

LEGEND AND LIGHTING PARAMETERS

GALLOPS TRAINING TRACKS

G1-G12	22m STEEL MAST
FLOODLIGHTS	4-5 x 1500W LED FLOODLIGHTS PER MAST TOTAL FLOODLIGHTS = 50
LIGHTING LEVELS	20 lux ON ALL TRAINING TRACKS (COURSE PROPER NOT LIT)
→	PRINCIPAL AIMING DIRECTION OF FLOODLIGHTS

HARNESS TRACK

H1-H7	22m STEEL MAST
FLOODLIGHTS	10 x 1500W LED FLOODLIGHTS PER MAST
F1-F17	18m STEEL MAST
FLOODLIGHTS	6 x 1500W LED FLOODLIGHTS PER MAST TOTAL FLOODLIGHTS = 180
LIGHTING LEVELS	1200 lux TO CAMERA IN FRONT STRAIGHT 1000 lux TO CAMERA IN BACK STRAIGHT AND TURNS
→	PRINCIPAL AIMING DIRECTION OF FLOODLIGHTS

BACKTRACK TRAINING TRACKS

B1-B12	22m STEEL MAST
FLOODLIGHTS	3-4 x 1500W LED FLOODLIGHTS PER MAST TOTAL FLOODLIGHTS = 38
LIGHTING LEVELS	20 lux ON ALL TRAINING TRACKS (WARM UP TRACK NOT LIT)
→	PRINCIPAL AIMING DIRECTION OF FLOODLIGHTS

NOTES

REFER TO DRAWINGS :

- TL02 FOR GALLOPS TRAINING TRACK DETAILS
- TL03 FOR HARNESS TRACK DETAILS
- TL04 FOR BACKTRACK TRAINING TRACK DETAILS

ISSUES / AMENDMENTS

REV.	DESCRIPTION	DATE	DRN.	AUTH.

WAIKATO THOROUGHBRED RACING

Consulting Engineer

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DRAWN	PWG
DATE	SEPT 2026
DESIGNED	RD
CAD FILE	TL01.DWG
SCALE	1 : 8000 @ A3 SHEET

