



Gunyama Stage 2 Pre-Construction Detailed Design Road Safety Audit

Prepared for:

Place Design Group

4 September 2023

The Transport Planning Partnership

Gunyama Stage 2

Pre-Construction Detailed Design Road Safety Audit

Client: Place Design Group

Version: 01

Date: 4 September 2023

TPPP Reference: 22538

Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
01	4/9/2023	Doris Lee	Stephen Read	Wayne Johnson	

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1 Road Safety Audit Summary

Audited project:	Gunyama Stage 2
Client:	Place Design Group
Project manager:	Tim Field
Email address:	tim.f@placedesigngroup.com
Telephone:	0403 863 059
Audit Team:	Stephen Read (level 3 lead road safety auditor) Doris Lee (level 3 road safety auditor)
Audit type:	Detailed Design (Pre-Construction)
Commencement meeting:	N/A
Audit date:	30/8/2023
Completion meeting:	Not required

The objective of this road safety audit is to examine and identify road safety concerns regarding the proposed extension of George Julius Avenue between Zetland Avenue and Peters Street, Zetland.

The findings of the road safety audit have been detailed in Section 4.3 of this report.

2 Introduction

2.1 Background

This report has been prepared on behalf of Place Design Group to present road safety audit findings that have been identified for the extension of George Julius Avenue between Zetland Avenue and Peters Street, Zetland. The road extension is located on the east side of Gunyama Park (Stage 2) with pedestrian access.

The road safety audit focused on the road extension with interface with the Peters Street intersection to the south, and the turning area to the north. The audit excludes the intersection treatment with Zetland Avenue.

2.2 Audit Objective

The objective of this Audit was to identify road safety issues associated with the proposed road extension.

2.3 Procedures and Reference Material

The procedures used are described in the following guidelines:

- Roads and Maritime Services' 2011 Guidelines for Road Safety Audit Practices
- Austroads Guide to Road Safety 2022: Part 6 Road Safety Audits.

2.4 Audit Team

The RSA was carried out by the following team:

- Stephen Read (RSA-02-0652) – level 3 road safety auditor (lead auditor)
- Doris Lee (RSA-02-0128) – level 3 road safety auditor (team member)

Stephen and Doris are registered road safety auditors with the NSW Centre for Road Safety and are experienced in traffic engineering and design/ inspection of traffic management schemes.

3 Road Safety Audit Program

3.1 Commencement Meeting

A formal meeting was not held.

3.2 Site and Field Audit

A site inspection was carried out on Wednesday 30 August 2023 in fine weather conditions.

Observations were made by driving along the audited road section. Photographs and video footage were taken during the site inspection and have been included in the audit findings (Section 4.3).

3.3 Completion Meeting

A completion meeting is not required.

4 Road Safety Audit Findings

4.1 Introduction

Table 4.1 provides specific details of the road safety deficiencies and a risk rating as extreme, high, medium, low or negligible. The risk ratings have been based on the risk matrix presented in Table 4.1, which has been adopted from the latest Austroads Guide to Road Safety: Road Safety Audit (2022).

Table 4.1: Risk Matrix

			Severity				
			Insignificant	Minor	Moderate	Serious	Fatal
			Property damage	Minor first aid	Major first aid and/or presents to hospital (not admitted)	Admitted to hospital	Death within 30 days of the crash
Likelihood (includes exposure)	Almost Certain	One per quarter	Medium	High	High	Extreme (FSI)	Extreme (FSI)
	Likely	Quarter to 1-year	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
	Possible	1 to 3 years	Low	Medium	High	High (FSI)	Extreme (FSI)
	Unlikely	3 to 7 years	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
	Rare	7 years+	Negligible	Negligible	Low	Medium (FSI)	High (FSI)

The terms in Table 4.1 are described below.

Likelihood:

- Almost certain – occurrence once per quarter
- Likely – occurrence once per quarter to once per year
- Possible – occurrence once per year to once every three years
- Unlikely – occurrence once every three years to once every seven years
- Rare – occurrence less than once every seven years.

Severity:

- Insignificant – property damage
- Minor – minor first aid
- Moderate – major first aid and/or presents to hospital (not admitted)
- Serious – admitted to hospital
- Fatal – at scene or within 30 days of the crash.

Priority:

- Negligible – no action required
- Low – should be corrected or the risk reduced if the treatment cost is low
- Medium – should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high
- High – should be corrected or the risk significantly reduced, even if the treatment cost is high
- Extreme – must be corrected regardless of cost.

4.2 Responding to the Audit Report

As set out in the road safety audit guidelines, the responsibility for the road rests with the project manager, not with the auditor. The project manager is under no obligation to accept the audit findings. Neither is it the role of the auditor to agree to, or approve the project manager's responses to the audit.

The audit provides the opportunity to highlight potential road safety problems and have them formally considered by the project manager in conjunction with all other project considerations.

4.3 Road Safety Audit Findings

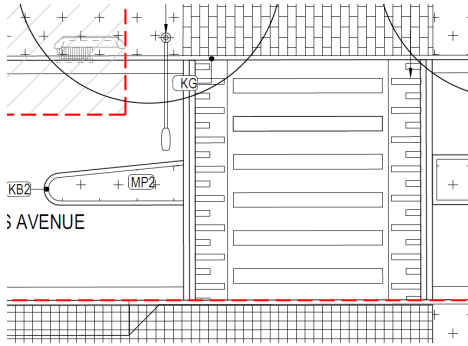
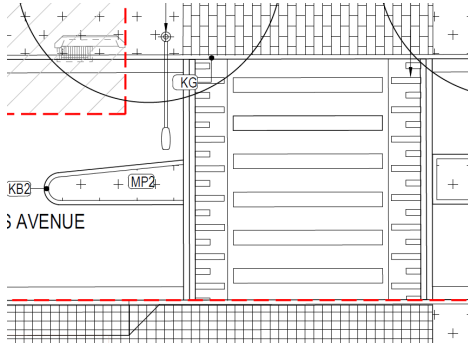
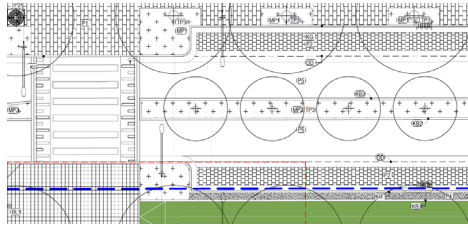
The audit findings are documented in Table 4.2 which provides:

