Location	53 Gorge Road, Trevallyn, TAS 7250
Contact	M: 0421 253 359 E: jawarch@hotmail.com
Site Assessment Date	Monday, 4th of July, 2022
Consultant	Paul Suidgeest, Dip Horticulture (Arb), QTRA No. 3744
Consultant Contact	E: pauls@uftac.com.au M: 0448 261 108
UFT&C Reference	

URBAN FOREST
TRAINING & CONSULTANCY

Contents

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1. Introduction

Urban Forest Training & Consultancy has been engaged by Mr Arias to inspect all trees in the grounds of 53 Gorge Road, Trevallyn, that he has recently purchased, to provide an audit containing basic tree data and recommendations on the trees. All trees were inspected for risk, health and longevity.

At the time of the site visit all deciduous trees were out of leaf, conditions were fine.

2. Key Objectives

- Conduct an assessment of the trees that were identified in the scope of works for this project
- Identify trees and provide relevant details about the assessed trees including their species, location, amenity value, health, structure, size.
- Provide recommendations regarding the management of identified trees

3. Methodology

3.1 Inspection Method

- A ground-based tree inspection was conducted using the Visual Tree Assessment (VTA) method (Mattheck and Breloer 1994)
- Aerial examination (climbing) of the tree structure was not conducted
- Heights and canopy widths are generally estimates
- Tree locations are usually within + / - 5m accuracy unless otherwise specified

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4. General Comments

4.1. Potential for Failure

Any tree can fail, and all trees present a risk.

Trees are dynamic structures that change in response to their growing conditions, state of maturity and in accordance with the species. This changing nature also changes their potential to fail and therefore the risk they present.

Failure potential increases with:

- Poor tree and structure development
- Decline in tree health
- Increased wind or changes in wind loadings such as those experienced after the removal of nearby trees or structures
- Drought or rain, particularly saturating rains
- Interference with root systems including compaction, disturbance, contamination, trenching or removal (excavations)
- Changes in water regimes such as those experienced when drainage patterns are changed by soil movements
- Inappropriate or excessive pruning techniques

Different species and provenances of species will influence the likelihood of a failure event. Also, a tree may shed limbs or fail for no apparent reason. Therefore, it's important to be aware of the individual characteristics and weakness that are endemic to certain species so that changes can be monitored in structural or environmental conditions. Trees should be managed accordingly to reduce risk.

All trees present a hazard; predominantly the hazard will be associated with failure potential however other hazards exist such as the production of allergens. Risk of failure may be increased in certain circumstances through changes in soil moisture content.

Risk assessment of the tree will determine the degree of risk associated with the identified hazards. Risk control is the process of implementing appropriate measures to reduce the risk to an acceptable level.

