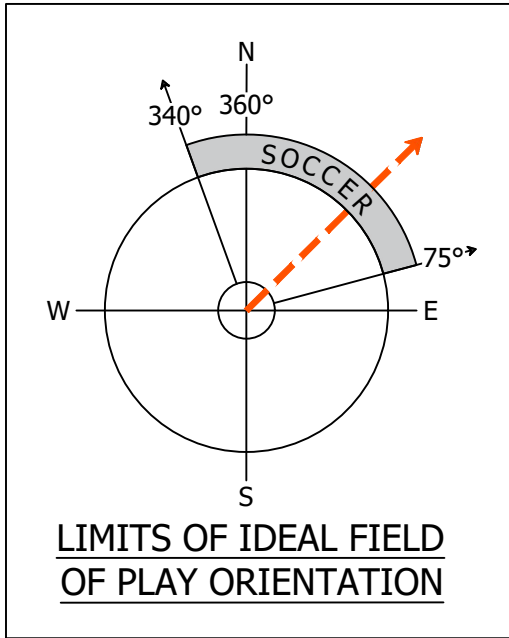


Appendices

APPENDIX A. DEVELOPMENT PLANS PREPARED BY SPORTENG

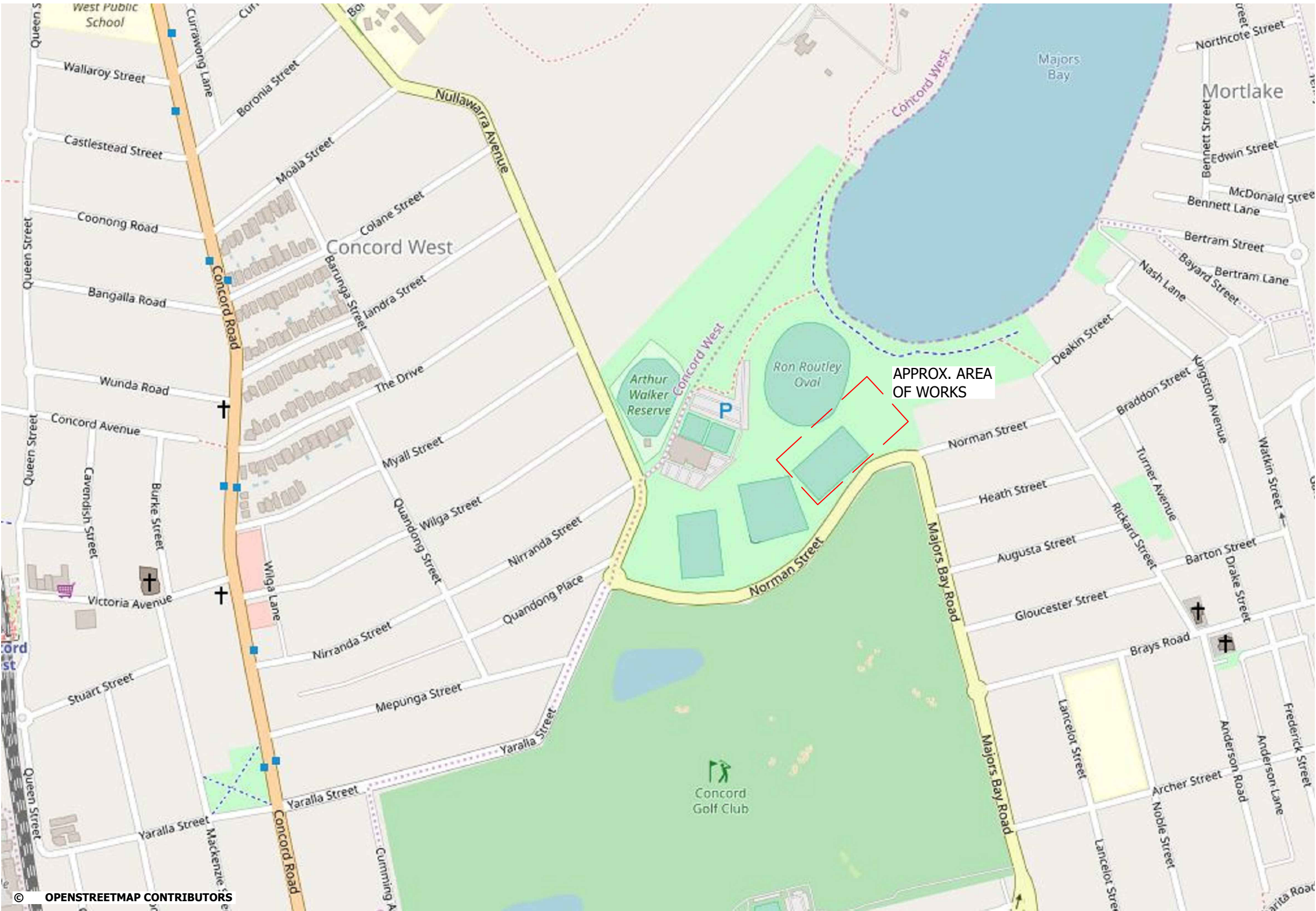
MAJORS BAY RESERVE SYNTHETIC SOCCER PITCH

NORMAN STREET, CONCORD, NSW 2137



DRAWING SCHEDULE:

F000	COVER SHEET
F050	EXISTING SITE LAYOUT PLAN
F200	GENERAL ARRANGEMENT LAYOUT PLAN
F300	STORMWATER DRAINAGE LAYOUT PLAN
F600	PAVEMENT PLAN



LOCALITY PLAN - NORMAN STREET, CONCORD, NSW 2137



OVERALL SITE LAYOUT PLAN

NOT FOR CONSTRUCTION

T3	21/05/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T2	15/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T1	12/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
COVER SHEET

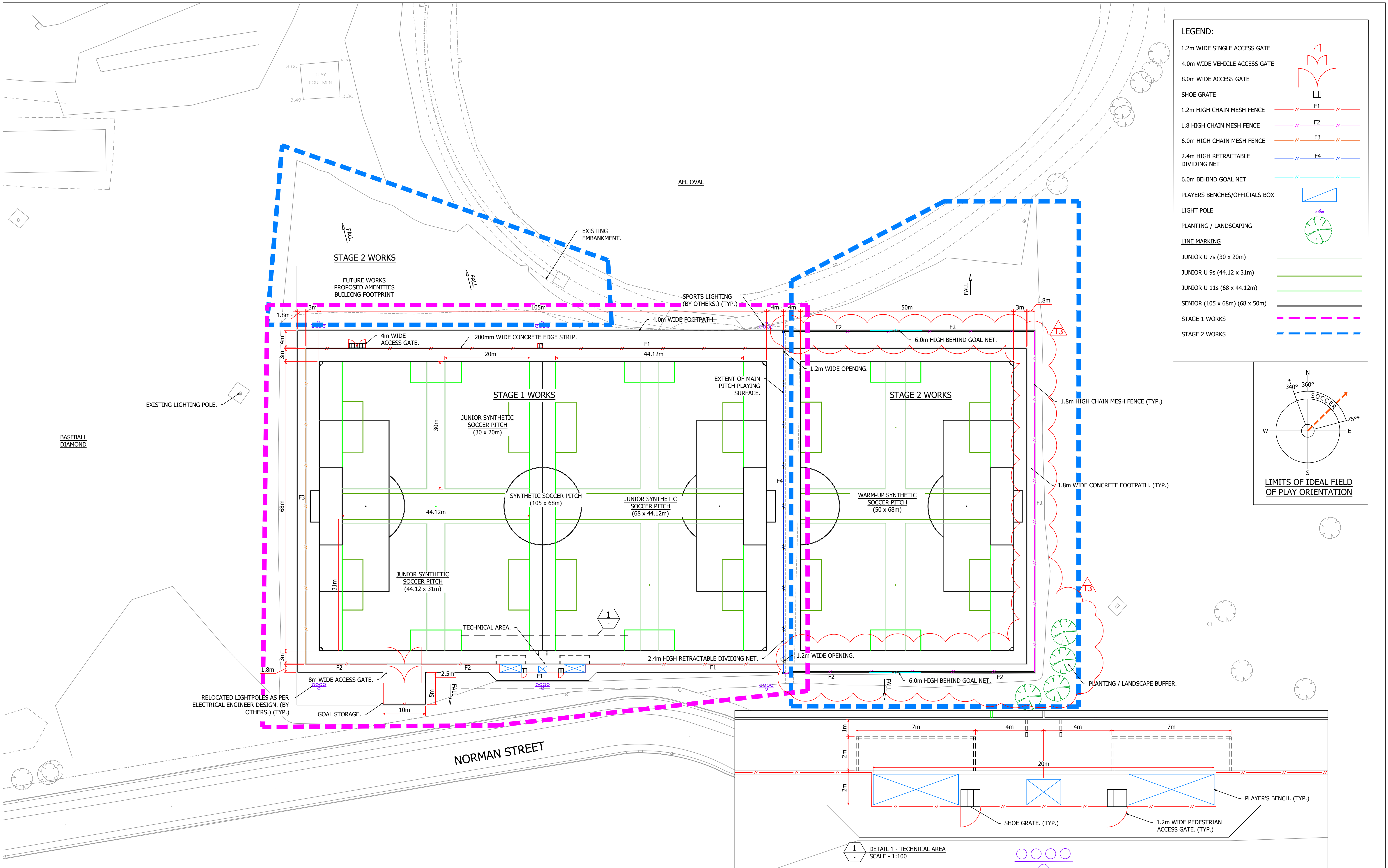
FIELD OF PLAY

TENDER

10332-00

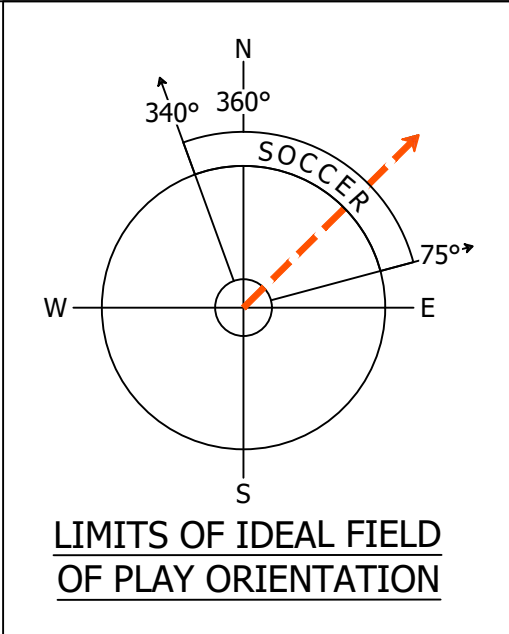
Drawing No
F000 - B

Issue
T3



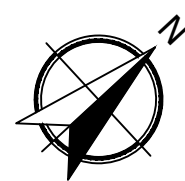
LEGEND:

- 1.2m WIDE SINGLE ACCESS GATE
- 4.0m WIDE VEHICLE ACCESS GATE
- 8.0m WIDE ACCESS GATE
- SHOE GRATE
- 1.2m HIGH CHAIN MESH FENCE
- 1.8 HIGH CHAIN MESH FENCE
- 6.0m HIGH CHAIN MESH FENCE
- 2.4m HIGH RETRACTABLE DIVIDING NET
- 6.0m BEHIND GOAL NET
- PLAYERS BENCHES/OFFICIALS BOX
- LIGHT POLE
- PLANTING / LANDSCAPING
- LINE MARKING
- JUNIOR U 7s (30 x 20m)
- JUNIOR U 9s (44.12 x 31m)
- JUNIOR U 11s (68 x 44.12m)
- SENIOR (105 x 68m) (68 x 50m)
- STAGE 1 WORKS
- STAGE 2 WORKS



WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

NOT FOR CONSTRUCTION



T3	21/05/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T2	15/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T1	12/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
**GENERAL ARRANGEMENT
LAYOUT PLAN**



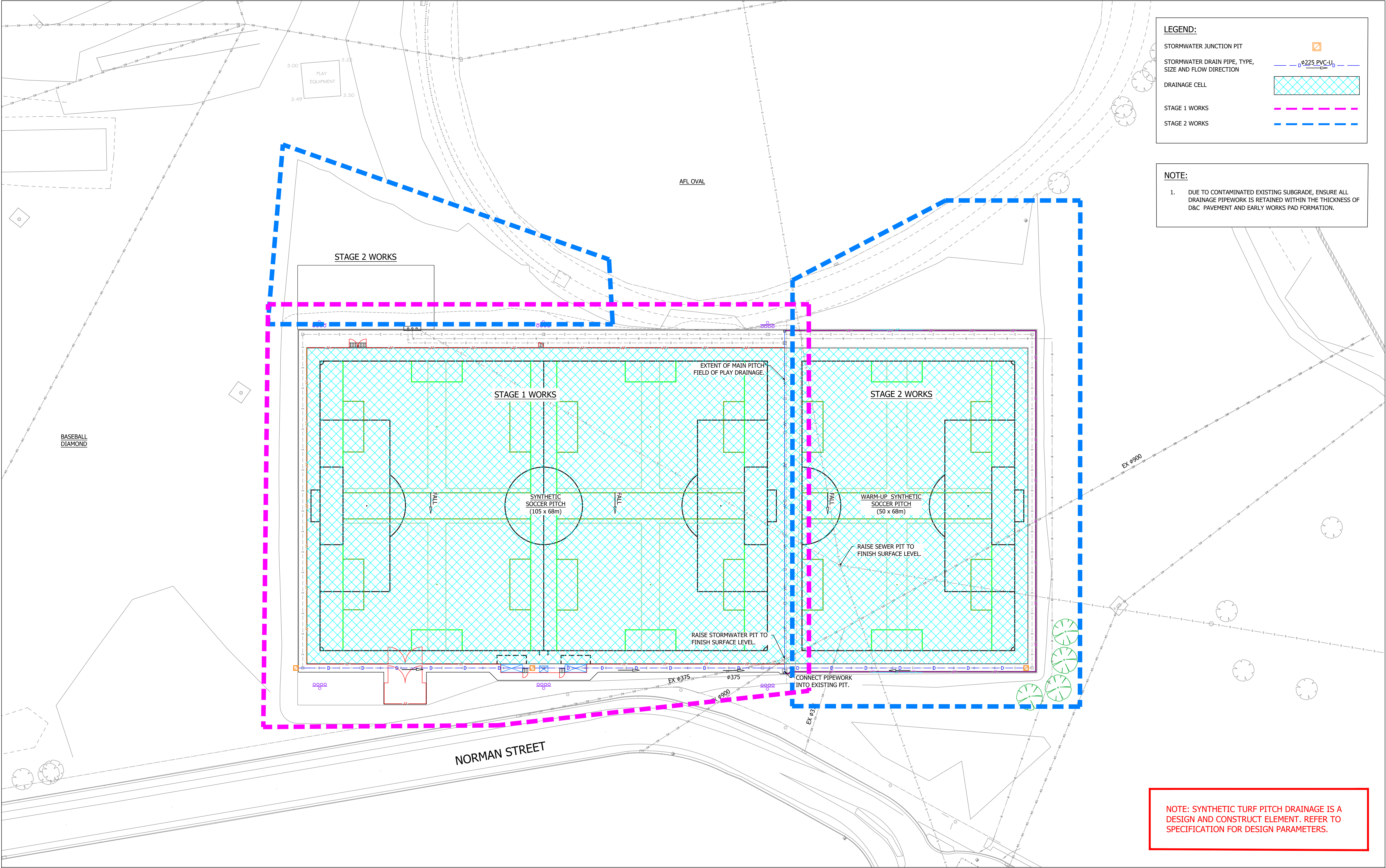
FIELD OF PLAY

TENDER

10332-00

Drawing No
F200 - B

Issue
T3



LEGEND:

STORMWATER JUNCTION PIT

STORMWATER DRAIN PIPE, TYPE, SIZE AND FLOW DIRECTION

DRAINAGE CELL

STAGE 1 WORKS

STAGE 2 WORKS

NOTE:

1. DUE TO CONTAMINATED EXISTING SUBGRADE, ENSURE ALL DRAINAGE PIPEWORK IS RETAINED WITHIN THE THICKNESS OF D&C PAVEMENT AND EARLY WORKS PAD FORMATION.

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

NOT FOR CONSTRUCTION



T3	21/05/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T2	15/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T1	12/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
STORMWATER DRAINAGE
LAYOUT PLAN



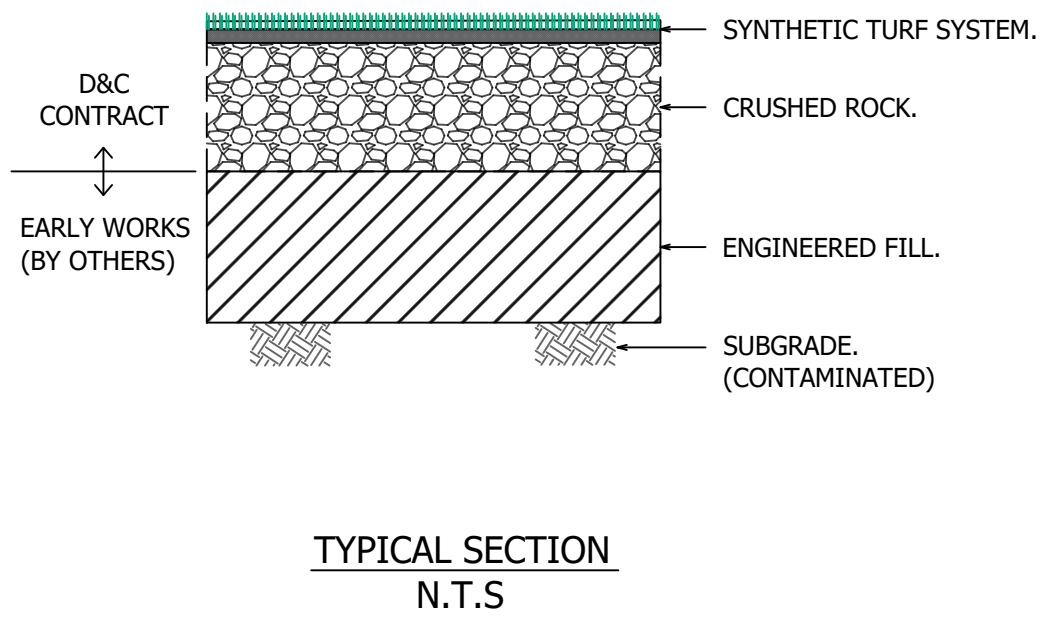
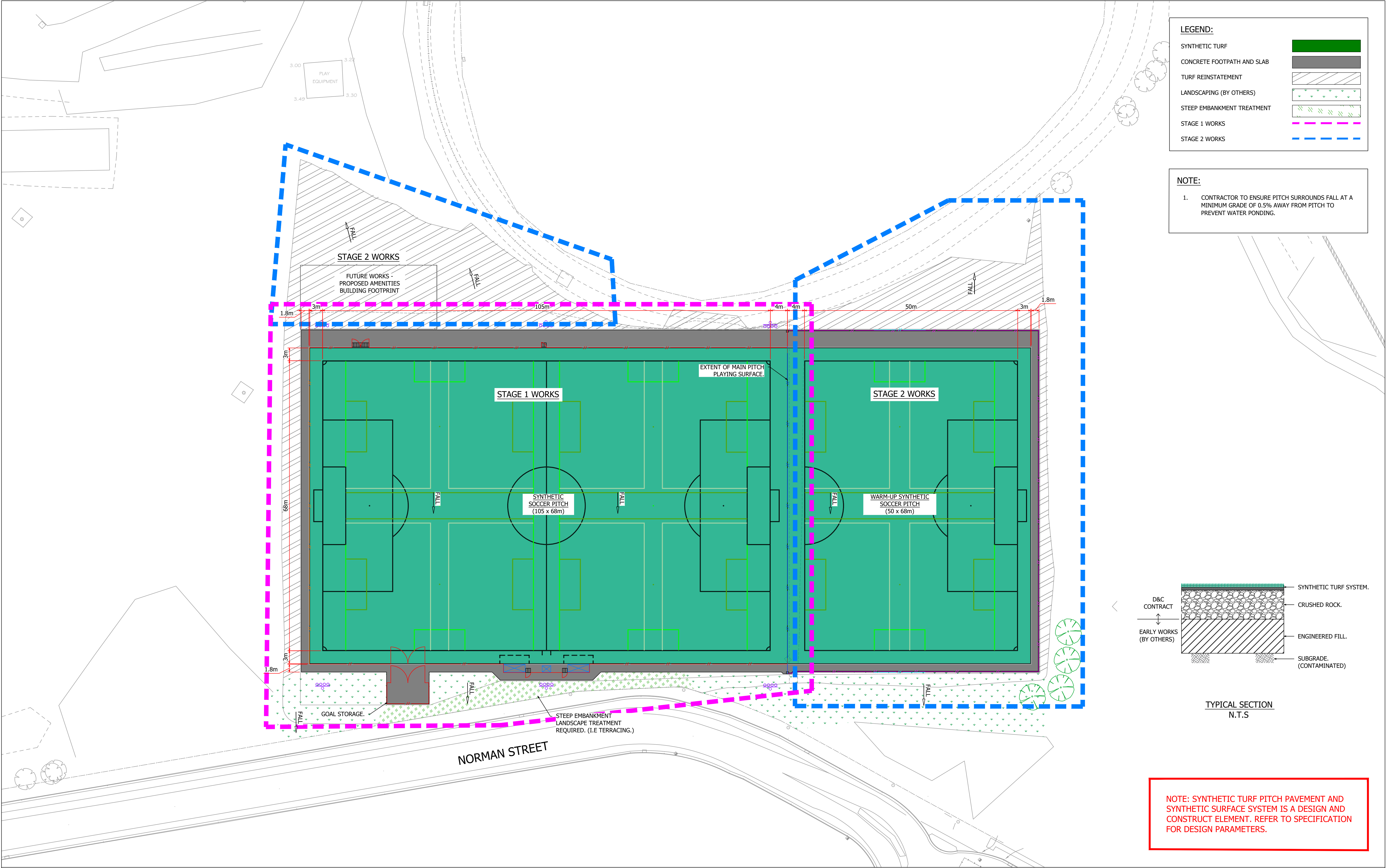
FIELD OF PLAY

TENDER

10332-00

Drawing No
F300 - B

Issue
T3



NOTE: SYNTHETIC TURF PITCH PAVEMENT AND SYNTHETIC SURFACE SYSTEM IS A DESIGN AND CONSTRUCT ELEMENT. REFER TO SPECIFICATION FOR DESIGN PARAMETERS.

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

NOT FOR CONSTRUCTION

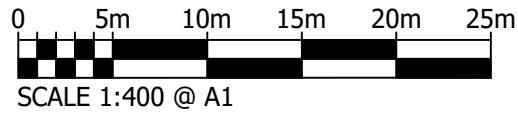


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ISSUE FOR TENDER				
T2	15/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
T1	12/04/19	ARM	JDH	JDH
ISSUE FOR TENDER				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
PAVEMENT PLAN



FIELD OF PLAY

TENDER

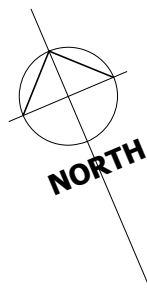
10332-00

Drawing No
F600 - B

Issue
T3

Appendices

APPENDIX B. CONCEPT PLANS FOR THE AMENITIES BUILDING PREPARED BY AUSCO MODULAR DATED MAY 2015 FOR ADELAIDE UNITED FOOTBALL CLUB



General Notes & Disclaimers
 Wall/Ceiling/Roof frames built to Ausco Backbone framing design standards.
 Building chassis designed to Ausco Standard Chassis drawings.
 All work must be done in accordance with the relevant Australian/New Zealand Standard(s) and the National Construction Code.
 Furniture, plumbing, & electrical representations are indicative. Appearance may vary depending on supplier.
 Loose items to be packed for transport.

Manufactured to Wall Speed: B190
 Manufactured in: WSA
 Intended Location: City, State

Client Approval
 Client: City of Playford
 Approved by: _____
 Company: _____
 Date (dd-mm-yyyy): _____
 Signature: _____

Drawings - Architectural		
Sheet	Content	Rev
A-100	Site Plan	A
A-200	Elevations	A

[illegible]


Preliminary



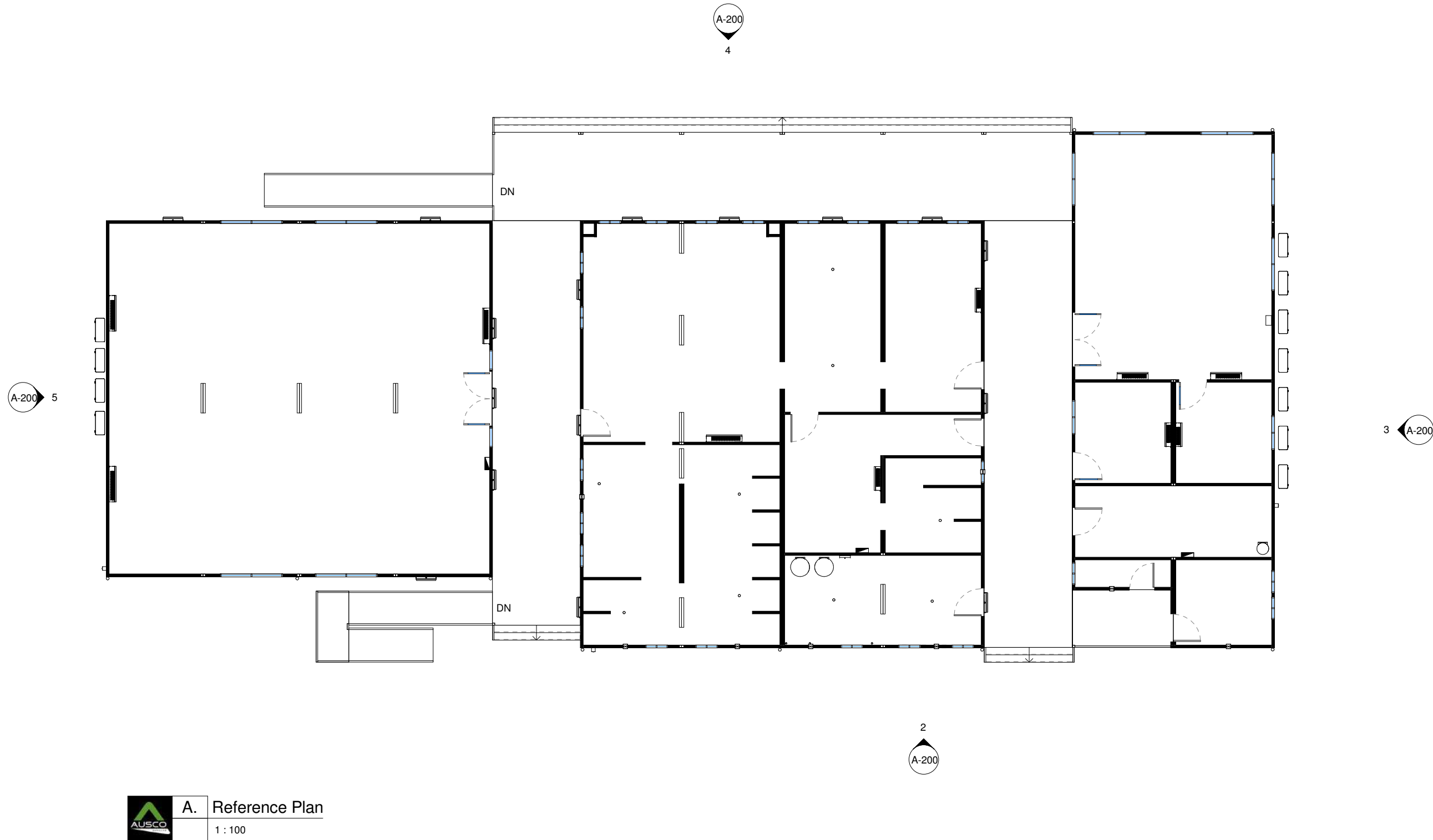
Site Plan (MSA)

Sale: Site Plan Layout (B190)

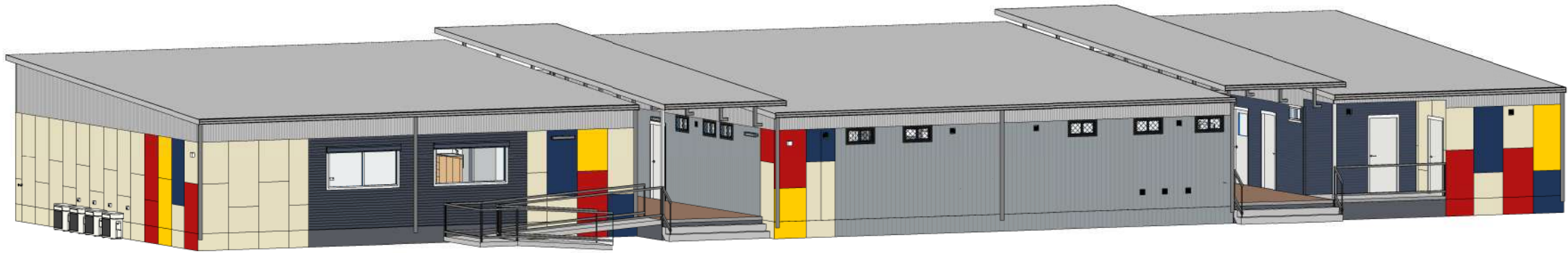
City of Playford

Drawn By AD	Drawn Date May 15	Scale 1 : 50		A0
Checked By -	Check Date -	DIMENSIONS ARE IN MM DO NOT SCALE		

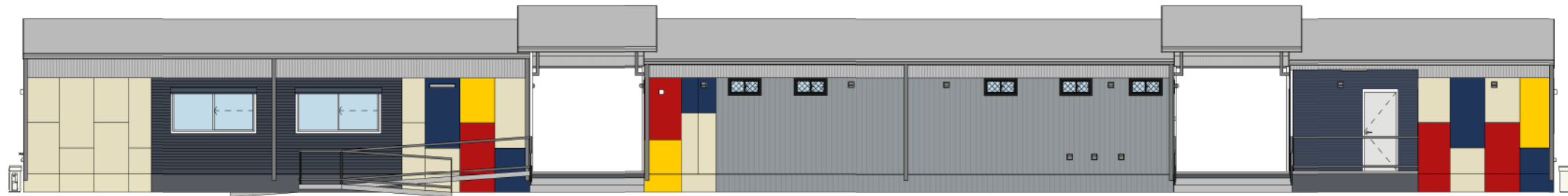
Drawing No. 18248-SP	Sheet A-100	Issue A
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1. Isometric



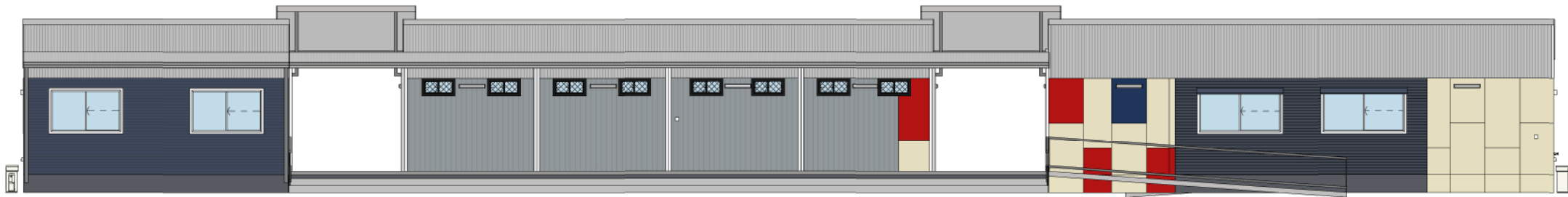
6. Isometric



2. Project South



3. Project East



4. Project North



5. Project West

General Notes & Disclaimers

- Wall/Ceiling/Roof frames built to Ausco Backbone framing design standards.
- Building chassis designed to Ausco Standard Chassis drawings.
- All work must be done in accordance with the relevant Australian/New Zealand Standard(s) and the National Construction Code.
- Furniture, plumbing, & electrical representations are indicative. Appearance may vary depending on supplier.
- Loose items to be packed for transport.

Manufactured to Wind Speed: B190
Manufactured in: MSA
Intended Location: City, State

Client Approval

Client: City of Playford

Approved by:

Company:

Date (dd-mm-yyyy):

Signature:

Drawings - Architectural			
Sheet	Content	Rev	
A-100	Site Plan	A	
A-200	Elevations	A	

No.	Description	As Issued	By
1	Original		

Preliminary

AUSCO
AUSTRALIAN BUILDING SYSTEMS
CORPORATION
100 DUNDAS STREET, MELBOURNE VIC 3000
OR AS NOTED OTHERWISE WITHOUT WRITTEN AUTHORITY

Elevations (MSA)

Project: Sale: Site Plan Layout (B190)

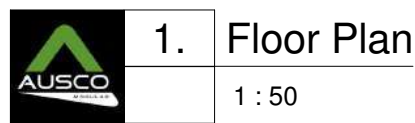
Client: City of Playford

Drawn By: AD	Issue Date: May 15	Scale: 1:100	Sheet: A0
Checked By: -	Check Date: -	DIMENSIONS ARE IN MM DO NOT SCALE	

Project No:	Sheet No:	Year:
18248-SP	A-200	A

Designed By: ADM/ML

Manufacturing - Roof					
Tag	Frame	Frame Crs.	Cladding	Lining	Insulation
	Engineered steel frame purlins 75mm, "Lipped C" section		Trimdek, Non cyclonic fixings (Shale Grey)	-	-



Manufacturing - Rooms				
#	Name	Floor Covering	Skirting	Cornice
004T	Gymnasium	Floor Vinyl, 2.0mm Seamless, Armalon (Neutral Grey)	'D' Mould (Black)	'D' Mould (Black)

X - X 	Y - Y 
Req'd 0.00 kN	Req'd 0.00 kN
Ach'd 0.00 kN	Ach'd 0.00 kN

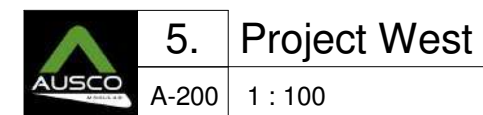
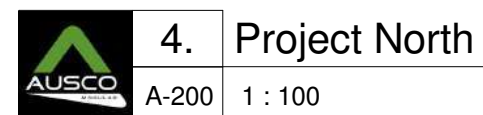
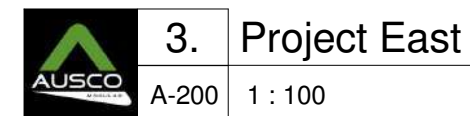
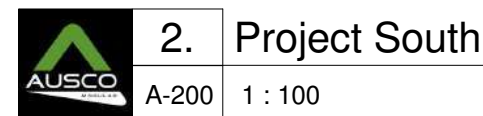
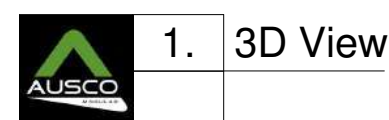
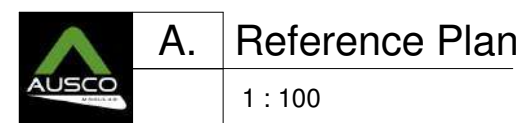
Floor Joists @ 200mm Ctrs

A	Original		As Shown	
Iss.	Description		Date	By

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City of Playford - Building 01

Drawing No.	Sheet	Issue
18248-001	A-100	A



Designed by: Adelaide

Item Schedule			
Tag	Description	Qty.	Installed
Casework			
CW01	Cupboard, LAM, 2200 x 600 x 900 w/ Drawers & Splashback	1	By Ausco
CW02	Cabinetry Locker w/ door, 1500h x 450w x 450d	36	By Ausco
CW03	Bench seat frame w/ slatted timber seat & Locker support	4	By Ausco
CW04	Vanity Bench, LAM, 2400 x 850 x 300 w/ Doors & Tiled Splashback (1 Row)	1	By Ausco
CW05	Counter, LAM, w/ metal legs, 4100 x 600 x 900	1	By Ausco
CW06	Overhead Shelf w/ Hanging Rail, 4100x300 @ 1500 AFL	1	By Ausco
CW07	Shower Partition, sanitary, 1550 x 1090 (internal)	3	By Ausco
CW08	Shower Partition, sanitary, 1550 x 1090 (internal) Front Only	3	By Ausco
CW09	Shower Partition, sanitary, 1550 x 1115 (internal)	4	By Ausco
CW10	Partition, sanitary, 1550 x 900 (internal) Front Only	1	By Ausco
CW11	Partition, sanitary, 1550 x 900 (internal), full height	2	By Ausco
CW12	Vanity Bench, LAM, 900 x 850 x 300 w/ Doors & Tiled Splashback (1 Row)	1	By Ausco
CW13	Ironing Station w/ iron, fold away	1	By Ausco
Electrical Equipment			
EE01	Switchboard, Interior, Lockable, 36 pole, Plastic @ 2000mm AFL w/ Duct above & below	1	By Ausco
EE02	PE Cell	1	By Ausco
Electrical Fixtures			
EF01	Switch, 1 gang, 1 way, single pole	6	By Ausco
EF02	Switch, 1 gang, 2 way, single pole	2	By Ausco
EF03	GPO, 1 gang, 32A, Double pole	3	By Ausco
EF04	GPO, 1 gang, 10A, single pole	9	By Ausco
EF05	GPO, 2 gang, 10A, single pole	16	By Ausco
EF07	Hand dryer, automatic	3	By Ausco
EF08	Isolator Switch, 20A, single pole	2	By Ausco
EF09	GPO, 2 gang, 10A, weatherproof, single pole	2	By Ausco
Furniture			
FN01	Toilet Roll Holder (Chrome)	3	By Ausco
FN02	Mirror, 600 x 600	4	By Ausco
FN03	Massage/Physio Table	3	By Ausco
FN04	Visitors Chair	4	By Ausco
Lighting Fixtures			
LT01	Fluorescent batten, 2x36W, diffused, Fitted by Ausco, Supplied by Client	24	By Others
LT02	Light, Emergency Exit compliant to AS2293.1, ceiling mounted	6	By Ausco
LT03	Vandal resistant light, 18W, clear	10	By Ausco
Mechanical Equipment			
ME01	AC, Split system, indoor unit, 3.5kW	2	By Ausco
ME02	AC, Split system, indoor unit, 8.0kW	1	By Ausco
ME03	Extraction fan, (RP202) Activated by Light Switch, Cutout: 220mmØ HH:2300mm AFL	5	By Ausco
ME04	Extraction fan (RP202) Ceiling mounted, Activated by Light switch, Cutout: 220mmØ	1	By Ausco
ME05	Extraction fan, (RP202) Activated by Light Switch, Cutout: 220mmØ HH:1800mm AFL	1	By Ausco
ME06	HWS 315L, 3x3.0kW, safety tray, isolator switch w/ Redi-Set Circulator	2	By Ausco

Item Schedule			
Tag	Description	Qty.	Installed
ME07	Redi-Set Circulator for HWS	1	By Ausco
Plumbing Fixtures			
PL01	Toilet Suite (Vitreous China)	3	By Ausco
PL02	Shower, 1050x900x2040H, with curtain	10	By Ausco
PL03	Shower Mixer (Chrome)	10	By Ausco
PL04	Shower head, wall mounted (Chrome)	10	By Ausco
PL05	Uninail, 1800mm long (Stainless Steel)	1	By Ausco
PL06	Uninail Caster (PVC)	1	By Ausco
PL07	Vanity unit, semi-recessed bowl (Vitreous China), H&C	4	By Ausco
PL08	Flickmixer, basin, H&C	4	By Ausco
PL09	Sink, single bowl, w/ side drainer, 765L (Stainless Steel)	1	By Ausco
PL10	Flickmixer, sink, H&C	1	By Ausco
PL11	Laundry tub, Double Bowl, 45 Litre w/ Cabinet Under	1	By Ausco
PL12	Tapset with Spout, Hot & Cold (Chrome)	1	By Ausco
PL13	W/M Tap set, H&C (Chrome)	3	By Ausco
PL14	Ice Bath - Free Standing	3	By Others
PL15	Tap set, Cold Only (Chrome) 900mm AFL	2	By Ausco
PL16	Floor waste, 80mm, through floor	9	By Ausco
PL17	Washing Machine Outlet, 50mm, through floor	3	By Ausco
PL18	Thermostatic Mixing Valve, in lockable cabinet (Stainless Steel)	4	By Ausco
PL19	Sinker, cleaners with grate (Stainless Steel)	1	By Ausco
PL20	Cleaners Trough Tapset with Spout, Hot & Cold (Chrome)	1	By Ausco
Specialty Equipment			
EQ01	Washing machine, top loader, 7.5kg	2	By Ausco
EQ02	Clothes Dryer, front loader, 9.0kg	2	By Ausco
EQ03	Bar Fridge, 113L w/ Freezer	1	By Ausco
EQ04	Provision for a Future Washing machine, top loader, 7.5kg	1	By Ausco
EQ05	Provision for a Future Clothes Dryer, front loader, 9.0kg	1	By Ausco
EQ06	Door Closer (Hold Open)	4	By Ausco
EQ07	350 x 755 Amplimesh Diamond Pattern Security Screen (Black)	19	By Ausco
EQ08	Whiteboard 1200x2400	1	By Ausco
EQ09	Pinboard 1200x1200	1	By Ausco
EQ10	Dryer Wall Vent w/ Duct through wall	3	By Ausco
Structural Columns			
	75x75x2.5mm SHS Posts (Concealed)	10	By Ausco
Structural Framing			
	200UB18.2 Beams, CANT, 2000mm Ctrs	8	By Ausco
	LC200, 19 Complexing Beams (Exposed)	4	By Ausco
BR01	Transit Brace, to Ausco Standards	12	By Ausco

Manufacturing - Floor				
Tag	Type	Frame Crs.	Pan Material	Insulation
	Plywood, 15mm, F11 flooring w/ Dropped Joists & Grated Battens where shown (Joists to Ice Bath @ 240mm Ctrs)	480	-	-

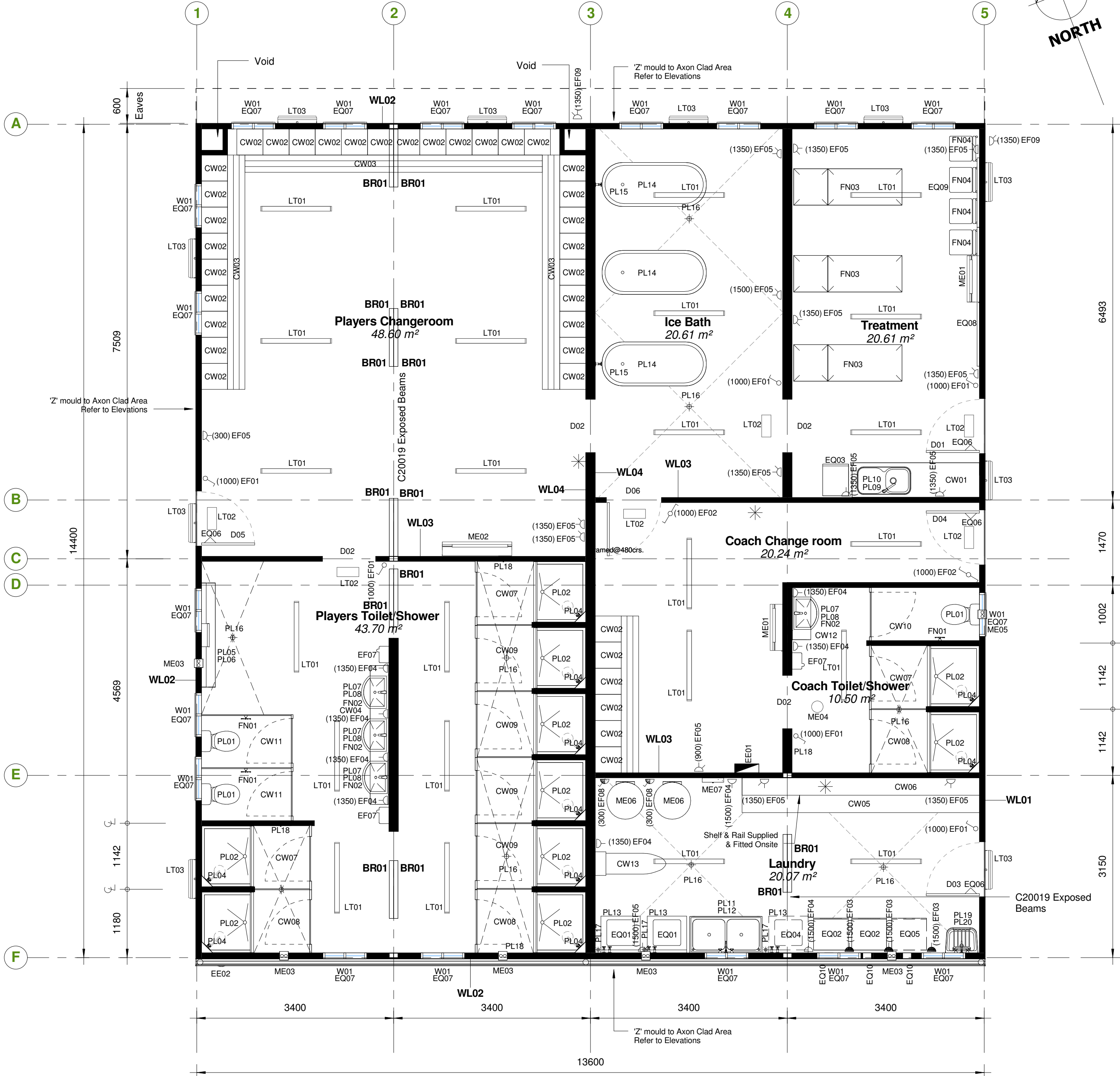
Manufacturing - Walls				
Tag	Frame	Frame Crs.	Cladding	Insulation
WL01	Engineered steel frame, 75mm, "Lipped C" section	400	Vertical Axon Cladding (Profile: Smooth 133. Colour to match C/B "Gully") to 2400mm AFL. Vertical Custom Orb (Dune) above Refer to Elevations & Client Colour Schedule. Perforated Sisalation behind all Ext. Cladding	R2.0 glasswool batts
WL02	Engineered steel frame, 75mm, "Lipped C" section	400	Vertical Axon Cladding (Profile: Smooth 133. Colour to match C/B "Gully") to part & Scyon Matrix w/ Express Joints to part up to 2400mm AFL. Vertical Custom Orb (Dune) above Refer to Elevations & Client Colour Schedule. Perforated Sisalation behind all Ext. Cladding	R2.0 glasswool batts
WL03	Engineered steel frame, 75mm, "Lipped C" section	400	-	-
WL04	Engineered steel frame, 75mm, "Lipped C" section	400	-	-

Manufacturing - Trims (Wall)	
Description	
100 x 40mm eave flashing (Woodland Grey)	
External corner flashing, 60x60 (Colorbond "Gully" & above 2400mm (Colorbond "Dune")	

Manufacturing - Ceiling				
Tag	Frame	Frame Crs.	Lining	Insulation
	Engineered steel frame, 75mm, "Lipped C" section	400	Pre-finished plywood, 3.6mm, H-mould (Mirage Pearl)	R3.0 glasswool batts

Manufacturing - Trims (Gutters)		Manufacturing - Trims (General)	
Description		Description	
CCS prefinished gutter (Woodland Grey) & 100mm ø CCS Downpipes (Dune)		CCS pre-finished barge (Woodland Grey)	

Manufacturing - Roof				
Tag	Frame	Frame Crs.	Cladding	Insulation
	Engineered steel frame purlins, 75mm, "Lipped C" section		Trimdek, Non cyclonic fixings (Shale Grey)	-



1. Floor Plan
1 : 50

Manufacturing - Doors								
Tag	Qty.	Style/Type	Size			Frame Type	Frame Finish	Accessories
			Leaf 1	Leaf 2	H			
D01	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised	CCS Clad (Dune) Lever Entrance set, RP4T & RP95 Seals - Cutout: 2085 x 950
D02	7	Door Opening Only	920	0	2040	Aluminium w/ Aluminium trims	Natural Anodised	- Cutout: 2085 x 950
D03	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised	Lever Entrance set, RP4T & RP95 Seals - Cutout: 2085 x 950
D04	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised	CCS Clad (Dune) Lever Entrance set, RP4T & RP95 Seals - Cutout: 2085 x 950
D05	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised	CCS Clad (Dune) Lever Entrance set, RP4T & RP95 Seals - Cutout: 2085 x 950
D06	1	Swing Door	920	0	2040	Aluminium w/ Aluminium trims	Natural Anodised	Timber HC (Off White) Lever Passage Set, Cutout: 2085 x 950

Manufacturing - Windows								
Tag	Qty.	Style/Type	Size			Frame Type	Frame Finish	Accessories
			H	W	Head			
W01	19	Half Slider Window	350	755	2350	Aluminium	(Black)	Obscured Amplimesh Security Screen (Black) Cutout: 355 x 765

Manufacturing - Rooms				
#	Name	Floor Covering	Skirting	Cornice
004S	Coach Change room	2.0mm Vinyl, Seamless, Armalon, (Neutral Grey)	'D' Mould (Black)	'D' Mould (Black)
004T	Coach Toilet/Shower	2.0mm Vinyl, Accolade Safe, Slip Resistant (Sand Grey)	100mm Covering up wall (Sand Grey)	'D' Mould (Black)
004Q	Ice Bath	2.0mm Vinyl, Accolade Safe, Slip Resistant (Sand Grey)	100mm Covering up wall (Sand Grey)	'D' Mould (Black)
004R	Laundry	2.0mm Vinyl, Accolade Safe, Slip Resistant (Sand Grey)	100mm Covering up wall (Sand Grey)	'D' Mould (Black)
004O	Players Changeroom	2.0mm Vinyl, Seamless, Armalon, (Neutral Grey)	'D' Mould (Black)	'D' Mould (Black)
004L	Players Toilet/Shower	2.0mm Vinyl, Accolade Safe, Slip Resistant (Sand Grey)	100mm Covering up wall (Sand Grey)	'D' Mould (Black)
004P	Treatment	2.0mm Vinyl, Seamless, Armalon, (Neutral Grey)	'D' Mould (Black)	'D' Mould (Black)

General Notes & Disclaimers

- Wall/Ceiling/Roof frames built to Ausco Backbone framing design standards.
- Building chassis designed to Ausco Standard Chassis drawings.
- All work must be done in accordance with the relevant Australian/New Zealand Standard(s) and the National Construction Code.
- Furniture, plumbing, & electrical representations are indicative. Appearance may vary depending on supplier.
- Loose items to be packed for transport.