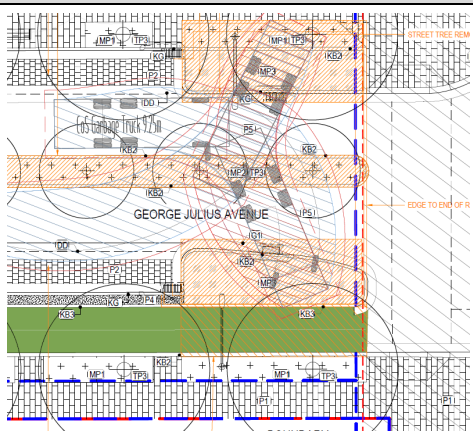
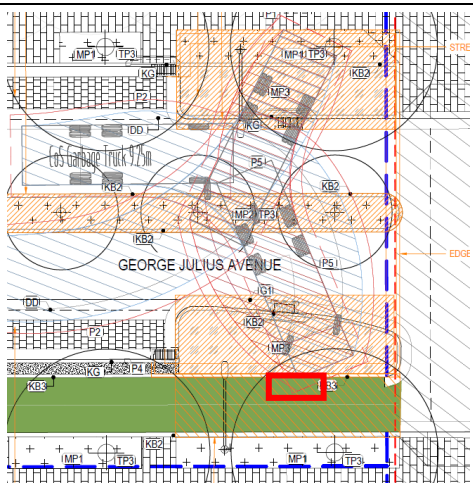
- specific details of the road safety issues identified during the audit
- a risk level rating for each of the road safety audit findings.

It should be acknowledged that positive attributes of the audited road section have not been discussed. Deficiencies that do not cause a safety problem are also not listed.

In-line with TfNSW's best practice recommendations have not been included in the road safety audit findings.

Table 4.2: Road Safety Audit Findings

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
1.	George Julius Avenue, north of Peters Street	<p>It is ambiguous to provide a median island on approach to the pedestrian crossing as motorists may confuse it with a pedestrian refuge where vehicles have priority over pedestrians. However, pedestrians have higher priority on pedestrian crossings.</p> <p>The confusion may lead to conflicts between vehicles and pedestrians as a result.</p>		Rare	Moderate	Low	
2.	Pedestrian crossing facility in George Jullius Avenue	<p>The future path connecting George Jullius Avenue and Gunyama Park will generate some cyclist demand. However, the proposed pedestrian crossing in George Julius Avenue does not cater for cyclist movements to/from the cycleway and Gunyama Park located on the other side of the road.</p> <p>Mixing cyclists and pedestrians in the crossing facility creates conflicts due to the different speeds, and may lead to injury in case of collisions.</p>		Unlikely	Minor	Low	
3.	Pedestrian crossing facility in George Jullius Avenue	<p>Sight distance to the pedestrian crossing may be obstructed by trees located in the median. As a result, motorists may not see pedestrians and cyclists about to use the crossing and thus increasing the likelihood of collisions.</p>		Rare	Moderate	Low	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
4.	Temporary turning area at the northern end of George Julius Avenue	It is not clear if a kerb would be provided to separate the turning area from the footpath and the cycleway.		-	-	Note only	
5.	Temporary turning area at the northern end of George Julius Avenue	<p>The temporary turning area is not sufficient to fully accommodate the swept path of a council waste collection vehicle making a three-point turn. Clearance of the vehicle encroach onto the footpath and cycleway on each side of the road.</p> <p>Cyclists may perceive the truck is getting too close to the cycleway. This may result in evasive action and swerving suddenly to the opposite side of the path. This may result in conflict with another cyclist in the cycleway which may lead to minor injury.</p>		Rare	Moderate	Low	

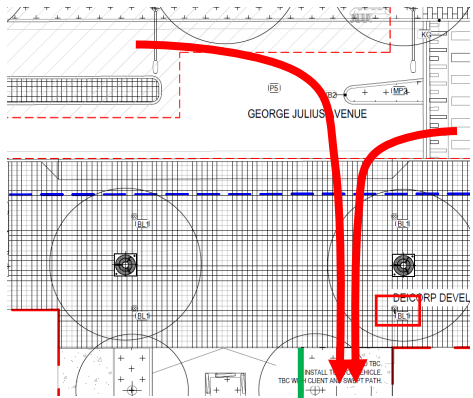
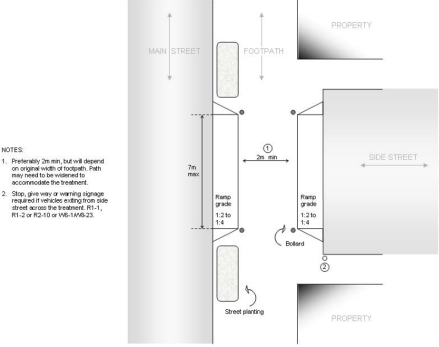
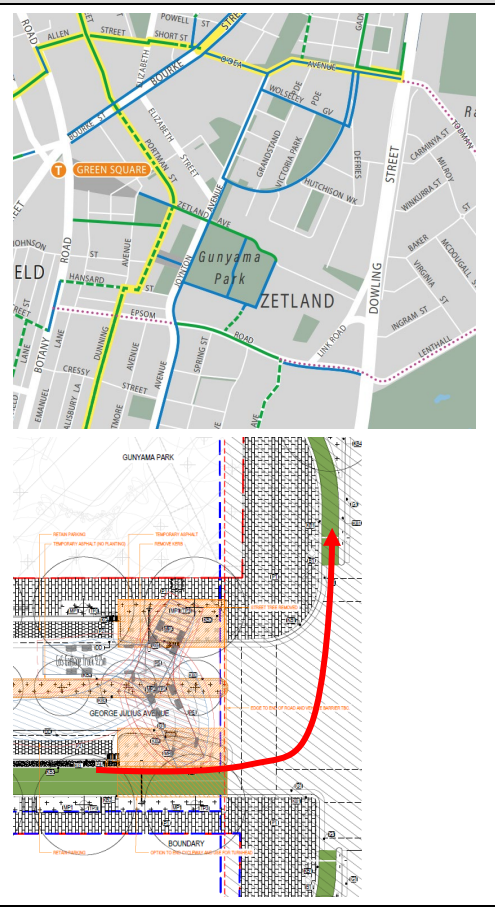
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
6.	Intersection of George Julius Avenue and Peters Street	<p>The bollard located at the north-eastern corner of the continuous footpath treatment is considered incorrect.</p> <p>If motorists use the bollards as a means of delineation when turning from George Julius Avenue onto Peters Street during low lighting conditions, they may end up in the footpath in Peters Street. The green line shows the kerb line along Peters Street.</p> <p>This deficiency may mislead motorists to over-turn at the intersection. This may result in reverse movements to correct the wrong turn path towards Peters Street.</p> <p>Based on TfNSW Technical Direction TD13/05, bollards are installed close to the kerblines of the side road to define the area for vehicle turning movements. It is understood that the first bollard located closer to George Julius Avenue is to facilitate the swept path of a left turn vehicle onto Peters Street. Consideration should be given to relocating the second bollard (encircled) to the prolongation of the Peters Street kerblines.</p>	 <p>TfNSW Technical Direction TD13/05:</p>  <p>NOTES: 1. Generally 2m min, but will depend on original width of footpath. Path also needs to be widened to accommodate the treatment. 2. Stop, give-way or warning signage required if vehicles entering from side street access the treatment. R1-1, R1-2 or R2-10 or VMS-14WB-23.</p>	Unlikely	Minor	Low	

Figure 1. Example of a continuous footpath treatment layout.