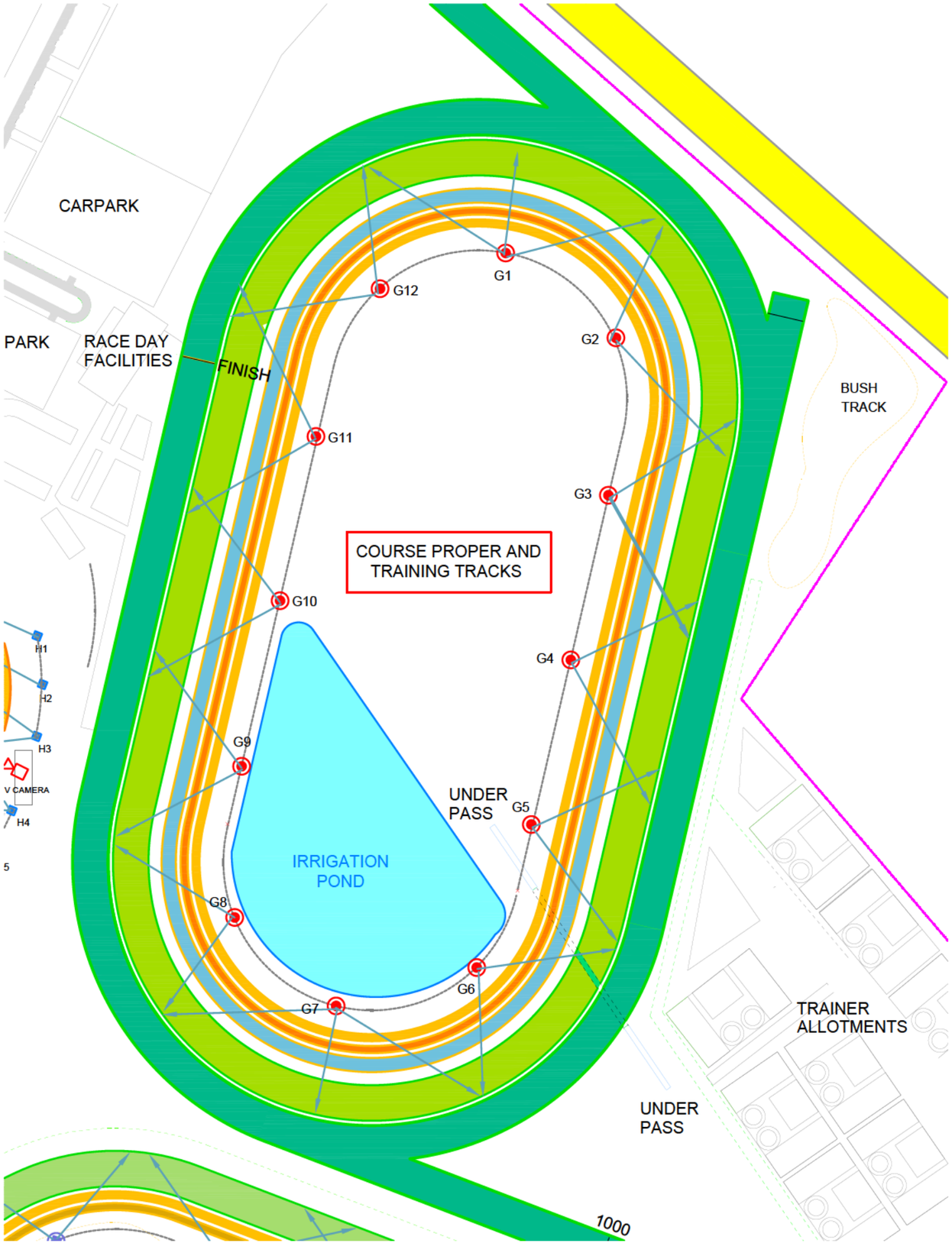
CLIENT: WAIKATO THOROUGHBRED RACING

PROJECT: WTR GREENFIELDS RACECOURSE TRACK LIGHTING

DRAWING TITLE: SITE PLAN AND PROPOSED TRACK LIGHTING LAYOUTS

DRAWING No. TL01

REVISION



GALLOPS TRAINING TRACKS	
LIGHTING LEVELS	
No 1 Grass Track	NOT LIT
No 2 Grass Track	20 lux AT TRACK LEVEL
Service Track	20 lux AT TRACK LEVEL
Synthetic Track	20 lux AT TRACK LEVEL
No 1 Sand Track	20 lux AT TRACK LEVEL
No 1 Plough Track	20 lux AT TRACK LEVEL
MASTS	
No MASTS	12 x TAPERED STEEL MASTS
MAST HEIGHT22	22m
MAST SPACING	140m
MAST OFFSET FROM TRACK	20m
FLOODLIGHTS	
No FLOODLIGHTS	50
FLOODLIGHT TYPE	LED PROJECTOR TYPE
FLOODLIGHT POWER & LUMENS	1500W, 220,000 LUMENS
FLOODLIGHT CONTROL	
LED DRIVERS	ELECTRONIC WITH DIMMING CONTROL
CONTROL METHOD	DALI

LEGEND

G1-G12 — 22m STEEL MAST WITH PRINCIPAL AIMING DIRECTIONS OF FLOODLIGHTS
(ONLY PRINCIPAL DIRECTIONS SHOWN - NOT ALL FLOODLIGHTS)

ISSUES / AMENDMENTS				
REV.	DESCRIPTION	DATE	DRN.	AUTH.