Manufactured to Wind Speed: B190
Manufactured in: MSA
Intended Location: Elizabeth SA

Client Approval

Client: City of Playford - Building 02
Approved by:
Company:
Date (dd-mm-yyyy):
Signature:

Engineering Data

Concentrated Floor Load:	0kN
Distributed Floor Load:	0kPa
Lifting Capacity:	0t
X - X	Y - Y
Req'd	Req'd
0.00 kN	0.00 kN
Ach'd	Ach'd
0.00 kN	0.00 kN

Transit Plastic Required - NO
Transit Piping Required - YES
* Location of R2.0 Insulation to internal walls, 100mm Complex walls Only
Joists to Ice Bath @ 240mm Ctrs

Drawings - Architectural		
Sheet	Content	Rev
A-100	Ground Floor Plan	A
A-200	Elevations	A

Iss.	Description	As Shown	By

Preliminary



Ground Floor Plan (MSA)

Project: Sale: 13.6 x 14.4 x 2.7m
Changern/Ldry/Amenities (B190)

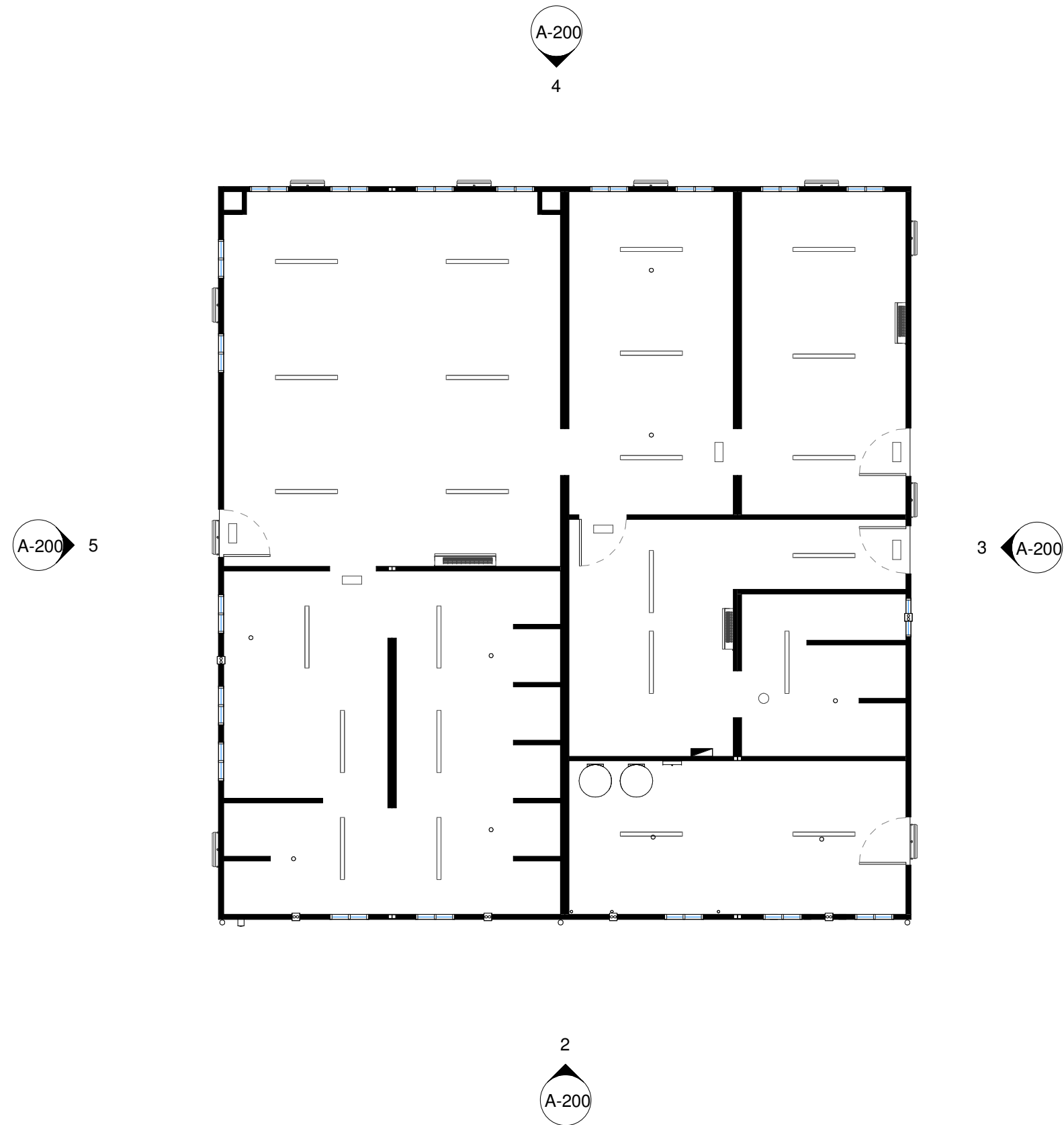
Client: City of Playford - Building 02

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Drawn Date: May 15
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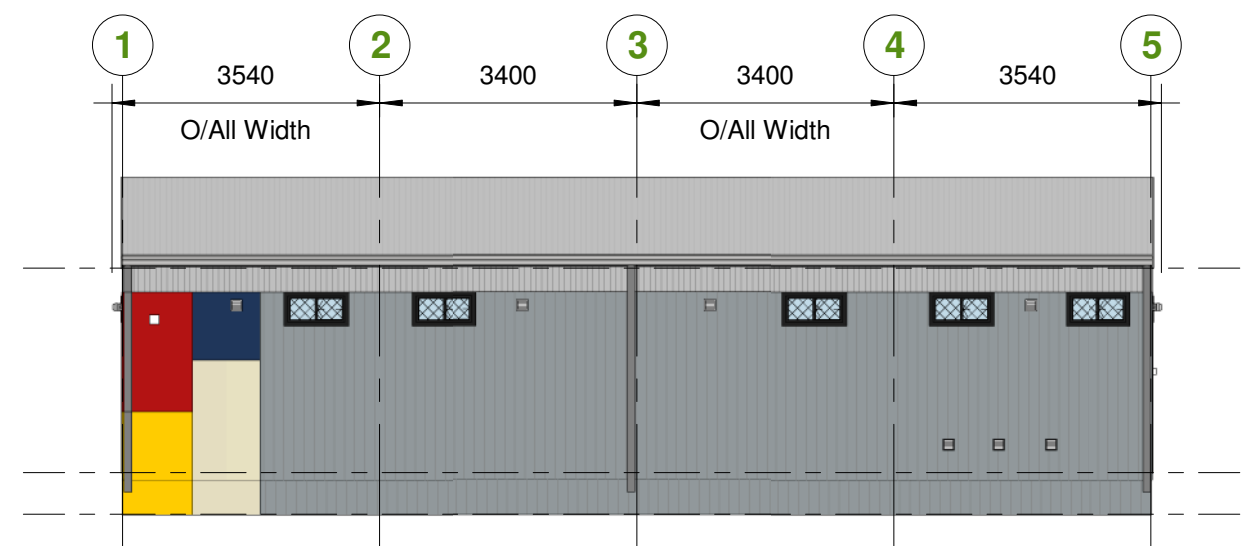
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Project No: 18248-002
Sheet: A-100
Issue: A

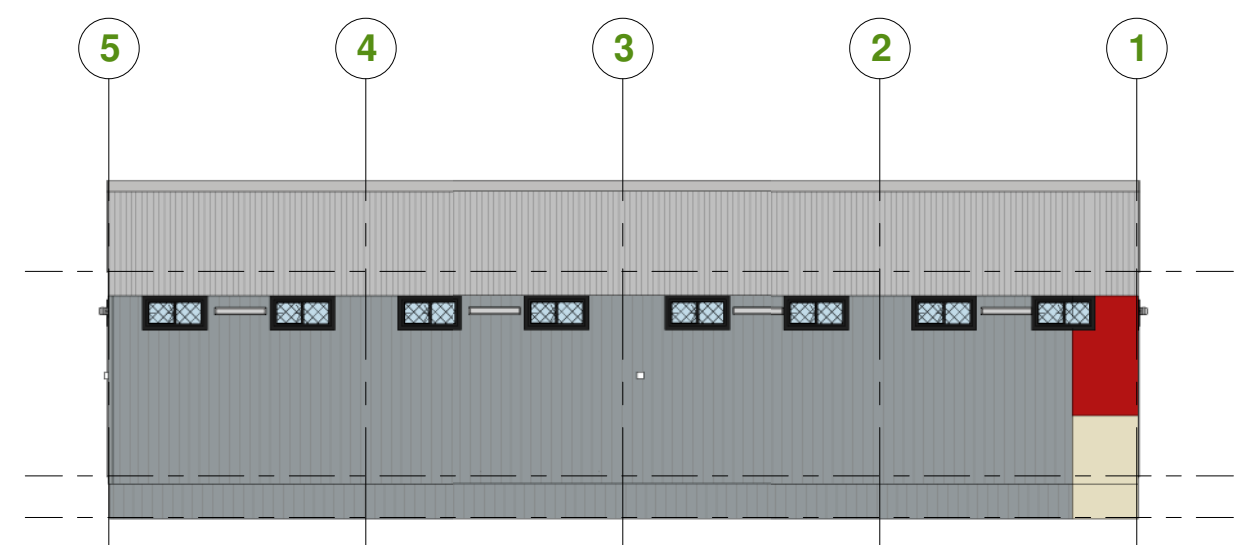
Designed by: Adelaide



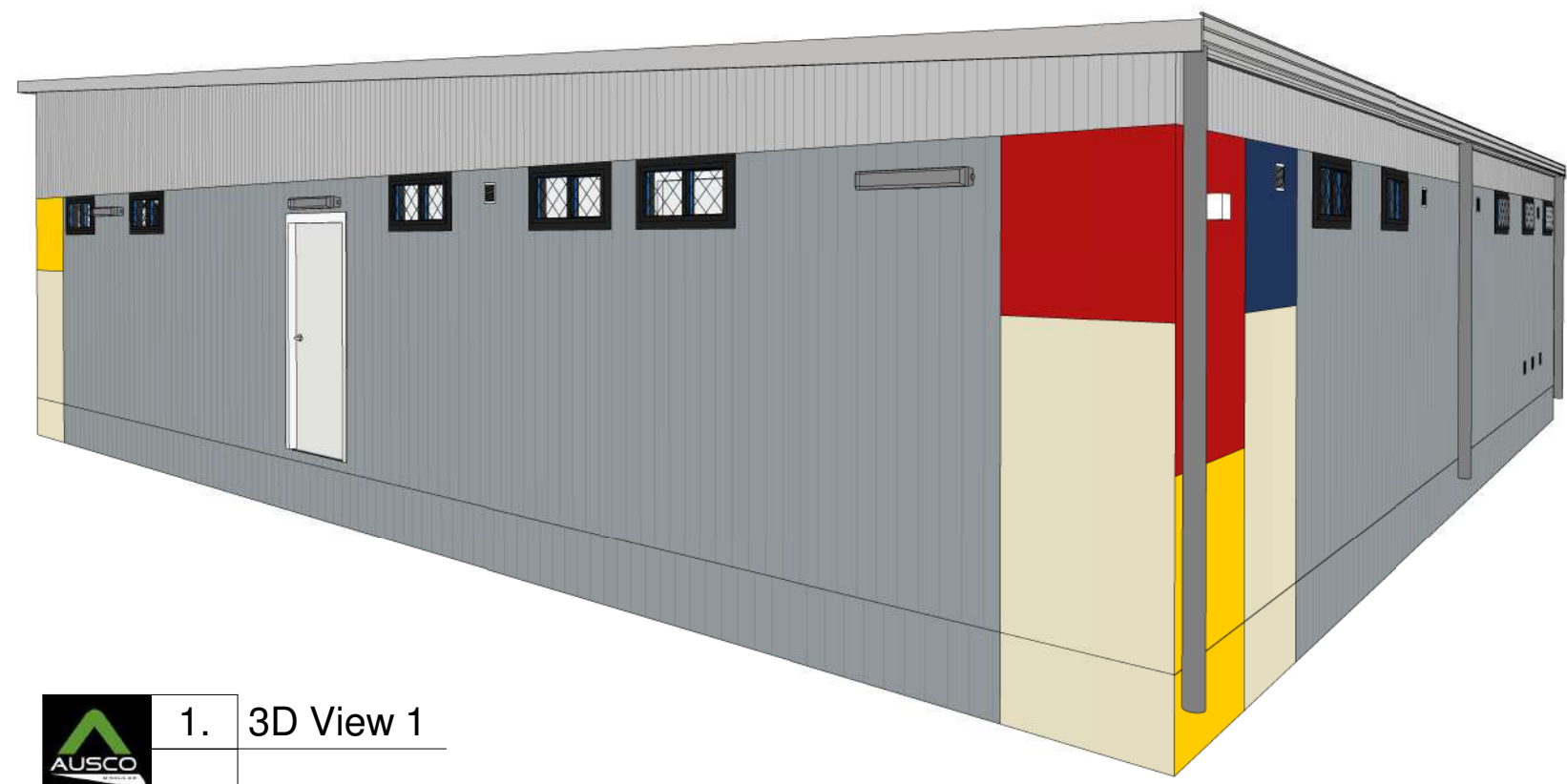
A. Reference Plan
1 : 100



2. Project South
A-200 1 : 100



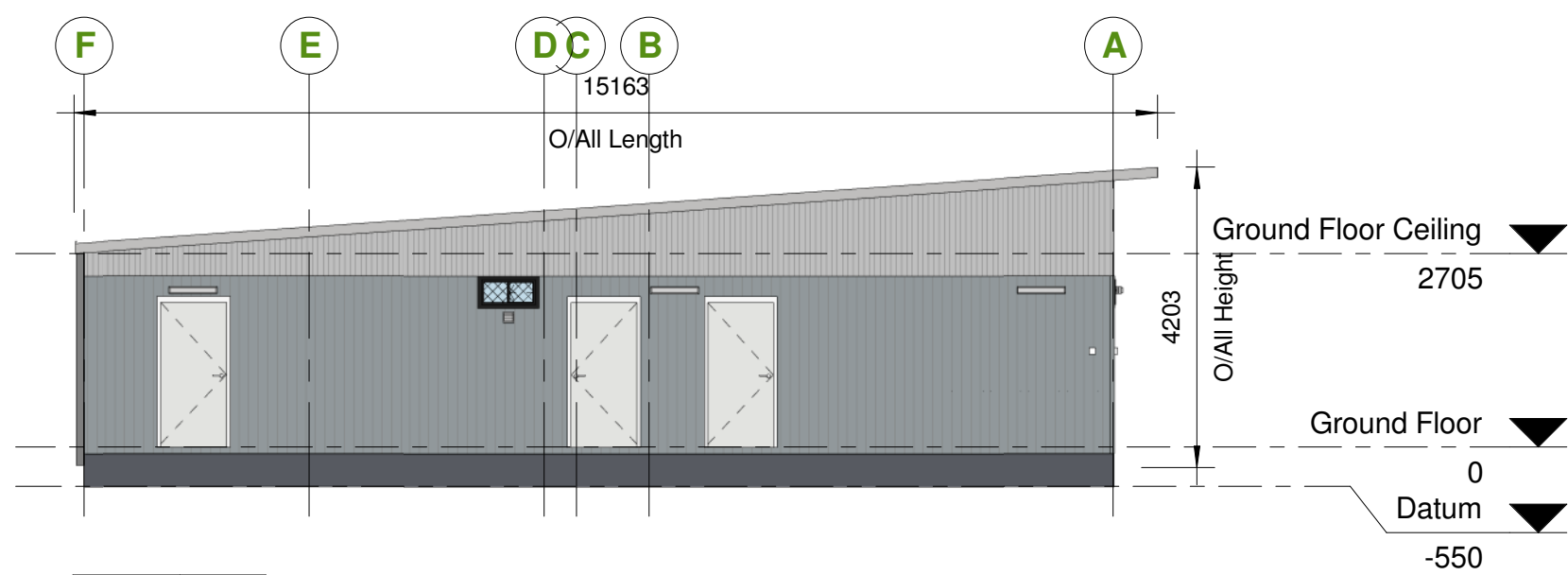
4. Project North
A-200 1 : 100



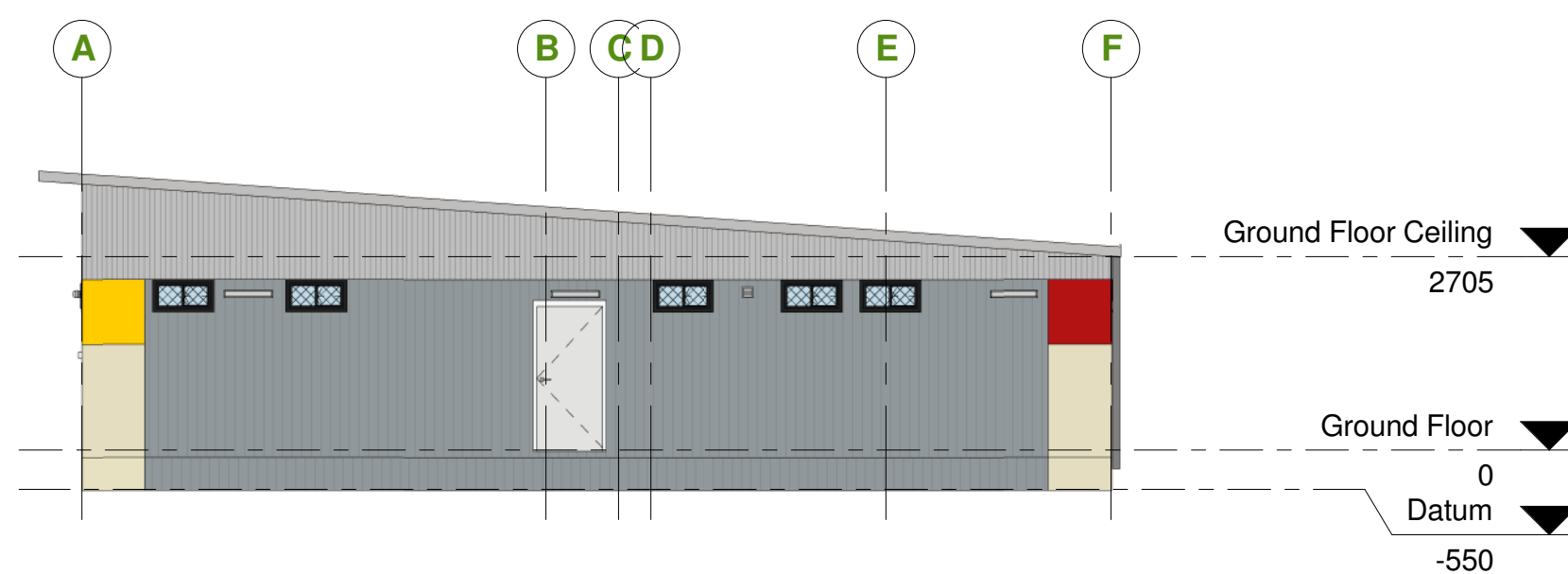
1. 3D View 1
A-200



6. 3D View 2
A-200



3. Project East
A-200 1 : 100



5. Project West
A-200 1 : 100

- General Notes & Disclaimers**
- Wall/Ceiling/Roof frames built to Ausco Backbone framing design standards.
 - Building chassis designed to Ausco Standard Chassis drawings.
 - All work must be done in accordance with the relevant Australian/New Zealand Standard(s) and the National Construction Code.
 - Furniture, plumbing, & electrical representations are indicative. Appearance may vary depending on supplier.
 - Loose items to be packed for transport.

Manufactured to Wind Speed: B190
Manufactured in: MSA
Intended Location: Elizabeth SA

Client Approval	
Client:	City of Playford - Building 02
Approved by:	
Company:	
Date (dd-mm-yyyy):	
Signature:	

SCHEDULE OF MATRIX PANEL COLOURS		
Neutral	to match Colorbond 'Dune'	
Red	to match 'Pantone 199'	
Blue	to match 'Pantone 295'	
Yellow	to match 'Pantone 137'	

Drawings - Architectural		
Sheet	Content	Rev
A-100	Ground Floor Plan	A
A-200	Elevations	A

Iss.	Original	Description	As Shown	Date	By

Preliminary



Elevations (MSA)

Project: Sale: 13.6 x 14.4 x 2.7m
Changerm/Ldry/Amenities (B190)

Client: City of Playford - Building 02

Drawn By: -
Drawn Date: May 15
Scale: 1 : 100

Checked By: -
Check Date: -
DIMENSIONS ARE IN MM
DO NOT SCALE

Project No. -
Order No. -

Drawing No. 18248-002
Sheet A-200
Issue A

Designed by: Adelaide

Item Schedule			
Tag	Description	Qty.	Installed
Casework			
CW01	Cupboard, LAM, 2200 x 600 x 900 w/ Drawers & Splashback	1	By Ausco
Electrical Equipment			
EE01	Switchboard, Interior, 36 pole, Lockable, Plastic @ 2000mm AFL, Duct above & Below	1	By Ausco
EE02	PE Cell	1	By Ausco
Electrical Fixtures			
EF01	Switch, 1 gang, 1 way, single pole	5	By Ausco
EF02	Switch, 1 gang, 1 way, single pole, AS1428 Compliant	1	By Ausco
EF03	GPO, 2 gang, 10A, single pole	14	By Ausco
EF04	GPO, 1 gang, 10A, single pole	4	By Ausco
EF05	GPO, 1 gang, 10A, single pole, AS1428.1 compliant	1	By Ausco
EF06	GPO, Ceiling Mounted	1	By Ausco
EF07	Draw wire, with plate	2	By Ausco
EF08	Draw wire for Projector Data, Ceiling Mounted	1	By Ausco
EF09	Isolator Switch, 20A, single pole	6	By Ausco
EF10	Hand dryer, automatic (AS1428 Compliant)	2	By Ausco
EF11	Power supply to EQ09	7	By Ausco
EF12	Isolator Switch, for HWS 20A, single pole	1	By Ausco
EF13	Draw wire, with plate for EF08	1	By Ausco
EF14	TV point, in-built ADSL filter & RJ12 socket	1	By Ausco
EF15	GPO, 2 gang, 10A, weatherproof, single pole	1	By Ausco
Furniture			
FN01	Workstation, 1800 x 1500 x 750 x 720	2	By Ausco
FN02	Mobile Pedestal Unit, 2 draw/1 file	2	By Ausco
FN03	Clerical Chair,	2	By Ausco
FN04	Filing Cabinet, 4 Drawer	2	By Ausco
FN05	Visitors Chair	4	By Ausco
FN06	Counter Top, LAM., 1800 x 750 x 900 w/ Metal Legs	1	By Ausco
FN07	Grabrail, 450mm straight rail (Stainless Steel)	1	By Ausco
FN08	Grab rail, Ambulant, 90° Angled (Chrome Plated)	2	By Ausco
FN09	90° Angled Grab Rails	1	By Ausco
FN10	Toilet Roll Holder (Chrome)	2	By Ausco
FN11	Shell, SS, 400 x 140 AS1428 Compliant	1	By Ausco
FN12	Mirror, 950 x 350 AS1428 Compliant	1	By Ausco
FN13	Mirror, 450 x 300	1	By Ausco
FN14	Postura Stack Chair (Slate)	30	By Ausco
Lighting Fixtures			
LT01	Fluorescent batten, 2x36W, diffused, Fitted by Ausco, Supplied by Client	10	By Others
LT02	Light, domed fluorescent	3	By Ausco
LT03	Light, Emergency Exit compliant to AS2293.1, ceiling mounted	1	By Ausco
LT04	Vandal resistant light, 18W, clear	4	By Ausco

Item Schedule			
Tag	Description	Qty.	Installed
Mechanical Equipment			
ME01	AC, Split system, indoor unit, 2.5kW	2	By Ausco
ME02	AC, Split system, indoor unit, 5.0kW	2	By Ausco
ME03	Split System Reverse Cycle, Outdoor unit, Packed & Fitted Onsite	6	By Ausco
ME04	Boiling water unit, 5.0L w/ Filter	1	By Ausco
ME05	HWS 50L, 1x3.6kW, safety Tray, isolator switch	1	By Ausco
ME06	Extraction fan, 150x150, Activated by Light Switch	2	By Ausco
Plumbing Fixtures			
PL01	Toilet Suite, Disabled, with floor mounted backrest, installed to Australian Standards [AS1428.1] (Vitreous China)	1	By Ausco
PL02	Toilet Suite, ambulant, installed to Australian Standards [AS1428.1] (Vitreous China, blue seat)	1	By Ausco
PL03	Sink, single bowl, with side drainer (Stainless Steel) 765L	1	By Ausco
PL04	Flickmixer, sink, H&C	1	By Ausco
PL05	Handbasin, installed to Australian Standards [AS1428.1] (Vitreous China)	1	By Ausco
PL06	Basin Flickmixer (Chrome), AS1428.1 compliant, Hot & Cold	1	By Ausco
PL07	Basin (Stainless Steel) w/ Overflow	1	By Ausco
PL08	Flickmixer, basin, H&C	1	By Ausco
PL09	Thermostatic Mixing Valve, Adjacent ME05	1	By Ausco
Specialty Equipment			
EQ01	Fridge/Freezer, 300L, 2 Door (Packed)	1	By Ausco
EQ02	Microwave, 38L (Packed)	1	By Ausco
EQ03	Shelving, 4 Tier, 6635 x 450 (Melamine)	1	By Ausco
EQ04	Robe hook, double (Chrome) @ 1000mm AFL	3	By Ausco
EQ05	Whiteboard 1200x2400	4	By Ausco
EQ06	Pinboard 1200x1200	3	By Ausco
EQ07	Projector (Future Projector Location)	1	By Others
EQ08	Door Closer (Hold Open)	4	By Ausco
EQ09	External Roller Shutters (Deep Ocean) Auto Electric	7	By Ausco
EQ10	350 x 755 Amplimesh Diamond Pattern Security Screen (Black)	3	By Ausco
Structural Columns			
	75x75x2.5SHS Posts (Concealed)	6	By Ausco
	75x75x4.0SHS Posts (Concealed)	4	By Ausco
Structural Framing			
	75x75x2.5SHS Verandah Roof Beam (Concealed)	1	By Ausco
	150UB14 Beams, CANT, 2000mm Ctrs	2	By Ausco
	200UB18.2 Beams, CANT, 2000mm Ctrs	4	By Ausco
	230PFC Compexing Beam (Concealed)	1	By Ausco
	LC200, 19 Compexing Beams (Concealed)	4	By Ausco
BR01	Transit Brace, to Ausco Standards	10	By Ausco

Manufacturing - Floor				
Tag	Type	Frame Crs.	Pan Material	Insulation
	Plywood, 15mm, F11 flooring w/ LC75 joists	480	-	-
F01	Compact Fibre Cement, 15mm, LC75 joists	400	-	-

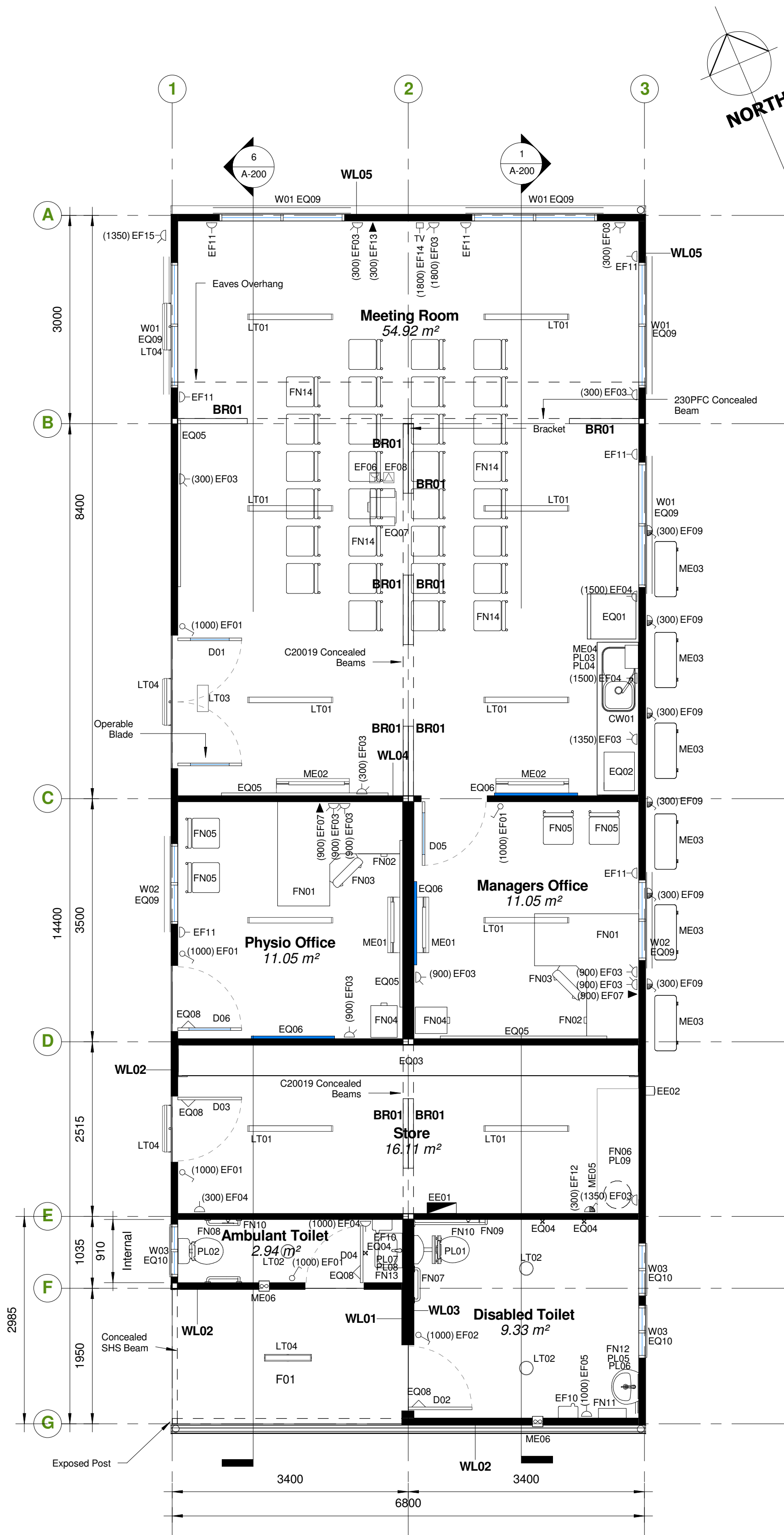
Manufacturing - Trims (Wall)	
Description	
100 x 40mm eave flashing (Woodland Grey)	
External corner flashing, 60x60 (Deep Ocean)	
Above 2400mm AFL (Dune)	

Manufacturing - Walls					
Tag	Frame	Frame Crs.	Cladding	Lining	Insulation
WL01	Engineered steel frame, 75mm, "Lipped C" section	400	Scyon Matrix w/ express joints to 2400mm AFL. Vertical Custom Orb (Dune) above Refer to Elevations & Client Colour Schedule. Perforated Sitalation behind all Ext. Cladding	-	R2.0 glasswool batts
WL02	Engineered steel frame, 75mm, "Lipped C" section	400	Scyon Matrix w/ express joints to 2400mm AFL. Vertical Custom Orb (Dune) above Refer to Elevations & Client Colour Schedule. Perforated Sitalation behind all Ext. Cladding	Pre-finished plywood, 3.6mm, H-mould (White Smoke)	R2.0 glasswool batts
WL03	Engineered steel frame, 75mm, "Lipped C" section	400	Scyon Matrix w/ express joints where shown, Horizontal Custom Orb to remainder (Deep Ocean) to 2400mm AFL. Vertical Custom Orb (Dune) above, Refer to Elevations & Client Colour Schedule. Perforated Sitalation behind all Ext. Cladding	Pre-finished plywood, 3.6mm, H-mould (White Smoke), one side only	-
WL04	Engineered steel frame, 75mm, "Lipped C" section	400	-	Pre-finished plywood, 3.6mm, H-mould (White Smoke), both sides	R2.0 glasswool batts
WL05	Engineered steel frame, 75mm, "Lipped C" section	400	Horizontal Custom Orb (Deep Ocean) to 2400mm AFL. Vertical Custom Orb (Dune) above, Refer to Elevations & Client Colour Schedule. Perforated Sitalation behind all Ext. Cladding	Pre-finished plywood, 3.6mm, H-mould (White Smoke)	R2.0 glasswool batts

Manufacturing - Ceiling				
Tag	Frame	Frame Crs.	Lining	Insulation
	Engineered steel frame, 75mm "Lipped C" section	400	Pre-finished plywood, 3.6mm, H-mould (Mirage Pearl)	R3.0 glasswool batts

Manufacturing - Trims (Gutters)		Manufacturing - Trims (General)	
Description		Description	
CCS prefinished gutter (Woodland Grey) & CCS Downpipes (Dune)		CCS pre-finished barge (Woodland Grey)	

Manufacturing - Roof					
Tag	Frame	Frame Crs.	Cladding	Lining	Insulation
	Engineered steel frame purlins, 75mm, "Lipped C" section		Trimdeck, Non cyclonic fixings (Shale Grey)	-	-



1. Floor Plan
1 : 50

Manufacturing - Doors									
Tag	Qty.	Style/Type	Size		H	Frame Type	Frame Finish	Leaf	Accessories
D01	1	Double Shopfront Door	920	920	2050	Aluminium w/ Aluminium trims	Natural Anodised w/ NA trims	Commercial shopfront double door	Lever Handle, Barrel Bolt, Door Seals. Cutout: 2105 x 1950
D02	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised w/ NA trims	CCS Clad (Dune)	Lever Entrance Set (AS1428 Compl.) Indicator bolt, Signage (LHS) RP4T & RP95 Door Seals. Cutout: 2085 x 950
D03	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised w/ NA trims	CCS Clad (Dune)	Lever Entrance set, RP4T & RP95 Door Seals. Cutout: 2085 x 950
D04	1	Swing Door	818	0	2040	Aluminium w/ Aluminium trims	Natural Anodised w/ NA trims	CCS Clad (Dune)	Lever Entrance set, Indicator bolt, Signage (Ambulant) RP4T & RP95 Door Seals. Cutout: 2085 x 850
D05	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised w/ NA trims	Internal SC w/ VP (Surfist)	Lever Entrance Set, Cutout: 2085 x 950
D06	1	Swing Door	918	0	2040	Aluminium w/ Aluminium trims	Natural Anodised w/ NA trims	CCS Clad w/ VP (Dune)	Lever Entrance Set, RP4T & RP95 Door Seals. Cutout: 2085 x 950

Manufacturing - Windows								
Tag	Qty.	Style/Type	Size		H	Frame Type	Frame Finish	Glazing
W01	5	Half Slider Window	1075	1800	2100	Aluminium	Natural Anodised	Clear
W02	2	Half Slider Window	1075	1155	2100	Aluminium	Natural Anodised	Clear
W03	3	Half Slider Window	350	755	2350	Aluminium	Black	Obscured

Manufacturing - Rooms			
#	Name	Floor Covering	Skirting
004E	Ambulant Toilet	Flooring, 2.0mm Vinyl, Accolade Safe, Slip Resistant (Sand Grey)	100mm Coveing up wall (Sand Grey)
004D	Disabled Toilet	Flooring, 2.0mm Vinyl, Accolade Safe, Slip Resistant (Sand Grey)	100mm Coveing up wall (Sand Grey)
004H	Managers Office	Carpet Tiles, Supplied & Installed by Ausco Onsite (COL)	D' Mould (Black)
004I	Meeting Room	Carpet Tiles, Supplied & Installed by Ausco Onsite (COL)	D' Mould (Black)
004G	Physio Office	Carpet Tiles, Supplied & Installed by Ausco Onsite (COL)	D' Mould (Black)
004F	Store	Flooring, 2.0mm Vinyl, Armalon, Seamless (Neutral Grey)	D' Mould (Black)

- General Notes & Disclaimers**
- Wall/Ceiling/Roof frames built to Ausco Backbone framing design standards.
 - Building chassis designed to Ausco Standard Chassis drawings.
 - All work must be done in accordance with the relevant Australian/New Zealand Standard(s) and the National Construction Code.
 - Furniture, plumbing, & electrical representations are indicative. Appearance may vary depending on supplier.
 - Loose items to be packed for transport.

Manufactured to Wind Speed: B190
Manufactured in: MSA
Intended Location: Elizabeth SA

Client Approval

Client: City of Playford - Building 03

Approved by:

Company:

Date (dd-mm-yyyy):

Signature:

Engineering Data

Concentrated Floor Load: 0kN

Distributed Floor Load: 0kPa

Lifting Capacity: 0t

X - X	Y - Y
Req'd 0.00 kN	Req'd 0.00 kN
Ach'd 0.00 kN	Ach'd 0.00 kN

Transit Plastic Required - NO

Transit Piping Required - YES

Drawings - Architectural

Sheet	Content	Rev
A-100	Ground Floor Plan	A
A-200	Elevations	A

Preliminary



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Ground Floor Plan (MSA)

Project: Sale: 17.4 x 6.8 x 2.7m
Meeting/Office/Store/WC (B190)

Client: City of Playford - Building 03

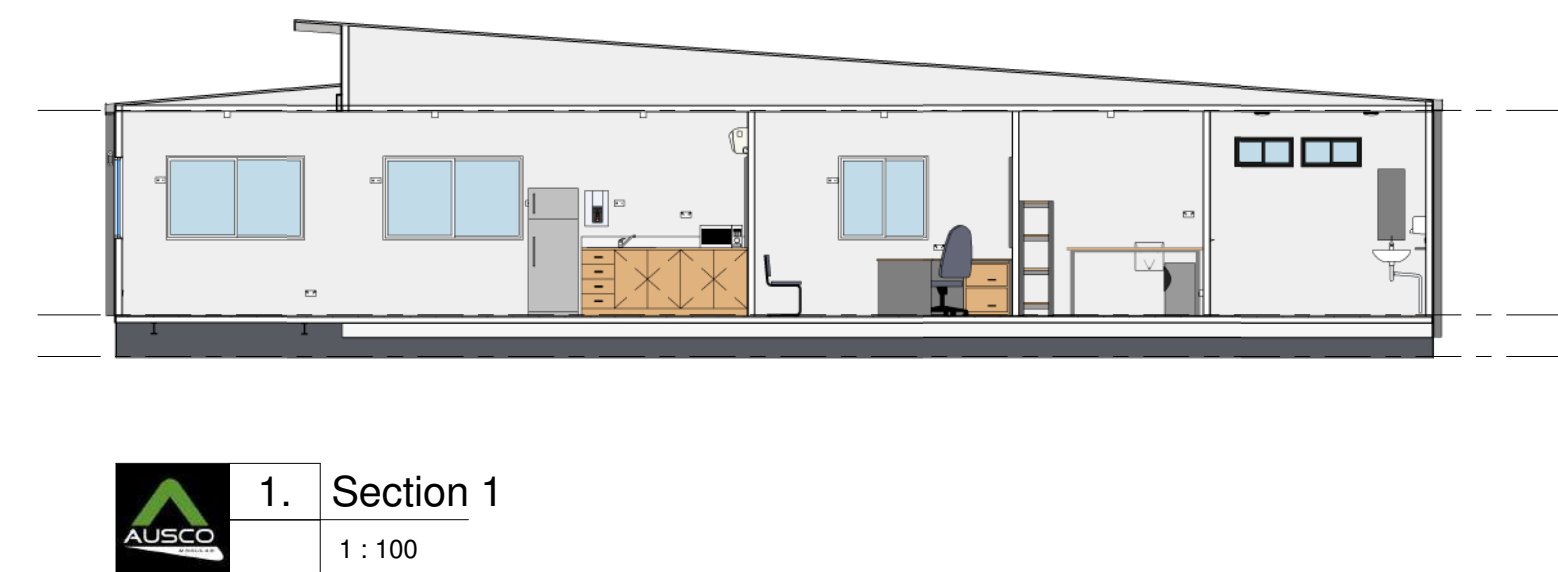
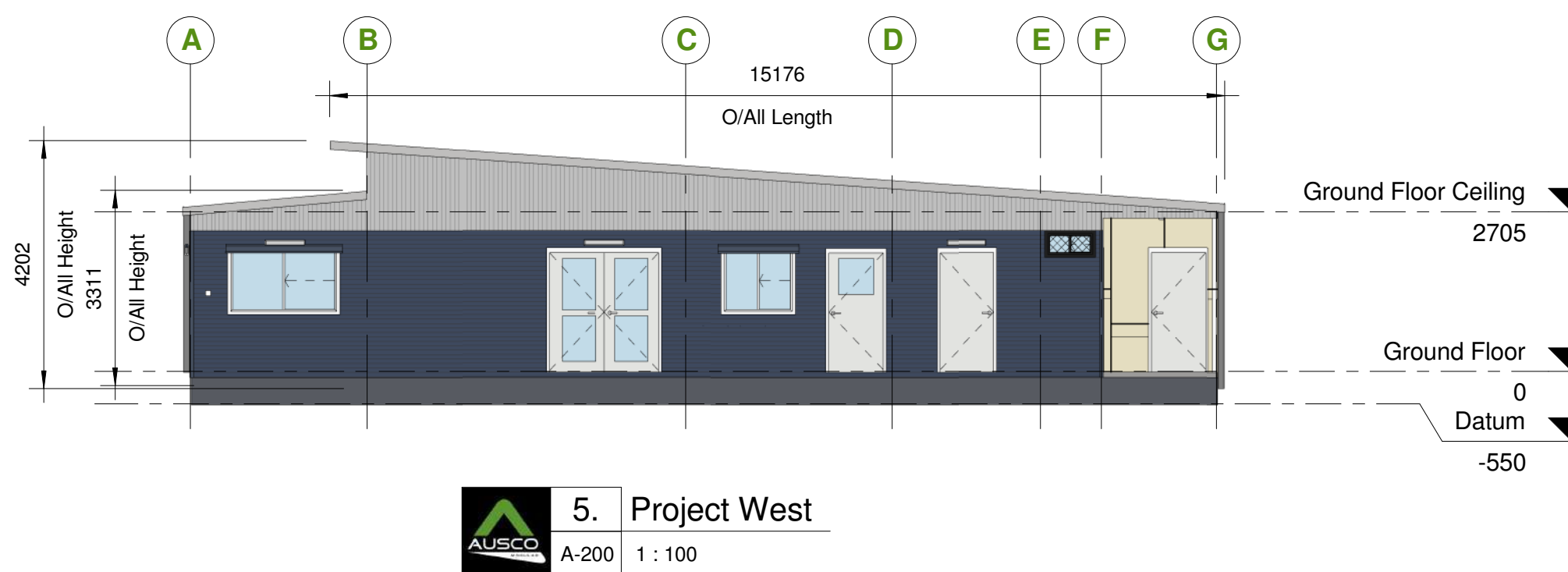
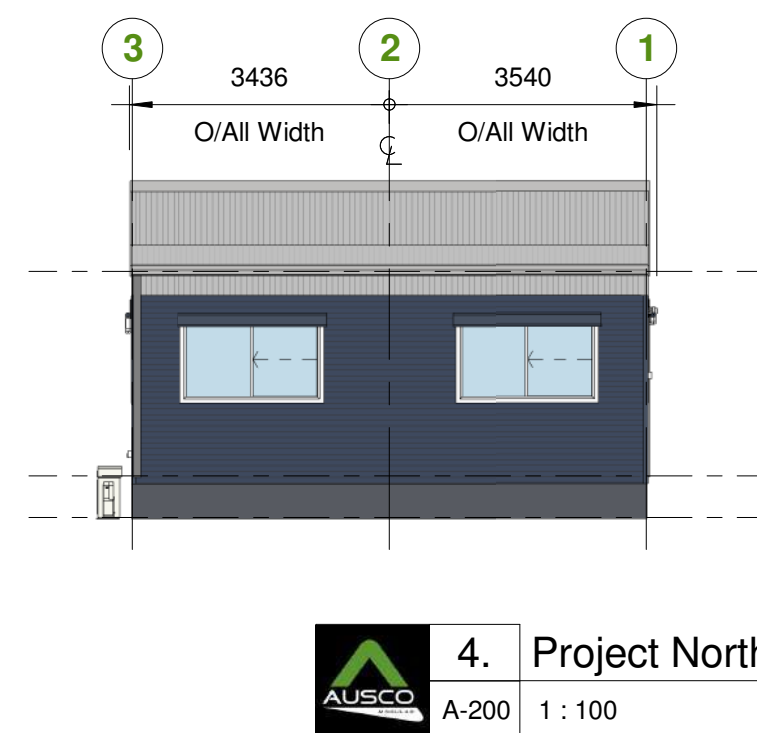
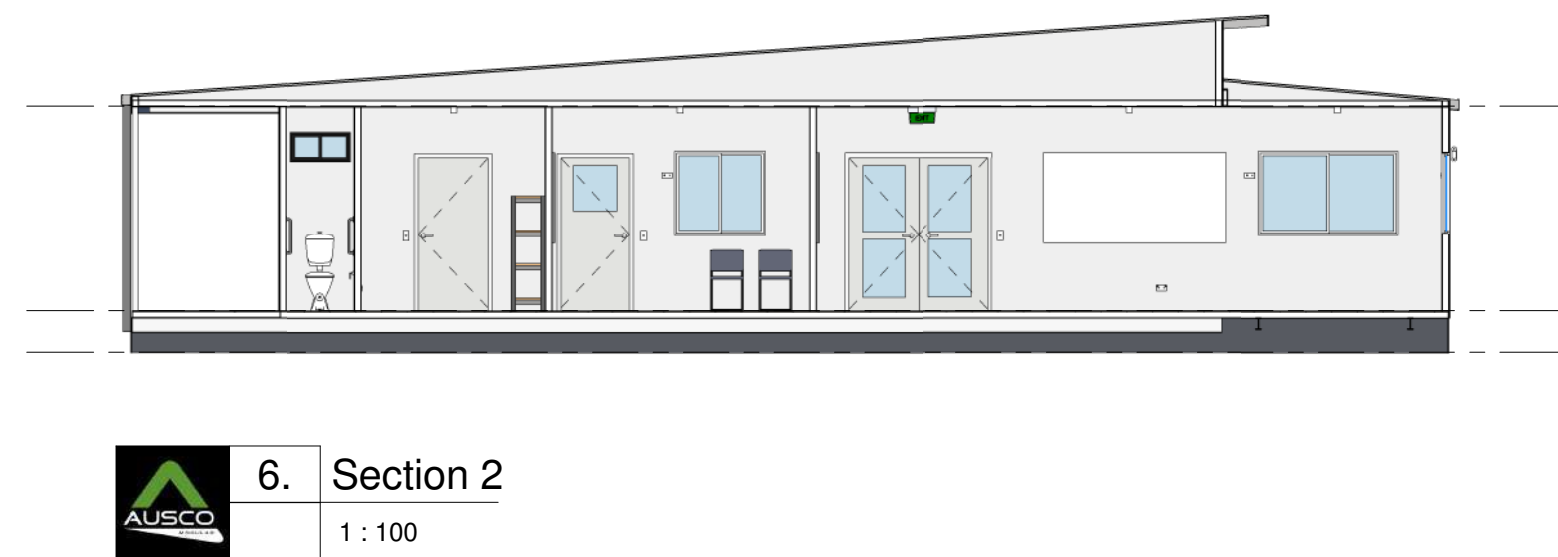
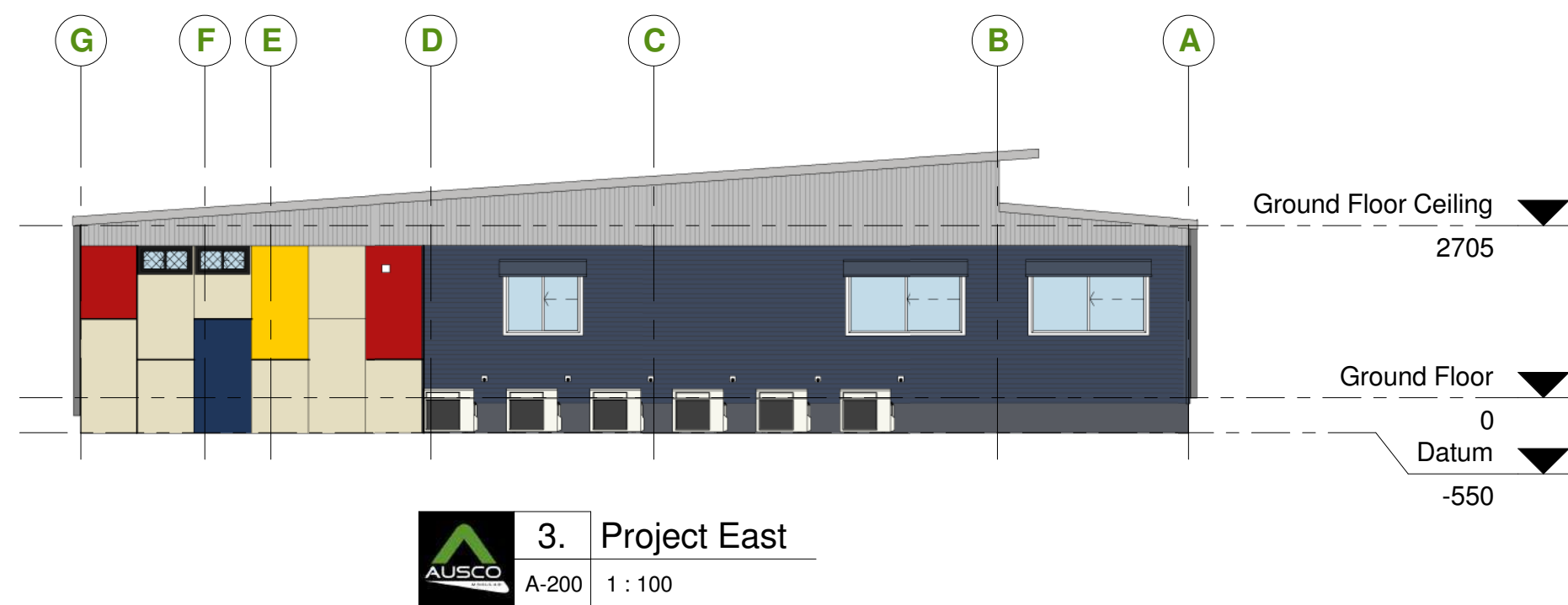
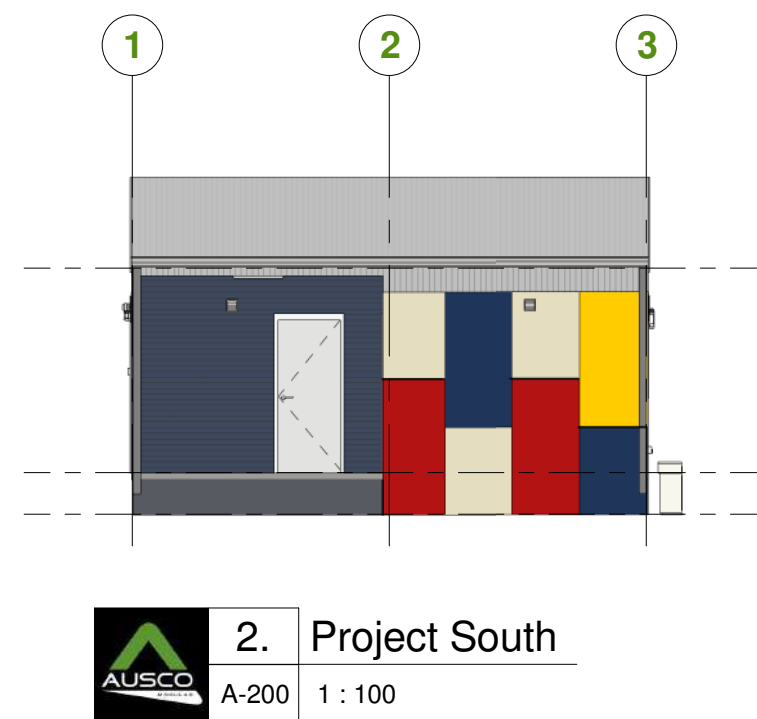
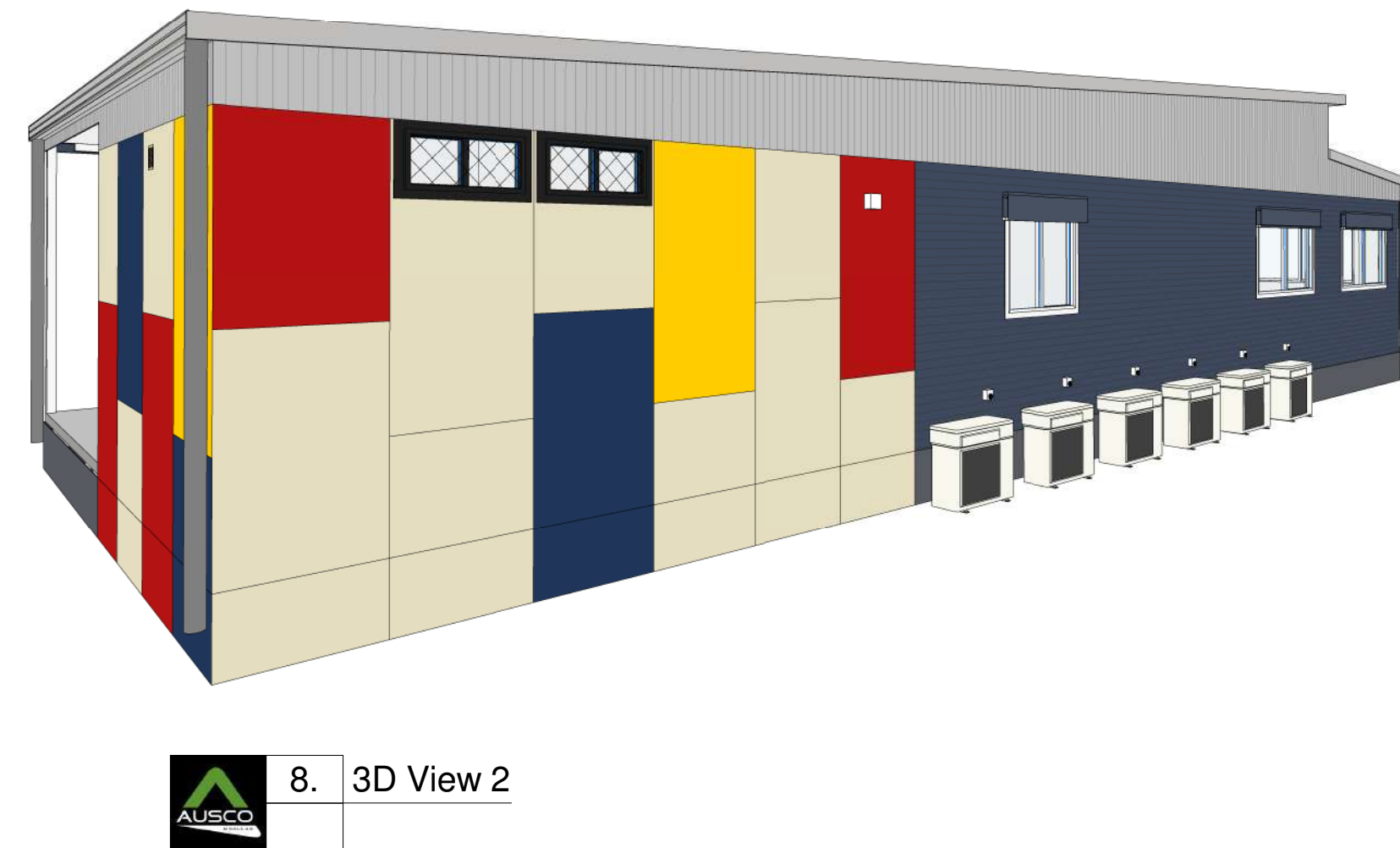
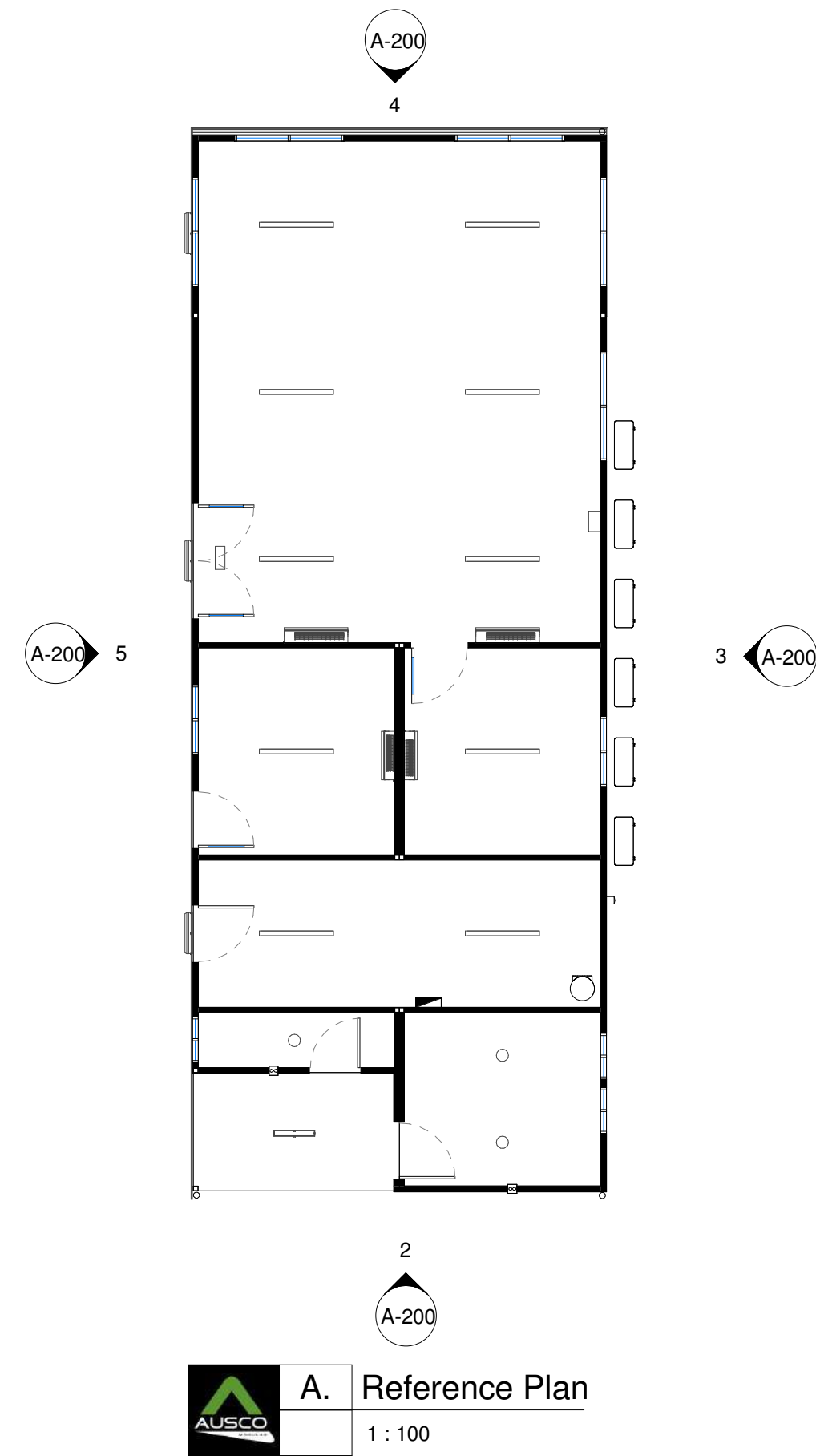
Drawn By: AD
Drawn Date: May 15
Scale: 1 : 50