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
7.	George Julius Avenue	<p>Review of the bike map indicates that the cyclist desire lines are mostly to the west of George Julius Avenue due to the lack of cycleway facilities to the east e.g. Dowling Street.</p> <p>Furthermore, Gunyama Park is located on the west side of George Julius Avenue with an expected increase of cyclist demand on the west side of the road.</p> <p>The proposed cycleway is however located on the east side of George Julius Avenue which will complicate the cycleway connection between the east side of George Julius Avenue and Zetland Avenue.</p> <p>Although the scope of the road safety audit excludes the George Julius Avenue and Zetland Avenue intersection, consideration should be given to providing a cycleway connection that is simple and easy for cyclists to follow, otherwise this could lead to road safety issues involving cyclists and other road users.</p>		-	-	Note only	
8.	George Julius Avenue and Peters Street intersection	<p>The design plan does not include swept path diagrams to demonstrate sufficient clearance is available at the George Julius Avenue and Peters Street intersection.</p>	-	-	-	Note only	

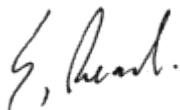
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
9.	General	Signage is not provided in the design drawings to guide road users of the road conditions, e.g. Road Ends sign, Pedestrian Crossing signs, parking signs and other regulatory and warning signs etc.	-	-	-	Note only	

5 Concluding Statement

The findings and opinions in the report are based on the examination of the specific road and environs, and might not address all concerns existing at the time of the audit.

The auditors have endeavoured to identify features of the road that could be modified in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe.

While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.



Stephen Read
Level 3 Lead Road Safety Auditor
The Transport Planning Partnership



Doris Lee
Level 3 Road Safety Auditor
The Transport Planning Partnership

Appendix A

Design Drawings

DRAFT

ISSUE	CODE	ISSUE DESCRIPTION	BY	CHK	DATE
01	PRE	50% DESIGN DEVELOPMENT	RH	LI	21.06.2023

PRE - Preliminary | CA - Council Approval | T - Tender | CON - Construction

DRAWING TITLE

**GENERAL ARRANGEMENT
PLAN**

DESIGN : BP
DOCUMENT : RH
PROJECT : 2522146

SCALE 1:100 @ A1 1:200 @ A3
DRAWING NUMBER GJA_2522146-201 REVISION 01

LEGEND

SOFTWORKS - PLANTING

- PROPOSED STREET TREE
REFER TO DETAIL #####
AND PLANTING PLAN
- TP1 - TREE PIT BUSTER (BROKEN KERB)
REFER TO DETAIL #####
.SCHEDULE AND PLANTING PLAN
- TP2 - TREE PIT IN PAVING
REFER TO DETAIL #####
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HARDWORKS - PAVING

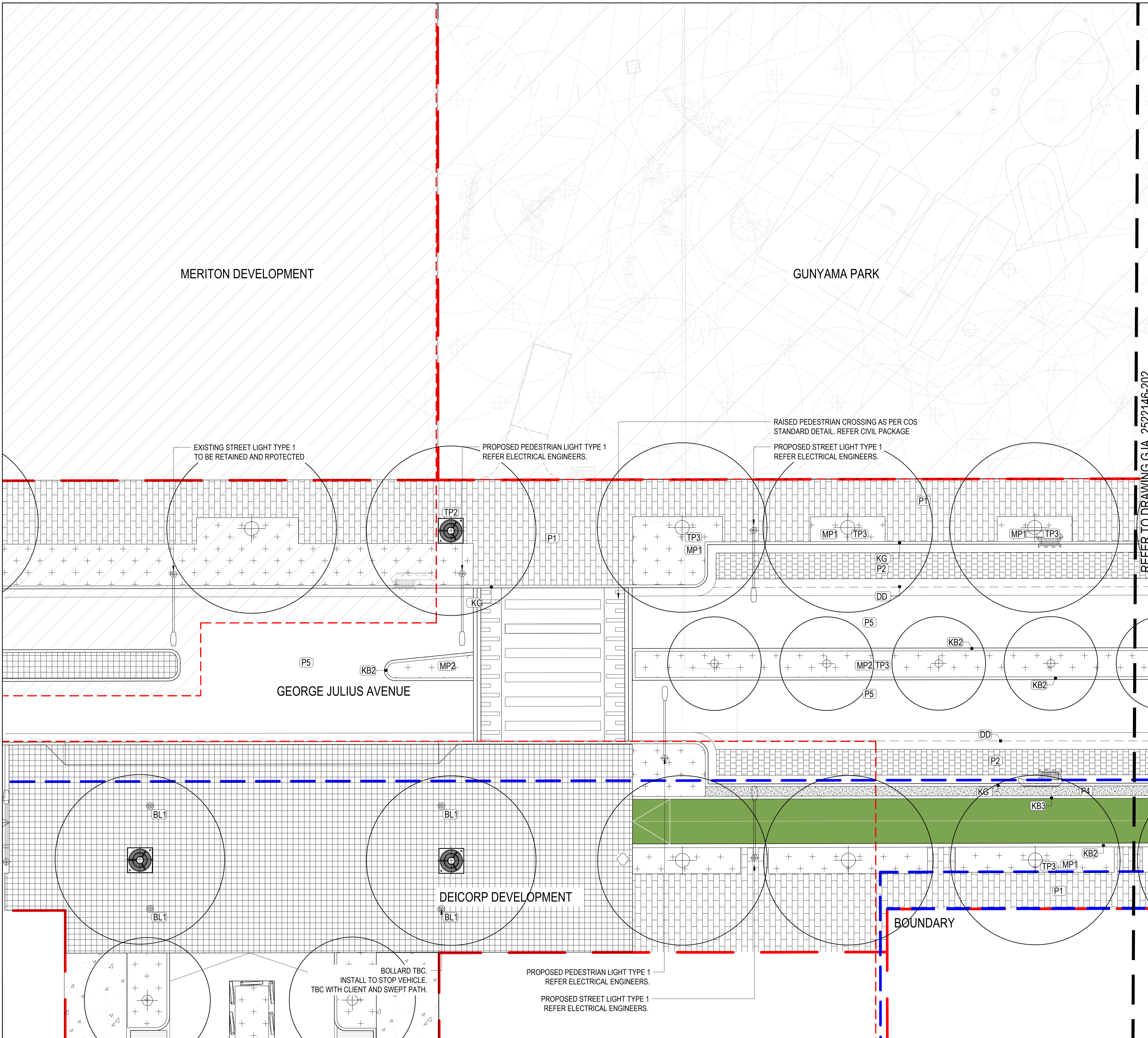
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- P4 - PAVING TYPE 4 - INSITU CONCRETE
REFER TO DETAIL #####
AND MATERIALS SCHEDULE
- P5 - PAVING TYPE 5 - ASPHALT
REFER TO DETAIL #####
AND MATERIALS SCHEDULE