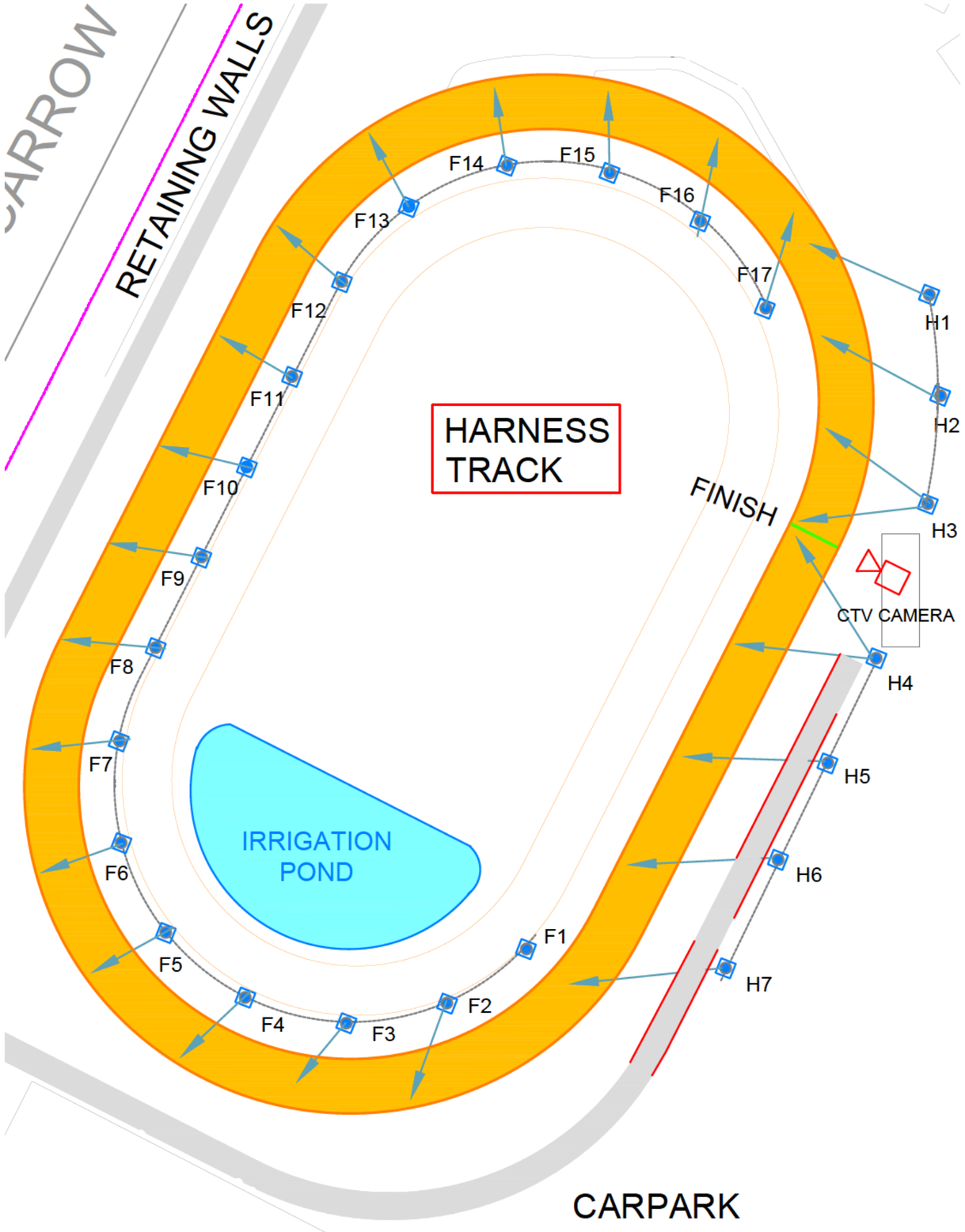
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SCALE	1 : 4000 @ A3 SHEET
CLIENT	WAIKATO THOROUGHBRED RACING
PROJECT	WTR GREENFIELDS RACECOURSE TRACK LIGHTING
DRAWING TITLE	GALLOPS TRAINING TRACKS LIGHTING LAYOUT
DRAWING No.	TL02
REVISION	



HARNESS TRACK	
LIGHTING LEVELS	
Harness Track Front Straight	
Horizontal illuminance	1000 lux
Camera illuminance	1200 lux
Lighting Uniformity	Min/Max >0.55
Harness Track Back Straight & Turns	
Horizontal Illuminance	800 lux
Camera Illuminance	1000 lux
Lighting Uniformity	Min/Max > 0.55
Harness Track Finish Line	
Photo Finish Camera Illuminance	2000 lux
MASTS	
No MASTS	24 x Tapered Steel Masts
MAST HEIGHTS	18m Infield, 22m front straight
MAST SPACING	40 infield, 45m front straight
MAST OFFSET FROM TRACK	18m Infield, 35m front straight
FLOODLIGHTS	
No FLOODLIGHTS	180
FLOODLIGHT TYPE	LED ASYMMETRIC AND LED PROJECTOR TYPE
FLOODLIGHT POWER & LUMENS	1500W, 220,000 LUMENS
FLOODLIGHT CONTROL	
LED DRIVERS	ELECTRONIC WITH DIMMING CONTROL
CONTROL METHOD	DALI