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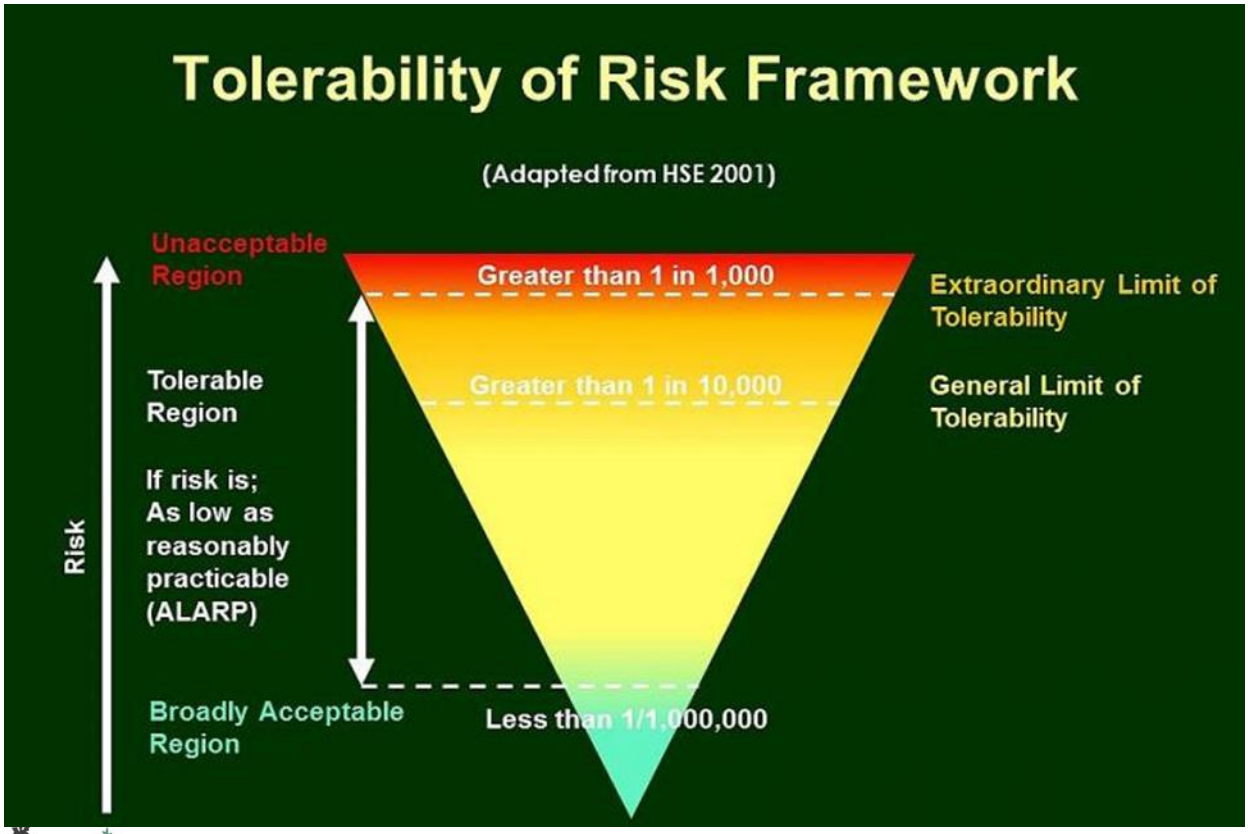
4.2. Controlling Risk

Each owner/manager of a tree will need to determine for themselves what level of risk is appropriate for their given situation. They will need to decide how they manage risk; risk reduction and risk control methods may include:

- Remedial pruning to remove weak or damaged parts of a tree
- Load reduction
- Relocation of targets such as seating or playgrounds
- Fencing of an area to exclude targets from under trees
- Erecting a structure over a target that can withstand a tree part failure
- Appropriate signage
- Complete tree removal
- Where recommendations are supplied as part of this document, the manager of a tree will need to determine if those recommendations are appropriate to the situation. The manager will need to determine a level of acceptable risk and act accordingly

Branch shedding and tree failure cannot be eliminated; however, the implementation of regular tree inspections using qualified and experience Arborists will help to reduce unpredictable tree or tree part failure. By adopting risk assessment and preventative control methods; failure events and risk, will be significantly reduced.