HARDWORKS - KERBS

- KB1 - KERB TYPE 1 - BLUE STONE KERB
REFER TO ENGINEER'S DRAWINGS
- KB1 - KERB TYPE 1 - BLUE STONE FLSUH KERB
REFER TO ENGINEER'S DRAWINGS
- KB2 - KERB TYPE 2 - CONCRETE KERB (ONLY)
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REFER TO ENGINEER'S DRAWINGS
- KG - CONCRETE KERB AND GUTTER
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- G1 - GUTTER TYPE 1 - CONCRETE GUTTER
REFER TO ENGINEER'S DRAWINGS
- DD - DISH DRAIN
REFER TO ENGINEER'S DRAWINGS

HARDWORKS - FUTNITURE

- F1 - OUTDOOR BENCH TYPE 1
REFER TO MATERIALS SCHEDULE
- B1 - BIN TYPE 1
REFER TO MATERIALS SCHEDULE
- BL1 - BOLLARD TYPE 1
REFER TO MATERIALS SCHEDULE
- BK1 - BIKERAIL TYPE 1
REFER TO MATERIALS SCHEDULE



REFER TO DRAWING GJA_2522146-202

DRAFT

ISSUE	CODE	ISSUE DESCRIPTION	BY	CHK	DATE
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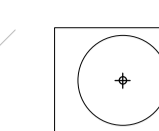
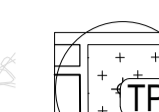
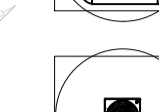

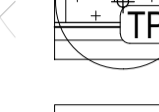

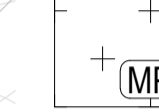
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DESIGN : BP
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PROJECT : 2522146


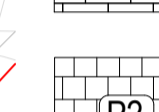
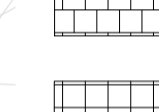
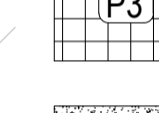

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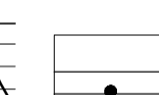

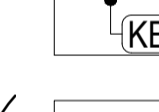
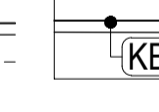
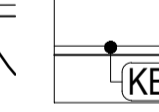
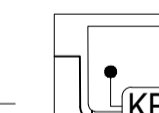
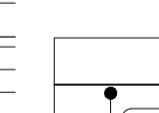
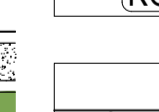
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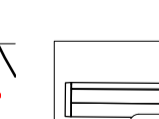

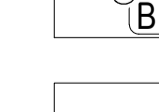
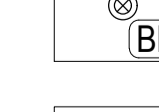
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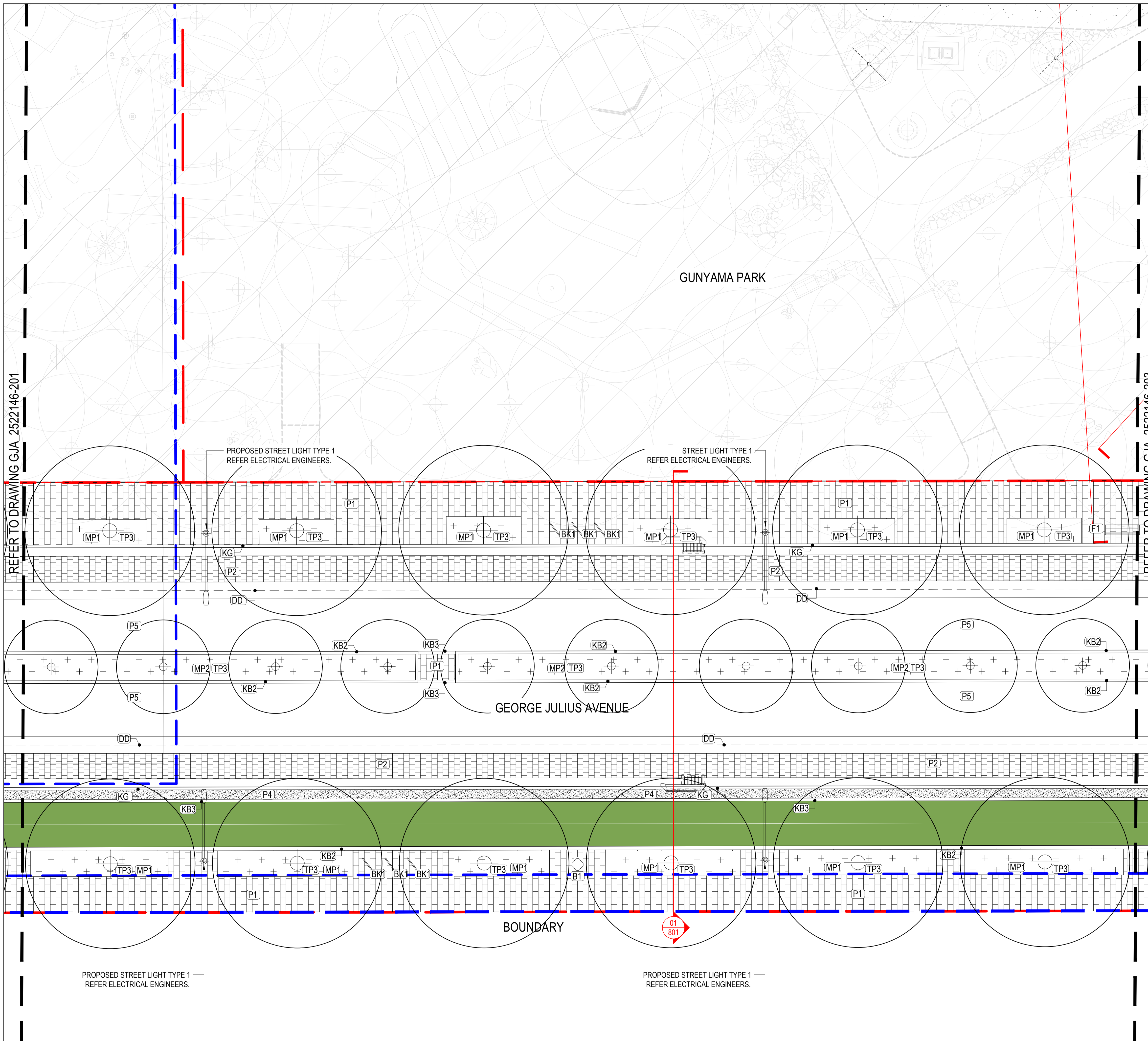
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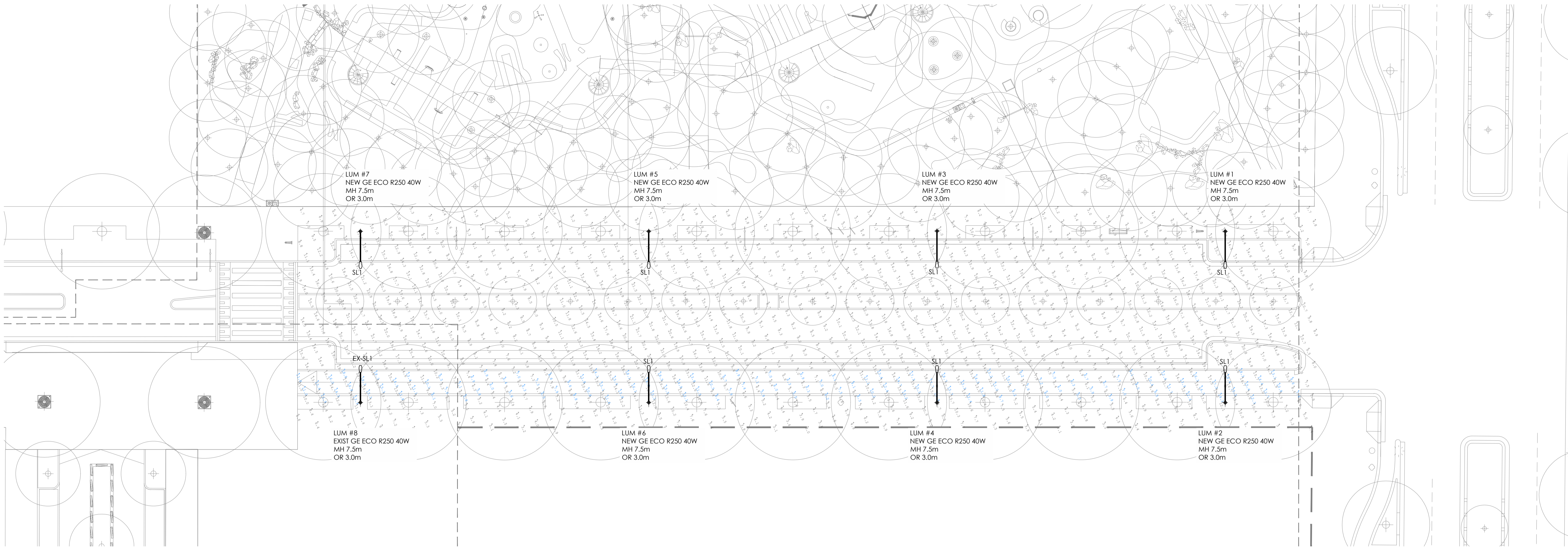
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PROPOSED STREET LIGHT TYPE 1
REFER ELECTRICAL ENGINEERS.