LEGEND

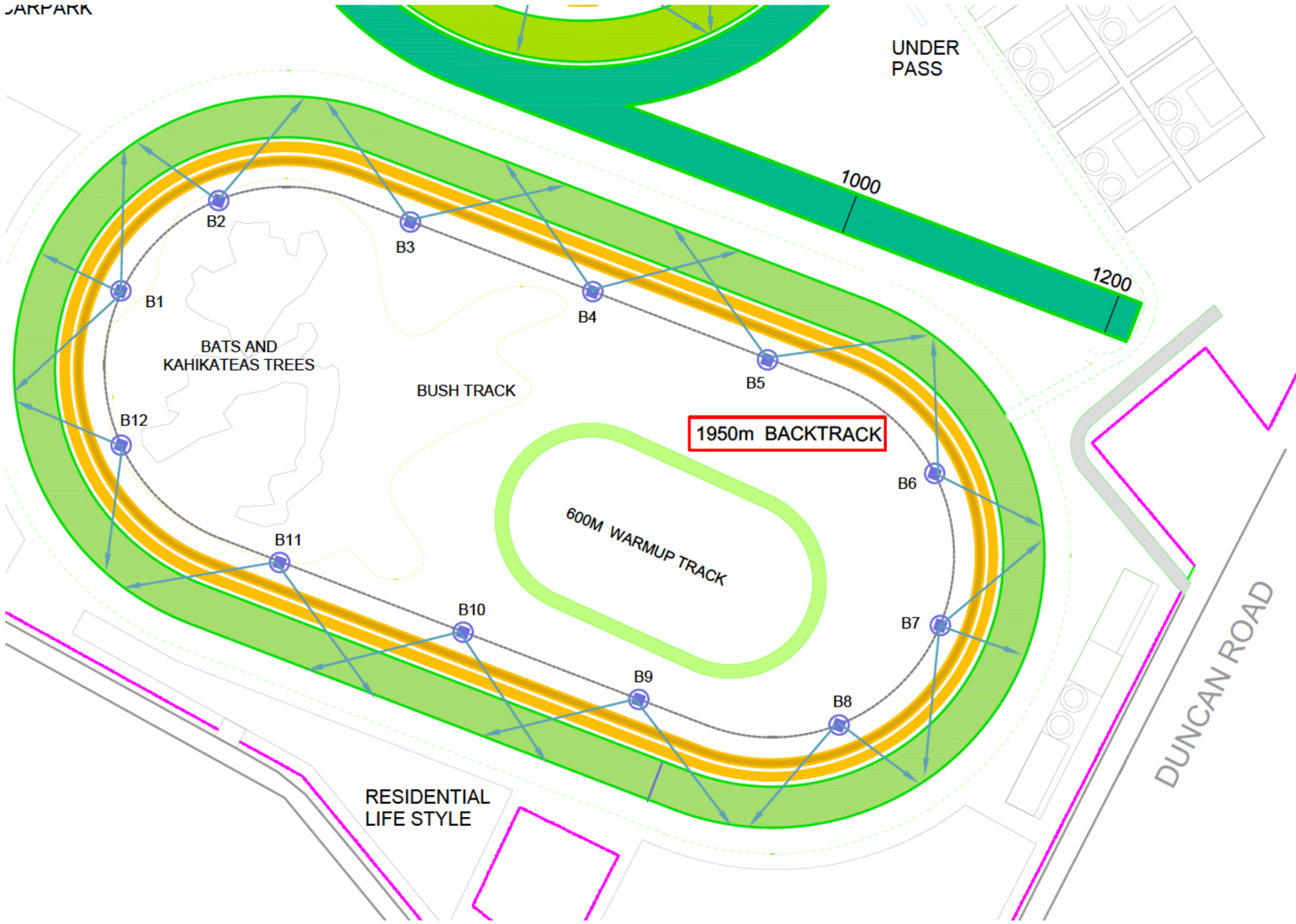
H1-H7 — 22m STEEL MAST WITH PRINCIPAL AIMING DIRECTIONS OF FLOODLIGHTS (ONLY PRINCIPAL DIRECTIONS SHOWN - NOT ALL FLOODLIGHTS)

F1-F17 — 18m STEEL MAST WITH PRINCIPAL AIMING DIRECTIONS OF FLOODLIGHTS (ONLY PRINCIPAL DIRECTIONS SHOWN - NOT ALL FLOODLIGHTS)

ISSUES / AMENDMENTS				
REV.	DESCRIPTION	DATE	DRN.	AUTH.

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DRAWN	PWG
DATE	SEPT 2026
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SCALE	1 : 2000 @ A3 SHEET
CLIENT	WAIKATO THOROUGHBRED RACING
PROJECT	WTR GREENFIELDS RACECOURSE TRACK LIGHTING
DRAWING TITLE	HARNESS TRACK LIGHTING LAYOUT
DRAWING No.	TL03
REVISION	



BACKTRACK TRAINING TRACKS	
LIGHTING LEVELS	
No 3 Grass Track	20 lux AT TRACK LEVEL
No 2 Sand Track	20 lux AT TRACK LEVEL
No 2 Plough Track	20 lux AT TRACK LEVEL
MASTS	
No MASTS	12 x Tapered Steel Masts
MAST HEIGHT	22m
MAST SPACING	140m
MAST OFFSET FROM TRACK	18m
FLOODLIGHTS	
No FLOODLIGHTS	38
FLOODLIGHT TYPE	LED PROJECTOR TYPE
FLOODLIGHT POWER & LUMENS	1500W, 220,000 LUMENS
FLOODLIGHT CONTROL	
LED DRIVERS	ELECTRONIC WITH DIMMING CONTROL
CONTROL METHOD	DALI

LEGEND

B1-B12 — 22m STEEL MAST WITH PRINCIPAL AIMING DIRECTIONS OF FLOODLIGHTS
(ONLY PRINCIPAL DIRECTIONS SHOWN - NOT ALL FLOODLIGHTS)

ISSUES / AMENDMENTS				
REV.	DESCRIPTION	DATE	DRN.	AUTH.