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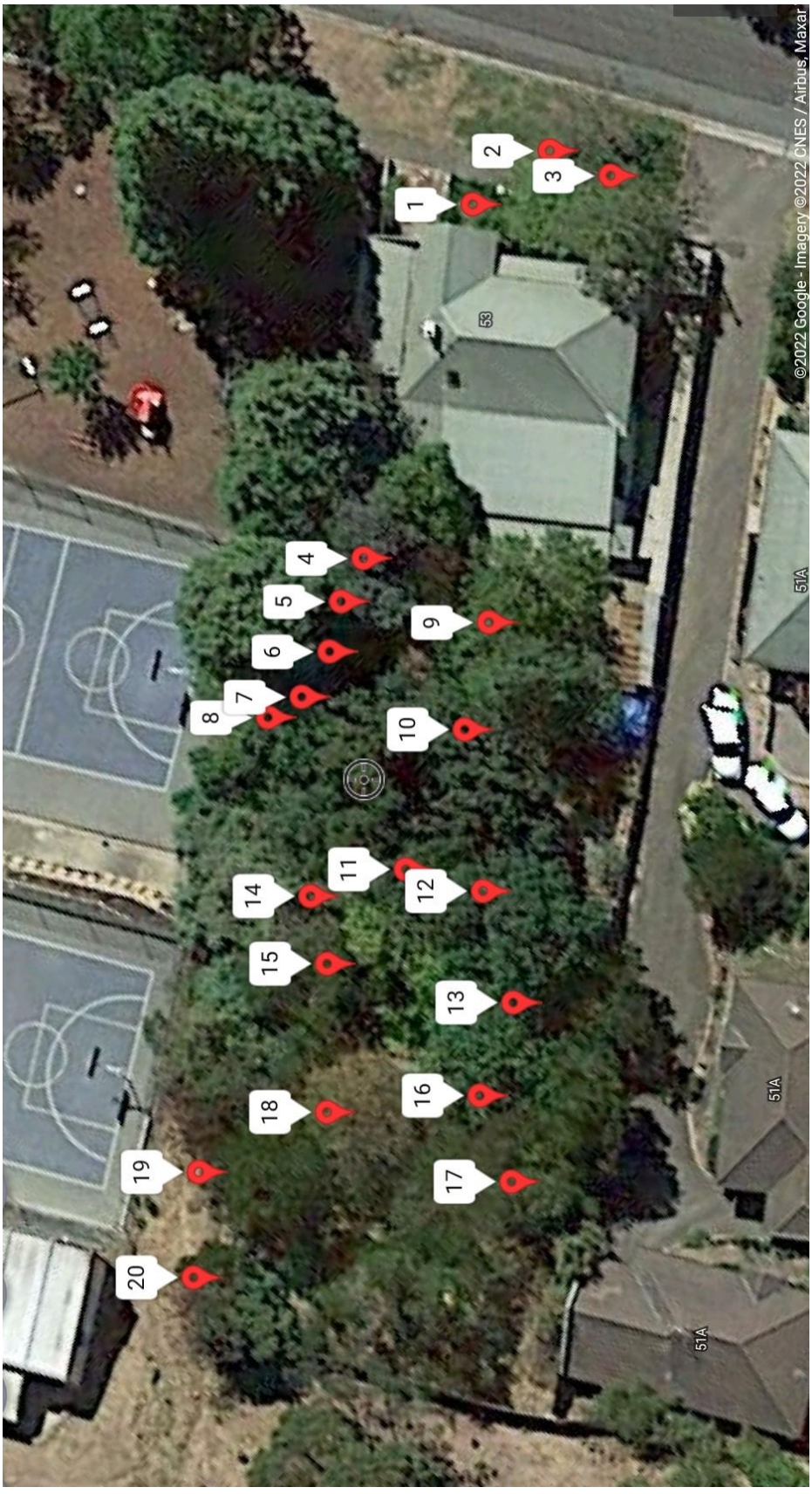
5. Site Plan



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6. Findings and Recommendations

Tree number	Species	Age	Height (m)	DBH (cm)	Trunk	Canopy radius (m)	General condition	Structure	Life expectancy (years)	Comments
1	Liquidambar styraciflua	semi-mature	3	7	twin	1	average	poor	50+	Semi mature liquidambar, twin trunk in proximity to building windows and entrance steps tree has included unions possum damage. Poor planting specimen/site, Remove tree
2	Betulaceae	mature	3	50	multiple	2	average	poor	50+	Multi trunk form, small tree potentially a Hazelnut, catkins forming, growing middle of front yard by footpath
3	Betula sp.	mature	10	25	single	4	average	fair	50+	Birch tree in front yard, lower canopy is reaching out over the corner of building, other side of canopy Is out over footpath trees, out of leaf at the moment with catkins just starting to form, tree appears to be in fair condition, lift canopy from building
4	Syzygium sp. Photinia sp.	mature	4	40/10	multiple	1	in decline	poor	5	Two trees in close proximity between rear veranda and water tank. Photinia, twin trunk, tree appears dead. Lilly Pilly heavily reduced to 2m regrowth growth appears to be grazed by possums. Remove trees
5	Pittosporum tenuifolium cv	mature	6	35	multiple	3	fair	fair	40	Pittosporum cultivar, edge of water tank and boundary fence, tree has a dead section of neighbouring Wattle growing up through canopy, lower canopy is on water tank, clear of fence, multi trunk tree in fair condition. Prune tree from water tank