Checked By: -
Check Date: -
DIMENSIONS ARE IN MM
DO NOT SCALE

Project No: 18248-003
Sheet: A-100
Issue: A

Designed by: Adelaide

28/05/2015 10:11:01 AM



General Notes & Disclaimers

- Wall/Ceiling/Roof frames built to Ausco Backbone framing design standards.
- Building chassis designed to Ausco Standard Chassis drawings.
- All work must be done in accordance with the relevant Australian/New Zealand Standard(s) and the National Construction Code.
- Furniture, plumbing, & electrical representations are indicative. Appearance may vary depending on supplier.
- Loose items to be packed for transport.


Manufactured to Wind Speed: B190
Manufactured in: MSA
Intended Location: Elizabeth SA

Client Approval		
Client:	City of Playford - Building 03	
Approved by:		
Company:		
Date (dd-mm-yyyy):		
Signature:		

Drawings - Architectural		
Sheet	Content	Rev
A-100	Ground Floor Plan	A
A-200	Elevations	A

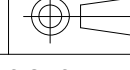
A	Original			As Shown	
05.	Description			Date	By

Preliminary

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MODULAR

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Elevations (MSA)

Project				
Sale: 17.4 x 6.8 x 2.7m Meeting/Office/Store/WC (B190)				
Client				
City of Playford - Building 03				
Drawn By	Drawn Date	Scale	 A1	
-	May 15	1 : 100		
Checked By	Check Date	DIMENSIONS ARE IN MM DO NOT SCALE		
-	-			
Project No.				
		Order No.		
Drawing No.		Sheet		Issue
18248-003		A-200	A	

Designed by: Adelaide

Appendices

APPENDIX C. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN PREPARED BY ZOIC ENVIRONMENTAL PTY LTD DATED 25 MARCH 2019

Construction Environmental Management Plan

Sid Richards Playing Field 3, Majors Bay Reserve,
Concord NSW 2137





City of Canada Bay
25 March 2019

19005



Quality Management

Document Distribution

Issue/Revision	Issue 1
Remarks	Final
Date	25 March 2019
Prepared by	 Graeme Malpass CEnvP-SC
Signature	
Reviewed by	 Peter Moore CEnvP-SC
Signature	
File reference	19005 CEMP (Final) 25Mar19.docx
Distribution	<ul style="list-style-type: none">• City of Canada Bay• Zoic Electronic File

This report was prepared in accordance with the scope of services set out in the contract between Zoic Environmental Pty Ltd, ABN 23 154 745 525, and the client.

Zoic Environmental Pty Ltd
ABN 23 154 745 525
Suite 1, Level 9
189 Kent Street, Sydney 2000
Phone: +61 2 9251 8070
www.zoic.com.au

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4. Environmental Management Activities and Controls	21
5. Monitoring and Review	29
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7. Environmental Control Documentation.....	35
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9. Emergency Plan and Response.....	38
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Appendices

Appendix A	Figures
Appendix B	Environmental Aspects and Impacts List
Appendix C	Weekly Environmental Checklist
Appendix D	Unexpected Finds Protocol Example



1. Introduction

1.1 Background and Scope

Zoic Environmental Pty Ltd (Zoic) was commissioned by City of Canada Bay (CCB) to prepare a Construction Environmental Management Plan (CEMP) for the proposed Synthetic Sports Pitch and Amenities Block (the 'Project') located at Sid Richards Playing Field 3, Majors Bay Reserve, NSW 2137 (the 'site').

From an environmental planning perspective, the Synthetic Sports Pitch (SSP), comprising both a full sized pitch and half sized training field, will be constructed under SEPP (Infrastructure) 2007 and does not require development approval (DA). Due to the proposed change of use, the Amenities Block (AB) will require further approval.

It is understood that the above elements will be constructed in the stages outlined below, however, for completeness both are addressed within this CEMP (Refer to drawings in Appendix A). Therefore, depending on the Project works being undertaken at a particular time only the relevant components of the CEMP need to be implemented:

- Stage 1: Construction of the full sized SSP; and
- Stage 2: Construction of the half sized training field and AB (and associated service trench).

CCB must ensure that the requirements of this Plan are communicated and implemented by the Principal Contractor. This CEMP may be updated, as required, throughout the Project.

This CEMP provides overarching guidance to manage environmental risks associated with the Project. It is understood that the Project will be managed by the Principal Contractor who will be required to communicate necessary requirements to all Employees and Subcontractors, prepare and implement a number of additional Sub Plans to ensure compliance with the CEMP.

1.2 Site Location

The site is located to the west of the intersection between Majors Bay Road and Norman Street in Majors Bay Reserve, Concord.

According to the Canada Bay LEP (2013) Majors Bay Reserve is zoned as RE1 Public Recreation. Land to the north east of the site is designated as a road reserve and is zoned as R2 Low Density Residential. Land to the east is zoned as R2 and R3 Medium Density Residential. Land to the south is zoned as RE2 Private Recreation.

The Project footprint comprises the following:

- Synthetic Sports Pitch (SSP) and half sized training field (HSTF)– approximately 15,640m² for both full and half sized pitches;
- Amenities Building (AB) – approximately 450m²; and
- Services Trench for Amenities Building – approximately 500m² (100m long x 5m wide).

The Project site is legally described as Part Lots 6 in DP217073, 1 in DP327309 and 1 in DP909052.



The location and layout of the site is available in Appendix A, Figures 1 and 2 respectively.

1.3 Proposed Construction Activities

It is understood that the existing grass will be treated with an appropriate herbicide before construction takes place.

The foundation for the SSP (Stage 1), HSTF and AB (Stage 2) will comprise approximately 600mm of compacted planings from Council road renewal works.

The reuse of road planings must be managed in accordance with the requirements outlined in:

- The Recovered Aggregate Order 2014 (Resource Recovery Order (RRO) - to be complied with by the supplier of the material);
- The Recovered Aggregate Exemption 2014 (Resource Recovery Exemption (RRE) 2014 - to be complied with by the user of the material); and
- At the request of EPA, it must also be demonstrated that the asphalt material does not contain coal tar or asbestos.

With the exception of a service trench (ST) (Stage 2) running from the south eastern corner of the AB to an existing Baseball Amenity Building, no excavation of existing site levels is proposed. The depth of the ST has yet to be confirmed but is expected to be 600mm below existing site levels.

It is noted that four existing light poles will be relocated but this will involve the use of displacement piling techniques. Consequently, no cuttings will be generated.

1.4 Operating Hours

Works will be carried out during standard construction hours or as stipulated within any subsequent approvals issued for the Project:

- Monday to Friday 7.00am to 6.00pm; and
- Saturdays 8.00am to 1.00pm.
- No work may be carried out on Sundays or public holidays except in the following cases:
 - By the Police or a public authority for the delivery of vehicles, plant or material; or
 - In an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
 - Where the works are inaudible at the nearest sensitive receivers; or
 - Where a variation is approved in advance in writing by CCB.

Notification of high impact activities or works out of standard construction hours must be notified to key stakeholders and neighbours in advance.

1.5 Environmental Objectives and Targets

The environmental objectives and targets for the Project are in Table 1.1 below.



Table 1.1 Environmental Objectives and Targets

Objective	Target
Effective site environmental controls	Achieve alignment with CCBC expectations in relation to best practice control measures -Fulfil environmental obligations
Environmental Performance	<ul style="list-style-type: none">• Zero environmental incidents and no breaches• Zero infringement notices• All environmental spills to be reported to CCB within 2 hrs of occurrence• Environmental inspection completed each week and documented using an Inspection Checklist (an example is presented in Appendix C). Frequency of documented inspections can increase, if required.
Reduce the amount of environmental impact our operations have on the environment	Environmental issues identified and controlled prior to causing negative impacts on the project or on the environment
Effective implementation of the environmental system	<ul style="list-style-type: none">• 80% or better internal audit results• Full compliance with DA requirements
Community issues carefully handled	Zero valid complaints and all complaints reported to CCB

1.6 Consultation

It is understood that no consultation is required to facilitate the Stage 1: Construction Works.

It is understood that community consultation will be conducted by CCB or their nominated representative prior to commencement of Stage 2: Construction Works.



2. Construction Management

2.1 Environmental Management Structure and Responsibilities

The Project roles and responsibilities are summarised in the following table:

Table 2.1 Project Roles and Responsible Persons

Role	Responsible Person
CCB Project Manager	Andrew Dimitriadis
Construction Manager	Principal Contractor TBA
Project Manager	Principal Contractor TBA
Site Manager	Principal Contractor TBA
Corporate HSE Manager	Principal Contractor TBA
Site HSE Officer	Principal Contractor TBA
Project/Site Engineers	Principal Contractor TBA
Contracts Administrator	Principal Contractor TBA

Specific responsibilities expected under the CEMP are as follows:

CCB Project Manager

- Shall appoint the Principal Contractor to implement the CEMP on behalf of City of Canada Bay.
- Shall ensure that the Principal Contractor has demonstrated appropriate training, experience and competencies to be able to successfully deliver the Project in accordance with this CEMP.
- Shall provide the Principal Contractor with available information and existing documents relevant to the implementation of the CEMP.
- Shall conduct appropriate checks to ensure that the Principal Contractor implements all relevant requirements of the CEMP.

Construction Manager

- Facilitate a systematic approach to managing health, safety and environment (HSE) including the identification, assessment, control and monitoring of related risks that may arise through both normal and adverse operating conditions.
- Check that personnel are adequately skilled and trained for the tasks they are required to undertake.
- Encourage and promote safety by participating and openly consulting with employees in respect to their health and safety.



- Support the HSE Manager in ensuring Project / Site Managers have developed and implement systems, which will ensure Subcontractors and/or Suppliers engaged by the Principal Contractor comply with the health and safety management systems and the relevant work health and safety (WHS) legislation.
- Respond to non-conformance by any Subcontractor, Supplier or Employee who fails to discharge their duties as set by the responsibility statement and actively participate in dispute resolution where required.

Project Manager

- Monitor construction activities against the conditions of approval to evaluate compliance.
- Conducting an Environmental Risk Assessment, reviewing and incorporating legal matters, and any requirements of other documents such as Environmental Impact Assessments (EIA) / Review of Environmental Factors (REF) prepared for the development.
- Identifying, planning and ensuring all environmental training required for personnel is undertaken. This task may be done in liaison with the Corporate HSE Manager.
- Support the Site Manager in the management of employees, sub-contractors, and suppliers' performance in complying with the requirements of this CEMP.
- Selecting appropriate Subcontractors, giving due regard to their ability to comply with legislative and environmental requirements of the Principal Contractor.
- Ensure environmental emergencies are incorporated in the site Emergency Response Procedures.
- Ensuring incidents are investigated and appropriate action taken as required by the Principal Contractors environmental plan requirements in consultation with the Corporate HSE Manager.
- Ensuring compliance with environmental legislation and the Principal Contractors environmental procedures.
- Operate as one of the 24-hour contact person for environmental matters.
- The Project Manager must carry out at least one formal site inspection per month at the site.
- Ensuring compliance with environmental legislation, regulations and licensing conditions, and authorities' requirements relevant to all construction work.
- Reporting to the CCB Project Manager on environmental performance of the Project.

Site Manager

- Unless otherwise nominated, undertaking the role of Site HSE Officer for environmental issues and control of the site. This role is supported by the Project Manager and the Corporate HSE Manager.
- Ensuring site security and site specific signage is fixed to key access, internal and perimeter areas including 24 hour project contact details, attendance details for visitors, personal protective equipment (PPE) requirements and construction zone signage.
- Monitor environmental controls for effectiveness and suitability.
- Implementing through consultation with the Project Manager, the CEMP in accordance with Legislation and Regulations, Codes of Practice, Australian Standards and/or other statutory requirements.



- Implementing and undertaking formal and proactive consultation measures between the Project Team, Subcontractors and Industrial Representatives such as Subcontractor meetings, toolbox talks, site HSE committee meetings and inspections.
- Monitoring Subcontractors compliance with the CEMP in particular to the environmental components of their safe work method statements.
- Identifying any hazards and assessing risks onsite, and implementing risk control measures.
- Liaising with civil or statutory authorities should an onsite emergency situation occur.
- Investigating, recording and reporting incidents and initiating corrective and action plans by relevant personnel. Reporting any serious incident immediately to the CCB Project Manager, Project Manager and Corporate HSE Manager.
- Ensuring that all plant and equipment used on the site is safe, correctly maintained and that the operator is correctly licensed or qualified for that equipment.
- Ensure that all environmental incidents (including spills, failure of sediment controls, water pollution etc.) are reported in accordance with the Incident Reporting and Investigation Procedure.
- Assessing Subcontractors Safe Work Method Statements prior to any work commencing, to ensure environmental requirements are met.

Corporate HSE Manager

- Overseeing the implementation of the integrated HSE management system and the Environmental Management Plans throughout the Principal Contractors activities.
- Ensuring a CEMP is prepared for the project.
- Advise Management and Site teams to any new or revised Act's, Standards, codes of practice (COP) or legal requirements associated or required in conducting the works.
- Setting and reviewing overall environmental targets and allocating priorities within the framework of the HSE management system.
- Planning and facilitating training in environmental management, including arranging for the appropriate internal or external trainers/facilitators to conduct the training.
- Manage collection and reporting of environmental performance data from monthly site reporting.
- Conducting or delegating internal HSE management system and site audits.
- Reviewing internal and external (independent) audit reports, and in consultation with the Directors and the Project Manager - develop appropriate action plans if necessary.
- Assist Project Managers in preparation of Environmental Risk Assessment and determining appropriate controls.
- Communicating relevant environmental information to management, staff and contractors.

Site HSE Officer

- Carry out erosion and sediment control inspections.
- Ensure that a Materials Management Plan (MMP) and Erosion & Sediment Control Plan (ESCP) are prepared and implemented.
- Maintenance of the CEMP including any minor revisions, as required.



- Ensure training/induction of personnel is carried out and that staff operate in an environmentally responsible manner.
- Ensure compliance with Environmental Approvals.
- Operate as one of the 24-hour contact person for environmental matters.
- Report on environmental incidents, liaise with the CCB Project Manager on corrective actions and verify environmental measures.
- Manage the register of environmental complaints and the subsequent corrective measures.
- Undertake and report on all monitoring and inspections completed.
- Monitor construction activities against the conditions of approval to evaluate compliance with the Environmental Management Systems (EMS), including at a minimum weekly site inspections.
- Maintain a register of all environmental management documents for the Project.
- Ensure that the CEMP is established, implemented and maintained in compliance with all Sub Plans, supplementary method statements and DA conditions.
- Overall responsibility for on-site establishment, management, monitoring and maintenance of erosion and sediment controls.
- Carry out regular inspections and auditing of the works to ensure that environmental safeguards are being followed.
- Identifying where environmental measures are not meeting the targets set and where improvement can be achieved.
- Facilitating environmental induction and toolbox talks for all site personnel.
- Specific authority to stop work on any activity where it is considered necessary to prevent environmental non-conformances.

Project/Site Engineers

- Liaise closely with the CCB to ensure environmental considerations contained within this CEMP are incorporated into construction activities.
- Produce SWMS which address environmental requirements.
- Conduct regular checks of the site to ensure environmental controls such as sediment controls and dust suppression are functioning effectively.
- Where engineers are responsible for managing Subcontractors and/or utilities authorities, ensure that any work performed by these external parties meets with the requirements of this CEMP and Sub Plans, including identifying and documenting the environmental risks of the proposed works.
- Report any non-compliance with Erosion and Sediment Control Plans (ESCP) and/or the CEMP to CCB.

Contracts Administrator

- Support the Project and Site Manager in the management of Employee, Subcontractor and Suppliers' performance in complying with the Principal Contractors WHS and the site specific rules for the Project.



- Assist the Project / Site Manager to ensure the CEMP and all Sub Plans associated documentation, including standard forms, procedures and templates; remain current and up to date.
- Include in subcontract agreement the requirement for Subcontractors to carry out their works in accordance with the Companies or Subcontractors approved Environmental Plans.
- At the tender interview stage discuss with the Subcontractors their obligation for managing environmental requirements by issuing to them relevant sections of the tender interview form and ensuring this is completed by Subcontractor prior to commencing on site.
- Request and obtain from the Subcontractor copies of their Environmental Plans.
- Where required, assist the Project / Site Manager in collecting required environmental documentation from engaged Subcontractors, and for conducting initial review ensuring all required documents have been submitted prior to forwarding documentation provided by Subcontractors to the Project / Site Manager for review.
- Ensure that the latest copies of Project Plans and HSE Risk Assessments are uploaded onto an appropriate data control system to which engaged Subcontractors have access.
- Assist the Project / Site Manager in conducting project audits, to report on safety compliance and in the maintenance of environmental records.
- Ensure all external complaint/incidents are recorded on 'Incident Report Form', filed in the 'Complaints Register' and communicated to CCB Project Manager.
- Assist Project / Site Manager in the general administration of HSE where requested.

Employees / Subcontractors

- Must comply with all site HSE rules, procedures and work practices identified in the CEMP, and / or as directed or informed by the Site Manager.
- Attending environmental training / inductions as directed by the Site Manager.
- Complying with all relevant environmental legislation.
- Reporting promptly to a Site Manager of any spills, leaks, potential pollution and / or poor environmental practices.

2.2 Approval and Licencing Requirements

In general, all activities carried out onsite must comply with the provisions of all legislation relating to the construction and operation of the Project.

Key planning legislation requirements are listed in Table 2.2 below.



Table 2.2 List of Legal and Legislative Requirements

Legislation / Policy (Administering Authority)	Summary of Legislation Requirements	Approvals/Permits or Licences Required
Contaminated Land Management Act 1997 (NSW Office of Environment & Heritage (OEH) / CCB Council)	Establishes a process for investigating and, where appropriate, remediating land where contamination presents a risk of harm to human health and/or the environment.	The proposed amenities building (and associated services trench) footprints, must be investigated to demonstrate suitability for a proposed change of use. Waste classification is required to be conducted for material disposed offsite. Where excavated materials are reused as part of the construction of the amenities building (and associated service trench) they must also be demonstrated as being suitable for use and unlikely to pose a significant risk to the environment. No further approvals needed. However, works are to be conducted in accordance with this CEMP to satisfy EPA requirements.
Environmental Planning and Assessment Act 1979	Works must proceed in accordance with the consent provided, including any conditions.	Construction of the SSP will be conducted under SEPP (Infrastructure) 2007 and may proceed without Development Consent. Construction of the AB and associated ST will require Planning Approval. Comply with the requirements of the SEPP (Infrastructure) 2007 and / or Development Consent conditions. Planning approval is required for any changes which are not in accordance with the Development Consent conditions.
Environmental Protection and Biodiversity Conservation Act (1999) (Commonwealth Department of Environment and Water Resources)	The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places – defined in the EPBC Act as Matters of National Environmental Significance (MNES). In addition, the EPBC Act confers jurisdiction over actions that have significant impact on the environment where the actions affect, or are taken on, Commonwealth land, or are carried out by a Commonwealth agency (even if that significant impact is not on one of the nine matters of 'national environmental significance').	There are no known MNES on the site. No requirement for permit or approval identified.
Environmentally Hazardous Chemicals Act 1985 (OEH)	Regulates the disposal of wastes issued with a "chemical control order" and designated chemical and chemical wastes (including asbestos). Disposal requirements for asbestos are identified under the Protection of the Environment Operations Act 1997 (POEO) Other chemical wastes designated under this act are:	Clearance, transport and disposal of designated chemical wastes must be completed under appropriate licences. Chemical wastes designated under this Act to be removed from this site must be transported and disposed of by appropriately licensed waste transport contractors to a facility lawfully able to accept that type of waste.



Legislation / Policy (Administering Authority)	Summary of Legislation Requirements	Approvals/Permits or Licences Required
	<ul style="list-style-type: none">• Aluminium smelter wastes containing fluoride or cyanide• Dioxin contaminated waste materials• Organotin waste materials• Polychlorinated Biphenyl Compounds (PCB)• Scheduled chemical wastes	
Heritage Act 1977 (OEH)	Protects all items of environmental heritage (natural and cultural) in NSW. The Act does not apply to Aboriginal "relics".	The site is not listed as a heritage item.
Local Government Act 1993	Controls environmental impacts including noise, pollution and nuisance not controlled under the POEO Act. Provides for licensing of trade waste discharges, in conjunction with the <i>Liquid Trade Waste Guidelines</i> .	Approval required, as appropriate.
National Parks and Wildlife Act 1974	Provides protection for most fauna species and protected flora. Provides protection for indigenous heritage in NSW. It is an offence: to harm animal which is part of a threatened species, population or ecological community; to pick any plant which is part of a threatened species, population or ecological community. It is also an offence if a person knows that an area of land is the habitat of a threatened species, population or ecological community, to do something or fail to do something that causes damage to that habitat.	There are no threatened species which have been identified. The potential for indigenous artefacts, based on the former site use as landfill, considered low.
Noxious Weeds Act 1993 (NSW Department of Primary Industries)	Provides for the identification, classification and control of noxious weeds in NSW. Applies to the management and disposal of noxious weeds if found and removed during works.	No approvals required.
Protection of the Environment Operations Act 1997 (OEH)	Environment protection licences are required for scheduled activities. Provides for the control of polluting activities in NSW to prevent pollution to the environment. Provides a duty to notify OEH of any environmental harm from site activities. Waste Classification is required prior to the removal of waste (including fill/soil) from a site to establish the appropriate means of disposal.	No requirement for an Environment Protection Licence identified for scheduled activities. However, control measures must be established on site to ensure that there are no uncontrolled discharges to water, sediments or air during the construction works. Waste classification assessment and waste classification certificates (produced by a qualified environmental assessor) are required prior to disposal and are required to accompany all waste soils materials being transported to waste facilities that are licenced by the EPA to accept the respective class of waste.



Legislation / Policy (Administering Authority)	Summary of Legislation Requirements	Approvals/Permits or Licences Required
		Transport contractors must be appropriately licensed to transport the class of waste they are carrying.
		EPA is the appropriate regulatory authority for the works.
Soil Conservation Act 1938 (OEH)	Controls activities causing or likely to cause soil erosion or land degradation. Project activities must prevent soil erosion or land degradation.	No requirements for permit or approval or licence identified.
Threatened Species Conservation Act 1995 (OEH)	This Act protects vulnerable and threatened species, populations and ecological communities.	No requirements for permit or licence identified.
CCB Local Environmental Plan 2013	Provides detailed implementation of development requirements, including where particular types of development are permitted with or without consent. Identifies items of local heritage value and trees which require preservation.	Consideration must be given to the potential to disturb acid sulfate soils when conducting excavations for foundations and services associated with the AB and ST. Whilst the proposal does include the removal of trees, they are not subject to preservation orders and will be replaced with native species as part of proposed landscaping works.
Waste Avoidance and Resource Recovery Act 2001 (OEH)	Promotes the waste management hierarchy (avoidance, resource recovery, and disposal).	No requirement for permit or approval or licence identified. Where possible, excavated material is to be reused onsite.
Waste Management Act 2000 (NSW Office of Water)	Controls water use for excavation activities and in areas of groundwater management.	It is considered unlikely that groundwater will intrude into excavations; however, a temporary licence may be required if excavations require dewatering during works.

Notwithstanding the above, all environmental investigation or waste classification works must be conducted in accordance with guidelines made or endorsed by Environmental Protection Authority (EPA) under Section 105 of the CLM Act 1997.

It is also understood that any works will be managed in accordance with CCB's policies and procedures.

Work which involves removal of asbestos containing material may require the presence of a licenced asbestos removalist in accordance with the Safe Work Australia (2011) How to Safely Remove Asbestos Code of Practice and Safe Work Australia (2011) How to Manage and Control Asbestos in the Workplace. A licenced asbestos removalist must notify SafeWork NSW in writing at least five days before licenced asbestos removal work commences.



This CEMP has been prepared in accordance with the relevant legislation and industry standards, with particular reference to the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR) Guideline for the Preparation of Environmental Management Plans (2004).



3. Site Condition and Environmental Setting

3.1 Site Identification

The site location is shown on Figure 1, Appendix A. The project site identification and land use details are provided in Table 3.1.

Table 3.1 Site Identification

Title	Details
Street Address	Majors Bay Reserve, Norman Street, Concord NSW 2137
Current Description	Part of Lot 1 DP909052, Lot 1 DP327309 and Lot 6 DP217073
Proposed Development	Construction of a full sized synthetic soccer pitch (Stage 1) and half sized training field with associated amenities building and service trench (Stage 2). Refer to Figures in Appendix A
Site Ownership	Crown / City of Canada Bay
Property Size	The Project footprint comprises the following: <ul style="list-style-type: none">• Synthetic Sports Pitch (SSP) and half sized training field (HSTF) – approximately 15,640m²• Amenities Building (AB) – approximately 450m²• Services Trench (ST) for Amenities Building – approximately 500m² (100m long x 5m wide)
Local Government Area	City of Canada Bay
Zoning	RE1 Public Recreation LEP 2013

3.2 Surrounding Land Use and Sensitive Environments

The site is located at the eastern edge of Majors Bay Reserve. Immediately adjoining land uses are described as follows:

Table 3.2 Site Surrounds

Direction	Details
North:	Majors Bay Reserve beyond which lies Majors Bay
East:	Norman Street beyond which lies residential properties
South:	Norman Street beyond which lies Concord Golf Club
West:	Majors Bay Reserve beyond which lies Concord RSL

3.3 Previous Investigation Works

The following previous environmental investigations were conducted at the site:

- Geotechnique Pty Limited (Geotechnique) (8 October 2015) Geotechnical Investigation (GI), Majors Bay Reserve, Sid Richards Playing Fields, Norman Street, Concord (Ref: 13537/1-AA-R1);



- Milestone (Aust) Pty Limited (Milestone) (4 April 2016) Statement of Environmental Effects (SEE) Provision for a Single Additional Outdoor Playing Field and Upgrade of Outdoor Light Poles and Floodlighting at Sid Richards Playing Fields, Majors Bay Reserve, Concord; and
- Zoic (August 2016) Targeted Stage 2 Soil Investigation (TSI) for Lighting Upgrade Project, Majors Bay Reserve, Nullawarra Avenue, Concord NSW (Ref: Z16023).

The following table provides a summary of the previous investigation reports:

Table 3.3 Summary of Previous Investigation Reports

Report	Summary (Objectives, Scope of Work, Key Findings)
Geotechnique (2015) GI	<p>The GI was conducted across a wider area that included the Project site.</p> <p>The objective of the GI was to determine subsurface conditions and geotechnical recommendations to facilitate design of footings for the proposed lighting upgrade.</p> <p>The scope of works comprised:</p> <ul style="list-style-type: none">• Reviewing available geological information relevant to the proposed development site.• Carrying out a walk over survey to assess existing site conditions.• Services search and scanning for buried services by a specialist subcontractor• Drilling nine boreholes (BH1 to BH9) using a track mounted drilling rig. Boreholes were drilled to depths ranging from 4.2m to 7.2m.• Preparation of engineering borehole logs.• Conducting Standard Penetration Test (SPT) in the boreholes to assess strength characteristics of sub-surface soils.• Excavating one test pit adjacent to the existing pole to assess type of footing and bearing material.• Recovering representative soil samples for visual assessment and laboratory geotechnical tests.• Measuring depths to groundwater level or seepage in the boreholes, where encountered. <p>The key findings of the GI in relation to this Project can be summarised as follows:</p> <ul style="list-style-type: none">• Fill thickness varied between 2.3 and 5m, and comprised silty clay, medium plasticity, brown, black, with fine to coarse grained sandstone gravel, cobbles, boulders, pieces of timber, plastic etc sandy silt, low plasticity, black, with fine to coarse grained gravel. 'Rubbish' was noted in the logs.• Natural ground comprised Clayey Sand, medium grained, grey-brown Sandy Clay, medium plasticity, brown, mottled yellow, with fine grained, sandstone gravel.• Weathered medium grained sandstone bedrock was encountered in three boreholes between 4 and 5mbgl.• The deepest fill was encountered in the northern part of the site, closest to Majors Bay (i.e. off site), with fill thickness reducing to 2.3mbgl towards the south close to Norman Street (i.e. on site).• Geotechnique concluded that the fill was likely to extend across Majors Bay Reserve and compaction was variable.• Groundwater was encountered in most boreholes between 1.5m bgl (in the north) and 3.9m bgl (at the southern edge of the Oval). Groundwater was encountered mostly in the fill profile or at the fill and natural interface.• A review of borehole logs indicates that a PID was used to screen samples for volatiles with most readings <5ppm, and all readings <20ppm.
Milestone (2016) SEE	<p>The SEE was prepared to support a DA for provision of a single additional outdoor playing field and an upgrade of light poles and floodlighting at Sid Richards playing fields (a larger area which included the Project site).</p> <p>The SEE provided:</p> <ul style="list-style-type: none">• An overview of the site and its context;• A detailed description of the proposed development;



Report

Summary (Objectives, Scope of Work, Key Findings)

- The planning framework; and
- An environmental assessment of the development.

The key findings of the SEE in relation to this Project can be summarised as follows:

- Threatened Species Conservation Act 1995: No requirements identified;
- CLM Act 1997: Section 35 Unhealthy Building Land "Contaminated by the prescribed activity of the disposal of chemical wastes, namely wastes, suspected of being dioxin contaminated, from the manufacture of pesticides";
- POEO Act 1997: No significant disturbance of the aforementioned wastes was proposed;
- Waste Avoidance and Resource Recovery Act 2001: Waste Management Plan (to be included in the Materials Management Plan) to be prepared and implemented for the works;
- SEPP (Infrastructure) 2007: Although not technically required, development consent was sought being the subject of the SEE;
- SEPP55 Remediation of Land: Proposals were not considered to alter previous conclusions regarding contamination at the site. A report prepared by Geotechnique (2015) concluded that the site is suitable for the proposed Lighting Upgrade Works subject to geotechnical recommendations made;
- SEPP (Sydney Harbour Catchment) 2005: Triggered the need for consideration under Part 4 of the EP&A Act 1979;
- Canada Bay Local Environmental Plan 2013: The Proposed Lighting Upgrade met the requirements for zoning and permissibility. No significant impacts in relation to height, heritage, terrestrial biodiversity or acid sulfate soils were identified;
- Canada Bay Development Control Plan 2013: No significant impacts were identified;
- EP&A Act 1979: Recommendations provided to manage Visual / Acoustic Amenities and requirement for Construction Management Plan (traffic, transport). No significant impacts identified with respect to heritage and socio economics; and
- EP&A Act 1979: The proposed land use was considered to be suitable for the site.

Zoic (2016) TSI

The TSI was conducted across a wider area which included the Project site.

The TSI had the following objectives:

- Satisfy Development Consent Condition DACCA03 regarding Investigation for Potential Contamination;
- Assess fill / soil conditions likely to be encountered during the future lighting upgrade works; and
- If contamination is identified, outline control and management measures to be implemented during the completion of the works such that disturbance and migration of soils is limited and to ensure the safety of workers and future users of the site.

The scope of work comprised:

- Drilling at 18 boreholes with a solid flight auger, targeting soils likely to be disturbed during upgrade works. Samples were collected from fill material;
- Laboratory Analysis of selected samples for contaminants of concern including total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorine pesticides (OCP), heavy metals, asbestos and dioxins;
- Selected testing of two samples for suspension peroxide oxidation combined acidity and sulfate (SPOCAS) to evaluate the potential for Acid Sulfate Soils;
- Assessment of results against NSW EPA endorsed human health criteria for open space/parkland (NEPM HIL Residential C, NEPM HSL Recreational/Open Space C (2013)), ecological protection guidelines for urban parks (NEPM ESL/EIL Urban Residential and Public Open Space (2013)); and
- Reporting of findings with recommendations in accordance with the NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites.

The key findings of the TSI in relation to the Project can be summarised as follows:



Report

Summary (Objectives, Scope of Work, Key Findings)

- Majors Bay Reserve has been extensively filled with material of unknown origin. Historical information indicated that dioxin-contaminated materials could have been used as filling at the site;
- BH3, 4, 5, 6, 14, 15 and 16 were formed in the vicinity of the proposed Synthetic Sports Pitch;
- Ground conditions comprised sandy clay or clayey sand with rubbish throughout to a maximum proven depth of 2m bgl;
- Elevated concentrations of total petroleum hydrocarbons, polycyclic aromatic hydrocarbons and some heavy metals were recorded in the fill materials
- Asbestos was observed locally within the fill materials, testing confirmed the presence of both non friable and friable forms of asbestos
- Concentrations of dioxins (composite samples BH1 / BH2 and BH9/BH10 which lie outside the Project site) were identified above background concentrations, confirming that dioxin-contaminated wastes were likely to have been used as fill at the site. However, concentrations are significantly lower than those that would be expected to pose a risk to human health;
- Acid sulfate soils may be present in deeper natural soils underlying the fill materials; and
- Volatile contaminants were not identified at elevated concentrations in soil.

3.4 Site History and Environmental Setting

This information has been sourced from the reports listed in Section 3.3 above and supplemented by publically available information.

Table 3.4 Summary of Site History and Environmental Setting

Item	Details
Summary of Aerial Photographs (both on and offsite):	<p>Based on the review of historical photos, Majors Bay Reserve has been highly modified by historical filling of low lying swampland to allow urban and recreational uses.</p> <p>Historical aerial photos for Majors Bay Reserve, which includes the site, indicated the following:</p> <ul style="list-style-type: none"> • 1933 – Majors Bay Reserve was densely vegetated land, which appeared to comprise mangroves. The Concord Golf Course and Dame Edith Walker Hospital were present. Surrounding properties appeared to predominantly comprise low density residential, or vacant land, with the Mortlake Gasworks present 500m to the east at Breakfast Point. • 1943 – Less vegetated than the 1933 photo, possibly indicating minor filling activities. Dirt tracks across Majors Bay Reserve. Norman Street appears as a dirt road, with Nullawarra Avenue an established road. Residential dwellings starting to occupy land to the east and north. • 1951 – The southern portion of Majors Bay Reserve appeared heavily vegetated, with the northern portion appearing as bare ground. Norman Street is an established road. A track is present west of the land now occupied by Concord RSL and Community Centre, running off Nullawarra Avenue. • 1961 – Quality of image poor, but indicates disturbance along the foreshore of Majors Bay and redevelopment of former low lying land for commercial/industrial purposes. • 1981 – Defined foreshore with the Bay, established grassed, levelled land with very little established/mature trees. Concord RSL and community centre present west of Majors Bay Reserve.



Item	Details
	<ul style="list-style-type: none">• 1985 and 1986 – Established recreational facility with defined oval and sporting fields. Scattered vegetation.• 1994 – No change since 1985 image, established recreational facility and vegetated foreshore.• 2009 to current – No change since 1994, established recreational facility with vegetated areas and foreshore.
NSW EPA Records	<p>A search of the POEO public register did not indicate any environment protection licences, licence applications or notices issued under the POEO Act or pollution studies or reduction programs for the site.</p> <p>A search of NSW EPA contaminated land public register indicated the following:</p> <ul style="list-style-type: none">• Two notices issued under Section 35 of the Environmentally Hazardous Chemicals (EHC) Act 1985 issued by the State Pollution Control Commission (SPCC) (now EPA).• Former Notice 107 (dated 20 August 1987) indicates that for any works that would disturb land below 0.5m depth approval from SPCC is required. The notice states that the land has become contaminated by the disposal of dioxin-contaminated waste materials during the period of 1949 to 1971. This notice operated for 12 months.• Current Notice 121 (dated 10 February 1989) indicates that the 'premises' is 'contaminated by the prescribed activity of the disposal of chemical wastes, namely wastes, suspected of being dioxin contaminated from the manufacture of pesticides; and deemed to be contaminated by reason of their being environmentally degraded.' The Notice requires that any work (be it reducing contamination, restoration or rehabilitation or removing/disposing of soil, rock, sand, water etc) disturbing land below a depth of 0.5m requires approval from the SPCC. <p>Correspondence from EPA dated 11 January 2019 states that the Notice issued under Section 35 of the EHC Act 1995 is continued in force under Schedule 2 of the CLM Act 1997.</p> <p>The EPA stated that excavation below 0.5m depth can occur providing the following requirements are met:</p> <ul style="list-style-type: none">• Works are conducted in accordance with a CEMP to be prepared, or reviewed and approved, by a certified consultant.• Include the classification of excavated material (identified for offsite disposal) in accordance with current EPA guidance, included analysis of dioxins.• Ensure any proposed reuse of excavated material onsite is appropriate in terms of potential risk to human health and the environment posed by residual contamination.• Ensure appropriate public and work health and safety practices are implemented. <p>The EPA intends to review the regulation of the site under the EHC Act 1995 / CLM Act 1997. Options include reassessing contamination at the site under s12 of the CLM Act and/or issuing a notice under s28 of the CLM Act for ongoing maintenance of the land (s28 notices can be issued to the owner or occupier of the land).</p>
Additional Information	<p>Milestone (2015) SEE stated that, based on their searches, there are no Indigenous or European heritage items located onsite. The site is not located on or within proximity to any Conservation Area.</p>
Geology and Soil Map Conditions:	<p>Geological Map of Sydney (scale 1:100,000) indicates that the subsurface profile across the site includes manmade fill comprising dredged estuarine sand and mud, demolition rubble, industrial and household waste.</p>



Item	Details
	Reference to the Soil Landscape Map of Sydney (scale 1:100,000) indicates that the landscape at the site has been extensively disturbed by human activities, including complete disturbance, removal or burial of natural soil with variable relief and slopes (Geotechnique 2015).
Acid Sulfate Soils:	<p>The NSW Natural Resources Atlas for Prospect/Parramatta River, Acid Sulfate Soil Risk Map 1:25,000 (1992) indicates that the site is located on 'Disturbed terrain'. Disturbed terrain includes filled land as part of reclamation of low lying swampland for urban development. Investigations are required to determine potential for ASS.</p> <p>Land further south west (occupied by Nirranda, Mepunga and Yaralla streets), is identified as having a low probability of ASS at depths >3m below surface.</p> <p>Review of Council's LEP 2013, indicates that the site is Class 2 ASS. This requires development consent where works will occur below the natural ground surface, and where works result in the lowering of the water table.</p>
Location of Fill Materials:	<p>Investigation works conducted by Geotechnique (2015) and Zoic (2016), as summarised in Section 3.3, stated that fill of variable thickness occurs across the site as a whole.</p> <p>This includes material described as 'rubbish' and silty clay, medium plasticity, brown, black, with fine to coarse grained sandstone gravel, cobbles, boulders.</p>
Summary of Registered Bores:	<p>In 2016, Zoic carried out a search of Department of Primary Industries Office of Water for registered wells in the vicinity of the site.</p> <p>The search indicated that there was one registered well within a 500m radius of the site. This well is installed to a depth of 90m bgl, and is located on the golf course, across Norman Street. The water bearing zone targeted is within sandstone. The bore is most likely for irrigation purposes. It is noted on the drillers log that 'clay rubbish' was identified in the upper profile.</p> <p>Based on Zoic's experience with the general area, there are other sites along the Mortlake peninsula that have monitoring wells installed, however, the purpose is for monitoring rather than for any beneficial use. Shallow groundwater is saline in the region.</p>
Depth to Groundwater:	Based on the geotechnical investigation (Geotechnique, 2015), perched groundwater was encountered in fill material between 1.5m bgl in the north, and 3.9m bgl in the central part of Majors Bay Reserve.
Direction and Rate of Groundwater Flow:	Groundwater is expected to flow in a north easterly direction towards Majors Bay, which lies approximately 100m beyond the site boundary. Groundwater may be tidally influenced.
Direction of Surface Run Off:	Surface water is expected to follow the topography and internal drainage lines for Majors Bay Reserve. It is likely that the site drains towards Nullawarra Avenue, Norman Street (south west and south east respectively) and also towards Majors Bay (in the north).

3.5 Potential Extent of Contamination

Reference should be made to the information presented in the existing reports for further detail, however, contamination at the site can be summarised in sections 3.5.1 to 3.5.3 inclusive.

During construction activities that involve excavation below the existing grassed site surface it is possible that workers may come into contact with the potentially contaminated media detailed below.

Management of future below ground works (and the associated environmental and health & safety risks) should take into consideration the information presented in this CEMP.



3.5.1 Potential Sources and Types of Contamination

Based on the review of site history, environmental setting and considering the proposed works, the potential source of contamination and associated contaminants of concern is as follows:

- Uncontrolled and historically placed fill present across the site ranging in thickness between 2.3m and 5m;
- Fill material is variable and contains waste material (referred to as rubbish). EPA records indicates that suspected dioxin impacted fill placed in the area;
- Contaminants of potential concern (COPC) include:
 - Heavy metals;
 - Total petroleum hydrocarbons (TPH);
 - Volatile organic hydrocarbons (VOC including BTEX)
 - Asbestos;
 - Dioxin;
 - Polycyclic aromatic hydrocarbons (PAH);
 - Polychlorinated biphenyls (PCB);
 - Organochlorine pesticides (OCP). (Organophosphate pesticides (OPP) are unlikely due to historical fill activities (>30 years) and OPP typically degrade within 24 months);
- Given the uncontrolled nature of filling, a potential exists for hazardous ground gases (including methane, carbon dioxide, carbon monoxide and hydrogen sulphide) to be present;
- Potential for acid sulfate soils at depth if natural ground under the water table, is disturbed, and brought to surface allowing for oxidation. A review of the Geotechnique (2015) logs indicate that ASS, if present, would occur >2mbgl.

3.5.2 Potential Migration Pathways

The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (i.e. solid / liquid and mobility characteristics);
- The extent of the contaminants (i.e. isolated or widespread);
- The location of the contaminants (i.e. on the site surface or at depth); and
- The topography, geology, hydrology and hydrogeology at the site.

Based on the information available to date, the following migration pathways may be associated with the site:

- If shallow fill is disturbed during the Project, workers and general public could be exposed to COPC identified above.
- If spoil generated is not removed from the site, or sufficiently remediated, capped or managed, there could be ongoing migration resulting in surface impact and runoff potentially causing a risk to human health and the environment.
- If volatile vapours or hazardous ground gases are identified, these may pose a potential risk to workers and the general public during construction and / or in the future.



However, in the context of the proposed works, the location and extent of potential disturbance of fill is likely to be minimal (as described in Sections 1.2 and 1.3), with works requiring reinstatement of any disturbed ground rendering it safe for continued public recreational use.

3.5.3 Potential Receptors

Potential receptors to COPC that may be present include the following:

- Construction workers on the site during the Project works;
- Recreational users of Majors Bay Reserve during the Project works;
- Future users of the site; and
- Future maintenance workers that may need to access service trenches;

Majors Bay lies approximately 100m beyond the northern site boundary at its closest point, however, if excavated soils are managed in accordance with this CEMP they are considered unlikely to adversely affect the surface water quality.

The closest residential receptor lies approximately 30m beyond the north eastern site boundary at its closest point. However, excavation works for the AB and ST lies at least 150m distance from this receptor and are considered unlikely to pose a significant risk if managed in accordance with this CEMP.



4. Environmental Management Activities and Controls

4.1 Impact Identification

A list of Environmental Aspect and Impacts has been prepared for the Project works and is available in Appendix B. The list outlines the anticipated major environmental aspects associated with the proposed works which have the potential to impact the surrounding environment. The list contains a risk assessment based approach to the risks identified, describes mitigation and management measures, and provides a residual risk rating based on implementation of the management measures. Upon identification of additional potential impacts, these documents will need to be updated accordingly.

4.2 Control Measures

Control measures to be implemented to address identified potential effects are included in the Project's Environmental Aspects and Impacts and Environmental Weekly Checklist (Appendix C). Relevant procedures will be followed by implementing the required control measures.

Specific requirements and all reasonable practical steps to reduce impacts regarding erosion and sediment, stockpiles, groundwater, contamination, waste, traffic, noise and vibration, flora and fauna, air quality, acid sulfate soils, asbestos, Aboriginal and non-Aboriginal heritage items, and external lighting are addressed in the following sections and the Environmental Aspects and Impacts list (Appendix B).