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REFER ELECTRICAL ENGINEERS.

BOUNDARY

01
801



GEORGE JULIUS AVENUE BETWEEN ZELAND AVENUE & MERITON/DELICORP DEVELOPMENTS Roadway, Cycleway & Pedestrian Crossing Lighting Compliance Assessment

Scope
The scope of the works is to assess the proposed street lighting on George Julius Avenue (Between Zeland Avenue & the Meriton and Delicorp Developments) to comply with:
- PR1 category of AS/NZS 1158.3.1:2020 for roadway.
- PP2 category of AS/NZS 1158.3.1:2020 for cyclist paths.
- PP2 + 0.6 lux minimum vertical illuminance CoS requirement for cyclist paths.
- PX3 category of AS/NZS 1158.4:2015 for pedestrian crossing.

Category	PR1	PP2 + CoS Cycleway
Average Horizontal Illuminance (lux)	>7.0	>7.0
Minimum Horizontal Illuminance (lux)	>2.0	>1.0
Horizontal Illuminance Uniformity (max/avg)	<9	<9
Minimum Vertical Illuminance AS/NZS 1158.3.1 (lux)	N/A	>0.3
Minimum Vertical Illuminance CoS (lux)	N/A	>0.6

793 / Clause 3.3.8

Minimum vertical illuminance (lux)	>1.6
Glare control at 90° (cd)	<170
Glare control at 70° (cd)	<1000
Upward waste light ratio	<7%
Additional category V lighting spots	Nil

Symbol	Qty	Notes
1	1	EXIST GE CoS ECO LED R250 40W
7	7	NEW GE CoS ECO LED R250 40W

Category	Streetlights	Streetlights @ Luminaire
STREET LIGHTS	On	0.80 / 8

Label	Category	Units	Avg	Max	Min	Max/Avg	PR1
E1 CYCLEWAY	Illuminance	lux	11.06	18.8	5.3	1.70	1.5
E1 CYCLEWAY NORTH	Illuminance	lux	N/A	14.4	0.6	N/A	1.5
E1 CYCLEWAY SOUTH	Illuminance	lux	N/A	12.7	0.6	N/A	1.5
PR1	Illuminance	lux	11.19	22.5	3.0	2.01	1.5

Luminaire Label	Latitude	Longitude	X	Y	Z	Height	TH	Overhead Arm
1	NFW GE CoS ECO LED R250 40W	334484.0	6246460.0	7.5	336.3	5	3.0m	
2	NFW GE CoS ECO LED R250 40W	334484.8	6246455.3	7.5	156.3	5	3.0m	
3	NFW GE CoS ECO LED R250 40W	334471.9	6246432.6	7.5	336.3	5	3.0m	
4	NFW GE CoS ECO LED R250 40W	334482.7	6246427.8	7.5	156.3	5	3.0m	
5	NEW GE CoS ECO LED R250 40W	334459.8	6246405.1	7.5	336.3	5	3.0m	
6	NEW GE CoS ECO LED R250 40W	334470.6	6246400.3	7.5	156.3	5	3.0m	
7	NEW GE CoS ECO LED R250 40W	334447.7	6246377.6	7.5	336.3	5	3.0m	
8	EXIST GE CoS ECO LED R250 40W	334458.6	6246372.8	7.5	156.3	5	3.0m	