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6	Acacia baileyana	mature	5	40	twin	4	poor	poor	5	Cootamundra Wattle planted on fence boundary, twin trunk structure, one spar appears to be dead growing out through neighbouring pittosporum. Live trunk, asymmetrical form growing into property, tree is just coming into flower, there is a fair amount of light deadwood within the canopy. Remove tree
7	Cupressus sp	mature	5	30	single	3	average	poor	50+	Cypress tree growing in bed approximately 2m from fence tree has a slight lean in towards the yard, tree has previously lost its apical dominance, has asymmetrical canopy due to neighbouring vegetation. Remove tree
8	Ulmus parvifolia	mature	10	17	twin	4	average	poor	30	Chinese elm, twin trunk growing out from boundary fence causing damage, main trunk of tree reaching through and intermingled with neighbouring vegetation, part of tree is reaching into the yard, second spar of tree, included union growing laterally along boundary fence into other vegetation. Remove tree
9	Acer negundo	mature	5	30	single	4	average	poor	40	Maple tree appears to be negundo, tree structure is twin trunk, at approximately 1m there is trunk damage at the basal area and a pruning wound at 500mm which is starting to decay, trees form contains rubbing branches and what appears to be a dead vine in the canopy causing congestion, trees aspect is growing over small garage and property veranda. Prune canopy/remove tree

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10	Betula pendula	mature	10	25/20	single	3	average	poor	30	Two trees grown in close proximity, edge of cutting and small shed, larger tree has suppressed smaller trees form, has a wounded section on the eastern side of trunk, smaller suppressed tree has been girdled by nylon rope at approximately 1.5 mm reducing the trees form and growth above that point, numerous cavity sites from old branch wounds, one side of tree is growing up through a small neighbouring prunus of minor significance. Inspect in leaf, remove suppressed tree
11	Fraxinus angustifolia 'Raywood'	mature	20	57	single	6	average	fair	40	Ash tree potentially Claret Ash, tree is in within 2m of cutting, has a cotoneaster shrub growing at the base and into lower structure, tree has a poorly formed multibranch structure at approximately 2.5m, there has been some lower limb removals with average reactive growth, hanging branches and deadwood in the scaffolding and canopy, part of the canopy is growing to the centre of the property, reaching out over other vegetation, tree was out of leaf at time of inspection. Prune tree, inspect in leaf
12	Cupressus Acacia	semi-mature	3	12/10	single	2	average	poor	20	Two trees that appear to be advantageously grown in corners of cutting, small Cupressus growing underneath Ash tree and cotoneaster with a asymmetrical form due to position, in the corner on boundary fence side there's a Cootamundra Wattle growing out over the fence tree is just coming into flower. Remove trees
13	Fraxinus excelsior	mature	20	53	single	6	average	fair	50+	Ash tree appears to be excelsior, tree is growing within 4m of boundary fence with small sheds under canopy, tree has a fair structure, lower branches growing onto shed and vines growing into outer canopy, tree has light deadwood throughout canopy. Prune canopy, inspect in leaf