4.2.1 Erosion and Sediment Control

The Principal Contractor and Subcontractors must plan and carry out works to avoid erosion and prevent sediment leaving the site to the surrounding land, watercourses, water bodies, wetlands, and stormwater drainage systems. This includes the installation of erosion and sedimentation controls prior to commencing works. Where possible, works shall be staged to reduce the areas cleared at the time to minimise soil disturbance.

The construction zone of the site comprises of predominately grassed areas. As work progresses the ground surface and excavated material will be exposed to rainfall and flows. It is important to manage flows on site so that sediment laden water is not mobilised into existing or temporary stormwater drains or channels.

An Erosion and Sediment Control Plan (ESCP) must be prepared by the Principal Contractor prior to commencement of works. It is to be available at the site, and shall be communicated to all Project staff during induction processes.

The ESCP must identify specific site measures that control water quantity and reduce the potential for soil erosion, land degradation and impacts on water quality within the construction zone, including typical measures as follows:

- Silt fences to prevent sediment from entering adjoining land.
- Stormwater inlet filters comprising of gravel filled wire mesh or geotextile 'sausage'
- Geotextile pit filters and / or geotextile filter pit surrounds will maintain stormwater quality by preventing sediment from entering stormwater pits.



- Temporary construction vehicle exit providing a stabilised site access point comprising of a berm and timber or metal sleepers underlain by a gravel bed followed by geotextile fabric.
- The removal of mud from the wheels and bodies of plant and vehicles before it enters public roads or other sealed pavements. This could be rumble grids, dry brushing, wheel wash etc. depending on the nature and conditions of the site.
- The removal of mud or dirt spilt by construction equipment on to public roads or other sealed pavements.

The controls shall be inspected and approved by the Site HSE Officer prior to the commencement of works. The controls shall be maintained in good working order and inspected daily to ensure they are effective in controlling erosion and sedimentation. Accumulated sediment shall be removed and disposed of regularly, i.e. weekly and after rain events.

Works shall be undertaken in accordance with this Plan and be subject to review / update by the Project Manager as works progress (the ESCP is to be considered a working document). Specific details such as the sizing of diversion channels must be confirmed by the Principal Contractor prior to commencing works.

To further protect water quality, additional actions have been outlined in Appendix B.

A weekly checklist to be completed by the Site Manager is provided in Appendix C.

4.2.2 Soil and Stockpile Management

Where storage of material is required, stockpiles should be kept to a maximum of 2m in height and be situated in area of the site of relatively level ground with no intercepting surface water flow paths. Stockpiles are to be 2m clear of drainage lines, natural water courses and established trees. Stockpiles are to have temporary silt fences in place around the stockpiles to create an enclosure and if necessary they will be covered with a shade cloth or tarpaulin to retain the materials on the stockpile.

A Materials Management Plan (MMP) must be prepared by the Principal Contractor prior to commencement of works to document the handling, temporary storage, environmental controls and final emplacement requirements of excavated and imported materials. It is to be available at the site and will be communicated to all Project staff during induction processes.

The MMP must identify appropriate controls and requirements to ensure that road aggregate importation and reuse are compliant with The Recovered Aggregate Order (RAO) and Recovered Aggregate Exemptions (RAE) 2014. Some key considerations include:

RRO (Responsibility of the Generator)

- Section 1.1 states that the RRO does not apply if the asphalt is found to contain Coal Tar
- Section 4.1 requires preparation of a Sampling Analysis and Quality Plan (SAQP) to facilitate sampling and testing in accordance with the frequencies specified in Section 4.2 (generated by continuous process) and 4.3 (generated as one off batches), as appropriate. Requirements around data quality and interpretation of the results are also present. A procedure for describing the material must also be included to demonstrate compliance with Section 1.2 of the RRE (see below).



- Each sample must be analysed for 8 heavy metals, electrical conductivity, NSW Roads & Traffic Authority Test T276 Foreign Materials (includes metal, plaster, rubber, plastic, paper, cloth, paint, wood and other vegetable matter) as outlined in Table 1. Test methods must be in accordance with Sections 4.6 and 4.7.
- To meet EPA requirements, in addition to the above parameters, asbestos and coal tar must also be analysed.
- In relation to the above point, written confirmation should be sought from the EPA regarding what test methods and detection limits they would accept for asbestos and coal tar analysis as these are not specified in the RRO. This is particularly important for coal tar as any detection above this approved level will negate the reuse of the asphalt for CCB purposes.
- Sample results must meet the requirements outlined in Section 4.4 and 4.5
- Section 4.8 requires that a written statement of compliance must be supplied for each sampling event.
- Sections 4.9-4.11 require that the specified documentation / information must be kept for 6 years. EPA must be notified within 7 days after becoming aware of any contravention with Sections 4.1-4.7 of the RRO.

RRE (Responsibility of the Consumer)

- Section 1.1 states that the exemption applies to recovered aggregate that is intended to be applied to land for road making activities, building, landscaping and construction works.
- Section 1.2 states that recovered aggregate is material comprising concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory bricks associated materials or asphalt that contains coal tar.
- Section 7.1 states that the exemption only applies if, at the time the materials are delivered to the receiving site, all requirements of the RRO have been met.
- Section 7.2 outlines under what uses the exemption applies and also lists specific applications which are not permissible.
- Sections 7.3-7.5 requires that appropriate records are collected, supplied to EPA on request and that the material is used within a reasonable period after its receipt.
- Written confirmation should be sought from the EPA regarding what they consider to be a reasonable period of use after receipt of the material on site as this will be important when planning quantities to import to site and how long they can be stockpiled before application to land.

4.2.3 Groundwater

Proposed excavations only extend to 600mm below the existing site surface and are considered unlikely to encounter groundwater.

4.2.4 Contamination Management

No below ground excavation of the current playing field surface shall take place within the proposed footprint of the SSP. Consequently, no excavation into the underlying contamination (refer to Section 3 above) is anticipated.

With respect to SEPP 55 (1998) Remediation of Land, the use of the land as a playing field is currently suitable for the site and the proposed development of the SSP does not involve a change of use therefore contamination investigation is not considered to be required.



Below ground excavation is only required for proposed services associated with the AB and ST to a maximum depth of 600mm below existing levels. A change of use is proposed and further approval will also be required. In accordance with SEPP 55 (1998) Remediation of Land, a contamination investigation shall be required in these areas of the Project site.

In support of this further approval, the Principal Contractor must appoint a suitably qualified and experienced environmental consultant (i.e. Certified Environmental Practitioner – Soil Contamination or similar) to conduct testing for the proposed Amenity Building and associated Service Trench to confirm site suitability and waste management requirements. Key considerations for the investigation shall include:

- Combined PSI and DSI prepared in accordance with guidelines made or approved by NSW EPA
- Amenities Building: NSW EPA Sampling Design Guidelines requires a minimum of 5 investigation locations for an area of approximately 450m²
- Service Trench: NSW EPA Sampling Design Guidelines requires a minimum of 5 investigation locations for an area of approximately 500m²
- Where possible, test pits should be used as they will allow a better description of fill to be completed, particularly for asbestos
- 3no. of the locations should comprise landfill gas / groundwater wells and be installed within the proposed building development footprint (service trench / amenities building) to the base of filling / 2m below groundwater levels to allow sampling to be conducted.
- Contaminants of Potential Concern (COPC) shall include: heavy metals, TPH, VOC, SVOC, dioxins and asbestos
- Gas monitoring is required for methane, carbon dioxide, oxygen, carbon monoxide, hydrogen sulphide together with flow rate in accordance with NSW EPA (2012) Gas Guidelines
- Where volatile COPCs are detected in soils / groundwater then assessment of volatile vapour risks to the proposed building shall be required
- Waste Classification will be required for soils surplus to development requirements (include consideration of TCLP for metals and PAH). Consideration of chemical control orders, particularly with respect to dioxin shall also be required.
- The testing and management of acid sulfate soils shall be considered where excavations extend beneath the water table. Follow ASSMAC (1998) requirements.

On completion of the construction works, the Principal Contractor must appoint a suitably qualified and experienced environmental consultant (i.e. Certified Environmental Practitioner – Soil Contamination or similar) to prepare a Long Term Environmental Management Plan (LTEMP) to manage the residual contamination present across the Project site as a whole.

4.2.5 Spill Management

To prevent the possible contamination of the site with hydrocarbons during construction, several measures are to be implemented to reduce the risk of an oil / fuel spill:

- Dangerous goods (such as petrol, diesel, oxy-acetylene, oils, etc) shall be stored in a lockable compound with sufficient ventilation in accordance with the relevant codes of practice and standards.
- Safety Data Sheets on all flammable and potentially harmful liquids shall be provided by the contractor undertaking the works.



- A register shall be kept of all chemicals stored onsite.
- A Spill Response Procedure Flow Chart must be prepared by the Principal Contractor prior to storage of any dangerous goods or chemicals on site.

4.2.6 Water Quality and Storm Water Control

The Principal Contractor and Subcontractors shall comply with the requirements of Section 120 of the Protection of the Environment Operations Act 1997 – Prohibition of pollution of waters. The Act prohibits all forms of pollution unless specifically authorised through an Environmental Protection Licence (EPL). To address this, the following control measures shall be in place.

Potentially hazardous activities, including washing out of concrete delivery vehicles, washing down of construction plant are not permitted on site except in specially constructed bays that retain high pH water. Washing out of concrete delivery vehicles offsite is only permitted at locations approved for that purpose by the appropriate authority. Drains are to be labelled to reduce likelihood of misuse.

Washing of paint brushes must be managed via collection of the wash-water and removed from the site and appropriately treated and / or disposed. The chemicals, acids or residues from any “wet trades” such as brick cleaning must be prevented from entering drains and waterways.

All liquids and materials that could cause water pollution must be stored in areas with secondary containment.

In general, stormwater shall be managed onsite via ESCP (refer to Section 4.2.1). In the event of stormwater collecting in erosion and sediment controls and is required to be pumped out, the pump intake is to be located no more than one metre below the surface of the collected water to reduce the amount of settled silt being pumped out for further treatment. Discharge of stormwater to the stormwater system requires prior written consent from Council.

Stormwater treatment options shall be outlined in the ESCP.

If stormwater cannot be treated suitable to regulations, an appropriately licenced liquid waste contractor must be engaged and the stormwater collected and disposed of at a location lawfully able to receive that type of waste and receipt documentation must be recorded.

4.2.7 Waste Management Plan

As discussed in Section 4.2.2, a Materials Management Plan (MMP) must be prepared to manage importation of materials to site including road planning to be used as a foundation material for the SSP and AB. In addition, the MMP must also address management of excavated soils and general construction wastes. The investigation outlined in Section 4.2.4 will assist in this process for excavated soils.

The Principal Contractor and Subcontractors shall adopt the hierarchy of waste – avoid, reduce, recycle/reprocess and dispose, to maximise resource recovery and minimise disposal wherever possible and practical. The Project’s target is to recycle as much waste as possible. The importance of appropriate waste management practices is to be included in the site induction.

For general waste and general recycling, bins shall to be provided onsite.

Any soils designated for offsite disposal must be classified in accordance with NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste. Once classified, waste designated for offsite disposal must be taken to a facility lawfully allowed to receive that type of waste. Consideration of chemical control orders, particularly with respect to dioxin shall also be required.



The MMP must include an Unexpected Finds Protocols for contamination, details on air monitoring requirements and the approach for the removal of hazardous materials including asbestos. An example is provided in Appendix D, but this shall be modified to suit the findings of the proposed investigations and MMP requirements.

4.2.8 Construction Traffic Management

A Construction Traffic Management Plan (CTMP) shall be prepared for the site outlining how the Principal Contractor proposes to manage safety in regards to traffic during the external works and construction components of the Project. The CTMP should include provisions for:

- The safe movement of vehicular and pedestrian traffic;
- The protection of workers on the site and from passing traffic;
- Access to the property for delivery of material and movement of work vehicles located within the limits of the project;
- Design, construction, maintenance and removal of any necessary temporary roadways and detours;
- Traffic controllers;
- The installation of temporary signs, road markings, lighting and safety barriers;
- The proposed protection of pedestrians adjacent to the site; and
- The best route / road corridor for all work activities including the existing road and road shoulder that may be used for the temporary diversion of traffic.
- Defined traffic route through the local area to minimise the impact to surrounding residents.

4.2.9 Noise and Vibration Management

From an environmental viewpoint, noise can create a nuisance to neighbours, members of the public, fauna and is subject to legal requirements. The Principal Contractor and its Subcontractors shall make all practical efforts to comply with statutory requirements for noise management and minimise nuisance to neighbours.

A Construction Noise Management Plan (CNMP) shall be prepared for the site by the Principal Contractor. The CNMP must provide site specific recommendations for management of noise and vibration together with complaints management procedures.

4.2.10 Flora and Fauna Management

No sensitive flora and fauna have been identified at the site and no special precautions are required.

4.2.11 Bushfire and Flood Emergency Plan

The site is not susceptible to bush fire. Whilst flooding may occur at the southern end of the site, modelling has confirmed that the proposed development will have no adverse affect on the current site condition and no special precautions are required

4.2.12 Air Quality

The Site Manager shall ensure that all construction facilities erected on the site and equipment associated with the works are designed and operated to minimise the emission of dust, plant and vehicle exhausts and other substances into the atmosphere.



The Principal Contractor and its Subcontractors shall employ construction methods that keep the air pollution to a minimum and apply measures as those listed below to ensure that airborne pollutants do not cause air pollution and nuisance in the vicinity of the works:

- The spraying of disturbed soil and roads with water while under construction, as required.
- Minimising exposed and disturbed soil areas.
- The provision of coverings or stabilisation of soil stockpiles.
- Covering all loads leaving the site.
- Stabilisation of ground likely to be exposed for significant periods (e.g. – using sterile seed).
- Fitting power tools with dust collection devices where practical.
- Keeping all plant and equipment well maintained and not leaving them idling while not being used.
- Reporting excess air emissions from plant and arranging for a service to fix the problem.

4.2.13 Acid Sulfate Soils

The works are only proposed to extend to 600mm below the current site surface and no special precautions regarding acid sulfate soils are required.

Field indicators of actual or potential ASS include the following:

- Dominance of mangroves / swamp / marine / estuarine environment
- Scalded or bare low lying areas
- Sulfurous smell
- Presence of shells in soil
- Yellowish / rust coloured staining in soil or water
- Unusually clear or milky blue-green drain water
- Erosion of concrete or steel
- Waterlogged soils, muds estuarine sands or sediments

Where the presence of ASS is suspected, **STOP WORKS** and arrange for appropriate investigation / management to be conducted by a Competent Person in accordance with ASSMAC (1998) to prevent environmental harm from occurring.

4.2.14 Asbestos

The presence of asbestos has been identified previously in fill materials underlying the site. An Asbestos Management Protocol (AMP) must be included in the MMP to be prepared by the Principal Contractor.

4.2.15 Aboriginal and Non-Aboriginal Heritage

The presence of aboriginal or non aboriginal heritage is considered unlikely due to the extensive filling that has occurred at the site. However, the following unexpected finds protocols are provided as a contingency measure.



Indigenous Heritage

Should any relic, artefact or material (including skeletal remains) suspected of being of Aboriginal origin be encountered, the Principal Contractor and Subcontractors must cease all construction work that might affect the relic, artefact or material and protect the relic, artefact or material from damage or disturbance. The Project Manager will notify CCB immediately, who will then provide further direction, as required.

Non-Indigenous Heritage

Should any item be encountered which is suspected to be a relic of heritage value, the Principal Contractor and Subcontractors must cease all construction work that might affect the item and protect the item from damage or disturbance. The Project Manager will notify CCB immediately, who will then provide further direction, as required.

A 'relic' means any deposit, object or material evidence:

- Which relates to the settlement of the area, not being aboriginal settlement; and
- Which are 50 or more years old.

4.2.16 External Lighting

External lighting will comply with AS 4282-1997 Control of the obtrusive effects of outdoor lighting.

4.3 Unexpected Finds

Residual hazards that may exist at the site would generally be expected to be detectable through visual or olfactory means. At this site, these types of hazards may include friable types of asbestos in soil and odorous or stained hydrocarbon impacted soils. The Project Manager is to maintain communication with the engaged specialist consultants to ensure the appropriate procedures are implemented.

An example is provided in Appendix D, but this shall be modified to suit the findings of the proposed investigations and MMP requirements.



5. Monitoring and Review

5.1 Environmental Monitoring Program

Requirements for environmental monitoring for the project are included in the Environmental Aspects and Impacts list (Appendix B). The monitoring program consists of: daily site inspections; weekly inspections, which are formally documented each week by using the Weekly Checklist (Appendix C); and specific monitoring carried out at agreed intervals or following major events, e.g. rainfall and vegetation clearing. The environmental monitoring program shall be the responsibility of the Site HSE Officer (or Project Manager Nominee), and include:

- Sufficient training of personnel.
- Arranging specialist consultants when required.
- Coordination of monitoring equipment and materials.
- Coordination of sample collection, documentation and delivery.
- Ensuring frequency and methodology is in accordance with all licences, permits, approvals, Australian Standards and any other industry standards.
- Data management and representation of results.
- Reporting non-conformances and implementing corrective actions.

Field data such as weather, air quality, and noise and water quality shall be recorded electronically where possible and transferred into monitoring results spreadsheets. Field data sheets shall be completed where required, and data input directly into monitoring results spreadsheets. In addition to measured parameter readings, the following information shall be recorded on Field Data sheets:

- Date
- Time
- Sampling point/location
- Name of sampler
- Laboratory analysis results will be filed electronically onsite.

5.1.1 Site Inspections

Environmental site inspections shall be undertaken by various project personnel to assess the adequacy and effectiveness of environmental controls. These inspections shall address the following as a minimum:

- High risk activities and processes.
- Work in environmentally sensitive areas.
- Site preparation for adverse weather conditions.

Responsibilities for environmental inspections on the Project are summarised below:

- Site staff shall conduct daily inspections of areas under their supervision, including assessment of environmental controls and issues. Daily inspections will be documented in Daily Diaries.



- Site supervisory staff / Site HSE Officer (or nominated person) shall conduct weekly inspections completing the Weekly Environmental Checklist. Environmental issues arising shall be immediately reported to the Site HSE Officer and Site Manager for rectification. Where required, issues may be entered into the Corrective Action Database.
- Any employee of the Principal Contractor or Subcontractor may raise an environmental issue through tool box talks or to any managing personnel.
- Safety, Environment and Quality Audits shall be performed by the Principal Contractors nominated HSE representative on a regular basis.

5.1.2 Auditing of CEMP

Audits of the CEMP shall be conducted regularly to ensure the Plan is appropriately in place and implemented. Audits must be undertaken by suitably experienced auditors.

Projects that have duration of more than six months shall have at least one audit of the CEMP, and after 6 months, shall be audited at least once per year. Projects with high risk activities or that performed poorly at the initial audit may be audited at a higher frequency. The Corporate HSE Manager is responsible for coordinating project audits.

A concluding environmental compliance audit must be undertaken at completion of the work under this Project. It shall include the following:

- Site surveillance/inspection.
- Full review of environmental records.
- Identification of any environmental protection measures and operational controls that have not yet been implemented to the levels identified in the associated plans.
- Recording of the condition of existing environmental protection controls.
- Identification of any environmental protection measures which require rectification and ongoing management.

5.2 Site Environmental Inspections

Site Environmental Inspections are to be undertaken weekly using the Weekly Environmental Checklist provided in Appendix C to ensure that environmental hazards are recognised and can be promptly rectified.

Additional environmental issues may be added to the Site HSE Inspection form, as required.

5.3 Monitoring of Project Environmental Activities

Objectives and Targets for the project are specified in Section 1.5. Data relating to these targets are to be documented daily using site diaries which are to be reviewed by Project / Site Managers on a monthly basis and forwarded to the Corporate HSE Manager for reporting to CCB Project Manager.

The KPI Monthly Report shall capture information on lag and lead indicators. The current indicators are:



Lag indicators:

- Number of environmental incidents.
- Number of Penalty Infringement Notices (PINs) or clean-up notices.
- Number of community complaints.

Lead Indicators:

- Number of toolbox talks (combined with WHS & include environmental issues)
- Number of environmental inspections undertaken.
- Waste and recycling volumes (initially to set benchmark then track improvement).

5.4 Review of CEMP

This CEMP must be reviewed by the Project Manager in consultation with the Site HSE Officer and the Corporate HSE Manager whenever any major changes occur on the site that may have an impact on the environment, or at least once during construction. Changes made to the plan are to be documented.



6. Environmental Incidents, Non-Conformance and Complaints

6.1 Environmental Incidents

An environmental incident may, amongst other things, include a fuel or hazardous material spillage / release; a major leak; failure of a pollution control device such as sediment controls; major noise and/or vibration affecting neighbours.

Any Environmental Incidents shall be immediately reported to the Site HSE Officer or Project Manager who will report the incident to the CCB Project Manager as per project requirements.

In the event of serious or material environmental harm, the Principal Contractor shall notify the CCB Project Manager and the relevant regulatory authorities in accordance with State / Commonwealth requirements. Where necessary, an agreed representative shall also notify the respective property owners or occupiers within 24 hours of the incident occurring.

An incident shall be reported if any of the following scenarios occur or have the potential to occur:

- Serious environmental harm.
- Material environmental harm.
- Prosecution by a regulatory authority.
- Environmental approval condition breach.
- Environmental monitoring parameter breach.

Incidents shall be reported both verbally and in writing. Additionally this information shall be forwarded to the CCB Project Manager. Verbal notification shall be provided immediately, and written notification will be forwarded to the CCB within 24 hrs of incident occurring. All incidents and accidents shall be recorded in an appropriate Incident and Accident Database.

All environmental incidents that cause, or could potentially cause environmental harm are to be investigated, and corrective actions implemented following the investigation. Depending on the seriousness of the incident, key site personnel, the Principal Contractors HSE Officer / Project Manager, witnesses etc. shall be consulted on the investigation and in determining appropriate corrective or preventive actions.

6.2 Preparedness

The key to effective prevention of incidents is risk assessment, procedure development, monitoring and training. During construction activities, the Principal Contractors inspections and preventive actions will include:

- Activity specific and daily risk assessments.
- Development of work procedures and construction method statements in consultation with relevant staff such as work teams, environment team members and senior management.
- Daily inspections of active work sites.
- Completion of routine environmental checklists.
- Issue and quick close-out of non-compliance notices.



- On-going environmental training.
- Environmental audits of work sites, Subcontractors and compliance issues.

Environmental and safety information on hazardous substances (e.g. MSDS) shall be available at the main site office and where such substances are stored. Environmental response procedures may be tested in areas where a pollution risk is present, such as those adjacent to waterways.

Personnel involved in emergency response activities shall be provided with specific training.

An up-to-date list of emergency response personnel and organisations shall be maintained at the site office and compounds.

6.3 Reporting

Site environmental incidents must be reported to the Project / Site Manager as soon as practically possible; in addition, any major environmental incidents must also be reported to the Principal Contractors HSE Manager. The first priority is to ensure that the situation is controlled as soon as possible, and to avoid further pollution or other adverse environmental consequences. Reporting of the incident shall not delay any immediate responses to the incident.

Environmental incidents that cause or threaten to cause material environmental harm must be reported to the Appropriate Regulatory Authority (ARA – which may include Council, EPA, Fire & Rescue, Minister for Health and SafeWork NSW) as soon as practicable following the incident. This would include any spillage or leak of substances that cause water or land pollution. Material environmental harm generally means harm that is not trivial and / or costs more than \$10,000 to clean up.

If the Site Manager believes the incident may be reportable to the ARA, contact the HSE Manager for further advice prior to making an Investigation Report.

Incident reports must be completed and forwarded to the Corporate HSE Manager within 24 hours and must be kept for a minimum of 5 years.

In the event of an environmental emergency, the Principal Contractor must nominate a person that can be contacted 24 hours per day, seven days per week (e.g. Project Manager).

Emergency services contact details are as follows:

- Emergency Hotline: 000
- Ambulance: 000
- NSW Fire Service: 000
- NSW Police (Strathfield): (02) 9746 7084
- State Emergency Service (SES): 132 500
- WIRES (injured wildlife): 1300 094 737
- OEH Environmental Hotline: (02) 9995 5911

All onsite information relating to hazardous materials, including Safety Data Sheets and spill containment materials shall be kept at the site office.



6.4 Non-Conformance Reports (NCRs)

The Principal Contractor shall have a non-conformance and Corrective Action process in place to address all non-conformities across the business regardless of the source.

Typically, environmental non-conformances would result from audits and inspections, from observations by the Site Manager of poor environmental practices including incorrect waste disposal/recycling including liquid waste, poor storage of hazardous substances, oils, chemicals and damage to existing environmental controls such as sediments fencing. Non-conformances may be issued for serious breaches, or repeated minor breaches.



7. Environmental Control Documentation

7.1 Records

Where applicable, the Principal Contractor shall maintain the following records for the project, in legible format, in order to demonstrate compliance with the CEMP:

- The CEMP (all versions), supplementary plans and procedures.
- Internal and external Construction Environmental Management Systems and CEMP audit reports approvals, regulatory licences and permits.
- Regulatory authority inspection reports.
- Correspondence with regulatory authorities and other key stakeholders.
- Employee induction and training records.
- Environmental monitoring records.
- Monthly KPI reports
- Sediment control works checklist and release records.
- Environmental accidents/incidents/emergency reports.
- Non-conformance reports.
- Reports to regulatory bodies.
- Complaint records.
- Community involvement information.
- Waste records.
- Checklists and field sheets.
- Any relevant reports submitted to regulatory bodies.
- Management review minutes and action taken.

Records will be held for at least five years after the date of final completion and will be available to upon request by regulatory authorities.

7.2 Inspections and Checklists

Inspections and checklists to be completed are to be documented within each Sub Plan. The primary Environmental Weekly Checklist is available in Appendix C.

7.3 Availability

Environmental control documentation, monitoring results and other environmental records shall be made available to CCB Project Manager or any regulatory authority immediately upon request.



8. Communication

8.1 Complaints Management

CCB Project Manager will engage suitably trained and experienced Council personnel to be responsible for fielding stakeholder feedback and coordinating appropriate responses from the Project team.

The CCB Project Manager or other nominated Council personnel must prepare a Complaints Management Protocol commensurate for the scale of the Project.

Those responsible for undertaking complaints and feedback handling shall be equipped to respond promptly to concerns about construction impacts, including but not limited to noise, dust, and vehicle movements – notwithstanding proper conduct on the part of the Contractor to mitigate foreseeable impacts. Where required, enquiries and / or disputes about compensation and rectification will be escalated.

A complaints register shall be maintained by the Site HSE Officer with the following records for all complaints and enquiries:

- Date and time of complaint.
- The method by which the complaint was made (telephone, letter, meeting, etc.).
- Name, address, and contact telephone number of complainant (if no such details were provided, a note to that effect).
- Nature of complaint.
- Action taken in response including follow up of contact with the complainant.
- Any monitoring to confirm that the complaint has been satisfactorily resolved.
- If no action was taken, the reasons why no action was taken.

This process enables the management of receipt and response to issues and reports.

All project staff shall be advised of the procedures to be followed on receipt of a complaint during the project induction.

The Principal Contractor shall notify relevant authorities (e.g. CCB) upon the receipt of a complaint, and provide a final report within 5 working days detailing the action taken to remedy the situation and any proposed measures to prevent recurrence.

8.2 Internal Communication

- Essential information relating to project environmental management will be communicated through tool-box talks and inductions.
- Environmental alerts shall be periodically prepared and sent to sites for posting on notice boards.
- Key changes to environmental legislation shall be sent by email to all Project Managers and Site Managers.



8.3 External Communication

8.3.1 Regulatory Authorities

Communication with a range of Regulatory Authorities shall be undertaken throughout the Project. This communication shall be through the Project Manager. Any communication from a regulator must be notified to the Corporate HSE Manager, and records of all communications retained and appropriately filed.

The name and contact numbers for two site personnel who are available on a 24 hour basis and who have authority to take immediate action to shut down any activity or to effect any pollution control measure must be notified to CCB prior to commencement of the works

8.3.2 Media

All contact with the media must be through CCB Project Manager. Under no circumstances are Project staff to engage with the media.



9. Emergency Plan and Response

Prior to commencement of the Project, the Principal Contractor must prepare an Emergency Plan and Response.

Some examples of incidents / emergencies, impacts and contingency response measures are provided in the following table:

Incident / Emergency	Potential Impact	Contingency Response Measures
Major Oil or Fuel or Chemical Spill	<ul style="list-style-type: none">• Contamination of land or stormwater system.	<ul style="list-style-type: none">• Immediately call the fire brigade and notify Site Manager
Major spills defined as a spill that is likely to have direct environmental consequences.	<ul style="list-style-type: none">• Contamination of soil.• Prosecution.	<ul style="list-style-type: none">• All work to stop immediately in vicinity.• Identify the source of the spill.• Refer to the Material / Safety Data Sheet, MSDS / SDS and evaluate the hazards of the material.• Spill response kits and equipment deployed if it is safe to do so.• Use all available resources to contain and clean up spill.• Contact additional consultants or Subcontractors if required.• Notify relevant authorities and persons (Corporate HSE Manager, Site Manager & Project Manager, EPA).• Implement incident reporting procedures.
Minor Site Spills	<ul style="list-style-type: none">• Contamination of land or stormwater system.	<ul style="list-style-type: none">• Stop work in the vicinity.
Minor spills defined as spills which can be contained and rectified correctly without the need of external services.	<ul style="list-style-type: none">• Contamination of soil.• Prosecution.	<ul style="list-style-type: none">• If the material is dangerous, evacuate the site immediately and notify neighbours.• If it is safe, halt the source of the spill immediately.• Contain the spill with spill kits and control the flow.• Block stormwater drains downstream of the spill.• EPA and local Council must be notified about any spills that are likely to threaten the environment.• Minor spills shall be contained and rectified with the site spill kit and disposed of correctly. Project Manager to be notified via incident report.• Reported to the Site Manager.



Incident / Emergency	Potential Impact	Contingency Response Measures
Major Sediment Discharge This could result from heavy rainstorm and flooding beyond the capacity of the sediment and erosion controls or a failure in the sedimentation control measures.	<ul style="list-style-type: none">• Contamination of stormwater system.• Risk to aquatic flora/fauna.• Prosecution.	<ul style="list-style-type: none">• All work to stop immediately in the vicinity.• Reinstate controls if required.• Install new controls if required.• Apply flocculants if required.• Commence clean-up activities.• Contact additional consultants or Subcontractors if required.• Notify relevant authorities (i.e. Council)• Implement incident reporting procedures.

At practical completion, the Principal Contractor shall ensure the site and surround, or any area which may have been used or impacted upon as a result of project-related works, is rehabilitated to a state equivalent or better in comparison to the pre-construction state.



10. Contacts

Internal Contacts Position	Name	Contact Number
CCB Project Manager	Andrew Dimitriadis	02 9911 6319
Construction Manager	TBA	TBA
Project Manager	TBA	TBA
Site Manager	TBA	TBA
Corporate HSE Manager	TBA	TBA
Site HSE Officer	TBA	TBA
Project/Site Engineers	TBA	TBA
Contracts Administrator	TBA	TBA

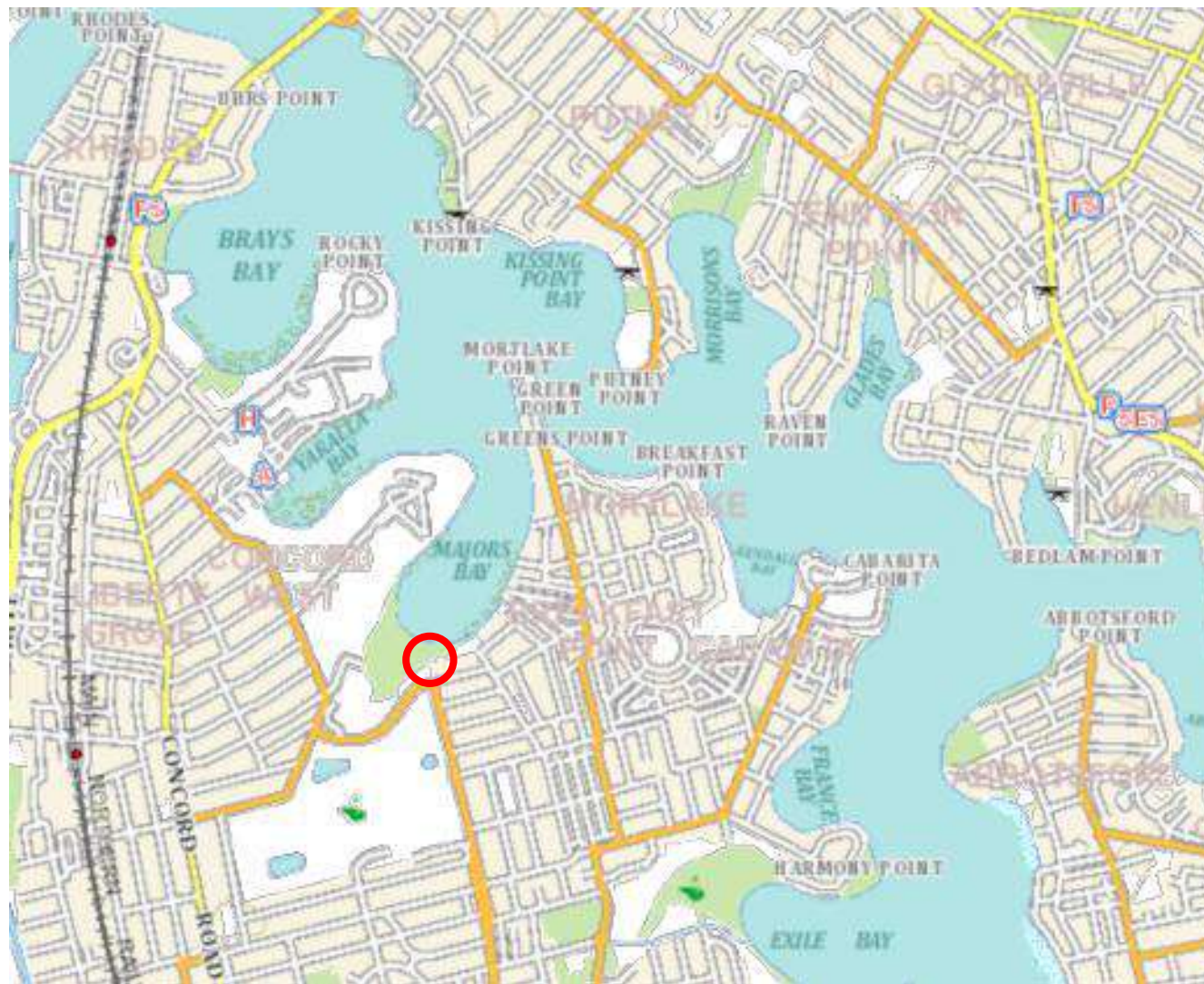
External Contacts Position	Name	Contact Number
Emergency Services	Police/Fire/Ambulance	000
Poisons Info Line	TBA	13 11 26
EPA Hotline	TBA	131 555



11. References

- AS/NZS ISO 14001: Environmental Management Systems – Specifications with Guidance for Use
- AS 3480.4: Methods for Sampling and Analysis of Ambient Air
- AS 1940-2017 The Storage and Handling of Flammable and Combustible Liquids
- Canada Bay Local Environmental Plan 2013
- Contaminated Land Management Act 1997
- Environmental Planning and Assessment Act 1979
- Environmental Protection and Biodiversity Conservation Act 1999
- Environmentally Hazardous Chemicals Act 1985 (OEH)
- Heritage Act 1977 (OEH)
- IECA Best Practice Erosion and Sediment Control Guidelines 2008.
- Landcom, 2008, The Blue Book – Managing Urban Stormwater: Soils and Construction.
- Local Government Act 1993
- NEPC Assessment of Contaminated Sites Measure 2013.
- NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste
- Protection of the Environment Operations Act 1997 (OEH)
- SEPP 55 (1998) Remediation of Land (OEH)
- Soil Conservation Act 1938 (OEH)
- Waste Avoidance and Resource Recovery Act 2001 (OEH)
- Waste Management Act 2000 (NSW Office of Water)

Appendix A Figures



LEGEND

 Site Location

This product has been created to support the main report and is not suitable for other purposes. Image courtesy of Google Maps.

Figure 1: Site Location Plan

Site Address: Syd Richards Playing Field 3, Majors Bay Reserve, Concord NSW 2137

Client: City of Canada Bay

Not to Scale

Job Number: 19005

Date: January 2019



LEGEND

—— Site Location

This product has been created to support the main report and is not suitable for other purposes. Image courtesy of Google Maps.

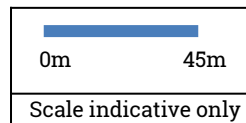


Figure 2: Site Layout

Site Address: Syd Richards Playing Field 3, Majors Bay Reserve, Concord NSW 2137

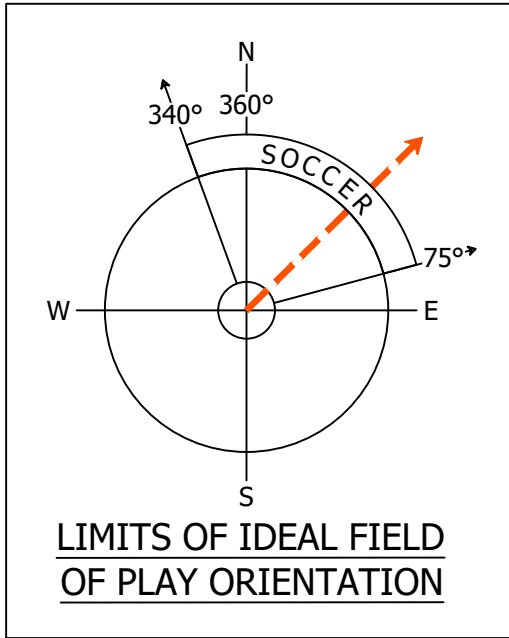
Client: City of Canada Bay

Job Number: 19005

Date: January 2019

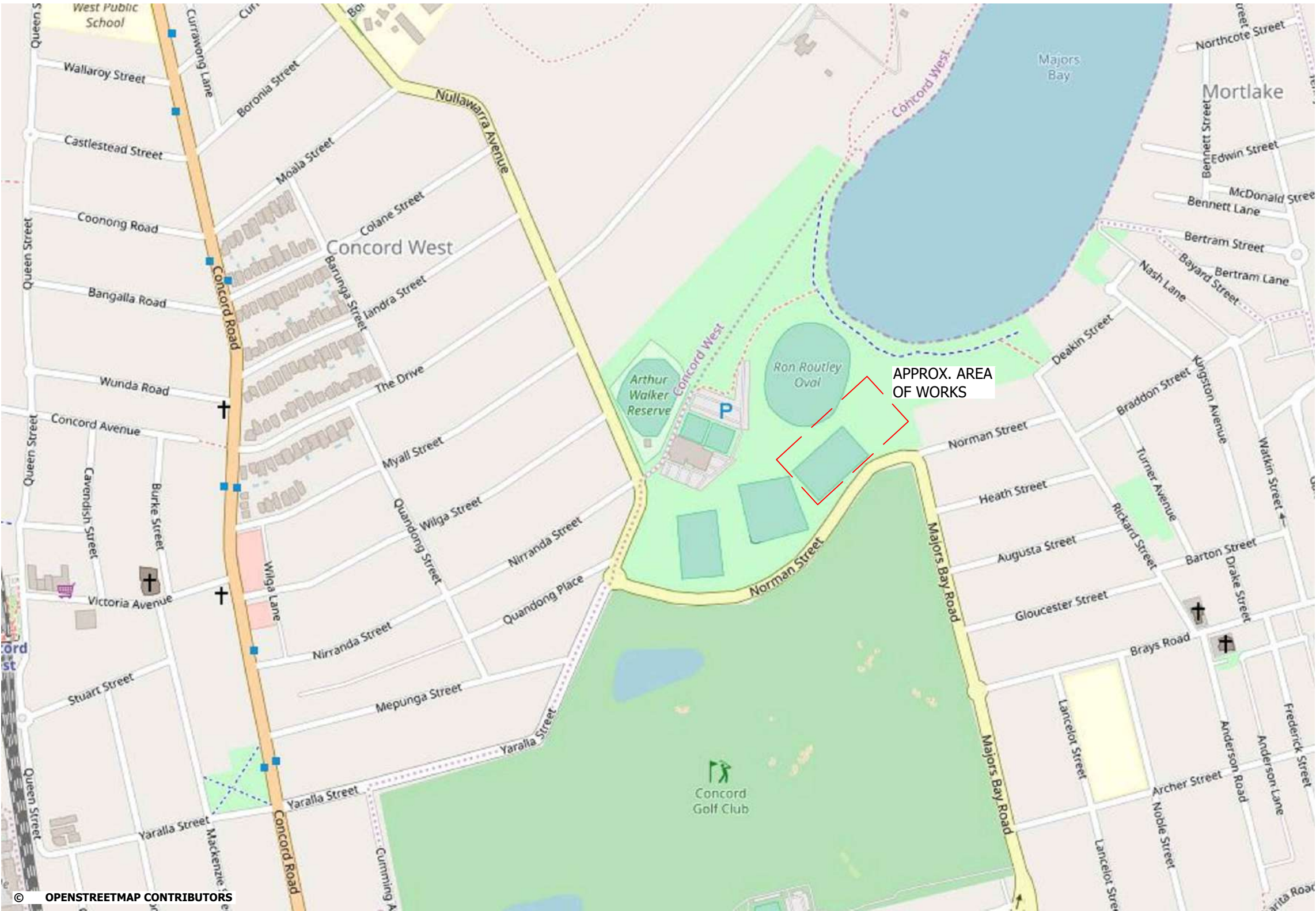
MAJORS BAY RESERVE SYNTHETIC SOCCER PITCH - EARLY WORKS

NORMAN STREET, CONCORD, NSW 2137



DRAWING SCHEDULE:

F000	COVER SHEET
F050	EXISTING SITE LAYOUT PLAN
F100	DEMOLITION PLAN
F150	BULK EARTHWORKS LAYOUT PLAN
F200	GENERAL ARRANGEMENT LAYOUT PLAN
F225	SITE SETOUT
F300	UNDERGROUND SERVICES LAYOUT PLAN
F600	PAVEMENT PLAN



LOCALITY PLAN - NORMAN STREET, CONCORD, NSW 2137



OVERALL SITE LAYOUT PLAN

NOT FOR CONSTRUCTION

P3	27/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P2	22/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P1	08/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH -
EARLY WORKS
Drawing Title
COVER SHEET

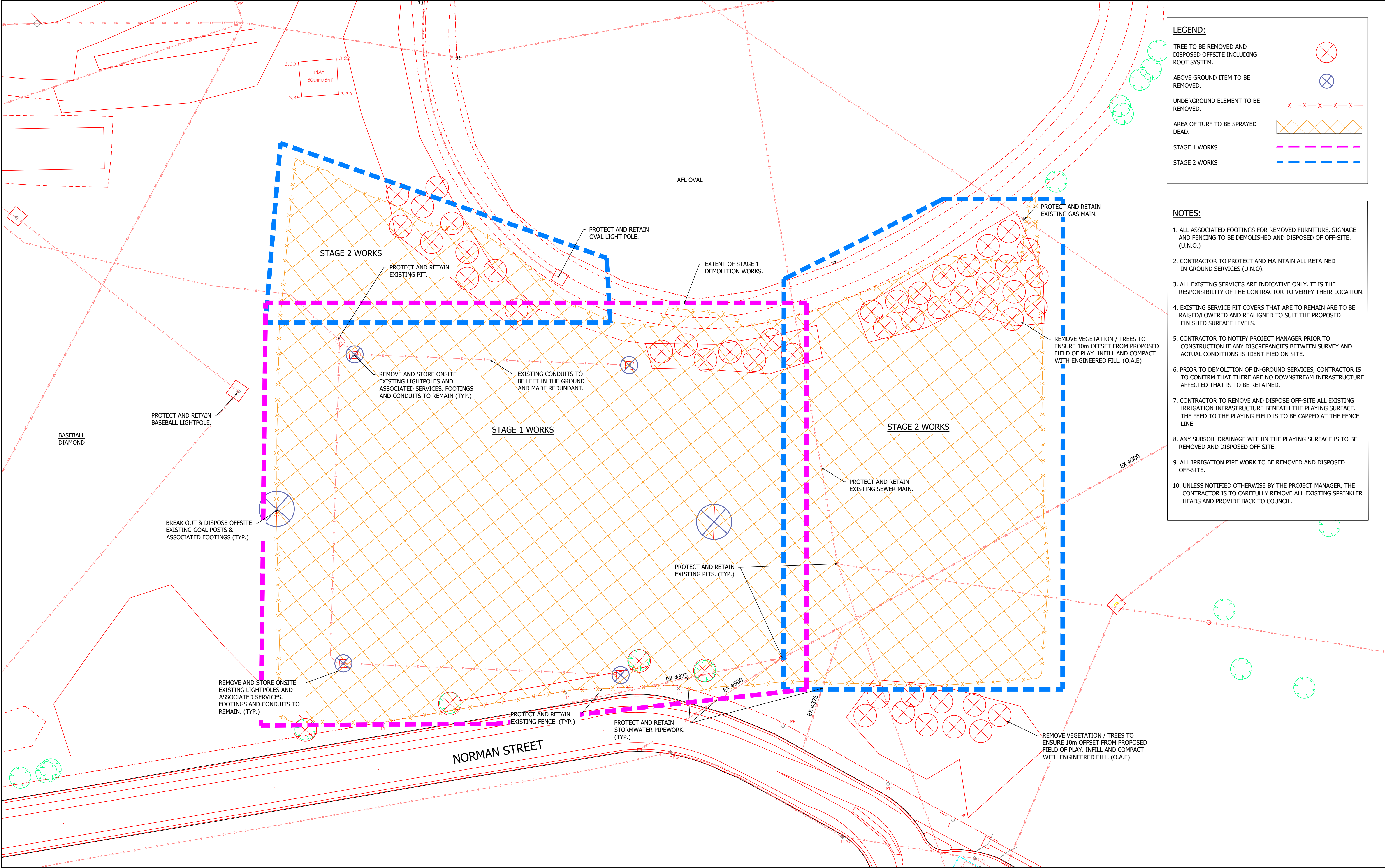
FIELD OF PLAY

PRELIMINARY

10332-00

Drawing No
F000 - A

Issue
P3



LEGEND:

TREE TO BE REMOVED AND DISPOSED OFFSITE INCLUDING ROOT SYSTEM.

ABOVE GROUND ITEM TO BE REMOVED.

UNDERGROUND ELEMENT TO BE REMOVED.

AREA OF TURF TO BE SPRAYED DEAD.

STAGE 1 WORKS

STAGE 2 WORKS

- NOTES:**
1. ALL ASSOCIATED FOOTINGS FOR REMOVED FURNITURE, SIGNAGE AND FENCING TO BE DEMOLISHED AND DISPOSED OF OFF-SITE. (U.N.O.)
 2. CONTRACTOR TO PROTECT AND MAINTAIN ALL RETAINED IN-GROUND SERVICES (U.N.O.)
 3. ALL EXISTING SERVICES ARE INDICATIVE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THEIR LOCATION.
 4. EXISTING SERVICE PIT COVERS THAT ARE TO REMAIN ARE TO BE RAISED/LOWERED AND REALIGNED TO SUIT THE PROPOSED FINISHED SURFACE LEVELS.
 5. CONTRACTOR TO NOTIFY PROJECT MANAGER PRIOR TO CONSTRUCTION IF ANY DISCREPANCIES BETWEEN SURVEY AND ACTUAL CONDITIONS IS IDENTIFIED ON SITE.
 6. PRIOR TO DEMOLITION OF IN-GROUND SERVICES, CONTRACTOR IS TO CONFIRM THAT THERE ARE NO DOWNSTREAM INFRASTRUCTURE AFFECTED THAT IS TO BE RETAINED.
 7. CONTRACTOR TO REMOVE AND DISPOSE OFF-SITE ALL EXISTING IRRIGATION INFRASTRUCTURE BENEATH THE PLAYING SURFACE. THE FEED TO THE PLAYING FIELD IS TO BE CAPPED AT THE FENCE LINE.
 8. ANY SUBSOIL DRAINAGE WITHIN THE PLAYING SURFACE IS TO BE REMOVED AND DISPOSED OFF-SITE.
 9. ALL IRRIGATION PIPE WORK TO BE REMOVED AND DISPOSED OFF-SITE.
 10. UNLESS NOTIFIED OTHERWISE BY THE PROJECT MANAGER, THE CONTRACTOR IS TO CAREFULLY REMOVE ALL EXISTING SPRINKLER HEADS AND PROVIDE BACK TO COUNCIL.