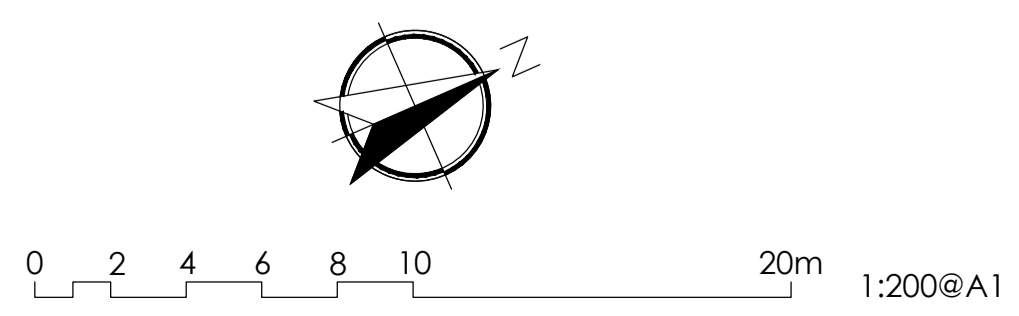
Certification
The proposed street lighting on George Julius Avenue (Between Zeland Avenue & the Meriton and Delicorp Developments) will comply with:
- PR1 category of AS/NZS 1158.3.1:2020 for roadway.
- PP2 category of AS/NZS 1158.3.1:2020 for cyclist paths.
- PP2 + 0.6 lux minimum vertical illuminance CoS requirement for cyclist paths.
- PX3 category of AS/NZS 1158.4:2015 for pedestrian crossing.

Maria Alouque
Maria Alouquerque MIES (Aus + NZ) MIES5490

Symbol	Description
+	Horizontal Illuminance Markpoint - Local Road
+	Horizontal Illuminance Markpoint - Cycleway

ZOOM INTO DIGITAL PDF TO READ ILLUMINANCE VALUES

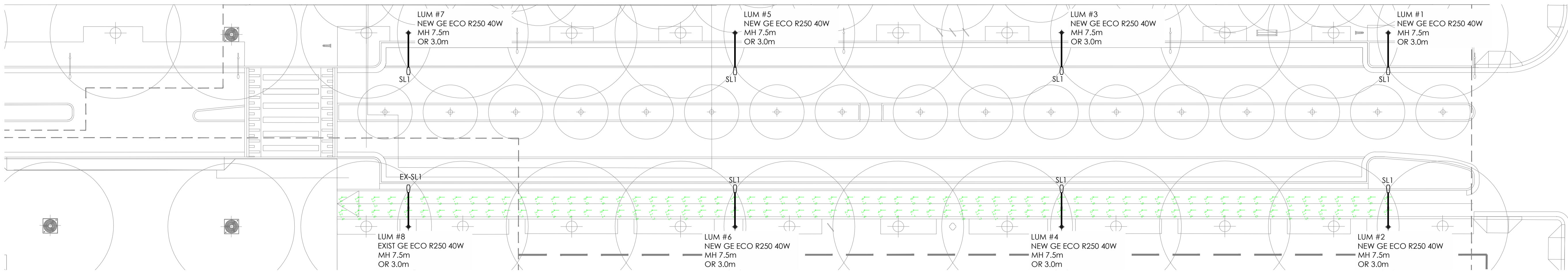
Issue: Amendment
Date: 08-06-23
P1: PRELIMINARY ISSUE



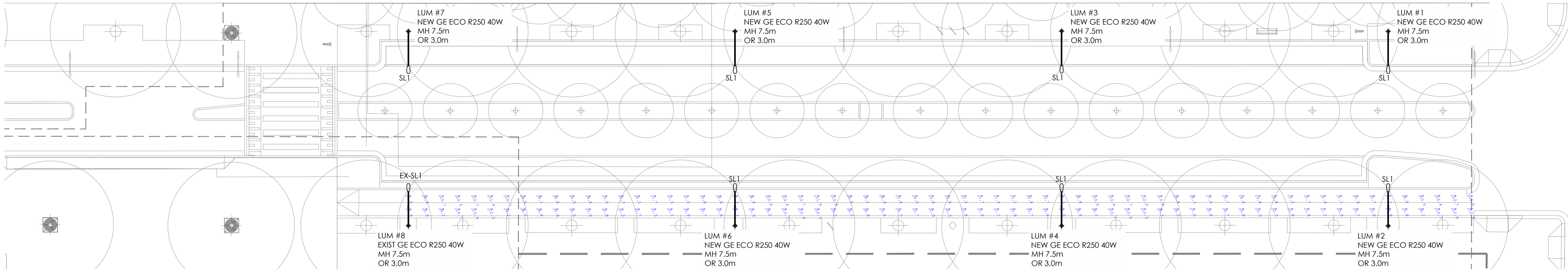
Lead Consultant
PLACE DESIGN GROUP
Client
CITY OF SYDNEY

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Project: GUNYAMA PARK STAGE 2 STREET LIGHTING DESIGN COMPLIANCE
Drawing: LIGHTING CALCULATION RESULTS - HORIZONTAL ILLUMINANCE - LOCAL ROAD & CYCLEWAY
Scale: 1:200@A1
Date: JUN 2023
Drawn MA, Approved RM
Project No: L177D, Drawing No: CL-101, Rev: P1



01 CYCLEWAY VERTICAL ILLUMINANCE - NORTH
SCALE 1:200@A1



02 CYCLEWAY VERTICAL ILLUMINANCE - SOUTH
SCALE 1:200@A1

GEORGE JULIUS AVENUE BETWEEN ZELAND AVENUE & MERITON/DFICORP DEVELOPMENTS Roadway, Cycleway & Pedestrian Crossing Lighting Compliance Assessment

Scope
The scope of the works is to assess the proposed streetlighting on George Julius Avenue (Between Zeland Avenue & the Meriton and Delcoro Developments) to comply with:
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- PP2 category of AS/NZS 1158.3.1:2020 for cyclist paths.
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Category	PR1	PP2+ CoS Cycleway
Average Horizontal Illuminance (lux)	>7.0	>7.0
Minimum Horizontal Illuminance (lux)	>2.0	>1.0
Horizontal Illuminance Uniformity (max/avg)	<9	<9
Minimum Vertical Illuminance AS/NZS 1158.3.1 (lux)	N/A	>0.3
Minimum Vertical Illuminance CoS (lux)	N/A	>0.6

Minimum vertical illuminance (lux) >1.6
Glare control at 90° (cd) <170
Glare control at 70° (cd) <1000
Upward waste light ratio <5%
Additional category V lighting spots Nil

Luminaire Schedule
Scheme: ILLUMINANCE ROAD & CYCLEWAY

Symbol	Qty	Label	Luminaire/Type	HP	Plane Hgt
1	1	EXIST GE CoS ECO LED R250 40W	N/A	1,000	40W_IBNA2002_IBS
7	7	NEW GE CoS ECO LED R250 40W	N/A	1,000	40W_IBNA2002_IBS