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14	Prunus domestica	mature	10	30/10/25	multiple	3	poor	poor	30	A line of 3 plum trees, multi-trunk specimen approximately 1.5 metres from fence, asymmetrical and suppressed canopy due to neighbouring vegetation, trees near archway, smaller tree has had reduction done growing up under ash tree small broken limbs, tree in centre of yard is leaning out towards the light from the two Ash trees, has rubbing branches and damage to limbs due to this. Remove trees
15	Ulmus sp	early mature	5	25	single	3	poor	very poor	10	Leaning tree appears to be elm, tree appears windblown with plate heave and signs of it having blown past the neighbouring prunus, growing under the ash tree and others, Remove tree
16	Malus domestica	mature	10	44	single	5	average	fair	40	Large mature apple tree, cavity in lower trunk, tree shows signs of having been reduced to size a number of times previously, tree has since been left to grow, there is vines starting to grow into the canopy and light deadwood throughout structure. Prune tree, consider removal
17	Prunus domestica	mature	4	30	single	3	poor	very poor	5	Tree on property boundary tree has a lean out to the centre of the yard due to root plate moving, the tree is swamped by vine throughout canopy and structure, there is delaminated branches in the structure and the vine is weighing the tree down. Remove tree and vines
18	Prunus domestica	mature	15	40	single	5	average	poor	40	Large tree appears to be Prunus, tree structure contains sections of deadwood and growing entangled branches, poor structural development at site of main unions. Remove tree

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19	Acacia sp	senescent	10	25	twin	2	in decline	very poor	5	A line of four mixed Acacias starting from top of yard closest to fence, tree is growing out over easement, rubbing on fence and growing into neighbouring vegetation with cavities at base, next tree down from that, is a tree that is basically dead except for very light foliage at some extremities, next to that is dead tree with one side has been broken out and is laying into other vegetation, the last of the trees has numerous broken branches, there is a small part of live canopy growing into the edge of the neighbour in prunus, tree has poor form. Remove trees
20	Cotoneaster	mature	4	40	multiple	3	average	poor	20	Cotoneaster shrub growing in the corner of the block against both fences shrub is causing damage to both. Remove shrub

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6.1. Photos of trees

Photo 1, front yard of property

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Photo 2, reduced Lilly Pilly, dead Photinia

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Photo 3, wattle, and Pittosporum

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Photo 4, suppressed Cupressus and elm growing from fence

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Photo 5, Acer by veranda and birch in background

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Photo 6, Claret ash at edge of cutting

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Photo 7, common ash on boundary

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Photo 8, looking to the rear of property, a mix of trees with poor form and other issues

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7. Summary

The tree population at 53 Gorge Road is mainly a mix of exotic specimens and aged fruit trees. There are some native Acacias present that have passed their useful life expectancy. As shown on the site map, when in leaf the rear yard has a full canopy cover and is congested. There has been little maintenance in the yard for a number of years besides the reduced Lilly Pilly by the veranda. The Claret ash appears to be spreading and dominating the centre of the rear yard, if the cutting was to be developed this tree would be of concern.

The trees in the easement along the western boundary affect most trees' form in that part of the rear yard by overshadowing them.

Of the trees at the property, there are few worth retaining for a new owner wishing to develop the garden. Trees 3 and 13 are possibly the better trees on the property, all others have issues of varying degrees that require maintenance or removal.

8. General Site Recommendations

Addressing tree health issues is likely to reduce dieback and limb failures, factors that can improve tree health include:

- Regular pruning to remove dead or damaged material from the canopy
- Minimise compaction or disturbance or root zones
- Protect trees from mechanical damage to trunks and surface roots
- Do not alter soil levels around tree trunks or over root plates
- Where appropriate take measures to aerate soil and apply a layer (10-20cm) of mulch, ensure mulch is kept away from the trunk / bark
- Minor landscaping works to create banks or berms to reduce rain runoff and increase soil moisture uptake
- The addition of indigenous shrubs, grasses and herbs can improve the health of nearby native trees