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

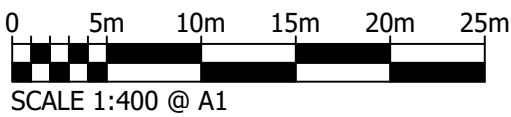
NOT FOR CONSTRUCTION



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PRELIMINARY ISSUE REVISED				
P1	08/02/18	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH -
EARLY WORKS
Drawing Title
DEMOLITION PLAN



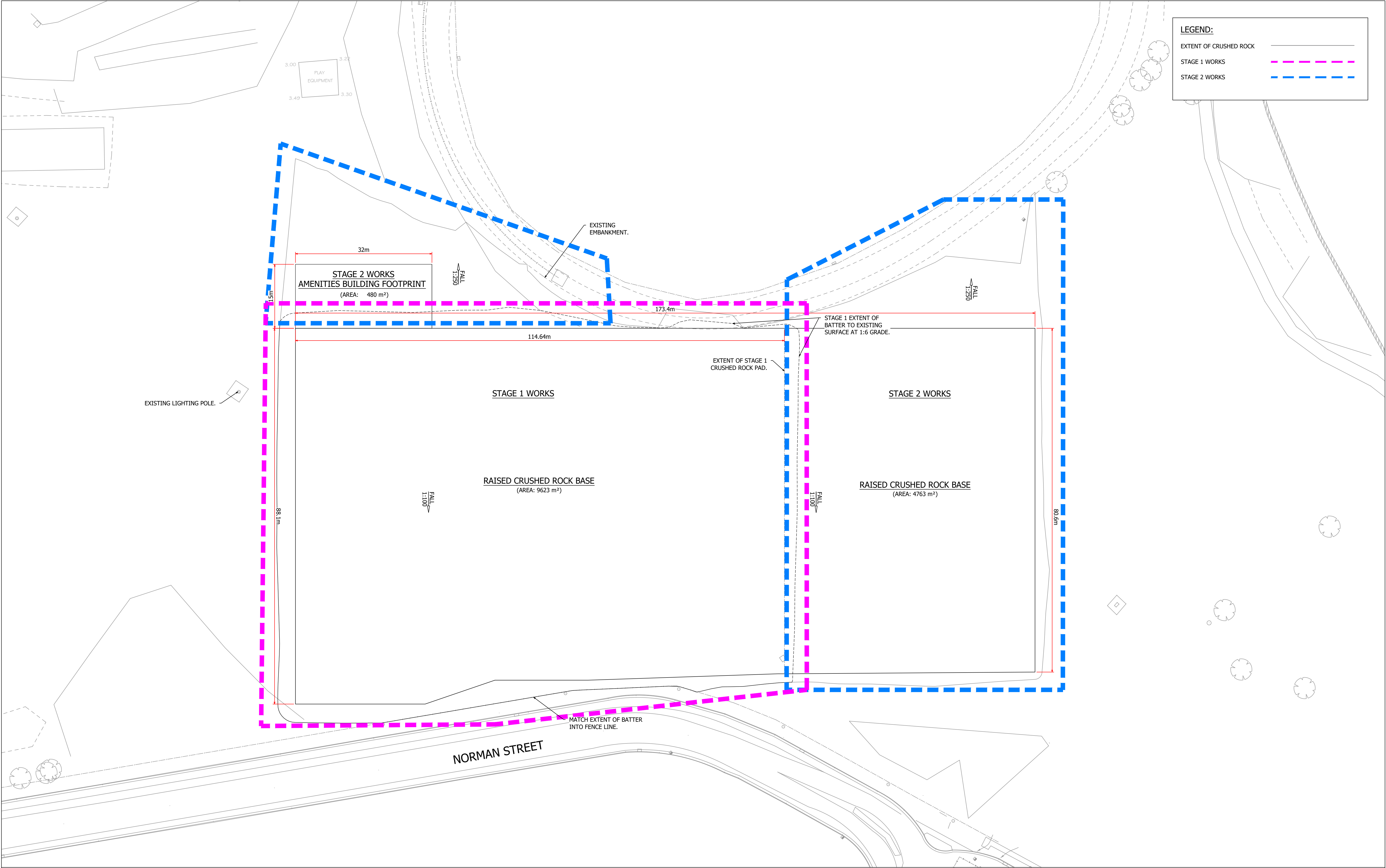
FIELD OF PLAY

PRELIMINARY

10332-00

Drawing No
F100 - A

Issue
P3



WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

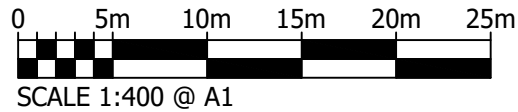
NOT FOR CONSTRUCTION



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P2	22/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P1	08/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH -
EARLY WORKS
Drawing Title
GENERAL ARRANGEMENT
LAYOUT PLAN



FIELD OF PLAY

PRELIMINARY

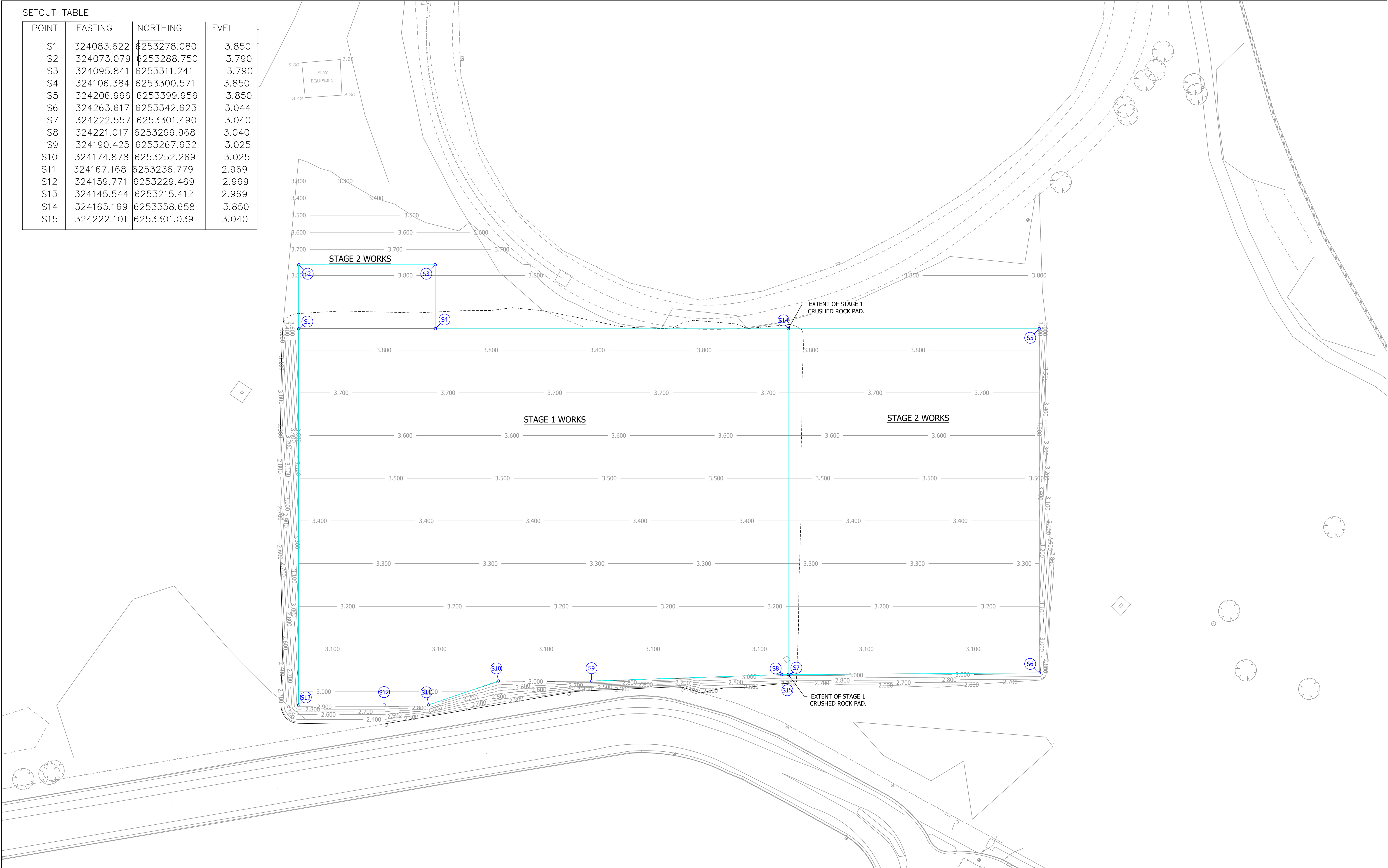
10332-00

Drawing No
F200 - A

Issue
P3

SETOUT TABLE

POINT	EASTING	NORTHING	LEVEL
S1	324083.622	6253278.080	3.850
S2	324073.079	6253288.750	3.790
S3	324095.841	6253311.241	3.790
S4	324106.384	6253300.571	3.850
S5	324206.966	6253399.956	3.850
S6	324263.617	6253342.623	3.044
S7	324222.557	6253301.490	3.040
S8	324221.017	6253299.968	3.040
S9	324190.425	6253267.632	3.025
S10	324174.878	6253252.269	3.025
S11	324167.168	6253236.779	2.969
S12	324159.771	6253229.469	2.969
S13	324145.544	6253215.412	2.969
S14	324165.169	6253358.658	3.850
S15	324222.101	6253301.039	3.040



WARNING

BEWARE OF UNDERGROUND SERVICES

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NOT FOR CONSTRUCTION



P2	27/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P1	22/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH -
EARLY WORKS
Drawing Title
SITE SETOUT PLAN



FIELD OF PLAY

PRELIMINARY

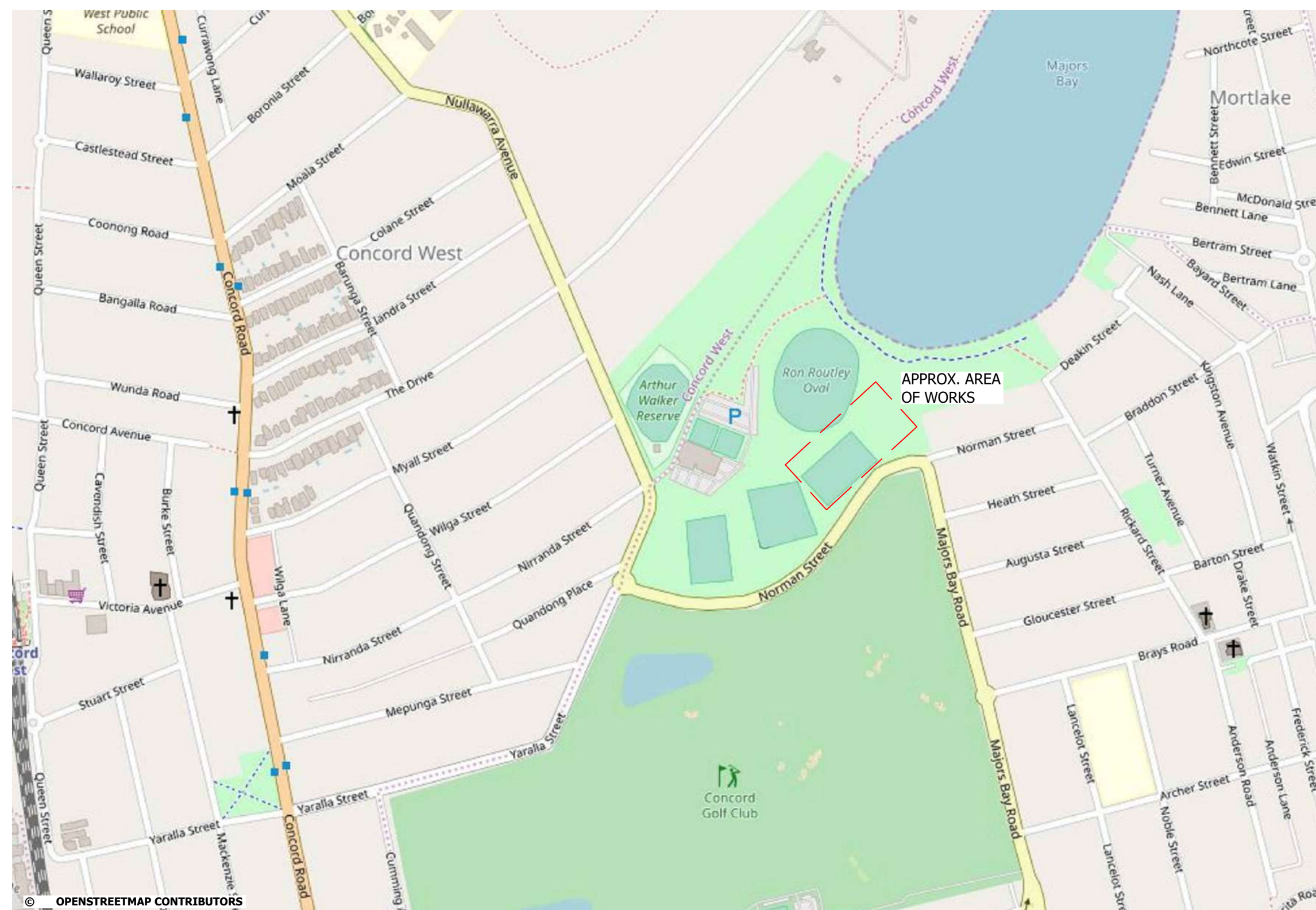
10332-00

Drawing No
F225 - A

Issue
P2

LIMITS OF IDEAL FIELD OF PLAY ORIENTATION

F000	COVER SHEET
F050	EXISTING SITE LAYOUT PLAN
F200	GENERAL ARRANGEMENT LAYOUT PLAN
F300	STORMWATER DRAINAGE LAYOUT PLAN
F600	PAVEMENT PLAN



LOCALITY PLAN - NORMAN STREET, CONCORD, NSW 2137



OVERALL SITE LAYOUT PLAN

NOT FOR CONSTRUCTION

P3	27/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P2	08/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
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PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd

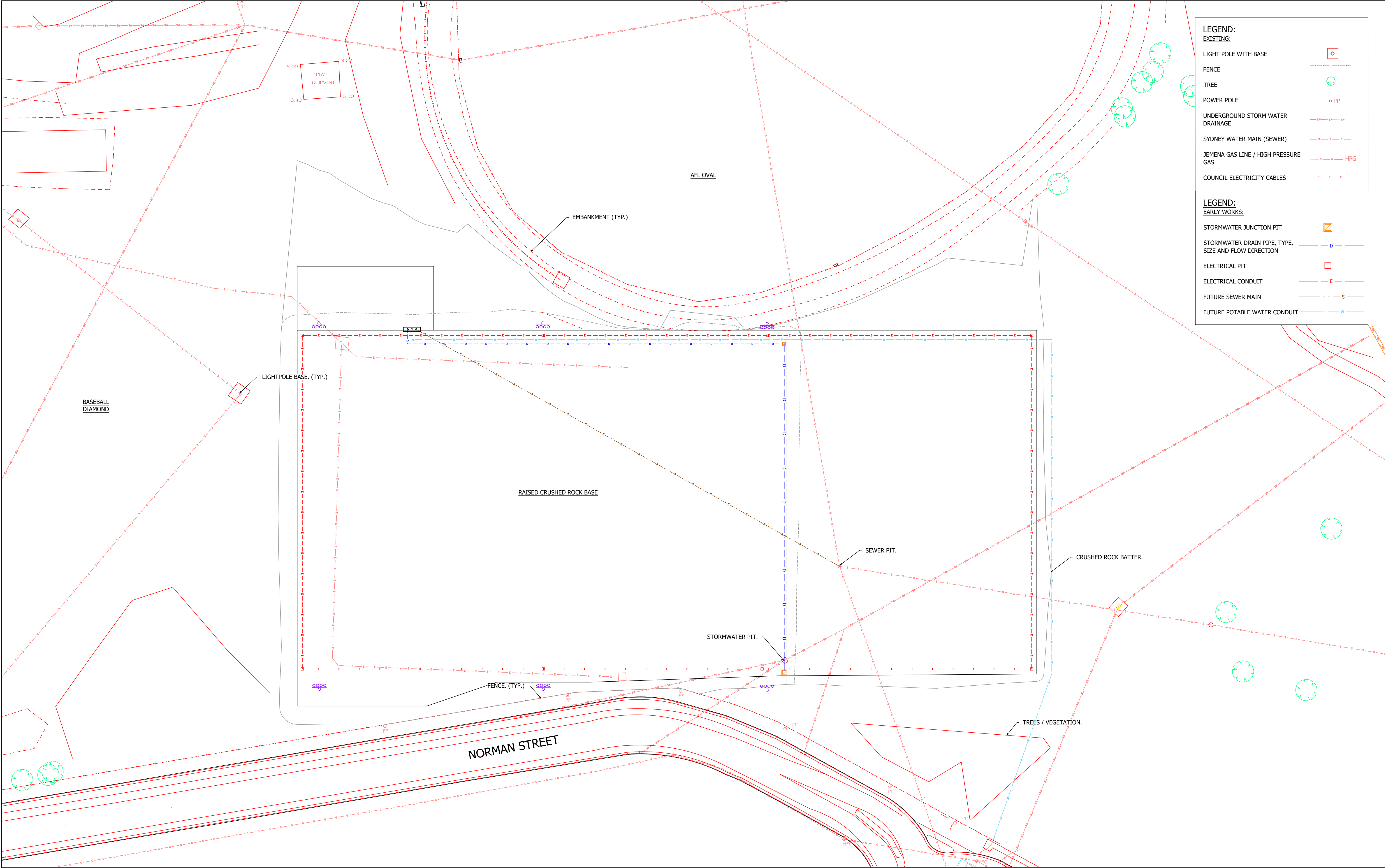
MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
COVER SHEET

FIELD OF PLAY

PRELIMINARY

10332-00	Drawing No F000 - B	Issue P3
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LEGEND:
EXISTING:

LIGHT POLE WITH BASE

FENCE

TREE

POWER POLE

UNDERGROUND STORM WATER DRAINAGE

SYDNEY WATER MAIN (SEWER)

JEMENA GAS LINE / HIGH PRESSURE GAS

COUNCIL ELECTRICITY CABLES

LEGEND:
EARLY WORKS:

STORMWATER JUNCTION PIT

STORMWATER DRAIN PIPE, TYPE, SIZE AND FLOW DIRECTION

ELECTRICAL PIT

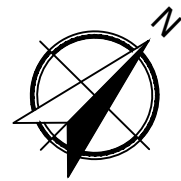
ELECTRICAL CONDUIT

FUTURE SEWER MAIN

FUTURE POTABLE WATER CONDUIT

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

NOT FOR CONSTRUCTION

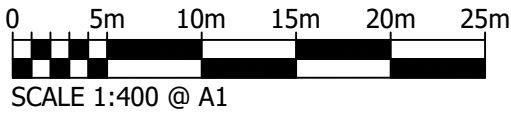


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PRELIMINARY ISSUE REVISED				
P1	17/01/19	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

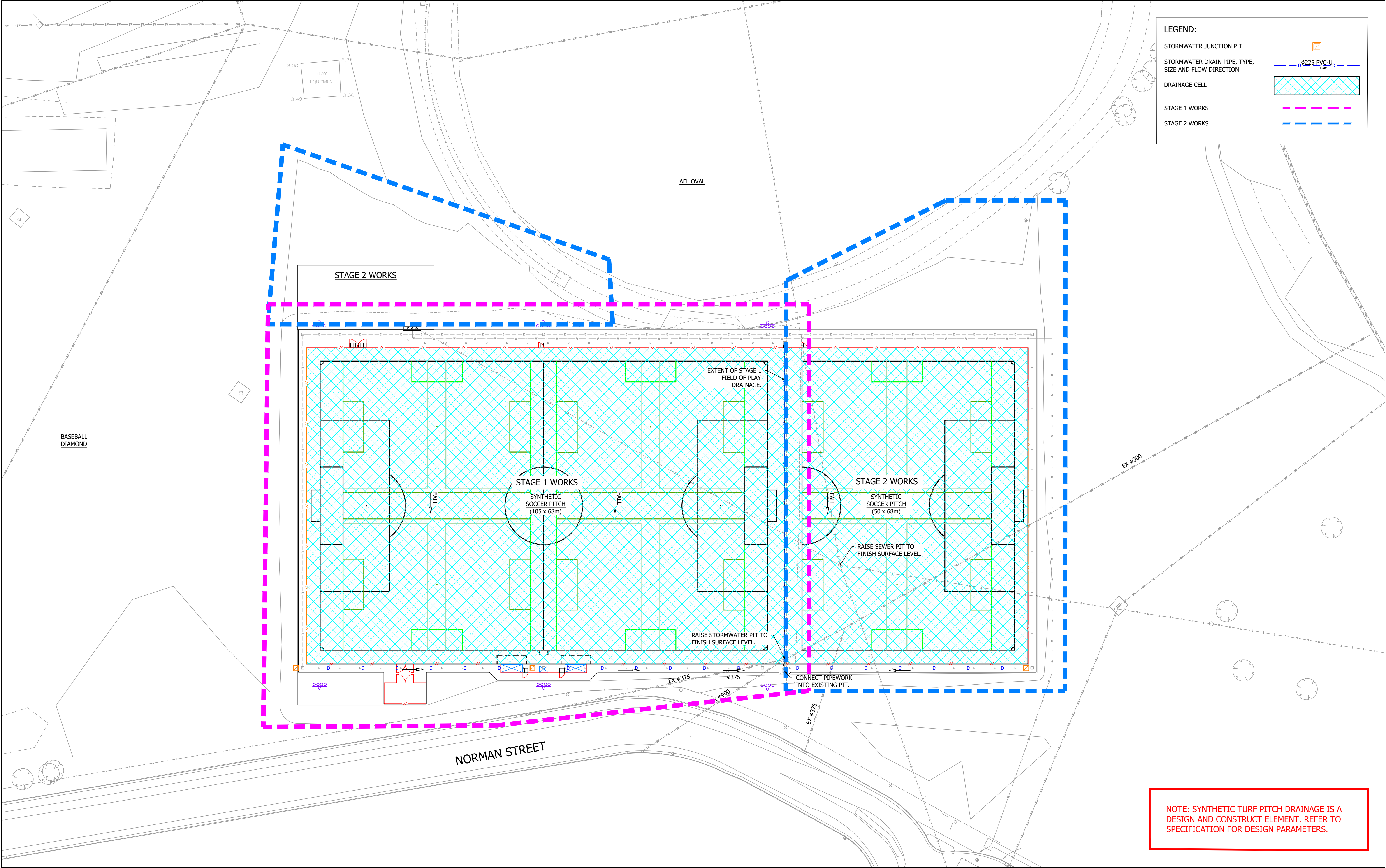
Drawing Title
EXISTING SITE LAYOUT PLAN



FIELD OF PLAY

PRELIMINARY

10332-00	Drawing No F050 - B	Issue P3
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LEGEND:

STORMWATER JUNCTION PIT

STORMWATER DRAIN PIPE, TYPE, SIZE AND FLOW DIRECTION

DRAINAGE CELL

STAGE 1 WORKS

STAGE 2 WORKS

NOTE: SYNTHETIC TURF PITCH DRAINAGE IS A DESIGN AND CONSTRUCT ELEMENT. REFER TO SPECIFICATION FOR DESIGN PARAMETERS.

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATELY SHOWN ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

NOT FOR CONSTRUCTION

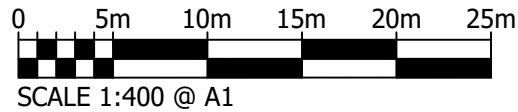


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PRELIMINARY ISSUE REVISED				
P2	08/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P1	17/01/19	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
STORMWATER DRAINAGE
LAYOUT PLAN



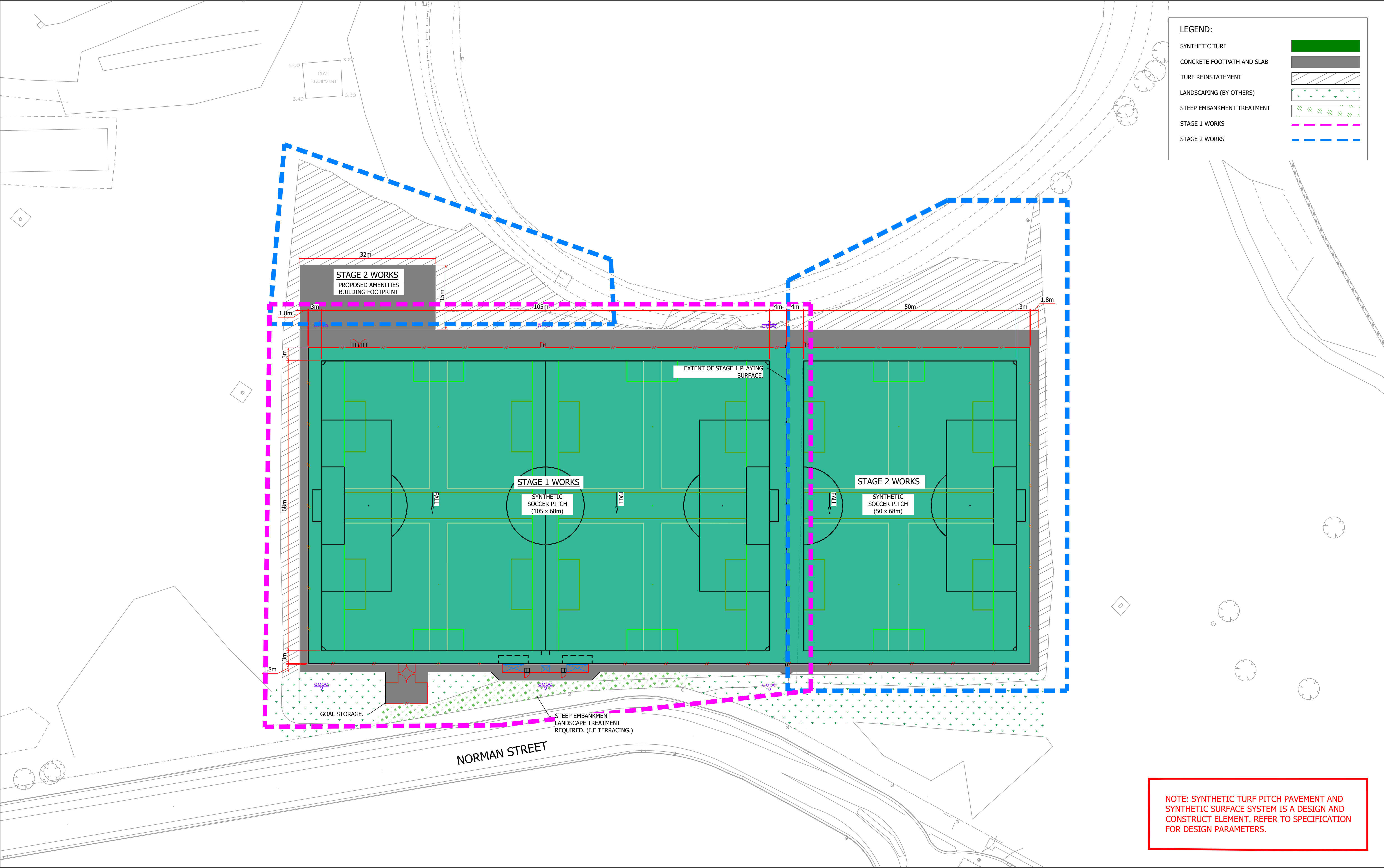
FIELD OF PLAY

PRELIMINARY

10332-00

Drawing No
F300 - B

Issue
P3



NOTE: SYNTHETIC TURF PITCH PAVEMENT AND SYNTHETIC SURFACE SYSTEM IS A DESIGN AND CONSTRUCT ELEMENT. REFER TO SPECIFICATION FOR DESIGN PARAMETERS.

WARNING
BEWARE OF UNDERGROUND SERVICES
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NOT FOR CONSTRUCTION

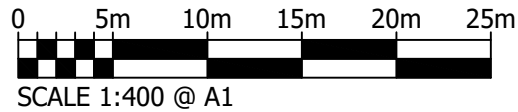


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P2	08/02/19	ARM	JDH	JDH
PRELIMINARY ISSUE REVISED				
P1	17/01/19	ARM	JDH	JDH
PRELIMINARY ISSUE				
Issue	Date	By	Chkd	Appd



MAJORS BAY RESERVE
SYNTHETIC TURF PITCH

Drawing Title
PAVEMENT PLAN



FIELD OF PLAY

PRELIMINARY

10332-00

Drawing No
F600 - B

Issue
P3

Appendix B Environmental Aspects and Impacts List

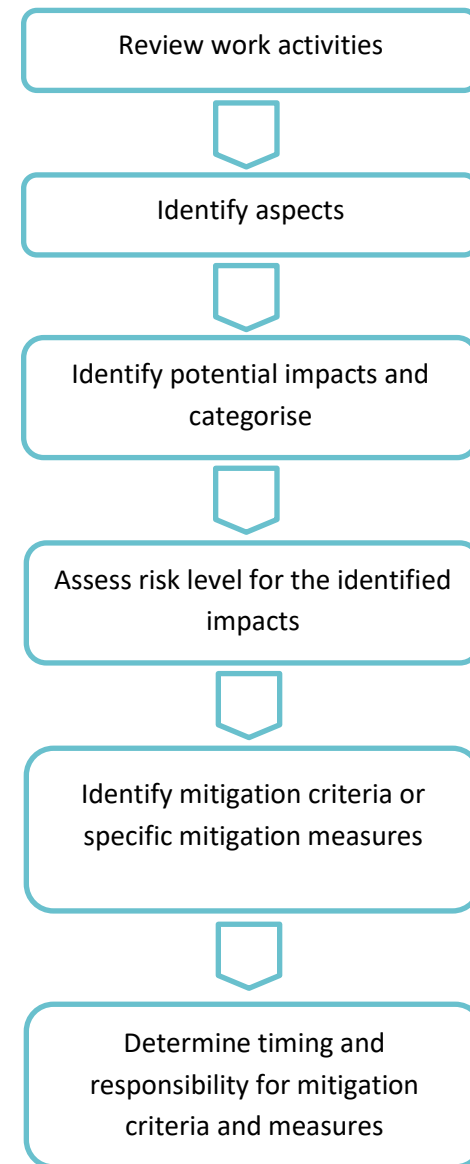
Environmental Aspects and Impacts: Sid Richards Playing Field 3, Majors Bay Reserve, Concord, NSW 2137

The process used to develop possible mitigation measures after an environmental risk has been identified, is illustrated in the Figure to the right.

The mitigation measures developed to control the identified environmental impacts are presented in the following tables. Also shown are the associated levels of risk of impact and responsible party for implementation of the respective mitigation measure. In accordance with the roles and responsibilities described in Section 2.1.

As defined in ISO 14001, an environmental aspect is “an element of an organisation’s activities, products or services that can interact with the environment” (SAI Global, 2004). Environmental aspects within this project are specific actions or items that could cause an impact.

The risk assessment matrix on the following page is used to determine the level of risk for identified potential impacts from the proposed works.





Severity	How severe are potential adverse impacts on:			What is the likelihood (risk) of this level of severity?			
	Human Health	Environment	Construction schedule and/or project costs	Very Likely	Likely	Unlikely	Very Unlikely
Catastrophic	Death, life-threatening injuries, permanent disability / ill health	Catastrophic environmental incident, serious risk and/or damage to onsite or offsite receptors, regulatory involvement, significant onsite and offsite remediation, financial penalties enforced, legal action	Severe delays, significant cost increases, possible project termination	16	15	13	10
Major	Major illness or injury requiring surgery / hospitalisation	Major environmental incident, onsite and offsite contaminant migration, regulatory notification and remediation needed	Lengthy project delays / major cost increases	14	12	9	6
Moderate	Injury or illness requiring treatment and resulting in lost time	Moderate environmental incident, contained onsite, requires some remedial action	Moderate project delays and cost increases	11	8	5	3
Minor	Minor injury or exposure not requiring medical attention	Minor environmental incident, localised	Minor project delays / some additional costs	7	4	2	1

Should additional environmental impacts relating to changed or additional work activities be identified during the project, the risks are to be assessed according to this procedure. Following this risk assessment system, mitigation measures must be selected as required, with responsibility allocated and the details documented in the relevant table, as part of the ongoing review of the CEMP.



Erosion and Sedimentation Risks					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Pre-construction					
Erosion and sediment control design	Inappropriate design, resulting in offsite transport of sediment to roads, and/or stormwater drains	12	An approved erosion and sediment control plan (ESCP) is to be implemented with controls in place.	4	Project Manager / Site Manager
Construction					
Site preparation	Sediment mobilisation and surface runoff from site establishment and clearing.	12	Prior to commencement of site work, install all erosion and sediment control measures based on an erosion and sediment control plan and ensure controls are operational in accordance with approved ESCP.	4	Site Manager
Vehicle traffic leaving site	Sediment tracked offsite by vehicle wheels.	8	Appropriate measures are to be implemented during the construction period to ensure vehicles leaving the premises are sufficiently free from dirt, aggregate or other materials such that material are not transported onto public roads. These may include shake-down areas at access points and truck wash-down facilities.	4	Site Manager
Transport of materials to and from site	Loss of load resulting in pollution of roads	5	Truck loads shall be covered. Should any material be transported onto the road or any spills occur it is to be cleaned up prior to cessation of the same day's work and/or commencement of any rain event.	2	Site Manager
Stormwater run-off	Run-off resulting in soil erosion.	12	Do not stockpile materials on drainage lines. Ensure stockpile slopes and batters are not excessive. Control stormwater runoff during construction in accordance with the ESCP.	5	Site Manager



Erosion and Sedimentation Risks Cont.					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Exposed surfaces and stockpiling of fill and construction materials	Offsite transport of sediment to roads and stormwater drains. Loss of fill material.	12	Maintain a project ESCP: Daily operational check of control measures by Site Manager or nominated person. Additional inspections to be carried out by the Site Manager after each storm event to assess adequacy of the erosion control measures, repair/replace any dysfunctional erosion control devices, and clean up any sediment that has left the site or is deposited on public land or drainage channels.	5	Site Manager



Water Quality					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Pre-construction					
Design of erosion and sedimentation control	Inappropriate design, resulting in localised ponding or flooding, excessive runoff, erosion and pollution of local area.	12	Controls to be installed in accordance with the ESCP. Any discharge to the street stormwater system is to be tested and approved by the Council in writing prior to discharge.	4	Contractor / Site Manager
Construction					
Discharge of waters from site	Discharge of sediment laden waters into watercourses.	14	Any discharge to the street stormwater system is to be tested and approved by the Council in writing prior to discharge. Implement ESCP.	2	Site Manager
Plant and equipment refueling, chemical use and storage	Accidental spills and leaks into nearby watercourses during refueling of equipment or storage of fuels and chemical.	8	Refuel plant and equipment in a location away from drains and watercourses. Ensure sufficient spill response kits are accessible on site at all times. Chemicals to be stored on site must comply with the management measures in the CEMP. Ensure site induction covers dangerous / hazardous goods and appropriate spill response procedure.	2	Site Manager
General use of construction site	Waste, litter etc. entering waterways via stormwater drains.	4	Ensure contractors leave the construction work sites free of debris and other rubbish (daily) and at the completion of the works. Provide sufficient number of and type of suitable receptacles on site for general waste, recyclable materials and other waste types (as required).	2	Project Manager / Site Manager



Noise and Vibration Management					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Pre-construction/Construction					
Pre-construction and construction activities resulting in noise complaints	Disturbance of onsite receptors/personnel, local residents, potential noise complaints. Non-conformance with Consent Conditions.	8	<p>Comply with defined work hours: 7.00am to 6.00pm Monday to Friday, 8.00am to 1:00pm Saturdays, no work on Sundays or public holidays or as stipulated within any DA conditions for the site.</p> <p>All subcontractors to be managed to ensure they work only within defined hours and in a manner to minimise noise and vibration. Stakeholders and neighbours must be kept notified in advance of potential high impact activities.</p>	4	Site Manager



Traffic Management					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Pre-construction / construction					
Parking due to construction related vehicles	Loss of parking availability in local streets	8	All site personnel are to be advised of parking allocations. Ensure work vehicles and plant/equipment do not obstruct vehicular or pedestrian traffic on roadways, footpaths or access to land uses unless absolutely necessary.	4	Site Manager
Construction traffic movements to and from site (imported materials, off site disposal, deliveries and site staff)	Increased traffic volume on roads during construction.	14	Haul routes to be identified and communicated to staff, personnel and subcontractors. Co-ordinate importation / off site disposal of materials and deliveries to avoid peak periods where feasible. Implement traffic management plans, including use of designated routes. Implement traffic control plan, including traffic controller where necessary.	9	Site Manager
Pedestrian movements surrounding construction site / site occupant movements	Pedestrian/occupant confusion, interference with vehicles, potential incident due to conflict between pedestrian/occupant and construction access points.	15	Identify traffic controls required. Restrict site access to personnel and authorised people only in accordance with WorkCover 2017 Regulations. Provide appropriate restriction signage.	9	Project Manager



Heritage Management					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Construction					
Discovery of unexpected find of heritage item/artifact	Impact on that heritage item in the event that correct steps are not taken.	8	Establish a heritage protocol for unexpected heritage finds and agree with CCBC	5	Site Manager



Air Quality					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Pre-construction					
Design of Materials Management Plan	Fill materials excavated from the site contain asbestos and may also have the potential to generate hazardous ground gases	12	An approved Materials Management Plan (MMP) is to be implemented with controls in place. Air quality monitoring adjoining work areas and site boundaries.	4	Project Manager / Site Manager
Construction					
Operation of plant and equipment	Air pollution from emissions	1	Ensure equipment and machinery is maintained and not left idling when not in use.	1	Site Manager
Vehicle movement, earthworks, handling and transport of spoil and fill	Dust generated from earthworks, including materials handling and wheel dust	12	Comply with all requirements of the MMP for excavation of fill materials. General: Cover all loads of excavated material and other erodible materials that are transported to and from the work site. Avoid or restrict dust generating activities during windy conditions.	4	Site Manager
Management of stockpiles, exposed areas and general site	Wind erosion of exposed surfaces and stockpiles	12	Comply with all requirements of the MMP for excavation of fill materials. General: Keep areas adjacent to the work sites free of construction soil or dust. Monitor all work sites, general work areas, stockpiles and skip bins for dust generation and water down or cover affected areas especially stockpiles of waste material. Minimise soil and vegetation disturbance, in order to minimise dust generation.	4	Site Manager



Air Quality Cont.					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Excavation works	Release of dust from excavation	12	Comply with all requirements of the MMP for excavation of fill materials. General: Implement dust suppression measures appropriate for the specific works; no dust is to leave the site. Wetting down / water carts can be used to minimise dust release.	4	Site Manager



Waste Management					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Pre-construction					
Design of Materials Management Plan	Fill materials excavated from the site contain asbestos and other contaminants including dioxins, which may limit potential waste management actions	12	An approved Materials Management Plan (MMP) is to be implemented with controls in place.	9	Project Manager / Site Manager
Construction					
Earthworks and construction	Generation of waste including potentially recyclable or reusable materials	12	Waste Management is to be based on the waste hierarchy, and is to maximise recycling and reuse of waste material and construction wastes, and to minimise waste to landfill. Waste management is to include the following steps. All material leaving site is to be disposed of at a suitable location lawfully able to accept the waste it is receiving. All material leaving the site is to be disposed of in accordance with the provisions of the Protection of the Environment Operations Act 1997 and the NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste. The waste disposal facility must be appropriately licensed to receive the class of waste being delivered as described in the respective waste classification. Monitor waste volumes and record their method and location of disposal and whether or not that location was a place that could lawfully be used as a waste facility for that waste.	9	Project Manager



Waste Management Cont.					
Aspect	Impact	Risk of Impact	Mitigation Criteria or Management Measure	Risk After Mitigation / Management	Responsibility
Earthworks and construction	Generation of waste leading to disposal - construction waste	7	Provide a sufficient number of and type of suitable receptacles onsite for general waste, recyclable materials and other waste types (as required). Maximise segregation of wastes. Recycle and divert from landfill surplus soil, rock, and other excavated material where possible. Separately collect and stream quantities of waste concrete, bricks, blocks, timber, metals, plasterboard, paper, and packaging, glass, and plastics and offer them for recycling where practical. Ensure that no waste from the site is conveyed to or deposited at any place that cannot lawfully be used as a waste facility for that waste.	2	Project Manager

Appendix C Weekly Environmental Checklist



Notes:

1. This checklist is to be used as a guide for the weekly monitoring of environmental issues by the Site Manager. The Site Manager should review, amend and update this checklist to ensure compliance with relevant legislation, guidelines and this CEMP.
2. The checklist is to be completed, reviewed and signed at the end of each week and filed as a component of the Project's records.
3. The weekly checklist applies to the entire site until construction has been completed. After this time, the monitoring/reporting component of the CEMP will be reassessed. As some activities become completed, some items in the weekly checklist may no longer be applicable.
4. Additionally, general site conditions should be checked daily for compliance and to ensure controls in general appear to be maintained in good conditions such as the erosion and sediment controls and stockpile controls.



Environmental Weekly Checklist

Project: Sid Richards Playing Field 3, Majors Bay Reserve, Concord, NSW 2137

Week Ending:

Action	Yes/ No/ NA	Comments/ Actions
GENERAL OBLIGATIONS		
Have all site managers, operators and staff undergone site induction and are aware of the appropriate method statements/procedures and environmental responsibilities that apply to their work? Has a written record been kept?		
NOISE & VIBRATION		
Are construction activity times being complied with?		
Are all work activities limited to the approved time periods?		
Are noise suppressors on site in working order?		
Are all reasonable practicable steps to reduce construction noise and vibration taken?		
ODOUR & AIR POLLUTION		
Are requirements of the Materials Management Plan are being implemented?		
Is the disturbed area being minimised?		
Is dust suppressed on disturbed areas (including stockpiles)?		
Are odour emissions from portaloos minimal?		
Is dust control applied, as requested, to landscaping activities?		
Are vehicle loads covered, as required, to prevent air pollution?		
Is machinery inspected and maintained to prevent noxious emissions?		
Machinery on site is not left idling when not in use. Is this statement correct?		
SITE ACCESS & TRAFFIC		
Have Council / residents been informed of upcoming traffic disruptions?		



EROSION AND SEDIMENTATION		
Are erosion and sedimentation controls designed and installed according to Blue Book specifications prior to commencement of works and according to design specifications (including diversion drains where appropriate)?		
Are controls functioning and trapping approximately 80- 90% of sediment?		
Are erosion and sediment controls being maintained weekly, or after every rain event, e.g. sediment removed, materials repaired or replaced?		
Are stockpiles located greater than 25 metres from water flow paths/spoon drains and controls used to prevent sediment escaping (e.g. silt fences, spray grass, sediment pond)?		
Are erosion/sedimentation controls installed at vehicle wash-down areas?		
Are controls decommissioned according to Blue Book specifications when replaced/removed? Has approval been sought prior to removal of controls when construction and revegetation works ceases? (Liaise with Project Manager and Site Manager).		
Are inspections of erosion and sediment controls conducted daily/following incidents?		
WASTE MANAGEMENT		
Are requirements of the Materials Management Plan are being implemented?		
Is waste reused on site where possible?		
Is waste separation occurring on site?		
Is waste stockpiled according to Materials Management Plan?		
Is all litter generated on site being disposed of using onsite, covered bins?		
Is the site tidy and free from windblown waste?		
Are waste materials leaving site covered to prevent windblown litter as required?		
Is waste being disposed to appropriate waste management centres?		
Have waste disposal dockets been maintained and recorded?		
Is construction / demolition, contaminated wastes and / or asbestos disposed of offsite? If disposed of onsite, is this in an appropriately bundled and designated area? In the case of asbestos, has the Asbestos Management Plan been implemented?		
When handling excavated fill materials / waste have the appropriate precautions been implemented as listed in the Environmental Aspect and Impact list?		



WASTE MANAGEMENT		
Are "Portaloos" toilets established on site and emptied as per relevant regulations?		
WATER POLLUTION		
Are vehicles stored in an appropriate area i.e. compound located greater than 50m from water flow path?		
Is equipment refuelled/ maintained offsite or in the vehicle compound?		
Are appropriate spill containment information (SDS) and/or spill kits kept on site?		
Are site managers and operators aware of spill kit locations and procedures?		
Is chemical/fuel storage appropriately located at 25m distance away from water flow paths?		
Is bund height and bund condition sufficient (sufficient volume to contain 120% of largest container within bund area)?		
Are concrete/agitator trucks leaving the site and returning to base for wash-out		
Is a schedule of hazardous chemicals maintained?		
EMERGENCY/ INCIDENT RESPONSE		
Were emergency/ incident procedures implemented as required?		
INCIDENTS		
Are Environmental Incident Reports completed and investigated?		

SIGNED:.....
(Site Manager)

DATE:

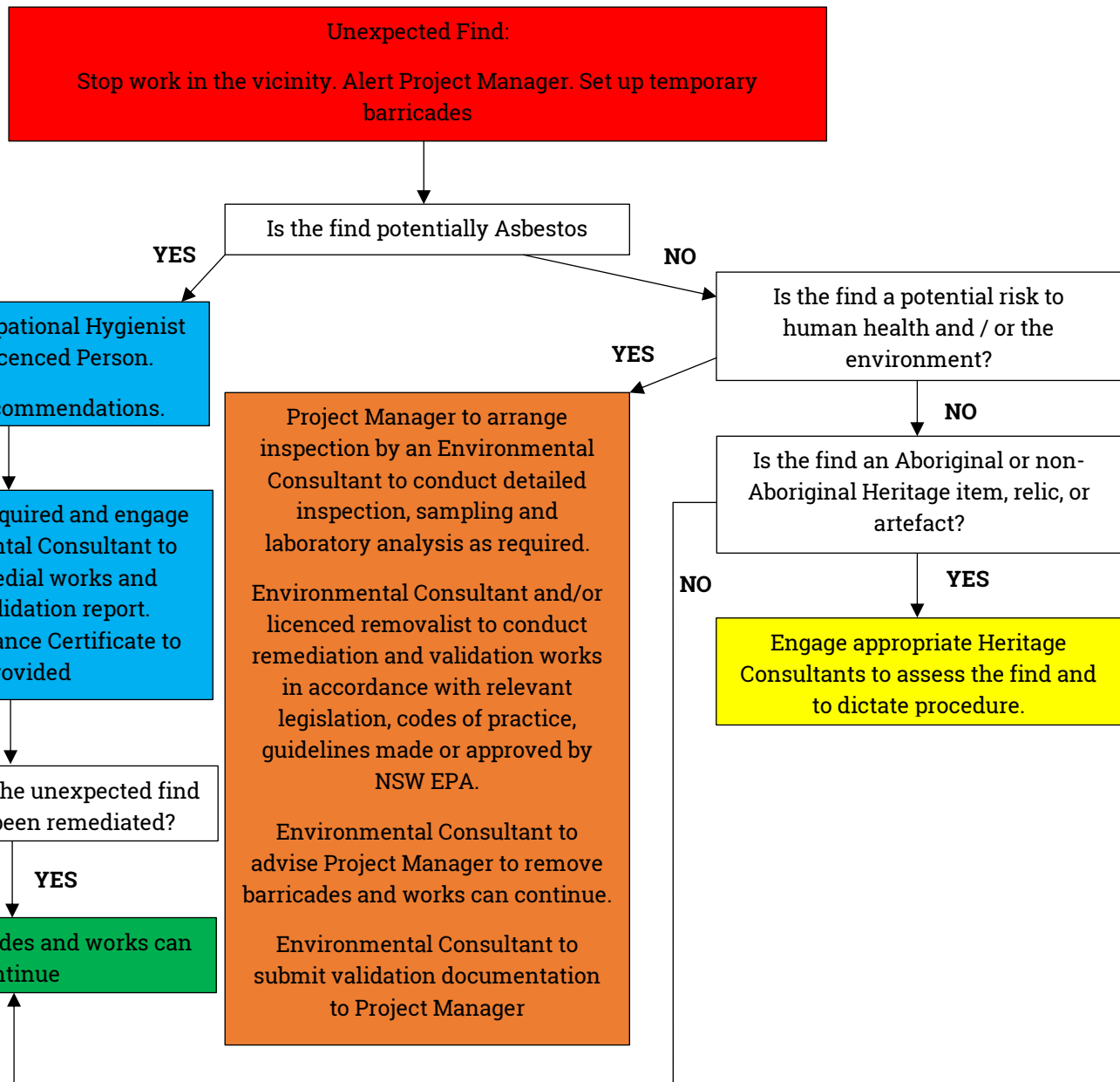
REVIEW/SYSTEM CHECK:
Environmental Weekly Checklist has been reviewed. All necessary NCRs have been raised.

SIGNED:.....
(Project Manager)

DATE:



Appendix D Unexpected Finds Protocol Example



Appendices

APPENDIX D. RESOURCE RECOVERY ORDER (RECOVERED AGGREGATE ORDER 2014)



Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered aggregate order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of recovered aggregate to which 'the recovered aggregate exemption 2014' applies. The requirements in this order apply in relation to the supply of recovered aggregate for application to land as a road making material, or in building, landscaping or construction works.

1. Waste to which this order applies

- 1.1. This order applies to recovered aggregate. In this order, recovered aggregate means material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory bricks or associated refractory materials, or asphalt that contains coal tar.

2. Persons to whom this order applies

- 2.1. The requirements in this order apply, as relevant, to any person who supplies recovered aggregate that has been generated, processed or recovered by the person.
- 2.2. This order does not apply to the supply of recovered aggregate to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

- 3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies recovered aggregate.

Sampling requirements

- 4.1. On or before supplying recovered aggregate, the processor must:
 - 4.1.1. Prepare a written sampling plan which includes a description of sample

preparation and storage procedures for the recovered aggregate.

- 4.1.2. Undertake sampling and testing of the recovered aggregate as required under clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with the written sampling plan and Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).
- 4.2. Where the recovered aggregate is generated as part of a continuous process, the processor must undertake the following sampling:
 - 4.2.1. Characterisation of the recovered aggregate by collecting 20 composite samples of the waste and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Characterisation must be conducted for recovered aggregate generated and processed every year following the commencement of the continuous process; and
 - 4.2.2. Routine sampling of the recovered aggregate by collecting either 5 composite samples from every 4,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.
- 4.3. Where the recovered aggregate is not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the recovered aggregate, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the recovered aggregate.

Chemical and other material requirements

- 4.4. The processor must not supply recovered aggregate to any person if, in relation to any of the chemical and other attributes of the recovered aggregate:
 - 4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation, or the routine or one-off sampling, of the recovered aggregate exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or
 - 4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the recovered aggregate (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or
 - 4.4.3. The average concentration or other value of that attribute from the routine sampling of the recovered aggregate (based on the arithmetic mean) exceeds the maximum average concentration or other value

listed in Column 3 of Table 1.

- 4.5. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	Maximum average concentration for characterisation (mg/kg 'dry weight' unless otherwise specified)	Maximum average concentration for routine testing (mg/kg 'dry weight' unless otherwise specified)	Absolute maximum concentration (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	75	75	150
4. Arsenic	20	Not required	40
5. Chromium (total)	60	60	120
6. Copper	60	60	150
7. Nickel	40	Not required	80
8. Zinc	200	200	350
9. Electrical Conductivity	1.5 dS/m	1.5dS/m	3 dS/m
10. Metal	1%	1%	2%
11. Plaster	0.25%	0.25%	0.5%
12. Rubber, plastic, paper, cloth, paint, wood and other vegetable matter	0.2%	0.2%	0.3%

Test methods

- 4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.
- 4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the recovered aggregate it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.
- 4.7.1. Test method for measuring the mercury concentration:
- 4.7.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated maximum average concentration in Table 1, Column 2 (i.e. < 0.1 mg/kg dry weight).
- 4.7.1.2. Report as mg/kg dry weight.
- 4.7.2. Test methods for measuring chemicals 2 - 8:

- 4.7.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.
- 4.7.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of stated maximum concentration in Table 1, Column 2 (i.e. 1 mg/kg dry weight for lead).
- 4.7.2.3. Report as mg/kg dry weight.
- 4.7.3. Test methods for measuring the electrical conductivity:
 - 4.7.3.1. Sample preparation by mixing 1 part recovered aggregate with 5 parts distilled water.
 - 4.7.3.2. Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
 - 4.7.3.3. Report deciSiemens per metre (dS/m).
- 4.7.4. Test method for measuring the attributes 10 - 12:
 - 4.7.4.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Aggregate (or an equivalent method), for the materials listed in 10 - 12 of Column 1, Table 1.
 - 4.7.4.2. Report as %

Notification

- 4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the recovered aggregate:
 - a written statement of compliance certifying that all the requirements set out in this order have been met;
 - a copy of the recovered aggregate exemption, or a link to the EPA website where the recovered aggregate exemption can be found; and
 - a copy of the recovered aggregate order, or a link to the EPA website where the recovered aggregate order can be found.

Record keeping and reporting

- 4.9. The processor must keep a written record of the following for a period of six years:
 - the sampling plan required to be prepared under clause 4.1.1;
 - all characterisation, routine and/or one-off sampling results in relation to the recovered aggregate supplied;
 - the quantity of the recovered aggregate supplied; and
 - the name and address of each person to whom the processor supplied the recovered aggregate.
- 4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for recovered aggregate supplied to any consumer of the recovered aggregate.
- 4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, recovered aggregate to land.

continuous process means a process that produces recovered aggregate on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates recovered aggregate into a material in its final form for supply to a consumer.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of recovered aggregate that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of recovered aggregate the first supply of recovered aggregate as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies recovered aggregate should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of recovered aggregate remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Appendices

APPENDIX E. RESOURCE RECOVERY EXEMPTION (RECOVERED AGGREGATE EXEMPTION 2014)



Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered aggregate exemption 2014

Introduction

This exemption:

- is issued by the Environment Protection Authority (EPA) under clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation); and
- exempts a consumer of recovered aggregate from certain requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and the Waste Regulation in relation to the application of that waste to land, provided the consumer complies with the conditions of this exemption.