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CLIENT	WAIKATO THOROUGHBRED RACING
PROJECT	WTR GREENFIELDS RACECOURSE TRACK LIGHTING
DRAWING TITLE	BACKTRACK LIGHTING LAYOUT
DRAWING No.	TL04
REVISION	



OBTRUSIVE LIGHT COMPLIANCE

THE OBTRUSIVE LIGHT EMANATING FROM THE RACECOURSE SITE IS TO BE FULLY COMPLIANT WITH THE AUSTRALIAN/NEW ZEALAND STANDARD AS/NZS 4282:2023 - CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING.

THE BOUNDARIES FOR THE 3 MAJOR OBTRUSIVE LIGHT PARAMETERS PERTAINING TO THE OBTRUSIVE STANDARD ARE:

1 SPILL LIGHT FROM NON TELEVISED OUTDOOR LIGHTING. THIS INCLUDES
THE MAIN TRAINING TRACK LIGHTING
THE 1950m BACK TRACK LIGHTING

2 SPILL LIGHT FROM OUTDOOR TELEVISED TV BROADCASTS. THIS INCLUDES
THE HARNESS TRACK LIGHTING

3 DISABILITY GLARE TO MOTORISTS TRAVELING ON ROADS ADJACENT TO THE OUTDOOR LIGHTING
THIS INCLUDES HIGHWAY 1 AND TE AWA RIVER RIDE ROAD
(DUNCAN ROAD IS NOT PRONE TO DISABILITY GLARE)

THE 4th MAJOR OBTRUSIVE LIGHT PARAMETER IS THE LUMINOUS INTENSITY OF THE FLOODLIGHTS
THIS PARAMETER LIMITS THE "BRIGHTNESS" OF ALL FLOODLIGHTS IN THE INSTALLATION

THE TABLE BELOW LISTS THE LIMITING VALUES OF THE OBTRUSIVE LIGHT PARAMETERS AS STATED IN AS/NZS 4282: 2023.

OBTRUSIVE LIGHT PARAMETERS FOR HARNESS TRACK TV BROADCAST LIGHTING

PARAMATER	REFERERCE	VALUES
Environmental Zone	Table 3.1	Zone is **TV**
Spill Light	Table 3.2	For TV zone max spill is 12% of track level OR **125 lux**
Luminous Intensity	Table 3.3	For TV zone and L1 (new installation) the max luminous intensity allowable is **100,000 cd**
Threshold Increment	Table 3.3	For TV zone the max Threshold Increment (TI) is **20%**

OBTRUSIVE LIGHT PARAMETERS FOR TRAINING TRACKS LIGHTING

PARAMETER	REFERENCE	VALUES
Environmental Zone`	Table 3.1	Zone is **A2/A3**
Spill Light	Table 3.2	For A2/A3 zone max spill is **5 -10 lux**
Luminous Intensity	Table 3.3	For A2/A3 zone and L1 (new installation) the max luminous intensity allowable is **7,500 - 12500 cd**
	Table 3.3	For A2/A3 zone the max Threshold Increment (TI) is **20%**

ISSUES / AMENDMENTS

REV.	DESCRIPTION	DATE	DRN.	AUTH.

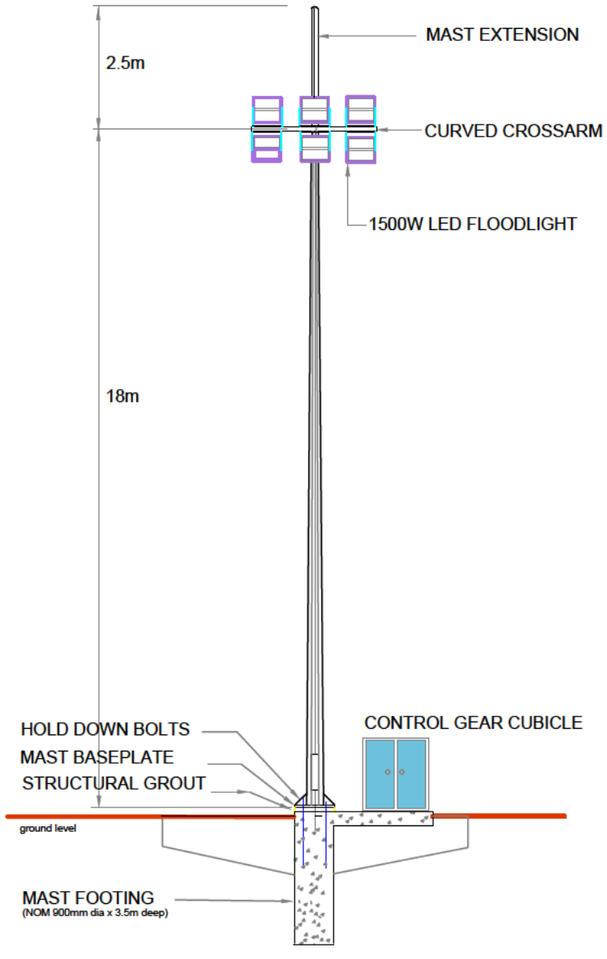
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DRAWN: PWG | DATE: SEPT 2026
DESIGNED: RD | CAD FILE: TL05.DWG
SCALE: 1 : 9000 (approx) @ A3