Scheme/Chapter Summary
Scheme: ILLUMINANCE ROAD & CYCLEWAY

Chapter	Switched	Dimming	# Lamps
STREET LIGHTS	On	0.80	8

Calculation Summary - Coverage of Cycleway
Scheme: ILLUMINANCE ROAD & CYCLEWAY

Label	Category	Unit	Avg	Max	Min	Max/Avg	PR1
E1 CYCLEWAY	Illuminance	lux	11.06	18.8	5.3	1.70	1.5
E1 CYCLEWAY NORTH	Illuminance	lux	N/A	14.4	0.6	N/A	1.5
E1 CYCLEWAY SOUTH	Illuminance	lux	N/A	12.7	0.6	N/A	1.5
PR1	Illuminance	lux	11.19	22.5	3.0	2.01	1.5

Lum #	Label	X	Y	Z	Height	TH	Distance
1	NFW GE CoS ECO LED R250 40W	334484.0	6246460.0	7.5	336.3	5	3.0m
2	NFW GE CoS ECO LED R250 40W	334484.8	6246455.3	7.5	156.3	5	3.0m
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8	EXIST GE CoS ECO LED R250 40W	334458.6	6246372.8	7.5	156.3	5	3.0m

Certification
The proposed streetlighting on George Julius Avenue (Between Zeland Avenue & the Meriton and Delcoro Developments) will comply with:
- PR1 category of AS/NZS 1158.3.1:2020 for roadway.
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- PP2 + 0.6 lux minimum vertical illuminance CoS requirement for cyclist paths.
- PX3 category of AS/NZS 1158.4:2015 for pedestrian crossing.

Maria Alouque

Maria Albuquerque MIES (Aus + NZ) MIES5490

Symbol	Description
→	Vertical Illuminance Markpoint - Direction NORTH
←	Vertical Illuminance Markpoint - Direction SOUTH

ZOOM INTO DIGITAL PDF TO READ ILLUMINANCE VALUES

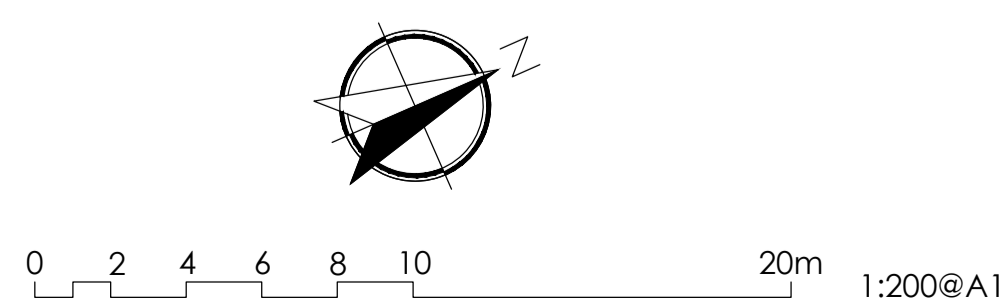
Lead Consultant
PLACE DESIGN GROUP
Client
CITY OF SYDNEY

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Project GUNYAMA PARK STAGE 2
STREET LIGHTING DESIGN COMPLIANCE

Drawing LIGHTING CALCULATION RESULTS
VERTICAL ILLUMINANCE - CYCLEWAY

Drawn MA Date JUN 2023 Scale 1:200@A1
Approved RM
Project No L177D Drawing No CL-102 Rev P1



GEORGE JULIUS AVENUE BETWEEN ZETLAND AV & MERITON/DEICORP DEVELOPMENTS Roadway, Cycleway & Pedestrian Crossing Lighting Compliance Assessment

Scope
The scope of the work is to assess the proposed street lighting on George Julius Avenue (Between Zetland Avenue & the Meriton and Deicorp Developments) to comply with:
- PR1 category of AS/NZS 1158.3.1:2020 for roadway.
- PP2 category of AS/NZS 1158.3.1:2020 for cyclist paths.
- PP2 + 0.6 lux minimum vertical illuminance CoS requirement for cyclist paths.
- PX3 category of AS/NZS 1158.4:2015 for pedestrian crossing.

Category	Min	PP1	PP2 - CoS Cycleway
Average Horizontal Illuminance (lux)	>7.0	>7.0	>7.0
Minimum Horizontal Illuminance (lux)	>2.0	>2.0	>1.0
Horizontal Illuminance Uniformity (max/avg)	<8	<5	<5
Minimum Vertical Illuminance AS/NZS 1158.3.1 (lux)	N/A	N/A	>0.3
Minimum Vertical Illuminance CoS (lux)	N/A	N/A	>0.6
Minimum vertical illuminance (lux)			PP3 / Cycleway 0.3,4
Glare control at 90° (cc)			>7.0
Glare control at 70° (cc)			>1.0
Upward waste light ratio			<5
Additional category V lighting spars			>0.3
			>0.6

Symbol	Qty	Label	Luminaire/Lamp	LF	Power/Watt
7		PEDX Guel2 115W LED 4000K ASYMM	8933.71	1.000	1731.05-Guel2-114W-LED-4000K-Asymm-WB.lvs

Category	Symbol	Qty	Label	Power/Watt	LF
PED X LIGHTS		On		0.80	2

Label	Category	Units	Min	Legend
PX3 NORTH GROUND	Illuminance	Lux	17.0	←
PX3 SOUTH GROUND	Illuminance	Lux	17.2	→

Label	Category	Units	Min	Legend
PX3 NORTH 1500mm	Illuminance	Lux	20.1	←
PX3 SOUTH 1500mm	Illuminance	Lux	20.0	→

Lum.No.	Label	X	Y	R	Offset	TI	Height Arm
101	PEDX Guel2 115W LED 4000K ASYMM	334451.5	6746369.9	7.5	66	0	3.0m
102	PEDX Guel2 115W LED 4000K ASYMM	334443.7	6746361.8	7.5	276	0	3.0m

Conclusion
The proposed street lighting on George Julius Avenue (Between Zetland Avenue & the Meriton and Deicorp Developments) will comply with:
- PR1 category of AS/NZS 1158.3.1:2020 for roadway.
- PP2 category of AS/NZS 1158.3.1:2020 for cyclist paths.
- PP2 + 0.6 lux minimum vertical illuminance CoS requirement for cyclist paths.
- PX3 category of AS/NZS 1158.4:2015 for pedestrian crossing.