This exemption should be read in conjunction with 'the recovered aggregate order 2014'.

1. Waste to which this exemption applies

- 1.1. This exemption applies to recovered aggregate that is, or is intended to be, applied to land for road making activities, building, landscaping and construction works.
- 1.2. Recovered aggregate is a material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory bricks or associated refractory materials, or asphalt that contains coal tar.

2. Persons to whom this exemption applies

- 2.1. This exemption applies to any person who applies, or intends to apply, recovered aggregate to land as set out in 1.1.

3. Duration

- 3.1. This exemption commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Premises to which this exemption applies

- 4.1. This exemption applies to the premises at which the consumer's actual or intended application of recovered aggregate is carried out.

5. Revocation

- 5.1. 'The recovered aggregate exemption 2010' which commenced on 13 September 2010 is revoked from 24 November 2014.

6. Exemption

- 6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of recovered aggregate to land when used for road making activities, building, landscaping and construction works at the premises:
- section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 and 42 of Schedule 1 of the POEO Act;
 - Part 4 of the Waste Regulation;
 - section 88 of the POEO Act; and
 - clause 109 and 110 of the Waste Regulation.
- 6.2. The exemption does not apply in circumstances where recovered aggregate is received at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

7. Conditions of exemption

The exemption is subject to the following conditions:

- 7.1. At the time the recovered aggregate is received at the premises, the material must meet all chemical and other material requirements for recovered aggregate which are required on or before the supply of recovered aggregate under 'the recovered aggregate order 2014'.
- 7.2. The recovered aggregate can only be applied to land in road making activities, building, landscaping and construction works. This approval does not apply to any of the following applications:
- 7.2.1. Construction of dams or related water storage infrastructure,
 - 7.2.2. Mine site rehabilitation,
 - 7.2.3. Quarry rehabilitation,
 - 7.2.4. Sand dredge pond rehabilitation,
 - 7.2.5. Back filling of quarry voids,
 - 7.2.6. Raising or reshaping of land used for agriculture, and
 - 7.2.7. Construction of roads on private land unless:
 - (a) the recovered aggregate is applied only to the minimum extent necessary for the construction of the road, and
 - (b) a development consent has been granted under the relevant Environmental Planning Instrument (EPI), or

- (c) it is to provide access (temporary or permanent) to a development approved by a Council, or
 - (d) the works are either exempt or complying development.
- 7.3. The consumer must keep a written record of the following for a period of six years:
- the quantity of any recovered aggregate received; and
 - the name and address of the supplier of the recovered aggregate received.
- 7.4. The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.
- 7.5. The consumer must ensure that any application of recovered aggregate to land must occur within a reasonable period of time after its receipt.

8. Definitions

In this exemption:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

consumer means a person who applies, or intends to apply, recovered aggregate to land.

processor means a person who processes, mixes, blends, or otherwise incorporates recovered aggregate into a material in its final form for supply to a consumer.

Manager Waste Strategy and Innovation
Environment Protection Authority
(by delegation)

Notes

The EPA may amend or revoke this exemption at any time. It is the responsibility of the consumer to ensure they comply with all relevant requirements of the most current exemption. The current version of this exemption will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this exemption, the EPA is not in any way endorsing the use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this exemption are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this exemption nor the accompanying order guarantee that the environment, human health or agriculture will not be harmed.

The consumer should assess whether or not the recovered aggregate is fit for the purpose the material is proposed to be used for, and whether this use will cause harm. The consumer may need to seek expert engineering or technical advice.

Regardless of any exemption provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The receipt of recovered aggregate remains subject to other relevant environmental regulations in the POEO Act and the Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of having an exemption, is guilty of an offence and subject to prosecution.

This exemption does not alter the requirements of any other relevant legislation that must be met in utilising this material, including for example, the need to prepare a Safety Data Sheet (SDS).

Failure to comply with the conditions of this exemption constitutes an offence under clause 91 of the Waste Regulation.

Appendices

**APPENDIX F. OBTRUSIVE LIGHT COMPLIANCE REPORT AND DRAWING PREPARED BY GARY ROBERTS
& ASSOCIATES PTY LTD PROVIDED BY CANADA BAY COUNCIL ON 20 MAY 2019**

Obtrusive Light - Compliance Report

AS 4282-1997, Pre-Curfew, Residential - Light Surrounds

Filename: 19005-05-A Majors Bay Reserve - 300 lx GR1 2 x22m poles deleted

17/05/2019 11:42:41 AM

Illuminance

Maximum Allowable Value: 10 Lux

Calculations Tested (2):

Calculation Label	Test Results	Max. Illum.
Ev_1_Ill_Seg1	PASS	0.2
Ev_2_Ill_Seg1	PASS	2.0

Luminous Intensity (Cd) Per Luminaire

Maximum Allowable Value: 7500 Cd

Control Angle: 83 Degrees

Luminaire Locations Tested (36)

Test Results: **PASS**

All Luminaire Locations (36):

Lum.No.	Label	Cd	Tilt	Roll	Spin
10	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
11	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
12	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
13	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
32	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
33	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
35	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
40	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
42	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
43	BVP525 OUT T30 50K A-NB+LO_30	384	65	0	0
41	BVP525 OUT T30 50K A-NB+LO_30	496	66	0	0
51	BVP525 OUT T30 50K A-NB+LO_30	623	67	0	0
52	BVP525 OUT T30 50K A-NB+LO_30	623	67	0	0
1	BVP525 OUT T30 50K A-NB+LO_30	760	68	0	0
2	BVP525 OUT T30 50K A-NB+LO_30	760	68	0	0
34	BVP525 OUT T30 50K A-NB+LO_30	760	68	0	0
4	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
6	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
7	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
9	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
14	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
16	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
18	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
20	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
21	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
22	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
23	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
24	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
25	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
26	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
27	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
30	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
45	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
48	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
49	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0
50	BVP525 OUT T30 50K A-NB+LO_30	1232	70	0	0

Threshold Increment (TI)

Maximum Allowable Value: 20 %

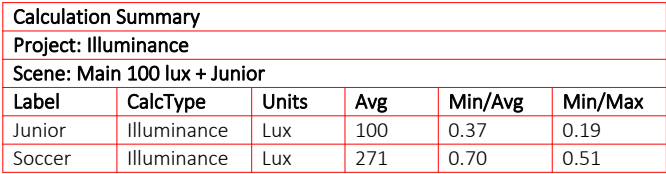
Calculations Tested (2):

Calculation Label	Adaptation Test Luminance Results
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TI_1 SB
TI_2 NB

0.2
0.2

PASS
PASS



Calculation Summary				
Project: TI Ev I				
Scene: Main 100 lux + Junior				
Label	CalcType	Units	Description	Max
Ev_1_Cd_Seg1	Obtrusive Light - Cd	N.A.	z = 1-20m	6734
Ev_1_III_Seg1	Obtrusive Light - II	Lux	z = 1-20m	0.2
Ev_2_Cd_Seg1	Obtrusive Light - Cd	N.A.	z = 1-20m	7409
Ev_2_III_Seg1	Obtrusive Light - II	Lux	z = 1-20m	2.0
Ti_1 SB	Obtrusive Light - TI	%	Lbar = 0.2	13.0
Ti_2 NB	Obtrusive Light - TI	%	Lbar = 0.2	14.0

Appendices

APPENDIX G. PARKING ASSESSMENT PREPARED BY COMPLETE URBAN DATED 29 MARCH 2019

MEMORANDUM

TO: Lisa Bella Esposito, Milestone

DATE: 29 March 2019

FROM: Nathan Parish, COMPLETE Urban

SUBJECT: Majors Bay Reserve Stage 2 Works – Parking Assessment for REF

Hi Lisa,

As requested, please find a parking assessment for the proposed works at Majors Bay Reserve. As discussed, the assessment updates that done in September 2015, reflecting the changes to the proposed field provisions since that time.

As per the previous assessment and as agreed, the below concentrates on the parking impacts only.

Site Description

Majors Bay Reserve is located with the City of Canada Bay LGA in Concord.

Existing Layout

The existing facilities within the reserve that generate parking demand are:

- a. Field 1 and Field 2 – baseball fields (summer, week night training, Saturday game);
- b. Ron Routley Oval – cricket/AFL (summer/winter, week night training, Saturday game);
- c. Concord RSL and Community Club; and
- d. Majors Bay Reserve – recreational activities.

Existing Parking

The following car parking provisions are located immediately adjacent to Majors Bay Reserve:

- a. Concord RSL and Community Club Car Park
 1. The car park has 10 spaces allocated to club representatives (President, Director etc.). These are restricted use and are unchanged with the proposed development;
 2. The car park has 64 spaces allocated to club patrons. These are restricted to club patrons and as such should remain unchanged with the proposed development; and
 3. The car park has 177 spaces allocated to sports field parking.
- b. Car Park 2
 1. The existing gravel car park has an estimated capacity of 30 spaces.
- c. Norman Street
 1. Kerb side parking restrictions on one side of Norman Street, immediately adjacent to the reserve. The kerbside parking available adjacent to the park between Majors Bay Road and Nullawara Avenue is approximately 450 metres, which would equate to approximately 75 car parks.
 2. There are also kerbside parking provision on other sections of Norman Street and surrounding residential roads, and it is noted that these are largely occupied by residents.

Parking Counts

No new car parking counts were undertaken as part of the Stage 2 assessment. The 2015 counts were used as follows:

- a. The counts were undertaken at the following times:
 1. Saturday 15th August 2015 from 10am to 5pm; and
 2. Tuesday 18th August 2015 from 10am to 12pm and 5pm to 9pm.
- b. The counts were undertaken at 3 locations as follows:
 1. Concord RSL and Community Club car park;
 2. Car Park 2; and
 3. Kerb side parking in Norman Street.

Parking Count Results

The results of the car parking counts indicate the following:

- a. Concord RSL and Community Club Car Park
 1. The car park has 10 spaces allocated to club representatives (President, Director etc.). These were rarely occupied.
 2. The car park has 64 spaces allocated to club patrons. Throughout both survey periods, occupation of these bays ranged from 15 to 43 (23% to 67%), indicating spare capacity.
 3. The car park has 177 spaces allocated to sports field parking. Throughout weekend survey period, occupation of these bays ranged from 19 to 77 (10% to 43%). Throughout the weekday survey period, occupation of the bays ranged from 2 to 7 (1% to 4%). The weekday results indicate that no sports training occurred on that evening. Based on the fact that numbers attending training would be similar to those attending on game day, it is assumed that the weekday count maximum would be similar to that experienced during the weekend. Thus, the counts would indicate significant additional capacity in the existing car park.
- b. Car Park 2
 1. The existing gravel car park has an estimated capacity of 30 spaces. Throughout both survey periods, no vehicles were recorded using the car park.
- c. Norman Street
 1. Counts were also undertaken for the kerb side parking provisions on Norman Street east of Majors Bay Road. The data indicated a consistently high utilisation of the car parking on Norman Street. Assessment of the site indicates that this is most likely due to resident parking, and the proposed development will have little impact on this and most vehicles were parked throughout the duration of the surveys.
 2. It is noted that the provided counts did not record data on Norman Street between Majors Bay Road and Nullawarra Avenue. Kerbside parking exists on one side of Norman Street over this length, being the side adjacent to the reserve. Site knowledge indicates that this parking is under utilised, with spare capacity available, and given the proximity to the playing fields, is likely to be used by park users.

Previous Assessment on Alternative Stage 1 Works

The previous parking assessment assumed two large soccer fields with an assumed parking generation of 37 per field, i.e. 74 for the total development. That assessment determined that there was sufficient spare car parking capacity in the Concord RSL and Community Club car park to accommodate the parking generated by the two fields. Additional car parking on Norman Street adjacent to the park would add further to the available capacity.

Proposed Development

The proposed Stage 2 development involves the following:

- a. Construction of a half size synthetic field;
- b. Construction of a soccer amenities building; and
- c. Associated works.

Generated Parking

As the development has changed from that previously assessed, it is not possible to simply add the Stage 2 works to the previous assessment, and as such the assessment of the parking generated assesses both Stage 1 and Stage 2 to determine if there is sufficient capacity in the existing car parking provisions.

It is assumed that the total development will either operate as 1 x full soccer pitch and 2 x mini soccer pitches or 6 x mini soccer pitches. Based on this assumption, the following parking generation is assumed:

- 1 x full soccer pitch and 2 x mini soccer pitches

Players: 11 players + 3 substitutes per team full and 10 players per pitch mini	48
Officials: 1 referee + 2 linesman full and 1 referee mini	5
Spectators: Assume 20% of total players for full, zero for minis	6
TOTAL	59

Note – the above assumes no car pooling so is considered a worst case scenario

- 6 x mini soccer pitches

Players: 10 players total per pitch	60
Officials: 1 referee per pitch	6
Spectators: Assume zero, as being minis, spectators would likely be in same car as players	0
TOTAL	66

Note – the above assumes no car pooling so is considered a worst case scenario

Based on the above, and with the likelihood of two matches worth of players being on site at any one time as players warm up whilst the previous game is still playing, it is assumed that the proposed development would generate parking of an extra 118 car parking spaces when in full pitch mode and 132 car parking spaces in mini pitch mode.

Conclusions

Based on the above assessment, the following conclusions are made in relation to parking:

- a. Based on the received car park count data, the highest demand currently observed is 77 vehicles in the Concord RSL. With a capacity of 177 spaces, this leaves an additional 100 spaces at the peak time that are available;
- b. Further, there is approximately 75 car parking spaces available on Norman Street adjacent to the reserve which are largely under utilised;
- c. In consideration of the above, it is expected that the existing car park and kerbside parking on Norman Street has the capacity to accommodate the generated parking numbers. The assessed spare capacity is 175 spaces (being 100 in the car park and 75 on Norman Street). The expected parking demand in the worst case development situation being an additional 132 cars. This equates to the development utilising 75% of the spare car parking capacity in the area, and will result in a spare capacity of 43 (or 25%) of the currently available car parks;
- d. In addition, should Council wish to provide additional car parking to reduce impact on the main car park and the driveway access, the opportunity exists to develop the existing gravel car park and/or provide additional signposting to direct motorists to it;

In relation to traffic, I make the following comments, which should be taken as comments only and are not supported by any traffic modelling or additional site observations / measurements:

- a. High utilisation of kerbside parking on Norman Street may impact on the safety and use of the existing bicycle shoulder lanes on Norman Street. It is suggested that the existing parking lane, cycle lane and traffic lane widths are calculated to assess impact;
- b. Whilst Norman Street and Majors Bay Road are considered arterial roads which form an important part of the surrounding road network, the 2015 counts indicate approximately 3-4 times more traffic use Nullawarra Avenue over Norman Street. Given the similarity of the roads and their capacity, and excepting some congestion during peak periods which would currently occur, it is considered that the additional traffic resulting from the Stage 2 development works will have a minimal impact on the traffic on Norman Street and Majors Bay Road;
- c. The performance of the driveway from the Concord RSL has not been modelled or assessed. However, given that the proposal does not increase the size of the current car park using this driveway, Council may have some previous modelling to support the car park size which indicates the performance of the driveway access.

Appendices

APPENDIX H. COMMUNITY ENGAGEMENT REPORT PREPARED BY CANADA BAY COUNCIL DATED 27 MAY 2019

COMMUNITY ENGAGEMENT REPORT

Majors Bay Reserve Sport Upgrade 1 April - 1 May 2019



CONTENTS

RESULTS

- 2 Topline engagement results

BACKGROUND

- 3 Overview
- 4 Stakeholders

ENGAGEMENT PLAN

- 5 Strategy
- 5 Engagement Methods
- 5 Promotion

RESULTS CONTINUED

- 6 Drop in feedback
- 7 17-19 Norman St feedback
- 8 Project page feedback

APPENDIX

- 9 Materials
- 15 17-19 Norman St Concord correspondence



1 APRIL - 1 MAY 2019

TOPLINE ENGAGEMENT RESULTS

THIS PROJECT RECEIVED 31 CONTRIBUTIONS FROM COMMUNITY MEMBERS.

POSITIVE FEEDBACK - 67.7% (21 OF 31)
NEUTRAL FEEDBACK - 3.3% (1 OF 31)
NEGATIVE FEEDBACK - 29% (9 OF 31)

POSITIVE FEEDBACK

SPORTING CLUBS

The 21 positive feedback responses were primarily contributed by sport club members and their families, specifically Inter Lions FC and Concord Junior Soccer Club, who attended the information drop in session on Saturday 13 April 2019. These groups are in support of the new fields and facilities as they will be using them consistently, and lobbied for funding to develop them.

NEGATIVE FEEDBACK

17-19 NORMAN STREET

A key group of stakeholders identified during planning is the residents and owners of 17-19 Norman Street (townhouses), who will be most affected by the installation of the second half-sized field, 6m safety net fence and lighting. Unfortunately, despite a letterbox drop occurring, these stakeholders have asserted that they didn't receive the DL flyer which was distributed on 2 April 2019. This meant that the group was uninformed and felt excluded from the consultation process. Andrei Gudas worked directly with the strata manager, David Hairman of ACE Body Corporate, to canvas concerns. It is noted that these stakeholders are in favour of stage one and the amenities building.

As a result of feedback from this group, Council officers met with the strata management committee on 8 May 2019 to discuss their concerns and provide assurances that their feedback would be addressed as the project progresses. These concerns and possible alternatives are outlined on page 7 of this report.

It is worth noting that the 2 of 9 pieces of negative responses were submitted as comments on Facebook and referred to the use of synthetics to create the fields as opposed to commenting on the wider project. ("Synthetic = Microplastics. Irresponsible.")

NOTE - Feedback +/- must be weighted against how this project affects each stakeholder group. Sporting groups, while important, are likely to be in extreme support for the upgrades while resident concerns are also important to consider as their support for the upgrades will ensure long term positive outcomes - particularly an harmonious environment for all stakeholders in the precinct.

PROJECT OVERVIEW

Major's Bay Reserve is currently undergoing an upgrade to its sporting precinct. The works have begun with stage 1 underway and stage 2 currently being planned. The proposed works will be completed by mid-2020 in two stages. Stage 1: one full-sized synthetic playing field, and Stage 2: one half-sized synthetic field complete with lighting, access, seating and a new amenities block.

The new fields will allow for greater opportunity for members of the local community and sporting teams to train and play, the project team has assessed how this will impact the local community, particularly pertaining to parking, congestion, noise and light pollution. These findings were presented in the Review of Environmental Factors (REF) document prepared by an independent town planner (Milestone Pty Ltd).

Community consultation was undertaken for stage 2 of this projects due to the change in intensity to the site (i.e. an additional half sized soccer field and increased hours of use) and proximity to residents. The community consultation provided an opportunity to understand community concerns and feedback.

EXTERNAL MESSAGING:

Majors Bay Reserve in Concord is an important sporting precinct with thousands of local residents using the space for active recreation and team sports.

Majors Bay Reserve is made up of the following sporting facilities:

- *Ron Routley Oval: Cricket and football field. Seasonal users include Briars Cricket Club, Inter Lions Soccer Club and Concord Junior Soccer Team.*
- *Sid Richards Parks 1, 2 & 3: Two baseball fields and a soccer field. Seasonal users include Concord Comets Baseball Club, Concord Junior Soccer Team. and Inter Lions Soccer Club*

In August 2018, Mayor Angelo Tsirekas announced our \$4.4 million funding commitment to undertake major upgrade works at Majors Bay Reserve in conjunction with \$2.3 million from the NSW Government. The upgrade will deliver a state of the art facility to meet ongoing demand for active open space facilities and will provide increased access for residents and sport clubs.

This project will be delivered in two overlapping stages:

Stage 1 - February 2019 to late 2019

Early works construction has begun on a full-sized synthetic playing surface at Sid Richards Field 3.

Stage 2 - Late 2019 to mid-2020

To complement the new full-sized playing field, we plan to construct an additional half-sized synthetic field complete with lighting, access, seating and a new amenities block.

STAKEHOLDERS

STAKEHOLDER CATEGORY	Stakeholders	Notification Methods	Engagement Methods	Influence	Interest	Interests, Benefits, Concerns
COMMUNITY MEMBERS	Broader community/casual park users	<ul style="list-style-type: none"> Collaborate website Site Signage 	<ul style="list-style-type: none"> Online Listening Post Email 	Medium	Low	<ul style="list-style-type: none"> Greater usage opportunities of the facilities, particularly amenities building Additional congestion through the area during peak periods – particularly Norman Street and <u>Nullawarra Road</u>.
	Residents in surrounding streets	<ul style="list-style-type: none"> Via post – DL flyer Collaborate website Site signage 	<ul style="list-style-type: none"> Online Listening Post Email 	Medium	High	<ul style="list-style-type: none"> Lighting and fencing near south east border of the construction area (Norman Street) Perceived additional congestion and noise through the area during peak periods – particularly Norman Street and <u>Nullawarra Road</u>. Greater usage opportunities of the facilities, particularly amenities building
	Sporting clubs	<ul style="list-style-type: none"> Email Face to face discussions 	<ul style="list-style-type: none"> Online Listening Posts Email 	High	High	<ul style="list-style-type: none"> Additional opportunities to play and train Use of amenities building for meetings and club gatherings

PROJECT STRATEGY

From 1st April - 1st May 2019, Canada Bay Council conducted a 4 week community consultation to canvas opinions and concerns related to the synthetic field upgrades already underway at Majors Bay Reserve - specifically related to concerns due to increased usage.

It was identified that, despite informing surrounding residents and sporting groups of the Stage 1 upgrades, insufficient detail regarding the Stage 2 of the project and how this would affect the precinct and surrounds was provided. The strategy was to engage the community to understand their concerns and incorporate solutions where practical.

*The working group decided that Council will engage with the community to **inform and consult** their feedback on Stage 2 of the upgrade via the following channels:*

- *DL flyer to 550 surrounding residents & 87 property owners on 2 April 2019*
- *Collaborate Canada Bay project page with in-depth FAQs, design images and documentation*
<https://collaborate.canadabay.nsw.gov.au/majorsbayreserve>
- *Information drop in session at Majors Bay Reserve on 13 April 2019*
- *Facebook post informing community of project and drop in session on 9 April 2019*

CONSULT engagement level - Identify appropriate stakeholders, individuals and/or groups and their needs or issues. Seek comment on project. Request response, but limited opportunity for dialogue. Take account of consultation feedback in decision making.

Copy of materials in appendix

POSITIVE COMMUNITY FEEDBACK

13 APRIL 2019 DROP IN FEEDBACK:

1. *"Totally 100% for all the new facilities. Kids need to be encourage to be active and there needs to be places for them to be active"*
2. *"I support this project. I've been coaching young kids here at Inter Lions for 23 years. About time we get better facilities"*
3. *"What a wonderful initiative for the area. Once again Canada Bay Council are on the forefront of providing excellent sporting services. Congratulations"*
4. *"Please allow our children of Interlions soccer to utilise the new synthetic grass field when complete"*
5. *"We would like the opportunity for our kids to play on upgraded fields to improve their skills and reduce likelihood of injuries. We hope you are able to provide this to our children playing with Interlions"*
6. *"It would be very benficial for the Interlions kids [to] play on the new field under construction. [It will] build a strong sense of community and pride."*
7. *"Looking forward to the new ground"*
8. *"Looking forward to the new ground"*
9. *"Looking forward to the new field"*
10. *"Looking forward to the upgrade of new grounds"*
11. *"Looking forward to the new grounds and grand stand"*
12. *"Looking forward to the new grounds and facilities"*
13. *"The new fields would be great for our players' training, development and games"*
14. *"Great for the community"*
15. *"The new facilities will be great for the community and families"*
16. *"We as a family would like our children to use the new fields"*
17. *"Looking forward to the new grounds"*
18. *"I would like my son to play on the new grounds"*
19. *"I think the new amenities are going to be fantastic for the younger generation. Awesome"*
20. *"Great initiative from Council. Good community spirit for Inter Lions"*

NEGATIVE COMMUNITY FEEDBACK

17-19 NORMAN STREET:

On 26 April 2019, the strata manager of 17-19 Norman Street Concord informed Council officers that owners and tenants of the building had not been informed of the proposal or community consultation being undertaken. Council had previously sent this group a Mayoral letter (12 February 2019) and a DL flyer (1-3 April 2019) that provided information and a link to Collaborate Canada Bay. Unfortunately, these stakeholders asserted that they did not receive this DL flyer and were not informed of the consultation or Stage 2 planned works.

Council received emails from 5 individuals including the strata manager and 4 owners of 17-19 Norman St Concord.

CONCERNS FROM 17-19 NORMAN ST CONCORD RESIDENTS AND OWNERS:

- Value disadvantage – the owners believe that having the soccer field so close to their boundary will have a significant detrimental affect on both the value and amenity of their properties.
- They currently enjoy a leafy aspect and outlook over the park. This will be changed by having a 6m high fence very close to the boundary of their property.
- The use of the soccer fields will create significant noise for the residents of the building especially during the evenings and weekends.
- The use of the fields at night will cause light to spill in to the complex.
- People parking in Norman Street may try to shortcut through 17-19 Norman Street to gain access to the playing fields

8 MAY 2019 STRATA MANAGEMENT COMMITTEE MEETING MINUTES:

The meeting was attended by the strata manager and 5 owner occupiers from 6.30-7.40PM on Wednesday 8 May 2019.

- **Owner occupiers of the properties expressed disappointed and frustration that their views had not been directly and effectively sought by Council.** Council officers reassured the group that Council sought to inform them and apologised for the breakdown of that process, and this meeting was part of Council's sign of good faith that their feedback is welcome and will be considered.
- The group expressed that they do not want the half sized field to be constructed in its current location. The group is in support of the full sized field and amenities building.
- **Some of the group would accept a half sized field that was made with natural grass and with no fence or associated lighting to reduce the proximity of the fence and noise pollution due to evening use. Other members disagreed with the development of any type of half sized field.**
- The group were interested in exploring other options for the placement of the half sized field, including on Ron Routley Oval or by moving the baseball diamond slightly to accommodate the half sized field on the southern end of the full sized field.
- The 6m high fence was a distinctly troublesome design element as it will obstruct their views, increase the risk of trespassing onto their property, and cause increase in parking congestion.
- **The group would like to reduce proposed usage hours from 8am-10pm to 8am-9pm on the fields as noise travels easily across the park, and players are often on site much later than the current 9pm curfew.**
- The group asserted that they would like to meet with the General Manager, and are willing to escalate their concerns up to Council and the Mayor if necessary.
- The group also questioned the Review of Environmental Factors document as the report states the half sized field would not have detrimental affect on their properties which they disagree with vehemently.
- The group questioned the validity of the flood report's conclusion upon which the placement of the fields was based and why consultation on the proposed location did not occur earlier in the process.

NEGATIVE COMMUNITY FEEDBACK

17-19 Norman St Concord Strata Committee Meeting Minutes
Wednesday 08/05/2019 | 6.30 - 7.40 PM | 4/17-19 Norman Street Concord
Meeting called by: Strata Committee
Type of meeting: Meeting with owner occupier of residence

Attendees:

- Andrei Gudas, Project Manager, City of Canada Bay
- Sarah Corry, Engagement Coordinator, City of Canada Bay
- David Harman, Strata Manager, Ace Body Corporate North Shore
- Ms Christine Haldane, Owner Occupier, 1/17-19 Norman St Concord
- Jodi & Dionicio Ignacio, Owner Occupier, 3/17-19 Norman St Concord
- Jessi Towns, Owner Occupier, 4/17-19 Norman St Concord
- Mrs Miryam Sanchez and Mr Joseph Tannous, Owner Occupier, 5/17-19 Norman St Concord
- Akwasi Agyei, Owner Occupier, 7/17-19 Norman St Concord

Minutes

Meeting agenda was to discuss group's concerns with the planned development of second half sized field and amenities building, associated fencing and lighting.

16/05/2019 Council amendments struck out and in bold following feedback from strata committee. Feedback from strata committee members in bold and blue

The meeting was attended by the strata manager and 5 owner occupiers from 6.30-7.40PM on Wednesday 8 May 2019.

1. Owner occupiers of the properties expressed disappointment and frustration that their views had not been directly and effectively sought by Council. Council officers reassured the group that Council sought to inform them and apologised for the breakdown of that process, and this meeting was part of Council's sign of good faith that their feedback is welcome and will be considered. Residents of Norman Street asserted that no DL Flyer was received as part of a scheduled letterbox drop by Council. Council officers apologised for this and issued residents with a copy of the flyer; reiterating that in addition to a multitude of communication channels (e.g. site posters, letters to owners, Council website, onsite listening posts and Facebook), the DL Flyer letterbox drop of over 550 residences was undertaken by Council employees on 2 April 2019.

Postscript comments by Mr Akwasi Agyei received 15/5/19: Council officers admitted that due process was not followed with regard to community consultation - as no resident at the complex received any of the mail box drop off.

2. The group expressed that they do not want the half sized field to be constructed in its current location. The group is in support of the Stage 1 full sized field and Stage 2 amenities building.

Postscript comments by Mr Akwasi Agyei received 15/5/19: The group stressed that the half sized field should be abolished from the current location with any development to be restricted to the blue dotted line at the end of the stage 1 full field.

3. The group would accept a half sized field that was made with natural grass and a naturally grassed field with no fence or associated lighting to reduce the proximity of the fence address the reduction in amenity and noise pollution due to evening use.

Postscript comments by Mr Akwasi Agyei received 15/5/19: The group does not want any field close to the complex. This statement relates to the historic use of the area which was some 60-70 metres from the complex and rarely used. This is not due to evening use at all. We just don't want it activity within such close proximity to a residential use area and the complex. It immensely impacts our private use and enjoyment of the rezoned area and our homes.

4. The group were interested in exploring other options for the placement of the half sized field, including on Ron Routley Oval or by moving the baseball diamond slightly to accommodate the half sized field on the southern end of the full sized field.

Postscript comments by Mr Akwasi Agyei received 15/5/19: The group questioned the location of the field given the options available within the wider reserve, particularly the fields at the intersection of Norman Street and Yarralla St (round about) where a full size field is currently established with a buffer and a road (approx. 60 metres) separating the field and nearby residence and the RSL club. The issues of flooding in that area is questionable as this can be mitigated with cut and fill as currently being undertaken for stage 1. The whole area is identified a flood zone and the elected area is in closer proximity to the water.

5. The 6m high fence was a distinctly troublesome design element as it will obstruct their views significantly and result in a loss of amenity by feeling 'caged in'. The group expressed concerns regarding trespassers on the complex, however Council noted that the main access to the synthetic field is via the amenities building from the RSL carpark and a fence will only serve to deter users from parking on Norman Street and trespassing through their complex.

Postscript comments by Mr Akwasi Agyei received 15/5/19: This is not a views question. We just don't want to be caged in with such fencing. The fencing will visually impact on the complex and value, create risk of pedestrians intruding / trespassing our complex to get to the field and amenities block and potentially use our limited car spaces within the complex whilst posing a big risk to our children who currently enjoy using the common areas.

Postscript comments by Ms Jessie Towns received 15/5/19: I'm happy with the minutes and with Akwasi's comments though I would like to leave in the part about the 6m fence obstructing views - that is a significant issue for me in number 4. And agree, it needs to be recorded that council admitted and apologised for the fact that we (the neighbours most impacted) were not consulted in the proper manner and this has amplified our frustration.

6. The group would like to reduce proposed usage hours from 8am-10pm to 8am-9pm on the fields as noise travels easily across the park, and players are often on site much later than the current 9pm curfew.

Postscript comments by Mr Akwasi Agyei received 15/5/19: The time of use only applies to the full size field as part of stage 1. We strongly object to the development of the half size field and Council officers confirmed this is development has not yet been endorsed/approved for development. They further stated the current fill on the area proposed for the half field is only from the local resurfacing works and not an indication of approved works. We take your words to be true and correct despite evidence of works relating to the proposed flood lights.

7. The group asserted that they would like to meet with the General Manager, and would be willing to escalate their concerns up to Council and the Mayor if necessary.

Postscript comments by Mr Akwasi Agyei received 15/5/19: We stressed that we want to escalate it now before it is too late - according to your admission, a decision on the half size has not yet been made. Stating would does not accurately reflect our request - it was a request on foot.

8. The group also questioned the Review of Environmental Factors document as the report states the half sized field would not have detrimental effect on their properties which they disagree with vehemently.

Postscript comments by Mr Akwasi Agyei received 15/5/19: There is no evidence to support this claim. There are major issues which would negatively impact on the complex including but not limited to noise pollution, visual, light pollution, trespassing, risk of damage to our property, risk of injury from flying balls to residents and in particular our children who play around the complex and loss of the peace and private enjoyment of our family homes.

9. The group questioned the validity of the flood report's conclusion upon which the placement of the fields was based and why consultation on the proposed location did not occur earlier in the process.

Action Items

Action items	Person responsible	Deadline
✓ Input feedback and <u>finalise</u> consultation report	Sarah Corry	09/05/2019
✓ Provide report to Director and GM	Andrei Gudas	09/05/2019
✓ Discuss request for meeting with GM & Mayor with leadership	Andrei Gudas	09/05/2019
✓ Provide owner occupiers of 17-19 Norman St with requested public information and reports	Andrei Gudas	15/05/2019
✓ Inform owner occupiers of outcome	Andrei Gudas	22/05/2019

FEEDBACK ON COLLABORATE CANADA BAY PAGE

Positive


"Inter Lions FC would be committed in supporting the Majors Bay Reserve Sports Upgrade. Inter Lions FC was established in 1983 (36 years ago) partnering with Canada Bay to engage community football within the Canterbury District Association and FNSW NPL/WPL Competition. The Sports Upgrade will enrich the community, commit to the continued use of land across NSW for sport, leisure and recreational purposes. We acknowledge that The Canada Bay Council have actively listened by promoting the many benefits of improving the health and well-being of individuals. This project contributes to the empowerment of individuals and developing inclusive communities."

Neutral

"Could you upgrade the website to note that Concord Junior Soccer Team has a huge stake in this project as well? I am getting a lot of feedback from parents that only InterLions are mentioned as having access to this field when we have been telling parents it is a joint project, and we are very much involved."

APPENDIX MATERIALS

Collaborate Canada Bay website page



Majors Bay Reserve Sport Upgrade

The popular park is getting a state of the art field and amenities block.

[+ Follow](#)

[Home](#) > [Majors Bay Reserve Sport Upgrade](#)

Majors Bay Reserve in Concord is an important sporting precinct with thousands of local residents using the space for active recreation and team sports.

Majors Bay Reserve is made up of the following sporting facilities:

- **Arthur Walker Reserve:** Synthetic cricket wicket and football field. Seasonal users include Briars Cricket Club, Inter Lions Soccer Club and Inner West Harbour Cricket Association.
- **Ron Routley Oval:** Cricket and football field. Seasonal users include Briars Cricket Club and Inter Lions Soccer Club.
- **Sid Richards Reserve:** Two baseball fields and a soccer field. Seasonal users include Concord Comets Baseball Club and Inter Lions Soccer Club

Upgrades Planned

In August 2018, Mayor Angelo Tsirekas announced our commitment to undertaking major upgrade works at Majors Bay Reserve in conjunction with funding from the NSW Government. The upgrade will deliver a state of the art facility to meet ongoing demand for active open space facilities and will provide increased access for residents and sport clubs.

This project will be delivered in two overlapping stages:

Stage one (late February to late 2019) – Full Size Playing Field

Early Works construction has begun on a full-sized synthetic playing surface at Sid Richards Field 3.

Stage two (late 2019 to mid-2020) – Half Size Playing Field and Amenities Building

To complement the upgraded full-size playing field, we are planning to construct an additional half size synthetic field as well as a new state of the art amenities building and associated lighting.

What's Next?

We are currently working on the design of the amenities block and will be reporting back with detailed plans for stage two by October 2019. Construction of Phase 2 will begin in November 2019, with a view to opening the facilities by mid-2020.

Have a question about the upgrades?

Open

Activity closes 01/05/2019 at 11:59 PM

The team will respond directly to any questions you have regarding the upgrades. While the construction of the site is already underway, we want to hear your questions about the future of Majors Bay Reserve and are here to keep you informed.

Ask a Question

Who's Listening?

Filter by:

Status

Sort by

Timeline

- ★ Stage One construction commences - February 2019
- ★ Stage Two Planning - March - May 2019
- ☆ Stage Two Design Phase - June - July 2019
 - Consultants engaged
 - Detailed design plan developed
- ☆ Procurement Phase - August - October 2019
 - Engage contractors
 - Final design confirmed
- ☆ Stage Two Construction Commences - November 2019
- ☆ Facilities Open - Mid-2020

[See less](#)

Contact Us

Have questions or want to learn more? Contact us below:

👤 Name Andrei Gudas

📞 Phone 9911 6555

✉ Email council@canadabay.nsw.gov.au

APPENDIX MATERIALS

Mayoral letter sent 12 February 2019

12 February 2019

The Resident
CONCORD WEST NSW 2138

Dear Resident,

MAJORS BAY RESERVE – NOTIFICATION OF WORKS COMMENCEMENT

Council is committed to providing quality open space facilities that encourage our community to participate in an active, social and healthy lifestyle.

In August 2018, I announced the commitment to undertaking major upgrade works at Majors Bay Reserve in conjunction with funding from the NSW Government. The upgrade will deliver a state of the art facility to meet ongoing demand for active open space facilities.

This project will be delivered in two stages:

Stage one (late February to late 2019) – Playing Field

Construction begins on a new synthetic playing surface at Sid Richards Field 3, including one full-sized field and one half-sized field, and existing sports field lighting reconfiguration.

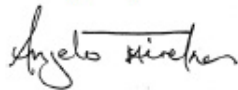
Stage two (late 2019 to mid-2020) – Amenities Building

Prior to the construction of the amenities building, we will be undertaking community consultation to discuss the design of this second stage of works.

Council officers will be at Majors Bay Reserve on Thursday 14 February from 5.30pm – 7pm if you wish to discuss this project further.

Should you have any questions regarding this project, please contact Council's Project Manager - Building and Civil Construction, Mr Andrew Dimitriadis on 9911 6319 or email council@canadabay.nsw.gov.au.

Kind regards,



Mayor Angelo Tsirekas
City of Canada Bay

T 02 9911 6555 E council@canadabay.nsw.gov.au www.canadabay.nsw.gov.au

Canada Bay Civic Centre 1A Marlborough Street, Drummoyne 2047

Locked Bag 1470, Drummoyne 1470 ABN 79 130 029 350

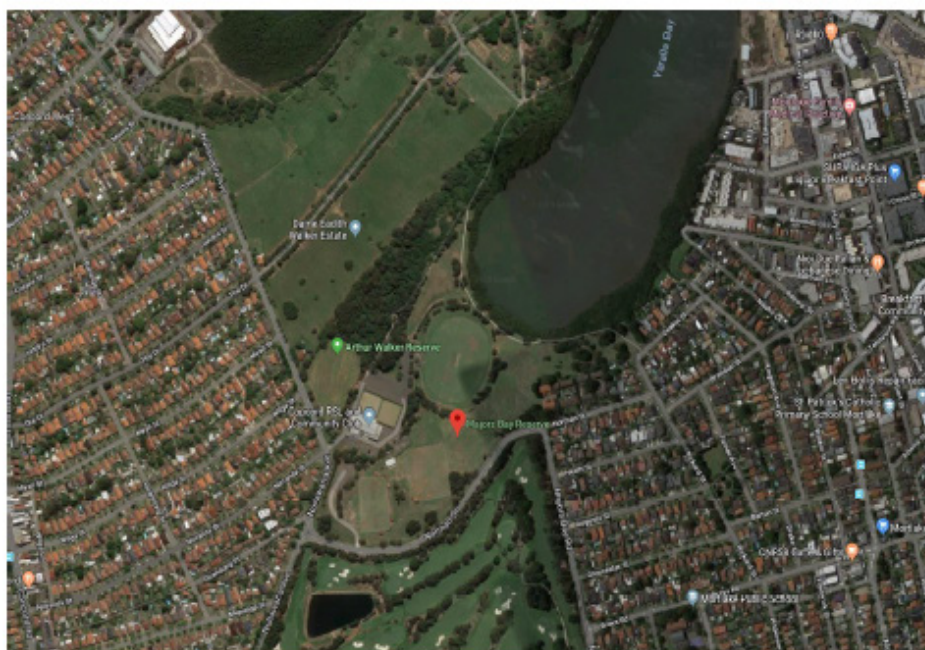


Image 1: Majors Bay Reserve and Surrounds



Image 2: Location of Synthetic Playing Fields

APPENDIX MATERIALS

Letter sent to non-resident owners

Dear Mr A Agyei,

Majors Bay Reserve Sporting Precinct Upgrade

We recently distributed an information flyer to your property at 7/17 Norman Street Concord NSW 2137 regarding an upcoming project at Majors Bay Reserve. Enclosed is a copy of the flyer.

Should you require further information please visit bit.ly/majorsbayreserve or come and meet the project team at Majors Bay Reserve on Saturday, 13 April from 10am-12pm.

Kind regards,

Andrei Gudas
Project Manager
City of Canada Bay

APPENDIX MATERIALS

DL flyer sent 2 April 2019


Majors Bay Reserve

Sporting Precinct Upgrade



Creating state-of-the-art recreation facilities for our community

 City of Canada Bay



Mayor Angelo Tsirekas

I am pleased to announce that work has begun on stage one of our Majors Bay Reserve Sporting Precinct Upgrade project. The upgrade will include a community amenities building and synthetic playing fields.

Majors Bay Reserve in Concord is an important sporting precinct with over 1,000 local residents utilising the space for active recreation and team sports.

The project, jointly funded by the City of Canada Bay (\$4.4 million) and NSW Government (\$2.3 million) through the Stronger Communities Fund, will deliver a \$6.7 million state-of-the-art facility to meet ongoing demand for active open space facilities, allowing increased opportunities to play and train.

This project will be delivered in two overlapping stages:

Stage one (late February to late 2019)
Construction of a full-sized synthetic playing field at Sid Richards Field 3.

Stage two (late 2019 to mid-2020)
To complement the new full-sized playing field, Council plans to construct an additional half-sized synthetic field complete with lighting, access, seating and a new amenities block.

Got any questions?

- Find out more: bit.ly/majorsbayreserve
- Come and meet the project team at Majors Bay Reserve on Saturday, 13 April 10am-12pm.

Proudly funded by



City of Canada Bay

Proudly funded by



NSW GOVERNMENT

APPENDIX MATERIALS

Site poster

Majors Bay Reserve Sporting Precinct Upgrade

Creating state-of-the-art recreation facilities for our community

Work has begun on our \$6.7 million Majors Bay Reserve Sporting Precinct Upgrade project. The project, jointly funded by the City of Canada Bay (\$4.4 million) and NSW Government (\$2.3 million) through the Stronger Communities Fund, will deliver a state-of-the-art facility allowing increased opportunities to play and train.

Key stages:

Stage one (late February to late 2019)

Early works construction has begun on a full-sized synthetic playing field and associated earthworks at Sid Richards Field 3.

Stage two (late 2019 to mid-2020)

To complement the new full-sized playing field, Council plans to construct an additional half-sized synthetic field complete with lighting, access and seating as well as a new amenities block.

Hours of construction:

- Monday to Friday 7am-5pm.

Community benefits:

- New facility for the local community and our local sporting groups
- Increase in team sport participation
- Positive mental and physical health benefits for our community.

Benefits of synthetic sports fields:

- Consistent playing surface, enhancing quality of play and reducing player risk.
- Players able to use field in all weather conditions
- Sustains higher use as compared with natural turf.

Typical use schedule:

Weekday use can be extended from Tuesday - Thursday 5-9pm to Monday - Friday 5-10pm

Weekend use can be extended from Sunday 8am-6pm to Saturday and Sunday 8am-10pm.

Sports field lighting illumination:

- Reconfiguration of existing lights to suit new sports field layout
- Proposed hours of illumination: Monday to Sunday 5-10pm.



More information

W: bit.ly/majorsbayreserve

E: council@canadabay.nsw.gov.au

P: 9911 6555

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City of
Canada Bay

Proudly funded by



APPENDIX MATERIALS

Facebook post 9 April 2019

**City of Canada Bay**
Published by Canada Bay Council [?] · 9 April at 08:28 · 🌐

Great news! 🥳👏👍

Work has begun on our Majors Bay Reserve Sporting Precinct upgrade, which will include synthetic sports fields and a new amenities building.

Got questions? Meet the project team this Saturday, 13 April 10am-12pm near the RSL at Majors Bay Reserve or visit the link below.

Majors Bay Reserve

Sporting Precinct Upgrade



More information
W: bit.ly/majorsbayreserve
E: community@canadabay.nsw.gov.au
P: 9011 6500

Project funded by
 City of Canada Bay

Project funded by
 NSW

✔ Get more likes, comments and shares
Boost this post for \$425 to reach up to 31,000 people.

3,164
People reached

283
Engagements

Boost Post

👤 Louise Maccroft, Julie Pragnell and 16 others · 6 Comments · 5 shares

👍 Like

💬 Comment

➦ Share

🔗

APPENDIX

17-19 CORRESPONDENCE

Andrei Gudas spoke with David Harman over the phone on 26/04/2019 and discussed the project and responded with the below information via email:

From: Andrei Gudas
Sent: Friday, 26 April 2019 2:14 PM
To: northshore@acebodycorp.com.au
Subject: Majors Bay Reserve Sporting Precinct Upgrade Stage 2

David,

Thank you for your phone call today regarding Stage 2 of our Majors Bay Reserve Sporting Precinct Upgrade. I understand you are the Strata Manager for 15-17 Norman Street, Concord. I hope I've cleared up some of the residents' concerns regarding this Project. We note that many of these items can be found under the 'FAQs' section on the project's website: <https://collaborate.canadabay.nsw.gov.au/majorsbayreserve>.

For further information I've attached high-resolution drawings which better detail the extent of the synthetic field, fences, footpaths, lighting and the amenities building. Note that this drawing is currently for information purposes only and is subject to change.

As discussed Council has hosted drop-in information sessions for the community on two occasions:

- Stage 1: Thursday, 14 February 2019 from 5.30 pm to 7.00 pm; and,
- Stage 2: Saturday, 13 April 2019 from 10.00 am to 12.00 pm.

Residents were notified by the attached Mayoral letter and the flyer on 12 February 2019 and 2 April 2019 respectively. I've also included a map of the residences that this was delivered to. Since this time there have also been further notifications regarding nightworks. I've attached a copy of each for your information as I understand that some residents did not receive notification of this. Please advise if this is the case as these were all printed and distributed.

Furthermore we also issued the attached letter and flyer to owners of the properties. Unfortunately we do not seem to have ACE Body Corporate listed in our database – hence why you would not have received a copy of this notice.

If ACE Body Corporate (and the residents/owners) do have feedback on this project we strongly urge you to provide this feedback on the project website so that we can collate the feedback and take appropriate action. Link to the Project website: <https://collaborate.canadabay.nsw.gov.au/majorsbayreserve>.

Should you have any further questions – please do not hesitate to contact me or ask questions on the community page.

Regards,
Andrei

1.

From: David Harman, Ace Body Corporate Northshore
To: Andrei Gudas, Project Manager, City of Canada Bay
Date: 06/05/2019

Hi Andrei

I am waiting to hear back from some of the committee members.

So far these are the concerns that will need to be included in your community feedback report.

This should be viewed as the feedback being delivered on behalf of all owners of Strata Plan 8491 – 17-19 Norman Street Concord.

1. Value disadvantage – the owners believe that having the soccer field so close to their boundary will have a significant detrimental affect on both the value and amenity of their properties.
 - a. They currently enjoy a leafy aspect and outlook over the park. This will be changed to having a 6m high fence very close to the boundary of their property.
 - b. The use of the soccer fields will create a significant noise factor for the residents in the building during especially during the evenings and weekends.
 - c. The use of the fields at night will cause light to spill in to the complex
2. People parking in Norman Street may try to shortcut through 15-17 Norman Street to gain access to the playing fields – please advise on what the council intends to do to prevent this from occurring?
3. The owners understand that a 6m high fence will be installed for the full width of the stage 2 playing field behind the goals. The owners are concerned about any recourse from the council for damage caused to the building from balls that have not been stopped by the fence.

I have also asked the owners to write to the council to voice their concerns. We also plan to engage a town planner to assess the impact that this field will have on the building.

Regards

David

APPENDIX

17-19 CORRESPONDENCE

2.

From: Jodi Ignacio, 17-19 Norman St Owner Occupier
To: Council email (council@canadabay.nsw.gov.au)
Date: 26/04/2019

Hi there

With the playing field changing to synthetic field i would like to know where the new amenities building will be placed as per the letter received it's due to possibly start towards the end of year.

I live next to the park and we are requesting for it not to be close to our home.

Regards

3.

From: Jodi Ignacio, 17-19 Norman St Owner Occupier
To: Andrei Gudas, Project Manager, City of Canada Bay
Date: 06/05/2019

Hi Andrei

I am part of the Norman st townhouses which I understand you've been speaking to David hairman.

Just to confirm no one received the 2nd letter box drop.

I even know someone who lives across the road and they never got anything either. I would appreciate better communication for important things like this.

My concerns would be:

- Hours of use, it says they plan to increase u til 10pm which is pretty late considering how close the fields are to our block. The yelling from the cricket oval is already heard at our house, with the field being closer it's going to be very loud, kids are in bed by 9pm. 10pm is quite late for every day use.
- There most likely will be much more people using this field, I don't feel comfortable having intruders trespassing our lot. What can be done about this ?
- Also litter, will council be picking up litter from the public as there will be much more use ?

Think that's about it from my end.

Thanks

Jodi

APPENDIX

17-19 CORRESPONDENCE

4.

From: Jessi Towns, 17-19 Norman St Owner Occupier
To: Andrei Gudas, Project Manager, City of Canada Bay
Date: 06/05/2019

Hi Andrei, my property is right beside the park and as David has suggested I am concerned on a number of points:

- the outlook from my property being significantly (and detrimentally) impacted in both the short and long term
- the increased noise levels, particularly late into the night, from both people and traffic
- the risk of damage to my property from balls and the increased foot traffic near our property
- the security risks posed by our block becoming a potential thoroughfare for those accessing the new grounds
- and most significantly, the impact of all of these factors on the value of our property.

Please include these issues in your community feedback report.

Thanks
Jessi Towns

5.

From: Jessi Towns, 17-19 Norman St Owner Occupier
To: Andrei Gudas, Project Manager, City of Canada Bay
Date: 06/05/2019

David, the committee would like to also raise the following concerns:

- Ideally, we want the smaller field to be relocated or abolished as it is the one that will impact us the most.
- The fence will have a visual impact which will in turn impact value. In addition, noise pollution to the complex will increase as well as light.
- Communication from council has been very unclear. We weren't made aware of how close the fields would be to our property.
- Community consultation should have been completed before construction commenced.

Thanks
Jessi

APPENDIX

17-19 CORRESPONDENCE

6.
From: Chris Haldane, 17-19 Norman St Owner Occupier
To: Andrei Gudas, Project Manager, City of Canada Bay
Date: 06/05/2019

Dear Andrei

I am writing to express my concerns regarding some aspects of the playing fields being developed in close proximity to our property at 17-19 Norman St Concord.