CLIENT: WAIKATO THOROUGHBRED RACING
PROJECT: WTR GREENFIELDS RACECOURSE TRACK LIGHTING

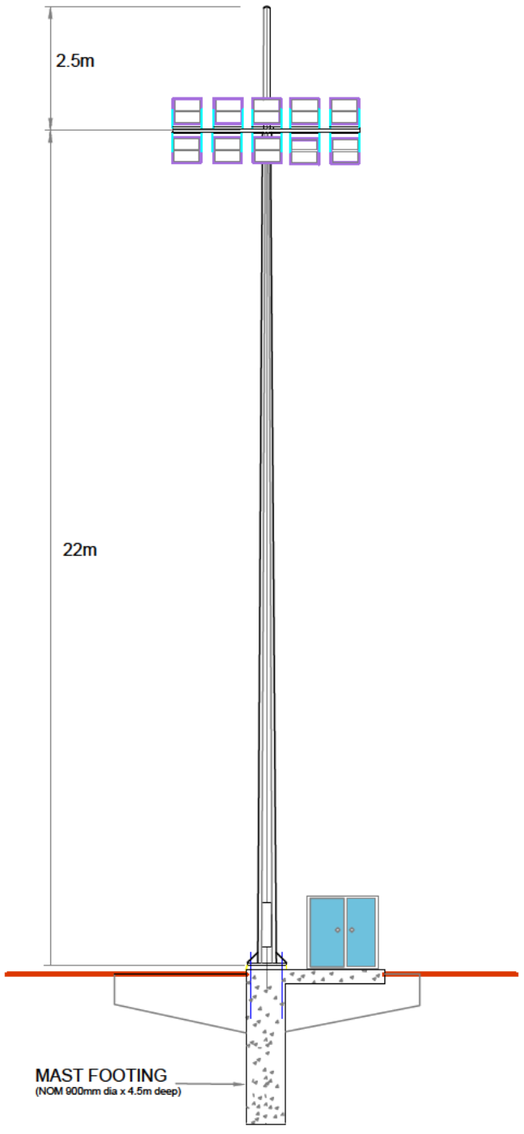
DRAWING TITLE: OBTRUSIVE LIGHT ABATEMENT

DRAWING No. TL05
REVISION



18m MAST DETAIL (type H)

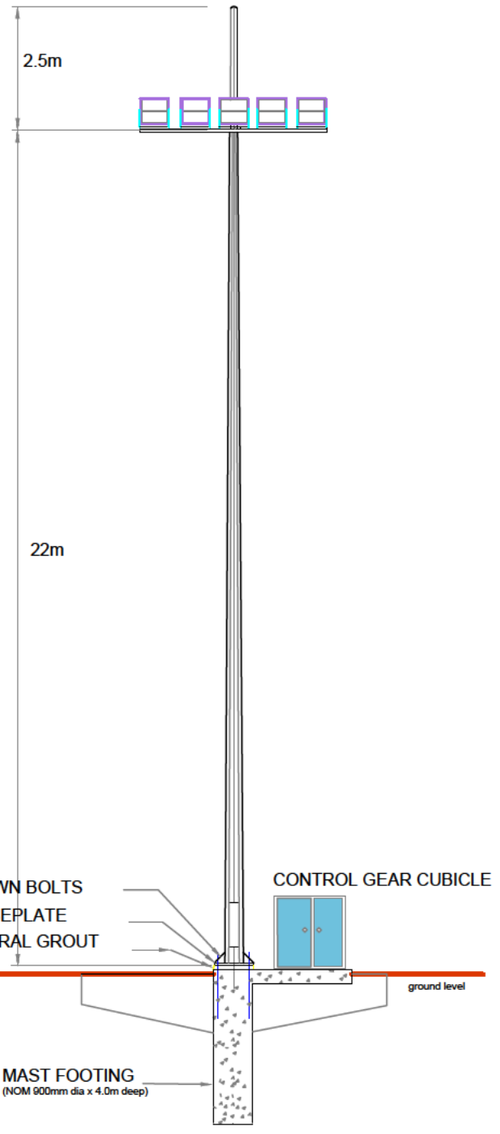
SHOWN FOR 6 FLOODLIGHTS



22m MAST DETAIL (type F)