María Albuquerque MILS (Aus + Nz) ML35490

Obtrusive Light - Compliance Report

Glare Control at 70deg
Filename: L1770-CL01-PEDX & ROAD
5/08/2023 4:38:11 PM

Luminous Intensity (Cd) Per Luminaire
Maximum Allowable Value: 4000 Cd
Control Angle: 70 Degree

Luminaire Locations Tested (2)
Test Results: **PASS**

All Luminaire Locations (2):

Lum.No.	Label	Cd	TI	Roll	Spin
101	PEDX Guel2 115W LED 4000K ASYMM	804	0	0	180
102	PEDX Guel2 115W LED 4000K ASYMM	804	0	0	180

Upward Waste Light Ratio (UWLR)
Maximum Allowable Value: 2.0 %

Calculated UWLR: 0.0 %
Test Results: **PASS**

Obtrusive Light - Compliance Report

Glare Control at 90deg
Filename: L1770-CL01-PEDX & ROAD
5/08/2023 4:38:12 PM

Luminous Intensity (Cd) Per Luminaire
Maximum Allowable Value: 170 Cd
Control Angle: 90 Degree

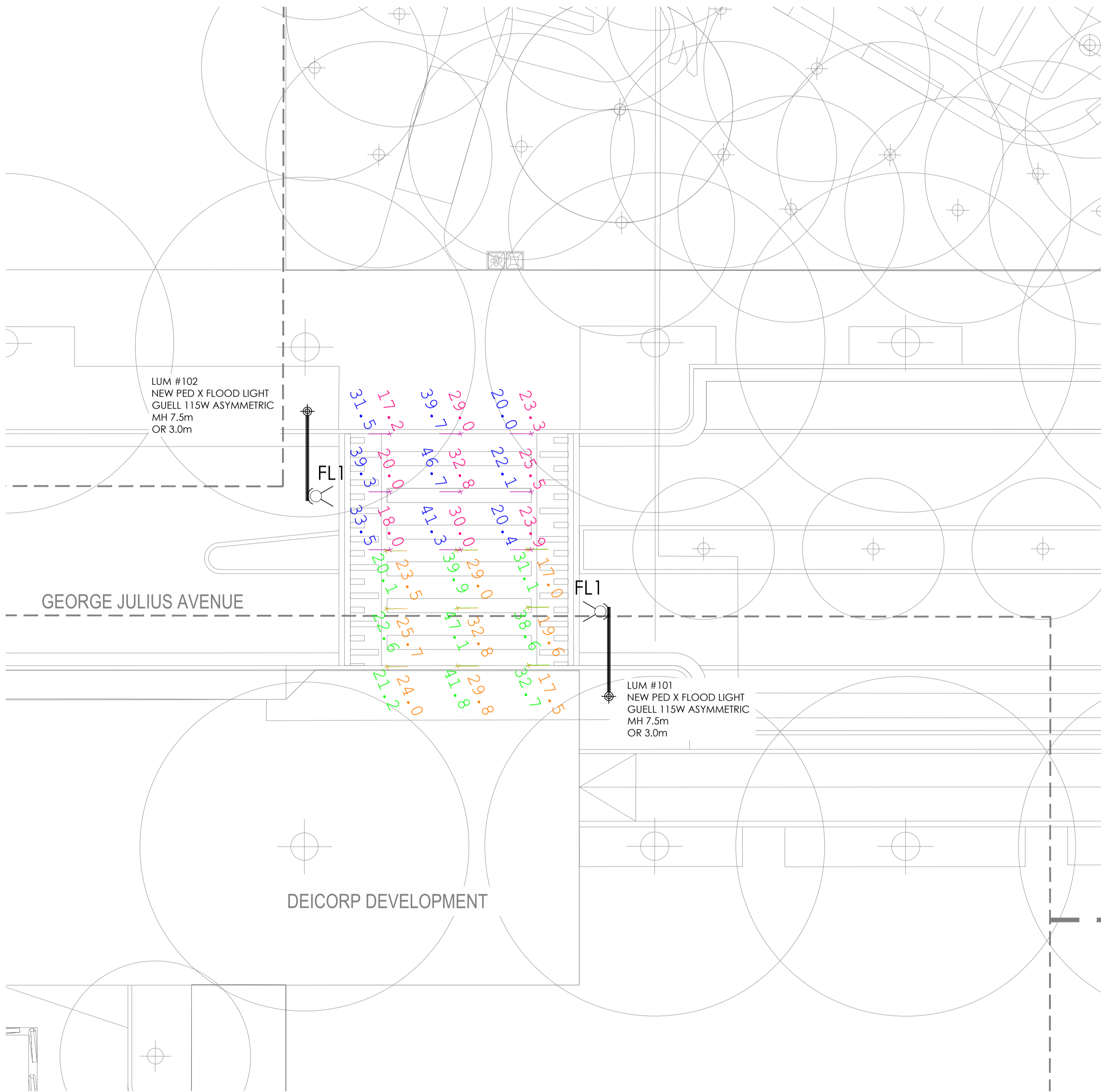
Luminaire Locations Tested (2)
Test Results: **PASS**

All Luminaire Locations (2):

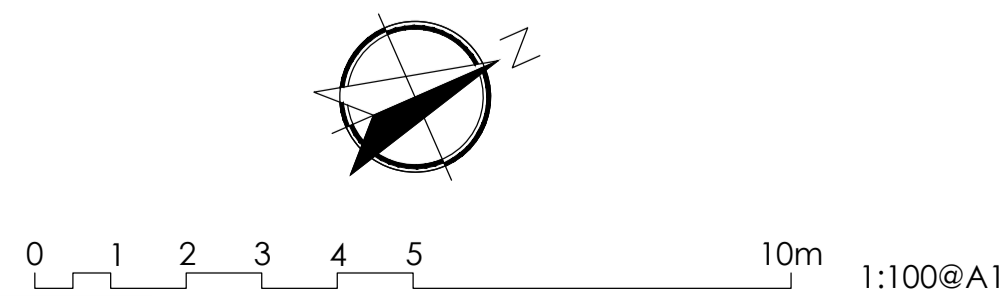
Lum.No.	Label	Cd	TI	Roll	Spin
101	PEDX Guel2 115W LED 4000K ASYMM	0	0	0	180
102	PEDX Guel2 115W LED 4000K ASYMM	0	0	0	180

Upward Waste Light Ratio (UWLR)
Maximum Allowable Value: 2.0 %

Calculated UWLR: 0.0 %
Test Results: **PASS**



Issue: Amendment
Date: 08-06-23
P1: PRELIMINARY ISSUE



ZOOM INTO DIGITAL PDF TO READ ILLUMINANCE VALUES

Lead Consultant
PLACE DESIGN GROUP
Client
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Project: GUNYAMA PARK STAGE 2 STREET LIGHTING DESIGN COMPLIANCE
Drawing: LIGHTING CALCULATION RESULTS PEDESTRIAN CROSSING
Scale: 1:100@A1
Drawn MA, Approv. RM, Date JUN 2023, Rev
Project No: L1770, Drawing No: CL-103, Rev: P1

The Transport Planning Partnership
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