I am concerned about the following :

1. the effect on the value of our property by having the current open vista spoiled by a 6 m high fence close to our fenceline. Whilst i understand that you are trying to prevent damage to our property by installing it, i am sure you can understand that it will certainly affect what is currently one of the better features of our property, along with the increased levels of noise that will no doubt accompany the games played there on weekends.
 2. recourse if damage to our property occurs despite the 6m fence
 3. that there may be an increased likelihood of trespassers if people use our driveway as a shortcut to the field. We already have some of this occurring and i would not like to see the volume increase.
 4. I assume the amenities block will be closed most of the week except for during games , and that it will be shut at night? Could you please clarify this.
- Thank you for your time.

Yours sincerely

Chris Haldane

APPENDIX

17-19 CORRESPONDENCE

Andrei Gudas spoke with Akwasi Agyei over the phone on 06/05/2019 and discussed the project with him.

7.

From: Akwasi Agyei, 17-19 Norman St Owner Occupier
To: Andrei Gudas, Project Manager, City of Canada Bay
Date: 06/05/2019

Dear Peter and Andrei,

Thank you for your time yesterday to discuss the proposed upgrade of Majors Bay Reserve Sport and the impact on the residential strata complex to the north-east known as 17-19 Norman Street, Concord (the Residential Complex), within which I own a property.

I am writing for Council to review and reconsider the need, location and orientation of the proposed half-football (soccer) as part of Stage 2 of the Majors Bay Reserve redevelopment. Before I outline the reasons for my request, let me firstly, let me declare my support for the redevelopment of the reserve, which I note will no doubt, deliver greater utilisation of the reserve and provide 'A class' playing facilities for the local clubs.

Notwithstanding, I am appalled at how has handled the community / stakeholder engagement process. As local ratepayers, we have been treated with due consideration and respect as stakeholders in the redevelopment process. By this, I'm referring to the lack of initial community consultation, in particular, with the owners and residents of 17-19 Norman St, whom will no doubt be negatively impacted by the redevelopment, given the proximity to the proposed fields. The lack of consultation has resulted in the inconsiderate design, location and orientation of the proposed half-field, which is noted to be some 12-20 metres from the complex at 17-19 Norman Street. As an owner, resident and ratepayer, I feel disrespected and disregarded. I can only imagine the anguish you would feel, as a homeowner (presumably) if we developed this next to your family home. Where is the 'fair go'?

The location and orientation of the additional half football (soccer) field will no doubt 'negatively impact' the private enjoyment and value of the complex noting proximity to the homes. In addition, the proposed 6 metre fencing, flood lights, increased noise pollution, pedestrian traffic and light pollution and not mention increased security issues will visually impact and detract from the complex as well as raise concerns for additional risk measures.

In case you and your team missed and/or failed to give adequate consideration, the proposed location of the half field and associated fencing and light will de-value the homes of the owners in the complex, and mind you, this is most likely the biggest investment of these long-standing rate payers lives. Further the owners and residents will have to deal with the challenge of increased risk, noise and light pollution given the proposed operating times (9am-10pm).

As an owner, resident, committee member and ratepayer, I would kindly request that Council respectfully consider the impacts of the proposed half-field as part of Stage 2 of the Majors Bay Reserve upgrade by relocating the half-field away from residence and towards areas within the reserve that is more suitable. There are options. Alternatively, Council should consider compulsorily acquiring the complex.

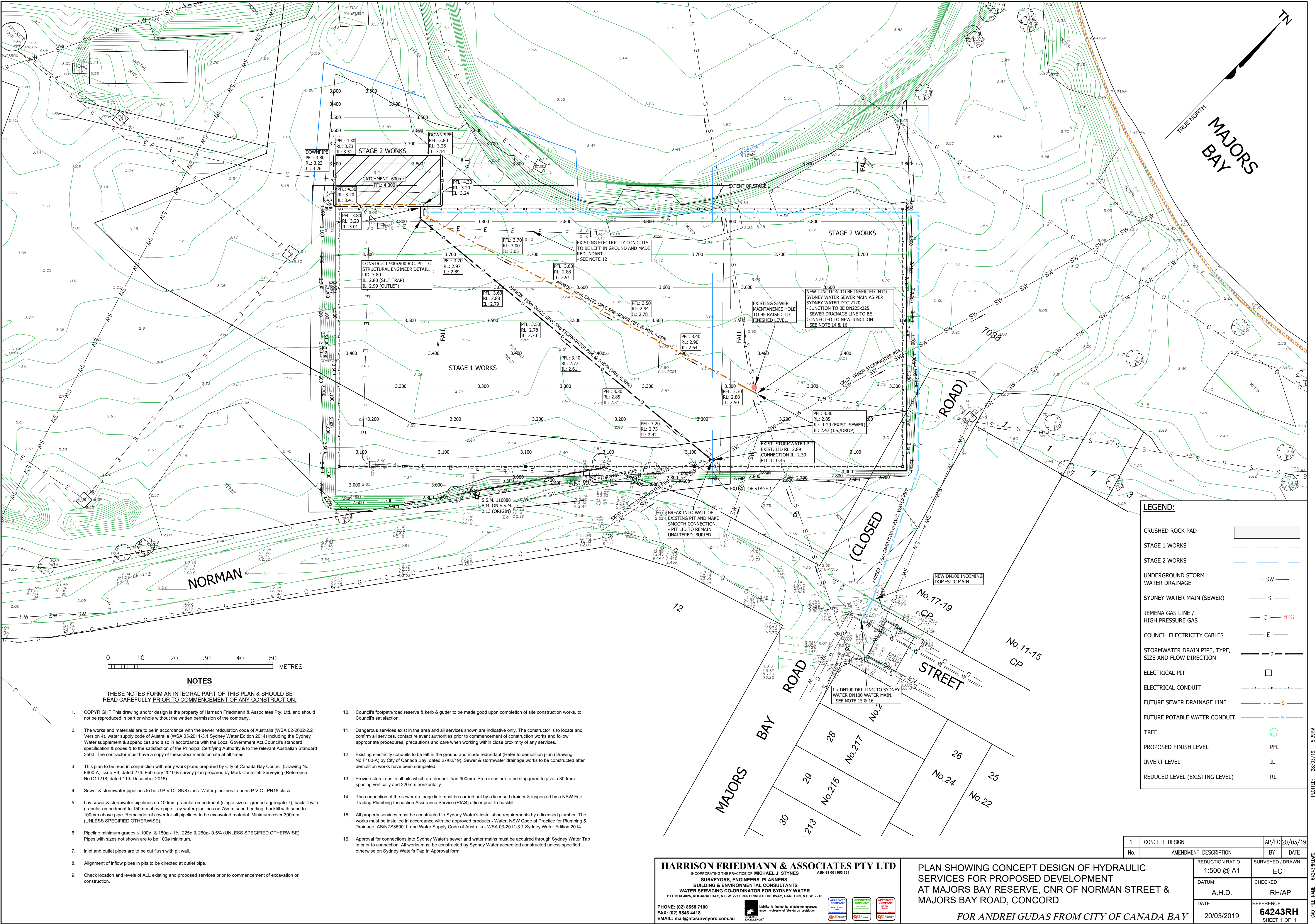
I am happy to discuss the matter further if it will assist you in making a decision and come to a mutually agreeable outcome. I am supportive of the main field redevelopment but I am not supportive of the half-field addition.

Please feel free to contact me on 0401 667 393 or via email at argi_08@live.com.au to discuss. Thank you for your time and consideration and I look forward to your response and consultation in finalising the design for the fields.

Yours faithfully,
Akwasi

Appendices

APPENDIX I. CONCEPT DESIGN OF HYDRAULIC SERVICES PREPARED BY HARRISON FRIEDMANN & ASSOCIATES PTY LTD, DATED 20 MARCH 2019



1. COPYRIGHT This drawing and/or design is the property of Harrison Friedmann & Associates Pty. Ltd. and should not be reproduced in part or whole without the written permission of the company.
2. The works and materials are to be in accordance with the sewer reticulation code of Australia (WSA 02-2002-2.2 Version 4), water supply code of Australia (WSA 03-2011-3.1 Sydney Water Edition 2014) including the Sydney Water supplement & appendices and also in accordance with the Local Government Act, Council's standard specification & codes & to the satisfaction of the Principal Certifying Authority & to the relevant Australian Standard 3500. The contractor must have a copy of these documents on site at all times.
3. This plan to be read in conjunction with early work plans prepared by City of Canada Bay Council (Drawing No. F600-A, issue P3, dated 27th February 2019 & survey plan prepared by Mark Castelletti Surveying (Reference No.C11218, dated 11th December 2018).
4. Sewer & stormwater pipelines to be U.P.V.C., SN8 class. Water pipelines to be m.P.V.C., PN16 class.
5. Lay sewer & stormwater pipelines on 100mm granular embedment (single size or graded aggregate 7), backfill with granular embedment to 150mm above pipe. Lay water pipelines on 75mm sand bedding, backfill with sand to 100mm above pipe. Remainder of cover for all pipelines to be excavated material. Minimum cover 300mm. (UNLESS SPECIFIED OTHERWISE).
6. Pipeline minimum grades > 100a & 150a - 1%, 225a & 250a- 0.5% (UNLESS SPECIFIED OTHERWISE)
Pipes with sizes not shown are to be 100a minimum.
7. Inlet and outlet pipes are to be cut flush with pit wall.
8. Alignment of inflow pipes in pits to be directed at outlet pipe.
9. Check location and levels of ALL existing and proposed services prior to commencement of excavation or construction.
10. Council's footpath/road reserve & kerb & gutter to be made good upon completion of site construction works, to Council's satisfaction.
11. Dangerous services exist in the area and all services shown are indicative only. The constructor is to locate and confirm all services, contact relevant authorities prior to commencement of construction works and follow appropriate procedures, precautions and care when working within close proximity of any services.
12. Existing electricity conduits to be left in the ground and made redundant (Refer to demolition plan (Drawing No.F100-A) by City of Canada Bay, dated 27/02/19). Sewer & stormwater drainage works to be constructed after demolition works have been completed.
13. Provide step irons in all pits which are deeper than 900mm. Step irons are to be staggered to give a 300mm spacing vertically and 220mm horizontally.
14. The connection of the sewer drainage line must be carried out by a licensed drainer & inspected by a NSW Fair Trading Plumbing Inspection Assurance Service (FIAS) officer prior to backfill.
15. All property services must be constructed to Sydney Water's installation requirements by a licensed plumber. The works must be installed in accordance with the approved products - Water, NSW Code of Practice for Plumbing & Drainage, AS/NZS3500.1, and Water Supply Code of Australia - WSA 03-2011-3.1 Sydney Water Edition 2014.
16. Approval for connections into Sydney Water's sewer and water mains must be acquired through Sydney Water Tap In prior to connection. All works must be constructed by Sydney Water accredited constructed unless specified otherwise on Sydney Water's Tap In Approval form.

HARRISON FRIEDMANN & ASSOCIATES PTY LTD
INCORPORATING THE PRACTICE OF MICHAEL J. STYNES
SURVEYORS, ENGINEERS, PLANNERS,
BUILDING & ENVIRONMENTAL CONSULTANTS
WATER SERVICING CO-ORDINATOR FOR SYDNEY WATER
P.O. BOX 4025, KOGARAH BAY, N.S.W. 2217 365 PRINCES HIGHWAY, CARLTON, N.S.W. 2216
PHONE: (02) 9558 7100
FAX: (02) 9546 4418
EMAIL: mail@hfasurveyors.com.au

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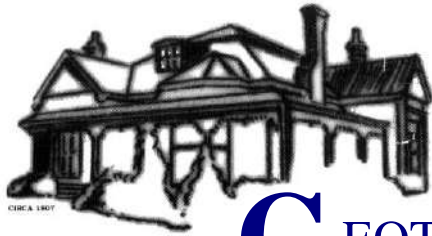
PLAN SHOWING CONCEPT DESIGN OF HYDRAULIC SERVICES FOR PROPOSED DEVELOPMENT AT MAJORS BAY RESERVE, CNR OF NORMAN STREET & MAJORS BAY ROAD, CONCORD

FOR ANDREI GUDAS FROM CITY OF CANADA BAY

1	CONCEPT DESIGN	AP/EC	20/03/19
No.	AMENDMENT DESCRIPTION	BY	DATE
	REDUCTION RATIO 1:500 @ A1	SURVEYED / DRAWN EC	
	DATUM A.H.D.	CHECKED RH/AP	
	DATE 20/03/2019	REFERENCE 64243RH	
		SHEET 1 OF 1	

Appendices

APPENDIX J. GEOTECHNICAL INVESTIGATION, PREPARED BY GEOTECHNIQUE PTY LTD DATED 21 AUGUST 2015



GEOTECHNIQUE[®]
PTY LTD

ABN 64 002 841 063



Job No: 13537/1
Our Ref: 13537/1-AA
21 August 2015

City of Canada Bay
c/- Complete Urban Pty Ltd
10 Regent Street
CHIPPENDALE NSW 2008
Email: edward_kong@completeurban.com.au

Attention: Mr E Kong

Dear Sir

re **Proposed Development
Majors Bay Reserve – Sir Richard Playing Fields
Norman Street, Concord
Geotechnical Investigation**

This report details the results of a geotechnical investigation for proposed light towers at Majors Bay Reserve (Sir Richard Playing Fields) at Norman Street, Concord, hereafter referred to as the site. The investigation was carried out in general accordance with the scope of work detailed in Geotechnique Pty Ltd proposal Q7254 dated 6 August 2015.

Proposed Development

We understand that City of Canada Bay Council is proposing to optimise the available land and build additional two new soccer fields with lighting infrastructure.

A geotechnical investigation was required by drilling nine (9) boreholes at the proposed light pole locations in order to determine subsurface conditions and develop geotechnical recommendations necessary for the design of footings. Also one test pit was required near the existing light pole location to determine the nature and capacity of founding material.

Available Information

Reference to the Geological Map of Sydney (scale 1:100,000) indicates that the subsurface profile across the site includes manmade fill comprising dredged estuarine sand and mud, demolition rubble, industrial and household waste.

Reference to the Soil Landscape Map of Sydney (scale 1:100,000) indicates that the landscape at the site has been extensively disturbed by human activities, including complete disturbance, removal or burial of natural soil with variable relief and slopes.

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Field Work

Field work for the geotechnical investigation was carried out on 13 and 14 August 2015 and included the following:

- Reviewing available geological information relevant to the proposed development site.
- Carrying out a walk over survey to assess existing site conditions.
- Reviewing services plans obtained from “Dial Before You Dig” to determine locations of services across the site.
- Scanning proposed borehole locations for underground services to ensure that services are not damaged during field work. We engaged a specialist services locator for this purpose.
- Drilling nine boreholes (BH1 to BH9) using a track mounted drilling rig. Boreholes were drilled at the locations identified by the client and were terminated at depths ranging from 4.2m to 7.2m. The approximate borehole locations are indicated on the attached Drawing No 13537/1-AA1. Engineering borehole logs are also attached.
- Conducting Standard Penetration Test (SPT) in the boreholes to assess strength characteristics of sub-surface soils. It should be noted solid bit was used for conducting continuous SPT at deeper depths due to caving.
- Excavating one test pit adjacent to the existing pole to assess type of footing and bearing material. A backhoe was used for this purpose.
- Recovering representative soil samples for visual assessment and laboratory tests.
- Measuring depths to groundwater level or seepage in the boreholes, where encountered.

Field work was supervised by a Field Engineer from this company who was responsible for nominating the borehole locations, supervision of SPT tests, sampling and preparation of field logs.

Site Description

The site is almost levelled and is bound by Norman Street to the south, existing residential buildings and an open land to the east, Ron Routley Oval and Concord RSL to the north.

Sub-surface profiles encountered in the boreholes are detailed in the attached logs and summarised below in Table 1.

TABLE 1A

BH	Termination Depth (m)	Topsoil (m)	Fill (m)	Natural (m)	Bedrock (m)	Groundwater
1	6.25	0.0 – 0.15	0.15 – 5.0	5.0 → 6.25*	NE	NE
2	6.7	0.0 – 0.15	0.15 – 5.0	5.0 → 6.7*	NE	2.0
3	5.8	0.0 – 0.15	0.15 – 3.9	3.9 → 5.8	NE	1.5
4	4.0	0.0 – 0.1	0.1 – 2.3	2.3 → 4.0	=>4.0	2.5
5	4.04	0.0 – 0.1	0.1 – 2.3	2.3 → 4.04	=>4.04	2.1
6	6.25	0.0 – 0.1	0.1 – 3.2	3.2 → 6.25	NE	3.0
7	7.1	0.0 – 0.1	0.1 – 4.3	4.3 → 7.1	NE	3.9
8	6.6	0.0 – 0.1	0.1 – 3.4	3.4 → 7.2	NE	2.5
9	5.0	0.0 – 0.1	0.1 – 2.5	2.5 – 5.15	=>5.15	2.0

NE : Not encountered;

* Depths to natural soils assessed from the material coated on solid SPT sampler

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TABLE 1B

TP	Termination Depth (m)	Concrete (mm)	Fill (m)	Groundwater
1	0.7	130	0.13 → 0.7	NE

Topsoil	Clayey Silt, low plasticity, trace roots
Fill	Silty Clay, medium plasticity, brown, black, with fine to coarse grained sandstone gravel, cobbles, boulders, pieces of timber, plastic etc Sandy Silt, low plasticity, black, with fine to coarse grained gravel
Natural	Clayey Sand, medium grained, grey-brown Sandy Clay, medium plasticity, brown, mottled yellow, with fine grained, sandstone gravel
Bedrock	Sandstone, medium grained, off-white, low strength, extremely weathered

Groundwater level was encountered in all boreholes at depths of 1.5m to 3.9m from existing ground surface. It should however be noted that fluctuations in the level of groundwater might occur due to variations in rainfall and/or other factors not evident during drilling.

DISCUSSION AND RECOMMENDATIONS

Existing Fill

Table 1 indicates fill materials are likely to be encountered across the site. Fill thickness is likely to vary from about 2.9m to 5m. Fill was consisted for silty clay and sandy silt with sandstone gravel, cobbles, pieces of timber and plastic etc.

We do not have information on how the existing fill across the site was placed and compacted. However, based on results of SPT in fill materials, it is our assessment that fill was assessed to be variably compacted. Furthermore, the fill was found to contain pieces of timber, plastic etc. Therefore it is our assessment that the existing fill is not suitable for supporting load bearing structures.

Light Pole Footings

As discussed earlier, footings founded in fill are not recommended for the proposed light poles. Also natural soils encountered immediately below the fill were generally found to be soft or loose. We do not recommend use of footings founded in the fill and natural soft or loose layers. Therefore, we recommend that the footings for the light poles are founded in stiff or medium dense natural soils likely to be encountered at the following depths:

TABLE 2

BH	Depth to Suitable Founding Material (m)
1	5.0
2	6.0
3	5.0
4	2.5
5	3.5
6	5.5
7	6.5
8	6.0
9	4.0

Loading conditions from the proposed light poles are not known at this stage. However, we understand that screw piles are being considered as the footings for the proposed light poles. We consider screw piles founded in natural soils (see Table 2) or bedrock will be appropriate footings for the proposed light poles. The recommended allowable bearing pressures for design of screw piles are presented in the following Table 3.

TABLE 3

Founding Material	Founding Depth from Ground Surface *(m)	Allowable Bearing Pressure (kPa)	Allowable Shaft Adhesion (kPa)
Stiff clays or medium dense sands	2.5-6.5	400	20
Sandstone, low strength	>4.0	1000	100

* Approximate only

Please note that sandstone bedrock was encountered at BH4, 5 and 9 at depths of 4m to 5m.

The recommended allowable shaft adhesions against uplift pressures are halves the shaft adhesions for compressive loads presented in Table 3.

As depths to natural soils and bedrock with the recommended allowable bearing pressures could vary across the site, the founding depths of footings to be constructed will also vary. The depth ranges presented in Table 3 are measured from existing ground surface at borehole locations and are indicative only. Therefore, an experienced Geotechnical Engineer on the basis of assessment made during pile installation should confirm founding levels during construction. The engineer should ensure that the design strength of bedrock is achieved.

Screw piles founded in firm or stiff or medium dense natural soils, the total settlements under the recommended allowable bearing pressures are estimated to be about 8mm to 10mm. For footings founded in bedrock, total settlements under the recommended allowable bearing pressures are estimated to be about 1% of pier diameter or minimum footing dimension. Differential settlements are estimated to be about half the estimated total settlements.

Existing Light Pole Footing

One test pit (TP) excavated near the existing light pole footing indicated 130mm slab. The slab measured about 3.8mx3.8m. It is possible that there is pier underneath the pole. However, this could not be confirmed due to the large size of the slab.

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General

Assessments and recommendations presented in this report are based on site observation and information from only nine boreholes. Although we believe that the sub-surface profile presented in this report is indicative of the general profile across the site, it is possible that the sub-surface profile across the site could differ from that encountered in the boreholes. Likewise, comments on depth to groundwater level are based on observation during field work. We recommend that this company is contacted for further advice if soils and bedrock encountered during construction stage differ from those presented in this report.

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECHNIQUE PTY LTD



ZIAUDDIN AHMED
Associate Geotechnical Engineer

Attached Drawing No 13537/1-AA1 Borehole Location Plan
Engineering Borehole Logs

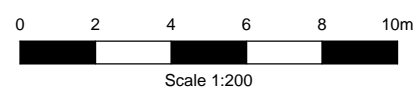
Copy Mr B Woodcock Email: bill_woodcock@completeurban.com.au



LEGEND

- Borehole
- Test Pit

Imagery ©2015 NearMap.com



PREPARED BY:



PO Box 880
 Penrith NSW 2750
 Tel: 02 4722 2700
 Fax: 02 4722 2777
 e-mail: info@geotech.com.au
 www.geotech.com.au

Complete Urban Pty Ltd
 Proposed Development
 Majors Bay Reserve - Sir Richard Playing Field
 Norman Street, Concord

Borehole and Test Pit Locations

Drawing No: 13537/1-AA1
 Job No: 13537/1
 Drawn By: MH
 Date: 20 July 2015
 Checked By: ZA

File No: 13537-1
 Layers: 0, AA1

engineering log - borehole

Client :		Complete Urban Pty Ltd				Job No. :		13537/1			
Project :		Proposed Development				Borehole No. :		1			
Location :		Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord				Date :		13/08/2015			
						Logged/Checked by:		SS			
drill model and mounting :						Hanjin D8, Track Mounted		slope :		deg. R.L. surface :	
hole diameter :		125		mm		bearing :		deg.		datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations	
TC-Bit		DS	1.8			0			TOPSOIL: Clayey Silt, low plasticity, brace roots					
									FILL: Silty Clay, medium plasticity, brown, with fine to coarse grained sandstone gravel	M<PL			Variably compacted	
		DS	2.8			0.5								
				DS	N=9 9,5,4									
		DS	1.5			1								
		DS	2.2			1.5								
				DS	N=7 3,3,4									
		DS	5.0			2								
		DS	1.5			2.5								
				DS	N=26 3,10,16									
		DS	3.0			3								
		DS	6.0			3.5								
	DS	1.6			4									
				DS	N=7 2,3,4									
						4.5						Sample unable to be recovered due to moisture content in soil. Solid SPT initiated at 4.45m		

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 1	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 13/08/2015 Logged/Checked by: SS	
drill model and mounting : Hanjin D8, Track Mounted		slope : deg. R.L. surface :	
hole diameter : 125 mm		bearing : deg. datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Dry					N=11 3,4,7	5							Natural material (sandy clay or clayey sand expected with possible sandstone gravel) at around 5m
					N=11 5,3,8	5.5							
					N=22 5,7,15	6							
						6.5			Borehole No. 1 terminated at 6.25m				
						7							
						7.5							
						8							
						8.5							
						9							
						9.5							

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 2	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 13/08/2015	
		Logged/Checked by: SS	

drill model and mounting : Hanjin D8, Track Mounted	slope : deg.	R.L. surface :
hole diameter : 125 mm	bearing : deg.	datum :

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	2.0			0			TOPSOIL: Silty Clay, low plasticity, brown, trace roots				
						0.5			FILL: Silty Clay, medium plasticity, brown, with fine grained sand	M<PL			Possible concrete boulder or hard material encountered
		DS	3.5			1							Timber pieces can be observed
		DS	2.0		DS	1.5							
		DS	7.0		DS	2							
		DS	15.0			2.5			FILL: Silty Clay, medium plasticity, black, with timber pieces and fine to coarse grained gravel	M>PL			Odour in the soil
		DS	6.0		DS	3							
		DS	13.0			3.5							
		DS	14.0			4							
		DS	14.0		DS	4.5							
					DS								
					DS								
					DS								

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 2	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 13/08/2015 Logged/Checked by: SS	
drill model and mounting : Hanjin D8, Track Mounted		slope : deg. R.L. surface :	
hole diameter : 125 mm		bearing : deg. datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
					N=7 4,4,3	5							Solid SPT initiated at 4.95m Possible natural alluvial material overlaying sandy clay/clayey sand at 5m
					N=7 4,4,3	5.5							
					N=13 5,6,7	6							
					N=20 10,10,10	6.5							
						7			Borehole No. 2 terminated at 6.7m				
						7.5							
						8							
						8.5							
						9							
						9.5							

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 3	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 13/08/2015 Logged/Checked by: SS	
drill model and mounting : Hanjin D8, Track Mounted		slope : deg. R.L. surface :	
hole diameter : 125 mm		bearing : deg. datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	3.5			0			TOPSOIL: Silty Clay, medium plasticity, brown, trace roots, with fine grained gravel				
									Fill: Silty Clay, medium plasticity, brown, with fine grained gravel, cobbles and boulders	M<PL			Variably compacted
		DS	2.5			0.5							
				DS	N=15,4, 8,7								Pieces of glass and plastics can be observed in fill
		DS	2.0			1							
		DS	3.0			1.5				M>PL			
				DS	N=0 0,0,0								
		DS	4.0			2							
		DS	5.0			2.5							
	DS	3.0			3								
			DS	N=0 0,0,0									
	DS	1.5			3.5								
								SC	Clayey SAND, medium grained, grey-brown				Natural material
						4							Shell pieces observed SPT values at 4.0m not taken due to wall caving in.
						4.5							Sample unable to be recovered due to moisture content in soil. Possible clay/sandy clay overlying sandstone

engineering log - borehole

Client : Complete Urban Pty Ltd						Job No. : 13537/1					
Project : Proposed Development						Borehole No. : 3					
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord						Date : 13/08/2015 Logged/Checked by: SS					
drill model and mounting : Hanjin D8, Track Mounted						slope :		deg.		R.L. surface :	
hole diameter : 125 mm						bearing :		deg.		datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
					<div style="display: flex; justify-content: space-between;"> <div>N=10 3,4,6</div> <div>5</div> </div>								Solid SPT initiated at 4.95m
				<div style="display: flex; justify-content: space-between;"> <div>N=18 8,8,10</div> <div>5.5</div> </div>									
						6			Borehole No. 3 terminated at 5.8m				
						6.5							
						7							
						7.5							
						8							
						8.5							
						9							
						9.5							

engineering log - borehole

Client : Complete Urban Pty Ltd						Job No. : 13537/1					
Project : Proposed Development						Borehole No. : 4					
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord						Date : 13/08/2015 Logged/Checked by: SS					
drill model and mounting : Hanjin D8, Track Mounted						slope :		deg.		R.L. surface :	
hole diameter : 125 mm						bearing :		deg.		datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	1.5			0			TOPSOIL: Silty Clay, medium plasticity, brown, with gravel and trace roots FILL: Silty Clay, medium plasticity, brown-black, with fine grained gravel	M<PL			Variably compacted
						0.5							
		DS	2.0										
				DS	N=8 1,2,6								
						1							
		1.5		DS									
						1.5							
		1.5		DS	N=12 7,8,4								
						2							
		1.1		DS									
					2.5		SC	Clayey SAND, medium grained, grey-brown	M	VL-L		Natural	
	1.3		DS			3		CI	Sandy CLAY, medium plasticity, brown mottled yellow, with fine grained sandstone gravel	M<PL	St-VSt		
						3.5			SANDSTONE, medium grained, white, low strength, extremely weathered				Bedrock
					4			Borehole No. 4 terminated at 4.0m due to refusal on sandstone					
					4.5								

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 5	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 13/08/2015 Logged/Checked by: SS	
drill model and mounting : Hanjin D8, Track Mounted		slope : deg. R.L. surface :	
hole diameter : 125 mm		bearing : deg. datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	1.5			0			TOPSOIL: Sandy Silt, low plasticity, brown, with trace roots FILL: Silty Sand, fine grained, with fine to coarse grained gravel				
						0.5							
		DS	2.0										
				DS	N=14 6,7,7								
		DS	3.0			1			FILL: Silty Clay, medium plasticity, brown-black, with fine to coarse grained gravel				
						1.5							
		DS	2.5										
				DS	N=3 4,2,1								
		DS	1.5			2							
						2.5			SC	Clayey SAND, medium grained, grey-brown	M-W	VL-L	
					3		SC	Clayey SAND, fine to medium grained, brown, with fine to coarse grained sandstone gravel	M-W	L-M			
					3.5								
					4								
				DS	N=Ref 20/40	4			Borehole No. 5 terminated at 4.04m due to refusal on sandstone				
						4.5							

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 6	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 14/08/2015	
		Logged/Checked by: SS	

drill model and mounting : Hanjin D8, Track Mounted		slope : deg.		R.L. surface :	
hole diameter : 125 mm		bearing : deg.		datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations	
TC-Bit		DS	5.0			0			TOPSOIL: Silty Sand, fine grained, brown, trace roots				Variably compacted	
						0.5			FILL: Sandy Silt, low plasticity, black, with fine to coarse grained gravel					
		DS	6.2											
				DS	N=11 6,7,4									
		DS	8.0			1				FILL: Silty Clay, medium plasticity, black, with fine to coarse grained gravel				General rubbish observed in fill
						1.5								
		DS	12.4											
				DS	N=10 3,4,6									
		DS	9.0			2				FILL: Silty Clay, medium plasticity, black, with fine to coarse grained gravel and bark pieces				
						2.5								
		DS	17.0											
				DS	N=19 8,5,14									
	DS	15.0			3									
					3.5				Clayey SAND, fine to medium grained, grey-brown	M-W	L-MD		Natural	
					4								Sample unable to be recovered due to moisture content in soil. Solid SPT initiated.	
					4.5								Solid SPT initiated at 4.45m Possible clay/sandy clay overlaying sandstone	

engineering log - borehole

Client :		Complete Urban Pty Ltd				Job No. : 13537/1							
Project :		Proposed Development				Borehole No. : 6							
Location :		Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord				Date : 14/08/2015							
						Logged/Checked by: SS							
drill model and mounting : Hanjin D8, Track Mounted						slope :		deg.		R.L. surface :			
hole diameter : 125		mm		bearing :		deg.		datum :					
method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
					N=8 3,4,4	5							
					N=17 7,9,8	5.5							
					N=22 11,10,12	6							
						6.5			Borehole No. 6 terminated at 6.25m				
						7							
						7.5							
						8							
						8.5							
						9							
						9.5							

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 7	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 14/08/2015	
		Logged/Checked by: SS	

drill model and mounting : Hanjin D8, Track Mounted		slope : deg.		R.L. surface :	
hole diameter : 125 mm		bearing : deg.		datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	3.0			0			TOPSOIL: Silty Clay, low plasticity, brown, trace roots FILL: Silty Clay, medium plasticity, brown-black, with fine to coarse grained gravel				
						0.5							
		DS	5.0		DS								
						1							
		DS	4.0										
						1.5							
		DS	1.6		DS								
						2							
						2.5							
		DS	4.0		DS								
						3							
		DS	3.5										
						3.5							
		DS	2.7										
						4							
	DS	3.0		DS									
					4.5								
							SC	Clayey SAND, fine grained, grey-brown				Natural	

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 7	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 14/08/2015	
		Logged/Checked by: SS	
drill model and mounting : Hanjin D8, Track Mounted		slope : deg. R.L. surface :	
hole diameter : 125 mm		bearing : deg. datum :	

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
					N=3 3,1,2	5							Solid SPT initiated at 4.9m
					N=2 2,1,1	5.5							Solid SPT sinking under own weight up to 6.2m
						6							
					N=9 3,4,5	6.5							Possible natural clay/ sandy clay
					N=18 8,9,9	7							
						7.5			Borehole No. 7 terminated at 7.1m				
						8							
						8.5							
						9							
						9.5							

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 8	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 14/08/2015 Logged/Checked by: SS	

drill model and mounting : Hanjin D8, Track Mounted	slope : deg.	R.L. surface :
hole diameter : 125 mm	bearing : deg.	datum :

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	1.0			0			TOPSOIL: Silty Sand, fine grained, with trace roots FILL: Silty Clay, medium plasticity, brown-black, with fine to coarse grained gravel				Plastics and glass pieces observed
						0.5							
		DS	1.0		DS								
		DS	1.2			1							
		DS	1.2		DS	1.5							
		D	2.2			2							
		DS	1.6		DS	2.5							
		DS	1.5			3							
		DS	1.3			3.5			CL	Sandy CLAY, low plasticity, black	M>PL		
				DS	4								
					4.5								

engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 8	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 14/08/2015	
		Logged/Checked by: SS	
drill model and mounting : Hanjin D8, Track Mounted		slope :	deg. R.L. surface :
hole diameter : 125 mm		bearing :	deg. datum :

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
						5							Solid SPT initiated at 4.95m. Solid SPT sinking under own weight from 4.95m to 5.4m Possible natural clay/sandy clay overlying sandstone/shale
					5.5	N=5 3,3,2							
					6	N=10 4,5,5							
					6.5	N=19 5,9,10							
					7	N=27 13,14,13							
						7.5			Borehole No. 8 terminated at 7.2m				
						8							
						8.5							
						9							
						9.5							


engineering log - borehole

Client : Complete Urban Pty Ltd		Job No. : 13537/1	
Project : Proposed Development		Borehole No. : 9	
Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Date : 14/08/2015	
		Logged/Checked by: SS	

drill model and mounting : Hanjin D8, Track Mounted	slope :	deg.	R.L. surface :
hole diameter : 125 mm	bearing :	deg.	datum :

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC-Bit		DS	1.0			0			TOPSOIL: Silty Clay, medium plasticity, brown, trace roots FILL: Silty Clay, medium plasticity, black, with fine to coarse grained gravel				
						0.5							
		DS			DS								
						1							
		DS	1.0										
						1.5							
		DS	0.8		DS								
						2							Wood pieces observed
		DS	1.3										
						2.5		CI	Silty CLAY, medium plasticity, brown-black	M>PL			Natural
				DS									
					3								
					3.5		CH	Silty CLAY, high plasticity, red mottled grey	M<PL	St-VSt			
					4		CH	Silty CLAY, high plasticity, grey	M<PL	VSt-H			
				DS									
					4.5							Possible bedrock	

engineering log - borehole

Client : Complete Urban Pty Ltd Project : Proposed Development Location : Majors Bay Reserve - Sir Richard Playing Field, Norman Street, Concord		Job No. : 13537/1 Borehole No. : 9 Date : 14/08/2015 Logged/Checked by: SS											
drill model and mounting : Hanjin D8, Track Mounted hole diameter : 125 mm bearing :		slope : deg. R.L. surface : deg. datum :											
method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
					N=Ref 18, 16/100	5							
						5.5			Borehole No. 9 terminated at 5.15m due to refusal on sandstone				
						6							
						6.5							
						7							
						7.5							
						8							
						8.5							
						9							
						9.5							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Topsoil



Fill



Sandy Clay
low plasticity



Clayey Sand



Sandstone



Silty Clay
medium plasticity



Silty Clay
high plasticity

Misc. Symbols



Groundwater

Descriptions of various line types (solid, dotted, etc.)



Profile change



Gradual profile change

Notes:

1. Exploratory borings were drilled between 14/08/2015 and 14/08/2015 using a 50, 100 and 125mm diameter continuous flight power auger.
2. These logs are subject to the limitations, conclusions and recommendations in this report.
3. Results of tests conducted on samples recovered are reported on the logs.

KEY TO SYMBOLS

Symbol Description

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Descriptions of various line types (solid, dotted, etc.)



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Gradual profile change

Notes:

1. Exploratory borings were drilled between 14/08/2015 and 14/08/2015 using a 50, 100 and 125mm diameter continuous flight power auger.
2. These logs are subject to the limitations, conclusions and recommendations in this report.
3. Results of tests conducted on samples recovered are reported on the logs.

Appendices

APPENDIX K. ASSESSMENT OF PROPOSAL PURSUANT TO THE SYDNEY REGIONAL ENVIRONMENTAL PLAN (SYDNEY HARBOUR CATCHMENT) 2005, PREPARED BY MILESTONE (AUST) PTY LTD DATED MAY 2019

APPENDIX K

REVIEW OF ENVIRONMENTAL FACTORS FOR THE CONSTRUCTION OF AN ADDITIONAL HALF-SIZE SYNTHETIC FIELD WITH ASSOCIATED LANDSCAPING, FENCING, ACCESS, SEATING AND THE CONSTRUCTION OF A NEW AMENITIES BUILDING AT MAJORS BAY RESERVE, CONCORD (STAGE 2 WORKS)

ASSESSMENT OF PROPOSAL PURSUANT TO THE SYDNEY REGIONAL ENVIRONMENTAL PLAN (SYDNEY HARBOUR CATCHMENT) 2005

May 2019

Clause	Matter for Consideration	COMPLIANCE
Clause 21 – Biodiversity, ecology and environment protection.	(a) A development should have a neutral or beneficial effect on the quality of water entering the waterways.	Complies. The proposed additional half sized synthetic field and amenities building are located within the existing Majors Bay Reserve and will not alter the quality of water entering Yaralla Bay.
	(b) Development should protect and enhance terrestrial and aquatic species, populations and ecological communities and, in particular, should avoid physical damage and shading of aquatic vegetation (such as seagrass, saltmarsh and algal and mangrove communities).	Complies. The proposal includes new planting and landscaping to the south east corner of the proposed half sized field. There will be no adverse impact on the ecology of the area as the result of the proposal.
	(c) Development should promote ecological connectivity between neighbouring areas of aquatic vegetation (such as seagrass, saltmarsh and algal and mangrove communities).	Complies Proposed works are to be located within and continue the use of existing areas of public recreation and do not seek alteration to, maintain significant distance from, and therefore will not adversely impact neighbouring areas of aquatic vegetation.
	(d) Development should avoid indirect impacts on aquatic vegetation (such as changes to flow, current and wave action and changes to water quality) as a result of increased access.	Complies. The proposal does not result in increased access to the surrounding waterways.
	(e) Development should protect and reinstate natural intertidal foreshore areas, natural landforms and native vegetation.	Complies. All works are located within the bounds of the existing Majors Bay Reserve, being a public recreation area, with no new impacts to the existing waterways.
	(f) Development should retain, rehabilitate and restore riparian land.	Not applicable. No works to riparian land are proposed.
	(g) Development on land adjoining wetlands should maintain and enhance the ecological integrity of the wetlands and, where possible, should provide a vegetative buffer to protect the wetlands.	Not applicable. No works to riparian land are proposed.
	(h) The cumulative environmental impact of development.	Complies. The proposed works are compatible with the existing use of the site for public recreation and no significant environmental impacts will arise as a result of the proposal.

Clause	Matter for Consideration	COMPLIANCE
	(i) Whether sediments in the waterway adjacent to the development are contaminated, and what means will minimise their disturbance.	Complies No adverse impact on the adjoining waterways will result from the proposed works.
Clause 22 - Public access to use of foreshores and waterways.	(a) Development should maintain and improve public access to and along the foreshore, without adversely impacting on watercourses, wetlands, riparian lands or remnant vegetation.	Complies. The proposal will maintain all existing public access to the surrounding vegetation foreshore and footpaths. It is noted that the half size field will include fencing for management purposes and this will restrict walking access around the field only, however, access to and around the foreshore is maintained.
	(b) Development should maintain and improve public access to and from the waterways for recreational purposes (such as swimming, fishing and boating), without adversely impacting on watercourses, wetlands, riparian lands or remnant vegetation.	Complies. The proposal will have no impact on the existing access arrangements to and from the waterways.
	(c) If foreshore land made available for public access is not in public ownership, development should provide appropriate tenure and management mechanisms to safeguard public access to, and public use of, that land.	Not applicable.
	(d) The undesirability of boardwalks as a means of access across or along land below the mean high water mark if adequate alternative public access can otherwise be provided.	Not applicable.
	(e) The need to minimise disturbance of contaminated sediments.	Complies. Minimal excavation (<500m for services trenching) is required as part of the proposal. All construction works associated with the proposed activity will be carried out strictly within the requirements of the site specific Construction Environmental Management Plan including measures to mitigate all potential environmental risks.
Clause 23 - Maintenance of working harbour	(a) Foreshore sites should be retained so as to preserve the character and functions of a working harbour, in relation to both current and future demand.	Not applicable.
	(b) Consideration should be given to integrating facilities for maritime activities in any development.	Not applicable.

Clause	Matter for Consideration	COMPLIANCE
	(c) In the case of development on land that adjoins land used for industrial and commercial maritime purposes, development should be compatible with the use of the adjoining land for those purposes.	Not applicable
	(d) In the case of development for industrial and commercial maritime purposes, development should provide and maintain public access to and along the foreshore where such access does not interfere with the use of the land for those purposes.	Not Applicable
Clause 24 - Interrelationship of waterway and foreshore uses	(a) Development should promote equitable use of the waterway, including use by passive recreation craft.	Complies The use of the surrounding waterway is not affected as a result of the proposal.
	(b) Development on foreshore land should minimise any adverse impact on the use of the waterway, including the use of the waterway for commercial and recreational uses.	Complies. The proposal complements and supports existing recreational uses within Majors Bay Reserve, within minimal impact on the use of the waterway.
	(c) Development on foreshore land should minimise excessive congestion of traffic in the waterways or along the foreshore.	Complies Traffic congestion in the surrounding waterways is not expected to increase as a result of the proposed works.
	(d) Water-dependent land uses should have priority over other uses.	Not applicable. The proposal does not constitute a water dependent use.
	(e) Development should avoid conflict between the various uses in the waterways and along the foreshores.	Complies. No conflict will arise as a result of the proposed development.
Clause 25 - Foreshore and Waterways Scenic Quality	(a) The scale, form, design and siting of any building should be based on an analysis of: (i) the land on which it is to be erected, and (ii) the adjoining land, and (iii) the likely future character of the locality.	Complies. The proposed amenities building is single storey and is compatible with the use and character of Majors Bay Reserve. The proposal includes the erection of 6 metre high nets behind the mini goal area and 1.8 metre fence. The visual impact of these structures is considered acceptable in context of additional proposed landscaping provided adjacent to the residential properties at 17-19 Norman Street. Further detailed landscaping plans are required to be prepared in consultation with Council's Coordinator Tree Services.
	(b) Development should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands, foreshores and tributaries.	Complies The current proposal will not impact on the visual qualities of Yaralla Bay as it is setback approximately 250 metres (from amenities building) and approximately 115 metres (from the field).

Clause	Matter for Consideration	COMPLIANCE
	(c) The cumulative impact of water-based development should not detract from the character of the waterways and adjoining foreshores.	Complies. No adverse impact on the character of the waterways will arise from the proposed development.
Clause 26 - Maintenance, protection and enhancement of views	(a) Development should maintain, protect and enhance views (including night views) to and from Sydney Harbour.	Complies. The site does not hold and is not subject to views to and from Sydney Harbour. The development does not restrict existing views to Yaralla Bay.
	(b) Development should minimise any adverse impacts on views and vistas to and from public places, landmarks and heritage items.	Complies. The site and Majors Bay Reserve is not subject to any iconic or significant views or vistas. The proposed development will generally maintain existing views within Majors Bay Reserve.
	(c) The cumulative impact of development on views should be minimised.	Complies. No adverse impact arises with respect to view impacts.
Clause 27 - Boat Storage Facilities	(a) Development should increase the number of public boat storage facilities and encourage the use of such facilities.	Not applicable.
	(b) Development should avoid the proliferation of boat sheds and other related buildings and structures below the mean high water mark.	Not applicable.
	(c) Development should provide for the shared use of private boat storage facilities.	Not applicable.
	(d) Development should avoid the proliferation of private boat storage facilities in and over the waterways by ensuring that all such facilities satisfy a demonstrated demand.	Not applicable.
	(e) Boat storage facilities should be as visually unobtrusive as possible.	Not applicable.
	(f) In the case of permanent boat storage, the safety and utility of the development should not be adversely affected by the wave environment, and the development should avoid adverse impacts on safe navigation and single moorings.	Not applicable.

Appendices

APPENDIX L. ACOUSTIC ANALYSIS PREPARED BY BLACKETT ACOUSTICS DATED 17 JUNE 2019



Blackett Acoustics

Noise & Vibration Consultants

17 June 2019

Project Number: BA190321

Ref: CB170619JA eltr

Mr Andrei Gudas
City of Canada Bay Council
c/o Milestone (Aust) Pty Ltd
93 Norton Street
Leichhardt, NSW 2040

Dear Andrei,

Re: Majors Bay Reserve Sir Richards Playing Field - Half Size Synthetic Field Noise Assessment

1. Introduction

City of Canada Bay Council is proposing to build a half size synthetic field near to Field 3 as shown in Figure 1-1.

Figure 1-1 Aerial of Project Site



Blackett Acoustics

An AAAC Member Firm Since 2014 • ABN 31 227 989 703
Level 6, 616 Harris Street, Ultimo NSW 2007 • m +61 0487 235 585

• email – jimi.ang@blackettacoustics.com.au • website - www.blackettacoustics.com.au

Blackett Acoustics has been engaged by the City of Canada Bay Council to conduct a noise assessment for the new half size synthetic field at the Majors Bay Reserve Sir Richard Playing Field.

This report provides an assessment based on the potential noise impact (if any) associated with the new half size synthetic field to the surrounding residential receivers.

2. Site Description

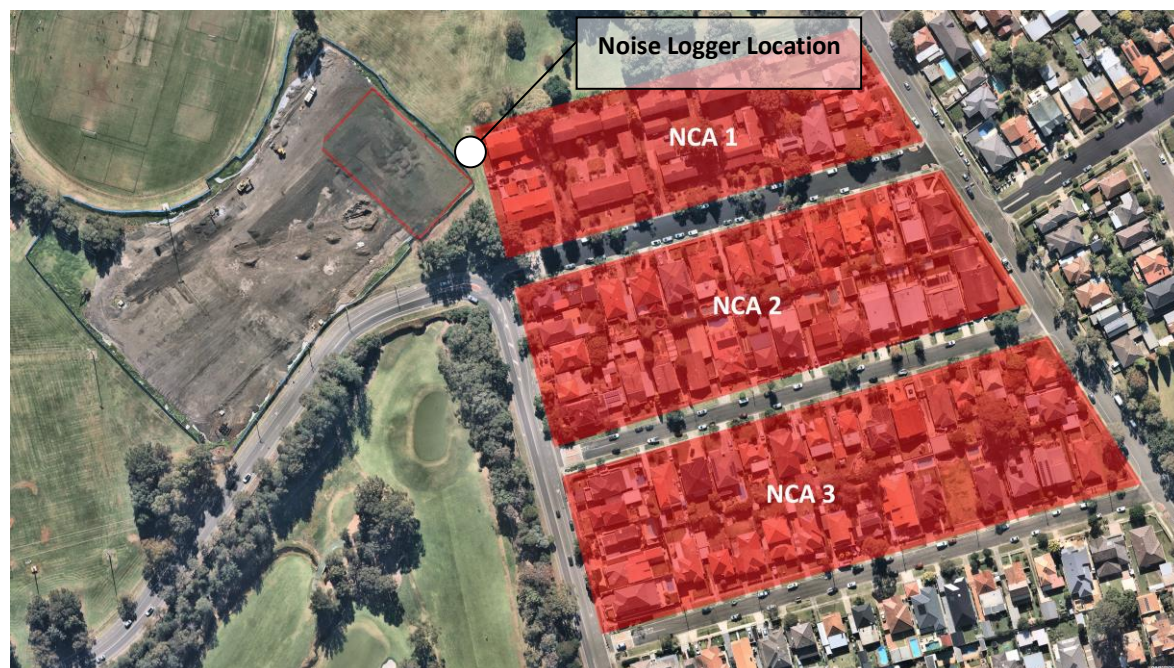
The Majors Bay Reserve consists of Sir Richards Playing Field, Ron Routley Oval and Concord RSL & Community Club. Sir Richards Playing Field is bounded by Norman Street to the south, Ron Routley Oval and Concord RSL to the north and consists of three existing playing fields – Field 1, Field 2 and Field 3 which are used for soccer and baseball games. The typical usage of the new synthetic field will usually end before 10.00pm.

As there are a substantial number of existing residential receivers to the east of Majors Bay Reserve, for ease of reference, the existing residential receivers have been grouped into different noise catchment areas (NCAs).

The three NCAs are as follows:

- **NCA 1** - Identified residential receivers located to the east of proposed synthetic field (next to field 3) and north of Norman Street;
- **NCA 2** - Identified residential receivers located south of Norman Street and Health Street; and
- **NCA3**- Identified residential receivers located south of Health Street and Augusta Street.

The NCAs are further illustrated in Figure 2-1. The unattended noise monitoring location is also outlined in the figure.

Figure 2-1 Aerial Outlining NCAs and Noise Monitoring Location

3. Existing Acoustic Environment

Unattended noise monitoring equipment consisted of an Environmental Noise Logger. This was deployed by Blakett Acoustics in a free-field position along the eastern the Majors Bay Reserve site to establish the existing background noise level. The noise monitoring location is also outlined in Figure 2-1.

The monitoring period was from Friday, 6 to Saturday, 7 August 2015. The calibration of the logger was checked prior to and following the measurement period and the variation in calibration was found not to exceed 0.5 dB. The noise logger was set to record statistical noise descriptors in continuous 15-minute sampling periods for the duration of its deployment.

Table 3-1 presents the relevant time period background noise levels recorded during survey period.

Table 3-1 Measured Background Noise Levels (dBA)

Monitoring Location	Measured Background Levels		
	Daytime	Evening	Night Time
Eastern boundary Majors Bay Reserve	46	46	41

Note: Daytime (7.00am-6.00pm), Evening (6.00pm-10.00pm) and Night time (10.00pm-7.00am).

4. Noise Goals

There are no specific noise goals for assessing sporting facilities in the NSW Environment Protection Authority document entitled Noise Guide for Local Government. In lieu of any existing guidelines, Blackett Acoustics will take reference from the now superseded EPA's document Environmental Noise Control Manual (ENCM) for guidance in establishing a noise criterion regarding noise from public places and sporting activities.

The following noise criteria for assessing the level of impact from a sporting facility is extracted from the ENCM:

- For existing activities, a criterion of the intrusive noise level L_{A10} not exceeding the background noise level L_{A90} by more than 10dBA; and
- For new events, a criterion of the intrusive noise level L_{A10} not exceeding the background noise level L_{A90} by more than 5dBA.

For the purpose of this assessment, Blackett Acoustics will adopt the background plus 10dBA criterion as the two additional soccer fields are considered to be part of an existing sporting facility.

Based on the established background noise level in Section 3, the $L_{A10,15min}$ noise goals for sporting events are summarised in Table 4-1.

Table 4-1 Summary of Established L_{A10} Noise Goals (dBA)

Established L_{A10} Noise Goals		
Daytime	Evening	Night Time
56	56	51

Note: Daytime (7.00am-6.00pm), Evening (6.00pm-10.00pm) and Night time (10.00pm-7.00am).