SHOWN FOR 10 FLOODLIGHTS

LIGHTING MASTS FOR HARNESS RACING



22m MAST DETAIL (type B and G)

SHOWN FOR 5 FLOODLIGHTS

LIGHTING MAST FOR GALLOPS TRAINING

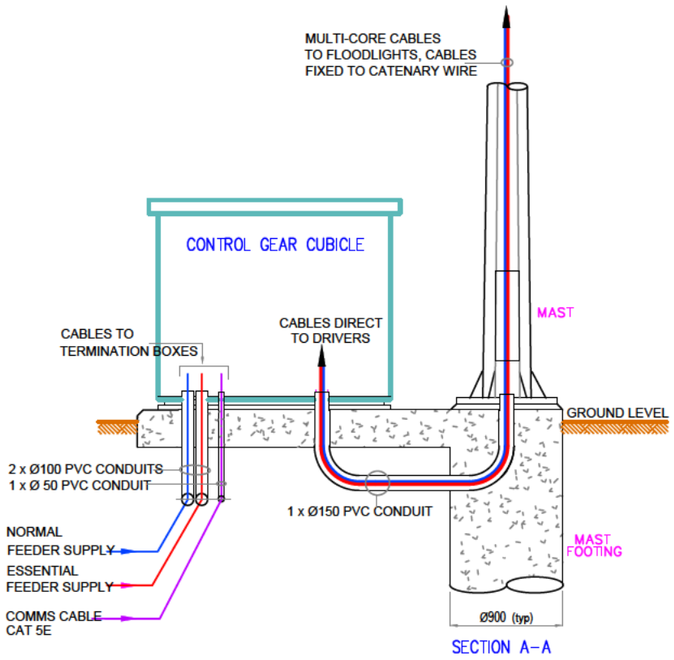
ISSUES / AMENDMENTS				
REV.	DESCRIPTION	DATE	DRN.	AUTH.

WAIKATO THOROUGHBRED RACING

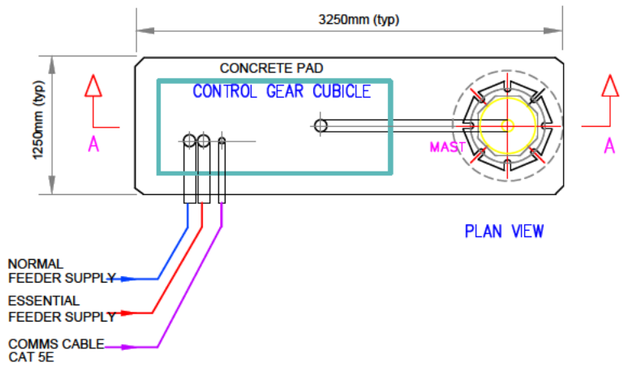
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DRAWN: PWG	DATE: AUGUST 2026	CLIENT: WAIKATO THOROUGHBRED RACING	DRAWING TITLE: TRACK LIGHTING MAST DETAILS
DESIGNED: RD	CAD FILE: TL06.DWG	PROJECT: WTR GREENFIELDS RACECOURSE TRACK LIGHTING	DRAWING No.: TL06
SCALE: 1:150 (approx) @ A3 SHEET			REVISION



SECTION A–A



PLAN VIEW

TYPICAL CONTROL GEAR CUBICLE MOUNTING DETAILS

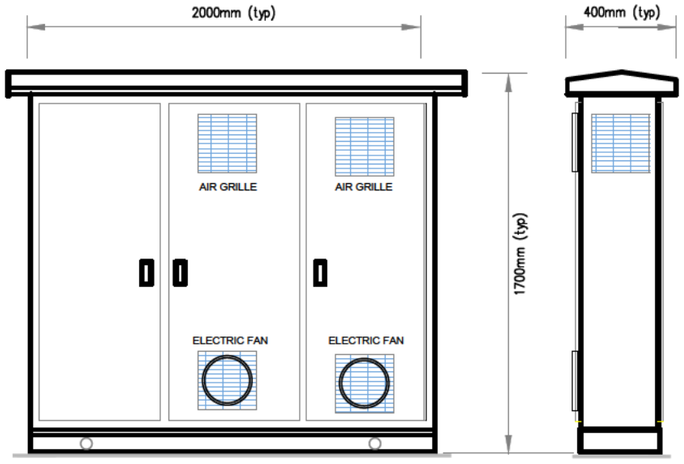
(TYPICAL LAYOUT FOR ALL FLOODLIGHT QUANTITIES)