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11. Glossary

Term	Description
Acceptable Risk	The assessed level of risk is considered low enough that no remedial action is recommended in the short term (4 years or less). The consulting arborist will consider the tree related hazards, and the use of the area, if it is determined that the risk level is currently acceptable then the tree or group of trees may not be detailed in this report. Where deadwood is the only significant hazard the tree may not be detailed in this report, however the deadwood should be removed. All owners and managers of trees are responsible for making the final decision on the suggested risk presented and what is, or is not, 'acceptable' as well as the most appropriate management of that risk.
Age Category	The age of the tree represented as New planting, Juvenile, Semi-Mature, Early-Mature, Mature and Senescent. • New planting – Recently planted tree, still establishing itself. • Juvenile - A young tree, given normal environmental conditions for that tree it will not yet flower or fruit. • Semi-Mature - Able to reproduce but not yet nearly the size of a mature specimen in that location. • Early-Mature - Has reached or nearly reached full size and spread for that species in the given location. • Mature – Has reached full size full size and spread. • Veteran - Old age: health and / or structure has features such as habitat values. • Senescent - being impacted by the ageing process; these processes will eventually lead to death.
Amenity Value	A judgement of amenity and / or utility the tree provides based on factors such as species, size, age, health and local environment. Amenity may be based on ecological or landscape value or both. Documented as Low, Medium or High. Amenity value does not consider the degree of risk associated with a tree.
Diameter at Breast Height (DBH)	The diameter of the trunk measured at or near 1.4m above ground level. Where there is more than 1 stem originating below 1.4m the measurement recorded is calculated as described in AS 4970-2009.
Distance to Works (DTW)	The distance (in meters) from the proposed works to the centre of the trunk at the base of the tree.
Height	The distance in metres from the ground to the highest point in the crown, calculated in the vertical plane. This measurement unless otherwise specified is an estimation only.
Risk Rating	The assessed risk that a certain tree presents over the next year with consideration to: • Targets (people and property) • The likelihood of a failure • The consequences of that failure **Green (Low)** - Assigned to trees where defects or concerns exist however the need for mitigation action is very low in the short term (12-24 months) **Yellow (Moderate)** - Either consequence is significant or severe whilst the chance of a failure occurring and striking a target is only somewhat likely. Or the consequences are lower but likelihood very high. Works recommended often medium term (6 months-2 years) or monitoring and annual re-inspection.

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	Amber (High) - Failure is likely or very likely, likelihood or impacting a target very likely and consequences would be significant to severe. Mitigation measures strongly recommended within a short timeframe (6 weeks to 6 months). **Red (Extreme)** - Failure is imminent, highly likely to impact a significant target, consequences would be severe. Action required within hours or days.
Average Radial Spread	Overall size of the canopy as looking from a plan view. Horizontal measurement of the tree's foliage diameter.
Structural Root Zone (SRZ)	The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in meters. • This zone considers a tree's structural stability only, this is different from the root zone required for a tree's vigour and long-term viability, which will usually be a greater area.
Tree Protection Zone (TPZ)	An exclusion area radius measured from the centre of the trunk at ground level that allows for protection of canopy and roots; both the structural roots that give the tree stability and the smaller absorption roots. The radius of the TPZ is normally calculated for each tree by multiplying the DBH x 12. The minimum distance will be 2m and maximum 15 as stipulated in the Australian Standard 4970-2009 - Protection of Trees on Development Sites.
Structure	Reference to the structural integrity of the tree with consideration of the crown, trunk and roots. Determined using the Visual Tree Assessment (VTA) method (Matheck and Breloer 1994) • Very poor - Clear indications that a significant failure is likely in the near future. • Poor - Signs of structural features obvious and failure possible, one might expect a failure event within the next 5 years. • Fair - Signs of features present though not obviously significant, possible to become worse over time. • Good - No obvious signs of structural weakness.
Tree Condition	A trees vitality as exhibited by the crown density, leaf colour, seasonal extension growth, presence of stress indicators, ability to withstand diseases and pests and the degree of dieback. Where a deciduous tree is inspected without foliage and health is undetermined a '?' will be noted. • In Decline - Cessation or near cessation of all metabolic processes. Showing signs of senescence • Poor - Indicating symptoms or extreme stress such as minimal foliage, or extensively damaged leaves from pests and diseases. Death probable if condition of tree deteriorates • Average - Indicating some symptoms of stress such or structural flaws • Fair - Not nearly of 'Good' condition (see below) • Good - Usual for that species given normal environmental conditions - full canopy with only minor deadwood, normal leaf size and extension growth, minimal pest or disease damage

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