5. Assessment of Sporting Noise

Based on Blackett Acoustics database and attended noise measurements at similar projects, Table 5-1 presents the noise emission levels during typical soccer games.

Table 5-1 Summary of Noise Emission Levels Associated with Soccer Activities

Description	Distance Measured	Overall Measured (dBA)	
		L_{Aeq}	L_{A10}
General noise from a soccer game with occasional shout outs and whistle	15	58-68	60-70

For noise modelling and assessment purposes, only the typical worst-case scenario during any 15 minutes period will be considered. In order to assess the likely worst-case impact from the additional soccer field, the following assumptions have been made.

Typical Worst-Case Scenario: The assumptions are as below -

- Soccer field with noise emission level of L_{A10} 70dBA at 15m is used in calculations

Noise emissions were modeled using the CONCAWE algorithms implemented in the “CadnaA” acoustic noise prediction software. Factors that are addressed in the noise modeling are:

- Sound level emissions and location;
- Screening effects from buildings (if any);
- Receiver locations;
- Ground topography;
- Noise attenuation due to geometric spreading;
- Ground Absorption;
- Atmospheric absorption; and
- Meteorological Condition.

Figure 5-1 presents an aerial indicating the noise emission point for the purpose of noise modelling. Figure 5-2 presents a 3D view of the noise emission point to the surrounds.

Figure 5-1 Noise Emission Points



Figure 5-2 3D View of Noise Emission Point to the Surroundings



Table 5-1 present a summary of the predicted range of L_{A10} noise levels that may be expected at each NCAs (without the implementation of any special noise mitigation).

Table 5-1 Predicted $L_{A10,15min}$ Noise Levels (dBA) - Without Mitigation

NCA	Most Stringent $L_{A10,15min}$ Intrusiveness Noise Criteria	Predicted Range of $L_{A10,15mins}$ Levels
NCA 1	56	41-56
NCA 2		40-50
NCA 3		38-44

Based on the predicted noise levels presented in Table 5-1, it can be established that compliance with the daytime and evening period noise criteria is predicted at all NCAs.

6. Conclusion

Blackett Acoustics has now conducted a noise assessment which considers the potential noise impacts associated with the proposed additional half size synthetic field at Majors Bay Reserve.

The assessment has identified the nearest surrounding residential receiver locations potentially most affected by noise emanating from the use of the half size synthetic field and considers the likely worst-case noise emission scenario.

Based on the predicted noise levels resulting from the worst-case activities considered, compliance is predicted at all the surrounding residential receivers located to the east of the Major Bay Reserve site.

I trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully

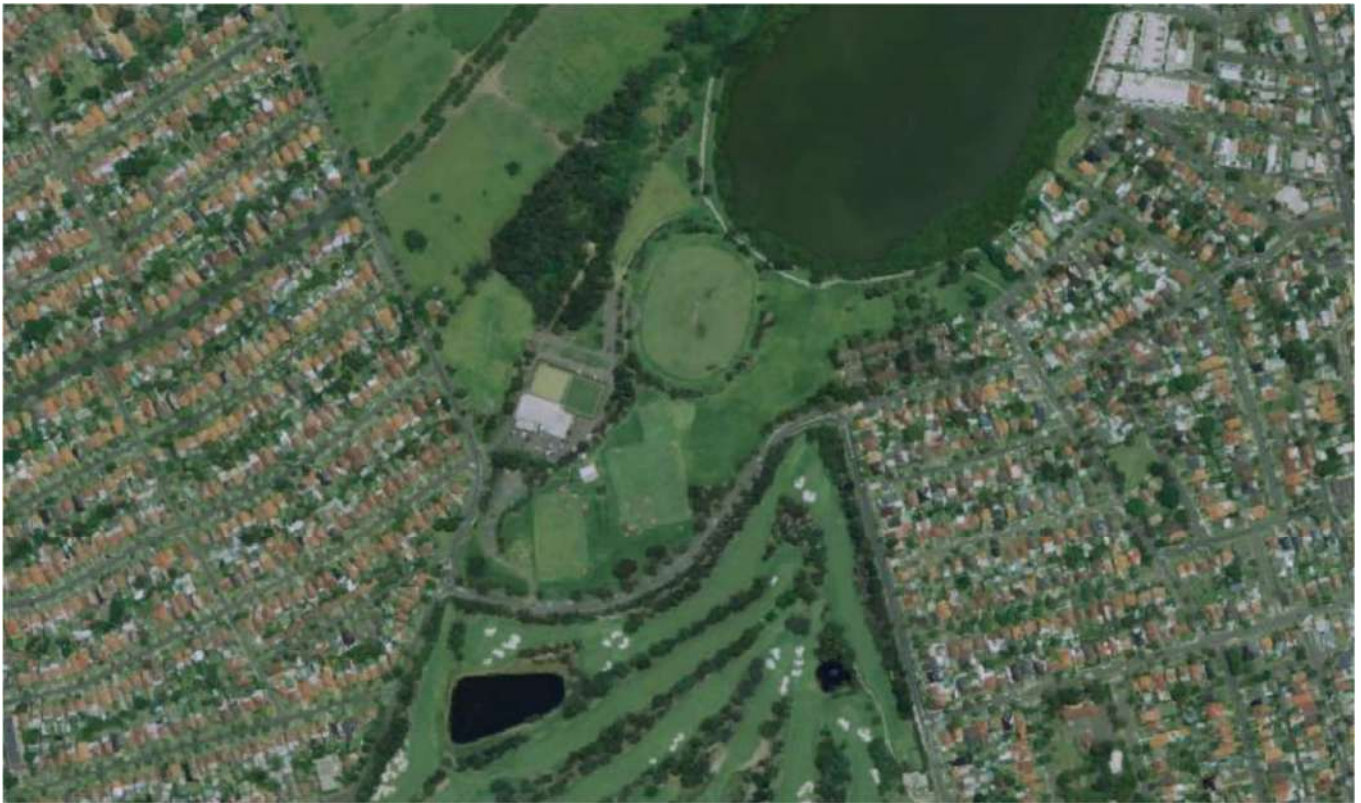


Jimi Ang

Principal | B.Eng (Aeronautical) | M.A.A.S

Appendices

APPENDIX M. FLOOD IMPACT ASSESSMENT REPORT PREPARED BY HYDROSPATIAL PTY LTD DATED MARCH 2019



Majors Bay Reserve

Flood Impact Assessment Report

Prepared For

City of Canada Bay and Complete Urban Pty Ltd

March 2019



HYDRO
SPATIAL

HydroSpatial Pty Ltd

ABN: 23 624 304 070

Suite 10, Level 14, 70 Pitt Street, Sydney NSW 2000

Contact: Erika Taylor

Email: Erika.Taylor@HydroSpatial.com.au

Mobile: 0423 624 696

Job Details	Majors Bay Reserve Flood Impact Assessment
Client	City of Canada Bay and Complete Urban Pty Ltd
Author	Erika Taylor
Job Number	18013
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Document Approval	
Erika Taylor	Signature
Director	

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Appendices

Appendix A:	ARR Data Hub
-------------	--------------

1 Introduction

Majors Bay Reserve (herein referred to as the site) is within the City of Canada Bay Local Government Area (LGA). The site is located north of Norman Street and west of Nullawarra Avenue Concord, shown on Figure 1.

It was proposed that a new car-park, new amenities building and new synthetic soccer fields be constructed within the site. Two option configurations were investigated; option 1 was located near the junction of Majors Bay Road and Norman Street, and option 2 was located near the junction of Nullawarra Avenue and Norman Street.

2 Data Collection

2.1 Topographic Data

The Airbourne Laser Survey (ALS) was obtained from Spatial Services, a unit of Department Finance, Services and Innovation. The ALS was acquired in April 2013. The horizontal accuracy was 0.8 m and the vertical accuracy was 0.3 m. The 1 m Digital Elevation Model (DEM) generated from the ALS data is shown on Figure 2.

2.2 Stormwater Asset Data

The publicly-owned underground stormwater data was obtained from the City of Canada Bay Council. This included the location of the pits and pipes, as well as the pipe dimensions.

2.3 ARR Data Hub

The ARR Data Hub was used to extract the ARR 2016 parameters relevant to the Majors Bay Catchment Area, detailed in Appendix A.

2.4 Design Rainfall Data

The very frequent to rare occurrence design rainfall data was obtained from the Bureau of Meteorology's 2016 Rainfall Intensity-Frequency-Duration (IFD) Data System online. The design rainfall data is detailed in Table 2-1.

Table 2-1: Rainfall IFD Data for the Majors Bay Catchment Area Centroid

Duration	63.20%	50%#	20%*	10%	5%	2%	1%
1 min	2.26	2.51	3.27	3.79	4.3	4.98	5.49
2 min	3.76	4.09	5.14	5.87	6.6	7.58	8.33
3 min	5.21	5.69	7.22	8.27	9.32	10.7	11.8
4 min	6.53	7.17	9.18	10.6	11.9	13.8	15.2
5 min	7.72	8.51	11	12.7	14.4	16.6	18.3
10 min	12.2	13.6	17.8	20.7	23.5	27.2	30.1
15 min	15.2	16.9	22.3	25.9	29.5	34.1	37.6
20 min	17.5	19.4	25.5	29.6	33.6	38.9	42.9
25 min	19.3	21.4	28	32.5	36.8	42.6	46.9
30 min	20.8	23	30	34.8	39.4	45.5	50.2
45 min	24.2	26.7	34.5	39.8	45	52	57.3
1 hour	26.9	29.5	37.8	43.6	49.2	56.8	62.7
1.5 hour	30.9	33.8	43	49.4	55.8	64.5	71.3
2 hour	34.2	37.3	47.3	54.3	61.4	71.1	78.8
3 hour	39.5	43	54.6	62.9	71.3	82.9	92.2
6 hour	51.5	56.5	72.8	84.6	96.7	114	127
12 hour	68.6	76.3	101	120	139	165	186
24 hour	91.6	104	143	172	201	241	273
48 hour	119	136	194	235	277	332	375

72 hour	134	155	221	269	317	379	426
96 hour	144	166	238	288	339	403	452
120 hour	151	174	247	298	350	415	465
144 hour	156	179	253	304	355	420	470
168 hour	160	183	256	306	357	421	471

Note:

The 50% AEP IFD does not correspond to the 2 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 1.44 ARI.

* The 20% AEP IFD does not correspond to the 5 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 4.48 ARI.

The Probable Maximum Precipitation (PMP) was calculated using the Bureau of Meteorology's Generalised Short-Duration Method (Ref 4). The PMP rainfall data is detailed in Table 2-2.

Table 2-2: PMP IFD Data for the Majors Bay Catchment

Duration	Rainfall Depth (mm)
0.25 hr	164.5
0.5 hr	238
0.75 hr	301
1 hr	348.25
1.5 hr	399
2 hr	448
2.5 hr	472.5
3 hr	498.75
4 hr	544.25
5 hr	588
6 hr	619.5

2.5 Design Sea Level Data

The design sea level data was obtained from the New South Wales (NSW) Government's Office of Environment and Heritage (OEH) Floodplain Risk Management Guide (Ref 6). The simplistic approach with a steady state ocean boundary was used because the critical rainfall duration (45 minutes, as discussed in Section 3.6) was significantly shorter than the duration between high and low tide (approximately 6 hours). The catchment was identified as a Waterway Entrance Type A, located south of Crowdy Head. Table 2-3 details the design sea level data based on the aforementioned catchment characteristics.

Table 2-3: Combinations of Catchment Flooding and Oceanic Inundation Scenarios

Design Event	Rainfall Event	Ocean Water Level Event	Ocean Water Level
10% AEP	10% AEP	HHWS	1.25 m AHD
1% AEP	1% AEP	5% AEP	1.40 m AHD
PMF	PMF	1% AEP	1.45 m AHD

2.6 Proposed Development Options

Details of the proposed design options to be investigated were provided by Complete Urban Pty Ltd. From this:

- Option 1 - consisted of one full sized soccer field and six 'five-a-side' soccer fields constructed from synthetic turf and a new amenities building. Option 1 was located near the junction of Majors Bay Road and Norman Street. The configuration of Option 1 is shown on Image 2-1.
- Option 2 - consisted of one full sized soccer field and four 'five-a-side' soccer fields constructed from synthetic turf, a new amenities building and an open car-park. Option 2 was located near the junction of Nullawarra Avenue and Norman Street. The configuration of Option 2 is shown on Image 2-2.



Image 2-1: Proposed Development Option 1

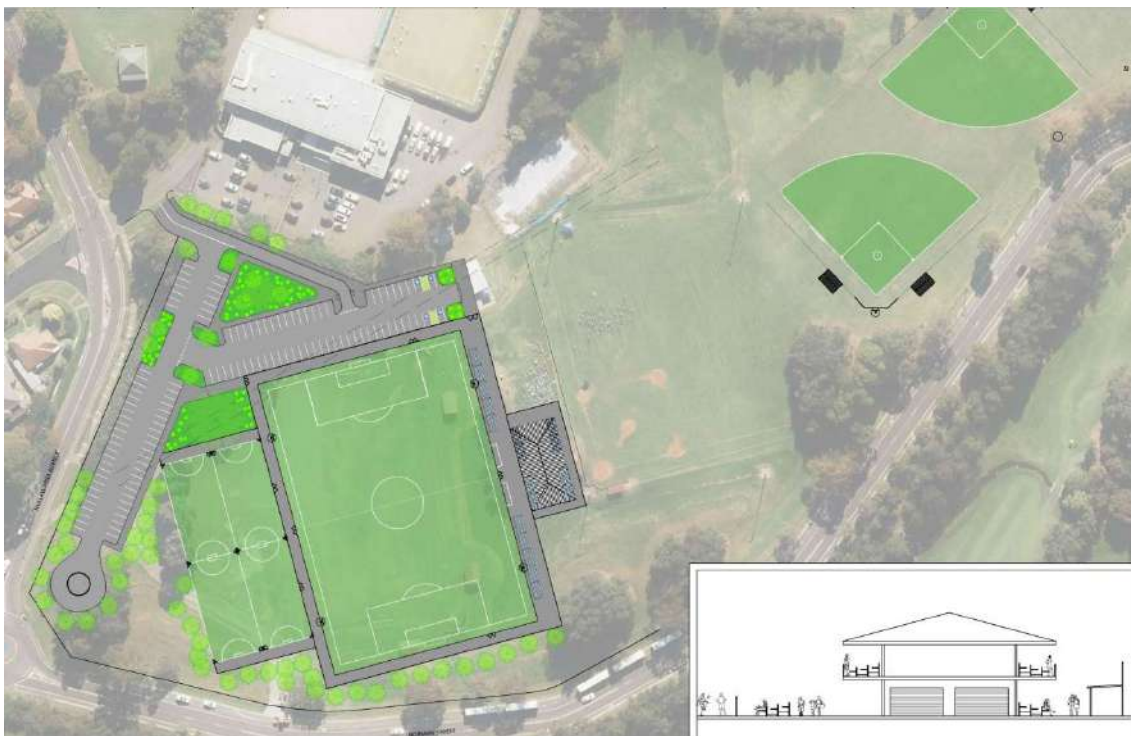


Image 2-2: Proposed Development Option 2

3 Hydrologic Model

The hydrologic model developed for this study used the Watershed Bounded Network Model (WBNM) software (Ref 3). The WBNM version used was 2017_V001.

3.1 Sub-catchment Delineation

The hydrologic catchment area was approximately 242 ha. A total of 16 sub-catchments were delineated across the Majors Bay Catchment Area. The sub-catchments had an average size of 11 ha. The sub-catchment delineation is shown on Figure 3.

3.2 Lag Parameter

The time difference between the centroids of the rainfall hyetograph and the runoff hyetograph is a function of catchment characteristics (such as area, shape and slope) and a specified lag parameter within WBNM. A lag parameter value of 1.7 was used for this study and corresponds to the NSW data detailed in the WBNM documentation.

3.3 Routing Parameter

Routing of flows from upstream to downstream through the sub-catchments can be calculated by a number of different methods within WBNM, including the nonlinear routing, time-delay routing and Muskingum routing methods. The nonlinear routing method with a parameter value of 1.0 was used for this study. This parameter value corresponds with the WBNM recommended value for natural channels.

3.4 Impervious Area

The proportion of pervious to impervious surface area across a region will influence the rate at which runoff will occur from the region. The percentage of impervious surface area within individual sub-catchments was based on the proportion and type of land uses within the sub-catchments (corresponding to the hydraulic roughness extents, discussed in Section 4.2). The impervious percentage per land use type is summarised in Table 3-1.

Table 3-1: Impervious Percentage

	Impervious Percentage
Roadway Area	90%
Urban Area	60%
Waterway Area	0%
Light Vegetation Area	20%

3.5 Rainfall Losses

Rainfall or storm losses represent the amount of rainfall that does not contribute to runoff due to interception by vegetation, infiltration into the soil, retention on the surface (depression storage), and transmission loss through stream beds and banks. A number of different methods are available within WBNM to estimate the rainfall losses, including the initial loss -

continuing loss (IL-CL) method, the Horton method and the time-varying method. The IL/CL method was used for this study.

The initial loss and continuing loss values were obtained from the ARR Data Hub (discussed in Section 2.3). As noted on the ARR Data Hub, the losses are not directly applicable to urban areas. In this case, the initial loss values supplied on the ARR Data Hub have been adjusted by 60% of the value; coinciding with the Australian estimates of the Effective Impervious Area (EIA) to Total Impervious Area (TIA) ratio, as per Book 5, Chapter 3, Section 3.4.2.2 of ARR 2016. Therefore, the storm continuing loss applied was 1.8 mm/hr and the storm initial loss applied was 19.8 mm.

The burst loss was calculated by subtracting the median preburst depth from the storm initial loss, as summarised in Table 3-2.

Table 3-2: Burst Losses

Storm Event	Storm Duration	Storm Initial Loss (mm)	Median Preburst Depth (mm)	Burst Loss (mm)
1% AEP	15 minute *	19.8	2.4	17.4
1% AEP	20 minute *		2.4	17.4
1% AEP	25 minute *		2.4	17.4
1% AEP	30 minute *		2.4	17.4
1% AEP	45 minute *		2.4	17.4
1% AEP	60 minute		2.4	17.4
1% AEP	90 minute		1.9	17.9
1% AEP	120 minute		2.4	17.4
1% AEP	180 minute		3.8	16
1% AEP	270 minute *		14.5	5.3
1% AEP	360 minute		14.5	5.3
10% AEP	15 minute *		3	16.8
10% AEP	20 minute *		3	16.8
10% AEP	25 minute *		3	16.8
10% AEP	30 minute *		3	16.8
10% AEP	45 minute *		3	16.8
10% AEP	60 minute		3	16.8
10% AEP	90 minute		5.8	14
10% AEP	120 minute		4.8	15
10% AEP	180 minute		5.6	14.2
10% AEP	270 minute *		5.6	14.2
10% AEP	360 minute		14.8	5

Note:

* Median preburst depths were unavailable for these storm durations, therefore the median preburst depth for the next highest storm duration was adopted.

3.6 Results

Using the “ensemble” approach from ARR 2016, the critical duration and critical pattern is that which produced the peak discharge one higher than the highest average discharge. To determine this, box and whisker plots were analysed for the sub-catchment directly upstream of the location of interest, Majors Bay Reserve (MBR040).

Chart 3-1 shows the box and whisker plot for the range of durations and patterns for the 1% AEP event. From this, the 45 minute duration was found to produce the highest average discharge of the durations investigated. Chart 3-2 shows the hydrographs for the range of temporal patterns for the 1% AEP event with the 45 minute storm duration. From this, temporal pattern 6 was found to produce the peak discharge one higher than the average discharge for this duration.

Chart 3-3 shows the box and whisker plot for the range of durations and patterns for the 10% AEP event. From this, the 60 minute duration was found to produce the highest average discharge of the durations investigated. Chart 3-4 shows the hydrographs for the range of temporal patterns for the 10% AEP event with the 60 minute storm duration. From this, temporal pattern 7 was found to produce the peak discharge one higher than the average discharge for this duration.

Therefore, the critical duration and critical pattern adopted for the study area was:

- 1% AEP event, 45 minute duration, temporal pattern 6
- 10% AEP event, 60 minute duration, temporal pattern 7

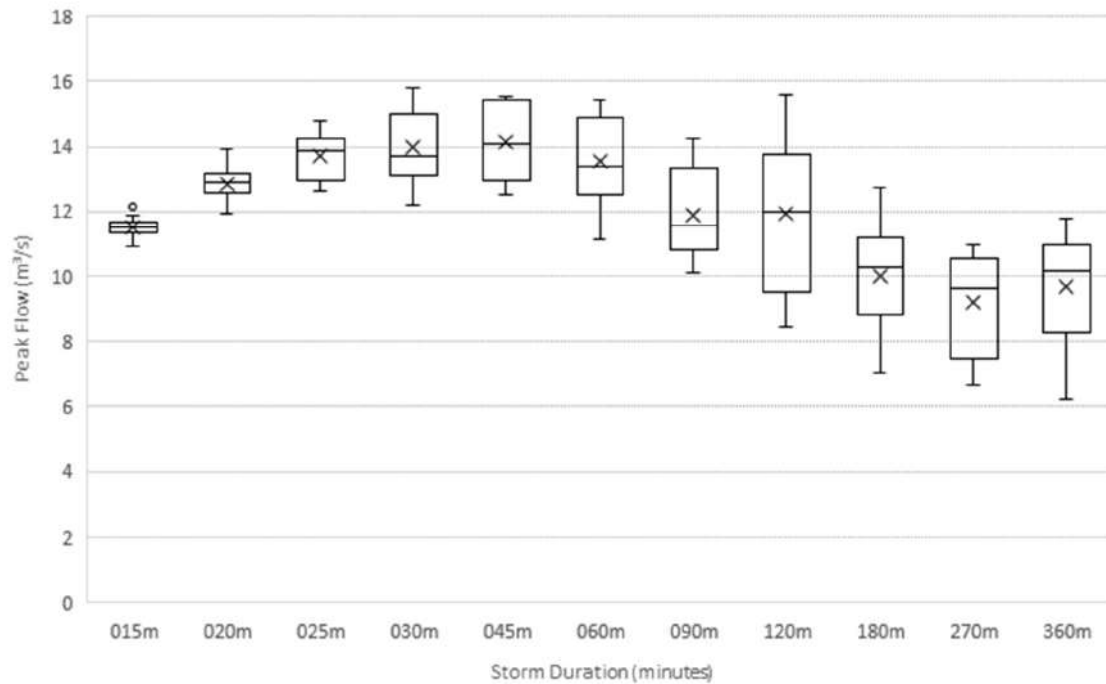


Chart 3-1: Box and whisker plot for sub-catchment MBR040 - 1% AEP event

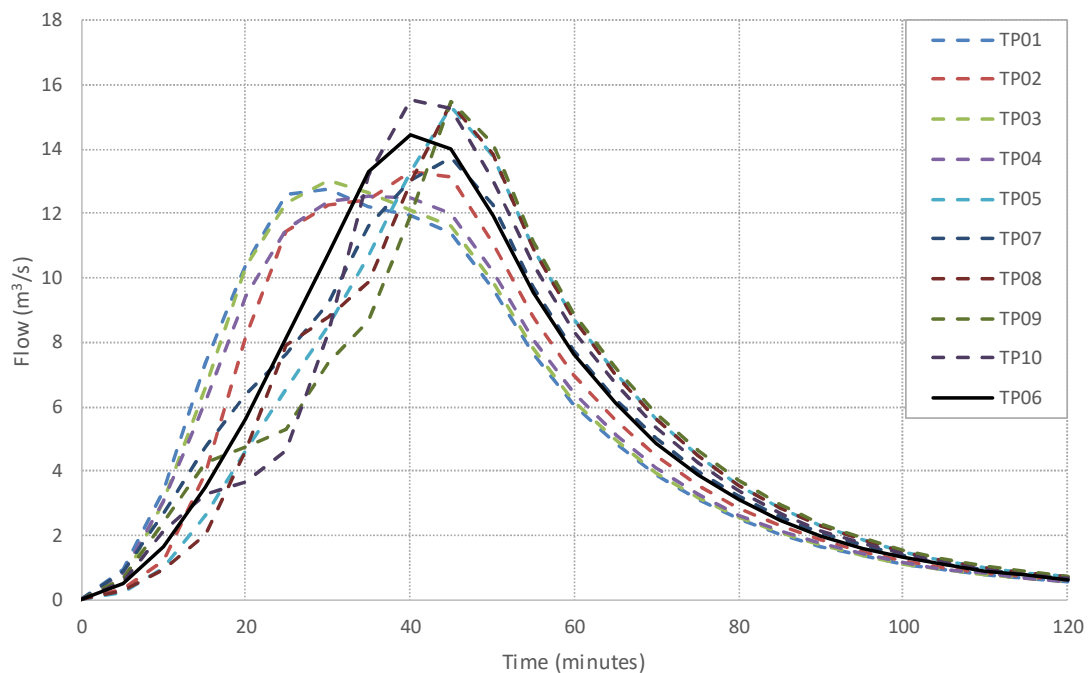


Chart 3-2: Hydrographs for sub-catchment MBR040 - 1% AEP event with 45 minute storm duration

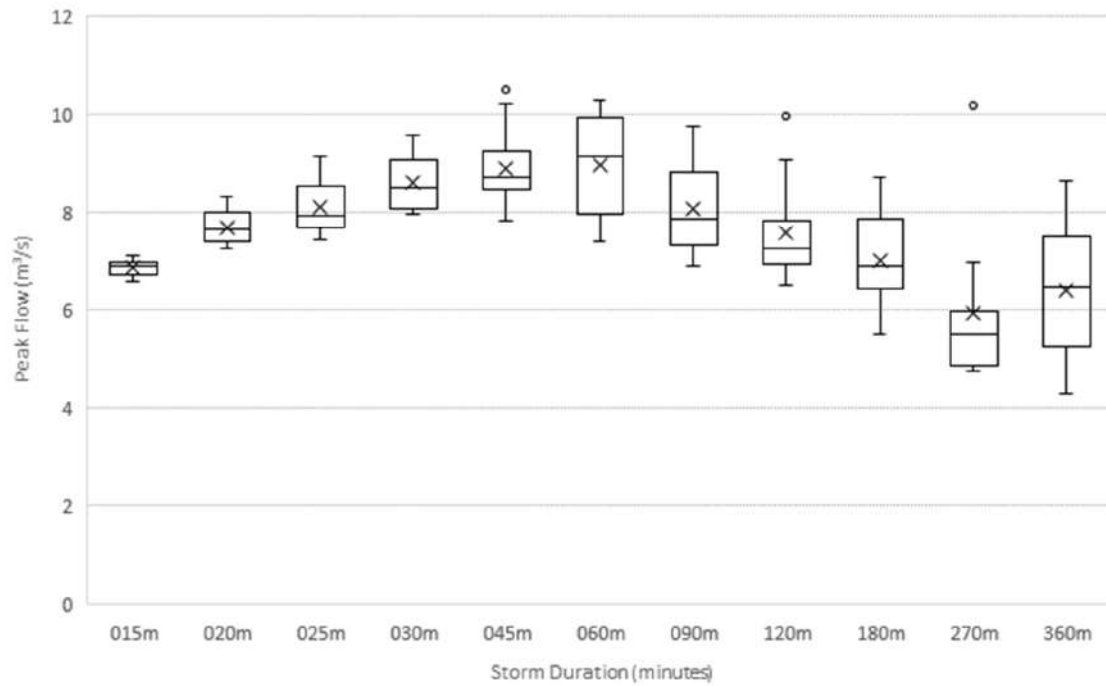


Chart 3-3: Box and whisker plot for sub-catchment MBR040 - 1% AEP event

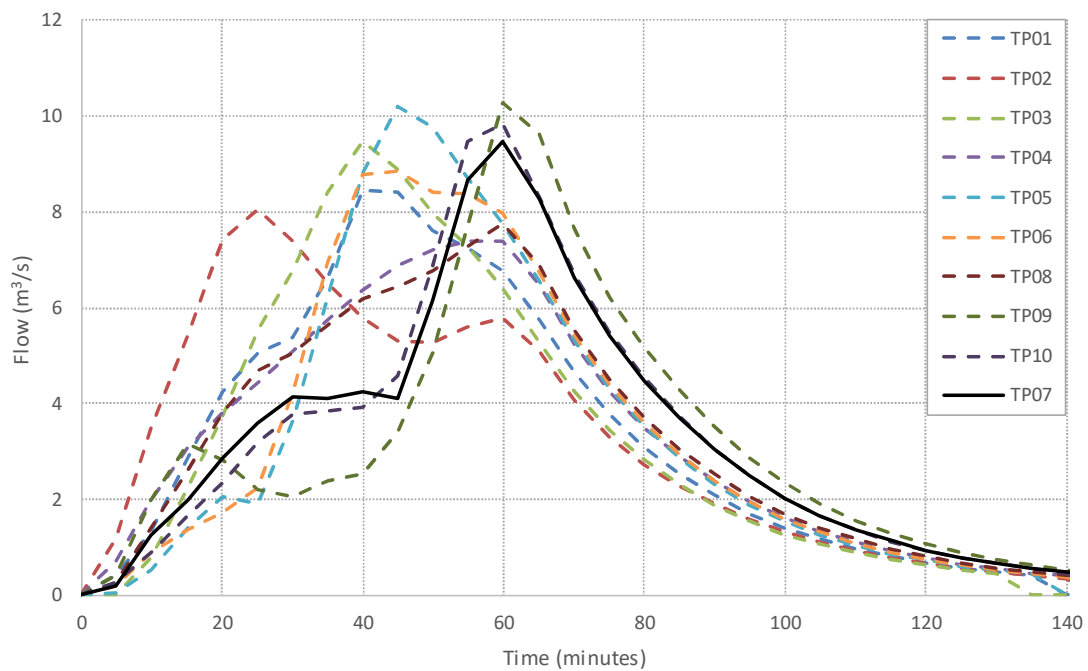


Chart 3-4: Hydrographs for sub-catchment MBR040 - 10% AEP with 60 minute storm duration

4 Hydraulic Model

The hydraulic model developed for this study used the TUFLOW software (Ref 2). The TUFLOW version used was 2017-09-AC with double precision.

4.1 Flow Boundaries

The rainfall runoff was extracted from the WBNM model. The total routed flows were extracted for sub-catchment MBR040, and the local flows were extracted for the sub-catchments that were downstream of or independent to sub-catchment MBR040. The flows were applied to the downstream point of the sub-catchments so as not to duplicate routing in the hydraulic model (that had already been calculated in the hydrologic model).

The sea water levels were as per the NSW guidelines, discussed in Section 2.5. These conditions were applied along the model boundary, coinciding with the embayment.

4.2 Hydraulic Roughness

The hydraulic roughness (Manning's 'n') represents the hydraulic efficiency of the flow paths within the TUFLOW model. Various industry references provide guidelines for acceptable hydraulic roughness ranges for varying land use types including Open Channel Hydraulics (Chow, 1959), Open Channel Flow (Henderson, 1966), and the Australian Rainfall and Runoff: Revision Project 15 Two Dimensional Modelling in Urban and Rural Floodplains (Engineers Australia, November 2012). Using these guidelines, the Manning's "n" values for varying land use types within the study area were determined, as detailed in Table 4-1. The spatial extents of these land use types (and thus the hydraulic roughness) throughout the study area were based upon the aerial photography and are shown in Figure 4.

Table 4-1: Hydraulic Roughness Values

	Manning's Roughness "n" Values
Roadway Area	0.02
Urban Area	0.05
Waterway Area	0.03
Light Vegetation Area	0.03

4.3 Proposed Development Option Schematisation

The proposed buildings were modelled as no-flow, completely impermeable features in the 2D domain of the hydraulic model. The proposed playing fields were schematised as raised ground level features in the 2D domain of the hydraulic model.

4.4 Results

Due to the urban nature of the catchment, the critical duration and critical pattern was investigated further to determine which produced the peak flood level one higher than the highest average flood level. To determine this, box and whisker plots were analysed for a point at the junction of Nullawarra Avenue and Norman Street.

Chart 4-1 shows the box and whisker plot for the range of durations and patterns for the 1% AEP event. From this, the 120 minute duration was found to produce the highest average flood level of the durations investigated. Chart 4-2 shows the hydrographs for the range of temporal patterns for the 1% AEP event with the 120 minute storm duration. From this, temporal pattern 2 was found to produce the peak flood level one higher than the average flood level for this duration.

Chart 4-3 shows the box and whisker plot for the range of durations and patterns for the 10% AEP event. From this, the 60 minute duration was found to produce the highest average flood level of the durations investigated. Chart 4-4 shows the hydrographs for the range of temporal patterns for the 10% AEP event with the 60 minute storm duration. From this, temporal pattern 9 was found to produce the peak flood level one higher than the average flood level for this duration. It should also be noted that temporal pattern 7 (which produced the peak discharge one higher than the average discharge) produced the peak flood level one lower than the average flood level for this duration.

A summary and comparison of the critical duration and pattern based upon the flow in the hydrologic model and the flood level in the hydraulic model is shown in Table 4-2.

Table 4-2: Critical duration and temporal pattern summary

Event	Critical duration and pattern based on flow in hydrologic model	Critical duration and pattern based on level in hydraulic model
1% AEP	45 minute duration, temporal pattern 6	120 minute duration, temporal pattern 2
10% AEP	60 minute duration, temporal pattern 7	60 minute duration, temporal pattern 9

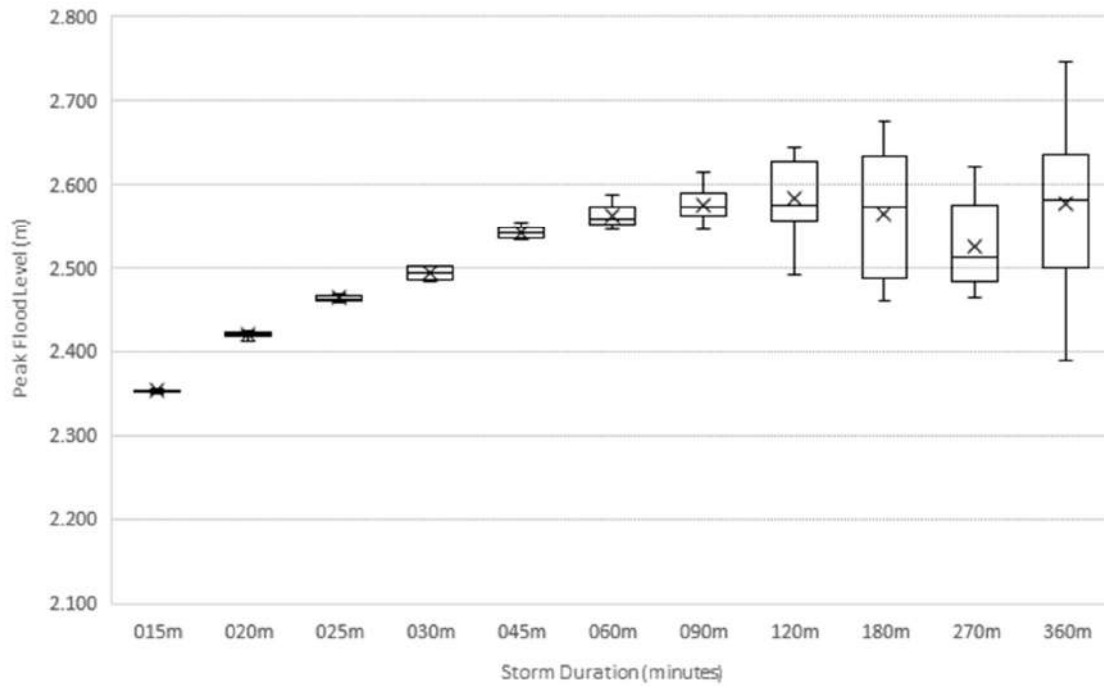


Chart 4-1: Box and whisker plot of peak flood levels for the 1% AEP event

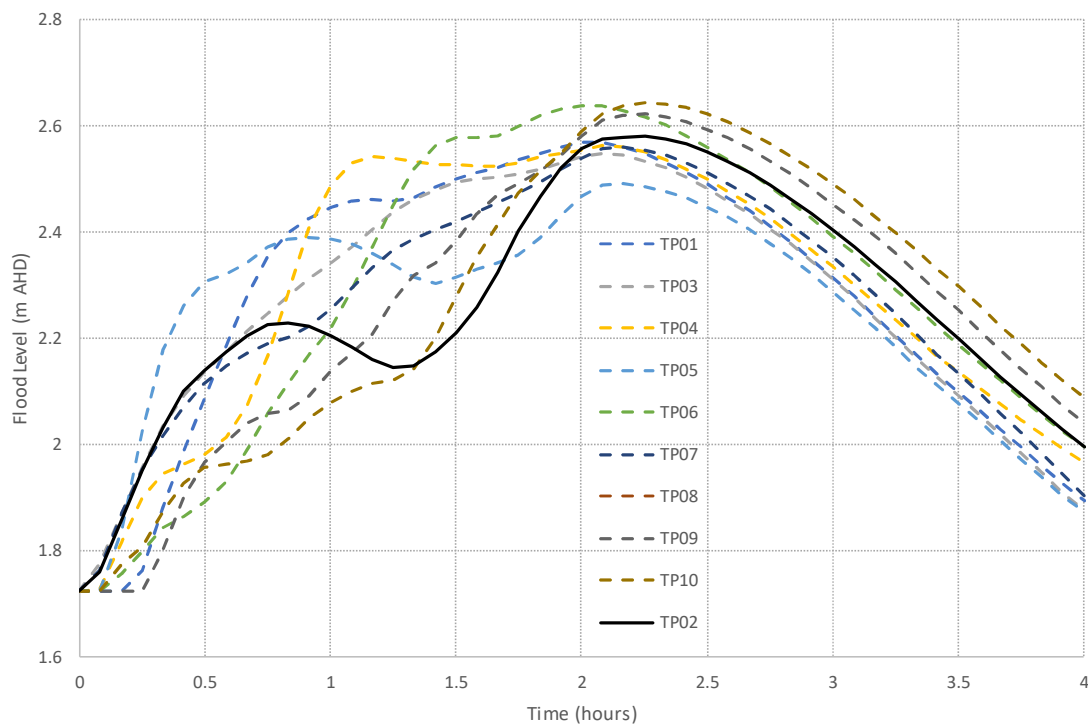


Chart 4-2: Hydrographs of flood levels for the 1% AEP event with the 120 minute storm duration

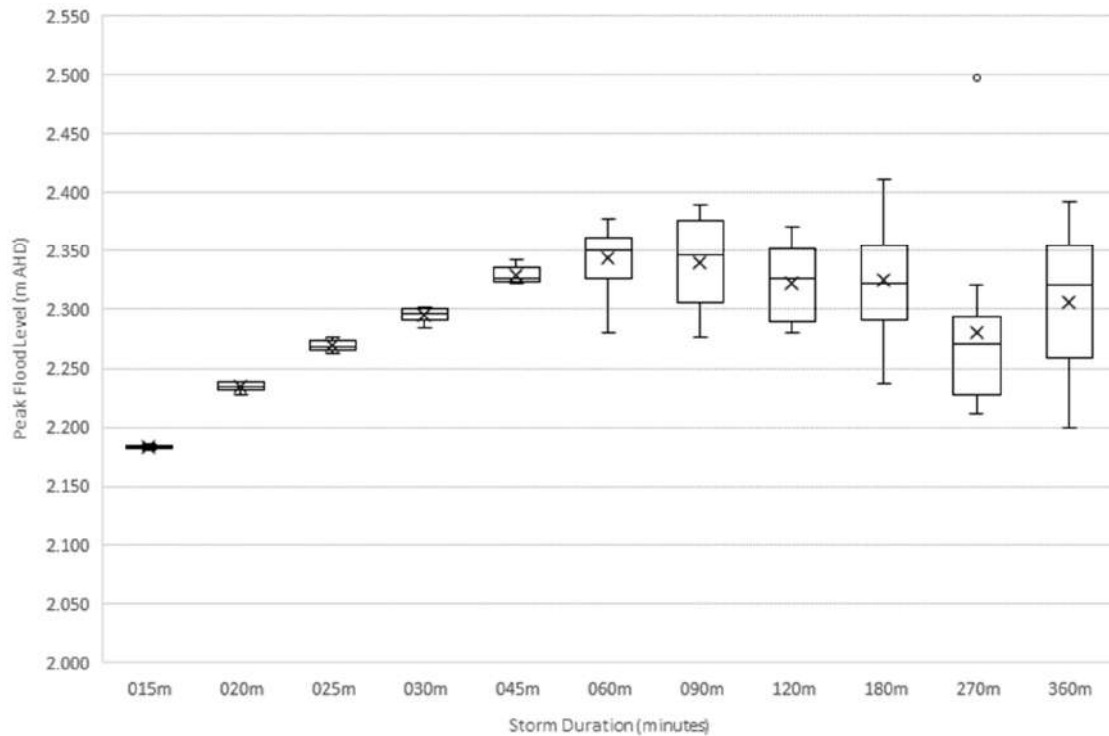


Chart 4-3: Box and whisker plot of the peak flood levels for the 10% AEP event

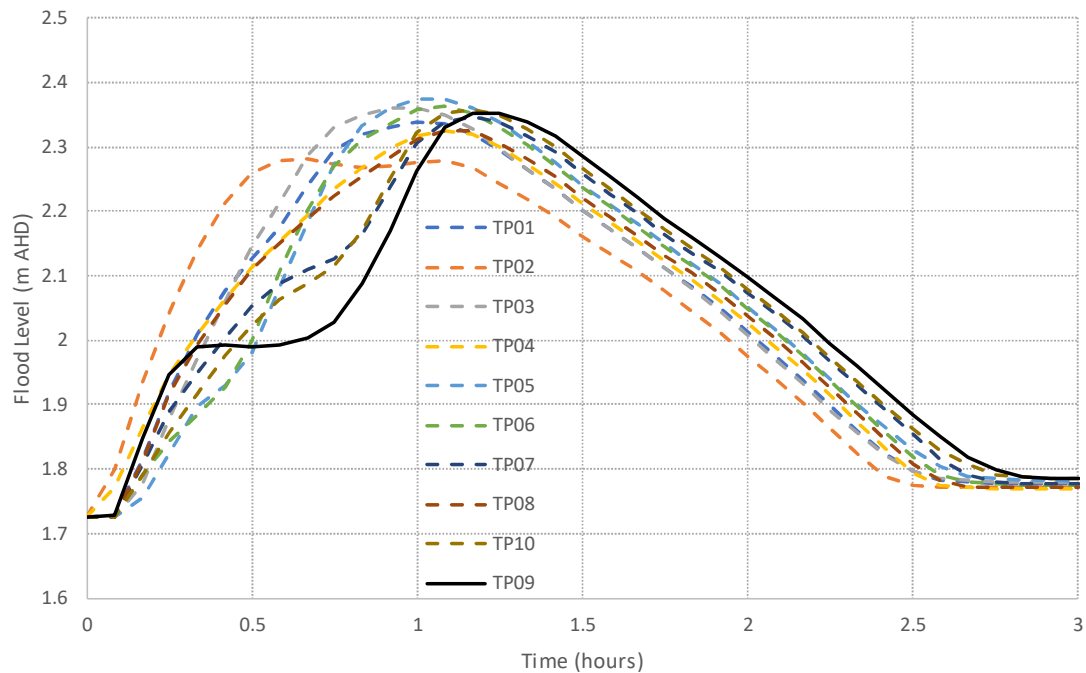


Chart 4-4: Hydrographs of flood levels for the 10% AEP event with the 60 minute storm duration

Due to the raised ground levels within Majors Bay Reserve, the properties and roadway area upstream of the reserve acted as a trapped topographical low point in frequent to rare rainfall events. Only in extreme rainfall events was the reserve substantially inundated. This is shown on Figure 5 to Figure 7.

The peak flood level at the roadway junction of Nullawarra Avenue and Norman Street was found to be:

- 3.40 m AHD in the PMF event;
- 2.58 m AHD in the 1% AEP event (with the 120 minute duration, temporal pattern 2);
and
- 2.35 m AHD in the 10% AEP event (with the 60 minute duration, temporal pattern 9).

5 Flood Impact Assessment

The peak flood level difference (or impact) between the existing conditions and the proposed development options 1 and 2 were analysed for the 1% AEP event with the 45 minute storm duration (temporal pattern 6) and the 120 minute storm duration (temporal pattern 2). The peak flood level differences within ± 0.01 m were considered within the precision tolerance of the hydraulic model and are considered to be negligible, as per the advice in Ref 5.

Figure 9 and Figure 10 show the flood level impacts of option 1 for the two aforementioned durations and temporal patterns. From this, no adverse flood level impacts were observed on adjacent land and property. There was a small area of “no longer flooded” area where the synthetic turf fields are proposed to be constructed above the existing ground level. However, as the flood water depth and volume contained in this area was relatively small, this resulted in little change to the peak flood levels.

Figure 12 and Figure 13 show the flood level impacts of option 2. From this, adverse flood level impacts were observed in the event with the 45 minute storm duration. This increase in flood level was located upstream of the proposed development on Norman Street, Nullawarra Avenue (between Nirranda and Mepunga Street), Mepunga Street, Quandong Place and Nirranda Street (with the latter three affected up to Quandong Street). The event with the 120 minute storm duration did not produce adverse flood level impacts due to the dual burst temporal pattern affecting the timing of the flood level ascension, as shown in Chart 5-1 and Chart 5-2.

Therefore, it is recommended that:

- Option 1 is viable for further investigation, with no adverse flood level impact found in the investigation; and
- Option 2 (in its current configuration) is not viable for further investigation, due to the adverse flood level impacts found in the investigation.

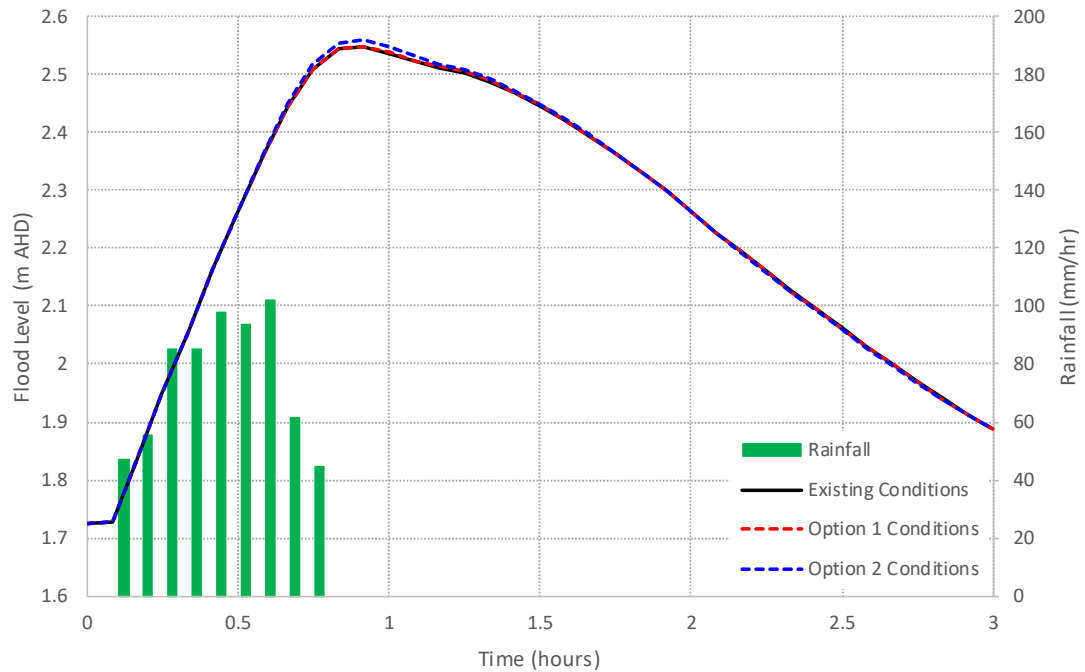


Chart 5-1: Rainfall and flood levels for the 1% AEP event, 45 minute storm burst, temporal pattern 6

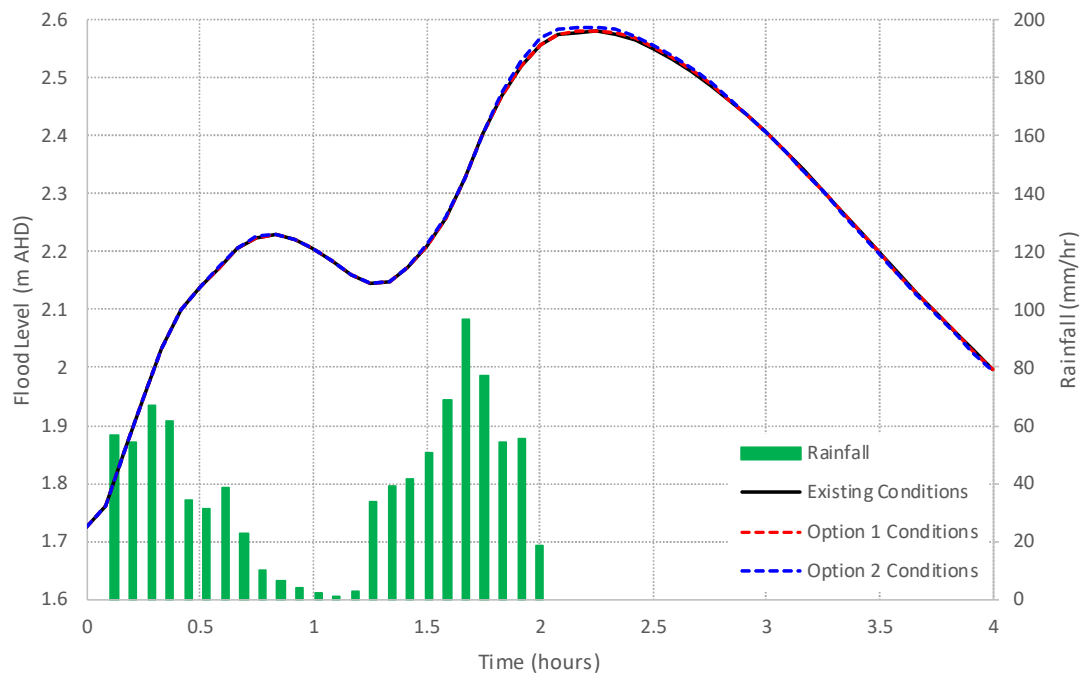


Chart 5-2: Rainfall and flood levels for the 1% AEP event, 120 minute storm burst, temporal pattern 2

6 Reference

- Ref 1: Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I (Editors) (2016), Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia
- Ref 2: BMT WBM (2016), TUFLOW User Manual.
- Ref 3: Boyd M, Rigby E, VanDrie R (2017), Watershed Bounded Network Model (WBNM) User Guide.
- Ref 4: Bureau of Meteorology (2003), The Estimation of Probable Maximum Precipitation in Australia: Generalised Short-Duration Method.
- Ref 5: Institute of Engineers Australia (2012), Australian Rainfall and Runoff Revision Project 15 - Two-Dimensional Modelling in Urban and Rural Floodplains.
- Ref 6: New South Wales Government's Office of Environment and Heritage (2015), Floodplain Risk Management Guide: Modelling the Interaction of Catchment Flooding and Oceanic Inundation in Coastal Waterways.