SCALE 1:50 (APPROX)

CUBICLE INSTALLATION PARAMETERS

CUBICLES TO BE MOUNTED ON CONCRETE PAD INTEGRAL WITH MAST FOOTING

NOMINAL 100dia PVC CONDUITS TO BE RUN INTO CUBICLE AND 150dia CONDUITS RUN FROM CUBICLE INTO MAST BASE



FRONT VIEW SIDE VIEW

TYPICAL CONTROL GEAR CUBICLE DETAILS

(TYPICAL CUBICLE SIZE FOR 10 FLOODLIGHTS)

SCALE 1:30 (APPROX)

CONTROL GEAR CUBICLE PARAMETERS

CUBICLES TO BE CONSTRUCTED FROM MARINE GRADE ALUMINIUM FIXED TO GALVANIZED STEEL BASE AND FRAME

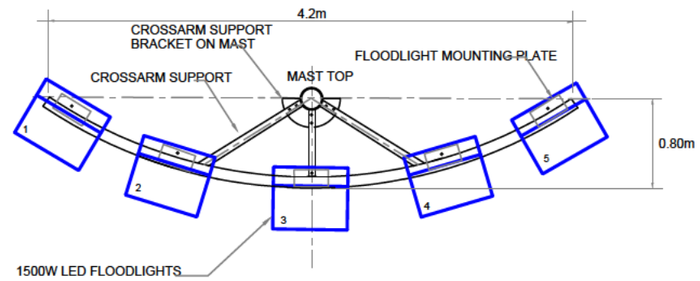
CUBICLES TO BE SINGLE SIDED FOR UP TO 10 FLOODLIGHTS PER MAST AND DOUBLE SIDED FOR HIGHER QUANTITIES OF FLOODLIGHTS

CUBICLE END PANELS AND ALL DOORS TO BE PROVIDED WITH AIR VENTS WITH FILTERS. MINIMUM SIZE 250 x 250

ALL CUBICLE ROOF SECTIONS TO BE PROVIDED WITH FULL LENGTH VENTILATION OPENINGS UNDER OVERHANGS.

CUBICLE TO HAVE 2 OFF 250dia ELECTRIC FANS IN FRONT DOORS FOR COOLING THE LED ELECTRONIC DRIVERS

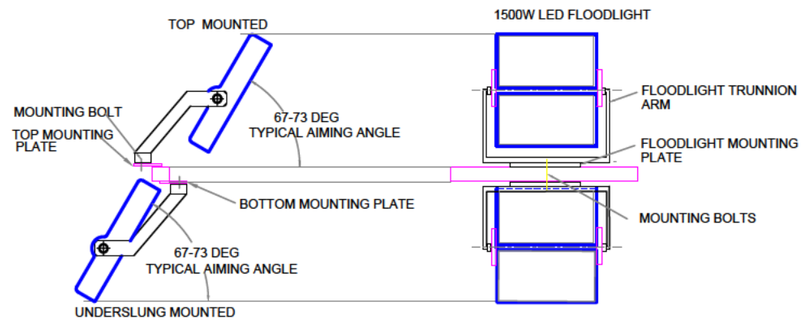
NOTE : TOP MOUNTED FLOODLIGHTS SHOWN ONLY.



PLAN VIEW : MAST HEADFRAME & FLOODLIGHT LOCATIONS

(TYPICAL FOR 10FLOODLIGHTS)

SCALE 1:50 (APPROX)



SIDE ELEVATION FRONT ELEVATION

ELEVATION VIEW : FLOODLIGHTS IN AIMED DIRECTIONS

(TYPICAL AIMING ANGLES FOR ALL FLOODLIGHTS)

SCALE 1:40 (APPROX)

TYPICAL FLOODLIGHT MOUNTING DETAILS

FLOODLIGHT PARAMETERS

NOMINAL 1500W LED TECHNOLOGY

COLOUR RENDERING INDEX CRI 80+

COLOUR TEMP 5700K

415V ELECTRONIC DRIVER WITH DALI CONTROL FOR SCENE SETTING AND LIGHT DIMMING

FITTED WITH LOUVRES AND BAFFLES AS REQUIRED TO LIMIT SPILL LIGHT

ISSUES / AMENDMENTS				
REV.	DESCRIPTION	DATE	DRN.	AUTH.

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CLIENT: WAIKATO THOROUGHBRED RACING

PROJECT: WTR GREENFIELDS RACECOURSE TRACK LIGHTING

DRAWING TITLE: TRACK LIGHTING FLOODLIGHT AND CONTROL CUBICLE DETAILS

DRAWING No.: TL07

REVISION